ORIGINAL

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
CONCENTRATED ANIMAL FEEDING	)	
OPERATIONS (CAFOS): PROPOSED	)	No. R2012-023
AMENDMENTS TO 35 ILL ADM. CODE	)	
501, 502 AND 504.	)	

TRANSCRIPT FROM THE PROCEEDINGS

taken before the HEARING OFFICER TIMOTHY J. FOX by Kari Wiedennaupt, CSR, at the Highland Community College, West Campus, 300 North West Street, Elizabeth, Illinois, on the 14th day of November, 2012, A.D., at 10:00 o'clock a.m.

A P P E A R A N C E S:

ILLINOIS POLLUTION CONTROL BOARD,
100 West Randolph Street
Suite 11-500
Chicago, Illinois 60601
(312) 814-6983
BY: MR. TIMOTHY J. FOX, Hearing Officer

ILLINOIS POLLUTION CONTROL BOARD MEMBERS PRESENT:

Mr. Thomas Holbrook, Lead Board Member
Ms. Jennifer Burke, Board Member
Dr. Deanna Glosser, Board Member
Ms. Carrie Zalewski, Board Member
Mr. Anand Rao, Technical Unit
Ms. Alisa Liu, Technical Unit

ILLINOIS ENVIRONMENT PROTECTION AGENCY,
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Appeared on behalf of the Petitioner;

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ALSO PRESENT:

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Appeared on behalf of Prairie Rivers Network.

I N D E X

PAGES

I N D E X (C O N T.)

E X H I B I T S

HEARING OFFICER FOX: Good morning, and welcome to this Illinois Pollution Control Board Hearing. My name is Tim Fox. I am the hearing officer for this rulemaking proceeding, which is entitled, In The Matter Of: Concentrated Animal Feeding Operations (CAFOs): Proposed Amendments to 35 ILL. ADM. Codes 501, 502 and 504. The Board docket number for this rulemaking is R12-23.

As our very first order of business, we do have two members in the General Assembly who are present here today to offer comments on the Agency's proposal on this issue, and with that, I would turn, first of all, to Representative Jim Sacia who is representative in this district. Sir, please --

REPRESENTATIVE SACIA: Thank you very much, Mr. Fox, ladies and gentlemen of the Board, ladies and gentlemen. It's a privilege to be here, and it's a privilege to have you here. You will recall that initially northwest Illinois I believe I am correct in stating was not a participant or was not having the Board convene, and thanks to the livestock producers

and concerned individuals in this area, we requested of you, and you were kind enough to accommodate us, and we are very, very grateful for that.

This representative district, the 89th District is the third most significant livestock area throughout the entire State of Illinois. The livestock community provides $109 billion worth of direct economic impact to this great state, and for that we are all very proud here in northwest Illinois.

I understand the reasons for the CAFO concerns. I truly do. I also am very, very cognizant of the Livestock Management Facilities Act that was passed approximately 20 years ago, and I think one of the very important things about the Livestock Management Facilities Act is it does not allow livestock producers to. I think that's very, very significant.

That being said, there is only two real points that I would like to make. No. 1 and most importantly, what types of plans and how significant of cost impact will this have on our livestock producers, the initial plan that -- I

am making an assumption here, Mr. Fox, that they will have to submit regarding any potential discharge.

That concerns me significantly and obviously, the ongoing cost to the livestock producers and how often the permit will have to be renewed. That being said and wanting to stay within the time constraints, I appreciate so much your willingness to convene this Board in Jo Daviess County and appreciate you giving me the opportunity to make a few comments. So with that, thank you all very much.

HEARING OFFICER FOX: Representative Sacia, thank you very much for your comments, which we greatly appreciate, and Senator Bivins, if you would step forward, we would be happy to hear from you and accept your comment into the record.

SENATOR BIVINS: Thank you very much, and I just have a very brief comment I would like to read, and I just first would like to take the opportunity to thank the Board for honoring the request of former Representative Lawfer and Representative Sacia and myself to come to Jo

Daviess County. You can see it's beautiful, if you have never been here before, and it's very rural. If you -- the new 45th Senate District will go from East Dubuque down to Sandwich, Illinois, which is 150 miles point to point. So it takes in a lot of rural area. We are a rural area, and 85 percent of our land mass outside the City of Chicago, of course, is agricultural land.

Agriculture plays a huge role in the Illinois economy, as Representative Sacia said, and it does -- as it does in northwest Illinois, pumping in approximately $9 billion a year into the state's economy. So you can see the importance of receiving the input of those who may be impacted by these rule changes. As you know, the Illinois Pork Producers Association, the Illinois Farm Bureau, Illinois Beef Association and Illinois Milk Producers have been working with the IEPA for several years to clarify the requirements for the permit program for concentrated animal feeding operations.

Reasonable and technical, feasible regulations will provide necessary environmental

protections while maintaining a strong agricultural sector of our economy. By providing clarity in the rule and consistency with the Livestock Management Facilities Act, we will allow those in the industry to properly adhere to regulations.

A clear and consistent rule will also help eliminate unnecessary duplication of regulations for farmers that would only add to the cost of compliance without providing additional protections for our natural resources.

So, again, thank you for considering these rule changes and assuring that the final rule will not only protect our natural resources, but allow livestock production to continue to be an important part of our economy in Illinois. Thank you very much.

HEARING OFFICER FOX: Senator, thank you very much for your comments, and both you and Representative Sacia please feel free to stay as long as your schedule allows.

Having heard from our legislative representatives for this district, let me resume

with some of the preliminary information. I do want to note that present today from the Board also are at my immediate left, Tom Holbrook, the Board chairman and the lead Board member assigned to this rulemaking. At his left is Board member Carrie Zalewski and at her left is Board member Jennifer Burke. At my far right is our fourth Board member, Dr. Deanna Glosser, and I also want to note for the record that present from the Board's technical unit are to my immediate right, Anand Rao, and at my far left, Alisa Liu.

The Illinois Environmental Protection Agency filed this original rulemaking proposal on March 1st of 2012, and in an order dated March 15th, the Board accepted the proposal for hearing. The first hearing took place on August 21st in Springfield, the second took place in Belleville, the third in Urbana and the fourth hearing took place in DeKalb, a litany that will be very familiar to many of you, I'm sure.

Originally a hearing officer order had set October 31st as the deadline to pre-file

testimony for this hearing, the 5th, and on the record of the hearing in DeKalb, the hearing officer did grant an oral motion to extend that deadline and set a deadline of Wednesday, November 7th to pre-file testimony for this hearing.

The Board received testimony, pre-filed testimony from this hearing first from Dr. Stacy James on behalf of the Environmental Groups, second from Dr. Peter Goldsmith and Mr. David Trainor on behalf of the Agricultural Coalition, and also from Mr. Donald Keefer. They are all present today, I understand, except for Dr. Goldsmith who we can address at a later point in the hearing, Ms. Manning.

In addition, the Agency received -- the Board received from the Agency, rather, pre-filed answers to questions that had been posed by the Board at the second hearing. Ms. Williams, you had expressed some misgiving about being able to prepare responses to those. So I want you to know that the Board appreciates the efforts that you and your colleagues extended to file those and to include those into the record.

We thank you for those efforts.

Following the order in which the witnesses pre-filed their testimony, we will begin once we have concluded public comments with the testimony of Dr. James and any testimony based upon it. Once those questions have been exhausted, we will turn to the testimony pre-filed by Dr. Goldsmith and Mr. Trainor and questions based upon that, and then Mr. Keefer, once those are exhausted, we will turn to your testimony and the questions that the participants have here based on that.

I do want to note for the record that just inside the door there is the sheet on which anyone who did not pre-file testimony but wishes to offer sworn testimony and respond to questions can indicate that they would like to do so, and I will confirm at a break whether anyone has so indicated. I do have in hand the list of folks who would like to offer a public comment. I see that a couple of people have come into the room since we began. I will use this to go through the folks and call them up for comments in the order that they appeared.

If anyone has since appeared, we will make sure not to overlook them and make sure that their comments get into the record.

Very generally, I do want to note that this proceeding is governed by the Board's procedural rules and under Section 104.426 of those rules. All information that is relevant and that is not repetitious or privileged will be admitted into the record. Please note that any questions that are posed by the Board or the Board's staff are merely intended to develop a clear and complete record and do not reflect any prejudgement on the proposal.

And I would ask you for the benefit of our court reporter who will be keeping our official transcript of this hearing to speak as loudly and as clearly as you can. I think the acoustics in this room are pretty good, and I would certainly ask you to avoid speaking at the same time as any other person so that her task is as easy as possible.

Do we have any procedural questions before we get underway with public comments?

Neither seeing, nor hearing any, let me

go through, first of all, the list to make sure that everyone is here and is prepared. The first commenter is Mr. Lawfer, who I do see here. Secondly, Cindy Bonnet; am I pronouncing your name correctly? Very good. Third, Matthew Alschuler. Very good. Esther Lieberman I did see was here. And forgive me if I'm reading this handwriting poorly. Beth Baranski?

MS. BARANSKI: That's correct.

HEARING OFFICER FOX: Great. Joan Wallace -- I'm sorry -- is present. Kathy Hicks. Very good. Roy Rutenberg?

MR. RUTHENBERG: Ray.

HEARING OFFICER FOX: Ray. I'm sorry. Then Douglas Schneider. Very good. Ken Turner I see in the back. Theresa Westaby. Am I pronouncing that correctly? Great. Susan Turner. All right. Ronald Lee Lawfer. Great. Greg Thoren. Great. Brian Duncan and Matt Ohloff. Very good. All are present.

Mr. Lawfer, let's start with you. If you would come up to this chair, please, and offer your comments, we would appreciate you having us get underway.

MR. LAWFER: Thank you very much. My name is I. Ronald Lawfer, address 14123 Burr Oak Lane, Stockton. I am a retired dairy farmer and live in and own a farm in Jo Daviess County, Wards Grove Township. Our dairy operation is now owned and operated by family members. I welcome Chairman Holbrook and the members of the Board and thank you for scheduling a meeting in Jo Daviess County. As you can see, this terrain is ideal for livestock production, especially dairy and meat utilizing the hay and pasture production.

This rolling land is what attracted many settlers to this area, and as a result, my community was named Stockton because of the large amount of livestock. Many livestock farms in Jo Daviess County have been in families for generations. Farm land in the Lawfer family has exceeded 100 years of continuous operation and ownership. This is the second Pollution Control Board hearing held in Jo Daviess County. In the summer of 1990, an outdoor hearing on proposed odor and manure application rules was held in the park at Stockton.

It should be noted that immigrant livestock farmers were attracted to this area by the availability of clean water from the streams, the springs and the shallow dug wells. Farmers understood the need to preserve the quality of the water long before any regulations were born since the passing of the Clean Water Act. Farmers still depend on the sources of water for livestock and family needs. For example, dairy farmers have their well water inspected and sampled regularly by the Department of Public Health in order to maintain the permits to market their milk from the farm.

My farm was chosen back in the early 1970's for a demonstration project as a result of the recently passed Clear Water Act. This project in cooperation with the Illinois Environmental Protection Agency and the Illinois Beef Council resulted in the construction of a zero runoff settling basin and holding pond receiving manure from a cattle feedlot. This million gallon holding pond is designed to be used for irrigation water for corn and hay ground and emptied on an annual basis.

I might add that during the demonstration that went on, the members of the Pollution Control Board at that time back in 1973 came to the farm and visited this project, observed the project, as well as other conservation practices that were being put on the land.

In the past 20 years in Jo Daviess County the number of dairy farms have decreased by a large percentage. Some of these operators have chosen other occupations or cropping methods because of economic reasons. Others have been visited, often on a drive-by basis, from representatives of the IEPA and offered a proposal to either remodel their manure holding facilities or face administrative action. Faced with these mandated and expensive upgrades, many dairy farmers -- family farmers have chosen to exit livestock production.

Today as you consider permits related to livestock operations, I ask you to consider the affordability, cost benefit and good science. Farmers are environmental stewards of their land 365 days, 24 hours a day. They have

a more complete understanding of saving the environment they live on than some bureaucrat in Springfield or D.C.

Thank you for holding these hearings in Jo Daviess County, and I hope you enjoy your visit.

HEARING OFFICER FOX: Mr. Lawfer, thank you for your comment, which we appreciate.

Ms. Bonnet, you are next. If we could have you step forward and offer yours.

MS. BONNET: Thank you, members of the Board, for the opportunity to speak today. My name is Cindy Bonnet, and I live and farm with my husband in northwest Illinois. Like many farmers in Illinois, our family comes from many generations of family farmers. I have worked for 20 years on our hog confinement and around liquid manure storage. I know what risks it can pose on others. I have even had fellow farmers, their family members and animals die from the effects of working around liquid manure.

We decided years ago to get out of the confinement business, in part because of the consolidation of the industry, but in larger

part because of its risks and what it did to our health.

I have been in this business, and I can tell you, stricter regulations for large CAFOs are needed in Illinois, other than the Livestock Management Facilities Act. The LMFA does not guarantee that CAFOs won't discharge their waste into the waters of the state. Even Warren Goetsch, the Environmental Program Chief from the Illinois Department of Agriculture recently said it was obsolete.

Wherever large industrial -- large scale industrial CAFOs have tried to build, it causes division among the communities. It has happened here in northwest Illinois. Because of the LMFA, neighbors and local communities don't have any power to make decisions about where CAFOs are built in their areas. This social injustice has put husbands against wives, neighbors against neighbors, friends against friends and even farmers against farmers.

In fact, many farmers are afraid to speak out for fear of being sued by the owners who are very wealthy and powerful. They also

don't want to appear as if they are against agriculture. If we stand up against them to protect our water and air, the agro businesses group put us down publicly. These are some of the reasons why this rulemaking is so important for farmers and rural communities in Illinois. These regulations are the only mechanism we feel we have to ensure our environment and way of life are protected.

I have witnessed two large CAFOs in my area discharging their waste into streams and stockpiling of manure in a quarry washout that was running off into a creek. Land application of liquid manure on frozen hillsides up slope from a creek and the spreading of silage leachate on fields over ten times the normal rate are just a few things that have happened. We cannot rely on all CAFOs to report what they discharge when they discharge waste.

It took local citizens who were concerned about their water being contaminated to let the Illinois EPA know about these problems. This is why an Illinois EPA registration program is so important. The

Illinois EPA needs to know where facilities that pose risks are located, and both the Agency and the public need to know how large CAFOs intend to manage their waste.

Local communities bear the burden of pollution caused by CAFOs and many times have been left to pay for the cleanup when they leave. We already pay enough taxes and should not be burdened with these added expenses. I don't want my taxpayer dollars spent on state enforcement after the damage has already been done when it would be so simple for large CAFOs to report basic information they should have at their fingertips to the Agency to prevent pollution in the first place.

Every year fish kills caused by CAFO discharges and manure runoff happen. This year of extreme draught throughout much of the nation makes water a precious commodity. The scarcity of water makes it even more important to keep it clean. I just learned Wisconsin has proposed a large CAFO asking for permits to drill 47 high capacity wells in the Central Sands area. The largest CAFO in Wisconsin has 8,000 cows. Our

county faced the construction of one double that size. If we don't put more environmental restrictions on these large CAFOs, there will not be enough clean water for the rest of us to use.

We have a creek that runs through our farm, and we depend on it. We fished in it when we were kids. I have seen wildlife such as blue herons, turkey vultures, hawks, deer, coyotes, foxes, turtles and raccoons near that creek as we work the fields nearby. We need this creek for our livelihood and for the wildlife it supports and for our children and grandchildren to be able to appreciate it.

Stricter regulations will not be a burden to the majority of livestock farmers in Illinois. It will be a good way to make the marketing playing field more fair to those that do a good job protecting the environment. Again, I worked for 20 years on our hog confinement, and I know what risks were involved. I urge you to adopt the regulations proposed by the environmental petitioners for the sake of all farmers like me. Please protect

the water we farmers and our animals need to allow our businesses to survive. Thank you.

HEARING OFFICER FOX: Ms. Bonnet, thank you for your comment. Mr. Alschuler, we are ready for you to step forward, please.

MR. ALSCHULER: Thank you for the opportunity to speak today. My name is Matthew Alschuler. I live outside of Apple River, Illinois near the Apple River Canyon State Park here in Jo Daviess County. I am the president of HOMES, a 501(c)(3) forum to educate the public on the risks of industrial agriculture and to promote farming that is good for the environment and rural communities.

Our organization originally came together about five years ago when our community was faced with the construction of the two large scale industrial confinement dairies to be sited over fractured bedrock in an area of the state known for its easily contaminated aquifer. It was suggested that members of our group take regular water samples from several streams that originate on or cross over the site of the mega dairies. We started sampling in early 2008

before any construction occurred at the site and then continued sampling since then. During the construction in '08 we documented a number of discharges of silt and very high totaled suspended solids in two streams that came off of the property and flowed towards the Apple River.

Although we provided this information to the Illinois EPA, there didn't seem to be much of a response. The USEPA stepped in and investigated the site and found a drainage pipe that went directly from one of the facility's lagoons into the tributary to the Apple River. This facility was claiming to be a zero discharge facility, but, in fact, it was designed to discharge from its waste ponds to the stream.

As you know, the law is written in such a way that the facility can claim they won't discharge so it doesn't have to file for an NPDES permit. In a rush to become operational and well before he obtained several permits he would need to finish construction in September of 2008, the owner of this facility had 26,000 tons of corn silage harvested and piled

up on a four-acre unlined and unreinforced concrete pad on the site.

On February 17th of 2009, the runoff from the thousands of tons of fermented silage had filled the silage leachate pond, and it had to be land applied to frozen, snow covered ground. I have pictures of a tanker truck driving back and forth spraying this highly concentrated nutrient source all over the land and over the stream bed of another tributary to the Apple River.

Just a few hours later a neighbor called. The stream smelled like a distillery. Several of us went over there and amidst the strong smell of hard cider, we took water samples and sent them off for testing. The state license lab determined that the BOD of our sample was 2,200 milligrams per liter or about ten times that of raw sewage.

We sent pictures of the spraying, the sampling and the lab tests to the IEPA. Nothing happened. Aerial photographs taken soon afterward showed that the leachate pond was rapidly refilling, and then we were hit with

some heavy spring rains.

On March 10th, 2009, we witnessed a power sprayer being used to pump out the leachate ponds directly over the same tributary that we tested less than a month earlier. I called the IEPA and spoke to an official who told me that he had authorized use of the sprayer since the ground was too soft to use a tanker for application, and the facility warned him that if they didn't empty the pond, it would overflow. We again took water samples, and despite being diluted by the heavy rains, it still had a BOD of 153 milligrams per liter. This too was sent to the IEPA and nothing happened.

On August 26th, 2010, we noticed that the same stream was the color of grape Nehi, and again took water samples we submitted through a testing lab. These came back with a BOD of 50 milligrams per liter. Photographs and lab results were submitted to the IEPA. Nothing happened.

Then, on the morning of October 1st, 2010, the stream was purple, and a filled

laboratory sample bottle was the color of Barney. I immediately sent photographs of the stream and the bottle containing the purple liquid to both the IEPA and the USEPA and took a sample that was again sent to a testing lab for a full workup. The lab reported a BOD of over 400, but no known chemical reason for the purple color.

This time the IEPA responded. To his credit, an IEPA official arrived quickly and took control of the situation. He ordered a representative of the facility to build a temporary dam to contain the discharge, had local farmers harvest the corn that was adjacent to the stream and directed a convoy of trucks to pump the purple discharge out of the stream and spread it over the recently cleared field.

Trucks were running day and night for almost 48 hours before the bulk of the discharge was contained and land applied. The farmer responsible for emptying the leachate pond admitted to spreading 320,000 gallons of leachate on almost five acres of land, an application rate of 64,000 gallons per acre and

well over 10 times the recommended maximum application rate.

One week later before they even had the lab results back, the IEPA asked the Illinois Attorney general to prosecute the mega dairy for this latest discharge over a year and a half after their first discharge. None of this would have ever happened save for the dedicated work of the neighbors of the facilities who kept a careful eye out for discharges and photographed and documented everything. If a non-discharge facility can't effectively manage a few hundred thousand gallons of leachate, how can they possibly manage a hundred million gallons of manure to be spread over tens of thousands of hilly acres all criss-crossed with creeks and streams which eventually make their way to the Mississippi?

I know the industry is proposing as part of these regulations that a CAFO without animals should not be considered a CAFO subject to NPDES requirements, but when situations like this arise, how can you regulate otherwise?

This was more than a "construction

area" discharge. How could this proposed change in regulations affect a hog CAFO that just depopulated but still has a full manure pond? If they discharge, would it not be considered a discharge from the CAFO because the site was temporarily empty?

Through all this we began the water monitoring of other CAFOs in the area. Local farmers had reported another dairy to us that they thought was polluting. In short, it was a mess. It is located right on the Yellow Creek, which eventually flows into a city park in Freeport, Illinois. So any animal waste discharge to that body of water could have an ill affect on the families that play in that water downstream.

To survey the site, we took some aerial photographs on February 13th, 2009, and found that one manure pond and the slurry store were both very full, and one appeared to be discharging into a culvert that led to the creek. Manure was also being spread right up to the edges of fields that bordered the Yellow Creek with no buffer or even a grass strip to

prevent the manure from running off into the creek during heavy spring rains.

On February 14th, 2009, we visited the site to take samples. There was no precipitation. We found wastewater running directly from the facility down to the gully that ran alongside the road and eventually emptied into the Yellow Creek.

On February 16th, we drove by again and saw an enormous, uncontained pile of fresh manure being stored at a quarry right next -- on the banks of the Yellow Creek. Fresh tractor tracks in the snow showed this pile had been recently visited. We took photographs, and on February 18th we sent them to the U.S. and Illinois EPA. The USEPA sent investigators to the site just a few days later.

On March 8th, there was a very heavy spring rain and we saw that the quarry flooded and a stream of dark brown frothy water flowing down into the Yellow Creek. We could not access the quarry area, because it's private property, but we did lower our sample lab bottles over the side of the bridge that crossed Yellow Creek and

drew up a diluted sample of the discharge. We also sampled the stream of brown fluid coming off of the barns that was discharging into a culvert in the road right of way.

Despite the dilution from the rain-filled creek, the quarry samples showed a fecal coliform level of 3,000 colonies per 100 milliliters, and a sample that we took straight off the milking parlor showed over 8,000 colonies per 100 milliliters.

We again sent photographs and lab results to both the Illinois and USEPA. The USEPA followed up with another inspection and ordered Rancho Cantera to remove the manure from the quarry and eventually asked them to apply for an NPDES permit.

Unfortunately, none of these discharges would have been detected if it had not been for citizen groups. Our work demonstrates that without a dedicated group of water monitors, a number of serious violations would have gone unnoticed by regulatory agencies. This could in part be due to the fact that the IEPA doesn't even know where a vast majority of these CAFOs

are located.

Existing rules need to be strengthened and clarified so that the operator, the Illinois EPA and residents all know the rules regarding setback, application rates, safe time to apply and so on. The purpose of these rules is not to punish farmers, but to promote safe operating procedures to protect our water supply while protecting our farmers from fines resulting from these discharges.

Most experts will tell you that every large facility will eventually discharge. So to classify these facilities as zero discharge and not requiring a permit is simply ignoring the inevitable. The purpose of an NPDES permit is to set up a procedure for the facility to follow so that it will avoid discharges, and limit them should they occur. The permit also alerts the IEPA and neighbors of the facilities the size and scope of the operation that is taking place in their community.

At the very least, the Board should require large CAFOs to report information to the IEPA about their operations. This would go a

long way to improving CAFO regulation in Illinois. As water shortages grow, more residents of Illinois will become dependent on groundwater for their sole source of domestic water.

It is imperative that we protect this resource for our towns and villages, our families, farmers and our children. As a citizen of the State of Illinois, I am pleased that our group is able to help protect our environment and water by reporting these discharges. My concern is that in more sparsely populated areas where residents are more afraid of retribution, these discharges would not have been reported.

It is the responsibility of the IEPA to know the locations of all these CAFOs and to make periodic inspections of the facilities. Not to penalize them, but to prevent the kinds of behavior that lead to discharges, fish kills, polluted streams and wells and endangerment of our drinking water and public health. I again thank you for the opportunity to speak today.

HEARING OFFICER FOX: Mr. Alschuler, thank

you for your comment. Ms. Lieberman, we are prepared for you if you could step forward, please.

MS. LIEBERMAN: My name is Esther Lieberman, and I represent the Jo Daviess County League of Women Voters. We are very grateful for this opportunity to participate in this hearing. Our league has a long-standing position on the protection of groundwater. We have observed and tried to understand the issues raised by the divisive siting process and litigation related to the proposed CAFO operation in our county.

We've come away with questions about the sufficiency of the regulations protecting against groundwater contamination in areas such as ours underlaid by carbonate bedrock.

Are the siting regulations based on the best scientific understanding of the karst features? We believe that all of us who live and work here would benefit from greater scientific understanding of what lies beneath the surface.

The work of the Northeastern Wisconsin Carbonate Bedrock Region Task Force, also known

as the Karst Task Force, is an example of the kind of cooperative efforts we believe could be replicated in our region. They acted to develop more cooperation among federal, state and local agents -- agencies and units of government responsible for the regulation of agriculture and other types of waste.

Their executive summaries state, It became clear that the physical environment cannot be characterized, understood or protected by merely locating and dealing with karst features at the surface. Rather the controlling factor is the underlying fractured carbonate bedrock.

The League of Women Voters of Illinois and local leagues including us will support legislation promoting sustainable agriculture and protection of our environment. We certainly support our farmers and appreciate that they are a major reason for our special place in Illinois and know that they care about the environment, working hard to keep it this special place. Thank you very much for coming and for giving us the opportunity to witness and participate in

this hearing.

HEARING OFFICER FOX: Very good, Ms. Lieberman. Thank you for your comment.

Ms. Baranski, we are prepared for you to step forward at this point.

MS. BARANSKI: Good morning. My name is Beth Baranski. I am a resident of Jo Daviess County, and I am here to express concerns about the scientific underpinnings of the code and proposed amendments. I served on the Jo Daviess County Board and was involved in the siting process for the CAFO proposed near Nora. At that time I studied the LMFA and associated regulations. I believe there are confusing and contradictory aspects of these guiding documents that caused a contentious battle.

The result was a tremendous expenditure of dollars and social capital that has left our county depleted and divided. Though I realize you are working on a different document, they are related, and I feel that opening Title 35 Parts 501, 502 and 504 of the code for amendment is an opportunity to begin to improve the overall situation.

I attended your hearing in DeKalb and recall concerns expressed about the administrative code amendment being consistent with other existing regulations. Rather than trying to match existing regulations that may be problematic, I would ask that you take this opportunity draw a clear, bright line that truly protects the environment. Let the other regulations be updated to become consistent with the standards that you set. This would give farmers certainty about the ways they should operate, which would allow agriculture development to move forward with confidence.

The siting controversy here in Jo Daviess County was like a Karst 101 class for me. In reading Parts 501, 502 and 504, I noted the references to sinkholes and understood the attempt to avoid water contamination by avoiding sinkholes. However, it's my current understanding that sinkholes are a symptom, if you will, of karst geology and not the definition of it.

So I was curious to see the technical supporting documents that were relied on when

determining that, for example, there must be a 200-foot vegetative, crop stubble or crop residue buffer between the field and any down gradient surface waters, conduits, waterways, open tile intake structures, sinkholes and agricultural wellheads.

The technical support document citations given under, "Fields That Are Suitable For Winter Application" relied on a portion of the LMFA which reads, A provision that livestock waste may not be applied within 200 feet of surface water unless the water is upgrade or there is adequate diking and waste will not be applied within 150 feet of potable water supply wells.

This documentation strikes me as insufficient. At the DeKalb hearings there were also comments made about how expensive it would be to fly over a farm or do the broad general site analysis needed to identify concerns about environment sensitivity, the suggestion being that this would place an undue burden on the individual farmer.

Fortunately there are entities that

conduct, research and gather data in a never-ending search for an improved understanding of the hydrogeology and soils in our state. I would suggest that you rely on them explicitly in the code to make determinations about the general conditions in an area and to prescribe the site specific testing that should be required for a proper detailed assessment.

With objective scientists both making the general determinations and prescribing the specific testing, I believe you can eliminate current inconsistencies and provide certainty for all parties. I ask you to amend the code on the basis of sound science. If this is done, I believe the public will feel confident that the environment is being protected, that enforcement concerns will be reduced and that farmers will be freed up to do what they do best. Time and resources in all these areas can be directed toward more positive ends. Thank you.

HEARING OFFICER FOX: Thank you for your comment, which we appreciate. Ms. Wallace, we are prepared for you to step forward. Thank

you.

MS. WALLACE: Good morning. My name is Joan Wallace. I have resided in the City of Galena for 12 years. I have never been negatively impacted by CAFO pollution because I have never lived near one, and yet here I am. I became interested and involved back in '07 and '08 when it was announced that A.J. Bos planned to build his mega dairy in Jo Daviess County.

Setting aside the horrors of water pollution, air pollution, stress on roads, depressed real estate, local businesses declining, I was astounded by the forward pace of this project.

Before I moved here, I lived in an unincorporated area of Lake Zurich, Illinois in Lake County. The minimum lot sizes were one acre. All lots were well and septic. The house I purchased in 1987 had been built in 1955. The well and septic passed inspection prior to my taking possession, but about 12 years later the septic failed and needed complete replacement. This required engineering drawings, soil perc tests and a permit. The toil type called askum,

A-S-K-U-M, II had since been downgraded to unsuitable.

I was therefore required to put in an above-ground Wisconsin mound system with a lift station. Twenty truckloads of sandy loam were brought in. The cost back then was $12,500. The setback requirements had to be not less than 90 feet from my well, neighbors' wells and neighbors' existing setbacks. I also had to have sufficient land for 100 percent replacement in the event the new system failed.

Clearly, the burden was on me to ensure there was no negative impact to my neighbors, and that's as it should be. Prior to my retirement to Galina, I worked for 26 years for a large Chicago suburban real estate developer who built custom homes, commercial buildings, shopping centers, apartments, condominium developments, planned unit developments, either HUD or conventionally financed.

Long before ground was ever broken, numerous studies were required; engineering designs for retention ponds, detention ponds, calculations for the 100-year and 400-year

rains, traffic impact studies, school impact studies and more. During construction, periodic inspections were made by lenders and various divisions of whichever municipality's building department we were working with.

Substantial cash bond requirements were necessary to ensure the work was properly done and stood the test for a specified period of time. Clearly the burden was on the developer, not only to make certain that product was up to code, but also for the environment and safety of the surrounding area. Again, as it should be.

So when I compare these two examples of a homeowner and a real estate developer, it would seem consistent that large CAFO owners/developers should be subject to more stringent requirements as most other industries are.

Regarding the CAFO industry, why is there no cash bond requirement to ensure the potability of water, the absence of particulates in the air, the maintenance of roads for a project the size of the mega dairy or a large hog farm or poultry facility? Why do CAFOs get

a free pass when they produce more waste than some cities? Why aren't they required to submit a waste management plan for approval from the IDOA or EPA?

As it is, the IEPA has responsibility to ensure compliance with the Clean Water Act. Shouldn't all large CAFOs be required to submit their plans to the Agency and be required to follow the same standards regardless of whether or not they are permitted under the LMFA or NPDES program?

The record shows many CAFOs have polluted regardless of approvals they have received under the LMFA and regardless of whether or not they had NPDES permits and even with their unapproved waste management plans on file.

Last, but not least, regulations now are so lame that the IEPA doesn't even have a complete inventory of where all these CAFOs are. It's often not until they receive a complaint about dead animals, dead animal parts, horrific smells or water pollution from an overburdened manure holding pond.

I would like to continue living CAFO impact free, no matter where I would choose to live, and for this reason, I thank you for allowing me to speak.

HEARING OFFICER FOX: Ms. Wallace, thank you for your comment.

Ms. Hicks, we are prepared for you to step forward, please.

MS. HICKS: I thank you for coming here to Jo Daviess County. It's easier to be here than for me to travel. My name is Kathy Hicks. I and my husband are retired farmers living on the farm. We are fifth generation on the farm. We rent our pasture and crop ground to a neighbor who has a small dairy.

My farm is in Jo Daviess County, the south end being less than a mile from what was proposed as the large mega dairy. Our grounds have five natural springs, three of which run year round. Because my land is of karst nature, I am concerned about water pollutions from large liquid manure and leachate ponds and overspreading of those materials contaminating the groundwater and aquifers.

We had an instance of this when the spreading of leachate of a concentrated magnitude on a small area led to the pollution of a creek leading to the Apple River. With the nature of this land, I am concerned about groundwater contamination getting into our aquifer and wells. Twice since we have lived on the farm our creeks and the pasture have been polluted. Once was from a fertilizer plant in Warren, which had a spill into the Wolf Creek.

We had a fish kill all the way to Hanover. I had a deformed calf born that year, and five cows did not a produce a calf. Then we had a small fertilizer plant across from the house owned by a neighbor. That had a spill. That killed the grass along the creek in our spring lot for two years.

The spills do not have to be intentional to cause damage. I think the law should take into consideration what mother nature can do and protect us from carelessness also. We have just this one earth to pass to our children and future generations. It is important that we keep the potable water we have

left clean.

We also owned a hardware store in Warren for 17 years. When we bought the store in July of 1978, there were businesses in every storefront. As small farms gave way to larger farms, we watched our town lose businesses one at a time. This just took 20 years. We had bought our business in 1978. I think that because of the nature of a CAFO and documented pollution across the U.S., we have to give the ICCW, the USEPA and the IEPA the laws and means necessary to do their jobs.

We know that self-regulations does not work when it defies their own interest. I think CAFOs should be registered. Laws controlling them should take into consideration the health and common good of all those they have an effect on, as should all industries that have the probability to pollute. And thank you.

HEARING OFFICER FOX: Thank you for your comment, Ms. Hicks.

Mr. Ruthenberg, we are ready for you to step forward, please.

MR. RUTHENBERG: My name is Ray Ruthenberg

from Woodbine Township just east of here, and I am a retired water and wastewater utility manager and a certified operator. Previous to retirement I had a Class A water certificate, the highest ranking certificate in Illinois, and a Class 2 wastewater certificate. My 38-year career included ten years of industrial wastewater treatment at Argonne National Laboratory, 4 years as a Public Works Superintendent in Blue Island, Illinois, 24 years in Jo Daviess County at Apple Canyon Lake and The Galina Territory, both in a karstic region of our county.

Part of that 24 years included teaming up with the Health Department to find and seal up old abandoned farm wells, as these wells and crevices pose a direct threat of pollution entering the drinking water aquifers. During that 24 years we had hundreds of water line breaks, usually due to the rock cuts -- big surprise -- and at least 80 percent of those leaks never surfaced. They found their way to fractured rock cracks, crevices and then flowed to the lower water aquifers. Only isolating

sections and using geophones, usually at night, were we able to pinpoint the location and repair those leaks.

I believe these occurrences point out the risk of spreading millions of gallons of liquid manure over land that is underlain with karst, fractured rock and field tiles. A 5,000 cow dairy would need to spread approximately 735,000 gallons of manure per day over a short period between harvest and spring planting.

This demanding schedule invites spills, runoffs and overtop events, all of which endanger our environment or pose a threat to our drinking water. For the past four plus years I have kept track of all significant spills across the county, and those folders are full of egregious events. This is three years of spills. It's about an inch thick.

One of the most tragic was the runoff event in Milwaukee in 1993. Heavy rains caused runoff of farm fields to get into the drinking water intakes, overloaded their treatment capacity resulting in 400,000 people getting sick and 104 died. I believe it is not a matter

of a spill will occur. It is just a matter of when these spills will occur, and I believe a CAFO should not ever be permitted in a karstic region.

In addition, where soil conditions are favorable, I believe we need increased setbacks from residential wells to reduce the possibility of contaminated wells and sick people. I thank the Board for coming to Jo Daviess County.

HEARING OFFICER FOX: Mr. Ruthenberg, thank you for your comment. Mr. Schneider we are ready for at this point. Please step forward.

MR. SCHNEIDER: Good morning. I would like to thank the Pollution Control Board for holding these hearings and the opportunity to comment.

My name is Doug Schneider. The family has had dairies in Stephenson County for five generations. My wife, Trish, was also raised on a dairy farm, and together we own what we call Schneidairy farms. Stephenson and Jo Daviess Counties are significant areas for dairy production in our state. These two counties produce about one-fifth of the state's milk and generate nearly $70 million in output from the

dairy industry. Their rolling hills are very suitable for dairy production, and it has been an economic cornerstone, annually creating nearly $500 million in local economic activity.

Trish and I drink the same water as our cows, as we have since we were children. So do our children and our grandchildren. It was noted earlier as a prerequisite to sell milk, the State Department of Public Health annually tests our water to ensure its safety.

On our farm we have a comprehensive nutrient management plan. It's a living document, one that is constantly being reviewed, updated and improved. We hire a consultant to help us manage this effort. Being able to use manure for crop nutrients is beneficial for two primary reasons. First, by applying at rates dictated by our CNMP, we reduce the cost of fertilization. Secondly, when applied as specified by the CNMP, it is indeed a very green and sustainable process since we produce the nutrients so close to our fields and only apply what the crops need.

Commercial fertilizer includes nitrogen

which is often in manufactured in Trinidad, phosphorus, which is mined in Florida and potassium, which is mined in Canada. These nutrients are then transported thousands of miles to our fields, which do -- the fields which are not able to receive manure.

A comprehensive nutrient management plan is a significant investment for our operation, and it serves as a prime example of the cost of doing business from a regulatory perspective.

Last week I attended a dairy meeting where four professionals spoke of working with a growing number of dairy producers who either are in the process or who are facing bankruptcy. The capital required to dairy is large, and the profit margins are often small. Smaller farms will be challenged in responding to regulations that will be costly or require an inordinate amount of human resources.

The regulations impacting the dairy industry need to be science base and rooted in common sense. We are proud of the work we as dairy producers do in Illinois. Our farm

utilizes many conservation practices including no till planting, conservation tillage, planting cover crops, crop rotation strip cropping and the planting of forages.

We consider ourselves to be conservation stewards and realize that both land and water must receive our care. Our son desires to become the sixth generation of our family to dairy in Stephenson County. As an industry, we face many challenges from many sources. The state needs to assure that we are in a responsible, yet reasonable and therefore competitive position with other states, so our dairy industry can thrive into the future and not be placed into a position of a regulatory quagmire, which would create an uncertain future for dairy and the rest of the animal agriculture. Thank you.

HEARING OFFICER FOX: Mr. Schneider, thank you for your comment.

Mr. Turner, we are ready for you to step forward, please.

MR. TURNER: I do have handouts for the Board and pictures if you wanted to distribute those

now or later, and there is probably enough for the Board and for the court reporter.

My name is Ken Turner. I am a science teacher, father of five. I am from Warren, Illinois here in Jo Daviess County, and I appreciate the opportunity to speak to you today. I am here to talk to you about zero discharge CAFOs. Researcher after researcher has put the measurement of documented leakage from the clay lines into the ponds at 750 to 1,250 gallons per acre per day, researchers like Schulte, Parker, Benson. Let's just refer to it as a thousand gallons per acre per day from manure ponds.

In litigation in Jo Daviess County, the senior engineer for the CAFO, the mega dairy that's been referred to before, testified that it would leak a little less than a thousand gallons per day per acre. Never, ever accept the term "zero discharge" at face value. Just think a thousand gallons per acre per day.

I am here to talk to you about the minimum required distance separating the aquifer and the bottom of a manure pit. There is none.

Right here in Jo Daviess County the CAFO that was proposed would have placed a manure pit an average of seven feet above the aquifer and as close as three feet, again according to the testimony in court from the senior engineer, is it prudent to place leakage of 40,000 gallons per day within three feet of the aquifer that serves thousands?

I'm here to talk to you about safety nets that do not exist. Karst, dangerous enough to be mentioned in the LMFA, we need experts to determine whether there is karst or not. In the case I have been referring to, six different regional to international experts on karst sent letters to the IDOA stating that the area in Jo Daviess County was karst.

A sinkhole formed near the manure ponds of the large CAFO during construction. I have that picture for you. I would like to enter it into the record. That's on the site. Despite the advice of experts and all the evidence, the IDOA permitted the construction of the facility and its waste ponds with no additional safeguards. I guess it's anticlimactic to state

that it ultimately discharged.

I'm here to -- certainly here to talk to you about current regulations. They are insufficient. I wrote many letters to the IEPA detailing my concerns about the proposed CAFO in our area. I wrote about the two streams on site, the conduit built from the manure holding pond directly to those streams. That's another picture -- actually two more pictures, this one and this one that I would like to enter into the record.

I wrote, The local geology, the expected waste leakage into the site's underlining karst aquifer and the significant nexus between the aquifer and the leaking manure ponds that would result in the contamination of Illinois' surface waters, our waters, our beautiful Apple River, a biologically significant stream and a prized tourist attraction. In addition to contributing to our quality of life, it is an economic engine for the county.

I finally received a letter back from the Director of the IEPA stating that no action

would be taken until after the facility polluted. There was no evaluation, no investigation. So I turned to the USEPA and provided them the information I had provided to the IEPA. In part, that's this, which is also attached. This is a complaint regarding an NPDES permit for the Tradition South Dairy of Jo Daviess County, Illinois.

The USEPA found merit to my concerns and determined that a significant risk was present. Us citizens should not have to take these extraordinary measures to protect their children's rights to clean air and water.

As it turned out, the facility was designed to discharge from at least one of its manure storage ponds through a pipe to the stream. In one of the USEPA's investigations on March of 2009 it was found this pipe was discharging to the stream from one of the large manure storage structures being built. The facility discharged from other areas of the site on several other occasions as well. That pollution should have been avoided.

I am sensitive to the fact that our

state agencies have excellent people working with limited resources in stressful times. My point is to show that the regulatory system is flawed. The state needs stronger regulations to equip the Agency to protect the citizens. I know there has been a pattern of regulatory failures beyond my case. The IEPA noted 244 regulatory violations in 2011, including water pollution problems from 12 pit discharges, 12 field applications, 6 lagoon overflows, 7 intentional discharge dumpings and others. These kind of problems could and should be prevented.

I'm here to talk to you about a wiser choice. Wouldn't it be wiser to place the manure farther from the aquifer? Wouldn't it be wiser to place the manure farther from the river? Wouldn't it be wiser to require registration of large CAFOs? Wouldn't it be wiser to know how many animals were on site? Wouldn't it be wiser to know if a CAFO has an adequate nutrient management plan?

The Illinois EPA needs to have the ability to better regulate large CAFOs. There

needs to be another check-in place besides the LMFA before pollution occurs. Some will say that we need these CAFOs for economic development. That is a lie. In a report commissioned by the North Dakota Attorney General, Dr. Stofferahn summarizes, In the case of large livestock confinement operations, communities will be at risk for environmental and health problems, entailing the need for state and local government intervention.

Communities that lose moderate sized family farms will lose a base of middle class producers and experience rifts in social fabric including population decline. These communities are likely to have declines in other businesses and in the local property tax base and may require government aid for social and public services.

According to the Institute of Science, Technology and Public Policy, communities with industrial animal facilities have higher unemployment rates. Small independent family farmers offer far more benefits to communities, 10 percent more permanent jobs, 20 percent more

local retail sales and a 30 percent increase in per capita income.

Some will say the CAFOs provide the means for increasing the tax base. Another lie. Property values actually go down. Here's a quote, "It is clear from the above case studies that diminished marketability, the loss of use and enjoyment and loss of exclusivity can result in diminishment ranging from 50 percent to nearly 90 percent of otherwise unimpaired value. That's from the Appraisal Journal. That's not from an environmental magazine, the Appraisal Journal of 2001.

If your house loses 50 to 90 percent of its value, you probably don't have much value left in your house. There is no economic prosperity if your region becomes known for its pollution or your aquifer is polluted.

Let's also note that the County Board of Jo Daviess County voted 11 to 5 against the particular mega dairy because of improper siting to the LMFA. Furthermore, our county, and thank you for visiting, has two referendums, one requesting increased setbacks, one expressing a

desire for a moratorium on large CAFOs.

In sum, CAFOs are built too close to rivers. They are built too close to aquifers. They claim no discharge, but they do and often don't get caught or punished. They increase poverty and decrease property values. Heed the plea of the rural communities. Provide us with protection. We require registration. We require greater setbacks from rivers and aquifers, and the next time you hear zero discharge, please remind yourself, a thousand gallons per acre per day. Thank you.

HEARING OFFICER FOX: Mr. Turner, thank you for your comments.

Ms. Westaby, we are ready for you to step forward, please.

MS. WESTABY: Good morning. My name is Theresa Westaby. I would like to thank the Board for giving me the opportunity to speak today. My husband, Delmar, and I own and operate a farm in Stockton, Illinois. We milk 81 registered Holsteins and we farm 645 acres. Our farm was started in 1861 and has been passed from father to son for five generations. Our

two sons will be the sixth.

We have owned the exact same acres purchased originally in 1861 and 1862. Needless to say, we have worked hard and loved this land for over 152 years. For over 50 years, our farm was a conventional dairy, but in 2002, we turned our farm organic, and we have been certified and successfully selling organic for over ten years. Our National Organic Standards, Oregon Tilth Certifier Standards and Organic Valley Processor Standards all regulate how, when and where we spread our liquid manure from our farm.

We are not allowed to spread our liquid manure on frozen ground, snow covered, or saturated ground. We have to submit a yearly manure management plan that includes soil testing, where manure was spread, what cover crops, crop rotations and tillage on a yearly basis.

When our organic inspector comes every year, we drive the fields to make sure that what we submitted matches what they see first-hand. We have to limit how much we can apply to each field, and it's based on the soil tests and

previous crops grown. In other words, even with just 81 cows, we are very much regulated on how and what we can do. We knew this going in and turning organic. It was part of the process, and it has not been a hardship.

Our farm is self-sustaining without government grants, no government subsidies or supplemental off-farm job incomes. Organic farming has enjoyed 15 to 20 percent growth yearly for the last 10 years, with Illinois producing around 15 percent of the national sales.

This in spite of the rhetoric of it being called a hoax and that it can't feed the world. It's offensive to hear that the ag industry groups are claiming the Illinois EPA proposed regulations will cause confusion, economic hardship and be overly burdensome. CAFO owners are intelligent businessmen and women. If they are able to manage million dollar facilities, thousands of animals and hundreds of employees, they should be able to follow regulations easily.

The LMFA when written protected farmers

and was considered very good, but it was written many years ago when the largest CAFOs were based mainly in California. Now that they have become more prevalent in Illinois looking for water and close feed sources, the state's environmental regulations need to be improved to ensure our water resources are protected.

The LMFA only regulates the construction of new CAFOs. It doesn't regulate them once they are in operation, and because CAFOs rarely own enough of their own land to spread their manure on, this causes many problematic issues. Spreading conventional manure on organic land is currently being debated and is expected to be prohibited within the next year.

How does this affect us? If a conventional farmer near us spreads liquid manure from a CAFO and they spread in the winter, on saturated ground or just over-apply to the ground, it can run off onto our land, and it would decertify our ground. Also, if a CAFO spreads next to a creek that runs into a pasture that our animals are in, the water is then

considered unacceptable and again, we pay the penalty. The way we farm doesn't affect our neighbors. We do no harm. But if the regulations on where and how the manure is managed are weak, we can be seriously harmed.

Farms and farming has changed for sure. If you look around, there is less hay and pasture available. Farmers are planting every possible acre in corn and beans, not because of regulations, but because they can make more money selling that, and no one blames them for that.

But that means less pasture and legume crops to absorb the soil -- and hold the soils. It's been our privilege to own and love our farm for over 152 years, and it should be a privilege to begin a new farm on Illinois soil. As a former minister of my church once told me, Theresa, you can say you own your land, but truly it's just borrowed from God to be used by the next generations to come. When you leave it, be proud of the legacy you have left for them.

Asking large CAFOs to respect and

adhere to more stringent regulations that will protect all Illinois farmland and all our water is such a legacy. Thank you.

HEARING OFFICER FOX: Ms. Westaby, thank you for your comment. We are ready for Ms. Turner next, please, if you would step forward.

MS. TURNER: I would like to submit copies of my comments to the Board and to the court reporter.

My name is Susan Turner, and I live in Warren, Illinois right here in Jo Daviess County. Thank you for allowing me this opportunity to express my concerns and desire to see that our water is protected from contaminants due to spills, dumping and other improper methods of spreading and storing liquid manure and leachate by CAFOs.

Since I live in a rural community, I have been witness to many of these improper practices that have resulted in undocumented discharges. I have witnessed from the side of the road visually as liquid was sprayed on snowy fields. This was often accompanied by a foul odor. Sometimes I could smell the odor, and

sure enough, the field application was occurring.

It was always the same area. I witnessed this five times from February of 2009 to September of 2010. And we have a little picture of the same area being sprayed over and over. I have also seen stacks of manure stored at the edge of Yellow Creek in Kent. I have seen over-application of liquid manure that has pooled enough that it gets to the road or a ditch with no buffer zone.

As these pollution problems occurred, I was also sitting in the courtroom listening to skewed science by the paid expert witnesses for the proposed Traditions mega dairy. We felt the mega dairy was improperly sited and illegally permitted by the Illinois Department of Agriculture. We did not think the granting of the construction permit upheld the Livestock Management Facilities Act, yet all of the paid experts at trial said it was a zero discharge facility.

Time would tell that this was not the case, and this can be seen at these facilities

that claim to be modern, state of the art operations. With regard to the issue of karst, the paid experts used what we thought was skewed science to focus on and conduct inadequate tests that would only prove where the karst was not. The soil borings they used to test the area are the size of a soup can. They used about 18 borings spread over 1,000 acres, and this is the equivalent of searching for a needle in a haystack with a pair of tweezers.

More skewed science is saying the aquifer will be protected because the same liner under the manure storage is really the filter for 43 acres, 20 feet deep filled with liquid manure. My refrigerator's water filter needs to be replaced every four to six months because it becomes embedded with impurities. This is with simple tap water, not manure. The clay in the soil gets saturated with impurities, and there is no filter to replace. And when you have a sinkhole or karst bedrock fracture, forget the clay and soil filtering anything. The waste has a direct pathway to the groundwater that we all depend on.

The League of Women Voters hosted a mega dairy seminar back in June of 2011 here in Jo Daviess County. At the seminar, Warren Goetsch of the Illinois Department of Agriculture was honest enough to say that the LMFA is obsolete. Warren also stated that manure storage wouldn't leak for maybe 10 to 20 years unless a crack forms, and living on a karst region, this really cracked me up.

The message I am trying to give you today is that the LMFA is outdated, and it does not in reality stop the runoff and the discharges from CAFOs, because they do occur. The Traditions mega dairy was actually a discharge facility, despite IDOA's determination that it met standards of the LMFA and despite what all of the dairy's paid experts said.

Even though we lost our trial against the facility because the judge relied on the testimony of the dairy's paid experts, what came to pass shows that sometimes you have to have other checks and balances in place. After the trial, the mega dairy polluted the stream that leads to the Apple River with the purple

discharge that everybody knows about, and had it been allowed to proceed as planned, it would have contaminated our aquifer because of the karst.

The federal EPA ended up getting involved and mandated the mega dairy conduct the tests that should have been conducted to begin with to identify the existence or nonexistence of karst under the waste ponds and its land application fields. At first the mega dairy refused. Perhaps it was because they were just afraid of what the tests would find.

But eventually the Department of Justice weighed in and things started to move in the right direction. To date, the dairy has yet to complete the required tests. Instead, it decided to dismantle the CAFOs nearly constructed barns and abandon the site.

Had there been another check and balance in place, such as oversight by the Illinois EPA to begin with, we all could have saved a lot of money and time. Think of the investment the mega dairy made and the land and the attorney fees and the high paid experts just

to walk away in the end.

This is all to say that the Illinois Pollution Control Board should enact clean water regulations that provide protections for citizens and their water. If you do not, the broken and dysfunctional regulatory mechanism dictated by the toothless LMFA will persist. If we continue to allow the LMFA to serve as the proverbial excuse to continue this dysfunction, polluted water will be the only things our children and their children will ever know.

HEARING OFFICER FOX: Ms. Turner, you mentioned documents that you wanted to attach to your comment. I can take those in just a second.

The second Mr. Lawfer is our next commenter. Mr. Lawfer, if you step forward while she does that, we will be ready for you in just a second.

MS. MANNING: Point of order, Mr. Hearing Officer. These pictures that are being submitted with public comments, are you numbering them and getting copies to everyone? Because I just haven't seen any of them and

would like to at some point.

HEARING OFFICER FOX: And, in fact, I can answer your question in two parts. These would be simply noted in the record as if they had been attached to a written public comment that would be received rather than a hearing exhibit sponsored by a witness. If you would like to take a look at them, I am more than willing to make them available for you, Ms. Manning.

MS. MANNING: Thank you.

HEARING OFFICER FOX: Mr. Lawfer, please go ahead.

MR. LAWFER: Good morning. To the Pollution Control Board and Hearing Officer, Timothy Fox, I would like to welcome you to Jo Daviess County. I am Ronald Lee Lawfer, a fifth generation dairy farmer from this county. My wife and I along with two sons who have returned to the farm operate a 130 cow dairy operation just west of Kent.

As you drove to this hearing, you were probably impressed with the scenic beauty that this county has to offer with its many hills and streams. Farmers understand that we need to

responsibly manage our farms to protect the natural resources and beauty of this area. We need to have livestock in Jo Daviess County. It is a $47 million industry in this county. We also need livestock from an environmental standpoint. We need to keep grass on our hills and grow crops that control erosion that only livestock can efficiently utilize.

Jo Daviess County leads the state in number of beef cows produced. We are in the top five for the number of dairy cows. We are the No. 1 county for hay harvested. Our farm incorporates alternating strips of row crops and alfalfa that are planted on the contour to prevent erosion. They are connected with glass waterways that allow drainage while conserving the soil. If we didn't have the dairy, we couldn't utilize the hay.

As President of the Jo Daviess County Farm Bureau, I am proud of the ingenuity of livestock producers in this county. Many are several generation farmers that have made a significant investment in protecting our environment and our resources. They know the

importance of these resources to make a living and want to pass them on to the next generations.

We realize that the Pollution Control Board has been assigned the task of reviewing the rules and regulations under which we must operate. All we ask is three things.

Common sense; rules and regulations that actually include language that protects the environment while not unnecessarily burdening the producer. Consistent; rules and regulations that are the same no matter what governmental agency they come from. It isn't fair to a producer to make all the effort to be in compliance with one governmental agency only to be out of compliance with another. This includes the Illinois Department of Agriculture, the Illinois EPA, the USEPA and the NRCS.

Cost-effective; rules and regulations are not so burdensome that producers cannot make a living raising livestock. It serves no purpose to have rules and regulations on paper if there are no producers left to regulate. We want to continue providing the products that

nourish this nation. Comments that were made this morning referred to a livestock facility that was never allowed to finish construction and never had an animal on the premise.

I hope you have the opportunity after the hearings are over to drive through the countryside on some of the back roads and see first-hand the efforts that our producers do in keeping Joe Daviess County the scenic and environmentally friendly county that it is. Thank you.

HEARING OFFICER FOX: Mr. Lawfer, thank you for your comment. We are ready for Mr. Thonan (phonetic) if he is --

MR. THONAN: I will concede my time because of repetition.

HEARING OFFICER FOX: Very good, sir. Thank you very much. Mr. Duncan is next on our list.

Sir, please go ahead.

MR. DUNCAN: Hi. My name is Brian Duncan. My wife and I operate a diversified grain and livestock farm near Polo. I appreciate the opportunity to speak to you today. I will try to keep my comments brief.

A lot has changed on our farm over the years. I am the third generation. My grandfather purchased the farm. We raise a lot of hogs that used to be in outside lots. Now they are all in protective housing. Manure is a valuable nutrient to us. It amounts to well over $100 an acre in cost benefit for our cropping operations.

We used to haul manure with a box spreader. Now we apply it with tankers equipped with GPS technology, applying only with a flow meter what the crop takes off. So the technology has been of great benefit to us. My wife and I live there. We have four kids. We care more about the water than anybody, and our message to you today is we want to stay there.

Staying on that farm is going to mean livestock. I have four children. I believe three of them will be part of the farm. I actually have a daughter who wants to be part of the dairy industry. I raise 50,000 hogs a year and I've got a daughter that wants to milk cows. Go figure.

Livestock is going to be important to

us as we go forward, and so my message to you today is going to echo what Mr. Lawfer said. No one here wants dirty water, dirty air, but those of us who farm need a regulatory environment that we know how to navigate. It needs to be consistent. It needs to parallel rules that are already on the books. I can't weed through and wade through three or four different levels of regulation. So we need to be consistent with this, and it needs to be something that the costs and benefits are analyzed.

You can lay layers of regulation upon layers of registration, and if they don't benefit the environment, all they do is serve as layers of discouragement. We want to continue to invest in the livestock industry. We want to continue to grow our farm, and what we are asking you is as you put these rules together, keep our family in mind. We want to stay here, and we want to be part of agriculture, specifically animal agriculture for generations to come.

HEARING OFFICER FOX: Thank you. Mr. Duncan, thank you for your comments.

Mr. Ohloff, we are ready for you to step forward, please.

MR. OHLOFF: Thank you. I will make this quick also because of duplication. My name is Matt Ohloff. I am a regional organizer with Food and Water Watch. Food and Water Watch is a national consumer advocacy organization. We have worked to protect our food and water resources. We have over 20,000 supporters in Illinois. Not only does Food and Water Watch organize all over the country on these issues, our research has detailed the adverse impacts of large CAFOs on the environment and local economies.

We did a report in 2010, called "Factory Farm Nation," which details environmental impacts from factory farms across the country. We also did this report a couple weeks ago, "The Economic Cost of Food Monopolies."

So quickly I will address the economic arguments that have been raised. This report, "The Economic Cost of Food Monopolies" has five case studies, one of which is in Iowa, which

details the consolidation in the hog industry. In Iowa, 1982, we had 23 million hogs. We now have 47 million hogs. With the overall economic productivity of the hogs, the price of the hog market overall has declined by 12 percent. So we have twice as many hogs and 12 percent less in total revenue.

Counties that have more hogs, those -- the local economies there have declined, are 12 percent less -- the growth is 12 percent less than the rest of the state. So the economic argument of large CAFOs providing economic growth to local economies is essentially false, and we have tracked that in this research.

Of course, farmers are not to blame for that. This has a lot to do with the consolidation in agriculture, but we just want to address that point, and that these regulations, the proposed regulations, would help level the playing field between small and medium sized independent family farmers and large producers. So we know very well the environmental impacts, and we need to realize the economic impacts and the benefit of small

and medium sized independent livestock farmers. And these environmental regulations would help level the playing field between independent family farmers and large CAFO operators.

We propose that these standards should include basic reporting by all large CAFOs in the state to the EPA so the Agency can properly account for them and ensure their operations are protective of our waters, should include basic reporting of nutrient management plans, should require that all large CAFOs comply with the same land application standards as the Clean Water Act imposes on CAFOs with NPDES permits, that it requires adequate setbacks and separation distances from surface waters, wells and sensitive aquifer and karst areas, and also because of the likelihood -- a lot of these things have been mentioned.

Because of the likelihood of manure runoff during snow and ice melts, prohibition -- prohibit application of manure from large CAFOs on frozen and snow covered ground unless an emergency situation exists and prior approval from the Agency is granted. If these

requirements are enacted in addition to the standards set forth in Illinois EPA's proposed regulations, Illinois will be one step closer to ensuring proper regulation of an industry that poses risks to our water resources.

And again, it would also be of benefit to the local economies and to livestock producers generally. Thank you.

HEARING OFFICER FOX: Thank you Mr. Ohloff.

As I mentioned as we began the comments, I had picked up this list at which you could sign in to offer a comment. I think we do have one person who arrived after the hearing began. Ma'am, may I get your name, please, to add to this list? And we will have you step forward and do that right now.

MS. WERNER: Lynn Werner.

HEARING OFFICER FOX: I'm sorry?

MS. WERNER: L-Y-N-N, W-E-R-N-E-R, and I was going to print it and my printer wouldn't work. That just goes to show that sometimes things don't work as you plan.

My name is Lynn Werner. I live in rural Galena. My parents were raised in rural

Iowa and Nebraska. I went to high school in Freeport, which is the next county, where I ice skated on Yellow Creek, where Future Farmers of America was the most active club in our school. That was the 1950's. I am turning 71. My father was career military until he retired in rural northwest Illinois. The landscape of family farms is one I can remember.

After a long, full life I returned to northwest Illinois a few years ago to raise organic produce, to live in amazement at the pristine beauty of our Driftless area. To say again and again, here I am whirling through space on this most exquisite of planets, our earth. How blessed I am.

In each season I walk to the stream on my property and I think about my life, my water bottle filled with the clean water from my well which comes from the abundant aquifers of our county. How precious our clean and abundant water.

Listening to the quiet movement of the stream, I remember the eight years I spent as a teacher and filmmaker working with poor rural

communities in South America. One day when I was filming, I saw a frail woman walking with her children down a country road. She told me she was going to get water. I imagined a bucolic stream surrounded by green. I asked if I could film her.

We dipped under a fence onto a rich landowner's property. I filmed as she pulled aside one boulder, then another until she got down to a clay pipe. Part of the pipe had been evenly broken and she pulled it off. In that deep hole she dipped her cup again and again to fill a bucket with someone else's clean water. How precious our water.

I remember the films I still have of children with skin lesions from play in the rivers in the Amazon-like jungles, waters which had at one time been clean, but now received the effluence of mining, sewage and the newly introduced factory farms owned and run by outsiders.

How precious our water. How precious our right to have hearings such as today's. I sit by my stream in Jo Daviess County and

remember returning to the pristine areas in the northwestern U.S. where I had traveled as a child, surprised to discover that the air was now heavy with the stench of factory farms. I searched the landscape for the small towns which had once dotted those hills but they were gone. I learned that property values plummeted as the homes became uninhabitable for families. The promises of economic growth from CAFOs dashed as outsiders took over what had been in families for generations, caring about their bottom line more than the preservation of clean water and air.

Yeah, a man with tired eyes told me in a small café. Economic growth for the guys that come in to build the CAFO; we had such promises to sell our hay. We were promised an economic boom. Instead, the value of our hay goes down, and my children can't play outside much of the day because of the contamination of the air. First one CAFO came, then another. They didn't tell us that.

I sit by the streams on my land in Jo Daviess County. Cattle peacefully graze in the

next pasture. I still trust the stream as a good place to look for fossils, to sail leaf boats. I show my grandson the rocky stream beds, and I tell him about natural aquifers, how important it is to protect water. He learns a new word, "karst." He likes big words.

Regulations are hard for us all. We all wish we didn't need them. They can feel cumbersome. We sometimes want to blame them for the breakdown of our small farms. And yet we see some new movement afoot. Farms with cattle set out to pasture, while still managing to protect our land and water. The gradual elimination, not expansion of CAFOs, for we know they end up destroying communities. We know as fossil fuels become more and more costly and unavailable, and as large corporations control our seeds and insecticides, raising costs because they can, the little guy seems to be squeezed out. It is all so complex, and we feel overwhelmed.

I am not a farmer. I do know, however, how precious the water of Jo Daviess County is. I am thankful for the regulations for CAFOs. I

am thankful that the regulations for CAFOs will be stringent, and that the testing will be done not after the pollution has taken place, but that the regulations will prevent such contamination. Our water will be kept clean. This afternoon I will sit by my stream. I will breathe deeply and listen. I will take a sip of my well water and want to protect just this. How precious our water. Thanks.

HEARING OFFICER FOX: Ms. Werner, thank you for your comment, and just for the record, before we move on to the testimony, is there anyone else who has not done so that wishes to offer a public comment today? Neither seeing nor hearing any indication that there is, I think we have come to the point where we can turn to Ms. James' pre-filed testimony.

MS. DEXTER: I believe Ms. James has a summary she would like to present first.

HEARING OFFICER FOX: Why don't we have the court reporter swear her in, and if you have a summary, Ms. James, you can proceed right to that.

(Whereupon, the witness was duly sworn.)

DR. JAMES: Thank you to the Board, to the Agricultural Coalition, to the IEPA and to the rest of the audience for this opportunity to present supplemental testimony on behalf of the Environmental Groups.

My name is Dr. Stacy James, and I am a Water Resources Scientist at Prairie Rivers Network, Illinois' statewide river conservation organization and the state affiliate of the National Wildlife Federation.

My work focuses on reducing pollution from agricultural lands and concentrated animal feeding operations through the adoption of protective policies and conservation practices. I was an active member in IEPA's CAFO rulemaking stakeholder workgroup that formed in 2009, and I am very familiar with not only the IEPA regulations, but also the Livestock Management Facilities Act or LMFA.

Under the LMFA only -- only those livestock operations with 1,000 or more animal units must prepare and implement a waste

management plan. These plans must include certain land application technical standards. In my previous testimony, I discussed some of the ways that the LMFA's technical standards are less protective of water quality than what IEPA has put forth in their proposed rule.

The Agricultural Coalition has asked that unpermitted large CAFOs following LMFA's waste management plans qualify for the agricultural storm water exemption.

The Environmental Groups are opposed to this, and therefore I thought it would be helpful if I more thoroughly compared in table format the land application technical standards in the LMFA to the technical standards for unpermitted large CAFOs proposed by IEPA as I understand them to be.

However, I want to point out that the proposed rule is unclear as to what technical standards are required of unpermitted large CAFOs. In particular, Section 502.510(b)(11) needs to be clarified so that it's easily understood what is meant by quote, "Livestock waste shall not be applied within the distance

from residences provided in Section 502.645(a) and within the areas prohibited from land application by this part."

The table I populated is presented as Table 1 in my supplemental testimony and provides further evidence that LMFA waste management plans fall short of equaling what IEPA has proposed for unpermitted large CAFOs. Unfortunately, what IEPA has proposed for unpermitted large CAFOs in turn fall short of what IEPA has proposed for permitted CAFOs and what is needed to protect Illinois' water.

In order for precipitation related land application discharges from livestock waste to be considered agricultural storm water discharges, unpermitted large CAFOs should be subject to the same land application technical standards as permitted CAFOs. At the end of my testimony I also addressed the question posed by the Board at the DeKalb hearing. The Environmental Groups have requested that Agency approval be obtained prior to surface application of livestock waste on frozen, snow covered or ice covered ground. The Board asked

whether other states require CAFOs to obtain Agency permission, and we found that Ohio and Wisconsin are among several states that have this requirement. This concludes the summary of my testimony.

HEARING OFFICER FOX: Dr. James, thank you for that summary. If you are ready, we can turn to questions that the other participants may have on the basis of it.

Does either the Agency or the Agricultural Coalition wish to pose any questions?

MS. MANNING: I have a couple of questions. I will go first. Did you guys want to?

MS. OLSON: Go ahead.

STACY JAMES Ph.D.,

having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. MANNING:

Q. I'll just start with some general questions and maybe have some follow-up after the Agency asks questions as well.

Ms. James, thank you for the

comparison, actually, between the Livestock Management Facilities Act and the -- with the waste management plans. I think it was rather helpful. You would agree, would you not, that actually -- and I think you say in your testimony that there are some provisions of the Livestock Management Facilities Act that are actually stricter than certain provisions in the proposed rules?

A. For unpermitted large CAFOs, yes.

Q. And for CAFOs -- and unpermitted large CAFOs are subject to the Livestock Management Facilities Act?

A. Yes.

Q. And you would agree, would you not, that -- that one who discharges -- a producer who discharges under the Livestock Management Facilities Act and has been accused of discharging because there is evidence of a pollutant entering a water of the United States will be enforced against, and there is no protection under the Livestock Management Facilities Act for him to be enforced against? In other words, the Livestock Management

Facilities Act does not provide any protection against pollution? Someone who pollutes who is following the Livestock Management Facilities Act is nonetheless subject to enforcement?

A. If you pollute you are subject to enforcement.

Q. Right.

A. If you are caught.

Q. And so all of those complaints that you put into evidence are evidence of the state going after those individuals, those producers, who have not followed the provisions of the Livestock Management Facilities Act adequately and/or have not -- have not managed their farms, their production areas, sufficiently to contain any pollution?

A. I don't think I want to make a blanket statement on all those complaints across the board, but certainly there were discharges in all those cases.

Q. And that's the reason for the complaint?

A. Yes.

Q. Okay. So they didn't get any

protection for following the Livestock Management Facilities Act as a result of that is my point? In other words, the state is free to charge someone with a violation of the Livestock Management Facilities Act under the environmental protection and through the Environmental Protection Act provisions?

A. If you are asking me a question, can you state that again?

Q. The -- a producer who follows the Livestock Management Facilities Act provisions, but nonetheless has a discharge is still subject to enforcement?

A. So, of course, IEPA --

Q. The question was just a yes or no answer one actually.

A. I don't want to answer it that way. Basically, if you look at the Livestock Management Facilities Act at the end of Section 20 there is -- so in Section 20 of the Livestock Management Facilities Act it discusses who has to have a waste management plan, and it discusses the technical standards that have to be in that plan, and then at the end of Section

20 in G it talks about, you know, people who are required to prepare and maintain waste management plans and who fail to do so shall be issued a warning letter by the Department for the first violation and shall be given 30 working days to prepare a waste management plan.

And then it goes on -- really right here in the LMFA it really talks about failure to prepare and maintain a waste management plan. Now, if we were to turn to --

Q. But that wasn't my question.

A. Well --

Q. Clearly, there are penalties for not doing what you are supposed to do under the Livestock Management Facilities Act?

A. For preparing and maintaining a plan, yes.

Q. But there is no protection against a discharge. By following Livestock Management Facilities Act plans, someone who pollutes the waters of the United States is nonetheless subject to enforcement under the enforcement provisions of the Environmental Protection Act; is that correct?

MS. DEXTER: Are you trying to ask her if the LMFA provides a permit shield or essentially a permit shield against --

MS. MANNING: I am asking her -- I am asking -- yes. Not a permit shield, but --

MS. DEXTER: Right.

BY MS. MANNING:

Q. It does not. I am asking her -- it's a real direct question. If someone discharges to the waters of the United States, and says, oh, but I followed all the provisions of the Livestock Management Facilities Act, but nonetheless there was a discharge, there is pollution that has hit a water of the United States and can be traced to that producer, he can still be charged with a violation of the Environmental Protection Act because he has polluted the water of the United States; is that correct?

A. If it's not an exempt agricultural storm water discharge.

Q. Thank you. And you talk about 1,000 animal units, and I know we kind of throw around the threshold, but could you explain as well, a

thousand -- the Livestock Management Facilities Act uses animal units, yet the federal derived rules uses sort of a different threshold.

So could you explain what a thousand animal units really means in the context of the various animal types?

A. Well, I think there was some discussion of this in Urbana. So I think this topic has already been covered, but basically it was admitted that in some cases there are discrepancies between a thousand animal units and what IEPA -- or sorry -- what USEPA defines as a large CAFO.

I didn't bring with me the nice table that IDOA has put together that outlines how many hogs or cows or cattle are a thousand animal units. There is a lot of similarities, but there is a few differences.

Q. And I also wanted -- you refer to part of your work, and I am just trying to understand. You evaluate construction applications for new CAFOs. And I understand your degrees to be in biology and science; am I correct?

A. Yes.

Q. You don't have any engineering or construction degrees?

A. Correct.

Q. Okay. And the attachment that you put on to your original testimony, just to put those in context as well. They were -- that you had various attachments, not only the complaints I know that we have talked about previously and today, but also the -- all of the studies that you put into evidence.

Just to clarify for the record, you didn't author any of those studies, right?

A. You are correct.

Q. So you are offering them as scientific literature for the Board to look at basically?

A. Yes.

MS. MANNING: Thank you. That's all I have right now. I might have more after the Agency asks questions.

HEARING OFFICER FOX: Very good. Thank you, Ms. Manning.

Ms. Williams or Ms. Olson, did you have any questions on the basis of Dr. James'

testimony today?

CROSS-EXAMINATION

BY MS. WILLIAMS:

Q. Maybe just one or two.

Dr. James, I thought I heard you say in your summary that you found several states that required permission before -- prior to winter application. Did I misunderstand the summary?

A. Yes. I said Ohio and Wisconsin are among several states.

Q. Are there any others that you didn't mention in your written testimony besides Ohio and Wisconsin?

A. Yes, there are, and we -- as I mentioned, at the end of my testimony, we would like to go into more detail on that in our final comments.

Q. With regard to Ohio and Wisconsin, I mean, would you agree that Wisconsin does not require permission of the agency if there is an emergency that would impede that?

A. It does say in my testimony on the last page, Item 2, Wisconsin, that the Wisconsin Administrative Code says, The permittee has

notified the department verbally prior to the emergency application. Unless necessitated by imminent impacts to the environment or human or animal health, the permittee may not apply manure to a field on an emergency basis until the department has verbally approved the application.

Q. So do you understand what -- how Wisconsin defines an emergency in its regulations? Do you know how they define the difference between an emergency in which you are allowed to apply in the winter and an emergency in which you are allowed to apply in the winter without agency permission?

A. Are you referring to the fact that in Wisconsin there are certain conditions that are considered an emergency?

Q. I am referring to the provision that in Wisconsin winter application should be done on an emergency basis.

A. Right. So, for example, in Wisconsin's liquid manure winter restrictions, they define conditions under which there is an emergency and then -- and then that was the basis for --

Q. And then so they have these conditions that they consider an emergency, but there is some heightened level of emergency then, I guess, in which you can land apply without waiting for agency approval; is that your understanding?

A. It does appear that when there is imminent impacts possible that you can forego that permission.

Q. Do you know -- either for Ohio or Wisconsin, do you have an understanding if there is a standard in the regulations that the agency uses to make a formal approval decision that land applications can be conducted?

A. I'm not sure what you mean by that.

Q. I was trying to help the Board understand and understand for myself if we were to require the agency to give permission, what standards would that decision be based on? So if there is help from the other regulations, and what set of standards is the agency decision going to be based on to grant permission?

A. I think our intent for our proposal was that basically the Agency would be sure that the

winter application would be in compliance with Illinois regulations. So it would be a rundown to make sure that Illinois' regulations are being complied with prior to winter application.

Q. And do you think that would require a site visit?

A. I think it would depend in part on whether or not this facility had already submitted a nutrient management plan to the IEPA and if that -- you know, if the IEPA had reviewed the winter application plan, which is supposed to be part of the nutrient management plan and given it the okay and issued the permit.

In the case of the unpermitted large CAFOs that are also required to have a nutrient management -- sorry -- a winter management plan, in those cases, as proposed, unpermitted large CAFOs will not be submitting their winter plans to IEPA for review and approval, so in which case at least seeing those plans I think would be necessary.

Q. And reviewing the plan, I would assume?

A. Right.

Q. Not just seeing it, reviewing it?

A. Yes.

Q. And making sure that it complies with the regulations.

Do you know if the other states that you have looked into so far have a similar process with winter application plans that get submitted?

A. I don't know if they have winter application plans, but they have nutrient management plans that must be submitted, and for example, the case in Wisconsin, they are more stringent than Illinois in that they require all large CAFOs regardless of whether they discharge or not to actually be permittees, whereas in Illinois we require only those that discharge to have a permit.

Q. And would you agree that some of the requirements in the Agency's proposal for winter applications are more stringent than some of the requirements in Ohio and Wisconsin for conditions when you can apply or the setbacks that must be followed?

A. I have not done a thorough evaluation

of that, because we were focusing on this one component of the rule.

Q. So, for example, do you know if Ohio allows winter application on slopes greater than 5 percent?

A. Whether --

Q. Whether Ohio would allow that? If you don't know, it's fine.

A. I would have to look at what I have before me.

Q. But you would agree that there is a big -- there is a component to winter. There is a lot of pieces to it, and that in order to compare states to each other there is a lot of factors that would be involved?

A. Absolutely.

MS. WILLIAMS: I don't think I have any other questions.

HEARING OFFICER FOX: Ms. Manning, did you have any follow-ups that you wish to pose?

RE-DIRECT EXAMINATION

BY MS. MANNING:

Q. I think I do. Would you agree, Ms. James, that the agricultural storm water

exemption is an exemption under the Clean Water Act?

A. Yes.

Q. Okay. And the USEPA allows the agriculture storm water exemption to be utilized as a defense if certain best practices are made and the USEPA in its rules sets forward sort of a standard set of those best practices, would you agree with that, in terms of the proposed federal rules?

A. They allow states to come up with technical standards. There are some minimum thresholds that USEPA has put forward, but basically Illinois EPA was charged with putting together a stakeholder committee that would provide input on what other technical standards we think are appropriate for Illinois.

Q. So you would agree then it's the purpose of this rulemaking to determine those best technical standards in Illinois?

A. Yes.

Q. And that the Livestock Management Facilities Act is already a law in Illinois, which sets forward some of those standards. You

would agree with that as well, correct?

A. Some of them. But, for example, in my table, I discussed the fact that the LMFA doesn't require minimum land application setbacks from conduits to surface waters, and conduits to surface waters are specifically mentioned in the USEPA rules.

Q. Yeah. I think the difference in the two of them kind of speak together. Some are more general. Some are more specific in various degrees and a comparison of both of them, but the intention of the Livestock Management Facilities Act, I don't think you would disagree, is to have provided even prior to the federal rules coming forward best management practices for producers to use in Illinois, such that they would not create a discharge. Would you agree with that?

A. Well, I am looking at the policy statement in the Livestock Management Facilities Act, and it says, Therefore, it is a policy of the State of Illinois to maintain an economically viable livestock industry in the State of Illinois while protecting the

environment for the benefit of both the livestock producers and the people who live in the vicinity of a livestock production --

Q. So the legislature believes that it effectuated an appropriate balance in creating the Livestock Management Facilities Act between the economics of agriculture and the protection of the environment?

A. The protection of the environment, yes.

MS. MANNING: Thank you. That's all I have.

HEARING OFFICER FOX: Thank you, Ms. Manning.

Anything on the part of the Agency?

CROSS-EXAMINATION

BY MS. OLSON:

Q. I have just one follow-up.

Do you believe that the LMFA should form the basis of when an unpermitted large CAFO can claim the ag storm water exemption?

A. No.

Q. Do you believe that the LMFA should form the basis of when an unpermitted large CAFO does or does not need a permit?

A. I guess I don't understand your question, because the LMFA is more about

construction standards and land application standards.

Q. So do you believe that the land application standards contained in LMFA would be sufficient for when an unpermitted large CAFO needs to get a permit? In other words, when would their land application practices --

A. Well, I think my main thought on your question is that there have been facilities that have been approved under the Livestock Management Facilities Act. They have not applied for an NPDES permit, and they have discharged. So I think history has proven that you can build your facility in accordance with the Livestock Management Facilities Act and have a discharge.

So I don't think the LMFA should be the basis for determining whether or not you need a permit. I think -- I would assume whether or not you need a permit should be based on the rule in which we are discussing today.

MS. OLSON: That's all I have.

FURTHER RE-DIRECT

BY MS. MANNING:

Q. I have a follow-up to that point. Maybe I am confused, but what I asked you earlier is that a producer who has a discharge and pollution is entering waters of the United States, that the Livestock Management Facilities Act is not in defense to that discharge? In other words, he could have had his facility approved by the Department of Agriculture, but he didn't operate it sufficiently or carefully enough or within the letter of the law under the Livestock Management Facilities Act, and if he has a discharge, that's not a pass on enforcement?

MS. KNOWLES: I don't really understand why the question is being asked again. It's been answered.

MS. MANNING: I thought I heard her answer it differently with the Agency.

MS. KNOWLES: The question posed was different. I object.

HEARING OFFICER FOX: Perhaps you could restate the question.

BY MS. MANNING:

Q. A producer who is certified has his

facility design certified with the Livestock Management Facilities Act, and you testified that history has shown that someone can have their facility approved by the Department of Ag, but yet there is still a discharge.

The question is, if the producer has a discharge, the Livestock Management Facilities Act does not protect him from enforcement under the Environmental Protection Act, correct? Even if the design was adequate --

MS. DEXTER: I think this is the same question again.

THE WITNESS: I mean, it's correct. I think our position --

BY MS. MANNING:

Q. That's fine. It's correct.

A. Am I allowed to continue and respond?

Q. Go ahead. I asked the question. Go ahead.

A. Our position is like what some of the citizens this morning presented, is that we are not interested in a "catch me if you can" system. We are interested in strong regulations that prevent pollution from happening to begin

with, and my belief is that what IEPA has proposed for a permitted CAFO is going to do a far better job than what LMFA contains.

HEARING OFFICER FOX: Anything further, Ms. Manning?

MS. MANNING: No, nothing further.

BOARD MEMBER ZALEWSKI: Just one question, Dr. James. Forgive me if we have this in the record, but do we have an exhaustive list of all the states that require permits by all CAFOs?

THE WITNESS: We do not.

BOARD MEMBER ZALEWSKI: Would you be able to submit that?

THE WITNESS: Yes.

MS. DEXTER: At least the ones we know. We hope to have that in our filed comments.

BOARD MEMBER ZALEWSKI: Okay. Thank you.

THE WITNESS: I know Wisconsin and Minnesota are among some.

MS. DEXTER: Vermont and Maine are others that I found.

THE WITNESS: Permits, not permissions.

MS. DEXTER: I'm sorry.

THE WITNESS: So we will look into that.

BOARD MEMBER ZALEWSKI: Thank you.

HEARING OFFICER FOX: Any further questions on the part of the Agriculture Coalition or of the Agency? Ms. Olson, do I see you indicating you have a follow-up?

FURTHER RECROSS-EXAMINATION

BY MS. OLSON:

Q. Just one second. It's just one question. My previous question, Dr. James, was about the LMFA and ag storm water exemption. So I kind of want to build on that.

If the rules that the Board adopts were to have the land application requirements based on the LMFA to claim the agricultural storm water exemption, can you tell us your opinion on whether or not you believe that the Board rule, if so adopted, would be more or less stringent than the federal rule?

MS. KNOWLES: Can I ask you to clarify? You said the Board's rule.

BY MS. OLSON:

Q. Right. So if the Board were to adopt --

MS. KNOWLES: Your proposal?

BY MS. OLSON:

Q. No. I'm just saying the Board's rule. Not our proposal. I am actually thinking about the Agricultural Coalition's proposal, that the ag storm water exemption would be tied to meeting the requirements in the LMFA. So if the Board were to proceed on that path, do you believe that that rule as adopted by the Board would be more or less stringent than the federal rules?

THE WITNESS: I'm sorry. Is this for unpermitted?

BY MS. OLSON:

Q. For unpermitted large CAFOs claiming that --

A. Only? Not the permitted?

Q. Not the permitted.

A. This is a legal question that I have not had enough time to discuss with my attorneys. So I think there is some -- I think in the federal rule there are some -- a few best management practices that are laid out, and so as I mentioned before, one of those best management practices is conduits to surface

waters. I think we would need to answer your question at a later time.

MS. OLSON: That's all I have.

HEARING OFFICER FOX: Very good. Ms. Manning, anything further on the part of the Agricultural Coalition?

MS. MANNING: No.

HEARING OFFICER FOX: I think we have a very good sign that we have been -- we have been underway for a while. That was very, very good timing.

Here is what my intention would be. We have exhausted all of the public comments, I believe, that wish to be offered and Dr. James, I believe, and I will certainly ask everyone to concur that we have exhausted the questions both on the part of the other participants and the Board on the basis of your testimony. We have two more witnesses left and one witnesses that we can address, I think, very quickly, Ms. Manning, as a procedural matter once we resume.

What I would like to do is this, take a break for approximately 15 minutes to 12:20. We have a number of people who have traveled some

distance, and I believe that they would like to resume that travel earlier rather than later, and to try to make as much progress as we can as quickly as possible when we resume at 12:20 assessing a bit later where we stand exactly.

I will point out that in this building we have down the hall to the left toward the front entrance restrooms and a drinking fountain. Around the corner to the left there are at least a couple of vending machines that have some drinks and food items in them so we can make use of the break. But at this point let's end for approximately 15 minutes and resume at 12:20. Thank you.

(Whereupon, a short break was taken.)

HEARING OFFICER FOX: All right. Let's resume this hearing, the time of 12:20 having come. When we broke at approximately noon, we had concluded the supplemental testimony that Dr. James had filed, and I believe we had exhausted all of the questions on the basis of it. So, Dr. James, we can certainly thank you for your role in this hearing and for your time

in preparing for them.

Before we began the hearing, we agreed that we would next turn to the witnesses who had pre-filed testimony on behalf of Agricultural Coalition. Those would be Dr. Goldsmith and Mr. Trainor.

And Ms. Manning, I think we are ready to turn to you to address those two gentlemen.

MS. MANNING: Thank you, Mr. Hearing Officer. First of all, with regard to Dr. Goldsmith, I apologize, but he had an inadvertent conflict that he was not able to reconcile. Given the timing of all of this, we were able to get his testimony pre-filed, but -- we knew he had a scheduling difficulty, but we had hoped that he could resolve it, and he was not able to.

So we apologize for that. And what I had proposed to do and had talked to the Hearing Officer about is simply turning that into a public comment, for the Board to receive Dr. Goldsmith's pre-filed testimony as a public comment. So with leave of the Board, we would ask that you do that.

HEARING OFFICER FOX: Very well. Ms.

Manning, what I will do is produce that for the Board's clerk where it will be docketed as a public comment, and I will ask him to clarify that it is in place of the pre-filed testimony effectively that you had previously filed last week.

MS. MANNING: And we brought extra hard copies of his testimony and the reports.

HEARING OFFICER FOX: Very good. And those are -- one copy of that is in my possession, and I appreciate the additional copies that you would provide us for the Board Members, and Ms. Manning, I understand that this is identical to the pre-filed testimony?

MS. MANNING: That's correct.

HEARING OFFICER FOX: Very good. And if the record would reflect that the pre-filed testimony was filed on Wednesday, the 7th, if memory serves me correctly, and has been accessible through the Board Clerk's Office online since the date on which it was filed. So it is precisely the same document that Ms. Manning has submitted today as a public comment on Dr. Goldsmith's behalf.

MS. MANNING: That is correct. And I do have one more copy of a hardcopy if either of you want it.

HEARING OFFICER FOX: I'm not seeing any interest in that, Ms. Manning. There was not a line. Ms. Manning, I think we have reached the point where we can turn to Mr. Trainor.

MS. MANNING: Yeah, we will get serious.

HEARING OFFICER FOX: And if Mr. Trainor has a brief summary or introduction that he needs to offer.

MS. MANNING: He does.

HEARING OFFICER FOX: Mr. Trainor, please go ahead.

(Whereupon, the witness was duly sworn.)

MR. TRAINOR: My name is David Trainor. I live in Madison, Wisconsin. I am a partner in a company called NewFields, which is a science and engineering company that deals with several areas of investigation or remediation. I am a registered professional engineer and a professional geologist. I have over 32 years of experience, and most of my area of expertise is

in the area subsurface investigation, groundwater seepage, facility siting and design and remediation.

I hold a bachelor's degree in civil engineering and a bachelor's degree in geology and a master's degree in environmental engineering. I was actually contacted by the Agricultural Coalition recently as a referral because of my previous experience working as a third-party expert witness on the Tradition Homes -- I'm sorry -- Tradition Homes administrative trial in Galena in 2009.

Because of that familiarity, I was asked to take a look at previous testimony that had been filed in this case, as well as review the rule and provide some opinions on that. And since much of the previous comments dealt with the Tradition Dairy siting, and as it is in my testimony, just to encapsulate what we did as third-party reviewers, we took a look at a lot of the data that had been generated from the facility siting design, all the work that had been done, evaluated conditions at the site, took regional data, assembled all that

information and made the conclusion that the facility would be designed and operated in being environmentally protective. And as a result of that, the judge made the ruling for the dairy.

One of the things that we were asked to look at here was to take a look at the rule and make a determination as to if it would be protective and evaluate some of the testimony that's been brought forth. We came to the conclusion that these rules basically follow what's been developed in other states. They essentially say that land application has to be regulated, and that we concluded that it would be protective of any groundwater resources or other sensitive areas as they are depicted in the rule.

One of the things that I looked at in the previous testimony and in some of the recommendations that we saw was that there were some fairly restrictive recommendations to implement with this rule, and we took exception to some of those. One of the things that you have to remember about land application of liquid manure is the affect of the nutrient

loading and the affect on groundwater.

Much of the concern that we have is what will happen with the migration of those contaminants to groundwater and then ultimately surface water. With manure you have contaminants that are predominantly inorganic; namely, phosphates and nitrates, and organic bacteria. When contaminants are released to the subsurface environment, they have to follow natural flow conditions in order to reach the water table. The concern that people have raised is that this -- in sensitive environments, this flow will be rapid and then it can quickly damage other water resources.

The rules are set up to use the attenuation capacity of soils as is well understood, as it has been the practice for decades for land application of wastes. Normally these wastes are applied -- if properly applied provide nutrients to the soil, and they are regenerated just as a plant regenerates in the normal cycle.

In sensitive environments, what will happen is there is a potential that especially

in karst environments there may be rapid transmission of these contaminants through fractured conditions through the soil and through the fractured rock and reach groundwater and surface water resources. That potential is there, but if it's properly managed, it can be properly handled.

We have to understand, too, when we talk about protection of groundwater resources, much of the comments that I have heard this morning deal with discharges that have resulted in surface water contamination. Much of that is caused by runoff. When it comes to groundwater contamination, there are very few -- and I'm not saying there aren't any, but with these types of contaminants for this type of application, most groundwater is normally protected.

And that has to do with a couple of things; namely, the environment of the groundwater is a reducing environment. It is oxygen starved, and that is, bacteria doesn't survive in the groundwater environment. Normally it dies off before it reaches surface water through normal discharge of groundwater to

surface water.

Some of the recommendations that I saw was that there should be a recommendation for a 50-foot separation for any land application between the ground surface and fractured bedrock. Personally, I have a problem with that because that's very excessive, and that would not only eliminate future land spreading area -- land spreading facilities, but it would basically eliminate all land spreading facilities in much of the Driftless zones in southwest Wisconsin, northwestern Illinois, eastern Minnesota and northeastern Iowa. We have operated land spreading facilities in these areas for decades, and by and large, most groundwater resources have been largely protected when properly implemented.

The other recommendations I saw had to do with recommendations for setbacks from surface water and from karst and other water resources such as potable water wells. In looking at some of those, those were comparable to large refineries or sanitary landfills. And we understand the potential contaminant sources

that those present. I offer that I would hazard a guess or, I should say, note that a manure stack or a manure source is not the same type of potential contaminant source as a sanitary landfill or a refinery.

So, in conclusion, I can just say that I feel that many of these recommendations I think are overly, overly conservative and would result in actually the loss of economic viability, simply because it would be too costly to implement and manage the agriculture resources.

MS. MANNING: Just if I could, as a clarification, Mr. Trainor, by the recommendations, you mean those proposed by the environmental community --

THE WITNESS: That's correct.

MS. MANNING: And not those proposed by the Environmental --

THE WITNESS: I should qualify that --

MS. MANNING: -- Protection Act?

THE WITNESS: The Agency's rules are protective. I'm looking at the rules I've just reviewed recently that are proposed as the

alternative recommendations.

HEARING OFFICER FOX: Very good. Mr. Trainor, thank you for that summary and for those opening remarks. If you are prepared, we can open the floor to questions that either the Environmental Groups or the Agency may have on the basis of that testimony.

DAVID TRAINOR,

having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. WILLIAMS:

Q. Just a couple of quick questions, I think. When you summarized your testimony, Mr. Trainor, I believe you said that you were a third-party reviewer?

A. That's correct.

Q. So does that mean you did not collect the site specific data that you testified about?

A. No. I -- well, I should say this. I evaluated the data. We were not part of the design team. So we did not collect our own samples.

Q. Do you have any experience that would

give you any knowledge as to about how much that type of investigation would cost?

A. Well, the Livestock Management Facilities Act is very specific on what's required for siting facilities. That work was implemented for the Traditions South Dairy. What's been recommended as far as trying to determine if -- for example, if karst features are present in the area of a proposed facility, would be frankly very prohibitive. I mean, you are looking at hundreds of thousands of dollars to do an investigation that would take months, if not years to do.

Q. But you don't have any information specifically on how much the cost was of the project you worked on?

A. What was done or what was being proposed?

Q. What was done.

A. I would imagine that the work that was done for the designer probably in the area of approaching a million dollar work load. I mean, that was a large facility.

Q. Can you tell us, do you have any

experience on how much it costs to drill borings? In the cost per boring, is it done that way, cost per boring?

A. Well, it's usually a cost per foot. It depends on the material. But usually what you figure is if you put in a 20-foot boring, you can assume depending on what you do with that boring -- if you are going to collect samples to do an analysis to install the well, you are looking at 5 or $6,000. If you are going to talk about drilling a 100-foot boring into the rock, you are looking at maybe three to four times that amount.

Q. Let me just ask you to clarify one of the statements. On Page 3 of your testimony, similar I think when Ms. Manning asked you about to make sure we are all clear on the record about what you meant by "these recommendations," I think that's what -- a similar clarification question I would like to ask.

"The statement on Page 3, Investigations comparable to those described above (and in the IEPA proposed rules) can provided sufficient information to develop a

land application plan." So can you just be clear, when you are talking about investigations comparable to those described above, which investigations are you talking about?

A. Specifically that deals with the investigations required by the rules, okay. So, for example, I used the cost of the Traditions South Dairy, which was a large CAFO that had very large manure lagoons. I gave you a number that probably had approached several hundred thousand dollars, a million dollars to investigate. I mean, that's a number that would be borne by the applicant. If we are talking about smaller facilities, of course, it's going to be a matter of scale with that. But I guess I just gave you the -- what I am referring to here is the regulations are already on the books.

Q. There was a term in your testimony I didn't really understand and this is just curiosity, I guess, on my part, but could you explain to the Board what a perched aquifer is and what that means?

A. Sure. It's important to understand

what is meant by groundwater flow, and much of the testimony and much of the work that's been done in this case deals with saturated conditions and the separation of water table. Any geologic unit that is saturated can be considered an aquifer.

Technically that's not necessarily true, because oftentimes the word aquifer is also applied to a potable water resource, but here in Illinois, we have classifications, and it does deal specifically with resource groundwaters or non-resource groundwaters, and any geologic unit that is saturated can be considered a Class 1 or Class 2 or Class 4 groundwater.

If the saturated unit is separated by an impermeable barrier to a lower unit and that there is no hydraulic connection between that upper unit and the lower unit, that's what's considered a perched aquifer, because there is a separation between that unit and a lower unit that is basically an impermeable barrier.

BOARD MEMBER RAO: So the upper unit is the perched aquifer?

THE WITNESS: Right. In my testimony what I was talking about was we evaluated conditions at the site that dealt with specifically how the ponds were going to be designed and how they had to deal with groundwater incursion in the area where the ponds were going to be excavated. Initially it was thought that this was what was called a perched aquifer. This was actually just a water table in the shallow unit above the bedrock. But based on regional information we evaluated -- again, we didn't collect samples. When we were doing our third-party evaluation, that perched unit was actually a reflexion of a much larger aquifer over the region, which actually was part of the potable aquifer that is used by local wells. That was an important conclusion we made in relationship to the design of the ponds and what our conclusions were regarding the facility itself.

So that's -- understand when I say perched aquifer, it wasn't a perched aquifer because the engineers thought, hey, we got this problem. Let's de-water this. Let's get rid of the water. They really weren't de-watering the

perched aquifer. They were actually lowering the water table for the regional aquifer. It just happened to be up in the overburden soils above the bedrock.

MS. WILLIAMS: Thank you. That's all I have.

HEARING OFFICER FOX: Thank you, Ms. Williams.

Ms. Dexter, you had a few questions it appeared.

CROSS-EXAMINATION

BY MS. DEXTER:

Q. I just have a few questions.

You are a professional geologist, but do you consider yourself an expert on karst?

A. Well, I have studied karst. I mean, I don't make my living on karst, no.

Q. Are you a hydrogeologist?

A. Yes, I am.

Q. Are you a soil scientist?

A. No.

Q. Okay. Have you done any research assessing the underground movement of land applied livestock waste in karst areas?

A. Personal research, no.

Q. Did you analyze any well water quality samples to support the conclusions you have presented in your testimony?

A. I have looked at the previous data. I have not looked at samples I have collected myself, no. I looked up the data.

Q. You mentioned that the regulations proposed by Environmental Groups would be too costly. Have you done an assessment of the cost of those proposed setbacks?

A. The setbacks. What I was sort of bringing was this universe of the setback plus the recommendations for bedrock separation and determining karst conditions. Now, what would happen obviously with the setbacks is you would eliminate land for production. So that would be an opportunity cost you would have to evaluate. Did I do a cost analysis of that, no.

Q. You haven't done a cost analysis --

A. No, no.

Q. On any of the things that you were --

A. No.

Q. Okay. Your testimony references litigation regarding the Traditions Dairy CAFO

for which you provided expert testimony where you concluded based on your analysis of soil boring data, quote, "That the proposed design was protective of groundwater and surface water recourses potentially affected by the proposed facility."

Are you aware that in 2009 USEPA initiated a series of Clean Water Act Section 308 information requests requiring Traditions to provide information to allow USEPA to determine whether the facility required an NPDES permit for discharges via the karst aquifer?

A. Yes, I am.

Q. Are you aware that during and subsequent to the litigation you were involved in, Traditions received a series of violation notices for discharges from the site from both USEPA and IEPA?

A. Yes, I am.

Q. Are you aware that the Illinois Attorney General brought an enforcement case against Traditions for its unauthorized discharges of water pollution?

A. Yes, I am.

Q. Are you aware that Traditions is now abandoning the site as a result of these enforcement actions?

A. I am aware they are abandoning the site, but not necessarily because of those enforcement actions.

Q. Do you know whether that was part of the settlement agreement?

A. I do know -- I wasn't part of the settlement agreement. So I can't speak to the specifics. I do know that Traditions was actually going to go ahead and do investigations to -- as required by EPA before they decided to make that -- before they decided to abandon the site.

MS. DEXTER: That's all I have.

MS. MANNING: Before we go, I have a couple of follow-up questions, if I might, toward that line of questioning.

HEARING OFFICER FOX: Please go ahead, Ms. Manning.

CROSS-EXAMINATION

BY MS. MANNING:

Q. The enforcement action that was filed

has nothing to do with livestock actually being in the facility or the facility being used to house livestock; is that correct?

A. That's correct.

Q. Because livestock never really entered the facility, because the facility was never operational; is that correct?

A. That's correct.

MS. MANNING: Thank you.

MS. KNOWLES: I have one, please.

HEARING OFFICER FOX: Please go ahead, Ms. Knowles.

CROSS-EXAMINATION

BY MS. KNOWLES:

Q. In your written testimony and today you stated that what IEPA is proposing is comparable to other states, and you used Wisconsin as an example; is that correct?

A. That's correct.

Q. And I can gather from your written testimony that you believe the Wisconsin standards with regard to land application on sensitive geologic areas reasonable?

A. Yes.

Q. Is that correct? And are you aware that that IEPA proposal prohibits application of livestock waste on land with less than ten inches of soil covering bedrock?

A. Yes.

Q. Are you also aware that Wisconsin prohibits land application on fields with -- I'm sorry. Let me start over.

Are you aware that the Wisconsin Administrative Code actually prohibits land application on fields with less than 20 inches of soil?

A. I think it's data in my testimony.

Q. Twenty-four inches. I'm sorry.

A. Yes.

Q. So would you say that's a reasonable proposal as well?

A. That's correct.

MS. KNOWLES: Thank you.

HEARING OFFICER FOX: Ms. Dexter, did you have anything further on the part of the Environmental Groups?

MS. DEXTER: No.

HEARING OFFICER FOX: Ms. Williams, Ms. Olson

on the part of the Agency?

MS. WILLIAMS: No.

HEARING OFFICER FOX: Ms. Manning, any follow-ups on your part?

RECROSS-EXAMINATION

BY MS. MANNING:

Q. I do have a couple of follow-ups.

Mr. Trainor, you also had the opportunity to review the testimony of Dr. Panno, I believe, and he spoke in large part about macropores. Could you take a little bit of time to inform the Board about macropores and your sort of assessment of the testimony provided by Dr. Panno?

A. Sure. And I have also looked at other testimony that's been filed since mine, so things that have been put on the website.

In regard to this, I know that there is a lot of discussion on macropores and micropores. I mean, again, this has to do with solute transport through porous media. I know that there is an issue about the potential for macropores to be a conduit for contaminants to reach bedrock and sensitive to groundwater

resources.

Essentially how I read this is all soils have macropores. Okay. That's a given. Soils are a dynamic environment. They have a natural equilibrium moisture content they want to achieve in normal conditions. Like this year, for example, we can all testify to the fact that we'd go out and look at our gardens and there would be large cracks, because we didn't have any rain for several months.

Those are macropores, but we can also probably testify to the fact that since that time, many of those macropores have changed and shrunk because of the fact that we have gotten significant rains. The importance of this is the soil environment is extremely dynamic. These things change and shift just based on moisture, freeze, temperature. Macropores are not permanent conduits so that you would have the potential for rapid transmission of contaminants to deeper zones at all times.

And I think that should be understood in the big picture of just how the environment works. It's very similar to everything else we

see on our planet. I mean, it's a dynamic environment. Macropores are not a permanent fixture that allow for the transmission of contaminants to greater depths.

HEARING OFFICER FOX: Mr. Trainor. I believe Member Burke had a question for you.

MS. MANNING: I don't want to -- if you want to go first, go right ahead.

BOARD MEMBER BURKE: It's on a different topic.

BY MS. MANNING:

Q. It is. Okay. Then I will just ask you -- this is sort of a qualification question. Ms. Dexter asked you whether you were a soil scientist and you said you weren't, but could you explain to the Board your experience with soils?

A. Well, I am what's called a geotechnical engineer. So I deal with soils as a building material, as a porous media. Soil scientists specialize in, for example, agronomical application. That's not my area of expertise. However, I have done a lot of testing on soils, to look at soil strength and soil porous

behavior.

I am very familiar with how soils -- how they behave with moisture conditions as I mentioned before, the various electrochemical behaviors of soil and how they behave with interacting with contaminants. The whole idea of land application is based on the fact that soils provide an attenuation capacity for contaminants. The soils themselves interact with contaminants as they pass through the soil matrix, and they are reduced. Chemical properties are changed. That's just the nature of what soils do.

So that's -- in response to the question, my expertise is actually dealing with the engineering properties of soils as compared to the agronomic properties of soils, and that's how soil engineers and geotechnical engineers interface.

HEARING OFFICER FOX: Anything further, Ms. Manning?

MS. MANNING: No.

HEARING OFFICER FOX: Very good.

BOARD MEMBER BURKE: Mr. Trainor, your

pre-filed testimony made some comparisons between the proposed Illinois rules to the Wisconsin program, and when I was listening to Ms. James' testimony earlier, she made a statement that I had a question about, and I am wondering if you had any insight into it.

I believe that Ms. James stated that Wisconsin issues permits to non-discharging large CAFOs, and I am wondering whether or not that Wisconsin permit is issued under an NPDES delegated program under the Clean Water Act or if it's some other type of state permit, if you know.

THE WITNESS: Yeah. I can't answer your question on that. I'm not familiar with that.

BOARD MEMBER BURKE: Thank you.

HEARING OFFICER FOX: Any further questions on the part of the Environmental Groups, Ms. Dexter?

MS. DEXTER: No. Thank you.

HEARING OFFICER FOX: On the part of the Agency?

MS. WILLIAMS: None.

HEARING OFFICER FOX: Ms. Manning, one last

chance for a follow-up before I cut you off.

MS. MANNING: No. I was just going to indicate to Member Burke that we would attempt to follow-up with that in terms of an analysis in our public comment to the extent which we can figure it out.

BOARD MEMBER BURKE: I think it follows up on Member Zalewski's question to the Environmental Groups. I am wondering if there is any information you can provide on if there is a distinction there.

MS. KNOWLES: What is the question? I'm sorry. What is the question?

BOARD MEMBER BURKE: Earlier Member Zalewski asked Ms. James about if we know about the universe of states that are issuing permits to large CAFOs, and I guess my question is a little bit -- digs a little bit deeper into if there's any distinction between states issuing permits to only discharging large CAFOs or which states are also issuing permits to non-discharging large CAFOs?

MS. KNOWLES: If I may, Dr. James informed me that she feels she could answer the question

that was posed to Dr. Trainor regarding the Wisconsin NPDES permits.

HEARING OFFICER FOX: Very good. Ms. James, Dr. James, you have been sworn in already. And if you are prepared to respond to a question of that nature, please go ahead.

DR. JAMES: Well, I can -- my caveat is that my response has to be fairly limited in nature, not having terribly studied the Wisconsin rule, but in Wisconsin they have what's called a WPDES permit. So it's not a NPDES, but it's a -- however you would say that. And so this issue of authority has come up in this rulemaking, and I believe that IEPA has submitted testimony on whether or not they believe they have the authority to regulate all large CAFOs or not.

So in some states they have established this authority to regulate large CAFOs, and they have decided to issue permits to those CAFOs. So I think we are down to a legal question of authority. So that's my response.

HEARING OFFICER FOX: Fair enough.

MS. MANNING: Can I ask a follow-up question of Ms. James?

HEARING OFFICER FOX: Please go ahead.

MS. MANNING: Ms. James, are you aware of whether they have separate statutory legislative authority to do that in that state?

DR. JAMES: I'm not aware. I'm only aware that they have WPDES permits that apply to all large CAFOs.

HEARING OFFICER FOX: Do we have any further questions then for Mr. Trainor on the basis of his pre-filed testimony or statement today?

MS. MANNING: I would ask that I have the right to recall Mr. Trainor after Mr. -- Dr. Keefer's testimony to the extent to which we might have some responsive testimony to Dr. Keefer's testimony.

HEARING OFFICER FOX: So noted. Mr. Trainor, we have come at this point to the conclusion of the questions based on your pre-filed testimony. Thank you for your -- for those responses in particular.

And Mr. Keefer, I know you are waiting in the back, and we are prepared to turn to you if you are all set to come forward. Actually, Ms. Manning, if you don't object, that chair

works out very well for witnesses.

(Whereupon, the witness was duly sworn.)

HEARING OFFICER FOX: Mr. Keefer, as you saw Mr. Trainor, if you have any summary or introduction you would like to offer, please go ahead if you are set to do that.

MR. KEEFER: My name is Don Keefer. I work at the Illinois State Geological Survey, which is now a department within the University of Illinois through the Prairie Research Institute. I have been at the Survey for 27 years associated with the groundwater section and pretty much at all times. I am currently the head of hydrogeology and geophysics section at the Survey. I am a licensed professional geologist in Illinois. I have a bachelor's in geology and a master's in soils, soil water quality through the University of Illinois. The degree was actually through the Department of Agronomy, but my thesis looked at preferential transport of pesticides and nitrate in tile drained soils. So that's some of my background.

I want to say also from the start that

I was asked to testify from one of the Board Members. I'm not an advocate for agriculture or the environment. At the Survey we are basically there to represent the science as we understand it. So that's where my testimony comes from. And I wanted to note also to start, it wasn't in my pre-filed testimony, but is part of my comments here, that there seems to be a potential conflict that exists really regarding the delineation of karst aquifers within the LMFA, and I don't know honestly whether this is to be addressed by this current CAFO ruling, but it's caused problems with the Nora dairy in particular where what we have in the LMFA guidance for identifying karst aquifers is basically insufficient from a hydrologic perspective. And the conflict then exists between the Illinois State Geologic Survey known as a mandate in Illinois statute, a directive in Illinois statute to define the geologic settings in Illinois, and then that guidance, which is given under the LMFA, which is again, hydrogeologically from our perspective insufficient at least in terms of what can be

identifiable as karst.

I also wanted to note that I think the potential of the karst aquifers within that and even within this CAFO proposed language is insufficient in the sense that thin cover over karst aquifers -- thin cover, specifically, it is potentially impossible to avoid some water quality degradation in the karst aquifers from a land application of non-point source types of chemicals. That could be pesticides. That could be nitrates. That could be manure. The depth with regards to which you are safe is very debatable, and we can talk to that a little bit later.

To get back to my -- to my pre-filed testimony, basically I am trying to provide testimony on the importance of macropores and the transport of water and constituents through the soil, the nature of soil water and shallow groundwater flow in the agricultural field setting, specifically with regards to subsurface tile drains. And then I did have a couple -- after looking through the proposed language, I did have a couple of concerns regarding some of

the proposed changes.

In summary of my pre-filed testimony, I really feel that you need to consider macropores as pretty much ubiquitous in a situation unless you have bare rock at the surface, and in Illinois we don't have that in a lot of situations. And the real -- to summarize, again, some of this, one of the major factors of this isn't necessarily the size of the macropore. It's the fact that it's basically like a straight path downwards; whereas if it's going through the matrix or what we call a matrix or microporosity, the pathway is very tortuous, and then it does have the ability to interact much more -- any water or constituents have the ability to interact much more with the materials in the soil.

When it's flowing through macropores, the travel time is amazingly fast. We have experimented with that directly at the Survey, and the literature is really replete with that kind of observation. Let's see. With regards to livestock waste applied fields without tile drains, I noted it appears that the constituents

at least from my perspective with the largest risk for transport to aquifers within 50 feet of land surface are likely to be nitrates, pathogens, hormones, antibiotics.

In areas where there are no aquifers within 50 feet of land surface and where there are no private large diameter wells, water supply wells within 800 feet, it appears unlikely that macropores will facilitate or will cause any significant contamination to groundwater or surface waters from properly managed livestock waste application.

Regarding subsurface tile drains, it's been my experience in my review of the literature that land applied chemicals are often found in tile effluent, period. There is not much we can do about that. Tiles in Illinois are typically set about three feet below land surface, and their objective is really to control and they are put in in situations where the seasonal high water table is high enough into the root zone that it will cause plants to die and the yields to be low. And typically that's in the foot to three feet.

So we find that at a spacing of approximately 100 feet in Illinois' fine grained soils we can put tiles in at about three feet, maintain the water table in the seasonal high period at approximately three feet and enable enough oxygen to be in the upper three feet to allow the plants to survive. And that's really the design of the tile system and why they work.

Again, because macropores are ubiquitous, these -- you basically have these fractured little networks that allow transfer down three feet and then laterally across the top of the shallow water table when the tiles are flowing so that you can get rapid transport within an inch of rain. I document that in a couple of studies.

Since this is pre-filed and online, I won't read the whole thing. I just wanted to identify a couple of key components. I do feel that there doesn't seem to be any way to ensure the discharge of pollutants at acceptable levels without monitoring. It doesn't mean that it won't be occurring probably the majority of the time, but from the literature it seems like

there are frequent times even with regards to the livestock waste application where you will get high episodes of nutrient concentration, and it's not just what are agricultural nutrients like nitrogen and phosphorus, but you have the potential then with any other water borne constituents is the term I use, which can include bacteria or viruses, which haven't been discussed much, antibiotics, and I've even seen estrogen compounds, which have significant impacts to surface water and to humans if you are consuming that largely.

That doesn't mean they are in high concentration, because I'm not qualified through my experience to comment on that, but I wanted to raise the issue that these tiles are designed to move water rapidly and they do that effectively. And you put something on them and rain on it, a fraction of that is going to move and, you know, the fraction quantity is very difficult to predict.

So with regards to other language worthy of note, in Section 502.106(b)(1) the section notes that, The Agency cannot require

NPDES permits for certain CAFOs unless they meet the specific conditions. I just, I guess, would encourage the consideration for inclusion of subsurface tiles in this section. Again, there are many studies that document high concentrations of glutens from livestock waste. I have another one here. It's just worth the Board and the agency's Consideration.

At 502.615(a)(6) regarding nutrient transport potential, tiles in the locations are noted. Again, I'm not sure that its just tiles in the locations that should be identified. I think in the presence of subsurface tiles in general without simply an inlet are significant pathways to potential routes to surface water that need to be considered.

The water table, at 502.620 with regards to protocol of the land application of the waste, Subsection K talks about with the water tables within two feet of the land surface, but there is no recommendations given on how that should be observed. I just wanted to point out that the USDA, NRCS, has published soil surveys, and it's very -- it's fairly well

documented. It's very well documented that basically soil profiles can be characterized very quickly by a soil scientist to identify seasonal high water table ranges within a fairly good precision of accuracy.

There is the concern that some situations will be perched, which in the definition of perched, what typically is used is that you have a saturated zone above a zone that's unsaturated and then another saturated zone at depth. And in that condition the soil survey is not very useful for identifying that. So it's not a sole source, but at the same time, if you are looking for shallow saturated conditions with regard to the application of the waste, that still might be a very useful tool and it's simple and free and available.

And then 502.630(a)(1)(A) Winter Application Prohibition; the rule currently states that the surface application of livestock waste on frozen, ice covered or snow covered ground is prohibited unless no practical alternative measures. I'm not criticizing the need occasionally to accommodate emergencies.

I'm not testifying to that at all, in fact. That's not my area of expertise, but I am concerned that this is insufficient to protect surface water quality simply because if the ground is frozen, and we all know that if you are planning -- if you are putting in a patio, they recommend in Illinois frequently, you know, a foot and a half to three feet potentially just to avoid frost heave. We typically have in the northern half of Illinois a couple feet of frost of frozen ground. The ground thaws typically from top down, and when it's frozen, you are not moving things through it. So if you apply the waste on top of the ground on the frozen soil, it will sit there until there is a melt, and they may attract a melt because the coloration will bring in sunlight and create heat.

I mean, it's just going to go laterally, and that's all it has to do. You know that if you think about snow. When the snow starts to thaw, that's really what happens. It ponds and then runs off, and that can be in a sloping soil or flat. I did my master's thesis on flat, 0 to 2 percent soils with tile drains,

and spent a lot of time in the rain just watching water flow on these soils.

And they typically exceed the infiltration capacity and have saturating conditions in most spring and fall storms. And so in those situations, the water has to run off, and so you always see gullies and erosional features even in flat soils, and they look for the road ditches and go, and that's why the roadside ditches are there to take the water off the landscape. So I just site that as a hydrologic reality, and regulatorily you will have to figure a way through that, but I just wanted to raise that point.

So I think that probably provides us -- if I could, also, I wanted -- with regard to Mr. Trainor's testimony, I wanted to comment on a couple of issues from my perspective. He made a comment that groundwater is always reducing, lacking in oxygen. Well, that really isn't true. I was talking to Mr. Panno in the back who has testified in DeKalb here. Mr. Panno is our karst expert at the ISGS, and he said he has basically sampled karst aquifers in Missouri,

Indiana, Illinois, Wisconsin and Kentucky, and all of those are highly oxic waters unless you get to significant depth in the limestone and oftentimes below some kind of confining unit.

Typically tile effluent and shallow groundwater is fairly oxidized still. It really depends on the time in that system. So that's the complexity. The longer it stays in groundwater before it gets to the surface water, though, the more oxygen that typically gets removed from it. So groundwater can be reducing, but not all groundwater, and particularly not shallow groundwater.

And I do, again, as with my testimony, I don't agree that macropores are not permanent conditions. Macropores are. In fact, the largest feature that I have seen of macropores in terms of solute transport and water transport are, as I described in testimony -- you know, it's a little bit technical and I apologize for that, but the idea is that soils develop through shrinking and swelling and expanding and within the clay movement in Illinois and organic bacterial activity, and what happens is we form

these things called peds which are in the shallow part of the soil. You can probably see them, but it's fairly stable and it's not encrusted with clay, but it has accumulations of clay, and that creates a stability that is long-term, thousands of years terms.

Things like wormholes, it depends on the kind of worm. Earthworms -- what do they call them -- night crawlers, I did a lot of research at a farm where a guy actually was learning how to harvest and grow worms. So we talked about worm activity, and night crawlers tend to be vertical, whereas some of the red worms tend to be more horizontal.

So the vertical ones -- kind of like the plant root if you have ever dug in a garden, the plant root might be open, but the hole from that root is stable, fairly stable for the long-term and those can be there -- number-wise, they are drafted by these inter-ped -- I call them the inter-ped fractures that are very stable. There are some environments in the world where the soils are swelling to the point where they really do believe they are

obliterated, but Illinois does not have that degree of swelling, and so these peds are fairly -- they are stable features and the joints between them tend to be stable.

I have done dye studies with red dye, rhodamine, where we irrigate it on the land surface, and then immediately after about an inch worth of irrigation, an inch only of rainfall during irrigation of sprinklers, we would start digging and we would get down four feet and that dye was already at four feet, and it was these inter-ped fractures that were responsible for transport within an hour of an inch of rain, and it shouldn't -- you know, most of our basic theories of water flow don't accommodate that kind of transport. So, anyway, I will use that as my summary of my testimony, and I will be happy to take any questions.

HEARING OFFICER FOX: Very good, Mr. Keefer. I am confident there will be some questions.

Does the Agricultural Coalition or the Agency wish to begin or the Environmental Groups?

DONALD KEEFER,

having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. OLSON:

Q. I have a few questions. In your testimony you describe macropores as something that is 0.08 millimeters or larger; is that right?

A. In my testimony I referenced the USDA publication, and it was just one USDA publication. USDA may even have a couple different definitions, but I found that to be consistent with another couple of articles I had seen in the literature. It's fairly arbitrary.

Q. Okay. And can you describe to me how small is 0.08?

A. Yeah, it's small. It's very small.

Q. Is it the size of a pin?

A. I don't honestly know that. That's a good question. I don't honestly have a good measure. It's 0.08 millimeters. I think it's maybe even smaller than that, and I think the important thing in my mind is, again, as I

mentioned, these things are fairly flat and vertical or horizontal and so it's that continuity and lack of tortuosity that becomes the important part.

I was at a research conference back in '88 or '89, and this -- it was on fractures in clays and transport of contaminants through them, and it was a major research conference and the discussion was that after some numerical modeling based on where they found contaminants through the clay, that the fractures had to be 0.03 millimeters, which is quite a bit smaller, and that's as small as some of the pores in the micropores that we call. So the pore size -- excuse me. What I gained from that was that pore size was not as much the issue as the fact that they are continuous, and these are fairly planer. So I don't know if that helps.

Q. I want to get back to the fact that they are continuous, but before I move on, I am going to try to pin you down a little bit more on how big exactly 0.08 millimeters is. Would you agree that it's something that you can or cannot see? Can you see it without the aid of a

microscope?

A. You know, I can't answer that directly. It's possible that you can see affects of those pores, and what I mean by that is that you will sometimes get organic accumulations on some of these or clay accumulations that are observable more than the actual pore aperture itself. So I really haven't really tried to quantify the size of the pore you can visibly see. I don't think it's possible -- I saw one comment at some point about finding a size that farmers are -- or anyone, a sole classifier could identify visibly. And my point of the testimony was that that's an impractical approach to the problem. So if that's getting more at where you are heading --

Q. I will get there, too.

A. That's fine.

Q. So the other thing, going back to the length, you said the important thing is that not how big they are, but the fact that they go down into the soil?

A. Correct.

Q. Can you tell me how far they go down in

the soil on average?

A. Yeah. Well, I can give you some insight on that. In Illinois in particular, the soil survey tends to look at soils as being -- most of the soils they describe -- and soils are weathering profiles of geologic materials. So that's what we think of as the soil. Most of those are about 60 inches that -- they found that to be an effective depth for characterizing things, and that tends to be the highly weathered portion of the top of the land surface. It's about 60 inches. Now, when you start at the -- you know, as any time you have gone in a farmer's field, you can get granules or peds, if you will, that are really small, and as you go down, they get bigger, and they get bigger and they get bigger. And then at about four or five feet, you can get fractures that are spaced maybe that far apart, and these networks are all -- they are interconnected. And so as you go to depth, it has more to do with -- I will mention back to this conference I was at in the late 80's. They felt that there probably weren't -- this was, you know, in the

late 80's. I was just starting my career. So these were people who were top in the field, and they felt that based on the results of contaminant transport, okay, that there probably were no deposits of clay that could be considered unfractured from a water quality protection perspective, because the spacing of the fracture is the issue, and that's a really hard one to answer.

But I have seen them in Illinois in tills where they're at four to five feet, you are talking through a weathering profile about two to three feet wide.

Q. So you said they can be about 60 inches. So that's five feet?

A. The soil is oftentimes characterized within 60 inches of the land surface. It can be shallower. It depends on the landscape.

Q. What is your opinion of a definition of a macropore that is a hole in the ground and would not be considered a macropore unless it was at least eight feet deep?

A. Yeah. I mean, I think a macropore can be that long. You know, I don't know that it

has to be any specific length.

Q. Can you tell us the length that you indicated with your hand?

A. Maybe an inch, right? And that's arbitrary. Again, I think it has more to do with what you might call the -- you know, the long axis versus the short axis. So if it's like a worm cylinder or that kind of -- or a root hole where it clearly has got a short dimension or like a circumference is much shorter than its length, I think you might be looking at something like a macropore, but we -- I have not typically seen classifications where they are worried about that type of -- how short can it be. Do you know what I mean?

Q. In your testimony you state, quote, "The most common type of macropore includes the fractures or openings between individual soil aggregates?"

A. Yeah.

Q. Can you tell me how large this type of macropore is, the most common type?

A. Yeah. I think that's larger than 0.08. I think that's probably going to be closer to

like a 0.1 millimeter type of thing, and it may depend on the moisture content in the soil.

As Mr. Trainor mentioned and as we all know, as soil drys out, it tends to shrink together, and present fractures tend to have a larger aperture, and then when they are fully wet, the clay is -- over time will slowly vibrate and then it can slowly close that back up, but what we found in Illinois soil is that even if these close to 0.08, then they are going to open back up again as the water drains. And so it is dynamic in that sense, but they still remain on the same joints, and they still are -- on the longitudinal profile it's just like a straight line almost.

Q. So you are saying that they can change. So can you tell me whether or not a macropore can be become a micropore?

A. Well, in the context that we are referring to, I don't think you can, because while the aperture or the size of it can be consistent with what you would see in the middle of -- see, that's what I was referring to earlier in that conference. While the size of

the facture may be even smaller than 0.08 millimeters -- may be it's at 0.03 -- the fact that it still is continuous surface at 0.03 means that it has this preferential transport capability, and that's why we worry about macropores. Macropores broke our understanding of the theory of water flow through soil and permeable materials.

We used to think of them as these uniform what we call porous medias or sandbox with no interruptions and everything flowed in a very uniform sense with a little bit of a leading edge in the middle and a little bit of drag on the sides, but otherwise it was kind of like a plug flow we would call it. And then we found that the contaminant concentrations in wells and other things didn't match that at all, and they were much faster, orders of magnitude faster than that.

So when we started looking, we were ignoring all these features that can be classified as macropores, joint and tree root holes and that type of thing. And so that's really where the concept of a macropore came

from is that term of what we call an observable feature that kind of contributes to this preferential water flow and contaminant transport behavior, and it happens to be an opening in the soil that has continuity and typically more aperture, more size, than your soil macropore -- micropore.

Does that make sense? Does that answer your question? Have I lost you completely.

Q. No. I may --

A. Tell me if I'm getting too technical. It's hard to dumb this -- I mean, you know what I mean. You know what I am saying. This is technical, and what we are trying to do is convert technical issues into nontechnical understandings and so our job is to talk to peers about how do we advance this understanding. So there is -- everybody has got a different level of insight on this, and I want to make sure that you get what I am saying.

Q. I want to make sure that the Board gets what you are saying.

A. I appreciate that.

Q. So I am going to ask you another

question.

You talk about -- in your -- On Page 3 of your testimony you said that you conducted research with less than one inch of irritation. Can you be more specific about what you mean by less than one inch?

A. Some of those dye studies where we basically applied -- we built a little structure and then we used pesticide sprayer nozzles and a 50-gallon tank with dye in it or a barrel with dye in it, and we sprayed it on the land surface with the red dye, and then we would, again, try to -- for the land surface area based on the quantity of water, we could estimate the effective rainfall amount. And then I had another study where we didn't apply dye. It was actually in a normal agricultural field, and we applied -- if this is a tile drain going this way, we applied -- and it's hard to describe, but we applied a specific tracer 15 meters away from that tile. We applied it parallel to the tiles that went into the field, and then we had another one 30 meters away, which is sort of the maximum capture zone estimated distance, and we

had this tracer go down 3 feet and over 15 meters in less than an inch of rain, and we detected in our tile table --

Q. I'm trying to pinpoint exactly what you mean when you say less than an inch of rain. Are you talking about --

A. Okay. We have a rain gage --

Q. -- three-quarters of an inch of rain?

A. Oh, what exact number?

Q. What exact amount are you referring to when you say less than an inch of rain?

A. Oh, man, that was '96. I think that -- I think it was like three-quarters of an inch.

Q. So have you --

A. It left me very uncomfortable, and we looked for errors in our design and our implementation and there was nothing, but it was consistent with other things we've seen.

Q. Have you conducted research where you looked at the amount of irrigation traveling through the soil when you only put a half an inch?

A. I can't answer that honestly. I don't know.

Q. What about a fourth of an inch?

A. Probably not. We wouldn't anticipate -- we were out -- when we were doing the tracer test with the dye, we were out there to see where it would go, and we were there to see which kinds, was it the roots, or the wormholes or these inter-ped fractures that dominated. At the time -- and this was in the late 80's -- the literature suggested it was roots and worm holes, and we were -- like I said, we were working on a farm with a guy actually who was trying to find out how to harvest and grow worms. So there was worms everywhere, and it wasn't the wormholes. It was these weathering profiles, inter-ped kind of inter-aggregate joints.

Q. Do you know how quickly livestock manure moves through soil when it's applied at a rate of a half an inch?

A. The issue with soil is its infiltration capacity, and that's a rate at which you can accept water. If you can apply something at a rate lower than its ability to accept it, it can kind of suck it in, and that's what we found.

And everybody -- it's kind of basic soil physics. If you apply rain at a rate faster than its ability to take it in, then you get ponding, and once you can get ponding even localized, then you get water movement into macropores. And that's the issue.

Water won't flow into macropores if the rate of rainfall is -- or irrigation is lower than the infiltration capacity because the water can absorb it.

Q. Okay. You talked about doing dyeing. Can you explain to me how much it costs to do one of those studies?

A. That was not much at all. I didn't have much of a budget. So, I mean, the dye, a little pint of the rhodamine, I think 10 to 15 -- maybe $20, and then I used PVC water supply pipe to build an eight-foot structure and 20 nozzles. I mean, you know, a couple hundred dollars of equipment.

Q. Do you think that an expert would be needed to conduct such a study?

A. What are your objectives with the study?

Q. To determine whether or not your field has macropores.

A. I think it's an ill-posed question. Your field contains macropores.

Q. How about to determine the depth of your macropores?

A. That would -- we found the movement to the top of the water table. So then that could be useful if you wanted to look at that. Again, it's a rate limiting thing, and that kind of thing is not high tech, if that's your question. It's a very approachable study.

Q. Do you think that a farmer can go out and conduct a study him or herself?

A. Well, I would be willing to bet that the farmers would be more mechanically adept than I was, given the equipment was a pump and pesticide sprayer heads, and a bucket with dye. So they have got to get the dye and spray it. So, yes, they would be able. They would probably have a backhoe to excavate as well, and I was just using a shovel. So, I mean, it's not a hard thing to do.

I would question the relative value of

that, but, yes.

BOARD MEMBER RAO: May I ask a follow-up question?

MS. OLSON: Sure.

BOARD MEMBER RAO: I think one of the reasons why the IEPA is asking you these questions are because the Environmental Groups have proposed a requirement which pretty much says that, you know, you cannot apply livestock waste to soils if macropores are present where there is subsurface drain tiles present. So with that kind of a requirement, do you see any point in testing the soil for the presence of macropores, because you have testified they're pretty much ubiquitous and it's always present?

THE WITNESS: If you are going to adopt that, I would say there would be no point. I mean, in Illinois soils, especially tile draining soils, there is going to be macropores throughout the field. I mean, tiles are used in the high water table conditions, and they can only work in situations where there is this inter-aggregate porosity, these joints that I talked about, where there is enough of those to allow water

flow at a rapid enough rate to bring that water table down in a couple days. That's how they -- there is some soils that are too low permeability to allow the water flux out, even though the water table is high, and you can't drain those with tiles. So if that's --

BOARD MEMBER RAO: So there is no point for a farmer to try to demonstrate there is no macropores, and I am going to apply waste in that kind of a situation?

THE WITNESS: I would say there is no point in that, because you are going to have them.

BOARD MEMBER RAO: Thank you.

DR. JAMES: Can I make a clarifying point?

HEARING OFFICER FOX: Please go ahead, Dr. James.

DR. JAMES: I would just like to clarify that in our proposal we also proposed a definition of macropore, and that definition would be a macropore that actually reaches a tile drain. So macropores with the idea that, yes, we don't need to regulate macropores that go only a few inches, but macropores that go deep enough to reach a tile drain could pose a threat to water

quality. So that's just my clarification.

THE WITNESS: Yeah, I guess to respond to that hydrologically, hydrogeologically, I don't feel like the classification of a macropore is even necessary in that context. As I kind of suggested, I think tile drains are vulnerable to occurrence of any land applied chemicals. I do -- and that doesn't mean to say, and I hope -- to try to clarify my point on that, I do believe that liquid manure and manure can be applied to lands without resulting in contamination of surface water, but I do also believe that there can be conditions where it's applied to land and that results in some contamination at least periodically throughout the year.

BOARD MEMBER RAO: My questions were more directed towards how you would implement the kind of a requirement that the Environmental Groups have proposed. So I was wondering, you know, if someone wants to demonstrate the presence of macropores or absence of macropores, how would they go about doing it or whether there is a point.

THE WITNESS: That kind of a study would be very effective. If you have -- well, I mean, the soil survey -- if it's got structure, I mean, you could use a soil survey for that. You don't have to even -- you know, the soil surveys are pretty accurate. There is locally errors in it, but the soil descriptions in those describe whether there are peds, and if there are peds and you have the soil develop, you will have macropores.

So in Illinois the shallower soils tend to be found on slopes and higher uplands or in very thin, rocky locations, but if you have -- most of Illinois you are -- you know, if it's greater than five feet depth, that stuff above the -- depth of the bedrock -- excuse me. The stuff above the bedrock will have macropores in it, and if it's tile drained, it's not going to be on a slope, because there is no need to tile drain a slope. Do you know what I mean? So it kind of self-corrects.

BOARD MEMBER RAO: Thank you.

HEARING OFFICER FOX: Do you have any further questions?

BY MS. OLSON:

Q. I have a few more.

I think I heard you say that you are not saying -- your testimony here today is not that a prohibition on -- for land application on a field with macropores; is that right?

A. Correct.

Q. And does that hold true even if the field has subsurface drainage?

A. Correct.

Q. And is that because you can change the application rates?

A. Yes.

Q. To make it protective?

A. Yes. I'm not -- I saw -- in the literature someone suggested trying to keep it off of -- like don't apply it over the tile, because right over the tile is the most vulnerable, and my point in including that study that I conducted where we had 15 meters away something go down to the water table and over in three-quarters of an inch of rainfall was there to suggest that you can't worry about just over the tile, because it's the whole field pretty

much. You just land apply the waste, and if you can do it in a way using best practices that results in effluent through the tile and it's within water quality parameters, then you have met your goal.

And I think it can be done. It depends on the rate, how much do you apply and what -- I don't know enough about manure characteristics, the liquidity. There is solid content, and then what are you worried about, nitrogen, phosphorus, pathogens, estrogen? That's not something I have done a lot with, but it's prevalent in the literature.

Q. Do you have an opinion about whether tilling the field before land applying would decrease transport to subsurface drainage?

A. Yeah. My advisor of my master's thesis, and again, it's in tile draining, he was a specialist in tillage and water quality, and so that's why he had me on, and it does have some effects, but the literature can be a little bit -- it does have some positive benefits to the water quality in that. And I think in this article that I had examined notes that, but the

results tend to be inconsistent, and it's a timing thing, because the macropores are going to redevelop over time that will connect wherever you stop tilling with where you tilled, and I don't know that it's -- without monitoring, I guess I wasn't comfortable just saying that's a sufficient coverage. I don't believe that's a sufficient coverage from my understanding of the literature and the physics of what's involved.

Q. I want to go to one of the comments that you made when you first started your testimony here today. You said that there would be a potential -- there is a potential conflict, and you said it has to do with, I believe, the LMFA's definition of karst; is that correct?

A. Karst aquifers, yeah.

Q. And I believe you also said that you believe that definition is insufficient?

A. Yes.

Q. Can you explain why you believe it's insufficient?

A. Yeah, I would be happy to. The treatment of karst -- and I think Mr. Panno

testified to this in DeKalb. Karst isn't something that exists on a localized area. It happens systematically across a landscape, and it isn't the kind of situation where you can have a little carved out niche that doesn't get karstified in that sense. It's really a reference to the processes that have happened on a rock formation, which is a thickness of deposits usually across many miles. Those can be eroded, and they can be locally present and absent, and that's where you might see karst here and not over here, because the rocks that make the karst are eroding over here. And I have forgotten your question.

So the problem with the LMFA is that it allows for point characterization on a site to identify karst or not, and that's just not -- it's not logical. It's not possible, and I think that the Nora dairy conflict proved that exactly, and I had very heated discussions with people pro-dairy on the phone with regard to defending our position why geologically, hydrogeologically we feel this way. I mean, there is a lot of literature out there about why

that is the case, and, you know, I can answer more specific questions if you would like with a follow-up.

You can't characterize karst from the site specific characterization capabilities, and I don't agree with Mr. Trainor's comments that it takes multiple years and hundreds of thousands of dollars. Mr. Panno and another colleague, Dr. Weibel, at the Illinois State Geological Survey over a period of maybe three or four years defined a map by the scale of 1 to 500,000 with the major karst areas in Illinois, and while that's not suitable for site specific location of facilities, it identifies the major karst areas, and you'd want to go in and look at that, but what it shows you is that we have identified rock formations and dissolution features; in other words, dissolving features of those rocks that are consistent with karst, and so we label these areas karst.

As you get towards the margins, you may want to have -- you need more site specific information to make sure that you are still within that rock formation, but in the middle of

those, unless you have an erosion of that rock formation, it's a fairly safe bet that you are in.

Q. So I just want to make sure I understand that. You are saying that karst should not be a site specific determination, but an area wide determination?

A. Yes.

Q. And when you say area wide, are you saying like county by county? What is your --

A. I don't think it needs to be county level, but I mean, at least on what -- the township is a 36-square mile area and that type of thing would be probably appropriate. You are looking for regional -- you are looking for features that occur and unfortunately that's where I looked through ASTM's guidelines. ASTM is a group that helps set guidelines for all kinds of things, and they have a lot of environmental guidance.

There was a withdrawn document on groundwater monitoring and karst that was really helpful. The only reason it was withdrawn is that the primary author died, and they have to

be renewed every periodic time, and he died and wasn't able to renew it, but there isn't unfortunately an ASTM guideline that I could find on defining karst. Sam found a very nice proceedings article that's very exhaustive about -- that includes information on defining karst.

Information from that could be provided in a language that would be helpful if you would like, but it isn't -- again, it isn't the kind of thing -- farmers typically if they have the ability -- it depends on how dynamic the erosion is. If the erosion isn't terribly dynamic like down in southwest Illinois, you can fill these things and plant over them, and how do you know where the sinkhole is? The sinkhole is still there.

Now, you will have a reduced water flow to the sinkhole, but the water once it hits the top of rock hits a fracture system, and it flows faster than it can come through, and so that creates pipings in the soil above, different than it would in sandstone, because once it hits the sandstone, it's got to go in through those

micropores, which are slow, and it doesn't -- it doesn't have the same vulnerability to contamination, is what I am trying to point out.

Q. I want to ask a few other questions that are not related to karst.

Do you -- to your knowledge, can you tell me whether or not subsurface tile drains are manmade?

A. Yes, they are.

Q. And when you formulated your opinions on winter that you have in your testimony, did you consider that the Illinois EPA prohibits winter application unless there is no practical alternative?

A. Yes. And my point wasn't to be critical of existing rule language. My point was just simply to ensure that this perspective was offered in the testimony. That's all. There has got to be a practical solution to it, and I'm not here to offer those up.

MS. OLSON: Thank you.

HEARING OFFICER FOX: Nothing further on the part of the Agency? Ms. Manning, do you have any follow-up questions?

CROSS-EXAMINATION

BY MS. MANNING:

Q. Just a couple of things. What's your understanding of the purpose for subsurface tile drains? Why were they built?

A. Their main goal is to move water from the subsurface. In an agricultural setting they are -- agronomically they are to lower the water table during periods where the water table is high, and the plants can be vulnerable to saturation. If the roots are in saturated soil, they don't get enough oxygen to grow. They need a certain amount of oxygen.

Q. Let me just ask you about your -- try to understand your position about the LMFA and karst.

A. Yeah.

Q. The LMFA has the definition of karst which is used to require certain kinds of design features on the Livestock Management Facilities Act. Would you agree with that?

A. Yes.

Q. And your point is that if you could identify a certain area as being karst just

regional?

A. Yes.

Q. So -- and your point further is if you have a regional -- that there should be no land application of --

A. No, not necessarily.

Q. Okay. Do you want clarify it then, what you mean? What is your position on land application of livestock waste pursuant to a nutrient management plan in a karst area?

A. Yeah, right. That's a good question. What we have found through monitoring for pesticides and nitrates, which are applied in a similar non-point source application is that we would have usually an undesirable number of detections of pesticides and it's oftentimes high concentration of nitrate if the top of the aquifer was within 20 feet of land surface. And that's largely due to transport through these preferential paths.

Q. I am just asking about the --

A. Well, I am going to get there, and I am trying to show you a basis for how I'm going to answer it. Because of our observations -- and

then we found when the top of the aquifer is between 20 to 50, there is a lower risk of contamination and concentration, and when the top of the aquifer is below 50, we generally find that it's very rare to see contamination of those kinds of things. I think -- Sam and I have talked about this. The difficulty with karst -- and I was alluding to that in my answers to another question of the EPA, is as opposed to sandstone, okay, another bedrock unit, is that the flow through karst is through these larger channels primarily. And they could be cracked. They could be channels or conduits or cave type of features, and what that means is that the water -- if there is an outlet, water flows really fast, okay, and so that will allow you to take water out of the material above it as fast as it can be provided. In things like sandstone, the water isn't flowing as fast, and the rapidity, the speed of the water is relevant because it allows piping -- I'm getting into engineering properties of soils -- of fine grain materials. If you have rapid water flow, you can get piping, which is kind of what's

happening in the limestone rock when it dissolves. You can have erosion of these cracks, and the soil along the crack can erode, and you basically form pipes and a larger and larger channel in the soil until you get a collapsing there, and that has a lot to do with the amount of water on the landscape, the landscape surface features, the thickness of material above, the limestone that's karstified, the outlet availability, how often does the water really -- is it unsaturated? Are all the channels in this limestone open versus saturated and full? So there is a lot of variables that are hard to predict.

Q. And how would a producer figure that out?

A. I don't think it's -- well, I mean, you could do some characterization. That's where a site characterization can be helpful; not to identify whether there is karst or not, but to look at the hydrology locally within that karst aquifer. The difficulty with that is -- and this is the problem that I saw -- is the step by step in the site characterization at the

proposed Nora dairy was that if you just drill into the site, the limestone, the vast majority like 80 to 90 percent could be unfractured, very dense limestone, but the 10 to 20 percent is the opening.

Well, if I don't hit that opening, I don't see the karstified portion of the aquifer. So even if I put a well there, I can see what the water is doing in the matrix part of the rock, but it has potentially no bearing at all to what's happening in the karstified channels. And that's the problematic part.

And so you could identify it on a site characterization basis, but you have to be fortunate enough to put a well in a location that intersects enough of these fractures or the important fractures to be able to knowingly represent the karst. That's hard to do, and a farmer, an individual landowner, probably can't do that reliably. A consulting firm might be able to do it, and it could be very expensive. Sam has done it through regional evaluations in water quality and sampling of a lot of private wells.

Q. You talk a lot about Nora, Illinois. Is that what you said, in Nora, Illinois? You talk about the Nora facility. So I assume you are --

A. I don't know what it's called.

Q. I assume you are knowledgeable since you are talking about it?

A. I am partially knowledgeable, to be fair, because --

Q. Well, where is it? Because I don't know.

A. I think the one that people have referred to earlier is, what, Traditions?

MR. TRAINOR: It's the same.

BY MS. MANNING:

Q. Okay. Thank you.

A. See, I have never been there. I consulted with Sam. Because of my knowledge of preferential flow in tiles into aquifers, Sam and I talked quite a bit, and my previous testimony during the LMFA -- I think you were involved with that, right?

Q. Right.

A. I'm testifying in front of the Board at

that point regarding different issues regarding LMFA, and part of it was the karst definition, and so that's what I was referring to.

Q. Thank you. I wasn't sure that was the same site.

A. That's the way Sam and I -- that's how I remembered it, and I couldn't remember enough of the other details, because I wasn't working directly on it. That was really Sam's.

MS. MANNING: Thank you. That's all I have right now.

HEARING OFFICER FOX: Very good. Thank you, Ms. Manning. I think we are ready to turn to the Environmental Groups. Ms. Dexter, if you have any follow-up questions for Mr. Keefer, please go ahead.

CROSS-EXAMINATION

BY MS. DEXTER:

Q. Just a few. In your testimony you stated that monitoring is needed to ensure waste application that does not result in contamination of surface waters. What sort of monitoring do you think should occur and would be both effective and practical?

A. The kind of monitoring that is typically done in tiles is to create an access point before the outlet so it's easy to reach; that can then be used to collect the sample from the tile during periods of flow, and the time that you tend to see the most contamination through the tiles is in the early part of drainage events after -- or if it's been draining for a while and within the, you know, three to ten hours after. It depends on the field, in the three to ten hours immediately following a rainfall event of sufficient intensity.

Q. Okay. What would you consider a large enough setback from community water supply wells to be protective of water supply?

A. From community, I didn't really have a position on it. EPA has got a procedure in place that I think has been protective, and I didn't really -- I commented more on the large diameter dug in bored wells, because those are typically tying in to either thin sands, or they are actually tying into this macropore network and getting water out of what wouldn't otherwise

be -- it's basically non-aquifer clay.

We have a lot of glacial till in Illinois, and you can put a 4-foot diameter well down 60 feet and like a cistern it will seep if the water table is high enough very slowly, and a lot of people have water wells like that, and they tend to be oftentimes highly contaminated if they are close to the farm fields, and again, this type of thing is something that I thought was vulnerable based on what we have seen with the pesticides and nitrates.

Q. And just to remind us, what is the setback that you think is appropriate?

A. To be very honest, I kind of grabbed that just -- not randomly, but I didn't use a reference, and I mentioned 800 feet, and I -- what I was just trying to do is, again, traditional models for predicting water flow are not able to handle preferential transport through macropores. So we just can't model that right now. And so the kind of approach that's done at the EPA for setback zones, capture zones for wells is not sufficient in these shallower environments in particular. And so I was just

trying to think about the likely capture zone volumetrically of what a dug well might reach to, and, you know, I think you will probably find a lot of other opinions on that, but that was just my feeling, that it took -- 800 feet would probably be safe.

MS. DEXTER: Okay. That's all I have. Thanks.

HEARING OFFICER FOX: Very good. Any additional follow-up questions on the part of either the Agency or the Agricultural Coalition at this point?

MS. MANNING: No.

HEARING OFFICER FOX: Very good. Thanks, Ms. Manning. Ms. Olson, Ms. Williams?

MS. WILLIAMS: No.

HEARING OFFICER FOX: Mr. Keefer, I have one quick question to ask you. You referred at the beginning of your testimony that you had appeared at the request of or on behalf of the Board?

THE WITNESS: That was my understanding.

HEARING OFFICER FOX: Can you --

THE WITNESS: I talked to Sam who said -- and

he testified at DeKalb and one of the Board members asked if I could attend and discuss macropores.

BOARD MEMBER RAO: Actually, I asked.

HEARING OFFICER FOX: Very good. I just wanted to clarify that. That is my only question, Mr. Keefer. So that, again, exhausts the questions that your pre-filed testimony or your comments today generated. Thank you for your time. It's much appreciated on the part of the Board.

That exhausts the pre-filed testimony that we received, the Board received, for this hearing. I want to clarify for the record, first of all, whether there is any person who did not pre-file testimony, but would like to offer sworn testimony and be subject to cross-examination here today as you have just seen in the case of Mr. Keefer.

Does anyone wish to testify?

Neither seeing nor hearing any indication that there is, we did accept a number of public comments at the beginning of the day. Is there anyone present who has not had an

opportunity to do so that would like to offer a public comment here? At this point in our hearing, neither seeing nor hearing any, I want to move on quickly to the issue of the economic impact statement, which we have quickly --

MS. MANNING: Mr. Hearing Officer?

HEARING OFFICER FOX: Yes, Ms. Manning.

MS. MANNING: I had reserved the right to call Mr. Trainor back to testify in response to Dr. Keefer's testimony.

HEARING OFFICER FOX: It appears you would like to do so?

MS. MANNING: I can do it whenever you want, I just wanted -- I didn't know if you were closing the hearing, and I just wanted to remind you that I had made that request.

HEARING OFFICER FOX: I was moving in that direction, and I appreciate your reference to it, and if it's appropriate --

MS. MANNING: Whenever. I don't mean to upset your timing.

HEARING OFFICER FOX: No. It's perfectly fine. If you would like to do that, now would seem to be a very good opportunity to do it, and

we can have Mr. Trainor sit in the witness chair once again.

Mr. Trainor, you have already been sworn, and Ms. Manning has a question she would like to ask.

DAVID TRAINOR,

having been first duly sworn, was recalled as a witness and was examined and testified as follows:

FURTHER RECROSS EXAMINATION

BY MS. MANNING:

Q. I do. First of all, Mr. Trainor, you listed the testimony of -- I know you read Dr. Panno's testimony. You listed Dr. Keefer's testimony. You also said his testimony. Do you -- could you, first of all, speak to the practical experience you have on the issues that they discussed, and then maybe go through some of the points of their -- of the testimony, and I can walk you through some of that, but particularly starting with -- starting with this whole -- his point on nutrient transport, could you enlighten the Board, first of all, on your experience on nutrient transport?

A. Sure. I tried to talk about this before. I alluded to some concepts that deal with groundwater flow and transport of contaminants to the water table. The problem that I see in some of this in looking at the facts, the -- when you land apply waste, it's going to follow an unsaturated flow path by gravity until it reaches the water table. Okay. That's a fact of life. Once it reaches the water table, it's going to follow hydraulic -- the hydraulic gradient before it reaches its discharge point and it's going to be subject to porous medium flow. The problem that I see in some of this testimony is that we are kind of mixing things up when we talk about rapid transport of groundwater in fractured conditions.

Okay. First of all, we are talking about macropores, however they are defined. Again, I won't talk about the permanence or lack thereof about them. If we are following fracture flow down to the water table, it's going to follow a preferential path to reach that point. Once it reaches the water table,

it's subject to the hydraulic behavior of the aquifer. It follows what's called Darcy's Law. It's the permeability -- the resistance of flow is based upon groundwater, which is just like surface water flows from a point of high pressure to low pressure, and the resistance against the porous media controls that rate.

Okay. It's not going to be some rapid movement of groundwater through some kind of solution channel where it's going to cascade out.

We talked about springs that have been operating, because there is a point of recharge where there is a consistent source for that spring so that there is a higher point of pressure that allows the water to flow by gradient out through that spring. Okay. Contaminants move with the groundwater at the same rate.

If they don't follow that path, they are going to be following some kind of unsaturated flow condition. So there has to be a continuous source of the material to cause that draining. And the only way you can

determine a value for the rate of flow in most karst conditions is to run what's called a pump test. So you would have to put in a pumping well and a series of observation wells and measure the reaction of those observation wells you pump over time from that observation well.

That's the only way you are going to be able to determine what is the actual flow in the groundwater -- in the groundwater environment. It has nothing to do with flow through fractures of material that is discharged to the surface, which by the way is a finite source, because when you discharge manure, it's not like a rainstorm, a continuous rainstorm for 24 hours. It's a finite amount of water that's going to be discharged to the surface, and it's going to basically follow the fractures or whatever mechanism down to the water table and then be controlled by the hydraulic behavior of the aquifer.

Q. Thank you. There is specific suggestions that Dr. Keefer made in terms of rule changes that I want to go through with you and sort of seek your opinion on them. The

first is that he has asked that the definition of groundwater be changed, providing a demonstration of the water level in a shallow well. Could you comment on that, like what your opinion would be on the necessity of doing that for environmental protection in the context of this rulemaking?

A. First of all, that is -- it's correct to say that to determine the actual static water level of a saturated condition, a well is required. You can't determine where it is otherwise. However, in trying to control -- in trying to get that information for land spreading would require a series of wells in the area where you would land spread in order to determine where the water table is. Now, that would require some cost to put those well points in.

It would also -- and I -- when we were thinking about this, it also would create one series of very large macropores, because that's what a well is. Again, it's just a big hole in the ground, a permanent conduit, but that would be the only way that you would be able to get

the actual level of the water table if you knew exactly where the water table was in order to meet that requirement.

I think it's -- I personally believe it's onerous, because the rule itself is conservative. To -- and you could base that on as Dr. Keefer said, for example, USDA soil surveys.

Q. They also talked about tiles, particularly Dr. Keefer talked quite a bit about tiles, and suggested that in Section 502.106(b)(1) he would encourage consideration for inclusion of subsurface drainage tiles in the section requiring NPDES permitting.

Could you talk to us a little bit about underground surface tiles in agricultural areas, particularly in Illinois, and the nutrient transport issues related to them as it would relate in the context of this rulemaking?

A. My reading of the testimony and my experience, of course -- and I think there were some statistics that were shown about the agricultural fields in Illinois are heavily tiled. There was a number of 35 percent of the

agricultural fields in Illinois that are tiled. Again, I don't know what that's based on, but again, farmers over decades have been putting in tile systems as Dr. Keefer says, to lower the water table in order to try and shift water away from the root systems.

My understanding of that is that if you tie that into the rule about making that a requirement, then the farmer would have to determine exactly where his tile systems were, and I would hazard a guess that farmers probably don't have that information, because many of those tiles were installed decades or even scores ago and that there is no record of those tiles. So consequently trying to develop a monitoring program for those tiles in itself would be difficult, to say the least.

Regarding Dr. Keefer's discussion about the transport of contaminants through those tile systems, he is correct, because research has shown that is a potential conduit for contaminants to be transferred. However, I would like to say this. We have been land spreading on these areas for decades, just like

the tile systems have been in place for decades, and I would ask what is the record of contaminants causing adverse consequences because of that transfer system that's already in place, and based upon the rule that's being put in place, which is, I think, more protective than the current conditions, I don't see any sudden change unless, of course, there are catastrophic failures, which could happen at any time. But I don't see any change in the regard for potential for contamination to be transmitted per those existing tile systems any more than they already have -- are in their current status.

Q. Okay. So given that, it appears to me then with his suggestion in 502.615(a)(6), nutrient transport, you would not support his recommendation as to the Board changing its current rule?

A. That's correct.

Q. Also, he talks in -- he suggests in 502.620 in protocols to land applied livestock waste, Subsection K, already it requires that livestock waste by applied at no greater than

50 percent of the agronomic rate. He suggests that the soil survey of the USDA be used as an indicator of what the water table is. Would you like to speak to that as well?

A. I did briefly before, but the USDA as Dr. Keefer said, the soil surveys are produced for counties all over the country. They rate the various soil types based upon their origins. They usually have in there information on engineering properties, as well as the water table location for seasonal high.

The recommendation to look at that information to determine the seasonal high, I don't see a problem with that, because if it -- you know, if it says that the seasonal high water table is within two feet, then I would think that the farmer would want to be able to determine that himself if he wants to use that particular field for land application. Like I said, the only way that you are going to determine where the actual water table is, is through -- through actual methods.

Q. And going back to the discussion on tiles for a minute, there was a discussion by

Mr. Keefer -- Dr. Keefer about the oxidation of water in the tiles, at which point he spoke about your prior testimony and said that it just isn't true in terms of the oxidation of the water. Could you speak to that point that he made?

A. Yeah. Dr. Keefer made the comment about my comment that the groundwater environment is -- as a reducing environment. I don't recall saying all ground wanter is reducing, but I said, by and large, it is a reducing environment. That's true.

There are occasions, just like any other, that there can be oxic conditions in groundwaters. In very fractured bedrock where you have shallow bedrock near the surface, that can certainly be measured. By and large, the groundwater environment worldwide tends to be reducing, because we use that fact in our studies of contaminant transport. This is why, by and large, most pathogens and most bacteria that gets into the groundwater environment doesn't survive. That's a fact.

I mean, it's just a function of the

fact that Dr. Keefer attested to, the reason you put in a drain tile system is to reduce the water level in order to allow the roots to maintain their oxygen levels. Because once the groundwater environment approaches, you have a non-oxygenated environment. So again, I'm not saying that all groundwater is reducing. I am saying that the large groundwater that we have on this planet is generally reducing. It's not all reducing, and there can be conditions where it can be oxygenating.

Q. And he also suggested, I think, in his testimony that he questioned the value of site specific evaluations in karst areas as to the practicality -- or not necessarily the practicality, but the viability for livestock facilities. Could you speak to the whole issue of a site specific evaluation for the determination, A, of placing a CAFO in a specific area or B, the land application of waste in that area?

A. When it comes to siting a CAFO -- and I can speak to my experience here at Nora Dairy, Tradition South area or whatever name we

provide. And we mentioned here earlier in the testimony about how the work was abandoned at the site at that facility. We were actually going about doing site specific karst investigations at that site. To perform that work, we had to do what was called a surface geophysical survey of that entire area where those ponds were located and the purpose of the survey was to look at fracture orientations in the bedrock below the proposed ponds.

From that information, then we had to -- at the concurrence of EPA develop a work plan in order to try and look at where logical locations would be for putting injection wells to put in tracer dyes and developed a plan to look at how we would do that tracing over squares miles. That in itself was a substantial investment by the owner of the facility before he decided to abandon it.

We never did those tests, largely because of the fact that he was pursuing, you know -- it was ratcheting up the bill for doing the work. If we take the testimony that I read on doing tracer studies or doing trenching to

evaluate site specific karst conditions, that would be an extremely expensive effort. The -- to determine an -- I agree with Dr. Keefer, karst is a region. Okay? It's a determined by, you know, changes in tectonic forces and weathering and erosion of geologic units.

But if an applicant is confronted with putting a manure pond that's concrete lined or steel lined versus determining if there were karst features below, he is going to have to make a decision on how to do that, and that's -- you know, in a sense, doing work to do site specific -- to actually confirm karst conditions would be extremely expensive.

Now, I would ask the question, if we are doing karst evaluations for land spreading to be so prohibitive that it wouldn't be worth it. And again, going back to the recommendations that were made by the Environmental Groups to provide this 50-foot separation, we would basically be eliminating much of any area in the Driftless zone, which occupies much of this area in northwest Illinois for any land application for manure waste.

MS. MANNING: Thank you.

HEARING OFFICER FOX: Any follow-up questions for Mr. Trainor?

Neither seeing, nor hearing any from the Agency or on the part of the Environmental Groups -- did I see -- Ms. Olson, I'm sorry. I didn't see you hand. My apologies. Please go ahead.

MS. OLSON: No. I thought you were moving on. I'm sorry.

HEARING OFFICER FOX: But you have exhausted your questions for Mr. Trainor? Very well.

Mr. Trainor, thank you once again for your testimony. Did you wish to be heard before we go any further on our order of proceedings?

MS. WILLIAMS: I'm just trying to remind you that I did have one exhibit I have been carrying around to all these hearings that I would like to not take back home with me.

HEARING OFFICER FOX: This is our final hearing on the calendar, Ms. Williams. If you would like to describe what you have and move for the admission of it into the record, I think we can deal with that very quickly.

MS. WILLIAMS: The document I have is a document that we -- it's really a replacement document for Attachment F that was submitted with our proposal. And what we have referred to it as is Compiled CAFO Final Rule. The document was an attempt by USEPA to combine the regulatory language from the 2008 and 2003 federal rules into one document, and because USEPA did another direct final rule this summer amending the federal rule to address changes from the National Pork Producers case, that document then has been updated on their website from July 30th, 2012, and we wanted the record to be complete and accurate.

So I will defer to you whether we should make it a formal exhibit.

HEARING OFFICER FOX: Actually, I would be willing to entertain a motion, Ms. Williams, to introduce this as an exhibit with the sense that you would wish this to be the substitute for Attachment F with your original March 1st rulemaking proposal.

MS. WILLIAMS: So moved.

MS. MANNING: And we are perfectly

comfortable with that.

HEARING OFFICER FOX: No opposition obviously from the Agricultural Coalition. Do the Environmental Groups have a position on the motion?

Neither seeing nor hearing any, Ms. Williams, that motion will be granted. This will be entered into the record as Exhibit No. 24 for your notes, and I will mark that, and it will be so admitted.

MS. WILLIAMS: Thank you so much.

(Whereupon, Exhibit No. 24 was marked for identification and admitted into evidence.)

HEARING OFFICER FOX: Anything further on the part of the Agency, or did that exhaust the --

MS. WILLIAMS: That's all we have.

HEARING OFFICER FOX: Very good. Let me establish once more, I believe we have now exhausted -- and thank you, Ms. Manning, for reminding me of your interest in recalling Mr. Trainor. We have exhausted the pre-filed testimony. Let me quickly ascertain, is there anyone who has not pre-filed testimony, but

wishes to testify today present here now, or is there anyone who wishes to offer a comment who has not already done so?

Neither seeing nor hearing any indication that there is, I would like to move on to the issue of the economic impact study and a couple of other procedural issues before we can adjourn fairly quickly. With regard to that study, Section 27(b) of the Environmental Protection Act provides that the Board must request that the Department of Commerce and Economic Opportunity or DCEO request that it conduct an economic impact study of proposed rules before the -- before the Board adopts them.

The Board must then make either the economic impact study or the department's explanation for not conducting one available to the public at least 20 days before a public hearing. For the record, in a letter dated March 22nd, 2012, the Board's chairman, Tom Holbrook, requested that DCEO conduct a study of that nature on this specific rulemaking proposal, and specifically requested a response

by May 1st of 2012, and the Board has to date received no response from DCEO.

Is there anyone who would like to testify either regarding the Board's request or DCEO's absence of a response to that request?

Neither seeing nor hearing any, why don't we go off the record just for a moment or two to address a quick couple of procedural issues.

(Whereupon, a short break was taken.)

HEARING OFFICER FOX: In going off the record, the participants at the hearing today discussed procedural issues going forward in this docket. First, copies of the transcript are expected to be available in the Board's office by Wednesday, November 28th of 2012. Once that is received by and filed with the Board, it will be posted to the Board's website where it can be viewed, copied and printed in its entirety.

In discussing the issue of filing post-hearing comments, the participants agreed to a deadline of Wednesday, January 16th of

2013. On the record at a previous hearing the deadline to respond to the Agriculture Coalition's proposal to amend the Agency's original proposal was granted. So the responses to the Agricultural Coalition's proposal would become due with the final post-hearing comments, again, on the date of Wednesday, January 16th, 2013.

The deadline for any participants to respond to those post-hearing comments, those final comments due on January 16th is Wednesday, January 30th of 2013, and that will also serve as the deadline for any individual comments generally on the proposal.

I do want to remind everyone that filing with the Board whether paper or electronic must also be served on the Hearing Officer and those participants who are on the service list. The service list is accessible through the Board's web page, and we have strived to maintain that accurately. You can always check with our Board's Clerk as well in person or on the telephone, if you wish to confirm that you have the most recent version of

that list.

If you have any questions about procedural aspects of this rulemaking, contact information for me and for the Board's Clerk is available on the Board's website. Are there any other questions or issues to address before we adjourn?

If we have covered them all, I certainly at the conclusion of five hearings owe thanks to all of you who are present. It has involved a great deal of time and travel on your part. It's appreciated by the Board in amassing its record. We will adjourn and we certainly thank you all.

(FURTHER DEPONENT SAITH NOT.)

I, KARI WIEDENHAUPT, do hereby certify that the foregoing was reported by stenographic and mechanical means, which matter was held on the date, and at the time and place set out on the title page hereof and that the foregoing constitutes a true and accurate transcript of same.

I further certify that I am not related to any of the parties, nor am I an employee of or related to any of the attorneys representing the parties, and I have no financial interest in the outcome of this matter.

I have hereunder subscribed my hand on the 25th day of November, 2012.

Kari Wiedenhaupt

KARI WIEDENHAUPT, CSR

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