D-15128

STATE OF ILLINOIS)
) SS:
COUNTY OF KENDALL)

BEFORE THE PUBLIC HEARING OFFICER

In The Matter Of:

APPLICATION FOR LOCAL SITING APPROVAL
PROPOSED WILLOW RUN RECYCLING AND DISPOSAL FACILITY
KENDALL LAND AND CATTLE, L.L.C.
WASTE MANAGEMENT OF ILLINOIS, INC.
KENDALL COUNTY, ILLINOIS

REPORT OF PROCEEDINGS had and

testimony taken at the hearing of the above-entitled

matter before PATRICK M. KINNALLY, Hearing Officer,

taken by Shannon M. Frey, CSR 084-2277, and Amy K.

Bateman, CSR No. 084-003803, on Monday, September 22,

2008, at 6:00 p.m., at 6617 Chicago Road, Plattville,

Illinois.

PRESENT:
MR. PATRICK M. KINNALLY, Hearing Officer;
PEDERSON & HOUPT, by
MR. DONALD J. MORAN
161 North Clark Street, Suite 3100
Chicago, Illinois 60601-3242
Appeared on behalf of Waste Management of Illinois, Inc.

JEEP & BLAZER, LLC by
MR. MICHAEL S. BLAZER, and
MR. DEREK B. RIEMAN
24 North Hillside Avenue, Suite A
Hillside, Illinois 60162 and

KENDALL COUNTY STATE'S ATTORNEY, by
MR. ERIC C. WEIS
807 West John Street
Yorkville, Illinois 60560
Appeared on behalf of the County of Kendall;

SCOTT M. BELT & ASSOCIATES, P.C., by
MR. SCOTT M. BELT
105 East Main Street, Suite 206
Morris, Illinois 60450
Appeared on behalf of City of Morris;

MR. DELBERT S. LYLE,
2100 Manchester Road, Suite 945
Wheaton, Illinois 60187
Appeared on behalf of Lyle Enterprises, LLC;
MUELLER & ANDERSON, P.C., by
MR. GEORGE MUELLER
609 Etna Road
Ottawa, Illinois 61350
Appeared on behalf of Kankakee Regional Landfill, LLC;

LAW OFFICES OF DANIEL J. KRAMER, by
MR. DANIEL J. KRAMER
1107A S. Bridge Street
Yorkville, Illinois 60560
Appeared on behalf of Village of Minooka.

ALSO PRESENT:
MS. RENNETTA MICKELSON, Kendall County Clerk;
MR. ROBERT E. DAVIDSON, County Board Member;
MS. JESSIE HAFENRICHTER, County Board Member;
MS. NANCY MARTIN; County Board Member;
MS. PAM PARR, County Board Member;
MR. JOHN P. PURCELL, County Board Member;
MS. ANNE VICKERY, County Board Member;
MR. JEFF WEHRLI, County Board Member;
MR. BILL WYKES, County Board Member.

I N D E X

WITNESS:

CHARLES NORRIS

EXAMINATION BY:	DX	CX	RDX	RCX	EX
Mr. Mueller	1479				
Mr. Moran	1526				
Mr. Kramer	1530				
Board Member Davidson	1534				
Board Member Purcell	1542				
Board Member Wehrli	1555				
Board Member Wykes	1563				
Board Member Vickery	1569				
Mr. Milliron	1572				
Mr. Blazer	1580				
Hearing Officer Kinnally	1584				

WITNESS:
JEFF VOGEN

EXAMINATION BY:	DX	CX	RDX	RCX	EX
Mr. Belt	1602				

I N D E X (Cont'd)

EXHIBITS:	ID	REC'D
Kankakee Regional Landfill Exhibit No.11	1479	1527
City of Morris Exhibit No. 1	1605	
City of Morris Exhibit No. 2	1608	
City of Morris Exhibit No. 3	1613	
City of Morris Exhibit No. 4	1614	
City of Morris Exhibit No. 5	1619	
City of Morris Exhibit No. 6	1620	
City of Morris Exhibit No. 7	1624	
City of Morris Exhibit No. 8	1625	
City of Morris Exhibit No. 9	1626	
City of Morris Exhibit No. 13	1632	
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City of Morris Exhibit No. 29	1645	
City of Morris Exhibit No. 30	1647	
City of Morris Exhibit No. 31	1653	

HEARING OFFICER KINNALLY: Okay. This is the reconvened hearing of the Applicant for the landfill siting. Waste Management and Kendall Land and Cattle is the Applicant.

Would the County Board please introduce themselves?

BOARD MEMBER DAVIDSON: Bob Davidson.

BOARD MEMBER VICKERY: Anne Vickery.

BOARD MEMBER MARTIN: Nancy Martin.

BOARD MEMBER HAFENRICHTER: Jesse Hafenrichter.

BOARD MEMBER WEHRLI: Jeff Wehrli.

BOARD MEMBER WYKES: Bill Wykes.

BOARD MEMBER PARR: Pam Parr.

HEARING OFFICER KINNALLY: And Eric Weis is with us, our state's attorney. We have a quorum.

And I think when we left off on Thursday, Mr. Mueller indicated that -- well, let me just stop that for a minute.

I think Grundy County was in their case with respect to their witnesses. Do you have any other witnesses?

MR. PORTER: Mr. Kinnally, thank you. No, we do not. No, we have no further witnesses; however, we do have a motion that I've handed up to you,

Mr. Kinnally, and have not handed out yet to the Board, though, I have given it out to parties, and it was sent by e-mail yet today.

I'm prepared to present that when you are ready to hear me.

HEARING OFFICER KINNALLY: Well, you can present it, of course, but we're not going to hear it right now because nobody has read it, and maybe we'll hear it later.

I don't know, has anybody -- I just received a copy of this right now, and I'm sure the Board wants to read it, so I don't think it would be fair to consider it until everybody has had the opportunity to read it first. Then maybe they'll want to respond, but you can hand it out and file one with the Clerk.

I'm informed by Ms. Mickelson the County had some internet problems today, and, unfortunately, robbed them of their service. So hopefully it will come back tomorrow, but we don't know that -- or she didn't know that yet because they had to go out to seven different vendors to try to find some part or something. Somebody is coming tomorrow, hopefully, to try to fix it.

So if you can't get into the internet. That's the reason. That's what I have been informed, anyway.

Okay. Why don't we start with Mr. Mueller, and then at the break maybe we can take a look at this motion and people can respond. If they want some time to respond, then we'll go from there.

Is that agreeable to everyone?

(No response.)

HEARING OFFICER KINNALLY: Mr. Mueller?

MR. MUELLER: Thank you.

Is my next Exhibit No. 10 or 11?

HEARING OFFICER KINNALLY: I don't know.

BOARD MEMBER MICKELSON: I forgot my booklet.

HEARING OFFICER KINNALLY: I'm not sure. She'll have to look.

Are you going to testify?

MR. NORRIS: That's my understanding.

MR. MUELLER: We would like to call Charles Norris.

HEARING OFFICER KINNALLY: All right. Stand up and raise your right hand and state your name.

MR. NORRIS: Charles Norris.

(Witness sworn.)

HEARING OFFICER KINNALLY: Thank you. I'll go back and look at my notes, Mr. Mueller.

MR. MUELLER: Mr. Blazer tells me it's 11 is my next exhibit.

HEARING OFFICER KINNALLY: I think that's accurate. Go ahead.

Okay. I have been handed Exhibit 11. This is the Kankakee Regional Landfill 11, which appears to be a CV for Charles Norris, N-O-R-R-I-S. Thank you.

(Kankakee Regional Landfill Exhibit No. 11 identified.)

CHARLES NORRIS

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

DIRECT EXAMINATION

BY MR. MUELLER:

Q. Would you state your name, please.

A. Charles Norris, N-O-R-R-I-S.

Q. Mr. Norris, what is your profession?

A. I'm a geologist.

Q. And are you licensed in the State of Illinois?

A. Yes, I am.

Q. And what are you licensed as in the State of Illinois?

A. A professional geologist.

Q. Now, I've handed out as Kankakee Regional Landfill Exhibit No. 11 a copy of your curriculum vitae. I believe it's last year's version.

Was it true and accurate at the time that it was prepared?

A. Yes.

Q. Do you want to just briefly bring us up to date on what significant career activities you've taken part in since this resume was written?

A. In looking at it, there are a couple of missing landfill siting hearings in Illinois, both of which were in Kendall County.

I was involved in hearings before the Nuclear Regulatory Commission's hearing board on a site on the eastern flank -- southeastern flank of the Illinois Basin where the geology was glacial sediments overlying Ordovician bedrock that had been subject to karst development through time.

I was invited to testify before a congressional subcommittee in June on waste disposal or waste placement in mining environments.

I was asked by the Commonwealth of Pennsylvania to serve on their Department of Environmental Quality's recommendation committee regarding waste placements under their regulations as beneficial use.

Q. So you've kept busy?

A. I have kept busy, yes.

Q. Now, Mr. Norris, have you had an opportunity to review this Siting Application?

A. Yes, I have.

Q. In addition to the review of this siting application, what other documents and records have you reviewed?

A. I reviewed the Application for Landfill Siting Hearing essentially at this site a year ago.

I reviewed the application for the landfill siting hearing next-door, diagonally across the intersection from this hearing -- or from this Board.

I reviewed the Lang reports that were provided, I believe, to the Kendall County regarding possible quarrying expansion near the Central Limestone facility, 47 and Whitewillow Road, supplemental topographic information in the vicinity

of this site.

I twice visited the pond that has been excavated at the nursery adjacent to this site to the east, and spoken with the owner regarding the construction of that pond.

Q. And looking --

A. Looked at additional air photos accessible through Google Earth. I think that probably summarizes it.

Q. And you were present for the testimony of Ms. Underwood and Mr. Nickodem?

A. Yes, I was. Ms. Underwood. Parts of Mr. Nickodem.

Q. Okay. And, Mr. Norris, I just want to review one of your professional experiences.

While you were at the University of Illinois from 1987 to 1992, you were manager of the Laboratory For Supercomputing in Hydrogeology?

A. Actually, I was manager of the Industrial Affiliates Consortium for the Laboratory For Supercomputing in Hydrogeology. Dr. Bethke was head of the center.

Q. All right. Let's talk about this Application.

What, in your opinion, is the most important geologic or hydrogeologic aspect of this site?

A. Well, certainly the biggest change, and, therefore, the biggest, I think, focus of this siting application, that the change from a year ago is the emphasis and reliance upon what is referred to as a confining layer between the landfill and not only the aquifer, but, also, the water table.

Q. And have you had an opportunity to look at the evidence for the existence of that confining layer?

A. Yes, I have.

Q. And do you want to discuss that evidence?

A. Yes. The described evidence for the confining layer is -- is approached from multiple directions, and that's as it should be.

The strongest arguments would be the nature of the unconsolidated sediments. They have a lot of fine grain materials in them. Fine grain materials can form confining layers.

The permeability data from the core samples that were taken in the fine grain materials and permeability data that are -- were taken across

from the -- or through the fine grain materials in bore holes as slug tests.

Q. Now, the soil borings from 2007 have been reinterpreted; correct?

A. Yes, they have.

Q. What's your impression of that?

A. The best opportunity to get a good description of a soil boring is by the rig geologist at the time the borings are taken from the ground.

The description that is obtained when they are first removed from the -- from the boring device have had the least opportunity for non-in-place environmental changes to that material.

So given the choice, if it's all things being equal about the people describing the cores, I would prefer the fresh cores. After they've sat around for a while in a warehouse, you're at a real handicap in terms of offering a reinterpretation.

Q. With regard to the soil borings, there were also some laboratory samples tested for conductivity under laboratory conditions?

A. Yes.

Q. Do you find that compelling evidence of a confining layer?

A. No, I don't, for a number of reasons.

One, when you're taught to do these laboratory tests, you are admonished to select from the materials available to you those materials that are intact, unfractured, competent samples.

So you are inherently biasing your results to samples that are looking at the densest, most consolidated, least likely to have things like fractures in them that are available.

It's the nature of the test that you have to have a good -- physically good sample in order to make the test work.

Second, in this particular case, the protocol that was used was to pressurize these samples under an axial load and a horizontal stress load that's comparable to about, depending on the samples you've got, somewhere in the order of 75 to 80 feet.

Now, what that does is compress the sample. It reduces the size of the pores. It reduces the sizes of the pore throats, and gives you a lower number than you would get if, for instance, they were compressed back to the approximate depth, which, in this case, is generally between six and 10 feet, that they were originally recovered from.

So the numbers that you're getting are not numbers that are representative of what these materials look like in nature.

I've on the slide on the overhead shown an example of the laboratory permeability data from one of the Equality Formation samples from B-38B, and it's directly from the permit application on Page D-1-51.

It, unfortunately, doesn't show up well on this slide projector; but if you notice over here in the upper two blocks of data, if you compare the volume of the sample after the test and the volume of the sample before the test, you'll notice that this compression not only squeezed it down, but it squeezed it down beyond its ability to expand back up when they took the load off.

So they've put it in an effective vise. They literally have changed the structure in the process of getting it down to take that measurement.

And if you look at the other eight of these samples, and there are only nine available, I believe each of them shows an actual volumetric reduction of that sample under that stress load.

Q. Now, is there a clear relationship between laboratory permeability measurements and actual permeability out in the field where the material originated from?

A. No, there is not, for a variety of reasons, one of which, of course, is that the laboratory measurements may be taken under conditions that are not representative of the field; but, secondly, there are all kinds of hydraulic elements, structures, that exist in the field that cannot exist in a sample that's about two inches thick and three inches in diameter.

Those features have to be evaluated by looking at alternative sampling techniques, one of which that gives you an intermediate size, intermediate scale of observation, are slug tests.

If laboratory tests could be extrapolated to field conditions, there would be no reason to do slug tests. There would be no reason to do aquifer tests.

Q. Were slug tests done here?

A. Yes, they were.

Q. And what comment do you have on them?

A. The slug tests that were done in the

unconsolidated sediments, were done in piezometers that were designed and constructed in a manner that the unconsolidated sediments were being tested, but, also, there was the potential or possibility that more permeable underlying sediments would be interfering with a clear interpretation for the results of those slug tests, a built-in, if you will, deniability of the information that was obtained from the slug tests.

Q. And could the slug tests easily have been designed so as to give us accurate, uncontaminated field scale permeability information?

A. Yes.

Q. Now, do you believe, based upon that, that the slug test permeability results are entirely useless?

A. No.

Q. Why not?

A. They're not entirely useless. They are biased or potentially biased by the design and construction of the piezometers that were used; but if you look at the total area of soil being investigated in an eight-inch borehole that is five or 10 feet long, and that is essentially what the slug test is designed to look at, is how ever many feet of

perforations or saturation you have times the area -- those feet times the circumference of an eight-inch well bore, that gives you -- for a 10-inch piezometer, it gives you almost 21 square feet of surface area.

If you look at the flow area available for water coming up from a high permeability zone underneath you, that is just the area of the eight-inch hole minus the area of the plugged well that extends into that. That's about a third of a square foot.

So the surface area that is providing flow into your -- into your well bore is overwhelmingly representative of the unconsolidated sediments where it's postulated there's a confining layer.

If you look at the one piezometer that unambiguously is completed in the unconsolidated sediments, which is the piezometer -- water table piezometer 53, and on the screen now is the slug test interpretation of that well, it's found on Page G-1-60 of the Application.

You can see that the horizontal hydraulic conductivity that the computer matched to the data was 1.6 times 10 to the minus 4 centimeters

per second -- yeah, centimeters per second.

That test is not -- does not involve any penetration of the aquifer underneath. It is not the lowest value of the slug tests. There are slug tests that may be drawing on information from the deeper aquifer but still have lower permeabilities than that. It certainly isn't the highest.

But it, without any influence from the underlying aquifer, has a hydraulic conductivity that is quite comparable to the conductivity within the uppermost aquifer.

Q. Now, that number, 1.6 times 10 to the minus 4, is that representative of a confining layer or of an aquifer?

A. No. It is a hydraulic conductivity that is typical of what material can be used for an aquifer. It is also typical of the hydraulic conductivities that were measured for this bedrock aquifer.

Q. Now, there was also testimony that a portion of the unconsolidated sediments are unsaturated near the ground surface.

Did you find the evidence for that to be persuasive?

A. No, I did not. Several aspects of the data suggest that that is -- that there is not a deep water table and that there is not a significant unsaturated zone.

First, if you have a thick unsaturated zone in a relatively deep water table, you will generally find yellow-brown oxidized sediments down to about the depth where the water table is found or at least the area over which the water table moves up and down through time.

When you look at the color descriptions in the borings and the verbal descriptions in the borings, that oxidized-leached zone that would exist above the water table is generally constrained to the first one-and-a-half to three feet. That is not characteristic of an unsaturated zone.

Once you get two or below that interval in the boring logs, the boring logs are universally described as either being moist or wet. Even where there are sand stringers described, the cores are still moist or wet.

If you have an unsaturated zone, if you have a zone where your sand stringers are not

carrying water, in my experience, such sands will be characterized and described as being dry.

So there's no coring evidence that suggests that these zones are -- or that there's a significant unsaturated zone.

Q. What about the field tiles at this site adds to your beliefs?

A. Yes, it does. I have a fair amount of personal experience with agricultural field tiles. Field tiles are not -- agricultural tiling is not put in above the water table.

The tiles are put in very specifically to lower the water table deep enough that the ground is tillable, that it can be farmed, particularly in April and May when water tables tend to be high, but not so deep that the water table is below its ability -- below the ability of agricultural crops to tap into the water at the water table.

So they're put in two to three feet below the ground surface. The idea is to keep high water levels in the water table to a depth that gives you two or three feet that your tractors can run over, but potentially leaves the water table as shallow as two or three feet so that the wicking action of water

from that water table can provide water to your corn or your beans.

To put agricultural tile in above a water table is to put in a conduit that doesn't have access for water to drain.

Q. Now, Ms. Underwood testified she thought the tile system was above the water table; correct?

A. I believe she testified to that effect, and certainly the Application describes it that way.

Q. Now, the water table elevations reported in the Application are based on some water table wells or piezometers that were set up.

Do you have a comment on the methodology for doing that?

A. Yes. The water tables that are described in the Application are found on Figure G-4-1, which I have on the screen for reference purposes.

These are water table measurements that are contoured based upon head levels in the water table maps in the same piezometers that are potentially influenced by the aquifer underneath them.

In this case, the aquifer underneath them, if there's a connection, is going to influence the level of water in that piezometer.

In this particular setting over most of this site, we have a downward gradient; that is, the water tables shallow are higher than the -- the water levels shallow are higher than water levels from piezometers that are completed deeper in the ground. It means that water is moving vertically downward.

If there is a connection, if this completion technique in fact created a connection between the unsaturated -- or not the unsaturated, the unconsolidated water table and the piezometric service in the aquifer, that connection will suppress/depress the head values; and the head values on this map that are being contoured would be values that if they are not accurate, they would be lower than the actual water table in the unconsolidated sediments.

Q. So you believe the actual water table is likely to be higher than what's reflected there?

A. Yes.

Q. And the difference here is, again, a direct result of the well completion plan that the Applicant chose?

A. That's correct.

Q. Now, even at these reported levels, does the water table intersect the bottom of the liner in

certain places?
A. Yes, it does. In some of the sump areas on the eastern side of the facility, even as it exists today, the liners are at and below the water table.
Q. Now, let's talk about the hydrologic evidence that we do have. Is it consistent with the interpretation of the unconsolidated sediments being a confining layer?
A. No. I think the hydrologic evidence is overwhelmingly to the contrary, that water in the fine grain, unconsolidated sediments is intimately connected to the bedrock aquifer.
Q. If you would explain.
A. There are several lines of evidence. One are vertical hydraulic gradients. Table G-5-21 is a two-page table that includes -- or that calculates some of the vertical gradients on the site.
Also in the Application, Table G-3 provides the piezometric elevations of piezometers on the site. Those are the data from which the vertical gradients are provided -- or are calculated.
The raw data are in the tables. I do better, quite honestly, with graphs; and so I have taken the data in those tables and in the comparable

tables from the previous application and I have graphed those data against time.
So that on the left we have the head of the water in the well, and on the horizontal axis we have the date that those measurements were taken.
And I have graphed on each piezometer the data from all of the piezometers at each nest. There are places on that site -- most places where there are more than one well, so you can see a representation of both the -- or of all of the piezometers on this. And I'll go through these to explain how they are -- how they are interpreted.
The first one is the piezometer nest, Nest 6 that was a drilling site B-31. And in this particular case, there are two piezometers. There's a shallow aquifer piezometer, which is the blue symbols, the blue triangles, and the deep Galena aquifer, which are the black squares.
And you'll notice that through time at this location, the shallow aquifer heads are always above or almost always above the deep aquifer head. That means you have a downward gradient.
There is one point in which the pattern reverses itself and you have an upward

gradient right after the first of the year.
It's a little hard to see on this, but starting in the spring, there are two readings on this graph that represent a water table well that was installed.
That water table well is virtually identical to the deep -- or to the shallow aquifer in both the magnitude of the head and, also, as this head moves vertically, as one head moves up, the other moves up.
When you have two wells in different zones that move in the same direction at basically the same magnitude, that's a very strong indication that those two wells are giving you data from the same overall aquifer.
I would also call your attention to the fact that I've used a little bit of a strange scale on the left. The reason I've used the scale I did -- the high number here is 952.2 [sic].
I scaled these data relative to the ground surface so that we can look -- at the same time we look at the changes in the heads, we can look at how far beneath the ground surface those heads are.
And so in this case we'll notice that

the heads during parts of the year are within two feet or less of the ground surface when you're talking about the shallow aquifer and/or the water table well.
And certainly most of the data from all zones are within three feet of the land surface. So that's -- that's piezometer Nest 6. If we --
HEARING OFFICER KINNALLY: Wait a minute. Go back to that. I want to ask you a question.
THE WITNESS: Sure.
HEARING OFFICER KINNALLY: No. 1, you said 952.2. I think you meant to say 592.2 at the top; correct?
THE WITNESS: Yes, I did. Thank you.
HEARING OFFICER KINNALLY: Now, is that intermediate line there, is that 587 or is it 597? I can't read it.
THE WITNESS: This one?
HEARING OFFICER KINNALLY: Yeah.
THE WITNESS: 587.2 --
HEARING OFFICER KINNALLY: Thank you.
THE WITNESS: -- and bottom one is 582. There's a one-foot increment.
HEARING OFFICER KINNALLY: Thank you. Go ahead. I'm sorry to interrupt you.

THE WITNESS: No. I appreciate your calling that to my attention.

BY THE WITNESS:

A. (Continuing.) Here is the piezometer Nest 5. Piezometer Nest 5 is at boring location 28.

Here again we have a shallow piezometer, a deep piezometer, and a water table piezometer.

The heads for all three of these piezometers in the period of record are all within three feet of the ground surface.

The response of these relative to each other is that they are almost identical. There's some slight indication that perhaps the shallow piezometer reacts a little more strongly than the deep piezometer, but for all practical purposes, measuring one of these is equivalent to measuring the rest.

That indicates no downward gradient at this site at this location, and with all of the piezometers at these kinds of depths moving together in terms of rising and falling and rising and falling essentially the same amounts, the evidence is that these are all part of the same aquifer system.

BY MR. MUELLER:

Q. To look at the bigger picture, Mr. Norris, is there evidence that the area of the proposed footprint is, in fact, a recharge area for the aquifer?

A. For the most part, yes.

If we go through these, the heads in this set of data, for instance here is the piezometer Nest 202. The water table is higher than the intermediate -- or the shallow aquifer, which is higher than the deep aquifer; and that is, for the most part, the pattern on this site.

The bulk of this site is a recharge area with water moving downward. That is also observed and is also evidenced by the pattern of heads when you map them.

Under this site you have, if you will, a dome or a series of round contour lines. That contour line on the water table, if you notice here, you've got this sweeping curvature. You've got the same curvature where the water table is five feet higher than that. You've got that same five feet lower than that.

It's not connected because there

aren't data down here, but this kind of curvature, this kind of dome is fundamentally characteristic of a recharge area, and an area that is recharging enough water that it is influencing the heads in the aquifer.

When you get a trough that shows up, as you do over Walley Run, that's a measure of a discharge area.

So in this site, not only in the water table wells, but in the upper aquifer and in the lower aquifer you have this pattern of recharge over most of the area with local discharge, that indicates that this site is a local flow area, a local flow system. It is not an intermediate. It is not a long-term flow system. It's a local flow system.

Q. Now, does the groundwater chemistry also play a role in your opinions?

A. Yes, very much so.

The map patterns indicate you've got significant flow from the surface downward into the aquifer. The groundwater chemistry absolutely establishes that interpretation.

You have tritium in the shallow aquifer at concentrations that indicate 10 to 20 feet into the shallow aquifer. You have water that is

younger than most of the people in this room.

You have water that gets -- some of -- some of that shallow water gets down to even the deeper portions of the aquifer. That simply doesn't occur if the water that's raining on the surface doesn't get down into the aquifer and get there quickly.

You do not get active tritium by recharging near Newark. You do not get active tritium by having it migrate through a confining layer that moves at millimeters per year. The tritium is dead before it gets to the aquifer.

This aquifer is full of young water at the top that can only come locally and only if the fine grain clay materials are so compromised that they do not form a confining layer.

The second line of chemical evidence is the chloride, and in particular, the chloride and the sodium together.

The highest chloride levels are next to Whitewillow Road, and they are higher in the shallow groundwater than they are in the deeper groundwater.

The chloride concentration drops as

you move away from the road. The chloride concentration drops as you move into the aquifer.

You have the sodium in the water shallow to account for that chloride as sodium chloride; salt.

The best available, simplest explanation for that pattern of chloride and sodium is that you're looking at road salt that is affecting the upper aquifer just like the naturally occurring marker tritium is being found in the upper aquifer.

Tritium falls over the whole site. Road salt is just deposited near the road.

Q. Meaning Whitewillow Road?

A. Whitewillow Road, yes.

Q. Now, did you also have an opportunity to look at the issue of karst formation and this site?

A. Yes, I did.

Q. And what are your conclusions?

A. There is karst at this site. There is no question, I think, that there is karst at this site. It makes no difference to groundwater whether that is paleokarst or whether that is karst that formed last week.

If there are open karst passages,

water moves through them whether they formed 300 million years ago or whether they formed yesterday.

There is karst, and here is, unfortunately, a picture that on this screen, at least for me, doesn't show up well, but it's an --

HEARING OFFICER KINNALLY: It doesn't.

THE WITNESS: Pardon me?

HEARING OFFICER KINNALLY: It doesn't. It's hard to see.

BY THE WITNESS:

A. (Continuing.) In the upper left is the central quarry area where a major cave was exposed as part of the quarrying activities.

The Lang reports on the properties immediately to the south and southeast of that describe, based on geophysical evaluations, karst in that property.

On this map just at the east side in the middle is Walley Run. That's how close we are to the site here.

The former Illinois Geological Survey representative that was contacted to review these materials pointed out that just to the southeast of here Channahon, there are karst features in these

rocks. We have karst features in the borings. There are at least seven borings that appear to have karst features in them.

Alongside the -- these borings -- if you look, for instance, at Boring B-50, the -- and this is Page C-142, Appendix C-142, you see a thick section of shale or clay in the middle of what should be carbonate rock.

When a new boring was installed about five or six feet away, that shale interval is still present. It is not a fracture that was fortuitously drilled into, unless one fortuitously drilled into it twice five feet away.

Boring B-53 in the very northeastern most part of the area has anomalous clay fillings, a shallow of 65 feet, and down below the Dunleith these kinds of shale fillings are also found in Boring 2-A, which was drilled immediately adjacent to one that had 20 or more feet of clay filling in it.

To the south, Borings B-46 had Pennsylvanian-aged sediments immediately underneath the glacial sediments.

BY MR. MUELLER:

Q. Let me interrupt you here. If all of

these paleokarst features are filled, what's the big deal?

A. Well, there's no reason to think that they are all filled. Certainly there is Pennsylvanian in-filling into these, but there is -- it's very difficult to fill something perfectly.

We also have in the area immediately south of this site in the same section and in the area where last year's application are, based on the air photos -- and I know we've submitted these ahead of time, but I've superimposed last year's application.

And you will notice in these air photos, these flooded out topographic areas, the circular closed lows that pond water and have interfered with crop growth this year, these run across the site and on the last year's site adjacent to the two wells that have Pennsylvanian sediments directly underneath.

Those Pennsylvanian sediments are unquestionably tied to karst development, and that karst is affecting today's flow systems in that they have continued to subside enough that they -- they hold water after rains enough to interfere with agricultural activity.

A stronger piece of evidence toward that is if you look at the northeast corner of the site -- and this is an air photo of the northeast corner of the site -- at the intersection of Whitewillow Road and Brisbin Road is where piezometers in the B-53 nest are located.

That's the piezometer that at the shallow level it was noted is very depressed in terms of its water level relative to the others on the site.

The intermediate water -- intermediate aquifer is similarly very depressed relative to head levels on the site.

Across Brisbin Road, you have the nursery operation that has excavated a pond in this drainageway. That pond has been excavated about 29 feet until it got through the unconsolidated sediments, until it got through boulder beds, down to a competent, solid limestone bed. There were about eight feet of collapsed boulder debris in that location.

The water table on that is controlled during most of the year by a large 18-inch drain that comes into it and leaves it.

During the summer that water table or

that pond level is pumped below the agricultural drain system or the drainage system because of irrigating the nursery stock.

The water table at B-53 is essentially the pond elevation, as best can be approximated from contour maps and visiting the site. That means that somehow that pond is controlling the water level, the water elevation, from here all the way over here with no head loss or very little head loss. That means an extremely high connectivity.

More importantly, if you go to the hydrographs for B-53 -- and this is the hydrograph data -- you can see on this one, this is the water table, and at 527-and-a-half that basically matches the pond elevation when it's at its normal elevation, but the aquifer is a good five feet below that.

There is no place in the vicinity of this landfill where the bedrock aquifer can drain to to give it that kind of elevation. You have to move miles away from this site to get an elevation that's that low to which that aquifer can drain.

Q. So what's that telling you?

A. That can only be accomplished if there is some kind of a conduit through which that bedrock area

there can drain with virtually no head loss, and that is quintessential demonstration of open karst flow.

Q. Now, Mr. Norris, what could or should the Applicant have done to more comprehensively understand the potential for karst flow?

A. They should have done geophysical investigation comparable to what is done for quarrying or was done and described in the Lang reports to establish where those karst features are, and in particular, to help locate where the open karst features are.

Q. What are the -- some of the geophysical tools that could have used?

A. Oh, LIDAR imagery, electrical surveys, high frequency, seismic. Those are three fairly common techniques that can be used.

Q. All right. Let's move on then, very briefly, to everyone's least favorite subject; the groundwater impact assessment.

And first of all, it's been pointed out on a number of occasions that a GIA or impact assessment isn't even required at the siting level.

That being understood, what is the relevance of the GIA, if it is done, at this level?

A. Well, it -- a GIA, I don't think by definition, can be done at this level because it's not part of the siting process; but groundwater modeling is extremely valuable and extremely relevant.

Groundwater modeling forces you to build a single conceptual model of all of these pieces of hydrologic data.

You then test your understanding of that site -- of that -- all of that data against the unforgiving equations that describe the physics of groundwater flow, and establish whether or not it's even possible for your understanding of the site to match the data that are out there.

So it's a test of your conceptual model. It also provides a predictive tool. It lets you explore things like what happens if I get a dry year. What happens if somebody comes in a quarter or a half-mile away and puts in a major quarry?

What happens if somebody moves in across the street and digs an irrigation pond for their nursery operation?

So those are all reasons why it is a very valuable exercise and certainly relevant to finding -- coming up with findings toward the public

health, safety, and welfare.
Q. Now, if a model using realistic site-specific values predict groundwater impact, what is the likelihood that that impact will occur?
MR. MORAN: Objection; foundation. This witness has no competence to address that issue.
HEARING OFFICER KINNALLY: Well, I've got to read the question. Let me look here.
Sustained. Why don't you lay a little foundation, Mr. Mueller.
BY MR. MUELLER:
Q. Mr. Norris, have you ever done any groundwater modeling?
A. Yes.
Q. And have you used different models?
A. Yes.
Q. Are you, for example, acquainted with MODFLOW, a three-dimensional model?
A. Yes.
Q. And have you been using that for almost 20 years?
A. All of 20 years.
Q. Okay. And are you acquainted with MIGRATE?

A. Yes.
Q. Do you have your own registered copy of it, actually?
A. Yes.
Q. And have you used MIGRATE and understand how the software works?
A. Yes.
Q. Have you done modeling for other clients as a geologist?
A. Yes.
Q. You're familiar with the techniques of modeling and you know how to read the instruction manuals for the specific models?
A. Yes.
MR. MUELLER: I think that's probably sufficient foundation, particularly since he has testified twice before in front of this County Board regarding modeling done by others and by himself.
HEARING OFFICER KINNALLY: Well, that's a nice statement, and if you ask him the question, maybe you won't get an objection.
So let's go back to the question and let's see if you get an objection. Then I'll make the decision.

MR. MUELLER: All right.
BY MR. MUELLER:
Q. I think, Mr. Norris, the question was, if you use reasonable and site-specific input values in a groundwater model, and it predicts a groundwater impact, what is then the percentage likelihood that that impact will occur?
MR. MORAN: Objection; foundation.
This witness may be conversant with various models and how they are run. He maybe has even used them in certain applications.
There is no indication that any of these models have been either designed or can be implemented so as to give anyone a prediction as to the probability of some impact or some event occurring.
MR. MUELLER: That would go to weight, that objection.
HEARING OFFICER KINNALLY: I agree. Overruled. You can cross him on it later on.
You can answer the question.
BY THE WITNESS:
A. Subject to the validity of the reasonable data and the sufficiency of the amount of that data

that you're using, the -- if you've got the right model, you will get an accurate prediction of the effects; but I would not want to put a percentage number to that.
BY MR. MUELLER:
Q. Let's talk specifically about the MIGRATE model, the baseline case proposed by the Applicant in this case.
Have you had a chance to review it?
A. Yes, I have.
Q. And have you had an opportunity to review the testimony of Mr. VanHook?
A. Unfortunately I have not.
Q. Well, then I can't cut this shorter by asking if you agree with his conclusions, so I'll just ask you what your observations were regarding the way that the MIGRATE groundwater model was done in this Application.
A. The ground -- the MIGRATE modeling that was done and submitted as part of this Application is essentially meaningless.
Ms. Underwood was correct when she said that MIGRATE is not designed and is not capable of modeling contaminant transport through an

unsaturated zone.
She did not --
Q. Let me back you up.
You don't necessarily agree that the zone is unsaturated; right?
A. No, but to the extent that her representation and her belief is that it's unsaturated, she should not have even used MIGRATE.
She should have used a model that can handle an unsaturated zone. Instead of that, she tried to develop a work-around.
A work-around is what we describe as a way to use a tool that isn't quite really designed for that purpose, but maybe you can -- maybe you can get reasonable results from it. It's like taking out a screw with a dime, sometimes it works; sometimes it doesn't.
But she didn't need to do a work-around. She could have gone out, and if Waste Management or if Earth Tech doesn't have the models in-house, they are readily available. They are not hard to use.
The work-around that she came up with I can -- I can describe as being nothing short of

bizarre, and I don't know why or exactly how she came to the conclusion that this was a viable approach.
She has a system that up until she gets to the unsaturated zone is identical to the system she had -- or to her unsaturated zone, the system that is identical to what she had a year ago.
You've got the liner -- double composite liner under the landfill with a compacted clay liner underneath that that has been saturated as part of the construction process in order to get the compaction that they want.
The problem that Ms. Underwood described was that when she gets to the unsaturated zone, diffusion through the unsaturated sediments may be slower than it would be through saturated sediments.
So she adjusted not the diffusivity of the zone that's problematic, she went back to the liner system that was under the same conditions and changed the material properties of that liner system such that this year she's allowing 10 molecules to get through that system into the compacted clay liner, whereas a year ago, she was letting a million particles through that liner system.

That liner system is no different than it was a year ago. It's sandwiched between exactly the same materials, but what she's doing is cutting the amount of material diffusing through it by a factor of 100,000.
There is no reason to do that. I can think of no justification for doing that. So from that standpoint, I just don't understand the work-around, but there are other problems beyond even that that render the results meaningless.
Q. Well, let's -- before we get to those, did you rerun the model using more conventional and accepted values for diffusivity in those liner system components?
A. Yes, I did. I ran them with the numbers that were used for this facility last year, assuming that there was a water table that was in contact with the clay liner.
Q. And running the model that way, does it predict groundwater impact?
A. Running the model that way creates numbers that exceed the threshold that the Application uses as passing or failing. That --
Q. All right. Now, you said there were other

problems in the --
HEARING OFFICER KINNALLY: Wait a minute. I don't understand that. I'm sorry, I don't understand your answer.
Can you put that in some kind of way that -- a different way so -- I don't think I'm not the only one here that doesn't understand it. Maybe there is people that -- I don't understand your answer.
THE WITNESS: Okay. The -- the assessment that is in the Application is being done parallel to the way the IEPA looks at the results.
HEARING OFFICER KINNALLY: Right, I understand that. Okay.
THE WITNESS: The way that is done is you use a -- a nominal concentration of one for your contaminant. You run it through the model. You find out how small that number gets at some point in the earth at some point in time, and that is an attenuation factor.
If you then compare that attenuation factor -- well, you look at the various contaminants you may be dealing with that have concentrations other than one.

You figure out what kind of an attenuation factor that material has to undergo in order to be compliant. It may be that it has to be attenuated a million-fold.

HEARING OFFICER KINNALLY: Okay.

THE WITNESS: You calculate those minimum attenuation factors for all of your constituents, and you find the one that's the smallest -- no, you find the one that is the largest.

HEARING OFFICER KINNALLY: Largest.

THE WITNESS: And you compare those constituent-specific attenuation factors with the calculated attenuation factor from the model.

If the model attenuates that much or more, then everything passes. Everything will be below the compliance level.

If, on the other hand, the model calculates a number that is not as low or lower, then at least one constituent fails, if you will.

My response to Mr. Mueller was that if you use last year's properties for the -- for the model, which I think are eminently reasonable properties to use, the attenuation factor calculated by the model does not afford a passing grade to one or

more of the expected contaminants.

I didn't want that to be implied or I didn't want it -- someone to infer from that that I agree, for instance, with the way they calculated their various standards, the way they calculated what the compliance number would have -- or the attenuation factor would have to be.

There's a lot of other problems associated with this modeling beyond that; but if you accept everything else and just use the appropriate liner properties in a saturated system, then all other things being equal, this calculation does not pass the impact threshold.

HEARING OFFICER KINNALLY: But -- but isn't it a fact that assuming that portions of it pass and portions of it fail, that the IP -- the Illinois Environmental Protection Agency, when they analyze the GIA, they're not going to approve it unless they all pass? That's their job; right?

That's why the GIA goes to the Illinois Environmental Protection Agency as opposed to this Board; isn't that true?

THE WITNESS: Well, for a new landfill, the GIA, as far as I know, has always had to pass.

For existing facilities, not necessarily; and, in fact, I'm working on one right now where the GIA does not, will not, cannot pass because there's leaking contamination.

So you're looking at incorporating remedial effects and things like that, but this is a new one, let's look at that.

Yes, if one fails, then it doesn't -- that's why you can -- you can run the test only against the most vulnerable one and get a pass/fail on one answer.

What will happen is Waste Management will come back to the IEPA and will say, "Well, yeah, it didn't pass the way we ran it that way, but we're going to make some changes. We're going to go ahead and add in absorption or something else," and when we do that, then it does pass.

And there may be five, six, eight, 10 interactions back and forth in order to get the numbers right so that they all end up passing and the IEPA signs -- I mean, you come up with a set of numbers that the IEPA accepts.

That is what the IEPA does with groundwater impact assessments, and I don't think

that's particularly germane to -- I mean, that's for their determination of human health and the environment.

That's not the same as the County's charge of the three -- the three criteria that you have -- I'm drawing a blank.

HEARING OFFICER KINNALLY: All right. Well, thanks. Sorry to interrupt you.

Go ahead, Mr. Mueller.

BY MR. MUELLER:

Q. Actually, to put a wrap on that, Mr. Norris, if an Applicant proposes a model that with realistic values fails, what is the predictive relevance of that to a determination of whether the site is so designed, located, or proposed to be operated that the public health, safety, and welfare would be protected?

MR. MORAN: Objection; foundation. He has already answered the question, says it cannot be used in any predictive fashion.

MR. MUELLER: He did say the model had some predictive value. He just didn't put a number on it.

HEARING OFFICER KINNALLY: Well, I think my notes indicate that he said that he couldn't put a

percentage on it.
MR. MUELLER: That's correct, he did say that, but he said it has predictive value.
HEARING OFFICER KINNALLY: All right. So what is the predictive value? Is it a percentage?
MR. MUELLER: I guess I'm saying, what's the relevance to the public health, safety, and welfare, determination in your professional opinion, Mr. Norris?
HEARING OFFICER KINNALLY: Yeah, I'm going to overrule the objection.
You can answer.
BY THE WITNESS:
A. I don't think the process of manipulating the data for GIA purposes is relevant to the health, safety, and welfare consideration given that it's known that process is going to be done by the IEPA.
BY MR. MUELLER:
Q. You're talking about the process at this point?
A. The process of establishing the pass or fail at 100 years after closure or 100 feet from the landfill.
Q. Now, in two minutes, you said there are

some other problems with this GIA. Do you want to tell us very briefly what those are -- or with this model, I should say?
A. Yes. As was discussed with Ms. Underwood, and looking at her results, it was noted that at a distance away from the landfill, in particular at the compliance point away from the landfill, the model showed the highest concentrations were at the land surface at the top of the model.
Things got progressively cleaner as one got down to the aquifer, and this was far enough away from the landfill that it should not be affected.
As she pointed out, contamination migrates out of the landfill, diffuses downward with minimal -- in her view, minimal flow downward, just diffusion.
It gets into the aquifer. It moves along the aquifer, and if there is any contamination in the overlying package, it has to be diffusing upward out of the aquifer and into that material.
What she has described bears no resemblance way, shape or form to what is the process of the transportation of contaminants.
I looked at her model results,

duplicated her model results to make sure I had them right, and with no changes other than looking at the different times and different distances, that model calculates at the first day -- not at 100 years, but at the first day, essentially the same condition out here; 100 feet away, contamination at the surface, the highest contamination at the surface, less and less contamination as you get deeper, even though you've only had one day for anything to get out of the landfill.
It not only does it 100 feet away at the compliance boundary at one day, it does it a mile away.
What she is calculating has nothing to do with migration from a landfill.
Q. Mr. Norris, to wrap it up, do you believe, based upon your entire evaluation, that there is a confining layer between the base of the liner and the aquifer which hydraulically separates the base of the liner from the aquifer?
A. I do not believe there is such a confining layer.
Q. Do you believe that the groundwater model presented provides any confidence that there will be

no groundwater impact 115 years from now?
MR. MORAN: Objection; foundation. He said none of that matters.
MR. MUELLER: I'm just asking if it provides confidence.
HEARING OFFICER KINNALLY: Overruled.
You can answer.
BY THE WITNESS:
A. It does not.
MR. MUELLER: That's all I have. Thank you.
HEARING OFFICER KINNALLY: Okay. Thank you, Mr. Mueller. We're going to take a break now for about 10 minutes.
(Recess taken.)
HEARING OFFICER KINNALLY: All right. I would like to reconvene, please.
Okay. We have a quorum of the Board; and I believe, Mr. Mueller, were you finished?
MR. MUELLER: Mr. Kinnally, I would like to move KRL Exhibit No. 11 into evidence.
HEARING OFFICER KINNALLY: Is there any objection?
(No response.)
HEARING OFFICER KINNALLY: Hearing none, KRL

Exhibit No. 11 will be admitted.
(Kankakee Regional Landfill Exhibit No. 11 admitted.)
MR. MUELLER: With that, I'm finished.
HEARING OFFICER KINNALLY: All right. Thank you, Mr. Mueller.
Mr. Moran?
MR. MORAN: Thank you, Mr. Hearing Officer.
CROSS-EXAMINATION
BY MR. MORAN:
Q. Good evening, Mr. Norris.
A. Good evening.
Q. Mr. Norris, you're here tonight on behalf of Kankakee Regional Landfill; is that correct?
A. I think that's who George's client is, but I'm not sure.
Q. Okay. And are you aware that the proposal to site the Kankakee Regional Landfill included a proposal to build that landfill into the bedrock aquifer? Were you aware of that?
A. I think I heard something to that effect, but I didn't review that application.
Q. Okay. You didn't review that application; correct?

A. No.
Q. You didn't testify at that hearing?
A. I believe I've testified -- I testified at a Kankakee hearing that Waste Management was trying to expand, but that's the only one in Kankakee.
Q. And those are the applications to expand the existing Kankakee Landfill that was owned and operated by Waste Management?
A. Yes.
Q. Those are the ones you testified at; correct?
A. Yes.
Q. Now, you've indicated that you are familiar with the groundwater impact assessment process as it occurs before the Illinois Environmental Protection Agency; is that correct?
A. Yes.
Q. And did I understand you correctly to say that that process works in a way that ultimately at the end of the day, the IEPA is going to ensure that whatever model is submitted is going to pass? Would that be accurate?
A. There will be a model arrived at that will pass, yes.

Q. Now, I thought I heard you say during the course of your testimony that the manipulation of the data or the adding of different parameters or values into the model is not in any way ultimately relevant to the question of the public health, safety, and welfare; is that correct?
A. I think what I said, but certainly what I hope to convey, is that the GIA process of creating a pass/fail at a compliance point after a block of time is something that is done independently of the Board, and were the Board to get involved in evaluating that, the effort would be duplicative of the IEPA, who is doing it for reasons different than the public health, safety, and welfare.
Q. And this County Board, in your view, doesn't need to engage in that exercise; would that be accurate?
A. It would be duplicative and I don't see why they should.
MR. MORAN: Thank you, Mr. Norris. Nothing further.
HEARING OFFICER KINNALLY: Okay.
Mr. Belt?
MR. BELT: I have no questions.

HEARING OFFICER KINNALLY: Mr. Kramer?
MR. KRAMER: Thank you, Mr. Kinnally.
CROSS-EXAMINATION
BY MR. KRAMER:
Q. Mr. Norris, you indicated that the boring log showed the materials extracted from the piezometers was wet or moist; is that a fair statement?
A. Once you get down below the top foot and a half of a zone, that was the descriptions, yes.
Q. Does the material that is retained for those tubes retain that same quality of wet or moistness if it is stored approximately a year after the date the core samples were taken?
A. Unless the materials are bottled or sealed in wax or left in the core barrels and the core barrels themselves are sealed, no, it won't.
Q. Is there any scientific way to measure as to whether the wetness or the moistness is the same a year later after being removed from the ground?
A. None that I'm aware of.
Q. Could I have you pull up a slide. I believe you referenced it as well test or well Nest 6.
I believe you indicated in direct

exam that the shallow wells and the deep well borings went in tandem; they went up and down in the same relation roughly with one another?

A. Yes, with the single exception that occurred on or about the 1st of January, 2008.

Q. Does that indicate connectivity between the surface layer materials and the first level of aquifer?

A. No. Where you don't have a water table well, that does not necessarily imply anything about whether or not they're moving in parallel with the water table well; however, for the last two sampling events, even though it may not be visible on the screen too well, but for these last two events, there is, in fact, a water table well that's moving directly with the uppermost aquifer, the shallow bedrock aquifer.

Q. And does that give us any clue or is it indicative of any vertical connectivity?

A. It is an indication that such connectivity is likely. Random variations of the same magnitude and the same direction always have some kind of a possible explanation; but when you're talking about a bedrock aquifer and an overlying water table and

you're considering the possibility of a confining layer, a low-permeability zone separating those two, then you cannot expect changes in the water table to necessarily be reflected, since it's separated from the aquifer, to be reflected in aquifer changes, and similarly, you can't inherently expect changes in the aquifer to be reflected that closely at the water table.

They can move in opposite directions. They can move one more than the other. One can go up; one can go down.

When they move together in the way that they are here, not just on this piezometer nest, but across the site, that's very strong evidence that you're talking about a single system, as Ms. Underwood testified, that one of the marks of a single system is that the heads in nest piezometers will move consistently with each other.

Q. Does it also indicate that there is likely not an upper confining unit then?

A. Well, the water table, by definition, is the free water surface. So there is no confining layer above it, and, yeah, I mean, that -- that precludes the idea that there's some other confining

layer above that whole system.

Q. Mr. Norris, you used on direct examination a term carbonate or carbonate rock?

A. Yes.

Q. Would you tell the hearing Board what that is, please.

A. Yes. Limestone is a carbonate rock. It's calcium carbonate. Dolomite is a carbonate rock. It has both calcium and magnesium that are in the crystal structure with the carbonate to create.

So carbonate rock is just a term that is used to shorten saying limestone and dolomite.

MR. KRAMER: Thank you. I have no further questions, Mr. Kinnally.

HEARING OFFICER KINNALLY: Thank you, Mr. Kramer.

Mr. Porter?

MR. PORTER: No questions.

HEARING OFFICER KINNALLY: All right. Thank you, Mr. Porter.

Mr. Lyle?

MR. LYLE: No questions.

HEARING OFFICER KINNALLY: Okay. All right. Do any of the Board members have any questions?

BOARD MEMBER DAVIDSON: Bob Davidson.

EXAMINATION

BY BOARD MEMBER DAVIDSON:

Q. You got my curiosity up a little bit. You made a statement about the field tile in the neighboring pond.

Now, most of this field tile was put in in the '30s and prior to; correct?

A. Certainly on the farm I was brought up on in Kane County, it probably would have dated back 30, 40 years before that.

Q. Yes, I agree with you a hundred percent.

So it was put in by hand with a spade, basically?

A. Yes.

Q. Most of that tile was put in the low area of a field or a farm; correct? That was -- go ahead.

A. The collection artery would typically run down a low area, depending on where the groundwater is creating your problem for use of the land.

I've seen a lot of places where if the groundwater is coming to the surface at a spring area or something like that on the side of a hill, the tiles -- the tiles will go intercept the groundwater

there.
Q. That was my next question, is, then why -- if that -- you're telling me that the pond -- the low tile or the main tile, that's determining the water level of an aquifer. Then how come I got springs up on a side hill that are three, four feet higher and sometimes higher than that? Because, you know, the way you explained it to us, that this is the water level. This is where we got control of the water level; correct?
A. Well, the purpose of the tile, in my experience, is to drop the water table from the surface or from being so shallow that you can't work the land down enough, buy yourself two or three feet.
And, you know, on our farm, sometimes they had to dig six or seven feet to get through a high area to continue to drain it, but the universal objective is to lower the water table in the area where you put the tile.
And then tiles from various areas may join together into an artery; and that artery, in order to drain, is positioned in the valleys and in the lower areas; but the tile themselves, the collection tiles, are not built above the water table

or they wouldn't be able to intercept any water.
Q. Okay. Now, I was always told that the finer the particles in clay, the less water soluble it is. The tighter the particles, the less air is in clay; correct?
A. As a rule, yes.
Q. What do you mean as a rule? You also sat there and said that that isn't right.
I mean, you testified that there's fine particles in here that should tell me that it's tight, and when soil is tight, like clay, water don't run through it?
As my grandfather always said, "Black dirt and topsoil is 20 percent matter, 80 percent air. Clay is 80 percent matter, 20 percent air. Water will not penetrate very well.
Now, explain to me why your statement.
A. The difference on this site is illustrated, I think, by the difference between the slug tests and the laboratory tests, and between the laboratory tests and the chemical data.
If you take a sample of fine grain material, clay -- dominantly clay materials, like they

tested in the lab, you do get a very lower permeability.
Water moves through that kind of material very slowly; but if you have dense, thick, hard clays that have been compressed underneath a glacier, then you have the potential, for example -- those materials can break.
If you're -- if you're digging your tile with -- with a tile spade, you might get a block of soil out, but if you hit it with a spade, it breaks.
Well, there are natural ways that those materials break and have cracks in them, and water flows through a crack between two blocks of clay as easily as it flows through a crack in a rock.
This site has a certain amount of fine grain materials that if you look at them in something about twice the size of a hockey puck, they have very low permeability.
But you have the -- you have the rest of the data, the correlation of the water level movements, the dated young water beneath these fine grain sediments, the evidence of road salt getting through these fine grain sediments, that says, yes,

those fine grain sediments are there, and, yes, if you have a small piece of it, it's very impermeable.
But there are pathways through there that clearly let water and large amounts of water run through it, and the water levels within those shallow wells are going up and down with the aquifer, not because the water is flowing through those clay materials -- your grandfather was right about that -- but they're flowing through cracks or fissures or interconnected sand paths or something that allows that water to get deep.
Q. Okay. You testified that it's someplace between a foot-and-a-half and three foot of a barrier between the aquifer, as you see it, with the existing clay layer that's there now; correct? Ain't that the way I kind of took that or am I wrong?
A. No. I was talking about that three feet being the compacted clay liner under the landfill, not the soils.
Q. The compacted layer that they are going to install?
A. That they are going to install.
Q. Not the existing --
A. Ground materials.

Q. Well, how can you and Joan be off that far, because I think she has testified or -- that there was basically three feet or -- you know, three feet to a foot-and-a-half in the existing layer that's already there, and they were going to put another three feet on top of that.

A. She modeled just over five feet of materials that were going to be left in place, which I think she said was the thinnest of that five feet.

I -- I can't fully -- I mean, I won't presume to explain why she doesn't recognize the local flow system, why she doesn't recognize the significance of the young water 10 and 20 feet into the aquifer, why she doesn't recognize that in spite of the fine grain sediments at this site, the hydrogeology tells us that that is not an effective barrier to flow, and, in fact, it's virtually transparent at this site.

I'm -- I mean, I quite honestly don't know. I can't explain it.

Q. Okay. You mentioned Well B-50, B-53, B-46. Are those locations under the footprint of the landfill at this -- I mean, of the actual landfill? Because you said they were in the upper right-hand

corner, at least B-50, which is in the staging area and over into the pond area, in that area, I believe.

Am I wrong?

A. B-53 --

Q. B-50 -- B-53, and, you also mentioned B-46.

A. Okay. The B-53 is out here way out in the northeast corner.

Q. Okay.

A. It's not under the footprint.

B-46, 47 are not under the footprint. They were within the facility boundary last time, but they have pulled the facility boundary back away from that.

B-50 I will have to look for a little bit to try and figure out where B-50 is. It may take me a little while. I don't have a --

Q. Okay. Well, we can --

A. Two of the wells are definitely not under the footprint. I don't know whether B-50 is or not.

Q. Okay. You got one last question.

You made the statement of the coloring of the soil, what water does to soils -- clay soil, correct, of different colors with the water

flowing through it, of different --

A. Yeah. It actually isn't the water that causes the color change. It's oxygen that gets --

Q. Right.

A. -- that gets to the minerals and causes them to weather.

Q. Well, the only problem with that is, we don't know if that was done before man dug the ditches and drained the water from the top of the ground or back in the 1600s or 1700s or it happened last week; correct? I mean, it's --

A. The advancement of a color front moving down into sediments is something that goes continually as long as -- as long as nature works on it.

If -- if the water table were six feet, eight feet down below the land surface, though, in today's world, unless there were a reason that you had -- that you could point to that resulted in a -- resulted in a recent drop, then that color front normally will extend down to at least the top of the fluctuation point of the water table.

Now, if you put in a tile, you may end up eventually creating an oxidation front that's deeper to reflect where the tile is, but that doesn't

oxidize water below the tile.

So the fact that we don't see deep orange-brown soils that we get just below the soil surface, and we start to get black soils, indicates there has not been a time period where the water table was substantially and consistently deeper than what we're looking at today.

BOARD MEMBER DAVIDSON: Thank you.

BOARD MEMBER HAFENRICHTER: No questions.

BOARD MEMBER MARTIN: No questions.

BOARD MEMBER PARR: No questions.

BOARD MEMBER PURCELL: John Purcell.

EXAMINATION

BY BOARD MEMBER PURCELL:

Q. You had testified that this is not a confining layer of the upper layer?

A. Yes, that's correct.

Q. You also used the term -- I think I heard this correctly -- vertical hydraulic gradients?

A. Yes.

Q. Could you briefly describe what that means again?

A. Yes. That's a measure of the direction that water is flowing in a vertical sense.

Is it flowing down into the ground or is it flowing from a deeper level up toward the surface?

Q. And what did you find?

A. Well, it varies across the site, but under most of the footprint, you have a downward vertical gradient.

Q. So it was downward in most of the site?

A. Yes.

Q. Okay. You also testified, I believe I heard this correctly, that the liner is in the water table at least in certain portions of the site?

A. Yes. As Joan -- as Ms. Underwood testified, the sump areas on the eastern side are in the water table; and without knowing how far off the water table map is, we don't know what other areas may be under -- in contact with the water table.

Q. Okay. You showed graphs of two or three different wells, and you had commented and demonstrated how the graphs tend to parallel each other, and -- between the deep and shallow wells. Did I understand that correctly?

A. Yes. Actually, among all of the wells, the water table, the shallow aquifer, the intermediate

aquifer, and the deep aquifer, all tend to move in parallel.

Q. That's what I want to clarify.

So that's true amongst all wells -- or all sites -- or well sites?

A. All the -- yeah, all the well nests, yes.

Q. Okay. Now, did you graph all the sites or just the two or three that you displayed for us?

A. No. I graphed all of the sites for which there are water table wells, as well as deeper wells.

Q. Okay. So if you were to display those graphs, they would look similar to what you showed us on the two or three --

A. Yes. I believe all of those graphs have been submitted to the Board.

Q. Okay.

A. And I can run through them all right here now if you would like.

Q. Are you confident you have submitted those?

MR. MUELLER: If Mr. Norris gave them to me, they were submitted.

BY BOARD MEMBER PURCELL:

Q. Did you give them to Mr. Mueller?

A. Yes, I did.

Q. You mentioned the tritium in the deep aquifer. Why is that significant or important?

A. Tritium has been -- as has been discussed, doesn't hang around very long for us to measure it, and the deep piezometers, the deep -- the deep wells, are 80 to 100 feet below land surface.

In order to get tritium in those wells, you have to penetrate through the fine sediments and through the 60 to 80 feet of bedrock aquifer in order to get detectible tritium that deeply.

We know we have a downward gradient, but just in my experience, that's very surprising. I simply would not have expected at that depth to have any water young enough to carry enough tritium down with it that it would still be detectible mixing with deeper, older water. It is just surprising how fast the system moves water vertically.

Q. Regarding the tritium, the term half-life has been used in these hearings. How long before the tritium decays so it's not detectible?

A. If we hadn't done atmospheric testing back in the '60s or '70s, and we were just looking at

natural tritium, it would decline below a one tritium unit measure in about 50 years, 60 years.

If you have some zone that has 1960s water in it that has not mixed and has just been sitting there, and you were to measure the tritium in that, because of what we call the bomb tritium, or if you had bomb tritium water in a bottle on your shelf, bomb water, you could maybe push that back to 70 years. You might be able to detect tritium in that 70, 80 years old, but groundwater mixes, gets diluted.

I think if you measure any tritium at all, you're talking about water that is 1950s or more recent.

Q. So there's no such -- there is no such thing as naturally existing tritium in waters anywhere in the surface of the earth or the subsurface of the earth?

A. No. If you have water that is less than 50 to 70 years old, you can have tritium in it. That's why it's a good marker of young tritium, but that tritium from the moment it forms in the atmosphere or in a bomb explosion, starts disintegrating and disappearing.

Q. But it would never leak from deep within

the surface of the earth and leach up?
A. No. No. Tritium -- tritium is either an artificial source like a nuclear power plant or a nuclear explosion or it forms in the upper atmosphere and falls with the rain, but there is no source of tritium within the earth.
Q. Okay. Now, you made some comments, and I didn't catch the whole thing, so if you could bear with me, I would appreciate it.
There is no other locations in this vicinity where the aquifer can be drained. You're referring to that pond. Are you familiar with what I'm --
A. Yes.
Q. Can you repeat that to me and explain that to me a little bit, please.
A. Sure. Groundwater is going to recharge at the surface and it's going to discharge back to the surface at. At some point it falls as rain or a river runs over the land and water soaks into the ground.
It will flow through the ground to some discharge point. That discharge point has to be below the recharge point, and everywhere along the path that that drop of water flows, it is always

flowing from an area of higher head to an area of lower head.
It may take 10 feet to get from recharge to discharge. It may take a thousand miles, but everywhere along that path it's always moving from an area of higher head to an area of lower head.
We have in the intermediate aquifer at the B-53 location, the location in the northeast -- we have a head in that aquifer -- just a minute. Let me pull up the hydrograph for it.
These down here are the heads for the intermediate aquifer. Now -- and these are the heads for the water table aquifer.
Now, these heads, even though they're very low compared to others on the site, are at or about what the pond is.
So water from this site can be flowing directly to the pond, but water from the intermediate aquifer cannot be flowing to the pond because the head level in this aquifer is below the head level in the pond and it can't flow upgradient.
It has to be flowing from the position of this well to somewhere that has a discharge point that's lower than 557.7 feet.

And you can pull out the topographic maps of the area and find out, well, where do I have a place it can come back to the ground that's at or below 557 feet? And there's nowhere around here close by that that occurs. There are no municipal wells that we're aware of or high volume wells that will be lowering the head in that aquifer by that extent.
So wherever that is draining, every place it moves, it gets a lower and lower head as it moves along its flow path.
Now, if it's flowing through a big crack that's been dissolved, then it doesn't lose much head as it flows along.
So if it's flowing through a karst conduit, it can get to an outcrop place or the base of a stream to discharge without getting much lower than that, but if it's flowing through aquifer material, it would have to be discharging at a point very low in terms of topography because it loses head at each step along the way.
So the lower that head is, the more likely it is that it's flowing in a high conductivity zone to get to some discharge point that's at lower elevation than that.

Q. One last question, I think.
Now, I guess part of this I'm going to paraphrase, and it's been asked again, but I want to make sure I understand this.
Your testimony, according to what you stated, is not relevant to this Board's decision?
A. Well, I hope that wasn't what I said.
Q. Okay. Well, I'm trying to understand regarding the last couple graphs regarding -- thank you -- regarding the GIA?
A. Okay. The GIA?
Q. Okay. So you're saying your testimony regarding that isn't relevant?
A. No. I would hope my testimony is very relevant.
What I'm saying is that I don't think the Board should look at modeling in part of the Application the same way that the IEPA looks at it, that if that's all they're using the modeling for, is to try and determine compliance with the GIA process, that that's redundant to what the State is doing.
Modeling is a very valuable tool. I think it would be wonderful if the Board had been given a working, usable, meaningful model to help it

incorporate all of the things we're talking about and see whether or not you can put together a flow picture that would help you distinguish between my understanding of the geology and what Ms. Underwood gave you as her understanding of the geology. That would be a relevant use of modeling that might be able to help the Board.

The GIA modeling is not designed to do that. The way the particular modeling that was done and given to the Board was performed has no meaning from a scientific standpoint, and if -- if as a result of that the Board would say, well, we're not going to even consider that, I would -- I would think that would be a good decision on the part of the Board's efforts, but the relevancy that I'm referring to is not computer modeling; it's the GIA process, which is a matrix checklist for the IEPA that they do by regulatory requirement that -- that doesn't really relate to the issues before the Board.

Q. Okay. I lied. I've got more questions. Sorry.

Approximately -- you don't have to count in your head, but approximately how many times have you been hired to testify for a landfill

applicant?

A. Well, I've never been hired to testify for or against a landfill application. I have only allowed myself to be hired to evaluate that.

Q. Okay.

A. My clients have almost universally been people who are opposed to the landfill, but that's their position, not mine.

Q. How many times have you been hired by -- approximately how many times have you been hired by a landfill applicant?

A. None. Well, for a hearing -- for a siting hearing process?

Q. Correct.

A. None. I have and am working for a landfill operator now who's trying to get some problems under control and remediation efforts in place.

So I am working for a landfill operator, and interfacing with the IEPA, and doing GIA runs and things like that, but that's not a siting hearing. We're not looking at getting an approval.

Q. Are they looking at expanding a site?

A. No. They're just trying to look at how to

close it in a way that controls the problems that exist at it.

Q. Okay. Then you have been hired several times by opponents of landfill siting applications?

A. I would judge probably somewhere between 18 and 24 such clients.

Q. And do you always testify in contrast to what the siting application testimony -- or contrary to what they're purporting?

A. I would -- sites where I don't see a problem with the application, the client doesn't ask me to testify at.

So the only times I testify are when there are issues -- hydrogeologic issues in what are presented in the application that need to be presented to the trier of fact.

I have looked at applications where the client said, thank you very much, but I don't want the landfill and I'm not going to have you testify that there is -- that the application is put together right.

HEARING OFFICER KINNALLY: Well, I think his point is, what percentage of those is that of your entire testimony? Is it 10 percent of those?

I mean, on your resume you have 15 landfill sitings that you've testified -- that you've worked on in your resume.

THE WITNESS: Right.

HEARING OFFICER KINNALLY: 11 of those have been for the opponent of the landfill.

I think John's question is, of those where you didn't testify, what percentage of your testimony -- how many times have you done that, basically?

THE WITNESS: Well, as I've said, if I'm testifying in a hearing, it's because I have problems with the geology and the hydrogeology as it's expressed in the landfill application.

So to that extent, 100 percent of the times I have testified for a client who opposes a landfill, parts of what I have testified to are at odds with the application.

That doesn't mean the entire testimony is entirely in opposition to it. There is almost always large areas of agreement.

Nobody that's testified before you disputes whether or not there's a bedrock aquifer here. I agree with that.

I have no problem with most of the heads that have been created.

This particular application, I am bothered by the fact that there are data that were collected that were not shared, but this Application, I think the fundamental differences in the hydrogeology are probably greater than, I think, any other application I can remember.

BY BOARD MEMBER PURCELL:

Q. Okay. Let me try one more.

Approximately how many times have you not been hired because your testimony would not support an opponent's position?

A. Okay. Three that I can think of right offhand.

BOARD MEMBER PURCELL: Okay. Thank you.

BOARD MEMBER WEHRLI: Mr. Norris, Jeff Wehrli.

EXAMINATION

BY BOARD MEMBER WEHRLI,

Q. You mentioned the pond several times, and actually went out and took a trip to the pond a couple times.

Did you say that the pond is fed by overland swales or pipes in and out of it, that it

would feed from overland routes, also?

A. Yes. This pond is in a swale, and it has on its north side probably an 18-inch concrete drain draining into it; and on the southeast side, it has a comparable drain leading out of it.

Q. Okay.

A. So large parts of the year it's just a flow-through.

During the summer Mr. Wallace indicated that their irrigation will -- excuse me -- draw that pond down below the input and output drains, and, in fact, the input drain, he said, during the summer will often be dry.

Q. Okay. Do you know if it is a clay-lined pond?

A. No, it is not. It's open to the bedrock.

Q. Okay. Thank you.

Would the descriptions of the boring samples taken by the on-site geologist still be relevant a year or two later?

A. Yes. They are still -- they are still a list of his observations at the time he was looking at the fresh core.

Q. Okay. And did Ms. Underwood's testimony

of her observations of the samples contradict the original observations, that you're aware of?

A. There are a -- there are fairly frequent alternative interpretations. Some of them apparently are word choices.

When she was asked about a comparison where one of the soil borings described fractures and her geologist's soil borings did not, she said, well, my geologist said it was blocky, and that is equivalent in my mind or something to that effect.

So some of it may be semantic, that certain words are, but I noticed for one -- one difference was that the original boring descriptions fairly often described the materials, in part, as being oxidized, weathered, and leached.

I didn't find any place where the term leached made it into the second description. Weathered did not make it into the second description as frequently. So they were seeing or describing differences.

In the bedrock, there's dramatic differences in the use of the term fractured. The original -- the original logs describe moderately fractured, extensively fractured, whereas the new

descriptions in some cases would explicitly say unfractured in those conditions.

So there were certainly dramatic differences, I think, in the bedrock descriptions. The soil boring descriptions are somewhat more subtle, I think.

Q. So, essentially, a lot of the differences were semantic, but some of them did -- especially when we got to the bedrock, that there was some differences in what she observed in the samples two years -- or a year after the samples were taken compared to the original on-site geologist; correct?

A. I think I would not necessarily say many were semantic.

I would certainly say some appear to be, but without sitting down with both sides and going, okay, well, resolve the differences between these two, we know that in the one case blocky apparently means fractured.

So there is some of that going on, but I would hesitate to say a lot of it.

Q. Okay.

A. I don't know.

Q. Okay. That's fair. What's the margin --

let's go to the slug tests that we talked about.
What's the margin of error you're suggesting that the slug test showed?
I mean, you said there is obviously a difference, but are you talking about a five percent difference or are you talking about a 500 percent difference?
A. I don't know. There's about a five percent difference in surface area, but the slug test is going to have a greater -- if it's tied in to what's underneath it, it will have a greater impact than that.
In some of the slug tests, the slug test in the shallow was a hundred times what the aquifer tests -- slug tests show. That cannot be attributed to flow through the bottom of the well, just through that third of a square foot.
What could be done, and the way to bracket that, would be to take the actual data and use it -- ask the computer to make an alternative interpretation and play the mind game of saying, well, I'm going to assume that that stuff is as tight as the laboratory data says and effectively contributes nothing to the slug test, and I will use as my model a

point source at the bottom of my well so that all the water is coming out of the bottom, and then ask the computer to solve that for you.
That would give you the reverse of an end bracket, and so then you can say it's no more than this; it's more than this.
Unfortunately, the slug test data were not provided in the Application, so your expert or myself or anyone else doesn't have the luxury of playing that game.
Q. Okay. What change, if any, to the hydrology of the site would the addition of a three million cubic yard borrow pit directly to the south of this site have?
A. Part of it would depend on how deep it goes and where it's located.
If the borrow pit is going to be on the west side of Walley Run, that's an area where data from the other application shows very strong upwelling water.
So you're going to -- you're going to have a borrow pit that's going to be making a lot of water there.
It could, depending on where it is

positioned, even be getting enough water that it will have to be drained because the head is higher than land surface.
In that case, if it's over there, it probably isn't going to affect the areas around it a great deal simply because there's that much head already in those soils.
If you're on the east side of Walley Run, you will probably be lowering the heads in the aquifer, lowering heads in the -- or lowering heads in the soil zone, lowering heads in the aquifer by some amount which will increase the rate of southward flow if it's south of the site.
The same thing for things east of the site.
Q. Okay. But for purposes of your investigations, there was no -- no consideration of any type of pit?
In other words, what I'm hearing is, depending on where it is, it could be relevant; it could not be?
A. Well, I think any time you're talking about that kind of an excavation, it is relevant and it's the sort of what if that can be explored had a

site model been put together that was capable of that.
Just like earlier at some point I heard questions about, well, what if a quarry were put in? That's a much bigger borrow pit, if you will.
Q. The cone of depression on a --
A. Would be an entirely different scale.
Q. Right.
A. But, again, it's the sort of question that you use groundwater models to try and understand.
Q. Okay. And, finally, we were talking about the liner system and was assigned 10 parts versus a million parts before, and that kind of blew over the top of me, but do you remember that testimony?
A. Yes.
Q. Explain, again, what the differences were in that.
A. Right. The landfill liners were assigned properties in this hearing that are a hundred thousand-fold lower than a year ago.
Q. But that's the rate of infiltration out of them by possible contaminants?
A. We're not talking about migration of leachate out. We're talking about diffusion of contaminants in the leachate moving through the liner

even where there is no hole in it.
Q. Okay.
A. But that's -- the material properties were throttled back by a factor of 100,000 --
Q. Okay.
A. -- and that was just a way to try and illustrate that change.
BOARD MEMBER WEHRLI: Okay. Thank you very much.
BOARD MEMBER WYKES: Bill Wykes.

EXAMINATION

BY BOARD MEMBER WYKES:

Q. You went through quite a few different things that showed that basically your testimony is that there is not a confining layer, that you're actually seeing vertical movement --
A. Yes.
Q. -- in this.
And you mentioned, you know, that the boring -- the classification by the rig geologist versus the following things were different, that the tests were not conducted as you would have done them, the conductivity things.
Slug tests were not -- you had -- you

thought were biased. One thing you mentioned then was you actually thought that this was somewhat of a recharge area.
Can you explain a little more on how this area is actually a recharge.
A. Sure. I've put on the screen the water table head map. If you look at the hydrographs, you'll recognize that the -- basically the same heads, same pattern exists down in the aquifer below this.
If this were an intermediate or regional flow system that was disconnected with the surface processes, you would expect this pattern to exist at the water table because this is basically the topographic pattern, and shallow systems, the groundwater in the water table tend to -- the water table tends to mimic topography. It's high under topographically high areas; it is low under topographically low areas.
And the water is sinking into the ground at the high transporting to the low area and coming to the surface. So you get patterns of high areas and low areas just like you do on topographic maps.
The high head areas represent areas

of recharge. The trough areas, the low areas on the head map, mark areas where flow is converging. And so, actually, you've got -- you've got diverging flow in the high areas, converging flow in the streams.
In theory, you could have diverging areas where you've got some kind of upwelling coming in, but the diverging area tells you water is coming into this zone from somewhere.
We know in this site it's not coming in from underneath because we have heads at various levels, and the heads show a downward gradient.
So the vertical heads tell us the water is flowing down, and when we move over to the piezometers near Walley Run, we have the reverse. The heads show a positive flow, an upward flow.
So the heads tell us we have downward flow under the topographically high areas throughout the aquifer and the shallow zone, and the inverse is true under the local stream.
So the pattern that you expect at the water table is the same pattern you're seeing in the aquifer underneath you.
The 500-pound gorilla, if you will, is not just that there's a downward gradient and an

upward gradient, because those could be very small amounts of water; but you filled the aquifer -- the shallow portion of the Galena aquifer with water that's less than 35 years old.
That means that not only do you have downward flow in this area, but you've got downward flow occurring at a high enough rate that you turn over, if you will, rotate, the water in the upper part of that aquifer within a 35-year period, and that's an astounding amount of vertical flow.
Q. And another one of those proofs was the fact that the tritium was found in the water at a younger age than -- I mean, it normally wouldn't be found in the deeper water because --
A. At least some of that water has not only gotten to 10 or 20 feet in the aquifer, but some of it has even -- in spite of the horizontal component of flow in that aquifer, it still has penetrated down to 80 or 100 feet into the -- below the ground surface.
Q. Okay. And another item you mentioned was the karst. You know, we've had a lot of talk about karst.
You said it doesn't really make a difference how old they are, that -- let me see if I'm

explaining this right, that it shows that there's been migration of surface material, clays and other things that are not limestone, but have filled up, and, therefore, they came vertically down into those holes, and would those -- I mean, they had to move through fractures, I would assume.

I'm assuming that they came through fractures, filled up those spaces. If they are all filled up, we don't know, but if they had fractures, would those fractures over time -- if they're old deposits, would those fractures over time have sealed up or would they actually remain or continue to age and weather?

A. Yes, all of the above.

The karst system that developed some 300 million years ago or more is -- in this area has a lot of sediment in it.

That sediment got in through sinkholes at the surface, got in through cracks at the surface, carried by surface water of some kind or another into the cave system, and filled up parts of that karst system.

Karst networks are very complex. You may have major cave systems, but for the most part,

the water that moves through them is not necessarily through major caves, but can be through the cracks that have dissolved an inch and a half or two inches wide, the bedding plane separations that develop six-inch tunnels through those.

You don't by moving sediments in through the surface cracks and the sinkholes and things have a mechanism to fill up everything. Some of it is still going to be there, but it's also possible for subsequent events during the last 300 million years, for which we have no geologic record, to have created flow conditions that washed out some of what washed in.

So you can have systems that are -- that were created originally very old that today are open again or parts of them that are open again.

The site I worked on at Jefferson Proving Grounds in Indiana with the Nuclear Regulatory hearing was that kind of site.

You had caves that were open enough at the ground that you could walk into them. The evidence showed that they had been filled back in Pennsylvanian time, but they've subsequently cleaned out.

So it's a very complex pattern, but the difference, the system is there. You can use techniques to figure out where the sediments are and where they aren't.

You can map the open conduit parts as opposed to just the closed conduit parts, and I think this is a site that that needs to be done on to understand the hydrogeology.

MR. WEIS: Okay. Thank you.

BOARD MEMBER PARR: No questions.

BOARD MEMBER VICKERY: Hi, Mr. Norris. My name is Anne Vickery.

EXAMINATION

BY BOARD MEMBER VICKERY:

Q. And it appears that you've done lot of study on this Application, but how long did it take you to go over all of this, research it, and do all the remodeling?

A. Well, the remodeling part is the easy part. That doesn't take very long at all to try and figure out what was misdone with that model to give the results that were there. That probably took only a day and a half.

I think I have put in probably a net

of four-and-a-half, five weeks on this version of the Application; probably six weeks, six-and-a-half weeks on the Application a year ago; and something comparable to the other one, the Soave one, in this area.

So all of that is involved in the understanding that I'm expressing tonight.

Q. Okay. I was looking at your resume. It's quite impressive, and it shows that you've testified, it looks like, maybe at least 15 times to research the applications and testify in support of those who may oppose the siting of landfills?

A. Yes.

Q. About how many times, despite your testimony, were landfills still sited?

A. I don't keep a tally on it. I don't think it's a 50/50 split. I think there have probably been -- been more that have been rejected than accepted, but that's a hard number to figure out how to report because in a number of cases, an application wasn't accepted for one reason or another initially, and return visits and subsequent hearings with modifications and changes resulted in some sites being approved with different designs and different

applications from the initial ones.
Q. Okay. So about 50/50, maybe?
A. Maybe. I think probably fewer than that.
Q. I just have one final question. If you were ever asked, would you ever work or testify or put together an application for someone who wanted to site a landfill?
A. I have always told landfill operators that if they want to hire me on my terms, and that those terms are I tell them what I see, I explain to them what the data tells me, and then they can either use me or not use me at hearing, I'll be happy to work for them.
Q. I guess my final question then would be, you don't believe that anybody tells the truth?
A. Pardon?
Q. That would lead me to believe that you don't believe anybody tells the truth when they're putting together an application.
That's all right. Never mind.
A. I hope that wasn't what I said.
HEARING OFFICER KINNALLY: Well, that's what she said.
BOARD MEMBER VICKERY: That's what I said,

that's right.
HEARING OFFICER KINNALLY: Okay. Thank you Ms. Vickery.
Is there any participant that has questions?
Well, let's take five minutes here. We need to switch the court reporter.
(Recess taken.)
HEARING OFFICER KINNALLY: Okay. We have a quorum.
And I believe we left off if any participant has a question for Mr. Norris, you can come up and say your name and ask your questions.
MR. MILLIRON: Todd Milliron, 61 Cotswold Drive, Yorkville.
I'll try to remember I'm playing Jeopardy here and will ask questions.
HEARING OFFICER KINNALLY: Well, this isn't a game, so we're -- just ask the questions.
MR. MILLIRON: All right.
CROSS-EXAMINATION
BY MR. MILLIRON:
Q. Mr. Wehrli's question had to do with that factor of 100,000. Could another term be used on that

that would be like the concentration factor of whatever was used?
Like I -- maybe an example would be orange juice and orange water where the water doesn't have any taste? Would that be --
A. It -- I mean, what we're talking about is the choice of a diffusivity constant through the liner testimony that's 100,000 times lower, that it does not transmit -- it only has 100,000th the capacity for a given gradient to move material through it.
Q. Okay. So it didn't have anything to do with the actual concentration of the components that were within that fluid used or for --
A. Well, it affects -- it affects the concentration in the plume by that factor.
Q. Okay. All right. You had mentioned that to better understand the geology on the site -- and I come from an old oil field background from my 20s -- that there would have been, like, three tests that you would have used to.
Could you name those three tests again -- one of them had to do with, like, seismic -- and how those tests are performed?
A. The three that I mentioned are LIDAR,

seismic, and electrical resistivity surveys.
Electrical resistivity surveys basically measure how easily the ground conducts electrical current.
Seismic is using an energy source, essentially sound, to transmit that into the ground and record the reflection of that sound back to the surface.
And LIDAR is a type of aerial imagery that looks at -- it creates a picture, if you will, of the land surface, but it's not using visible light. It's -- it's a laser imagery.
Q. And would any one of those three tests kind of give you maybe a 3-D view of the underlying geology of that site?
A. The LIDAR only looks at the surface, but it gives a very detailed look at the surface.
Both the seismic and the resistivity give you subsurface 3-D information. They're different information, and for this purpose, you need both of them so that you can compare the responses.
Q. Okay. Did Waste Management tweak or cook up the test parameters to get the desired and favorable result in your opinion?

MR. MORAN: Objection.
HEARING OFFICER KINNALLY: Sustained.
BY MR. MILLIRON:
Q. You had used the term something or another deniability. I thought it was program deniability. Do you remember that term in your testimony? It had ...
A. I think -- I think maybe it was inherent deniability.
Q. What did you mean by that term?
A. When one builds piezometers in a manner that you may be testing more than one interval, more than one rock type, when the -- when that ends up being what happens when you construct a well, then you automatically are in a position where if you don't like the results, you can dismiss them.
Q. Okay. Mr. Norris, was it your testimony that the liner will be in the aquifer or water table at or at the top of it, depending on where the actual head is on the site?
MR. MORAN: Object to the form of the question.
HEARING OFFICER KINNALLY: Do you understand the question?
THE WITNESS: I think so.

HEARING OFFICER KINNALLY: Pardon me?
THE WITNESS: I believe so.
HEARING OFFICER KINNALLY: What's the basis for the objection?
MR. MORAN: The basis for the objection is the questioner used the term aquifer and water table as if they were equivalent, and they're not.
HEARING OFFICER KINNALLY: Overruled.
MR. MORAN: And it's a compound question to that extent.
HEARING OFFICER KINNALLY: Overruled.
Go ahead and answer.
BY THE WITNESS:
A. I think there's general agreement that portions of the liner are definitely going to be at or below the water table.
Based upon the questions about the data, we don't know and can't know at this point how much of the liner over -- or over what areas it may be in contact beyond what is mapped in the Application.
HEARING OFFICER KINNALLY: So you don't know as you sit there today as to whether or not it sits in the aquifer, which is the other part of his question? Does it or doesn't it?

THE WITNESS: Parts of it do.
HEARING OFFICER KINNALLY: So you equate the aquifer with the water table; is that your testimony?
THE WITNESS: I don't see at this site a difference --
HEARING OFFICER KINNALLY: Listen to my question. It's real simple. Do you equate the water table with the aquifer at this site; yes or no?
If you can't answer it, that's a fine answer, too.
THE WITNESS: I'm sorry. The way the question is asked, I can't answer it.
HEARING OFFICER KINNALLY: Okay. Thank you.
Next question, Mr. Milliron.
BY MR. MILLIRON:
Q. How confident are you in this 5.2-foot layer of compacted soil on this site to be a barrier and contain any leaks?
A. Well, the 5.2 feet is not a compacted liner. It's natural materials that are there, but I do not think it is a significant barrier to migration at all.
Q. Okay. Mr. Norris, who is CEC?
A. I don't --

Q. I've seen that initial up there on some of those slides.
A. It's the contractor that was used the first time around, but I don't know what CEC stands for.
Q. Okay. Do you know if anyone from CEC testified at Waste Management 1?
A. I don't know.
MR. MORAN: Objection; irrelevance.
HEARING OFFICER KINNALLY: Well, we know they didn't.
MR. MILLIRON: All right. So that's the answer. Thank you.
That's the next question I was going to ask Mr. Moran if he knew.
HEARING OFFICER KINNALLY: Well, we already know that.
BY MR. MILLIRON:
Q. All right. Much of that testimony from Waste Management 1 was characterized as hearsay.
Why should we accept this data provided by CEC as accurate representation of the soil samples and bore cores?
MR. MORAN: Objection; mischaracterizes that

testimony and relevance.
HEARING OFFICER KINNALLY: Why don't you ask a different question. Try it again, Mr. Milliron.
MR. MILLIRON: Maybe I'll break it down.
HEARING OFFICER KINNALLY: Okay. That's a good idea.
BY MR. MILLIRON:
Q. Much of the testimony from Waste Management 1 was characterized as hearsay evidence. Why should we accept the data provided by CEC as an accurate representation?
MR. MORAN: Same objection; mischaracterizes the testimony from Willow Run 1 and the relevance of this answer has no bearing on any issues in this case.
MR. MUELLER: I'll join the objection.
HEARING OFFICER KINNALLY: Let me just say this. I appreciate all the catcalls; but the issue is, as I understand it, that these core samples are core samples that were taken by CEC originally. There were no new core samples that were taken.
So to that extent, to the -- that it pertains to those core samples, I think it is relevant. I'm going to overrule the objections.
You can answer the question.

BY THE WITNESS:
A. The -- the issue of a boring log description being hearsay or not hearsay from an evidentiary standpoint is a legal situation that, to me, has nothing to do with the weight to which I give the boring log description.
HEARING OFFICER KINNALLY: Okay. Thank you.
MR. MILLIRON: I'm done. Thank you.
HEARING OFFICER KINNALLY: Thank you.
Any other participant?
(No response.)
HEARING OFFICER KINNALLY: Mr. Blazer, I think it's you're up now.
MR. BLAZER: Just a few, Mr. Kinnally. Thank you.
CROSS-EXAMINATION
BY MR. BLAZER:
Q. I want to try and just ask what are hopefully just a few simple questions, Mr. Norris, and hopefully we can get a few simple answers. Okay?
A. I hope so.
Q. You said in response to, I believe, a question from Mr. Davidson that you won't presume to explain why there's such a divergence of opinion

between yourself and Ms. Underwood. Do you remember that?
A. Yes.
Q. All right. You did say that you termed Ms. Underwood's, what you described as a work-around in her MIGRATE model as bizarre?
A. Yes.
Q. Do you remember that?
Are you telling us that in your opinion Ms. Underwood intentionally misrepresented the data?
A. No, that's not what I'm saying.
Q. All right. Are you telling us that she intentionally misrepresented site conditions?
A. No.
Q. You do disagree with her interpretation of the data; correct?
A. I'm sorry. Are we talking about her interpretation of the data or her implementation of the model still?
Q. Let's take about the data first; then we'll talk about the model.
A. Okay. Yes, I disagree with her interpretation of the data.

Q. All right. Now, as to the core samples, I believe Ms. Vickery asked you how much time you've spent on this project so far, and I think you said around five weeks?
A. This go-around, yes.
Q. That's the only one I'm talking about right now, this go-around. Five weeks?
A. Something on that order, yes.
Q. All right. How long ago were you hired by Mr. Mueller or Kankakee Regional Landfill?
A. I believe I got the e-mail from George within days of the filing of the Application.
Q. So sometime around the beginning of June?
A. Yes.
Q. I'm going to ask you the same question I asked Mr. VanHook last week. Did you ask anyone to obtain access to the core samples that Ms. Underwood examined?
A. I did not.
Q. Now, you are aware that the Applicant, either through Earth Tech or Shaw, did take a number of new core samples as well; correct?
A. Yes.
Q. All right. Did you ask for access to

those new core samples?
A. No.
Q. Here are hopefully the simple questions, and hopefully we can get a simple answer.
Is it your opinion that the liner system and other engineered components of this facility would not be protective of the public health, safety, and welfare?
MR. MUELLER: I'm going to object because I think it's beyond the scope of his direct.
HEARING OFFICER KINNALLY: Overruled.
BY THE WITNESS:
A. I have no opinion one way or the other on that.
BY MR. BLAZER:
Q. Is it your opinion that this proposed facility does not comply with Criterion 2?
A. I have no opinion one way or another on that.
MR. BLAZER: I have no further questions.
HEARING OFFICER KINNALLY: I'll be very brief since I know you've been testifying for quite some time, Mr. Norris.

EXAMINATION
BY HEARING OFFICER KINNALLY:
Q. How many applications have you submitted for a new landfill siting in the State of Illinois?
A. None.
Q. What were the compaction rates that were used by the Applicant on this siting application?
A. I'm sorry. Could you ask the question again?
Q. Could you read -- yeah.
What were the compaction rates that were used by the Applicant on this siting application?
A. I'm not sure what you mean by compaction rates.
Q. Okay. That's fine.
You indicated previously that in your opinion groundwater modeling was something that was important for the County Board to determine in making a decision in this particular case; true statement?
A. Yes.
Q. Where in the ordinance does it say that?
A. I did not make that comment in reference to the ordinance.
Q. I don't care whether you made it in --

where in the ordinance does it say that the Applicant needs to present groundwater modeling as part of their application here?
A. I have not read the ordinance.
Q. You haven't read the ordinance?
A. No.
Q. So you have not read the operative document that the County Board utilizes in this proceeding to determine whether the Applicant meets the nine criteria; is that your testimony?
A. That is correct.
HEARING OFFICER KINNALLY: Thank you for your coming and giving us your information.
Mr. Mueller, do you have any other questions?
MR. MUELLER: I do not.
MR. MORAN: Mr. Hearing Officer, if I might request just a few questions again as a follow-up to questions asked after I conducted my cross-examination. I will be brief.
HEARING OFFICER KINNALLY: No, I don't think it's necessary. I really don't.
Mr. Norris, you're excused.
Okay. Thank you, Mr. Norris.

(Witness excused.)
HEARING OFFICER KINNALLY: All right. Mr. Mueller, do you have any other witnesses?
MR. MUELLER: We do not.
HEARING OFFICER KINNALLY: Okay. Let's see here. Mr. Belt, I think you're -- before we do that, I wanted to take up -- I said we'd take up -- two things I want to take up.
First, I want to tell everybody who is here that we're going to start taking public comment tomorrow and through the end of the week.
Here's what I know from the lawyers, so everybody knows. Mr. Belt has two witnesses or one witness.
I don't know of any other lawyer representing a party here that's going to have any witnesses other than Mr. Kramer, and he has a geologist who can't be here until Monday.
Mr. Blazer has reserved whether or not he is going to call any witnesses, and at that point, assuming that -- you know, if he does or he doesn't, after that, the Applicant gets to present rebuttal testimony, if they want. We're not at that point yet, but it's -- you know, it's something that

could occur.
So as far as people that want to make public comment or want to make sworn testimony, we're going to start taking it tomorrow night and continue throughout the week.
And it's likely that given that schedule, we will cancel Friday night and Saturday so we don't have to -- so you can have a weekend and have a life in addition to landfill hearings.
So that's kind of what -- I mean, other participants have asked me from time to time what the schedule is, and that's kind of where we're getting to but we're coming up to the end. If we don't get it done this week, which we won't because of the Village wanting to call -- Village of Minooka wanting to call this witness on Monday, we'll probably be done next week. So that's -- that's Issue No. 1.
Issue No. 2 is the motion that was filed by Grundy County to dismiss these proceedings, which we've received today, and the -- I would assume people want to respond to this. I can't -- is that a fair statement? Do you want to respond, Mr. Moran?
MR. MORAN: Yes, I appreciate that opportunity.
HEARING OFFICER KINNALLY: Well, anybody who

wants to respond, you know, if you can submit your paperwork by tomorrow night, hopefully.
The hearing ordinance indicates that under Article 7, Sections 2-A and 2-B that I have the authority to address any contested legal issues, as well as motions; and under Paragraph 3, it says I also have the authority to confer with the County Board concerning such motion.
I may do that. I probably will, and we probably can rule on that motion this week, I would assume.
MR. MORAN: Mr. Kinnally?
HEARING OFFICER KINNALLY: Yes.
MR. MORAN: I would be prepared, if you deem it appropriate, to respond orally tonight to the motion, and, also, if you deem it appropriate, submit a written response later in the week.
I don't know if I could have a written response by tomorrow, but I'm certainly prepared to address the motion right now if Mr. Porter would like to present it and any other parties would like to respond. I'm prepared to respond now.
MR. PORTER: That would definitely be my preference.

HEARING OFFICER KINNALLY: Okay. Well, there's other people involved here.
Mr. Belt, do you have any input on this?
MR. BELT: No, other than the fact that the City would join in on the motion, but I do not anticipate any written commentary.
HEARING OFFICER KINNALLY: The City would what?
MR. BELT: The City would join in on the County's motion, but I don't anticipate submitting a brief or anything for legal authority.
HEARING OFFICER KINNALLY: Mr. Dan Kramer.
MR. KRAMER: Again, on the behalf of the Village of Minooka, we would join in the motion, and I would submit written authority as well.
And I presume Kelly will on behalf of the land trust as well.
HEARING OFFICER KINNALLY: Mr. George Mueller.
MR. MUELLER: I don't anticipate any oral argument, but I may submit something in writing.
HEARING OFFICER KINNALLY: Okay. And, Mr. Lyle?
MR. MUELLER: I would also join in on the County's motion.

HEARING OFFICER KINNALLY: Okay. Mr. Lyle?
MR. LYLE: I would join in the motion, but I do not anticipate submitting anything in writing.
HEARING OFFICER KINNALLY: Mr. Blazer?
MR. BLAZER: We won't be submitting anything in writing, Mr. Kinnally.
HEARING OFFICER KINNALLY: Is there any participant that wants to respond to the motion, if you've read it?
It's basically a motion to dismiss the proceedings, and not to shortchange it in any way, but basically it indicates -- and I'm sure Mr. Porter will correct me if I'm wrong, but basically indicates that the borrow area in the County's position are part of the proposed site and the failure of the Applicant to include the borrow areas in the proposed site means that the Applicant has not thought -- not complied with the notice requirements which are jurisdictional to Section 39.2 of the Environmental Protection Act.
Is that a fair characterization?
MR. PORTER: That was dead on.
HEARING OFFICER KINNALLY: All right. Well, I think I would like to hear the arguments right now.
Let me just ask this. Mr. Belt, how

long do you -- how long do you think you're going to be?
MR. BELT: I anticipate approximately an hour and including cross -- I'm hoping that will include some cross-examination, but obviously that's kind of an unknown.
HEARING OFFICER KINNALLY: Let's listen to Mr. Belt. He's got Mr. Vogen here, and I don't -- we'll wait to do that tomorrow night, then, maybe.
Let's listen to Mr. Belt's witness.
Just the one witness, Mr. Belt?
MR. BELT: Yes.
HEARING OFFICER KINNALLY: All right. It's your turn now, so you can go ahead.
MR. BELT: We would call Mr. Jeff Vogen, and I explained to the Hearing --
HEARING OFFICER KINNALLY: You've got to talk into the microphone. You don't need to stand up.
MR. BELT: The City would call Jeff Vogen as its witness. And I just wanted to point out to the Board that due to the constraint in one of the wires that we need to utilize for an audio system for part of our presentation, that it would require that I sit in close proximity to Mr. Vogen.

HEARING OFFICER KINNALLY: Okay. There's another microphone over there if you want to sit over there.
Okay, Mr. Vogen -- or Jeff Vogen. Do you want to raise your right hand? Nice to see you again.
(Witness sworn.)
HEARING OFFICER KINNALLY: Now, before you start, Mr. Belt, I've taken the liberty of looking at your exhibits here, which are some 33 in number; and, again, I don't want to cut you off in any way, but I think everyone will agree here -- I think everyone, all the participants -- and if I'm wrong here, tell me -- that birds that hit vehicles, such as airplanes, cause damage and are a safety concern.
Can I get a stipulation from everyone on that?
MR. BLAZER: The County will stipulate.
MR. KRAMER: We would stipulate. That's fine.
HEARING OFFICER KINNALLY: Anyone disagree with that proposition?
MR. MORAN: No.
HEARING OFFICER KINNALLY: All right. So that will be stipulated to with respect to the fact that

birds that come in contact with airplanes as vehicles cause -- can cause serious personal damage to -- and can cause personal injury, as well. Okay?
All right. Go ahead.
MR. MORAN: And, Mr. Hearing Officer, if I might, before we commence the direct examination of Mr. Vogen, lodge my objection to the testimony as it relates to any issues relating to the FAA circular, the FAA regulations with respect to this matter, and any other applicable federal regulation applying to this airport and its location related to this proposed facility.
The Illinois Pollution Control Board has recognized in a case entitled City of Geneva versus Waste Management of Illinois, Inc., the number is PCB 94-58, issued July 21, 1994, the whole issue of whether an applicant addressed alleged issues relating to the effect of its operations on an airport not properly part of the siting process. Indeed, part of the permitting process that occurs if and when the Board were to issue an approval for this landfill.
As you know in that case, the issue was the proximity of the Settler's Hill Landfill to the DuPage Airport, and that issue was raised in that

proceeding, as well, and, indeed, the same objection was lodged, and upon appeal, the Pollution Control Board determined the County Board in that instance was entirely within its rights to essentially ignore that issue.
It wasn't relevant to the siting criteria or the siting issues, and that issue could be deferred for subsequent consideration either by the Illinois Environmental Protection Agency, the Federal Aviation Administration, or both.
So I object to the presentation of testimony that relates to that issue.
HEARING OFFICER KINNALLY: Okay. Would you like to respond to that, Mr. Belt?
MR. BELT: Yes, I would, Mr. Kinnally.
I believe that the Applicant has opened a door here through --
HEARING OFFICER KINNALLY: You've got to talk into the microphone.
MR. BELT: Is this on?
HEARING OFFICER KINNALLY: We can't hear you. The ladies can't hear you who are taking it down.
Thank you.
MR. BELT: I believe the Applicant has raised a

couple of issues and opened some doors through their direct testimony through their various witnesses on a number of items.

First off, there was testimony that the advisory circulars that were discussed with Mr. Nickodem, he testified that those are a reliable form of data that he has relied on, on that -- the information contained in those circulars in the past, that that information is, in fact, reliable, at least as it relates to an engineering standpoint.

He also testified that he was familiar with the regulations, specifically 40 CFR Part 25-A. In fact, he quoted it by -- by name indicating that that is a regulation that he feels that applies.

The other two items that were raised by the Applicant, which I believe, in fairness, need to be responded to, are related to the Settler's Hill Landfill and the Prairie View Landfill, which -- neither of which were addressed in their -- in this Application.

So with that having been said, I do believe that the testimony anticipated by Mr. Vogen is going to be relevant as it relates to Criterion 2 for

the -- related to the health, safety, and welfare of the public compatibility aspect, for Criterion 3, and as it relates to Criterion 5, for any potential operational accidents.

HEARING OFFICER KINNALLY: Okay. Does anybody else want to be heard on this objection or want to say anything about this, any of the lawyers or the participants?

Mr. Porter?

MR. PORTER: Yes.

HEARING OFFICER KINNALLY: Talk into the mic, please.

MR. PORTER: Unfortunately, I'm not familiar with PCB 94-58 and a copy has not been provided. Taking that in and of itself, I would want to review it before making a comment as to whether or not you can get into compliance with FAA regulations at a siting hearing.

Having said that, it's clearly relevant as to whether or not FAA regulations are being complied with as to bird safety. I mean health, safety, and welfare is directly on point; and, therefore, as far as relevancy is concerned, it is axiomatic that this is completely -- you've already

established on the record here that it is related to health, safety, and welfare.

So on that grounds, I would obviously want the City of Morris to have the opportunity to address the issues.

HEARING OFFICER KINNALLY: You said bird safety. Don't you mean human safety?

MR. PORTER: Undoubtedly.

HEARING OFFICER KINNALLY: Okay. Thank you. All right. Thank you, Mr. Porter.

Mr. Dan Kramer, did you want to say anything?

MR. KRAMER: No comment, Mr. Kinnally.

HEARING OFFICER KINNALLY: All right. Mr. George Mueller?

MR. MUELLER: Mr. Porter stole my thunder.

HEARING OFFICER KINNALLY: All right. Well, that's a rarity.

How about Mr. Lyle?

MR. LYLE: I believe Mr. Porter said it all. I believe that the issue of safety and the location of this particular site is particularly germane to this hearing.

HEARING OFFICER KINNALLY: Okay. Anyone else

want to be heard on that?

MR. BLAZER: Mr. Kinnally, the County is not going to take a position on this; but since Mr. Porter happened to raise it, I do happen to have a copy of the City of Geneva decision here. I could certainly read the pertinent portion that I think Mr. Moran is referring to, if you would want to hear it.

HEARING OFFICER KINNALLY: We would appreciate it.

MR. BLAZER: All right. It's a section entitled Airport Safety.

Geneva asserts that WMII, Waste Management, Inc., improperly failed to address the impact of the proposed expansion on airport safety, as required by 40 CFR 258.10-A, and 35 Illinois Administrative Code 814.302-C, relying again on some report.

Geneva argues that this assessment is necessary because of the proximity of the landfill site to the DuPage County Regional Airport. Geneva claims that without making such a demonstration, the County could not have found that the site was so designed, located, and proposed to be operated that the public health, safety, and welfare will be

protected.

Waste Management asserts that this is an issue which is not properly addressed during the siting process. The Board agrees with Waste Management that this is a permitting issue, and that it is not necessary for Waste Management to make this showing at this time.

The Board believes that a local decision-maker is free to place some reliance on the Agency's permit review process, citing a couple of cases.

While a local decision-maker is in power to consider any and all highly technical details of landfill design and construction, it is not necessary for the local decision-makers to examine each request for siting approval so as to ensure compliance with every applicable regulation.

MR. PORTER: If I may then, Mr. Kinnally.

HEARING OFFICER KINNALLY: Yes, you may, Mr. Porter. Go ahead.

MR. PORTER: It's clear to me after having heard that that case revolved around a standard review issue.

It wasn't necessary for the local

siting authority to address whether or not that FAA regulation had been complied with. That was not a prescription from doing so. And at the PCB level, all they're doing is affirming the decision based on the manifest weight of the evidence standards probably.

So again, without the ability to completely review the decision, we're at somewhat of a disadvantage, but that seems relatively obvious from what I just heard.

HEARING OFFICER KINNALLY: Okay. Does anybody else want to be heard on this?

BOARD MEMBER WYKES: May I, Mr. Kinnally?

HEARING OFFICER KINNALLY: Who?

BOARD MEMBER WYKES: Bill Wykes.

HEARING OFFICER KINNALLY: Sure.

BOARD MEMBER WYKES: I just thought that the whole purpose was to gain information on public safety, and I would think that we should be allowed to hear it. I mean, I'm not going to make any ruling on any FAA regulation or anything, but I would just be interested in hearing what they have to say.

HEARING OFFICER KINNALLY: Okay. Anybody else want to say anything?

(No response.)

HEARING OFFICER KINNALLY: All right. I guess I get to make the call on this.

Number one, I don't think the door was opened through Mr. Nickodem on direct testimony. And I think we are concerned with safety.

I don't see where the County Board needs to go through what the Feds are going to do with respect to 40 CFR.

But with respect to the location, these runways and things of that nature, which I assume Mr. Vogen wants to tell us about and tell us why they're different, I think it's relevant.

But, at the same time, I think that there is some limitation with respect to the whole federal process that we don't really need to know about. I mean, if you want to say some things about it, that's fine.

So I'm going to give you, the applicant, leeway here with respect to what they offer, but, really, the federal regulations are something for the federal government to determine.

I think the Geneva decision is right on point; and so if you want to renew your objection at some point, Mr. Moran, you can, but I think the

Board wants to hear from Mr. Vogen, and so we're going to give them some leeway with respect to.

That's my ruling. Go ahead, Mr. Vogen.

MR. BELT: Thank you, Mr. Kinnally.

JEFF VOGEN

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

DIRECT EXAMINATION

BY MR. BELT:

Q. Would you state your name, please, and spell your last name for the record?

A. Jeff Vogen, V as in Victor, O-G-E-N.

Q. And where do you reside?

A. 425 East Benton Street, Morris, Illinois.

Q. Are you currently employed?

A. Yes, I am.

Q. And in what capacity?

A. I'm the airport manager for the Morris Municipal Airport.

Q. And how long have you been so employed?

A. Since 2000.

Q. And what are your duties and responsibilities as airport manager?

A. I oversee all the projects at the airport. I can do all the safety checks at the airport. We do the fueling at the airport. Basically chief cook and bottle washer at the airport.

Q. Does part of your duties include oversight for general safety for air traffic using the airport?

A. Yes, it is.

Q. Would it also include investigating wildlife management issues?

A. Yes, it does.

Q. And do you communicate with agencies such as the FAA and the Illinois Division of Aeronautics and potentially USDA on those issues?

A. Yes, I do.

Q. Do you have any professional experience in the aviation industry?

A. Yes, I do. I've got 27-and-a-half years with Delta Airlines. There, I was a technical operations line mechanic, which later became a PTI, which is a problem training instructor for Delta Airlines.

Part of those duties included engine maintenance, engine repair, foreign object damage, bird strikes, accident investigation; and from there,

I was in the Delta Employee's Technical Council, which was, again, another safety-related job.

Q. Prior to your employment with Delta, do you have any educational certificates or degrees in the aviation industry?

A. Yes, I do. I went to Louis University studying aviation maintenance management and graduated in 1978.

Q. During your 27-and-a-half years with Delta, did you engage in any continuing education?

A. Yes. From the moment I started with Delta, we had continuing education. It was FAA-approved studies, and, literally, I have 300 courses that I've completed with Delta Airlines.

Q. Okay. Do you hold a -- are you currently a pilot?

A. Yes, I am.

Q. And what licenses or certifications have you obtained?

A. I am a private pilot, single engine, multiengine, instrument, multi-instrument, and commercial-rated pilot.

Q. Okay. Do you own your own aircraft?

A. Yes, I do.

Q. Approximately how many hours have you logged as a pilot?

A. Roughly about 1,400.

Q. I understand you were raised in the Newark area?

A. Yes, I was.

Q. And are you familiar or have you been familiar with the Morris Airport for an extended period of time?

A. Yes, I have been. Ever since I was a child.

(City of Morris Exhibit No. 1 identified.)

BY MR. BELT:

Q. Okay. I would like you to look, if you would, please, at City of Morris Exhibit 1.

Could you -- are you familiar with that exhibit?

A. Yes, I am.

Q. What's that exhibit depict?

A. This is the Morris Airport from the air. And first, I've got to apologize for our short notice here. We didn't know we weren't going to have a projector screen, so a lot of these pictures are going

to be out of focus to you, so that's my fault. I apologize.

HEARING OFFICER KINNALLY: No, you don't have to be -- you gave us a nice book of exhibits here, and I'll tell you the one thing, the Board is very thankful that they have them all in front of them.

So whatever is up on the screen, don't worry about it because they can see it.

Thank you very much.

THE WITNESS: Well, the book has been condensed from this down to that little book, so we're trying to move it along for you.

BY THE WITNESS:

A. This right here is the north end of Morris Airport. On your right-hand side is Route 47. That would be west, and, of course, east on your left.

This depicts the Runway 18-36. Those are the magnetic headings.

A few things to note on here. Right here are the new "T" hangars that we built. This is our current property purchase that's going on as we speak for our extension to our runway to the north. The first extension is going to be 500 feet.

This ramp extension, because of all

of our traffic, you can see this little notched-in area in the middle of the picture. Because of all our heavy traffic now, the jets, this extension is going to start beginning of spring.

You can just barely see it on the picture, but at the very top, the south end of the picture, you can see where our 1,000-foot runway extension has been completed.

If we go down -- you're going to have to excuse my voice, too.

If we go down to the lower picture, you can see north on the top, Route 47 running along the left. This area here right north of the airport, this is our property purchase.

This is the runway extension we talked about last year at this time. You can see it has been completed.

And something new that's coming up right over here is going to be basically a corporate airport where we're going to have large corporate hangars, and the future Morris Fire Department is going to have a base here also for the airport and for the northern communities.

This section right here, you can see

running diagonal left to right, that is where the approved east-west runway is going to be sitting.

(City of Morris Exhibit No. 2 identified.)

BY MR. BELT:

Q. Thank you.

I would like you now to look at Morris Exhibit No. 2. Could you describe what's depicted in this exhibit, please?

A. Yes. The top picture is -- we are airborne east of the airport; and again, north is to the right, west is on top. Route 47 is running right along above the airport runway. You can see the entire 5,008-foot runway.

Up here is our airport development, the corporate hangar sitting right here. This was our property purchase last year.

I'm going to jump to the lower picture. You'll see Route 47 here on the bottom. North is to our left.

This shows our approved east-west runway much better. It comes from right here to here.

Again, this section right here to the lower left, that is for airport development for our

ramp. Our property purchase on the far left of the screen is right here.

And, again, this section of land, once it is purchased by the City, this is all for airport development; and we've got corporate hangars -- I'm sorry, corporate aircraft lined up to come into our airport with these hangars.

In the middle of the airport development here, you see the vacant grass spot? That is where the airport administration, FBO restaurant, and training center is going to be placed.

Q. Jeff, you used the term FBO. What does that stand for?

A. FBO means fixed-based operations. That is for flight schools and maintenance departments.

Q. Okay. So that's mechanical repair of aircraft?

A. Yes, it is.

Q. Okay. Is the -- the 1,000-foot runway extension that you testified to, is that, in fact, complete?

A. Yes, it is. It was completed October 18 of last year, right after the last hearing.

Q. So that's in full operation as of today?

A. Yes, it is.

Q. Okay. So if I could summarize your testimony, Morris Airport currently has one runway which is located in a north-south direction; is that correct?

A. That is correct.

Q. And there is no crosswind runway at this time?

A. Not at this time.

Q. And the runway is currently in excess of 5,000 feet; is that correct?

A. Yes, it is.

Q. What is the exact dimension?

A. It is 5,008 feet long, 75 foot wide.

Q. The Morris Airport is open on a 24-hour per day, seven-day-a-week basis?

A. Yes, it is. It is open 24 hours a day, seven days a week, 365 days a year.

Q. How many operations -- well, strike that.

Are you familiar with the term operations?

A. Yes, I am.

Q. And what does that mean?

A. The operation at an airport of an aircraft

is a landing terminating at the airport or a takeoff originating at the airport. That does not count students doing touch-and-goes, flying into pattern.

Q. When you were here a year ago to testify, I believe you testified that the Morris Airport sees over 42,000 operations per year. Is that still accurate?

A. Yes, it is. That was counted with a physical counter furnished by the Illinois Department of Transportation.

Q. Okay. And for those aircraft that are landing -- specifically landing at the airport, what effect, if any, does the prevailing winds have on which direction they land from?

A. Aircraft landing into -- landing at the Morris Airport, most all -- in fact, let me rephrase that. All aircraft are to land into the wind. This gives them more lift, gives them a slower approach speed.

Q. Okay. And what are the prevailing winds at the Morris Airport?

A. The prevailing winds are from the southwest, which means that most of the time the aircraft will be landing on Runway 1-8, which is the

180 degree radial, so you would be landing from north to south.

Q. Okay. There are currently hangars -- "T" hangars at the Morris Airport?

A. Yes, there are.

Q. And those house aircraft?

A. Yes, they do.

Q. How many aircraft are currently based at the Morris Airport?

A. We have 76 aircraft based at the airport.

Q. The Morris Airport entertains both piston aircraft and jet aircraft; is that correct?

A. Yes, it does.

Q. Are you aware of any kind of a percentage breakdown between the number of piston aircraft and jet aircraft that currently utilize the airport?

A. I could relate to that on the fuel sales because I'm directly involved with that.

Last year at this time, I believe you remember me talking that for the first month our jet fuel sales had outreached, overtaken our avgas sales.

Well, this year from the time that the runway got extended and opened, our jet fuel sales now are 61 percent and our avgas sales are 39 percent.

Q. And when you say the term avgas, that's for piston aircraft only?

A. Yes, it is.

(City of Morris Exhibit No. 3 identified.)

BY MR. BELT:

Q. I would like you next to look at Morris Exhibit No. 3, which is the Transportation Improvement Plan.

Are you familiar with that document?

A. Yes, I am.

Q. Has that been prepared or amended under your direction and supervision?

A. Yes, it has.

Q. Does this document fairly and accurately depict the proposed construction at the Morris Airport between the '05 and the '09 fiscal years?

A. With one exception. Our runway extension took a lot longer than we thought, so the projects got moved back one year. But, yes, other than that, it's totally accurate.

Q. Okay. I would like to direct your attention to the upper right-hand corner of this exhibit. There's some orange crosshatching.

Could you explain what that area depicts, please?

A. Yeah. This section to the top right, that is the property purchase that the City of Morris is going through right now. This is to facilitate the extension of our runway by 500 feet.

Q. And the green area directly to the left, which appears to be a runway extension, does that depict the proposed or future 500-foot runway extension and corresponding taxiway?

A. Yes, it does.

Q. Okay. The red area, the red crosshatching in the center, is that intended to depict the future land acquisition and construction for the crosswind runway?

A. Yes, it does.

Q. Has this plan been reviewed and approved by the FAA and the Illinois Division of Aeronautics?

A. Yes, it has.

(City of Morris Exhibit No. 4 identified.)

BY MR. BELT:

Q. I would like you to next, please, look at City of Morris Exhibit No. 4, which is a City of

Morris Airport Layout Plan. I assume you're familiar with this document?

A. Yes, I am.

Q. And likewise, has this been prepared and amended under your direction and supervision?

A. Yes, it has.

Q. And does this exhibit fairly and accurately depict the layout of the airport in relationship to the proposed Waste Management Landfill?

A. With one exception. The borrow areas were not included on the Application. They could not be mapped on this map.

Q. Okay. Since this one is just a touch confusing, could you use your pointer, please, and identify, first of all, which direction is north and then where the north-south runway is at and then the proposed crosswind?

A. The right side of this chart is north; top, west; the bottom, east; and your left is south.

Right here you can see the north-south runway with parallel taxiway. The proposed east-west runs vertical.

The landfill footprint is right here

with the sedimentation basin.

The green line, you see running on a diagonal from left to right, that is the VORA instrument approach to the Morris Airport.

VOR is VHF omnidirectional range radio. That is one of the primary instrument approaches to the Morris Airport.

You can see the distance from the airport operations area at the Morris Airport to the corner of the landfill footprint is 2.38 miles.

Now, again, like I said, it is completely accurate other than the borrow areas that were not on the Application that would be here farther to the left or south of the landfill.

Q. Okay. Let's talk a little bit more about the VOR approach.

Does that -- does that fall within the definition of an instrument approach?

A. Yes. The VORA approach is an instrument approach.

Q. Okay. And explain how the VOR system works, would you, please?

A. The VOR system is the primary navigation system for aircraft today.

This particular VOR sits right over here on -- just a quarter mile farther east on McKanna Road.

A very simple way to explain a VOR is it is a radio transmitter that emits a signal much like the spokes of a wheel. Each one of the spokes is a corresponding bearing from that transmitter.

So when an aircraft flies, in this case, from the Joliet VOR towards the Morris Airport, they fly on the 210 degree radial. That radial brings them directly to the airport.

Q. And if an aircraft were to be on an instrument approach from the Joliet VOR, would they be traveling across the green line that you pointed out a moment ago on this exhibit?

A. Yes, they would. That is the 210 degree radial from the Joliet VOR.

Q. Okay. And this exhibit depicts that green line or that VOR instrument approach essentially bisecting the landfill footprint; is that correct?

A. Yes, it does.

Q. What's the significance of that?

A. It's a huge significance. There are two different reasons. First off, that VOR approach is a

protected airspace. At the projected buildout of 181 feet -- I got to go back.

The VOR approach is a nonprecision instrument approach. There is no vertical guidance up or down. It is strictly done by the speed of the aircraft and your time from the station.

Therefore, when they cross over the Joliet VOR inbound to the Morris Airport, they are descending to see the ground. They have to make it -- the minimum altitude without any distance measuring equipment is 698 feet.

Now, with the landfill built there at 181 feet, that gives you less than a 500-foot separation between the aircraft and the landfill.

And, of course, our favorite talk, now if you put a wildlife attractant directly under a VOR instrument approach where the aircraft are flying literally in the clouds without forward visibility, the chance for impact are huge.

Q. Jeff, you testified to the number 698. That's intended to be 698 feet above ground level; correct?

A. That is correct.

Q. And, likewise, the 181 feet number that

you referenced, that's the proposed top elevation on final buildout of this landfill, and that also is an above ground level determination?

A. Yes, it is.

Q. Okay. The Joliet VOR, is that unique to the Morris Airport, or do other airports utilize that system?

A. No. The Joliet VOR is not only used for instrument approaches by Morris, it's also used by Joliet, Lewis Lockport, DuPage Airport, Midway Airport, and O'Hare Airport.

Q. How is it that Midway and/or O'Hare would utilize this system?

A. Usually with the aircraft going into Midway or O'Hare are coming from the south or the west. They are cleared directly to the Joliet VOR and then inbound to their respective airports.

(City of Morris Exhibit No. 5 identified.)

BY MR. BELT:

Q. Next I would like you to take a look at Morris Exhibit No. 5, which is actually Figure 1.1 from the Applicant's siting application, with the exception of some shading.

The Morris Municipal Airport is depicted on this exhibit. Do you see where that's coming out?

A. (Indicating.)

Q. Yes.

Does this exhibit accurately depict the Morris Airport as it currently stands today?

A. As it stands today, no. It did depict the airport. That is the actual airport layout plan from 1947 to 1992.

Q. Okay. So as it relates to the current physical makeup of the airport, as we sit here this evening, this is not an accurate representation; is that correct?

A. No. It is completely inaccurate.

(City of Morris Exhibit No. 6 identified.)

BY MR. BELT:

Q. Okay. Next I would like you to take a look at Morris Exhibit No. 6, which is the -- which is Figure 3.2 previously admitted into evidence through the Applicant's siting application.

Initially, I would like you to take a look at the red box that surrounds the Morris Airport

property.

Does that depict the airport operations area as it currently stands today?

A. Yes, it does.

Q. Okay. Is that -- well, strike that.

You have also identified a -- the runways, both the north-south and you've also included an east-west crosswind runway in blue; is that correct?

A. That is correct. That is our current layout plan.

HEARING OFFICER KINNALLY: I don't want you to interrupt you, Mr. Belt, but I get to control the record. So if you want to withdraw a question, don't just say, "Strike that," because that's not the way you're supposed to do it. Okay?

MR. BELT: Thank you.

HEARING OFFICER KINNALLY: All right. Thank you.

BY MR. BELT:

Q. Mr. Vogen, you testified earlier that there was a 2.38-mile difference between the airport and the landfill. Can you explain -- well, strike that.

I withdraw that question. I'm sorry.

HEARING OFFICER KINNALLY: All right. The question will be withdrawn. That's fine. Just ask him another question.

MR. BELT: Thank you.

BY MR. BELT:

Q. Did you perform that calculation, and if so, how did you come to the 2.38-mile distinction?

A. Yes, I did. With regards to all of our measurements to a landfill from an airport, you need to go from the airport operations area to the closest distance of the landfill.

In this case, the GPS coordinates, and by using GPS and landmarks, the actual distance is 2.38 miles from the airport operations area to the corner of the footprint of the landfill.

Q. Okay. The 3.3-mile distinction that was previously identified by Waste Management, do you know how that dimension was calculated?

A. Yes. I don't know how they did it, but I can come up with a conclusion on why there's so much of a difference.

Our old airport runway was shorter, and it was much closer to Route 47. The new runway is

850 feet farther to the east and it is much longer.
Also, the airport operations area
does not start at the end of the runway.
Q. Where does it start at?
A. Well, the definition for an airport
operations area explains that best.
An airport operations area is that
area on the airport or -- I'm sorry, that area on the
airport to facilitate safe operations of aircraft for
takeoff, landing, and surface movement, and also,
planned areas on the airport for takeoff, landing, and
surface movement.
Q. So if I understand your testimony
correctly, the red area that's depicted on Morris
Exhibit 6 depicts the future final buildout of the
Morris Airport; is that correct?
A. That is correct --
Q. Okay.
A. -- at this time because, again, the
airport is growing.
Q. Okay. Morris Exhibit No. 6, this also
depicts the VOR instrument approach?
A. Yes, it does.
Q. And this, likewise, shows it bisecting the

landfill footprint?
A. Yes, it does.
(City of Morris Exhibit No. 7
identified.)
BY MR. BELT:
Q. Okay. I would like you to next look at
Morris Exhibit No. 7.
Are you familiar with this document?
A. Yes, I am.
Q. What does this document tell us?
A. This shows the VFR approach and departure
tracks to and from the Morris Airport.
The green line right here shows the
departure that leaves from the airport and moves to
the right, which would be northeast. As you can see,
the standard VFR departure also goes directly over the
landfill and the unknown borrow pit areas.
Q. Okay. You used the acronym VFR. What
does that stand for?
A. VFR stands for visual flight rules. In
other words, the simple explanation for that is you
need to have three miles visibility and be 1,000 foot
clear of clouds.
Q. Okay. How does that -- how is that

different from a VOR flight rule?
A. Well, the VOR flight rules for us with the
instrument approach would be instrument flight rules.
Those instrument flight rules, literally you can be
IMC, which means you're in the clouds, and be flying
on the VOR into the airport.
It's very important, too, to know
that not only are you flying inbound on the VOR
approach to the airport, you are also flying outbound
to the VOR on an instrument flight; and, again, with
our VFR departure track, the standard VFR departure,
again, is directly over the landfill.
(City of Morris Exhibit No. 8
identified.)
BY MR. BELT:
Q. Next I would like you to take a look at
Morris Exhibit No. 8.
Are you familiar with this exhibit?
A. Yes, I am.
Q. And what does this exhibit tell us?
A. This is the Waste Management facility,
Section 4-2 on the siting of landfills near an
airport.
Q. Okay.

A. And I might add, if you read the
highlighted area, the EPA requires any municipal solid
waste landfill operator proposing a new or expanded
waste disposal operation within five miles of a runway
to notify the appropriate FAA regional airport's
office and airport operator pursuant to 40 CFR.
(City of Morris Exhibit No. 9
identified.)
BY MR. BELT:
Q. I would next like you to look at Morris
Exhibit No. 9.
And as it relates to the term runway
end, do you have an understanding as to how the FAA
has interpreted that term?
A. Would you repeat the question, please?
Q. Yes.
I would like you to look at Morris
Exhibit No. 9.
A. Yes.
Q. And you just testified regarding -- using
the word runway end in connection with a five-mile
requirement.
What is your understanding as to how
the FAA has interpreted the runway --

MR. BLAZER: Can we ask what this is?
HEARING OFFICER KINNALLY: I don't know what it is. It's the exhibit. I don't know where it came from.
THE WITNESS: This is --
HEARING OFFICER KINNALLY: It would be nice to know.
THE WITNESS: I'm sorry. This is a condensed version of the AC 150 5200-33 (b). It is the section from the advisory circulars for known wildlife attractants at or near airports.
HEARING OFFICER KINNALLY: Well, I appreciate that information, Mr. Vogen, but who published it? I mean, when was it -- do you know anything --
THE WITNESS: Yes. It's published by the FAA.
HEARING OFFICER KINNALLY: When was it published?
THE WITNESS: The most recent update was this 33 (b). It was done last June.
MR. BELT: Do you remember my question?
BY THE WITNESS:
A. Yes, I do.
The runway end, according to the FAA on this advisory circular, is actually the airport

operations area.
If you look at No. 1-4 as previously -- let me slow down.
As previously mentioned by, I believe it was Mr. Nickodem, that airport servicing jet aircraft have a 10,000-foot separation area; however, the next paragraph was left off, and that is the protection of approach, departure, and circling airspace for all airports.
The FAA recommends a five-statute mile from the farthest edge of the airport operation area and the hazardous wildlife attractant.
BY MR. BELT:
Q. And if I understand your testimony a moment ago, the proposed landfill footprint is located both beneath an approach surface and a departure surface; is that correct?
A. Yes, it is.
Q. So is it your understanding that there is a five-mile rule that applies to the siting of this landfill as opposed to a 10,000-foot rule?
A. Absolutely. The five-mile rule in this case takes precedent. There is, according to the FAA, no wildlife attractant to be within five miles of the

approach, landing, and circling distance.
HEARING OFFICER KINNALLY: Mr. Belt, isn't this something for the FAA to determine? Aren't they the one -- I mean, if this Application doesn't comply with the federal government's rules, I mean, it's not going to get approved, is it?
MR. BELT: I think Mr. Nickodem hit the nail on the head when he testified that in his prior experiences he had consulted with the FAA on prior occasions before engaging in a siting hearing and found that information reliable and helpful.
And to the extent that he believes that the 10,000-foot rule applies, obviously Mr. Vogen differs with that thought; but I believe that Mr. Vogen is complementing his testimony by suggesting that consultation with the FAA to solicit their recommendations and input as it relates to this siting application certainly would have been appropriate and something reasonable for the Board to consider.
HEARING OFFICER KINNALLY: Under what -- wait a minute. Under what part of the ordinance do we consider it?
MR. BELT: I think it's considered under Criterion 2, 3, and 5.

HEARING OFFICER KINNALLY: Well, I'm not worried. That's a state statute.
Where under the ordinance does it -- I mean, I'm not trying to cut you off, but my understanding is if we can't -- if the Board is supposed to consider this matter, why would the Feds consider it then?
I mean, help me with this, would you? I mean --
MR. BELT: I believe that it's a consideration that needs to be taken up at both levels.
HEARING OFFICER KINNALLY: Okay. Did you want to say something?
MR. MORAN: Yes, Mr. Kinnally.
If I could just point out, I certainly don't want to keep any relevant information from the Board in any way, shape, or form; but it appears that what Mr. Vogen is now doing is reading this circular and giving his opinion on what is covered, what isn't covered. I don't think that's relevant or appropriate here.
And as we pointed out, these are all contents of an advisory circular and matters relating to the FAA that really are best applied and

interpreted by the FAA.
HEARING OFFICER KINNALLY: Does anybody else want to be heard on this?
MR. BLAZER: I have a suggestion. I don't know if it's appropriate or not, Mr. Kinnally, but I think we already have a proposed siting condition, if siting were to be approved, to require consultation and approval -- consultation with an approval by the FAA.
HEARING OFFICER KINNALLY: Well, I think that goes without saying. If the Feds don't approve this thing, it's not going down.
MR. BLAZER: Well, right. Exactly. And that's my point.
I just -- and again, we're certainly not trying to keep the City of Morris from presenting any information to this Board.
HEARING OFFICER KINNALLY: Here's what I want to do. I mean, I appreciate Mr. Vogen. He's testified at all these hearings. We know that -- but I don't think that he can say, Well, this is what the FAA means.
If you want to put the circular in, Mr. Belt, that's fine. But I mean, the FAA is going to say what it means whenever it says it. So, I

mean -- but go ahead.
MR. BELT: Thank you.
(City of Morris Exhibit No. 13 identified.)
BY MR. BELT:
Q. Let's turn to Morris Exhibit No. 13. Are you familiar with this exhibit?
A. Yes, I am.
Q. What does this exhibit depict?
A. This is a picture of the actual landfill footprint right here depicted in blue.
Again, I'm going to apologize. You're going to have to look at your pictures in front of you.
The red line goes directly from the Morris Airport. This is VOR approach to the Morris Airport over the landfill. Right now, we are at the minimum altitude, and you can see that the VOR directly bisects the landfill.
Q. Okay. So this -- if I understand your testimony correctly, this photograph was actually taken at approximately 696 feet above ground level?
A. Yes, it was.
Q. And the area outlined in blue is the

landfill footprint?
A. Yes, it is.
Q. And red line running vertical is the Joliet VOR approach to the Morris Airport?
A. That's correct.
Q. And then I know it's difficult to see on the screen, but in the printed version, the Morris Airport is actually shown in this photograph on the top portion of the photo?
A. Yes, it is. It's right there on the top center.
You can see by the distance on this picture, too, that you're not just crossing over the landfill. You're crossing over it for roughly three-quarters of a mile.
(City of Morris Exhibit No. 14 identified.)
BY MR. BELT:
Q. Thank you.
Let's turn to Exhibit -- Morris Exhibit No. 14. Are you familiar with this exhibit?
A. Yes, I am.
Q. And what does this show us?
A. These are current aircraft using the

Morris Airport. They range in various sizes and various companies.
Q. Reflecting back on your earlier testimony about the completion of the additional 1,000-foot runway extension to the south resulting in a total runway length in excess of 5,000 feet, has that had any impact at all on jet traffic such as the type of aircraft that are depicted in Morris No. 14?
A. Absolutely. That is why these aircraft are now at the Morris Airport.
Q. Do you have a breakdown between the number of jets that are based at the airport versus the piston-type aircraft that are based at the airport?
A. We have only two jet-propelled aircraft at the airport based; however, our operations now are skyrocketing with jet aircraft landing and taking off from the airport.
(City of Morris Exhibit No. 15 identified.)
BY MR. BELT:
Q. Thank you.
Next I'd like you to look at Morris Exhibit No. 15.
Do you agree with the proposition

that municipal solid waste landfills are known to attract large numbers of birds?

A. Yes, I do.

Q. And does this photograph truly and accurately depict conditions at municipal solid waste landfills as it relates to bird population?

A. Yes, it does.

MR. MORAN: Objection; foundation.

HEARING OFFICER KINNALLY: Sustained.

MR. BELT: Your Honor, if I could continue to explore that foundation.

HEARING OFFICER KINNALLY: Sure. Absolutely.

BY MR. BELT:

Q. Mr. Vogen, have you had any personal observations of any municipal solid waste facilities where you have made similar observations to what's depicted in Morris Exhibit No. 15?

A. Yes, I have.

Q. And when did you make any such observations and at what locations?

A. Friday afternoon at the Prairie Hill Landfill -- or the Prairie View Landfill. I'm sorry.

Q. And what was it that you observed at Prairie View Landfill this past Friday that leads you

to believe that Morris Exhibit 15 is a fair and accurate depiction of bird populations at municipal solid waste facilities?

A. I was invited some time ago to visit the Prairie View Landfill as it would, quote-unquote, be a great example of an operating landfill. Last Friday afternoon I flew over the landfill.

As I approached the landfill, I saw three huge flocks of seagulls flying up in the air along with hawks and other raptors.

Each flock, three in total, were over 100 birds each. They were at the operating cell, on the area just to the east of the operating cell, which I -- I'm not a landfill person too well, but I assume is going to be a new cell, and they were also in the borrow area -- the water holding borrow area.

(City of Morris Exhibit No. 16 identified.)

BY MR. BELT:

Q. I would like you to turn to Exhibit No. 16.

Is this one of the observations you made this past Friday at Prairie View Landfill?

A. Yes, it is, and my photography skills

aren't very well. I couldn't keep up with all the birds; however, you see the operating cell on the bottom of the picture. You can see the seagulls flying up to the right, and in the center of the picture you can see the hawk.

Q. Okay. Can you --

A. Yeah, I'm sorry.

Q. I don't know if you can identify those on the screen, please.

A. Right there is the hawk that was flying up.

Now, I have to say we approached this landfill at 1,000 feet above the ground. I had been told by people who are, at this point, seagull experts that they will take off, fly for -- at about 100 feet, then scatter and climb to a thousand feet.

As soon as we flew into the area, we had to climb up to 1,500 feet to keep away from the birds.

On the right-hand side of the picture, you can see the flocking seagulls. In the center, you can see the equipment that had just scared them up as it was compacting the garbage.

(City of Morris Exhibit No. 17 identified.)

BY MR. BELT:

Q. Next is Morris Exhibit No. 17.

Can you tell us what this photograph depicts?

A. Correct. This is the eastern side of the Prairie View Landfill. And at this point, the one flock had settled, and as you can see by depicted in the picture -- you probably can't see on the screen -- there are literally hundreds of seagulls sitting on the sidelines.

The thing that amazed me is as the equipment was moving, the seagulls had become very adapted to the landfill. As the equipment would pass, the seagulls would jump, scatter, flock, and come back and land and start eating again.

(City of Morris Exhibit No. 18 identified.)

BY MR. BELT:

Q. Thank you.

Next I would like you to look at Morris Exhibit No. 18.

Are you familiar with this photo?

A. Yes, I am.
Q. And what does this photo show us?
A. This is a Cessna 150 that was damaged after a -- it struck a hawk in midair. The hawk went through the windshield, shattered the windshield while it was on approach to the airport. Consequently, the airplane was destroyed.
Q. Is a Cessna 150 a common type aircraft that utilizes the Morris Airport?
A. Yes, it is. Cessna 150 was most utilized as training airplanes. They are highly used airplanes, and we have three of them based at the Morris Airport.
(City of Morris Exhibit No. 19 identified.)
BY MR. BELT:
Q. Thank you.
Next Morris Exhibit No. 19, are you familiar with this exhibit?
A. Absolutely. This is a Cessna Citation, a Cessna 525. It hit a flock of white-winged scoters. White-winged scoters basically range in weight from two to four pounds.
And as this shows, that the damage to

the engine was extensive. Luckily it went through the bottom of the cowl and not directly into the engine, as that engine would have been lost completely.
Q. Mr. Vogen, is a Cessna 525 a type of aircraft that utilizes the Morris Airport?
A. Absolutely. We have multiple companies using them at the airport.
(City of Morris Exhibit No. 20 identified.)
BY MR. BELT:
Q. Next I'd like you to look at Morris Exhibit No. 20.
Are you familiar with that exhibit?
A. Yes.
HEARING OFFICER KINNALLY: Mr. Belt, we've got a stipulation with respect to the fact that bird strikes create safety hazards with respect to personal injuries and personal property; and, you know, I guess these pictures further amplify that, but I don't think we have to go through every one of them. Why don't you go to 27.
MR. BELT: I understand that, Mr. Kinnally.
Can I understand that the stipulation would include a stipulation for the admission of the

exhibits through Exhibit No. 27?
HEARING OFFICER KINNALLY: It's my understanding that it does. Is that right?
MR. MORAN: The stipulation is to the admission of these photos which we just received today, have not been filed in accordance with the ordinance?
HEARING OFFICER KINNALLY: Well, you already stipulate -- we can go through them one by one. You already stipulated that they indicated that bird -- when they -- birds, when they hit aircraft vehicles, cause personal injury and property damage.
MR. MORAN: That is true, that, we did stipulate to, but the photographs --
HEARING OFFICER KINNALLY: Did you give them these before?
MR. BELT: Yes, Mr. Kinnally. These photographs were filed on September 4.
HEARING OFFICER KINNALLY: I think they were.
MR. MORAN: Wait a minute. We just saw a photograph allegedly taken on Prairie View at on Friday.
HEARING OFFICER KINNALLY: Oh, that's a different issue. I'm not asking about that. I'm asking about the ones about the bird strikes. I'm not

talking about Prairie View.
I'm talking about the ones that start -- he hasn't offered the other ones. The ones that start with 18 and go to 26. Those are -- he -- those are already -- you've seen those before.
MR. MORAN: That's fine. We have no objection to those.
(City of Morris Exhibits Nos. 18 through 26 admitted.)
HEARING OFFICER KINNALLY: So 18 through 26, they're in.
Now, the other ones you have to offer. Why don't you go to 27 then, Mr. Belt.
Thank you for that accommodation. Appreciate that. Mr. Moran, appreciate that as well.
(City of Morris Exhibit No. 27 identified.)
BY MR. BELT:
Q. Mr. Vogen, I would like you to look next at Morris Exhibit No. 27.
Are you familiar with that exhibit?
A. Yes, I am.
Q. What does this exhibit tell us?
A. This shows that the number of bird strikes

have been drastically increasing.
As you can see from 1990, there was less than 1,800 reported. At the year 2007, there was 79,000 reported.
And you've got to remember that only 20 percent of all bird strikes are reported. 80 percent of them go unreported.
HEARING OFFICER KINNALLY: Where did this come from?
THE WITNESS: This comes from the FAA in the advisory circulars, and it's on wildlife hazards.
HEARING OFFICER KINNALLY: So is this in that one circular you were talking about before?
THE WITNESS: Correct. And it's also in the -- the DNC, which is the bird study -- I'm sorry, Canadian bird study group.
HEARING OFFICER KINNALLY: Okay. Thank you.
(City of Morris Exhibit No. 28 identified.)
BY MR. BELT:
Q. Next exhibit is Morris Exhibit No. 28.
Are you familiar with this exhibit?
A. Yes, I am.
Q. What does this exhibit depict?

A. This depicts the DuPage Airport and Settler's Hill Landfill, and the location of the Settler's Hill Landfill.
Q. Could you identify with your pointer, please, where the landfill is at and then the respective runways and surfaces -- approach surfaces that you've identified here?
A. Correct. Right here to the left depicted in yellow is the Settler's Hill landfill.
On the top of the screen, the vertical runway is Runway 2-20.
Again, they go by magnetic heading.
Depicted in blue is the ILS approach for Runway 2, and depicted in green is the VOR approach to Runway 2, and this green line is also off of the Joliet VOR. It's the same VOR that we use.
Q. Mr. Vogen, were you here when Mr. Hoekstra testified or have you otherwise seen his testimony that he's unaware -- or he was unaware of any bird strike incidents at the Settler's Hill Landfill?
A. Yes. I was here and I also read it.
Q. Do you have any understanding -- an understanding as to whether or not there have been any bird strikes associated with the DuPage Airport?

A. Absolutely. I used to fly out of the DuPage Airport, so it kind of struck my eye and my ear. So I contacted the DuPage operations people, and asked them if the landfill and/or the airport has had any wildlife strikes -- bird strikes.
They have had numerous, numerous bird strikes at the DuPage Airport. Their bird control is now a seven-day-a-week full-time operation trying to control the bird problem at the DuPage Airport.
Every nodem, every publication about the DuPage Airport has a caution on it, and that is birds flying on airport and in the vicinity.
They have had countless problems, and that was not -- I don't know a nice way to say it. They have had a lot of bird strikes.
(City of Morris Exhibit No. 29 identified.)
BY MR. BELT:
Q. Okay. Next I would like you to look at Morris Exhibit No. 29.
What does this document tell us?
A. This is the actual reported bird strikes from the DuPage Airport from 2001 to just recently at 2008.

Q. And how many bird strikes are reported during that period of time?
A. There have been 30 wildlife strikes in that period of time. These are actual confirmed bird strikes with damage to aircraft.
Now, they have had countless dead birds on the runway, but they have not been reported by the tower or the pilots.
Q. In the next to last line in this exhibit, there is a -- an occurrence noted with a coyote?
A. Correct.
Q. With the exception of that -- of that incident with the coyote, are the balance of these bird strikes?
A. Yes. The other 29 are bird strikes.
Q. Through your inquiry or investigation, were you provided any information on why there may have been a coyote strike at the airport?
A. Yes. Because it's a big urban area, the only thing that they could figure out is the dead birds on the side of the runway, the coyote was in that vicinity.
Q. Out of the 20 -- excluding the coyote strike, out of the 29 that are identified in this

exhibit, how many of the bird strikes occurred on the north-south runway?

A. 90 percent of those bird strikes ended up on the Runway 2-20, which is the closest runway to Settler's Hill Landfill.

(City of Morris Exhibit No. 30 identified.)

BY MR. BELT:

Q. Look at Morris Exhibit No. 30, if you would, please.

A. Okay.

Q. Could you show us with the pointer, please, the movement of an aircraft on either Runway 2L or 20R?

A. If the wind is out of the south, which would be this direction at the bottom of the page, aircraft would take off to the south, following this path. The same way for landing, they would come in the same direction.

The wind out of the north, the takeoffs again would be just the opposite. They would take off from this direction going north, and they would land coming in over the -- the south end towards the Settler's Hill Landfill.

One important thing to note, it was brought up in his testimony, too, that the Settler's Hill Landfill was within 10,000 foot of the airport. That is not actually true at the time of siting.

This Runway 2-20 never existed. It was only completed in 1992 as a 5,000-foot runway. The only two runways at the siting were the east-west and the small north-south.

In 1996, the runway got extended, and the rest is history for DuPage.

Q. Mr. Vogen, were you aware that Mr. Hoekstra also testified that the same bird control measures that were -- or that are employed at the DuPage Airport are proposed here?

A. Yes, I do.

Q. And do you have any independent knowledge as to whether or not the DuPage Airport manager believes that the bird control measures at Settler's Hill are effective?

MR. MORAN: Objection.

HEARING OFFICER KINNALLY: Okay. What is it?

MR. MORAN: Hearsay.

HEARING OFFICER KINNALLY: Well, I'd like to hear some foundation.

Hearsay can be admissible under certain circumstances, but let's -- when did he talk to this -- who is the person? When did the conversation take place? Who was present?

Can you give us some foundation?

MR. BELT: Certainly.

BY MR. BELT:

Q. Mr. Vogen, have you had any conversations with anybody at the DuPage Airport related to the bird control measures?

A. Yes, I have.

Q. And who would that be?

A. I talked to Byron Miller who has been with the DuPage Airport for 25-plus years. I talked to Jeff Jorgensen, who is the head of operations; and I also talked to Tom Cleveland, who was prior with the DuPage Airport and now is the airport manager for DeKalb airport.

Q. And when did those conversations take place?

A. They took place on Friday.

Q. And were those in person?

A. No. I contacted them over the phone.

Q. And have you spoken with any of these

three gentlemen on more than one occasion?

A. Yes, I have.

Q. From those communications, returning to my question, do you have an understanding as to whether or not the airport manager or other airport personnel at the DuPage Airport feel as if the bird control measures employed at Settler's Hill have been effective as it relates to the DuPage Airport operations?

MR. MORAN: Objection to the form of the question, what these people feel about anything.

HEARING OFFICER KINNALLY: Well, I'm going to sustain the objection.

MR. BELT: I'll rephrase it.

HEARING OFFICER KINNALLY: All right.

BY MR. BELT:

Q. Have you been informed by any of the three gentlemen that you just mentioned as to whether or not the bird control measures employed at Settler's Hill Landfill are effective as it relates to the DuPage Airport operations?

A. Yes, I have, and they told me that they were totally ineffective.

In fact, they've talked about using

shell crackers, bird bombs, cannons, and everything else at the DuPage Airport, and told me how they worked -- they did not work.

They have also -- because of the circumstances at DuPage, they have had to go to get permits from the DNR for lethally killing these -- this wildlife.

The standard permit is two to five for seagulls. DuPage Airport, because of its location and its surrounding area and Settler's Hill Landfill, now has a permit -- and it has been increasing every year -- to lethally take over 200 seagulls per year.

They also have permits for migratory birds, and believe it or not, they have a permit for blue heron.

The bird control problem at the DuPage Airport is literally out of control. They, too, are going through a wildlife hazard assessment with the United States Department of Agriculture at this time.

Q. Mr. Vogen, have you had an opportunity to review the bird control plan that was submitted with this Application?

A. Yes, I have.

Q. And in reviewing that Application, did you find any studies specific to either the Morris Airport or Kendall County, Illinois, as it relates to bird patterns, bird habitat, et cetera?

A. No, I did not.

Q. Was the Morris Airport even mentioned in the bird control plan?

A. No, it was not.

Q. Was there anything in the bird control plan that you observed that indicated that there were any recommendations or suggestions considered by either the -- any either state or federal agency that regulates wildlife?

A. No, there was not.

Q. Is there anything that you found in the bird control plan to suggest that this proposed landfill would be compatible with the operations of the Morris Airport?

A. No, there was not.

Q. Just a couple questions on stormwater.

Mr. Vogen, do you know the total number of acres of open water for this proposed facility, including the borrow areas?

A. No, I do not. That was omitted off the Application.

Q. Would you agree that it would be fair to characterize the borrow area as substantial?

A. Yes. Three million yards is a very substantial borrow area.

Q. In your experience as a pilot and through your other experiences in the aviation industry, can open standing water attract birds?

A. Absolutely.

MR. BELT: Mr. Kinnally, if I could have just one moment, please?

HEARING OFFICER KINNALLY: You sure may.

BY MR. BLAZER:

Q. Mr. Vogen, we have brought several videos to show the Board; is that correct?

A. Yes, we did.

Q. And these are actual videos of bird strikes?

A. Yes, they are.

(City of Morris Exhibit No. 31 identified.)

BY MR. BELT:

Q. The first video that I'd like to discuss with you is the -- the video which is -- has a final

name of Feed Burner Flash Video, and I'd also like the record to reflect that we have provided a transcription of the audible communications, and on Morris Exhibit No. 31, which is entitled NATO Hawk Bird Strike with Student Ejection and Crash.

Are you familiar with this video?

A. Yes, I am.

HEARING OFFICER KINNALLY: Well, the record will reflect that, since that's my job, Mr. Belt, you gave us 31, 32, 33, and 34, which appear to be transcripts of videos.

MR. BELT: That is correct.

MR. MORAN: Mr. Hearing Officer, I would lodge an objection at this point. If these videos are simply going to depict birds striking aircraft, we've already stipulated to that.

More importantly, unless there can be some connection with all of these videos, photos that somehow whatever strike's being addressed was one that occurred near or in close proximity to a landfill, there's no relevance to any of this.

HEARING OFFICER KINNALLY: Anybody else want to be heard on this?

(No response.)

HEARING OFFICER KINNALLY: Mr. Belt, do you want to respond?
MR. BELT: Sure.
Mr. Kinnally, I do think that it is very relevant as it relates to the operations, the communications, the activities that take place within a cockpit during and immediately after a bird strike.
HEARING OFFICER KINNALLY: Well --
MR. BELT: We have a very limited -- I guess not a limited, but more of a unique opportunity to see what actually transpires in a cockpit when an aircraft strikes a bird.
And I would offer the suggestion that these are extremely short video clips, and I think that the -- I think they are relevant.
HEARING OFFICER KINNALLY: I don't think they're relevant. I'm going to sustain the objection.
You've already got a stipulation with respect to this, and we have the transcripts here, as well, and I don't think they're relevant at this point.
You've got the stipulation, so it's just -- it's duplicative of what we already have in the record, so I'm going to sustain the objection. Go

ahead.
MR. BELT: May I make an offer of proof?
HEARING OFFICER KINNALLY: Sure.
BY MR. BELT:
Q. Mr. Vogen, have you transcribed the audio communications contained in the -- the video that I just described?
A. Yes, I have.
Q. And does the transcription fairly and accurately depict the communications as it relates to those communications within this video?
A. Yes, it does.
HEARING OFFICER KINNALLY: Well, I think we're going to have to see the videos tomorrow night because it's 10:30 and it's time to go home.
So if you want to come back tomorrow, and we'll convene with Mr. Vogen at that time and you can make your offer of proof then.
MR. BELT: Thank you.
HEARING OFFICER KINNALLY: Sure. All right. Thanks for coming tonight, and we will see you tomorrow night.
And if the lawyers are ready on the motion filed by Mr. Porter with respect to argument,

after we hear from Mr. Vogen on his cross-examination, we'll do that then. Thanks.
* * * * *

STATE OF ILLINOIS)
) SS.
COUNTY OF DU PAGE)
I, Shannon M. Frey, CSR No. 084-002277, and Amy K. Bateman, CSR No. 84-003803, do hereby certify that we reported in shorthand the proceedings had at the hearing of the above-entitled cause and that the foregoing Report of Proceedings, Pages 1471 through 119, inclusive, is a true, correct, and complete transcript of our shorthand notes taken at the time and place aforesaid.
We further certify that we are not counsel for nor in any way related to any of the parties to this suit, nor are we in any way, directly or indirectly, interested in the outcome thereof.
This certification applies only to those transcripts, original and copies, produced under our direction and control; and we assume no responsibility for the accuracy of any copies which are not so produced.
IN WITNESS WHEREOF we have hereunto set our hand this 23rd day of September, 2008.

Certified Shorthand Reporter

Certified Shorthand Reporter