THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF SOUTH DAKOTA

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IN THE MATTER OF THE APPLICATION OF MONTANA-DAKOTA UTILITIES CO. AND OTTER TAIL POWER COMPANY FOR A PERMIT TO CONSTRUCT THE BIG STONE SOUTH TO ELLENDALE 345 kV TRANSMISSION LINE — EL13-028

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Transcript of Proceedings
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BEFORE THE PUBLIC UTILITIES COMMISSION

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Reported By Cheri McComsey Wittler, RPR, CRR

TRANSCRIPT OF PROCEEDINGS, held in the above-entitled matter, at the South Dakota State Capitol Building, 500 East Capitol Avenue, Pierre, South Dakota, on the 10th and 11th days of June, 2014.

study was the pole construction aspect of this project; is that correct?
A. That's correct.
Q. In doing the analysis you did for that part of the project, did you conduct any studies specifically with respect to local land use?
A. We did not perform any studies for land use, no. The studies that I performed specifically was a structure study.
Q. And you wouldn't have been involved in any sociological or economic studies either?
A. No, I would not.
Q. And I believe in your testimony you indicated that it's your assessment that steel monopole towers are better for the landowners; is that correct?
A. It's perceived to be less impact to the landowners, yes.
Q. You would agree, though, that no tower at all would be still less impact to the landowners?
A. I would.
Q. Can you briefly describe the pole construction process for us? What's involved in putting one of those up?
A. Once the final structure location is known, we will go through construction staking. So we go out, and they

stake the actual structure. Then civil foundation crews would come in, and they will drill the foundation, come in, place concrete.

After a period of time the concrete will cure, and then they would come in and bring the structure and using cranes they'll set the structure.

Q. So they will excavate a hole in the ground, fill it with concrete, and put a structure on top of it?

A. That is correct.

Q. What kind of equipment are they using to excavate this hole?

A. They're called drill rigs. Basically they're large drill rigs with augers on it, depending on the size or diameter of the hole.

Q. Do those drill rigs collect the soil that's extracted, or is it just sort of spilled to the side of the hole that they're actually digging?

A. It's spilled to the side. Just like if you were drilling a hole for a post.

Q. Do you know about how many cubic feet of soil they would be extracting for a foundation on each one of these towers?

A. Each foundation will be site specific designed. So throughout the entire project there will be a specific design for each foundation. And that can vary.

And typically the tangents will be 6-foot diameter and can be anywhere from 25 to 30 feet deep. So the volume would be somewhere in the 30 cubic yards roughly.
Q. Somewhere around 30 cubic yards?
A. Yeah. It's give or take. It will be dependent on the individual locations.
Q. Are you able to tell me -- and it may be in your testimony already. I apologize if I don't recall it -- about how many total foundations or poles are going to go up?
A. There are approximately 740 or so structures on the entire project. That includes the North Dakota portion also.
Q. Now as far as the equipment, the drill rig, for example, do you know what one of those weighs?
A. It's really dependent upon which contractor is chosen and then what equipment they bring to the site.
Q. Has the individual contractor equipment factored into any sort of a soil compaction study that you may have done?
A. Most of the equipment that we use is going to be standard. Even though each individual contractor has their own specific equipment, it's still going to roughly be the same. Kind of like a tractor is a tractor.
Q. So it's anticipated there will be several different

contractors with different sets of equipment working on this project?

A. Yes.

Q. I guess in your capacity as an engineer with the towers have you prepared any plans for testing or safe disposal of the soil that's distracted?

A. Testing in regards to what?

Q. Soilborne parasites.

A. That would not fall under what I'm doing as an engineer. It might fall under environmental.

Q. Do you know the identities of the contractors that are going to be used or where they're coming from?

A. No, I do not.

Q. It is anticipated, however, that whatever contractors are used will have motorized wheeled equipment that will travel from field to field?

A. Yes.

Q. So it is possible that those pieces of equipment are going to transport soil from field to field as a result?

A. There is a possibility of it.

Q. Now at one point in your testimony you mention the cost of putting lines underground and testified that it could cost 15 to 20 times more.

Do you stand by that today?

I was hired to work almost exclusively on that, and that was my graduate training as well.

Q. Can you give the Commission a short explanation of what the soybean cyst nematode is?

A. Sure. So generally I start off this explanation by describing nematodes in general. These are microscopic worms that live in water and soil, very common. And most of them are good. They're beneficial.

But there are a subset of them that feed on plants. And many of these plant feeding nematodes or plant parasitic nematodes are native to the United States, and they're commonly found in agricultural soils throughout the United States.

But there also are a few that are introduced pests. And soybean cyst nematode, which I'll probably refer to as SCN from this point on, is one of those introduced pests.

And introduced pests create unique problems in that when they are introduced into a field first off they have no natural enemies because they've never existed there before. So many of the native plant parasitic nematodes are not terribly damaging because there are other things that live in the soil that eat nematodes for lunch, for example.

But when you're a new introduced pest you have the

benefit of many years for not having any natural enemies. And so that's one of the things that makes soybean cyst nematode or SCN so difficult and so dangerous.

It also has aspects of its biology that make it very unique and very damaging. Most nematodes are individual worms that feed from the outside of the root and produce five or 10 offspring. But soybean cyst nematode burrows into the root. It attaches to the vascular tissue, which is in the center of the root, and then the female swells up to form who we refer to as a swollen female. And the reason she swells up is because ovaries develop inside of her that are very large.

Eventually the adult swollen female is about the size of a printed period at the end of a sentence. So in a book page or a newspaper. And that swollen female fills up with eggs, 200 to 300 eggs. So a unique aspect of the nematode's biology is that it has a very high reproductive potential.

Now the whole life cycle of SCN can be completed in four weeks. So when you think about how many weeks a soybean crop is grown in your state or mine that allows for three or four or five turns of the life cycle, generations. And so that adds to the potential for explosive increases in numbers.

And then if mother nature didn't give us enough of a

bad hand, that final aspect that makes it terribly difficult to manage is the eggs inside the females. When she dies those eggs can live 10 or more years without a soybean crop being grown. Those eggs go dormant in the soil.

So it's a very troublesome pest because of being an introduced pest, having a high number of offspring per individual, a short life cycle, and then very long lived in the soil.

Management of soybean cyst nematode consists of checking your fields to know if you have it or not, and then once you've discovered you've got it, you're looking at growing resistant soybean varieties or not growing a host crop like soybeans or using a seed treatment, which is a new management strategy that's just been brought on to the market a couple of years ago.

So really check your fields, switch to a resistant soybean variety, don't grow something that's a host crop, or a seed treatment.

I want to just touch on the resistant soybean varieties for a second because I don't want to give you the impression that that's a cure. So resistant soybean varieties suppress the reproduction of the nematode, but it doesn't stop reproduction. And also it still suffers some damage.

And then as you use the resistance over time, the nematode can become resistant to resistance. So in Iowa where we grow 11 million acres of soybeans, soybean cyst nematode is in 75 percent of the field. It's not a death sentence, but it's a significant economic hit to the soybean production in any field that has it because of these things.

And the seed treatment, which is the newest management strategy, in my mind at least the verdict is still out on whether or not they provide any additional benefit or not.

Because of everything I've just said, I consider the states of North Dakota, South Dakota, and parts of Minnesota as being in a really unique situation in that there are large tracts of land growing soybeans that don't have soybean cyst nematode yet. And so that's a unique opportunity in terms of management. In many respects the best way to manage soybean cyst nematode is to delay its arrival into a particular field.

So I find myself sitting here listening to proceedings thinking of my career in the early '90s in Iowa when soybean cyst nematode wasn't very widespread, and we really beat the drum and talked about managing the movement of soil to slow the spread of the nematode. Once the nematode is present then we've covered already

what your management options are.

And as far as spread goes, as in my prefiled testimony, anything that moves soil has the ability to move soybean cyst nematode. I just want to bring you back to a mental imagine of a female the size of a period at the end of a sentence. And that little object has 200 to 300 offspring inside of her.

And so the smallest little particle that's able to hold a period at the end of the sentence, that's the amount of soil that could be moved to move the nematode.

Finally, one just short comment. I've heard comments yesterday and today about farmers not mentioning this in discussions and so forth. That doesn't surprise me at all. Soybean cyst nematode has been in Iowa since 1978. And I arrived in 1990 and have devoted my career to research and grower education on soybean cyst nematode, and to this day I run into Iowa farmers who were unaware of soybean cyst nematode.

So just because the farmer -- don't be alarmed or don't let that throw you a curve ball. Soybean cyst nematode is still somewhat unrecognized even in it the State of Iowa among some farmers.

And that concludes the summary of my prefiled testimony.

Q. Mr. Tylka, I have just a couple more questions for

you then.

MR. SMITH: Mic.

MR. PESALL: It's on. I'll lean forward a bit there.

Q. Can you explain to the Commission about when it came into South Dakota and where it's at right now?

A. It's hard to say when it came in. As scientists when we discover a pathogen of significance, we will report it in a scientific journal. And so that report was published by a South Dakota State University professor in 1996 indicating that they had discovered it in 1995. But when it actually showed up in the state would be anybody's guess.

Q. What counties or where in the state is it concentrated right now?

A. East -- the eastern band. I mean, I don't know if I'd consider it the eastern third or the eastern 25 percent of the state. From north to south.

Q. And that would be reflected in the maps that we've submitted in the exhibits?

A. Yeah. I should say I'm not a geographical expert, but I had submitted a map that -- I'm in charge of updating the known distribution map of soybean cyst nematode in the nation and we just updated that map in January of this year and I submitted the newest version

of that map.

Q. Turning your attention to the management plan that's been submitted by the Applicants, which is Exhibit 23, have you had a chance to review that exhibit?

A. Yes.

Q. Do you have any concerns about the efficacy of the plan proposed in there?

A. I don't think I can comment on the potential efficacy because there aren't details that would allow me to make that judgment.

Q. Do you think it would need more details in what regard?

A. In terms of the number of soil cores that would be collected, where they would be collected in the field, and in what type of a pattern. And probably most importantly, how many acres would be represented by one set of soil samples.

And the reason for all of that concern is I keep going back to the biology of the nematode in that it's a very aggregated pest. The individual worms themselves, all plant parasitic nematodes, can only move an inch or so under their own power. But remember that this nematode's female produces 200 or 300 eggs inside of her body. So that makes it even more aggregated or clustered in a field.

So even from a field research perspective it's very easy to miss soybean cyst nematode in soil samples, depending on how many you take and when you take them and the area that you take them from.

Q. Are there any issues that come to your mind with the concept of washing down equipment between fields?

A. Yeah. I guess the thing that pops into my mind is where will the water and soil that's washed off go? I mean, I'm always thinking about those little dots, those little white females full of 200 to 300 eggs. And it's very easy to imagine a soil particle small enough to hold one of those little dots being moved.

And I run into the same situation in research where we will want to add soybean cyst nematode to certain research areas to control it, to study it. And it's very -- we have to be very careful as we do that not to spread soil or runoff water because that would spread the nematode.

Q. Is there a known false negative rate for soil testing?

A. Yes. In the late '90s I worked closely with our plant disease clinic where farmers send soil samples. And for three years they processed the samples and gave farmer results. And I had them save all the samples that tested zero for soybean cyst nematode and I took the

leftover soil from them samples and I grew soybeans in them to see if I could get soybean cyst nematode out of it.

And 14 percent of the time -- over about 600 samples, 14 percent of the time we found soybean cyst nematode on soybean roots, even though the standard soil test gave us a zero egg count.

And so that has become part of our response to farmers when we tell them that the egg count came back zero. We warn them that there's a small percentage, 14, 15 percent, of false negatives.

Q. Is it 100 percent effective with laboratory testing?

A. No. Our -- I haven't figured out a way to experimentally test how effective our extractions procedures are, but I know if we process a soil sample once and we'll get a certain number of nematode eggs per half a cup of soil, if we don't throw that soil away and we process it a second time, we'll get some more out of it. And then we process it a third time, and we'll get a little bit more.

So I know that we're not getting 100 percent of the nematode out during the first run of the sample. But for research purposes that doesn't bother me because as long as I treat every sample the same, I can still conduct

scientific research. But I know for a fact our extraction procedures are not 100 percent effective.

Q. How deep can these little worms go?

A. Pretty much as deep as soybean roots would go in the soil. And that kind of tends to surprise people. I wouldn't have guessed soybeans went 6, 7 feet deep. But when I was studying at the University of Georgia they had a facility where they buried a room into the soil and that room had glass walls and they would plant soybeans above ground and let the soybeans grow and when they touched the glass walls you could then see the roots 5, 6, 7 feet deep.

And I saw SCN females on roots 5, 6, 7 feet deep. So I don't know what the maximum is, but I know it's at least 5, 6, 7 feet deep.

Q. Finally then, in your opinion, looking at the proposed mitigation plan, is that plan sufficiently detailed to provide any assurance that the nematode would not be spread by this project?

A. Not for me because of lack of detail.

MR. PESALL: Nothing further.

MR. SMITH: Is it Mr. Sutton?

MR. SUTTON: Correct, Mr. Smith. Is that better?

MR. SMITH: Those mics., they don't pick up well

absence of the nematode.

That has become less of an issue over the past 20 years, but there still are some SCN resistant soybean varieties that do not have top yield potential. So that's my reason for my answer being it depends on the variety that's chosen.

Q. Because of our growing season, as we move further north into areas that have had less pressure from SCN, would the varieties probably have more research done in that area at this point?

A. The answer is yes. And there are much fewer varieties available with SCN resistance in the maturity groups grown in South Dakota relative to Iowa. Even right now.

MR. SCHURING: Thank you.

MR. SMITH: Mr. Morehouse, any questions?

MR. MOREHOUSE: Nothing. Thank you.

MR. SMITH: Staff, any questions?

MS. CREMER: Thank you.

CROSS-EXAMINATION

BY MS. CREMER:

Q. Is there any way to determine how SCN is introduced into a clean field?

A. I've never been asked that question in 28 years.

Q. Yay for me.

COMMISSIONER FIEGEN: Congratulations.
A. I don't think so. They all look the same and are genetic the same. I don't think so.
Q. And is there any way to determine when SCN was introduced into a clean field?
A. Not specifically. Although you could deduce some timing information based on the numbers that are detected. It doesn't show up in full blown force in terms of numbers. It starts out slowly and builds up.
Q. And then looking at your Exhibit 105, it's a map.
A. Yes.
Q. You have that? So if I understood your testimony correctly, where it shows there is SCN, there definitely is in the dark portions of the map?
A. It should be red if it were printed in color.
Q. Yeah. I printed mine black and white, but okay. If I understood you correctly, those areas that show up white, those may also have SCN and you just haven't found it yet?
A. That's correct.
MS. CREMER: Okay. Thank you.
THE WITNESS: That's a correct statement.
MR. SMITH: Is that all the questions you have?
MS. CREMER: That's all I have. Thank you.
MR. SMITH: We'll turn then to Commissioner

questions.

Commissioner Fiegen, do you want to go first?

COMMISSIONER FIEGEN: Sure. This has certainly been an education, I'm sure, for all three Commissioners. I think Commissioner Nelson and I were probably in soils about 20 or 30 years ago with Dr. Malo at SDSU, and I know we didn't talk about this. But my memory's not that good.

Do you consult with local elevators, co-ops, custom combiners, spray -- people that do commercial spraying? Do you consult with them on the spread of this disease?

THE WITNESS: No. And there's really two nos to that. Consult in the State of Iowa would mean that I get paid personally rather than through the University, and so that answer is no.

But I also don't communicate with individual co-ops and grain elevators other than through whatever educational materials I produce or whatever I mention in presentations. So I don't have a particular relationship with any individual one of those organizations about spreading or not spreading SCN.

COMMISSIONER FIEGEN: This is certainly difficult to get my mind around because it's extremely tricky. So when you go do your research do you go out

and research in fields, or does everything come in to you?

THE WITNESS: No. Most of my field research is done on farmers' fields.

COMMISSIONER FIEGEN: Okay. So what precautions do you take and your assistants -- I'm sure you have some grad assistants with you.

What type of precautions do you take on vehicles, clothing, work boots, all of that?

THE WITNESS: Just knock off as much dirt as possible, as much soil as possible. Soil probes is probably another thing that would accumulate soil. We just make sure we're not taking large clods of soil. But we don't steam wash or power wash. We just -- we work in fields with SCN. So we -- yeah.

COMMISSIONER FIEGEN: It is really tricky because when an egg of 200 eggs -- that swollen female.

THE WITNESS: Female.

COMMISSIONER FIEGEN: And it's a point of a period, it is in your boots. Because when I wear work boots they have groves.

THE WITNESS: Absolutely.

COMMISSIONER FIEGEN: I can knock off as much soil as I can, but it's still there.

THE WITNESS: Yes.

COMMISSIONER FIEGEN: So the precautions of the research people are pretty much not going through the washing but mostly knocking off the excess.

THE WITNESS: Yeah. And let's be specific. You asked about my particular research group. There may be other research groups in other states where they do use plastic booties on their feet and they do more thorough precautions than I do.

COMMISSIONER FIEGEN: Sure. Thank you.

THE WITNESS: Yes.

COMMISSIONER FIEGEN: Are you aware -- especially when I see commercial sprayers out there across the State of South Dakota, but I'm sure across Iowa you have those big commercial sprayers. Are you aware of any mechanisms they take to prevent the spread of diseases?

Because, of course, they travel on roads. Roads have mud. So they're picking up things while they're traveling to the farmers, let alone from farm to farm to elevator, all of that.

THE WITNESS: Yeah. The answer is no. And forgive me if I'm over answering, but since you're curious about that, the way I pitch managing the movement of soil in Iowa is first in the context that three-fourths of the fields have it. And that percentage

hasn't changed -- I think we have reached a steady state.

But, more importantly, we really hone in on any operation that digs in the soil. And it goes back to the line of questioning about disturbing soil and making it more friable.

I just think I would get laughed out of the state if I advocated everybody washing the tires on every piece of equipment that goes through a field. So the much greater risk is when that soil is disturbed. And in Iowa it would be, you know, for tillage implements and so forth.

COMMISSIONER FIEGEN: We certainly don't want you laughed out of the state, but you could come to South Dakota because I'm sure we have job openings here.

THE WITNESS: And I don't disagree with you that the amount of soil that would stick to a cleat in a boot would be enough to have one of those females, but we have to manage what's practical with what's prudent.

COMMISSIONER FIEGEN: I'd like to talk a little bit about testing because I'm sure the other Commissioners have the same questions I do about testing. And so this is all new to me.

I would think the best test would be the roots that you would have until harvest or actually after

harvest that -- instead of the soil sample that -- I mean, how many probes would you need of soil samples, and why isn't the roots the best way to test?

THE WITNESS: Well, the chances of error are much greater when looking at roots. Because the females of the nematode aren't very tightly attached to the roots. And so when you're digging up roots, and even though we say that's a way you can check your fields for soybean cyst nematode in a hurry, you could miss it.

And so I know it sounds inefficient, but there's 50 years of research that shows that soil samples is really the most reliable, steady way to check for this thing.

COMMISSIONER FIEGEN: See, the internet just -- when we look and get our research we see these pictures of the roots and the eggs on the roots so we just -- we take that assumption.

THE WITNESS: That's a way -- and it goes back to awareness, farmer awareness, and so forth, to get folks to at least start checking for it. But anything -- any thorough treatment of checking fields that I would have written would include soil sampling.

And soil sampling can be done any time of the year. Whereas those females of SCN are on the roots only for a specific time. And you really -- it's late June.

It's actually right now. Late June, mid, late June through July.

And then when you get into August they're still forming on the roots, but they're in the new roots which are 2 and 3 feet deep or 4 feet deep, and you can't get at them to dig them out. So digging roots and looking for SCN females is a great way to check for about eight weeks of the growing season.

COMMISSIONER FIEGEN: So when you go into a field and you're testing for this disease like how many or how far apart or -- tell us about the soil samples and what complexity and the cost.

So how much does it cost a farmer to test their field? Who does it? Do they do it themselves and send it in? And then what's the cost of the test?

THE WITNESS: Okay. So the cost of the test at Iowa State would be $30 to have that sample processed. And I'm guessing it's comparable at SDSU.

Who collects the soil sample? That would vary by farmer. My perception is that usually it's somebody from the co-op or the grain elevator that does it for them.

And then the sample intensity is the wild card. We advise them to take 20 soil cores from as small of an area as possible but no more than 10 to 20 acres at a

time. And so 20 cores. And I pitch it as saying it's one of those things in life where you get out of it what you put into it. If you take 20 soil cores from five acres, your results are going to be much more meaningful than 20 soil cores from 20 acres or 20 soil cores from 80 acres.

COMMISSIONER FIEGEN: So if we had a quarter of land, we would have 16 different samples? So 16 times 30. And then what is the estimated -- what's the average of the estimated damage per bushel per acre on this disease average?

THE WITNESS: I still can't answer even when you threw that in an average. It depends greatly on weather. In a year with adequate to excess moisture, yield loss could be only 5 or 10 percent. But in a year that's dry and warm, the yield loss literally could be 50 percent. And I've heard some say 100 percent.

We've seen patches that have been killed, patches of soybeans that are dead. And I guess that's the definition of 100 percent yield loss. I don't know. But I have research data showing 50 percent yield loss even just comparing a susceptible variety to a resistant variety, resistant yielding double the susceptible.

COMMISSIONER FIEGEN: I only have two more quick questions.

THE WITNESS: That's fine.

COMMISSIONER FIEGEN: I'm sure everybody's getting tired. The resistant soybean, when I was looking at it -- and you kind of talked about it. Like is it like a rotation of every three years, or they can only do it three consecutive years?

I saw the three years and I couldn't remember exactly and then you said you don't want to continually plant it because there's the resistance that builds up. What is the issue with that?

THE WITNESS: So the problem is even in my state where we have literally 700 SCN resistant varieties to pick from, 98 percent of them have the same set of resistance genes. So the industry by and large is using one set of resistance genes, which is not too dissimilar to using one herbicide.

And all it takes is -- well, not all it takes. Slowly as a few nematodes become able to reproduce on that resistance, if that's the only type of resistance it's exposed to, it starts to build up similar to weeds becoming resistant to Glyphosate herbicide or Roundup.

So there are other types of resistance out there, but apparently they're hard to breed into high yielding soybeans. So we've been begging for 25 years for more different types of resistance varieties, and

we're always told just give us another 10 years.

COMMISSIONER FIEGEN: I used to represent Roundup about 30 years ago.

I think I'm going to hone in and allow the other Commissioners to ask questions.

MR. SMITH: Commissioner Nelson, do you want to go first or --

COMMISSIONER NELSON: What causes the egg to break dormancy?

THE WITNESS: There's we believe three types of eggs in that dead female. By the way, I didn't say it earlier, but that dead female full of eggs is what we call a cyst. So the name soybean cyst nematode, the middle name, the word "cyst," is referring nothing more than that dot that's a dead female full eggs.

So we believe some of those eggs will hatch when it's warm enough and there's moisture available. Some other of those eggs are going to hatch only when they sense chemicals given off by soybeans or another host crop. And then there's a third component of hatching behavior that are truly dormant, and those eggs won't hatch until 10 or more years have passed. And then when they wake up from dormancy we believe they fall into one of those other two categories.

COMMISSIONER NELSON: Based on that answer, the

next question I'm going to ask may be a tougher question than I anticipated. I was going to ask what the -- not a bell curve but what the curve is so far as the percentage of eggs that will break dormancy each year over a 10-year period.

THE WITNESS: With, say, corn being grown for 10 years or nothing being grown? Let me finish your question for you.

COMMISSIONER NELSON: Yeah. There's apparently a lot of variables to that.

THE WITNESS: So in the absence of a host, in the absence of soybeans, the curve, I don't know how I'm going to draw the curve for the court reporter, but for you folks it's going to start high and we see a pretty big drop, up to 50 percent in one year of corn, for example, and then we see maybe another 10 percent drop in another year of corn. And then it flattens out, and it's a very slow decline down to zero. (Indicating)

And it's very, very difficult to eliminate soybean cyst nematode because of that slow decline. You're going to get a decent drop in one year of not growing soybeans and a little more drop in a second year, but then that's when the 10-year dormant eggs -- that's all that's left at that point, and they're just going to hang around for a decade or more.

COMMISSIONER NELSON: Thank you. I think the -- you answered the question regarding the number of samples that you would consider necessary to do an adequate test.

I think the only other question I've got, in talking about the SCN resistant varieties, is there a refuge requirement for those?

THE WITNESS: No. We tried to create our own refuge by suggesting that farmers grow a nonresistant variety after growing resistance a couple of times and if their numbers were relatively low.

And I've run into a few farmers that have done that with pretty good success, but most of the farmers I've encountered don't do that and they just grow resistant soybeans all the time.

COMMISSIONER NELSON: One more question. You indicated that the presence of SCN could be localized within a field; is that correct?

THE WITNESS: Yeah. I could give you specifics if you want --

COMMISSIONER NELSON: Well, let me ask the next question.

So where we've got a power line going across a field and maybe three poles -- so really a pretty defined line across that field where the power line is going to run.

The testing would only need to take place in that line; is that correct?

THE WITNESS: (Nods head.)

COMMISSIONER NELSON: Can I get that answer verbally?

THE WITNESS: I'm still thinking through it. Yeah. I guess if you wanted to know if soybean cyst nematode could be spread on the equipment associated with this activity, only the areas that are going to be dug into by that activity would need to be tested.

COMMISSIONER NELSON: Thank you. No more questions.

CHAIRMAN HANSON: I just need to be clear on a couple of things. You spoke to a potential depth of 6 or 7 feet. I assume you're not absolutely positive how deep it actually can go. But how shallow can -- is it likely to be?

THE WITNESS: I think we would find it in even the upper inch of soil. The thing I would worry about from a research standpoint is if those numbers were indicative of, let's say -- typically we advise farmers sample 6 to 8 inches deep and that's what we do for research.

My worry with the upper 1 inch is in the middle of summer when it gets pretty hot I would guess that