INTERVIEW WITH DENNIS SCHUETH
BY JIM BARR

April 30, 2014

MR. BARR: This is Jim Barr. It's April 30th, 2014. I'm in O'Neill, Nebraska, visiting with Dennis Schueth. How do you pronounce that?

MR. SCHUETH: It's pronounced Sheet (phonetic). On paper, it looks like Schueth. So, it's a good conversation piece.

MR. BARR: And I'd like to just begin by letting you kind of go over a little bit about your background and how you got involved in this and that sort of thing.

MR. SCHUETH: Yeah, well, thank you, Jim. I started back in 1986 when I was first employed with the Upper Elkhorn NRD. And I grew up around Ewing, which is just to the southeast of O'Neill here, so I'm kind of a native. But it's kind of interesting, growing up in Ewing. That was a very small community. And some people say, “Well, jeepers, you didn't get very far,” you know. But when I look at O'Neill, Ewing didn't have a movie theater or a bowling alley or anything like that, so coming up to O'Neill, for me, was very -- it was a big adventure to say. You know, even though I had graduated from University of Nebraska-Lincoln back in 1985, I did want to come back to a rural setting. My first job actually took me to Chambers, Nebraska, which is also just south of O'Neill. And I was an agronomist, and I got my degree from the University in agronomy. And so, then, how I got into the NRD business or

got the position, that was when legislation was just passed on the Chemigation Act. That happened in 1985. And the staff at the time of the Upper Elkhorn NRD was two people, the manager and the secretary, very small. And so, I was lucky enough to land the position to do the chemigation inspections and they gave me the title as Assistant Manager. And so, I began my work as a chemigation inspector, did all of the water sampling for water quality and quantity purposes. And so then, over a period of time up to 1994, a position opened up, the general manager's position opened up, and I interviewed in front of the full board. Because of my background, I didn't want to be just moved up the chain. I wanted to compete for the position. And so, we went through an interview process. And luckily, in my opinion, I was hired as the general manager back in 1994. And I've been here ever since.

MR. BARR: Who was the general manager before?

MR. SCHUETH: The previous manager was Paul Mann.

MR. BARR: Okay, did you have any recollection about the early development of the natural resource districts? I think you apparently lived in the district.

MR. SCHUETH: I really am embarrassed to make this here next comment. When I was in school at the University of Nebraska, the natural resource districts really were not discussed as far as a state authority and local authority,

and so, I really did not know the whole premise behind a natural resource district. And when I was working as an agronomist and this position came open, then I started investigating a little bit more to be more prepared for the interview. And so, my knowledge is more so of the review and the research that I did to be prepared for the interview process and then knowing more about it as I stayed on with the natural resource district. And knowing how this here process developed, I think it's a great thing that the State of Nebraska has. Other states really like to comment how the natural resource districts are set up on the funding mechanisms, on the representation of the natural resource districts. And that premise is on the fact that local solutions to local problems. And I think that was very successful when those senators and everybody that was promoting it back in 1969 and probably some of the discussions earlier than that, but it really took the forefront in '69. That I got to commend those people. They -- when they started talking about 10-15 years, about downsizing government, well, they did that back in 1972, and I think they were very visionary at that time, because in all of the documents you hear, 154 organizations were combined into 24 natural resource districts. And so, when you start talking about consolidation or downsizing, I think the NRDs and those individuals back in the late '60 and

early '70s on the forefront of the development of the NRDs, they were visionaries. And I think it's worked out very well for the State of Nebraska.

MR. BARR: How about in the Upper Elkhorn, was there any particular differences in this NRD as it developed than, say, other NRDs in the state?

MR. SCHUETH: I think we're kind of on the verge, in the state of Nebraska, where you kind of start seeing the urban farming. And then, as you keep going to the west -- and I use O'Neill. O'Neill, when you start going to the west, it's more ranching and you continue out to the Panhandle. It is more ranching. And when I first started with the NRD, a lot of out cost share dollars was going toward ranching issues. '70s, in the early '70s, the late '70s, you know, irrigation development really took a strong hold and that also -- in the state of Nebraska, but that also hit this area. And a lot of that irrigation development happened on the eastern side of our district in Antelope County. And so, over the years, we've become more diversified with irrigation and also ranching. And so, we have great representation on our NRD board, because it's about half and half, half ranchers, half farmers or other businesses representation. And so, I think over the years that has changed the thought processes of the NRDs, because now when you look at our cost share programs that are

available, a lot of the producers have their pastures already partitioned off or cross-fenced, and you can only do so much of that. And the shelter belts are the same thing. You plant so many shelter belts. And our district has been one of the larger districts of planting trees over the course of the years. And so, with the development of irrigation, we have seen our focus starting to shift over the years more to water quantity/quality issues associated with irrigation development.

MR. BARR: Now, when you started, you started working with the chemigation program, how has the activities of the NRD developed over that period that you've been here?

MR. SCHUETH: Yes. Back in 1986, when I started with the NRDs or with the NRD, the Upper Elkhorn, we probably had about 2,000 to 3,000 irrigation wells in our district. And a lot of people were putting chemicals -- chemicals, meaning fertilizer, also through the pivot, but there were really no regulations prior to that. And so, due to the concern of potential contamination of the groundwater, we have, at that time, back in 1986, we inspected roughly about 850 chemigation sites. Today, we're up to permitting about 3,000. And so, we think, for the water quality issues that we have with nitrate nitrogen, spoon feeding that through the pivot is probably the best way of applying fertilizer. As I stated, we probably permit

about 3,000 irrigation wells a year. To put that in comparison with our total number of irrigation wells in our district, we have about 4,700. So, you know, we're over half, you know, in that 60 percent rate. And I think down the road is probably going to be one of those things that our district, our board is going to have to make a decision that we will need to have more of the fertilizer applied through the chemigation system and spoon feeding it when the crop is requesting it.

MR. BARR: For people who may not have a clear idea of what's involved in overseeing chemigation, could you just kind of review the sorts of things that are required on irrigation wells and for the operation of them?

MR. SCHUETH: Yes. There's different type of equipment that needs to be inspected when you do a chemigation inspection. One, you'll have a fertilizer tank that will have a hose that goes to the pipe, the distribution into the water supply. And at that juncture there, there's a piece of equipment that allows the chemical to be injected into the water. And that has to be inspected and because we do not want any backflow from that water pressure to go back through that piece of equipment into the tank and then overflow the tank.

And then the next thing that we inspect is the slam valve. There's a gated piece of material that's inside

of the diameter of the pipe.

MR. BARR: The irrigation pipe.

MR. SCHUETH: The irrigation pipe. And so, the flow of the water, when it comes from the irrigation pump that pushes that gate open allows the water to go through to the pivot, but if that pivot -- if the irrigation source, power source shuts down, the water supply stops. That gate shuts closed and then anything that has that contam- -- I shouldn't say it's contaminated -- has that product in that water, it cannot backflow into the irrigation well. And so, we have to inspect that back gate.

Then there's also a device on the bottom of that irrigation pipe, so if that gated door happens to leak, there is a reservoir on the back side where that water can collect. It drains out more than 20 feet away from the irrigation well, so it would not be a direct link to that irrigation well, so it drains away. So, those -- and then, I mentioned before that if the irrigation supply power source shuts down, we have to check that interlock, too. So, we just don't want that chemigation pump valve to continue pumping, so that all has to shut down if there's a power shortage or a shutdown. So, it's been a very successful program and I believe the cooperators have been very willing to work with us. And again, I think that's one of the best management tools that we have in our district

due to the fact of the type of soils that we have in our NRD. We have a lot of sand, Valentine sand, and also right around in O'Neill, we have a lot of coarse soil, gravel. We're farming maybe about a foot of topsoil and then it turns into very coarse sand, gravel. And we have a chance of leaching those fertilizer or chemicals into the ground, and then ultimately getting into the water source.

MR. BARR: What sort of depth are you drawing water from in the average -- maybe it's a range.

MR. SCHUETH: Within the Upper Elkhorn NRD district, the static water level does vary very much across from the eastern side of Antelope County to the western part of our district of Rock County. The saturated thickness of -- in Antelope County, it may only be 200 feet up in northern Antelope County, but if we get into Rock County, we are sitting on anywhere between 600 to 700 feet of saturated thickness of water and so, as I mentioned before, we've been very blessed with a good aquifer system. Now, we do have that area up in northern Antelope County that has a little bit shallower aquifer system, but we're trying to look at -- if there's decisions or regulations that need to be looked up there into the future.

MR. BARR: While you've been here, are there sorts of projects or centers of attention? How has that evolved?

MR. SCHUETH: As I mentioned before, when I first

came on to the NRD back in 1986, our biggest projects before that was mentioning before was ranching. But we were really noted for planting trees. We would plant up over 100,000 trees each year. And that has been dwindling down. For example, this year, we are down to maybe, I think the staff said we're down to about right around 30,000 trees. And some of that has to do with, due to the fact that our district was -- and the landowners were so progressive in planting windbreaks. You can only plant a windbreak so many times, and you look at, since 1986 or even 1972, that's over 40-some years, and some of those belts do need to be replaced, but that's even a slower process, because you got to tear out the trees and then you got to replant them, but that was the biggest change for us, is that was also a great opportunity for revenue for our NRD. And that has also dwindled down just based off of the participation of that program. So, that was very exciting times, planting that number of trees. And now we'd like to try to increase those numbers, too. But 2012, for example, when the commodity prices got up to be very high on corn and soybeans, people were more excited about knocking out windbreaks, shelter belts, to get that extra acres or two acres of ground for crop production. And then the other thing that has happened within our district is statewide and even nationwide for planting trees that the federal programs have changed. The

federal programs, if you wanted to put a corner of trees and get under a federal program, you almost had to plant the whole corner into trees. That's almost seven acres' worth of trees there. Now, some of the federal programs that if you plant 150 trees, shrubs, and every three feet, so you're taking up 150 square-foot area, and plant those 150 trees in there, that whole corner becomes eligible for the government program, the federal program. And so, producers have changed their thought process of going from a big five-row or maybe even a 13-row shelter belt in their corners to those little shrub plantings where some of the upland game, such as pheasants, quail, and those type of birds. So, that has changed why our tree numbers have gone down substantially.

MR. BARR: What about water quality and quantity programs? What sort of things have you dealt with?

MR. SCHUETH: The water quality issues that we have up in our NRD have been an issue for our natural resource district. Back in 1997, our NRD labeled our full district as a Phase 1, part of our groundwater management control -- groundwater management plan. And so, what that plan was trying to do was really advise individuals of the water quality concerns that we have in our district. And that concern is nitrate nitrogen, and that, we've had various portions of our district -- in generalities, I can

say anything north of the Elkhorn River, the actual river itself, we have nitrate issues that are pushing the ten parts per million, which is the federal health standard. And so, our district labeled the full NRD as a Phase 1 to try to start educating individuals. You know, what they are doing with their ground above actually impacts what is happening down below, such as the aquifer system below. So, we have nitrogen certification classes. We have staff people that hold training courses, classes, throughout the winter months to have the farmers come in and become more educated. We can show them the data that we have collected from that year and previous years. Then we stepped up in 2003, we increased our requirements for water quality, again, nitrate nitrogen. And that requires the producers to tell us how much fertilizer they're putting on, how much chemicals they're putting on, how much irrigation water they have put on, and how many other type of pesticides that they have put on that field. And we labeled two areas, one area around O'Neill, and another area over by Page, Nebraska. Those were kind of our pilot projects, because along with it, if you're going to ask producers to give you more information, you got to have a database system set up to record so you can evaluate that.

MR. BARR: Sure.

MR. SCHUETH: So, those were our pilot projects

and the producers have worked very well with this. And, of course, you know, there's always that percentage that they'll drag their feet. They will procrastinate getting the forms in, but once we contact them, we have a pretty good rapport with those individuals, and they'll get the information in. Then, in 2012, our board of directors really took a big step and labeled that that area north of the Elkhorn River, as I mentioned before, we labeled that whole area as our Phase 2. And so, we are in the process right now of expanding our database, making it more available to the producers, because if we have 4,000 -- or excuse me, we have about 500,000 acres of irrigated ground in our district, and probably about 300,000 acres of that needs to report that information that I mentioned before. And so, we want to make it as easy for those producers to get that information to us. And so, we're trying to develop an online database form that the producers can sit down at their home, fill out those forms. It'll go into our database and it will do a lot of the work for us here at the office. And so, that, for water quality, that has been our biggest issue. And trying to get the producers to understand that the nitrates that are in the water is the same type of nitrates that you would be applying from commercial production or livestock production.

And we do have some very high levels. We have

some nitrate levels in our irrigation wells that are pushing 30 parts per million. Those are kind of localized areas, but when you look at that and how we try to educate the producer just for easy conversion factor quick, the actual conversion factor for our area is, like, 2.72 for every part per million, but I usually round that up to three. And so, if you had 30 parts per million of nitrate in your irrigation water, that means you're applying 90 pounds of fertilizer just from your irrigation water, if you apply 12 inches of water. So, if you take 90 divided by 12, that's almost seven to eight pounds of nitrogen per inch of water that you're putting on. And so, we're trying to educate those producers that that's a valuable commodity in the water. We're not happy. They aren't happy that it's in there, but we might as well be using that nitrogen that's in the water.

MR. BARR: Do you work with crop consultants and the ag -- fertilizer companies on these programs, too?

MR. SCHUETH: Yes. We try to -- anybody that applies more than 50 pounds of nitrogen, and that's even those individuals that are recommending those -- that amount of nitrogen, they need to come to our certification class. And so, they know the direction we're headed and hopefully, because of the 500,000 acres of irrigated ground up here, and that does not include the dryland, you know, nitrates in

the water is getting to be a bigger issue, too, for everybody, and without nitrogen fertilizer in the ag sector, our yield production would probably be cut in half. And so, that is an element, a nutrient element that we need to be able to use. We hear about the world population, what it's going to be in 2050, and somehow, we got to feed them. And so, commercial fertilizer is a part of how we're going to have to feed those individuals into the future. And so, we've got to -- there's got to be a common balance between the use of it and how restrictive we get with it.

MR. BARR: Do you have any trigger points or -- for further management activity by the NRD in case you get to a certain level of problem?

MR. SCHUETH: Yes. Our Phase 1 that I mentioned before goes from zero to seven and a half parts per million. Our Phase 2 goes from 7.51 to 9.5. Then our Phase 3 becomes 9.51 to anything greater than that. And each one of those become more regulatory, more reporting. One of the things that everybody keeps asking us is, if those trend lines continue to move upward, will there be a point in time where the NRDs have -- will make the fertilizer recommendation and will also tell the cooperators the yield production? Within the best management practices that the NRDs can utilize, that is something that is available to the natural resource districts as per their regulation. And we hope we don't

have to get there, but I can't say definitely that that may not be an issue.

MR. BARR: Do you have any regulation on timing of fertilizer?

MR. SCHUETH: We have, in our Phase 2, and again, that gets to be more restrictive into our Phase 3. We really do not want any fertilizer, fall fertilizer to be applied prior to November 1st and prior to March 1st. We've tried to keep that, and so we want that restriction to be kind of excluded during that time.

MR. BARR: Any other regulatory area besides timing and recommendations?

MR. SCHUETH: Coming to our nitrogen certification class, and so that's a very important item.

MR. BARR: Is that annual or periodically?

MR. SCHUETH: The certification class card is valid for four years. And so, in their third year, they need to come back and get recertified.

MR. BARR: You also mentioned at some point you might have had some concerns on the quantity. Do you have any activities in that direction?

MR. SCHUETH: The quantity, when the NRDs first -- the first items that they really tried to address back in 1972, people were really concerned about the quantity issues. And so, the NRDs, a lot of them developed their

groundwater management plan to address quantity. Now, within the Upper Elkhorn NRD, on just groundwater, we really have not had much of an issue. Even in 2012, which as far as my life span, that was the worst drought, I think, not only just for this area, but for the state of Nebraska and for the United States, and even worldwide, that was a very unusual year. And so, when we go back and look at our data that we have, when we look at the 2013 spring static water levels compared to what the spring level of '012 was. We did have the largest drop in our static water levels, which was about three feet. That was an average. And if you look at the reports that the USGS did, across the whole state of Nebraska, that was kind of a common number that showed up across the whole state of Nebraska. And so, within our district, it's kind of amazing. Our irrigation development has increased over the years, and the 2013 static water level is still not as low as what it was in some of our previous years, so we were really shocked with that, because we've had some individuals that was 2012, they applied the most water that they've ever applied. And some of those fields may have been anywhere from 21 to 30 inches, depending on your soil types that you were irrigating. And so, with that large number of withdrawal from about 4,700 irrigation wells within our district, we did not see the impact as what we thought we would have seen. Now, in

spring of 2014, we've kind of stabilized a little bit and we still have not reached our lowest readings ever. And so, we felt pretty good that we came out of 2012 as good as we did for as hard as everybody had to pump.

MR. BARR: Is there any other NRD activities perhaps dealing with communities or any other programs besides the ones you've already mentioned?

MR. SCHUETH: Yes. The communities in our natural resource district are very small in nature. We may have -- I think we have a community that is -- which would be Emmet, might have about 50 to 60 people in it, and O'Neill has the largest population, and it'll fluctuate between 3,200 to 3,800 people. And where we differ with a lot of other NRDs, especially when you go to the south and to the east where the general population is, a large population is, they'll have a lot of projects within the urban settings. We'd done very limited cost share items with the communities. One due to the fact that the communities, because of their small nature, they haven't requested. But I'm very happy to say, this year, we had the village of O'Neill, or the community of O'Neill, they had to do some drainage issues within the city of O'Neill, and they came and asked for assistance on it. And so, we were able to give and provide them some financial assistance for that drainage project.

Getting back to the water quality issues within our district, where we have helped communities more so such as O'Neill, Orchard, Brunswick, Royal. They have had some issues with -- some nitrate issues. And so, what we try to do is, we'll sit down with them and we'll kind of -- because we have a large database of where we collect water samples from, and we'll sit down with them and we'll try to give them the data and kind of show, well, if I was you, to try to get a new municipal well, maybe I would head over in this direction, based off groundwater flow and what the surrounding nitrate levels are in those irrigation wells. And so, being there to give them some advice on the water quality issues has been our biggest involvement with the communities, except for now, very proud to say that we were able to help O'Neill with a flood project, drainage.

MR. BARR: Before we go into general reflection area, is there anything more about the NRD activities or situation, leadership, organization, anything like that you'd like to comment on?

MR. SCHUETH: Yeah. I think one of the things that is the forefront of the NRDs is given the makeup of the boards and the concerns that we face -- those communities or the NRDs are faced with, such as water quality and quantity, I think, if you look over the years, NRDs have been very proactive. Now, in some people's eyes, it may not act as

fast as what they would like to see, but some of these changes take time, the implementation. As I mentioned before, when I started with the NRD, there was three staff. Right now, as of what we're speaking today, within the Upper Elkhorn NRD, we will have ten staff people. So, we've grown due to the fact of regulations and regulations that may have been kind of due to legislation that has been passed, and also just from our local NRD boards. And I think the direction that our board has done, we weren't afraid to label part of our districts as Phase 2 -- Phase 1, Phase 2. Our districts have -- NRDs have also applied for additional funding mechanism. I mentioned northern Antelope County. We're partnering with four NRDs on water quality issues. And quantities also being involved in there. And you see more partnership than what you would have seen back in 1972, and even when I started in 1986. You see the NRDs really partnering up to try to resolve a common issue, because when the NRDs were developed, you know, you draw a line in the sand. One, you're in this basin, the other one's in the other basin, but the issue may have crossed that boundary line. And I think I would have to applaud the NRDs. Over the last ten years or so, the NRDs have been very willing to cooperate and share funds, staff, equipment to get that concern addressed and try to inform the general public of it.

MR. BARR: How do you organize the management of this joint effort?

MR. SCHUETH: That's -- we're just getting into it. We just hired a project coordinator for that position. And she will oversee it and she will -- the project coordinator, as you can tell, it's a woman. She will have to be accountable to the other three NRDs and the Upper Elkhorn NRD. That position will be housed out of O'Neill, Nebraska, here. And with that, she will have to give reports on a day-to-day basis. The Upper Elkhorn NRD will oversee that person. But that's a pretty exciting project that we're working on, and hopefully, we're going to be able to showcase that down at the legislative sessions and even at the state conferences.

MR. BARR: Can you just kind of outline the area and the NRDs involved?

MR. SCHUETH: Yes. The NRDs that are involved is the Lower Niobrara NRD, the Upper Elkhorn NRD, the Lower Elkhorn NRD, and the Lewis and Clark NRD. And so, the top two tiers of townships in Antelope County, and then the next two townships up above of Antelope County, which include Knox, and then Pierce County, which would be in the Lower Elkhorn NRD, would have about a township over to the right of Antelope County. And so, that -- we're just in the process, again, of the coordinator getting on. She'll start

tomorrow, actually, and so we'll really start pushing that project forward over the next couple of weeks.

MR. BARR: What is the nature of the problem that you're going to be treating?

MR. SCHUETH: The nature of the problem that we have is the nitrate concern. The village of Creighton, for example, which is in the Lewis and Clark NRD, they have had a nitrate concern for many years, and they have a treatment system reverse osmosis there. And again, unfortunately the communities in this here area over years, the population is decreasing. And so any additional cost to those urban individuals and it seems like the urban towns in our district and even in the districts that we mentioned, the population is an older generation, and they're on some fixed incomes. And so, if you have to increase their water bill expense by 20 or any dollar amount, it becomes a hardship. So, the Village of Creighton is very concerned about the continuation of their treatment system, the cost that goes along with it. And so, we're trying to educate those producers in there and it's not just the irrigation producers, it's the livestock producers, and also the urban people, because urban people also put on fertilizer on their lawns. They also irrigate their lawns, sprinkler systems, and so they're also part of the issue of what has gotten the nitrate issues up high in that area that I described

earlier. And so, that is the main issue.

And then also, along with that, water quantity will be an issue, because I mentioned before, they're in a saturated aquifer system that's only about 200 feet. And the village of Creighton's shale where Creighton is, their aquifer system may only go down 120 feet. So, they're very tight on where they can get available water.

MR. BARR: Well, that kind of probably covers the current situation. Do you have any thoughts or reflections or anything about the whole NRD process or this NRD in particular that you'd like to mention?

MR. SCHUETH: I think the process of the natural resource districts, the concept is very good and it has proven to be very effective. As we go on, there has been some movement, as I stated before, that there're individuals or a group of individuals that think that the NRDs are not moving faster on some water quality or quantity concerns. And so, I think one of the issues that we will have to battle into the future, the last five years to six years, we've been battling this issue, and that is, keeping the senators down in Lincoln all informed about what the NRDs are doing. This year, there's a potential of -- there's 17 senators that are being term-limited out. We're going to have a new governor. Along with that comes a new director for the Department of Natural Resources, potentially.

There's -- our Attorney General is running for different -- governorship, also. And so, when you look at that, depending on who fills those positions, they will have a very big impact on what the future is going to look like for the state of Nebraska, and I also think, for water quality/quantity issues. So, therefore, that puts more pressure on your local NRDs, and so, hopefully, we can keep the senators and keep getting individuals interested in running for the NRD boards that have a vested interest in the resource and not just a one-issue item. And so, I think that's going to be our biggest task into the future.

MR. BARR: Any -- I got to get a picture here, if that's okay with you.

MR. SCHUETH: Yeah, that's fine.

MR. BARR: Probably should take a couple in case I mess up one. And other thoughts about the future or the things that you've seen evolve over the time that you've been here?

MR. SCHUETH: I think some of the history that I just talked about with the senators, the turnover in the senators, we're also having that same type of turnover in management. We lost a very effective, very knowledgeable individual, Ron Bishop. And his communication skills were just far above how -- he could talk to a group of people and just kind of have a calming effect on everybody. And so,

the knowledge of, in the next three to five years, also is going to impact the management. And so, I think the existing managers that are there, such as myself, I consider myself kind of a young manager, we're going to have to probably even step up even more, because with the turnover in the senators and the turnover in the management, the ones that have been here, such as myself, since 1994, and the other ones that have come on after that, we got to show our faces a lot more to the general public and we got to get our staff out more to the general public. And I think that's going to be the trend that we need to look towards.

MR. BARR: Anything else?

MR. SCHUETH: I really appreciate the opportunity to sit down with you, Jim, and talk about this, and --

MR. BARR: I've enjoyed having you do that.

MR. SCHUETH: And hopefully, this is a -- the project ends up good, because it'll be interesting for me just to see how this turns out, so I was very happy to be asked to sit down here and be interviewed, Jim.

MR. BARR: Well, thank you very much.

- - -