Interview with Dave Craigmile
Voices of the River - Oral History Project

by Anne Queenan

The project has been made possible by the Arts and Cultural Heritage Fund through the vote of Minnesotans on November 4, 2008.

Administered by the Minnesota Historical Society.

It is also supported by matched donations made to Clean Up the River Environment (CURE).

Q. The first question I'd like to start with is to tell me about your family ethnic heritage and how you came to Minnesota.

A. Well on my mother's side, my mother's side was English and she actually had a relative that was an officer in the American Revolution. And therefore, she had a complete family tree structure and it's been written up in a book that's about two-and-a-half inches thick. And so she was also

always claimed as a Daughter of the American Revolution or a DAR person. And that was her birth father. However, she had the misfortune of being born during the 1918 flu epidemic and her mother perished approximately four weeks after giving birth and her father was severely weakened and he passed away about two years later. So then she was adopted and she was adopted by the Henry Millers. And on that side of the family then, actually George Henry Miller, who homesteaded out this way, he was a Civil War veteran with the 53rd Illinois Volunteers. So my mother was very insistent about her children being aware of their heritage and of history because it was very important to her and it became very important for us.

I'll move over to my dad's side. They were a little bit more of the scoundrel type that came over from Scotland in the 1850's and they settled in Iowa. And they didn't really do too well farming and the Gold Rush came upon about that time and so they headed for California. But they didn't do too well there either. They did not find any gold and they came back to Iowa and farmed and then subsequently they moved up to Canby area, which is just to the southwest of here in the late 1920's. And they farmed and they also, there were four brothers that they were truckers, they became truckers. So they hauled livestock and did gravel trucking and that kind of thing, in addition to their farming.

And eventually my mother and my dad crossed paths and they married and then they ended up purchasing one of the farms that her adopted grandparents had purchased when they moved up here in homestead. And then over the years, I've also been able to purchase one other or two other parcels actually of that grandfather, then adopted grandfather on my mother's side, of her land. So I guess we're Scottish and English; that's not too far apart. My wife is Irish, so if I'm Scottish and she's Irish, again, we're pretty close, and we go overseas visiting. My wife had always liked to, she's about a hundred percent Irish 'cause she's a Ryan. And so anyway, we're going to be able to look up both of our ancestors as we cross the pond, 'cause they're both in the immediate area there.

Q. So we're doing this oral history project on the history of the modern movement cleaning up the Minnesota River, which we say begins in the late 1980's surrounding the Minnesota River Assessment Project and the

Citizens Advisory Committee that was convened by Lynn Kolze to review the findings of the Minnesota Pollution Control Agency assessment of the river and to come up with recommendations. Do you agree that's when this movement began, and if not, tell us when you think it began?

A. Well I think the statewide or the area-wide awareness came when our Governor Arne Carlson spoke about 1990, '91, in that timeframe and kind of summed it up, if I remember the dates correctly. Previous to that time, I'm not necessarily aware that some of that, those more detailed studies were not readily available. We didn't have the internet, they were not published as far and wide, and so I don't think people were as much aware and you even have people in rural areas that probably didn't subscribe to "The Star Tribune." And so the overall media coverage was not such. I mean it developed, that's the way I look at it, it developed as time went along and especially after Governor Arne Carlson expounded on the issues when he gave that address on the banks of the river.

Q. When did you start thinking about the Minnesota River? What were your earliest experiences?

A. Well, the truth of the matter is, my dad and his brothers, besides being truckers and farmers, they were also great fishermen. And at the drop of a hat or what you would say in farm country out here, if you had a rainy day, well they would always get together and go fishing. And so I was the little kid in the bottom of the boat if you will, and where we fished a lot of the time was Lac Qui Parle Lake, which of course is a widening in the Minnesota River. And so I spent a lot of time in a boat on ??? Lake and I also spent a lot of time in a fish house in the winter time on Lac Qui Parle Lake, which is the Minnesota River, a widening in the Minnesota River. So, and I was aware of that at a very early age and in the upland area where we farmed, or where I grew up, we did not have any rivers immediately close to us, the closest being four or five miles away. Of course we had little watersheds that moved that way and ravines, but no real rivers by us. But I was well aware of the Minnesota River and Lac Qui Parle Lake.

Q. So for you, what is at the heart of the matter, the issue, when it comes to the effort to restore the river? What lies at the heart of the issue?

A. Well, I guess with any area, there is always a number of resources that are available for the public as a whole. And we can always talk about human resources, but there are also all kinds of natural resources and of course, one of the most basic resources is a human need of water or something to drink. And so your water resource issue becomes kind of first and foremost. And having also grown up on a farm where we were challenged. I mean we did not have very good aquifers, the geology was not appropriate in any case, we couldn't find much water. We had a very limited supply of water. And therefore, he was held, in other words, my understanding of it and how it applied was probably more so than any other neighbors where all they do is turn on the faucet and water was always there. In our case, there was always a more limited supply and we had to conserve, and therefore we had fewer livestock and my dad expended numerous dollars drilling new wells and all of that. And so yeah, water, the water as a resource, an important resource was readily evident as I grew up and I was one to understand it and do what I could and be as responsible as possible to maintain that resource.

Q. So as far as you can remember, recount how the Minnesota River Movement emerged and how it grew and what your role in it has been.

A. Well, when I left in 1964 and then was gone eleven years as I was in college and then as I taught Physical and Earth Science Osseo school system in the Twin Cities area, then I moved back here in '75, '76. And so once I was back out here on the open prairie and had my feet on the soil and my feet in the water so to speak, why then I was able to become more involved. I guess when I lived in the Twin Cities area, I really didn't feel as involved at all, especially in the suburbs there. We had a little creek by the school there called Shingle Creek that's still on the map today, but otherwise, really weren't close to the Minnesota or Mississippi Rivers, right where we were at anyway. And our science classes never, at that time were, well how would you say it, were not engaged to the extent that they would go out and study the river close up. We just didn't necessarily leave the classroom as much in those days as today.

So when I moved back out here, actually the landscape, the farms, the soils and the water out here, just kind of became my laboratory again if you will, and I don't know how you could not till the soil or plant crops and watch the

rain come up over the prairie and how it falls on the landscape without being (inaudible), of that. And so it wasn't too long that I became involved with our soil/water conservation district and became involved with what's known as the County Water Plan, and I also became involved with farm organizations, Farm Bureau in particular, and also some of the production organizations of corn and soybean growers. But I was active with The Soil and Water Conservation District and they (inaudible) a plan in developing responsible uses for the water of the county.

Q. Can you, in just another sentence or two, identify the names of each of those groups, the actual area that you're representing, like with the soil and water conservation district, etc.

A. Yeah, The Soil and Water Conservation District was the Lac Qui Parle Yellow Bank Soil and Water Conservation District. Conservation districts are organized by counties and they have an affiliation often times with the USDA, the United States Department of Agriculture, they're also called the Soil Conservation Service at an early age, and also more recently Natural Resources Conservation Service and nowadays it's called the Farm Service Agency. But it had a bunch of different acronyms and names over the years. Essentially the Soil and Water Conservation Districts came together after the "Dirty 30's", after the realization that soil and water needed to be conserved or understood far better than what went into the 1930's. And it was kind of a perfect storm in the 1930's.

Of course it did have an economic down turn. You had a droughty period and you had soils and waters that had become depleted because of irresponsible use to some extent. And people just didn't understand appropriate usage of the soil and the water either at that time. And it seemed like it would never end there, that there was an unlimited supply and it would just go on forever. But it did come to an end and so there was, that's why I call it kind of a perfect storm, because you have this economic slowdown. It was a great problem for many people , it was really, really tough on a lot of people.

And then you also had the drought as well. So everything came together; the soils ran out, the water ran out and it was really tough times. That's

when the Soil and Water Conservation District was born. And a lot of your, other conservations groups beyond that.

Q. Which leads me to asking about the various agencies and organizations involved in this work and your relationship with them.

A. Well from the water plan, up to the, well I'm still involved with the, what Lac qui Parle County did was form what they called a Resource Commission. And the Resource Commission then would work with the Soil and Water Conservation District. It would work with the water plan, it would work with the planning and zoning and it would also work with the watershed district that was in the area as well, because not every county has a watershed district. Watershed district follows the outline of the watershed. But in Lac qui Parle County, you did have the Lac qui Parle (inaudible) Watershed District and of course each county has its own planning and zoning group. And so the idea was to form a Resource Commission that would inform these different entities, local government unit entities and so I became a part of that and I chaired that for a number of years with the idea that you would have this crossover then where you wouldn't necessarily leave something out, because you would know what the other areas were doing and you would blend them all together. And so that worked very well, and really, that basically led into also serving on the Lac qui Parle Planning and Zoning Commission, and then eventually serving also with the Lac qui Parle (inaudible) Water (inaudible). And so that's how it kind of came to be in the immediate area and then beyond that, I also served on various advisory committees to the Minnesota Pollution Control, I worked with the Army Corps of Engineers and also the Minnesota DNR at times as well.

Q. So tell us when you first started thinking about the Minnesota River and some of your early experiences.

A. Well my earliest experience with the Minnesota River was in the bottom of a fishing boat because my dad and his brothers, besides being farmers and trucking somewhat on the side, whenever there'd be a little bit of rain and they couldn't do their field work or couldn't do some of the other things, they would always call each other up and we'd all go fishing. And so that was my first experience on the Minnesota River because we went

to Lac qui Parle Lake and Lac qui Parle Lake is a widening of the Minnesota River. Also in the wintertime, of course, around here where we have ice fishing, and being where we only lived about ten miles from Lac qui Parle Lake, ten to fifteen miles depending on where you went on the lake, why it was a short trip and in the wintertime it was good entertainment as well. And so I spent a lot of time on the Minnesota River and really the widening called Lac qui Parle Lake.

But at home of course, we always had the difficulty with your water resources, with our well water, because we had a limited supply of well water. And so at an early age, my sister and I, there's just two of us children in our family, our whole family, we realized that water conservation was very important because we had a limited supply. And therefore, we also had a limited amount of livestock. We did not, we were not able to have really sufficient numbers like our neighbors had, and therefore, we more or less specialized in cropping, crops. And my dad drilled numerous wells and even ironically, the country school that I went to, which was only a third of a mile away, I didn't have to walk three miles uphill and then back home again or something like that, I just had to walk a third of a mile through our grove and then get to the country school. But my dad, or we all knew that that country school had a very good well over there and so when the country school closed in 1964, my dad bought the property and then he piped the water over to our farmstead.

So that was kind of an interesting situation, but that was also the same time that I left for college and when I went off to college, why then my studies, major and minors were in the physical and
earth science, physics and geology. And then I was gone for eleven years and eventually came back to the area here when my dad had a severe heart attack, and well I'd been kind
of antsy to get back here too. Either that or I was going to continue my studies and going to climatology because I always had an interest in the weather. You can't live on the prairie out here without being interested in the weather, because on the prairie you can see from horizon to horizon. You can see the storm systems coming up or the weather fronts moving in, and it's really a neat thing. I guess beyond that I would say it would be really tough for me to live in the woods, up in Northern Minnesota, or to live

in a valley. I'm a prairie person; I like the wide open spaces and if anything, I would build a house on top of a hill.

And we do have some high places on our property, one high place in particular that we always called, "Pike's Peak," and it does have an elevation that affords a wonderful view. It just so happened to be about in the middle of a section of farm land. It was never a farm, but it was a remote site to get to or travel to, so you really didn't have a road to it other than in the spring and in the fall, before crops are planted or after crops are planted and you would maybe go there. Or, during the summer months, especially during May or June, when you're picking rocks, we sometimes, when we were in that area, we would haul our rocks up there and then dump our rocks up there. And so there's an assortment of rocks. Rock picking, if you're a farmer, it's not quite so tedious.
Some people think it's tedious, but it's all very enjoyable and very interesting because you never know what you're going to find.

A. Rock picking is a chore in this area that has been restructured with glaciers over the last 25,000 years because there are all types of rocks in this area. And they were brought down from the north and the northwest and even the northeast previously, but the last time it was from the north and the northwest. And those rocks are all intermingled with the till and the till of course becomes topsoil. And rocks are problematic because they get into the machinery; they can plug up planters, they can wreck equipment, they can get into combines and they cause all kinds of problems if you run into them and they're too big. So that's kind of a chore every year to pick rocks in this area out here. It's a chore, but it's also, well make it interesting is the bottom line and you try to identify the rocks. And you become used to finding certain rocks in certain areas and then you have an understanding of why they may be there or where they came from. And so one of the unique rocks we have in this area we find is called an Omar and it comes all the way from Hudson Bay. It's the only place that it outcrops and the providence of it or how it
traveled here has been traced and we do find quite a few of them in the area here.

And I can show you one at a later date here; it's quite unique. Locally it has a name called an "Indian Paint Rock," because there are softer portions of

it that will weather out preferentially and then it forms a divot in it or a hole in the rock. And then native people here, of course the Dakota People, what they did is they would mix up their pigments of paints in those, or at least some of them would. It would be possible to do that. And people always wondered about this, and it really wasn't until the late 1980's that this was finally determined or figured out, where these came from. In some cases, nobody really paid much attention to it, and then finally it struck note with a couple of geologists who traced it down where it came from, southeast side of Hudson Bay. So that's a long ways away.

Q. Do you want to say anything about that school bell?

A. The bell tower we have in our yard there is from the country school that I attended, my sister and I attended. And like I said, it's right across the road, so to speak, from where we grew up. You walk through our grove and then you're at country school. And that was convenient too because we had swings over there and teeter totters and all this, and so we would visit there during non-school time as well. And of course in the early years of the 1930's, that school was there from 1914 on, why then the teachers often stayed in the farmhouse that we had; they stayed upstairs. That's how it was in the early days of the country schools, teachers often stayed with a neighbor.

Q. So can you tell us about the project, water-related project that you've been involved in?

A. Well the primary projects I've been involved in in Lac qui Parle County, the first primary project was the Lac qui Parle County water plan, which was through the Soil and Water Conservation District, the Lac qui Parle County Soil and Water Conservation District. And that looked at all of our water resources, both surface and groundwater resources. And it looked at a proper way of managing them in conjunction with our soils in the county. And it looked at it from the perspective that we know that this county's primary resource is its soils and the climate and the waters all combined together. I mean I can't just say that there's one primary resource. We do have this climate, we do have these soils, we do have the water here, and therefore we need to look at all of those and how they interact with one another. And so the water plan does just that. It looks at

the practices and also the isolation if you will, and the protection and the conservation that would be necessary to make all of those come together. And to maintain those resources, if we, well for as long as possible, or to be sustainable in the process all the way through.

Sustainability can mean various things to various people, but in this case, we try to be realistic, realizing that people are trying to make a living out here and on the soil, from the land out here, and therefore, we try to blend it all together. We know that there are going to be trade-offs, there's going to be compromises and therefore, when we use our, what we call the Lac qui Parle County Resource Commission, we have a representative group of people representing the townships, the cities and the villages of the county, and plus some of the state agency people. We have them sit on the resource commission and work with this, and then we come out, or we certainly hope we do and we believe we do, we come out with a quality product that allows us to be conserving and sustaining with our resources.

Q. What would be an example?

A. Well, one thing we do here, people always think of drinking water. It seems as though any survey that's done in the county or is done in the state, the most important issue for people is the drinking water, and therefore, we have monitoring of well water and we also have sealing of wells. We all realize that there will be wells that will become dysfunctional, if you will; they don't work right. However, they still have an open inlet into some aquifer or into a deeper strata and it's very easy for those or various products to be introduced or to fall in there or move into that lower aquifer and therefore, we have an important project or an important part of our efforts are to seal those wells. So we have complementary funding to help with that and education to do that. So drinking water always comes up first, it seems like, and we want to maintain that and we want to understand our aquifers, what aquifers we do have in the county. And therefore, we supported the various geological studies to interpret that and highly supported well logging. If you drill a new well, we would like to have people come out from the Minnesota Geological Survey and log that well. Not just report the drill cuttings from it, but also log it with a gamma radiation sensor, because that allows them to understand the strata that's down there. And so we encourage all of those conservation measures in the

county and I've been intimate with that and promoting that, especially the work with the Minnesota Geological Survey and mapping our water resources. And especially so since I grew up on a farmstead where we had trouble finding adequate groundwater. So been particularly involved with the groundwater issues.

Q. Any other projects you want to talk about?

A. Well beyond that, in terms of the water plan, we were also always looking at areas in the watershed where you could store water and wetlands that could be restored or practices on the soil such as building terraces to slow down the water and its movement down ravines or down sloping landscapes. And various cover crops, CRP buffer strips, other types of buffer strips, other kinds of best management practices on the landscape that will keep the soil in place, and at the same time, keeping it in place then it will keep it from becoming picked up by the water. Water being the universal solvent that it is, it tends to pick up and carry things along with it too easily, very easily. And we may intend that to be so, but it will do it and therefore, we have to be especially careful. Water even has ability to dissolve quartz and that's how we ended up with our state rock, the agate. Quartz in the water eventually settled out in these little gas pockets in the volcanic rocks up in Northeastern Minnesota and the quartz came back out. So water is a very strong solvent, and we need to be on the watch all the time to keep any unnecessary stressors out of it.

Q. What are you most proud of when you think back about your work to help restore the Minnesota River and related watersheds?

A. Well, being a person that, since day one I guess, my mother and the family, as you look at the school bell over here and you look at the country school where I went, education is very important and it isn't just the education as in academic sense, but it's this understanding. So promoting a much higher level of understanding by society of the natural resources and so I've always worked to further that understanding myself and then further that understanding in the populous or the public around us through the various county agencies and state agencies and the federal agencies as far as that goes, wherever I could. So in other words, bringing science to the table, bringing understanding. A person doesn't have to get hung up

on science as being something that's this high-end academic stuff that I can'tunderstand. You're really just seeking to get a better feeling for what nature is doing around you, all around you. And simply understanding nature. Now you have to work at it a little bit, but that's okay because that's part of life too. So furthering understanding is what I probably strive for more than anything else.

And I suppose that's a rub-off from being a teacher, if you will, but it's also a rub-off from, just I think it's fun to understand things. I like digging into things. I suppose I drove my mother nuts because I was always tearing something apart when I was a kid, but understanding why a river does what it does, understanding why the soil, well how the till turns into topsoil or turns into soil. All of these things are, they're neat to work with and it's neat to develop a higher level of understanding. You learn something every day. We don't think we know it all. I think most of your Nobel Prize winners, Nobel Peace Prize winners or Nobel Physics winners or whatever, the first thing they'll tell you is, is the more they know, the more they know they don't know. And they always want to learn more and it leads them down other avenues and pathways.

Q. What's your biggest frustration?

A. Well, probably, biggest, well they're kind of closely related. I think, one of them is patience. People need to be patient and not expect, we live in an age where we expect things to happen right overnight. We want instant gratification, all of this, and that isn't necessarily the way the world works. So I'm always saying, well just wait a minute here. Maybe you should take a little bit of time to further understand the issues here. So my frustration would be with people that don't have any patience and people that don't want to try to understand the issues. And people that just want to jump ahead and do something just for the sake of doing it. That bothers me. When I do something, I want to be sure of what I'm doing. So I suppose that's just my psyche or my psychology about life, but I think you should plan things and I think you should know what you're doing, be sure of what you're doing before you just go out and do something. I don't think a person can just look over the riverbank or look across something and say, well this is the way it is. I think you really have to, I think you have to understand the issues, you have to collect some data and you have to

understand those relationships that are going on out there. There's a lot of relationships, interactions, that are taking place, and you need to work through those. I'm the kind of a person that probably, well not probably, I don't necessarily believe anything that anybody says. I'll generally look it up myself and look through it and research it and see what the data show to see if the interpretation that is being presented is appropriate or not.

Q. Are you familiar with the Minnesota River TMDL Process, Total Maximum Daily Load, and the water quality standards developed by the Pollution Control Agency? What do you think about them and what do you know about them, and what are your attitudes and beliefs?

A. Well first of all, I'm simply say that it's a very complex issue. TMDLs, I became involved in TMDLs when the MPCA asked for stakeholders and they asked me specifically if I would serve on a stakeholder committee for the Minnesota River Dissolved Oxygen TMDL.

I've been involved for a little over ten years now, going on eleven years with the TMDL process in Minnesota, and I was asked to serve on the Minnesota River Dissolved Oxygen TMDL when it began. I was asked by the Minnesota Pollution Control Agency to do that. And I served as an Ag stakeholder on that, an Ag advisor on that. And I would first of all say that being this was the first large TMDL done in Minnesota on a large river and on a large scale, that it was a learning experience all around. It was a learning experience for the MPCA, it was a learning experience for the stakeholders, and it was even a learning experience for the US EPA. For about halfway through it, I was interviewed by the US EPA as to how it was going. They had a graduate student contacting various ones of us, asking about the process. And I was very candid, saying I think there was quite a bit of frustration at first because we were all learning. But I think that's natural. I think that's part of what I was talking about earlier. It takes a little bit of patience here for us all to get on the same page, if you will, and understand what this all means and how we approach it. So there might have been two steps forward and then two steps back and then one step forward and then whatever.

It was a little discouraging at first, but it started to gel, it started to come together, but the one thing that stood out in my mind, what was really a little

bit lacking for me, was that I like to look at things from a budget cycle approach. I believe that the water flows in the Minnesota River, number one should first be budgeted. In other words, we should develop a water budget first. Then we can go and we can figure out stressor budgets along the way. But as long as the water is the main transport medium in the system and all of the chemical and physical interactions that are involved with water, flowing water, we need to have a water budget first.

Well it so happened that the Dissolved Oxygen TMDL of course was on a time constraint with the US EPA and it drew to a close somewhat successfully, and there were a couple of us, especially myself, that were pushing and knowing that we were going to be going to the Turbidity TMDL, the Total Suspended Sediment TMDL next, and we said why, I think you need to involve one of the highest academic achievement groups in the State of Minnesota and that would be at the St. Anthony Falls Hydraulics Laboratory. They're part of the University of Minnesota.

As I progressed in the first TMDL, and as I searched my soul for my own beliefs on where this was going, I came to the simple conclusion that we need to look at budget approaches. We need to first of all look at a water budget for the Minnesota River and then we can delve into the stressor budgets as well. In other words, we need to have life-cycle sequences, life-cycle budgets if we're going to really understand and work with this. If the water is being depleted of oxygen, we need to know the amounts of water that are available in the system and how they're moving through the system, and then we also do the same for the dissolved oxygen. And I was especially thinking this way, there were a couple of us thinking this way, that as we all knew, we would next be moving into the total suspended solids or the Sediment TMDLs for the Minnesota River, and that it would be the time to do that, it would be the time to move in that direction.

But the question some people had was well how do we do that? Well I made the suggestion, there was one other person that made the suggestion that we go to a branch of the University of Minnesota, the St. Anthony Falls Hydraulics Lab and those people there, they have what you would call a stream lab. It was developed in the 1930's; they use Mississippi River water, they run it into their laboratory and they can do all kinds of experiments with it, without going into a lot of detail here. At the

same time, at approximately a year or so earlier, the St. Anthony Falls Hydraulics Lab had received a large grant from the National Science Foundation to also be the headquarters for the National Center for Earth Service Dynamics. And in that process, they were going to employ, not just employ as work, but in other words, use the expertise of the top river scientists in the United States, if not the world. And they would all come to bear at the St. Anthony Falls Lab there through this National Center for Earth Service Dynamics.

And we would employ all kinds of disciplines in this working for understanding. And after a number of special meetings were held, the MPCA did decide to go ahead and move with that aspect of it and employ the St. Anthony Falls Lab in a study on the LeSueur River. And the main reason for using the LeSueur River was because that ids the primary sediment loader of the Minnesota River. And so these top scientists tackled that and worked at it and to be honest, they're still working on it today.

But I believe we're finally focused on the right track here for TMDLs. It's just that it's going to take a little more patience, or maybe a lot more patience from some people because the answers are not easy to come by. Mother Nature is a little difficult to unravel, and if I do try to sum it up in a simple sense, when we work with budgets, it really isn't any different than your checkbook. And obviously, a month or so ago here, middle of April, it was tax time, everybody's taxes were due on April 15th and people, you go through your records for the year, you go through your checkbook, you go through your budget for the year, and of course, in that case we're talking about a monetary, a financial thing, you're talking about dollars and cents, whereas when we're dealing with TMDLs, we're talking about the amount of sediment in the river, we're talking about the amount of mercury in the river, or we're talking about the amount of dissolved oxygen or bacteria in the river. And we have to go back up through the system then and say, well, just like our checkbook, I had all these different sources of income, if that was the case, or I had these various expenses where it flowed out, so we have to take these inflows and these outflows and put them together in a flow chart process so we can better understand how this all fits together.

And I think once we do that, we will eliminate a lot of the contention as well, because then it becomes clear to everyone and it does not necessarily appear that favorites are being chosen or things are riding out the way somebody wanted it to and not the way that science was allowing it to work out or the way Mother Nature was allowing it to work out. So I'm a big believer in a budgeting process and refining that process all the way through.

And that also leads to the next step, which is recycling or it's inherent in it, it's part of it. We all know that each of us, when we drink a glass of water, have an impact on that glass of water. None of the seven billion people on this planet Earth can merely drink a glass of water without impacting water quantity or water quality. The outcome is that we have to have some way to work with that outcome, if you will, and we have to have some process or some budgeting means to recycle that water then, and just like any of our other resources. So I feel very comfortable in that kind of an approach and I believe strongly that that's the approach that must be taken.

And integrating the recycling with the whole life-cycle budget is just one and the same and we're all getting a little bit smarter in that in our everyday lives. We're recycling our cans and bottles and our papers and tires and various things as well and all of that'll help see, because then those stressors do not find their way into the waters of the state or the nation or anything else.

So I find it all flowing together, if you will, and all interacting for the positive.

Q. So for me to get further explanation and understanding of what you just said, when you talk about the income and the expenses, what are you specifically saying about the Minnesota River and TMDL?

A. What we're saying is the water, first of all, the water is the transport item in the Minnesota River. And being water is the universal solvent and being water is moving, it' has kinetic energy and it's moving things along with it, it's rolling pebbles along the bed of the river, it's carrying little particles, smaller particles in suspension in the water, moving them along, and it is also carrying along with it all kinds of dissolved products, dissolved

products that it picks up from the soil, dissolved products that it picks up from humans. Even the drugs, we know they have, the Baby Boomer Generation that I'm part of, there are some of us that take quite a few pills so to speak, quite a few medicines or we've become a medicinized society as well. We want our cures, our excitement, we want everything in a pill and so we...

(interruption)

Q. You were talking about the inputs and the outputs as it relates to the Minnesota River or the TMDL Process and I believe I cut you off in the middle of a sentence about human medicines.

A. Well, if we look at stressor budgets, in other words, things that are causing a problem, potentially causing a problem, but if nothing else, they're becoming dissolved in the water...

A. If we have a particular stressor, something that becomes, when I use the word stressor, I mean something that becomes entrained in the water, trapped in the water, it's being moved along with the water in a riverine system, or it's became dissolved in it, chemically dissolved in it, or in suspension in the river, we really need to be able to measure where did it come from? How much of it came in at that particular point? And how does it move out of the system? In other words, we're talking about a complete life cycle budget for that, we'll call it a stressor, or that particular item that has come into the waters of the State of Minnesota. So we need to be able to calculate that if we're going to be able to solve or come up with some management practice to mitigate that. And we can think of all kinds of different stressors that might come into the waters of Minnesota. So, we just need to develop those life-cycle budgets for those stressors and seeing where they come in and where they go out and how we remove them or how we prevent them from moving into the water system in the first place.

But beyond that, I think an important issue just the basic water budget for that river system. In other words, when we think about a water budget, we have to think about where is the water also coming from and where is it

going or where is it being used up in the process of moving along somewhere.

From a natural setting, of course, we have water that comes into a riverine system, we always think about from rainfall, moving across the surface of the landscape. It can also seep out if a river is incised in the landscape, and depending on how deeply it is incised in the landscape. If a river has an incise like the Le Sueur River is where it comes in at Mankato into the Minnesota River, where it's very deeply incised, of course then you have the potential for a lot of seepage of groundwater into the river system, and you need to be able to determine those two natural sources that I was just talking about, precipitation and seepage. Now other sources could be, they could be from artificial water management or some people just plainly call it drainage. It could come from a wastewater treatment plant, as the City of Mankato essentially mitigates the human issue with its wastewater there. They pump that back into the system. You may have some farmer further downstream that is irrigating, taking water out of the system and spreading it on the landscape. And then it kind of recycles by seeping down through the profile and entering the river again. You have evaporation; you have evaporation of the water, of course, just by the sun shining and the wind blowing across the surface of the water; it evaporates. You have the transpiration, I've mentioned briefly already, where the transpiration is that a plant, through capillary action, draws up the water, uses it in the photosynthetic process and then expels it into the air or stores it in the plant fibers or the grain or the fruit of the crop, or whatever is growing, the plant. It could be in wood, or it could be in corn or soybeans or anything else. But the bottom line is you do really need to figure out that water budget, I believe first, and I believe that is the false step that's been made in many of these processes, is that that was not done. And that has made the whole effort that much more, well what should I say? I guess it made it kind of stumble along because you really did not know that water budget, and therefore, if you don't know the water budget, you really can't calculate all those carrying capacities or the transformation processes that are going to happen in that river system as it travels across the landscape. So I think the water budgets are very, very, very important and that is just being started to be put on the table for study, and it should have been done a long time ago. But at least we can see success and that people are thinking more strongly in that way.

And then I can regress a little bit back to what I was saying earlier about maybe pharmaceuticals or anything else that might have a chance to move into our waters of the state of Minnesota, be it the groundwater or be it the surface water. We need to figure out budgets there as well. And the reason budgets are important because then that will allow for recycling, that will allow for us to move these back out of the system and reuse them. If we give them a value, if we give these different, what we're originally calling stressors when they're in the water maybe doing harm, if we move them back out of the system and then are able to use them somewhere else where they're beneficial and keep them there, well that would be a positive.

Q. What did you think of the upstream/downstream friendship tour process that recently has been embarked upon?

A. I think it's excellent. We all have to understand how the water moves in a watershed again across the landscape, and so anytime the people or society as a whole, can move throughout a watershed from the head waters to the mouth of the system and see the diversity that's involved all the way along and throughout this watershed, that has got to be enlightening, has got to be very helpful for problem solving and for furthering understanding; it has to be; it's a good thing, great thing.

Q. What do you know about the Minnesota River Board or the Minnesota River Watershed Alliance?

A. I'm familiar with both of them. The Minnesota River Board, our local county commissioner was the chair of the Minnesota River Board here for the last few years and just relinquished that chairmanship and moved on. The Minnesota River Board is composed of members, county commissioners, county commissioners that serve on that board, on that governing board, and I have attended meetings sporadically as they are in the area here. If they're in a reasonable distance of my area here, I generally do attend them. I do receive the agendas in the mail, both physically and also email. And so I'm familiar with it. Certainly there is a potential for the whole watershed as a group, because the idea is to represent the whole Minnesota watershed with the River Board. There is

certainly a potential for that watershed then to work better together with such a group. It takes great leadership. I think Shannon Fisher; I believe Shannon Fisher is providing that leadership. However, it is a little tough at times to pull all of the counties and all the county commissioners along, and so I, it's like anything else, well when I say anything else, people really have to have some projects and drive to keep everything going. And sometimes it seems like there's a few stumbles with part of that. But it should work in the long run, but again, I wonder a little bit.

We have a Watershed Alliance that is more of a citizens' group then, and I've been to a few of those meetings, not as many. But a Watershed Alliance is particular in my mind, or the way I perceived it all the way along is more of a grassroots citizen, everybody a citizen in a watershed group. And it appears from time to time there gets to be a little bit of a conflict between the two or something. And maybe I'm misperceiving that, but anyway, they should be able to help each other out. But maybe I'm just a little too far distant or something, I don't know.

(break)

Q. Picking up where you just left off. You said there may be some conflict between the two, you're not sure. Could you please give me some examples?

A. Well if I look at a county commissioner and I try to reconcile how a county commissioner thinks about things, as compared to a citizen of the watershed, how they think about things, I think there can be a conflict at times because a county commissioner is, he's got all these government strings attached to what he's doing, and he is working at the behest of an elected situation. I mean he is elected, whereas the others are primarily doing it because of a passion, if you will. Sometimes it appears to me there can be a conflict between people with a passion and people that are in a government office, that sometimes the two of them, I think the people with a passion don't think the people in the government structure work well enough or get off their butts and get going or something. But they maybe don't recognize the restraints that these county commissioners have and that they have to have a more of a go slow approach or something of that nature. And whether I'm seeing it correctly, I don't know

for sure, but I feel that. I'll just say that I feel that in there, and that, and then I've heard some people say well, really, do we need both groups? Do we need it or not and you would hope that they could work together or work as a cohesive unit or inform one another and maybe I'm not the best judge of it either. I'm not sure.

But being a watershed district person, the watershed concept of approaching or solving any issue is worthy, is ultimately worthy. So if that's what we're doing or striving to do, we should be able to make progress, we should be able to benefit all with looking at it from that perspective. Now there gets to be turf battles because I know there's another issue that's floating around out there, and that is to take the different individual watershed districts, like for instance, we are in the Lac qui Parle Yellow Bank Watershed, and both of those are tributaries to the Minnesota River. And otherwise, up in this area up here, we have the Upper Minnesota Watershed District, which would be the Whetstone and the Little Minnesota. But on the north side of the Minnesota River, we really don't have a Pomme de Terre Watershed District, we don't have a Chippewa River Watershed District, we don't have Hawk Creek Watershed District. We do have a Yellow Medicine, again on the south side down here as we come down here. So they're not all, there are some watershed districts and others are just looser organizations, if you will. And there is some conflicted feeling that if you were to put it all together and dissolve all of this and put it into one big Minnesota Watershed, that probably wouldn't fall out well with some of these other individual organizations. And there was some, there has been that kind of a feeling in the background there as well, that I've detected, that the end game to some of this, or the end result would be dissolving parts of this and putting together a new organization that is primarily just a Minnesota Watershed District. So again, I hear that back and forth.

Q. What are your beliefs about it?

A. Well it's always local control, you know, there would be, working under an umbrella group would be fine, but I think the individual watersheds, there's merit to having those as well. I mean I wouldn't see anything wrong with the Pomme de Terre for instance forming a Pomme de Terre Watershed District; they should do that. Chippewa should

form a watershed district. Hawk Creek should form a watershed district. And then you would have a representative from each of those watershed districts of the 13 major, or you can take the minor ones too, down by the Seven-Mile Creek and you can put them all in there. And having them all have their individual watershed districts and then they could have a representative from each one of those watershed districts come together and be part of a larger scale Minnesota Watershed. I would think Minnesota law would look at that favorably, and that's the way it was put together, and so what am I saying here? I think sometimes there gets to be confusion; I think there gets to be confusion a little bit with the River Board and the Watershed Alliance and the Watershed Districts, and then Clean Water Partnerships. It's like there's just a little bit too many of all these things, and that can cause confusion in some of the public's mind, if you will, and it can cause the commissioners to get a little nervous. I mean the elected officials, the county commissioners to be a little bit nervous that there's too many things kind of going on out there. So it's hard to sum this up, but there's a lot of individual efforts and there's a lot of passion involved that's good, but some see it as not focused, or just kind of off over here doing this or off over here doing that and that may be all put together. So it's a hard thing to put your finger on, but over the years, I've kind of seen a little bit of all of this to be honest. I've seen a little bit of everything and I've heard talk from all sides of it, and it generally isn't, how should you say it, maybe real serious talk, but there's just this little agitation feeling out there about all the different groups and that if there was more...And I don't think it's just because I'm a watershed district person and the laws of Minnesota clearly state how you can form a watershed district, and I can do all this. I don't think it's just from that, because I hear it just in general out there, people that don't know anything about a watershed district, that why aren't these other tributary areas, why haven't they formed a watershed, or what are they doing, or how come?

Q. To follow up on what you just said, the question is, what does it mean to you and to the Minnesota River and the watersheds all along the Minnesota River, to be organized in watershed districts with local watershed districts?

A. Watershed districts are all about local control, they're all about working in a watershed where you're familiar with the watershed, in the

simplest sense. Every watershed is unique. We can easily look at all the data that's been collected by the NPCA and others up and down the Minnesota River. And for instance, just looking at the sediment one, which just jumps out at you and really knocks you over, you can look at the lowest one is 27 pounds per acre of sediment coming into the system, 27 pounds per acre. That's about like a pocket gopher mound, that's pretty small. And then you look at the largest one and it's somewhere close to 700 pounds per acre. That's a huge difference, a huge difference. And what does that mean? I mean this one over here that's got the 27 pounds is organized as a watershed district. This one over here that's got 700 is not organized as a watershed district. Does that mean that's the reason? No, that's not fair to say. That's not an honest comparison just to say, because this one is organized and this one is not. But maybe there's some little attribute of it that has something to do with that. And so what I've said and what I'm saying here is a little bit contentious, but I mean Minnesota put watershed law on the books for a good reason, I believe, and people should partake of it, should move forward with it, and go ahead. And that doesn't mean they isolate themselves in their little own watershed, but it means they can take that pass and they can pour it on in that watershed and attack those local problems that they know all about. These people up here in the 27 TSS, what do they know about this down here that's got 700? Do they know anything about it down there? They say well for heaven bid, all you have to do is do this over here and it'll work just fine, you won't have those problems. But maybe that doesn't work down here. So the local control, I think is always important. And the local understanding is always important. And these watersheds, even in and amongst themselves, are very unique, so hey, my recommendation is let's organize all of the tributaries, major and minor, along the Minnesota River into watershed districts and yes, then we can work together. But we'd be working on it then as a core watershed. So I would not be one of those in favor of organizing just one Minnesota River Watershed District. I don't think that's a good idea.

Q. What did you think when Arne Carlson, the Governor of Minnesota, announced that the Minnesota River should be cleaned up in ten years, made to be fishable and swimmable? In 1992 he made that pronouncement. What did you think? Were you around?

A. Yes, I remember that. I think it caught a lot of Minnesotans' attention. I think it's the first time that it, it's important for a governor to be a leader. It's important, the media covers it and all these things, but I mean in general, it's important for the governor to be a leader. And he said this is an issue and we're going to work on it. And that put everybody, so-called steered them in a way to go and move ahead and sure, there are lots of whatever you want to say, t's to cross and i's to dot and all this kind of thing, but anyway, it got the ball rolling and we've been rolling ever since. So I believe just before he left office, he also gave a kind of a state of the river too. He made a commentary there, and he was rather proud to say and he felt good about it, that progress had started to be made. And I think when the CREP program has been employed as it has, especially for setting aside lands in the flood plain. I mean anything you can do in the flood plain, and any of the work that was done in the flood plains, and it's almost like Mother Nature gave a natural impetus to do this with some large flood events, then that had a nice impact. And we have seen various fisheries people, experts from the DNR and other botany people and the fauna people say that some of the species of mussels are coming back and different species of fish are now making their way further upstream and proliferating. And so the various tests that we've been doing, the measurements, the monitoring on the Minnesota River, have shown some improvements. In other words, it appears as though we're making progress. And again, from earlier what I said, I think you have to be patient though, and it's not just a time-honored phrase, you know, we didn't get here in the last ten years, we're not going to move back in ten years. It did take us a long time to get here. We've had a lot of things that we've done over the years that we really didn't understand what we were doing and now we're making progress and we've got better technology, better science, and I think we're moving ahead, via flood freak.

Q. What do you mean a flood freak?

A. Well they're interesting, they're an interesting event of nature.

Q You want to tell me about your hat?

A. Sure, my hat is from the American Society of Agronomy, the Crop Science Society of Agronomy and the Soil Science Society of America.

And it is a group, I belong to the American Society of Agronomy and this is a hat that they, well their membership has, and I like hats. I have kind of a collection of hats and so I thought I had a unique saying as well. I believe as we look at it here it says, "Solutions for the global community."
And I believe that's what science does for us, understanding does that for us. Don't just get hung up on the word science, but if mankind does not come up with solutions, or does not use technology, I really don't think there's much future for us because we've gone along here far enough now that we can't just go backwards, we have to move ahead, and we'll have to use our understanding as we have used so far to get to this point. We'll have to employ that all the more and come up with more solutions, otherwise our resources, sure, we're going to be, our resources are going to be downgraded and we have to learn how to recycle those resources and I don't know how you do that without understanding or developing a higher order of understanding.

Q. What's an example of a way of moving forward?

A. Well, in the simplest sense, well first of all, I'll speak from a farmer's perspective here on employing science, and that is in the understanding DNA sequencing, understanding all of our, well, how we're put together. Really what we do now, or what we can do now is we can have designer crops, we can have designer trees, we can have designer grass, if you will, we can have designer vegetables and plants, but it's going to take a little while.

But we're developing that understanding and with seven billion people and growing on the planet, what else are we going to do? We can't just go backwards. I think this whole biotech is a great path to the future and we don't quite understand it yet and we're a little bit scared of it, and like any other avenue, we have to be a little bit careful, and we have to watch it along the way, but I can't believe what the possibilities are. I mean I think they are, not just unlimited, they're unbelievable, what the possibilities are with genetic engineering. I mean genetic engineering, it'll probably scare us what we can design, but it should be able to take us along ways. I mean we should be able to develop bacteria, if you will, or genetic sequences that will be able to clean up water and for instance, that you could take a plant

leaf and actually obtain alcohol out of the plant leaf or something of that nature. Probably the simplest way to say it is photosynthesis in a bottle.