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Natural Resources Committee and Agriculture Committee
October 30, 2007

[LR106]

SENATOR LOUDEN: Today the Agriculture and Natural Resources Committees are having a joint interim hearing on LR106, and that's to examine the facts...effects of vegetation on river flow and river basins in Nebraska. I'll start with the introductions here. To my right is Jody Gittins, counsel for the Natural Resources Committee. Next to her is Senator Gail Kopplin from Gretna; next to that is Senator Tom Carlson from Holdrege; and next to him is Senator Deb Fischer from Valentine; and on the end is Senator Mark Christensen from Imperial, all members of the Natural Resources Committee. On their right is Barb Koehlmoos, the committee clerk; and next to her is my administrative assistant, Cynthia Monroe. To my left is Senator Annette Dubas from Fullerton, she's Vice Chairman of the Ag Committee, and also on the Natural Resources Committee; next is Rick Leonard, research analyst for the Ag Committee; and sitting next to them is "Cap" Dierks, a member of the Ag Committee; and next there would be Senator Russ Karpisek, who's also a member of the Ag Committee; and Senator Norm Wallman is a member of the Ag Committee and the Natural Resources Committee. At this time, I think Senator Joel Johnson has just left, but he was here for the tour this morning, and he is from Kearney. Myself, I'm Senator LeRoy Loudon, Chairman of the Natural Resources Committee. And with that, I would introduce some the agency people that are here today. I think when I get done everybody will be introduced, probably. First would be Nate Donovan, from the Attorney General's Office, that is assigned to the Game and Parks; and Kirk Nelson from Game and Parks Office; T.J. Walker from North Platte, from the Game and Parks. And then Lorrie Benson is the Water Resource Center, she's the Conservationist for the Water Policy Task Force; and Rich Reiman from the Ag Department; Dr. Gary Hergert is here and Gary Stone, they will do some work and give us a presentation shortly, and they're from the Panhandle Research and Extension Center in Scottsbluff, Nebraska. Also Jason Alexander and Bob Bettger from the Department of Natural Resources. And if there's anybody else important here, why please stand up. (Laughter) Now we'll get to the important ones. We have some managers from the Natural Resources District: John Thorburn, from

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Tri-Basin; and Dan Smith from Middle Republican; and of course the one that I really want to introduce is Mike Clements from Lower Republican, today that gave us the tour, gave us a fine lunch, worked up to get the facilities for us and that sort of thing, so we certainly appreciate Lower Republican for helping us get this on board today. With that, those wishing to testify on the resolution should come to the front of the room when that resolution is to be heard. As someone finishes testifying, the next person should move immediately to the on-deck chair. The green sign-in sheets are for testifiers on the testifiers' table and need to be completed by all people wishing to testify, including senators and staff introducing resolutions. Please complete the form prior to coming up to testify. When you come up to testify give it to the committee clerk. Do not turn the form in before you actually testify, and please print. And it is important to complete the form in its entirety. If our transcribers have questions about your testimony, they use this information to contact you. If you do not wish to testify but would like your name entered into the official record as being present at the hearing, there are white sheets for you to sign on the testifiers' table. The list will be part of the official record of the hearing. As you begin your testimony state your name and spell it for the record, even if it is an easy name. Please keep your testimony concise and try not to repeat what someone else has covered. If there are large numbers of people to testify, it may be necessary to place time limits on testimony. I would also like to remind you that the purpose of the hearing is to gather information for the benefit of the committee. It is not appropriate to respond to what someone else has testified to, unless a committee member asks for clarification. If you have handout material, give it to the staff and they will circulate it to the committee. If you do not chose to testify, you may submit comments in writing and have them read into the official record. No vocal display of support or opposition to a resolution will be tolerated. With that, I would ask legal counsel, Jody Gittins, to introduce LR106, the interim study on the effects of vegetation on the river flow in Nebraska basins. [LR106]

JODY GITTINS: Good afternoon, members of the Legislature. The purpose of the interim study...my name is Jody Gittins, J-o-d-y G-i-t-t-i-n-s. I'm legal counsel for the

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Natural Resources Committee and introducing LR106 on behalf of Senator Louden. The purpose of the interim study is to examine the effects of vegetation on river flow in river basins in Nebraska, primarily in the Republican River Basin, the Platte River Basin, and the Niobrara River Basin. During the last legislative session, Senator Carlson introduced LB458. This was incorporated into LB701, which was passed and signed by the Governor. LB701 created the Riparian Vegetation Management Task Force to develop vegetation management goals and objectives and to file a final report on June 30, 2009. The Director of the Department of Agriculture administers the grant program that was established to assist entities within the state that are subject to an interstate compact or decree in the management of vegetation that has a negative impact on river flows. It is Senator Louden's hope that the members of the Legislature attending today will acquire more knowledge regarding this important issue as the task force is moving forward to accomplish its goals. The end. [LR106]

SENATOR LOUDEN: Any questions? Seeing none, thank you, Jody. And the first part of the testimony we'll get today will be from Gary Stone, from Extension Service. He's going to have a presentation on some of the work that's been done up in that area. [LR106]

GARY STONE: (Exhibit 1) My name is Gary Stone, Extension Educator, Panhandle Research and Extension Center in Scottsbluff. I'm here at the bequest of Senator Louden to make a presentation about a project that Dr. Hergert started using Landsat satellite images to develop consumptive water use maps. First off, I'll start with a little background slides, a little background history of how we got there with the water issues and the research that we're doing out there in the Panhandle. As you can see, at least out in the Panhandle, or at least out west we are still in a drought situation, and that also extends out into Wyoming where a lot of the snowpack and the moisture that we need to fill the reservoir starts. [LR106]

SENATOR LOUDEN: Can you spell your name, Gary, your last? [LR106]

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GARY STONE: Excuse me. Stone, S-t-o-n-e. [LR106]

SENATOR LOUDEN: Thank you. [LR106]

GARY STONE: So we are still in a drought situation out west. The rivers are running dry. Lake McConaughy is down, the reservoirs up in Wyoming are way down, they're only running about 22 percent of normal. We have a lot of irrigation wells in the state drawing a lot of ground water out. And this is a view looking north towards where North Platte would be, back in 1905, what they call Dodge Hill. That's where North Platte would be, it's basically where the South Platte and North Platte Rivers are out there. As you can see, there isn't much vegetation out there. If you look at it today, things have changed quite a bit. We have a lot of DNR stays on well drilling, irrigated lands that we can water, and additional lakers that you can bring into production. Some of the drivers for change are the NRD allocations that have come about, the Platte Basin River Agreement, the Republican River Basin Agreement, and LB962. LB962 mandated that we develop integrated water management plans, have a balance between the basin supplies and their uses, sustain economic viability and environmental benefits, and also return to 1997 water use levels. And that right there is probably the main reason why we are using this research program because, how do we know what water we used in 1997? Hopefully, this research project will be able to tell us that. We need to reduce water demand, reduce irrigated acres, reduce ground water pumping, remove invasive species, limit the water that we use on existing acres, do we change our crops or cropping practices, change tillage or residue management, and use water transfers or marketing. And the ultimate question is while we're all here, who's going to pay? The taxpayer wants to know who's going to benefit and who's going to pay? While some of the Panhandle research and extension research projects going on are for water, we do have water research going on invasive species; we're trying to breed plants to tolerate drought; we're working on soil and tillage management for better water use; developing no-till, limited water research, the Pumpkin Creek Project some of you may have heard

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about; we're working with oil-seed crops that use less water; and one we're doing now is ET mapping of large scale areas with Landsat satellite photos. So the project is to develop consumptive water use maps to improve ground water irrigation management. The project was funded in part by the NRCS, the North and South Platte NRDs, and the Department of Natural Resources. We're using a program called METRIC, it's Mapping EvapoTranspiration with high Resolution and Internalized Calibration, and it was developed by Dr. Richard Allen, out of the University of Idaho and his counterparts there. Well, what METRIC is, is what we call a hybrid. It combines remotely-sensed energy balance or satellite data that we get, and we anchor it with the ground-based weather data. And it combines these energy balanced calculations from the satellite with the accuracy of the weather station data that we get. So when it comes down into a nutshell is what we're doing, without getting too complicated, we take a Landsat satellite photo image, we combine the weather station and crop data that we have from the ground, we put it into the METRIC model to calculate, and we come up with an evapotranspiration or water use map for a large area at one point in time. And then throughout the season we take several of these maps, seven to nine of them, and we stitch them together, and then we get a cumulative or seasonal ET for that area. METRIC does have some concerns. We do need cloud-free images. If we have clouds in the image, a lot of them, we have to get a different image somewhere. The satellite passes over once every 16 days. There is another satellite up there called MODIS. It can fill in the gaps, but its resolution is like a half a mile, where Landsat is 30 meters or roughly 100 feet, so the image quality is poor with the MODIS. The ET maps cover roughly 100 miles by 100 miles, but it takes about four weeks to process each satellite image. And it is basically rocket science. This is some of the calculations that you have to go to, to come up with that ET map. These are the paths and rows that the Landsat satellite covers when it crosses the state. The Landsat satellite flies from north to south as it goes around the Earth. And those are the...those rectangles are the images that it takes. And it circles the Earth roughly once every 99 minutes, but it only crosses those rectangles once every 16 days. This is the Upper or the North and South Platte NRDs outlined by that light blue box, and those are the two satellite images that we are going

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to process for the years 1997, and that will give us our basis that we need to get back to on how much water was being used by the different crops; 2002, which was the driest year out there during this drought season, and 2005, which was the wettest year since the drought. This is what a Landsat satellite image looks like as we get it. There is actually seven different layers that the image has in it, different wavelengths of light. Right there is Lake Minatare, up here would be Box Butte County and Alliance, Scottsbluff would sit right in there, Gray Rocks Reservoir up there in Wyoming, Pumpkin Creek would be here, Platte River coming down here, and Lodgepole Creek here. So if that helps give you some reference, and the Niobrara River up there. And this image was taken on August 9 of this year. Well, that's one image that we processed to start out with to get a handle on things to see how they would go. Through CALMIT, they already have what we call land use values for the ground, we know what the vegetation is, and that's what this slide shows the different vegetation within that area that we're going to process. And so far we've processed one satellite image, that 8-9 image, and this is the water use map for August 9 in that area. If you wanted to convert the millimeters per day you would divide those numbers by 25.4 to get inches per day. So the real dark blue, at that 10.1, would be about four-tenths of an inch of water use per day by the vegetation. And there are few of those up there. We need to find out why they are, that's why we go back and ground-truth them, get the GPS reference points and go back and see why those are so high because they probably shouldn't be there. There really isn't anything that uses water that much at this stage of the growing season. [LR106]

SENATOR LOUDEN: The red then, is that all farm ground or is that farm ground and... [LR106]

GARY STONE: These areas here would be pivots and farm ground, yes, that would be farm ground. Wherever it's red that's evapotranspiration taking place. [LR106]

SENATOR LOUDEN: It could be farm ground or it could be Russian olives or... [LR106]

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GARY STONE: It could be rough farm ground, it would be Russian olives, because yes, the river flows right up through there. It's probably more farm ground is what I would say, Senator. So the question I know you're probably going to ask, METRIC in riparian areas? Well, like I said, METRIC maps see the entire area. They see 30 meters resolution, or roughly 100 feet by 100 feet. Each one of those Landsat satellite images has roughly 34,500,000 pixels in it and that's why it takes so long to process. We have to calculate the proper numbers for each pixel. To get the ET for the invasive species we need individual crop coefficients or water use values for those plants. We already have them for corn, we have them for soybeans, we have them for sugar beets, we have them for alfalfa, but we don't have them for saltcedar, Russian olive, phragmites, cottonwoods or willows. Up until this point, there's never been a need to know, and now we need to know. And it's easier said than done. We also need to be able to go out and what we call ground-truthing. We need to be able to determine the size, the age, what's underneath those plants, whether it's grass or it's gravel, bare soil, also need to know the density of the stands to get an accurate fix on what the ET of these plants are. Well, we think we might have a handle on this and it's something we're going to try. It kind of came along as a side note to the overall METRIC project that we're doing for the North and South Platte NRDs. Dr. Robert Wilson, also from the Panhandle station, through CALMIT, flew from "Mac" all the way up to the state line with hyperspectral images. And a hyperspectral image, in this case, was 1.5 meters resolution, so it's roughly seeing about four feet. So that can pick out individual trees. And that's what we really need to use the METRIC. So taking...and this is what one of those images looks like, that's just south of Mitchell. And the red would be the saltcedar. They've identified it. The bright yellow would be the Russian olive, with the kind of lime green Canada thistle, plus musk thistle. But what we are going to try and do with Ayse Irmak, she's out of the University of Nebraska - Lincoln, she's the one that processes our images. She's going to attempt to take the Landsat image, overlay the hyperspectral images from Dr. Wilson, and run them through the METRIC program and see if we can't come up with a value for the Russian olive and saltcedar on how much water they're using. So basically, that's what

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that slide says, taking those images and doing that. It's going to take some money and it's going to take some time, we're thinking at least a year to come up with that before we get a good handle on it. And I'll entertain any questions. [LR106]

SENATOR LOUDEN: Questions for Gary Stone? Senator Carlson. [LR106]

SENATOR CARLSON: Senator Louden, Gary, thank you for being here today and reporting. On one of the first slides that you had was the drought, I think, last year and this year, both Nebraska and Wyoming? [LR106]

GARY STONE: Yes, sir. [LR106]

SENATOR CARLSON: Now Wyoming looked a lot better this year. [LR106]

GARY STONE: A little better. [LR106]

SENATOR CARLSON: Can you comment on that? [LR106]

GARY STONE: Oh, other than they've probably had some better rainfall come through than what we've had out in the Panhandle. [LR106]

SENATOR CARLSON: I wonder when that was? Because when we were out there on that tour, it looked pretty dry to me. But at least it's better than last year. [LR106]

GARY STONE: It's better than last year. Yes, sir. [LR106]

SENATOR CARLSON: Second question, one of the slides you had mentioned water transfers and marketing. Can you explain that a little bit? [LR106]

GARY STONE: You know, I suppose what it would be is that some of your irrigation

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districts would want to give up their water rights, you know. But that would probably have to go through the landowners or the members of the district. In some cases, in other states maybe adopt what their programs are; they would give up their use of that water for say a season, but still retain the ownership of the water, but let somebody downstream or upstream use that water instead. And then have...you know, pay a price for it. [LR106]

SENATOR CARLSON: So the agreed upon price would be the marketing aspect of it then? [LR106]

GARY STONE: Yes, sir. [LR106]

SENATOR CARLSON: Okay, thank you. [LR106]

SENATOR LOUDEN: Senator Dubas. [LR106]

SENATOR DUBAS: Thank you, Senator Louden. Thank you, Gary. On that slide about reducing water demand, are you currently researching any of those questions? [LR106]

GARY STONE: Which slide is that, Senator? [LR106]

SENATOR DUBAS: That would be on the second page, the fourth slide on the right-hand side. You have reduce irrigated acres, reducing ground water pumping. Are you... [LR106]

GARY STONE: Okay. Yes, we are. You know, we're...those are just some of the factors that you could look at as some of the possible answers to the water questions we have across the state. [LR106]

SENATOR DUBAS: So you are currently doing some research in... [LR106]

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GARY STONE: The next slide would be the one that we're actually doing the research on. [LR106]

SENATOR DUBAS: Okay. Okay. [LR106]

GARY STONE: These are just some of the... [LR106]

SENATOR DUBAS: Suggested areas. [LR106]

GARY STONE: ...possibilities that could be followed. [LR106]

SENATOR DUBAS: Thank you. [LR106]

SENATOR LOUDEN: Questions? Senator Fischer. [LR106]

SENATOR FISCHER: Thank you, Chairman Louden. Thank you, Mr. Stone, for being here today. I appreciated your presentation. On the METRIC model, can you tell me is it being used in other areas or other institutions or states? [LR106]

GARY STONE: Yes, it is, Senator. The state of Idaho water resources folks are using it pretty much exclusively to manage their water on the Snake River Basin. And I could have had some slides to show that, what they have, but we thought it more pertinent to show what we have in this state. But, yes, they are using it there. They've used it in other states for riparian purposes to try and determine overall what saltcedar, cottonwood, and Russian olive are using predominantly on the Rio Grande River in New Mexico. [LR106]

SENATOR FISCHER: In New Mexico then do they know how much water saltcedar takes? [LR106]

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GARY STONE: I've got the paper, I haven't read it. It's a pretty technical paper. They have a good... [LR106]

SENATOR FISCHER: Don't give it to me then. (Laughter) [LR106]

GARY STONE: ...estimate. You would like it. (Laughter) Okay, I will get that for you. [LR106]

SENATOR FISCHER: Oh no, I said don't give it to me. (Laughter) [LR106]

GARY STONE: No, don't give it to you? (Laughter) It was an article written for a journal and they did address that. And it's interesting reading but, yes, it does get pretty technical. [LR106]

SENATOR FISCHER: Is helpful to you then? On one of your last slides that you showed, where you had obviously someone in a plane was flying over and they were able to identify the species then,... [LR106]

GARY STONE: Yes. [LR106]

SENATOR FISCHER: ...the forest to the...the flight line location. Would the research in New Mexico help on that, too? Or because of soil type differences and things like that, it maybe wouldn't apply here in Nebraska? [LR106]

GARY STONE: The research in Mexico (sic, New Mexico) did not use this type of imaging to come up with their answers. They just strictly used the Landsat satellite photos. So theirs was a real broad estimate of the numbers. The hyperspectral is a sharper picture. And hopefully, you overlay that with the Landsat satellite for the overall area that you're on, and then process it through METRIC, we hope to come up with a

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better estimate of the water use by the Russian olive and the saltcedar, because we can get a finer picture of where the plants are. [LR106]

SENATOR FISCHER: I think I understood you to say on one of the slides, I think it was the water usage slide, that you had some questions on that image. And you thought you needed to recheck maybe some of the figures. Does that happen often in this model? [LR106]

GARY STONE: No, it shouldn't. I mean, well let me back up, it can, and that's why you go out and ground-truth. Dr. Irmak will give us those reference points through GPS. We'll go out and actually physically look and see what's on that...or where that image is at or where that spot is on the map and then tell her what it is so she can make adjustments in her calculations. Because... [LR106]

SENATOR FISCHER: Does that happen often? [LR106]

GARY STONE: To my knowledge, I wouldn't say no. It's just that it's time consuming. You go through one step, you make sure everything looks good, and then you progress to the next. And the final product would be this. Overall, this is a very accurate map. It's just that there's a few points on it that we've got questions about. [LR106]

SENATOR FISCHER: Are there other models available to do this type of thing? [LR106]

GARY STONE: The original model was called SEBAL, and that's the acronym, I couldn't tell you what the actual name is. It was developed by a gentleman from the Netherlands and he and Dr. Allen were good friends. And Dr. Allen took it one step further and came up with what he calls the METRIC program, which tries to be more accurate and more thorough. [LR106]

SENATOR FISCHER: So basically, just two in the world. [LR106]

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GARY STONE: They are both...there are just two in the world. [LR106]

SENATOR FISCHER: And how long has it been used? [LR106]

GARY STONE: Oh, four years, five years. [LR106]

SENATOR FISCHER: So still fairly new and not a long track record on it then? [LR106]

GARY STONE: Well, but for Idaho to be using it on a regular basis should say something for the program. [LR106]

SENATOR FISCHER: Okay, thank you very much. [LR106]

GARY STONE: They have confidence in it. [LR106]

SENATOR LOUDEN: Senator Christensen. [LR106]

SENATOR CHRISTENSEN: Thank you, Chairman Louden. Thank you, Gary. When you're talking about here...up there going back to 1997, water use levels from LB962, do you have satellite images from back then that you can put through the program and compare '97 to 2007 or whatever? [LR106]

GARY STONE: Yes. Landsat was launched, I think, Landsat V in 1984, and it's been up there and operating real good. So we can take Landsat V or Landsat VII images. So yes, we have images back to 1984, if need be. [LR106]

SENATOR CHRISTENSEN: So have them maps been read and determined what's been used back then? [LR106]

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GARY STONE: That's what we're in the process of doing. [LR106]

SENATOR CHRISTENSEN: So we just have the images, we're just starting the data?
[LR106]

GARY STONE: We're just starting the project and starting to process the images. And we're going to do 1997 first to get our basis for the North and South Platte NRDs. And then we'll progress to 2002 and 2005. [LR106]

SENATOR CHRISTENSEN: Okay. And using 1997, how do we know that that's not an extra wet year or extra dry year? You know, using just one year if it...you know, if it's in LB962 I understand it's beyond your scope. But you can't just pick a date and call it average. [LR106]

GARY STONE: Well, we look at the overall annual precip. that we get. And it is pretty close to being average, it might be a slightly wetter year I think we determined. But overall, for an average year it will fit the bill. Does that answer your question, Senator?
[LR106]

SENATOR CHRISTENSEN: Well,... [LR106]

GARY STONE: I'm...no, no, but I... [LR106]

SENATOR CHRISTENSEN: You're answering my question, I'm just not sure that picking any one year can ever be a perfect average. [LR106]

GARY STONE: Okay. Well,... [LR106]

SENATOR CHRISTEN: You know, that's my concern. [LR106]

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GARY STONE: ...we're just going on the basis of LB962 that said that's where everybody has to be at. [LR106]

SENATOR CHRISTENSEN: Right, right at that year. But you know it's...we know how much every year varies in the state of Nebraska. [LR106]

GARY STONE: Um-hum. [LR106]

SENATOR CHRISTENSEN: So to take one year and call it average is tough. But I understand you're following the bill. [LR106]

GARY STONE: Um-hum. [LR106]

SENATOR LOUDEN: Other questions? Yeah, I have one or two, Gary. You mentioned the cost, you know, \$239,000, \$120,000, \$105,000. Did that finance the...how much of that project did that finance or did it...or did it finance it all or was there money left over or what's it going to cost to do this thing? [LR106]

GARY STONE: Can I defer to Gary Hergert on that? [LR106]

SENATOR LOUDEN: Okay. [LR106]

GARY STONE: He's got a little bit better handle on the figures than I do. [LR106]

SENATOR LOUDEN: That will be fine. When he gets up to testify, we'll put the crank on him. (Laugh) [LR106]

GARY STONE: Okay, okay. [LR106]

SENATOR LOUDEN: Yeah. When...I guess I'm more intrigued about using this in like

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the Republican River or some other place. [LR106]

GARY STONE: Um-hum. [LR106]

SENATOR LOUDEN: How long will it be before you know how much the saltcedar or cottonwood or something uses in Nebraska? Because I presume the water usage will be different in Nebraska because we don't have as long of a growing season or something. How many years is that out before you have that information? [LR106]

GARY STONE: Well, hopefully, if the lady in Lincoln can process it, you know, maybe a year at the most. I also know that there's a research project going on where they are also trying to come up with those figures. And that's probably at least one or two years out. But they're trying to do actual measurements of these species. [LR106]

SENATOR LOUDEN: Well, what I'm wondering is I've had some discussion with different ones, and they were wanting to know what the baseline was of the water usage of these species like now, and then we spray, and have we done any good? Is there any way that this system can figure that out for us? Do you understand what I asked? [LR106]

GARY STONE: Um-hum. To get an accurate as you can, you would have to process a season's worth of Landsat images based on what one flight of hyperspectral would give you. That would tell you where the plants are at. That would tell the program where to look and what to look for. So to just take one Landsat image and one CALMIT hyperspectral flight, that would only tell you how much for that day. But to get a really accurate image of how much these species are using, you'd still have to process one season's worth of Landsat images. And then, hopefully, that one hyperspectral image would tell you where those plants are at, and so it could process and know where to look for them. So I'm not quite sure if I'm answering your question. But it would... [LR106]

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SENATOR LOUDEN: What I'm wondering is, okay can you go back in 2005 or '06, which ever year you want to pick. [LR106]

GARY STONE: Um-hum. [LR106]

SENATOR LOUDEN: Could you run this through your little magic machine and find out how much the usage was in that particular year? [LR106]

GARY STONE: If you have say a current hyperspectral image or flight that would pinpoint where those plants were at. [LR106]

SENATOR LOUDEN: But you don't know if anybody...if those flights ever happen in the Republican River or not? [LR106]

GARY STONE: No, I do not. [LR106]

SENATOR LOUDEN: Okay. If they haven't, then we're out of luck, is that correct? [LR106]

GARY STONE: That's correct. [LR106]

SENATOR LOUDEN: But if you did, then could you go like in 2008 then and see whether or not any of that spraying done any good? To see if there was less than what there was in 2000 and... [LR106]

GARY STONE: I would think you should be able to because you know where they were, and if you sprayed them out they would not show up the following years that you would run those. [LR106]

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SENATOR LOUDEN: Is there any way we can find out if any of those images or if any of that work was done in previous years? [LR106]

GARY STONE: Yeah, we can contact CALMIT, and they should be able to tell us if they've ever flown any of the basin here. [LR106]

SENATOR LOUDEN: Is that...in order for them to take those pictures, somebody got to ask for it or order it or something like that or... [LR106]

GARY STONE: To take them and have a sizeable checkbook, even though it's the university's plane and everything. They don't let anybody off scot-free. [LR106]

SENATOR LOUDEN: Now you're talking about flying them with an airplane or flying with a satellite? [LR106]

GARY STONE: Yeah, flying them with a plane. The satellite images are relatively inexpensive, they're about \$450 apiece. And if you have say ten of those for a season, that's \$4,500. CALMIT is going to charge you, well I know what they've done up in Wyoming. Dr. Wilson, what did he... [LR106]

DR. DR. GARY HERGERT: Gary Hergert. Each one of those flights cost about \$4,500. So basically, to fly the North Platte River from Wyoming to McConaughy was 20 times \$4,500, that's just to get the pictures. Okay? That doesn't include any processing time to develop the, you know, the pretty picture like that, which took somebody else about a year, you know, you're paying a \$50,000 person for a year to manipulate the images. [LR106]

SENATOR LOUDEN: Why don't you sit down there, Gary, and introduce yourself and spell your name and we'll let you reenforce what he's doing here. [LR106]

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DR. GARY HERGERT: Okay. My name is Gary Hergert, H-e-r-g-e-r-t, with the University of Nebraska Panhandle Research and Extension Center. I'm a soil scientist there. [LR106]

SENATOR LOUDEN: Questions for Dr. Hergert? Okay. Then when we, getting back to this, what I was wondering, can you...can you...is any of this satellite work that's cheaper? Can that be done for the Republican to find out whether or not our money that we're spending down here is doing any good? I mean, that's what we got to...that's what we're here today for to find out if this spraying is doing it. Because if it isn't doing any good, we're going to be tough to get more money. If we can show that it's doing some good, then we can probably get some more money to do more of it. [LR106]

DR. GARY HERGERT: I think we give you a definitive answer in a year. The...what we're trying to do in this project is that again the METRIC is taking large areas. It will take us one year to process the hyperspectral, more dense images that CALMIT got and see if the answer that we get from those is as good as if we use the Landsat images. So we're comparing method A versus the other one. Once we compare the two, we can answer your question. The images of the...because riparian areas are narrow, compared to cropped areas, we're not sure whether that half mile of a river area is big enough for the Landsat images and METRIC to really work well. Now, Rick Allen has done some of that work for the state of New Mexico. And Rick would be...could probably say whether it would work or not. He's done it, but there are some areas down there that they have a mile wide of saltcedar. Well, that's a lot different than some of these narrow areas that we even looked at this morning. So we think it can, but we don't know how small an area it can do and really be accurate. But basically, yes. If you have an area with the satellite images and you run it through METRIC, you can get ET for an area now; you can go back one, two, three, four, five years later, process the Landsat images, and you can tell the reduction in evapotranspiration from those areas over time. And that's where we hope to get to, it's just that, you know, the science is behind the need that we have. [LR106]

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SENATOR LOUDEN: How many years into the future are you talking when you're doing what you just said? I mean, is this... [LR106]

DR. GARY HERGERT: I think probably to really get some good, definitive answers it's going to take us at least a year and a half, maybe two years. We would hope to get some good comparisons in a year. We're just getting the first processing of the Landsat images, and we'll probably start processing the hyperspectral images this winter. [LR106]

SENATOR LOUDEN: And that's for the North Platte Valley? [LR106]

DR. GARY HERGERT: That's for the North Platte, yes. [LR106]

SENATOR LOUDEN: And that's what you're...yeah. [LR106]

DR. GARY HERGERT: And what we will look at, there are areas already on the North Platte that have been sprayed, right? [LR106]

GARY STONE: Um-hum. [LR106]

DR. GARY HERGERT: So we probably have some test areas that if we worked with the NRD and some landowners, if we can find some historic areas that somebody has already sprayed, we may be able to develop some information that says, yes, here is what we can see so far. Ultimately, I think the question will be...there's a lot of questions and a lot of answers that we want. One is, how much water do the invasive species use? If we get rid of them, we know the water use drops down. But something will come back in where the invasive species were. Now, we either manage that or we keep spraying to keep the area bare. So you have to decide how you're going to manage it, how much money you're going to spend to control what's there into the future for a

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certain amount of water savings. [LR106]

SENATOR LOUDEN: Okay. Other questions? Senator Fischer. [LR106]

SENATOR FISCHER: When you have an empty area, say we...the spraying program works extremely well and we get rid of all these invasive species. In a bare area, at least in my country, nature doesn't like a vacuum,... [LR106]

DR. GARY HERGERT: That's right. [LR106]

SENATOR FISCHER: ...and so usually it's weeds that come in first. And in the Sandhills sunflowers aren't bad if they're growing in a blowout. But what would you like to see, what would you like to see on these areas where the invasive species are taken care of? [LR106]

DR. GARY HERGERT: Probably some of the native grasses. I mean, if you could remove... [LR106]

SENATOR FISCHER: You're going to have to plant them, though. [LR106]

DR. GARY HERGERT: What? [LR106]

SENATOR FISCHER: You're going to have to plant them,... [LR106]

DR. GARY HERGERT: Yeah, I know. [LR106]

SENATOR FISCHER: ...don't you think? Or you're going to have weeds. [LR106]

DR. GARY HERGERT: Yeah. [LR106]

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SENATOR FISCHER: Wouldn't you have weeds, too, first? [LR106]

DR. GARY HERGERT: Yeah, you'd have weeds. [LR106]

SENATOR FISCHER: What we consider weeds. [LR106]

DR. GARY HERGERT: Yeah. I mean, you know, you have to look...if you do nothing, the seed that's there already, which is Russian olive, Canada thistle are just going to regrow. [LR106]

SENATOR FISCHER: Um-hum. [LR106]

DR. GARY HERGERT: So...and there are efforts right now, Bob Wilson is working at...they've cleared and they have seeded areas already in the North Platte Valley. [LR106]

SENATOR FISCHER: So we'll know next year how that turned out? [LR106]

DR. GARY HERGERT: Umm, you know most grass... [LR106]

SENATOR FISCHER: Or have you seen something this fall? [LR106]

DR. GARY HERGERT: You're from the Sandhills. You know, how long does it take for a good grass seeding to catch? [LR106]

SENATOR FISCHER: Well, you know, if we get our 18 inches we're doing pretty well, but depends. [LR106]

DR. GARY HERGERT: Couple of years. Yeah. Well, they did some planting this last spring. But again, the Panhandle was dry compared to the rest of Nebraska, so I don't

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know how successful those seedings were. [LR106]

SENATOR FISCHER: Okay. If you could keep us updated on that, I'd appreciate it.
[LR106]

DR. GARY HERGERT: Okay. [LR106]

SENATOR FISCHER: Thank you. [LR106]

DR. GARY HERGERT: You're welcome. [LR106]

SENATOR LOUDEN: Any more questions? Well, I see no further questions, gentlemen.
Thank you for coming today... [LR106]

GARY STONE: Thank you for inviting us. [LR106]

DR. GARY HERGERT: Thank you. [LR106]

SENATOR LOUDEN: ...all the way from Scottsbluff. So have a safe trip home. The next
testifier. [LR106]

LORRIE BENSON: Guess I'll come up. [LR106]

SENATOR LOUDEN: Thank you, Lorrie. [LR106]

LORRIE BENSON: (Exhibit 2) I'm Lorrie Benson, L-o-r-r-i-e B-e-n-s-o-n, with the
University of Nebraska Lincoln Water Center. A number of you, I believe, are
acquainted with Jessica Harder, who had been our liaison for the Legislature and sadly
left us, a couple of weeks ago, to move to Iowa. So her position has not been filled, and
so I'm pinch-hitting, so you have the B team today. But I wanted to bring along a little bit

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of information just to have you be aware of it. I'm appearing here in a neutral capacity today. My business card, if you have any questions, we'd be certainly happy at the Water Center to help you, if we could. I have brought you three things. First is some information Jessica had pulled together on invasive species and riparian vegetation studies being done at the university. The way we collect this information is by asking faculty to let us know if they have projects in-process. We don't...there is so much research being done that we don't have one, big database that we can just go to and check. So this is just strictly what people have reported to us. And clearly, we don't have everything. But these are a couple of things that are kind of interesting and I think are on point for some of the questions that you've asked maybe about the studies being done in the Republican. So I'll pass this on for your information. And if you'd like more information or like to get in touch with any of these faculty members, we'd certainly be able to...certainly be happy to help do that. The third thing, the map that I'm giving you, this is off of our web site. And this is a searchable data base of university research being done by legislative district. So if you'd like to see what's happening in your district, you can scroll over that and go to more information. Again, this is based on information that faculty have reported to us. So I'm sure there is more that we're not aware of, but we keep asking and we keep adding information. So that might be of interest to you. The final thing I wanted to make you aware of is the article from Rangeland Ecology and Management, from September of 2007, on saltcedar water use. This just came to our attention late last week, I believe. It's...obviously, it's a technical article, but the abstract, I think, will tell you what the bottom line is in terms of the estimated use of water by saltcedar. This study found that rather than the 200 gallons per day, that is a figure that we are all very familiar with, that these authors feel that a more realistic figure is more in the 32 gallons range. So I will throw that into your mix, I guess. And answer any questions, if I can. [LR106]

SENATOR LOUDEN: Okay. Questions for Lorrie? Senator Carlson. [LR106]

SENATOR CARLSON: Senator Louden. Lorrie, on this saltcedar water use, one of the

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things evaluating how much water might be used in a given area would be, you know, how dense saltcedars are. How many have you got per acre? And if there's enough per acre, 32 gallons a day is a lot of water. So just having gazed at this, I don't know if that's addressed in there or not. But do you have any comment on that? [LR106]

LORRIE BENSON: If you're referring to the fact that if you've got enough of them it certainly does add up, kind of like a dollar here and a dollar there adds up? Yeah, that certainly would be true, Senator. I think, you know, I'm a lawyer, not a scientist. And it would be presumptuous of me to address a lot of the science in here. I think Dr. Hergert could do that, you know, much more effectively than I could. But the author certainly talks about...qualifies that your study results could be considerably different, too, based on soil types, and climates, and leaf area, and you know, all those types of factors. So there...and I believe, that the literature survey that is part of the university research that I passed out, the fourth one, report on riparian water use that Dr. Awada and Dr. Josiah did, confirms the same thing, that you can have widely differing evapotranspiration rates based on your different conditions for the same type of plant. [LR106]

SENATOR CARLSON: I remember testifying on the floor, I'd stepped off the floor of the Chamber, and it is approximately one-ninth of an acre. And I asked the body to imagine one saltcedar in the middle of that floor area, that's one-ninth of an acre. How many could we have in an acre? I don't know. I think we could have a lot. And I think that, depending on how many are in an acre and whether it's 32 gallons or 180 gallons, it's still a lot of water. And going from Gary and Gary's testimony, we're still not in a position to be as accurate as we'd like to be on what the actual water use is. I'm not trying to downgrade this report, I appreciate you being here. But I'm going to continue taking the position that those invasives take water. [LR106]

LORRIE BENSON: Well, any kind of plant is going to take water that we've put in there. So yeah, that's true. [LR106]

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SENATOR LOUDEN: Other questions? Seeing none, thank you, Lorrie. [LR106]

LORRIE BENSON: Yeah, thank you. [LR106]

SENATOR LOUDEN: (Exhibit 3) Next testifier. Okay, at this time why the NRD, let's see, what do you call this thing? Nebraska Association of Resource Districts has a proposed resolution to support the establishment and funding of comprehensive integrated vegetation management programs in all basins of the state. That's the resolution they asked to be read into the record today. And we have done so. Okay, we got a testifier; we got a hot one here. Got a live one. [LR106]

KIRK NELSON: Got a hot one. (Laughter) Senator, members of the Ag and Natural Resources Committee, my name is Kirk Nelson, spelled K-i-r-k N-e-l-s-o-n. I work for the Nebraska Game and Parks Commission. It's a pleasure to be here today. It was enjoyable being on your tour. It's a lovely time of the year in Nebraska. We at Game and Parks live for this time--turkeys and deer, pheasants and quail, that's our mainstay and that's where we'd like to stay. But unfortunately, once in a while we have to venture into these areas of endangered species, non-native species and so forth. Our rivers and streams aren't functioning in our state like they were for years. I think we can all agree that they are altered. The flow regimes that used to be there aren't there now for a variety of reasons, both man-made and ecologically are a result of what's going on in that arena. Two things happen when that kind of situation starts to play out. Species that grew up or adapted to what was there to begin with begin to have a disadvantage. They fall off, they now no longer can sustain themselves because they grew up with the natural flow regime of either flooding or ice events or, in some cases, fire and grazing, whatever you want to bet. But those kind of things are not there anymore. Those species sometimes become what we call endangered species or threatened species. They are the ones that can't compete anymore, they're disappearing. The Platte River has the whooping crane, the terns and plovers, the pallid sturgeon. Those are the species that are controlling the issues on the Platte River. The Republican River doesn't

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have any that have really been identified. But we really haven't done much down here to study much of it either. Some of those studies cost millions of dollars to do and we haven't had a lot of time and effort to do it. Endangered species on one end, invasive species on the other end. When you change the natural flow regime of an ecological setting, like a river, you have openings. All of a sudden phragmites show up, Russian olive shows up, loose strife shows up, you got musk thistle, the whole bit. We've been fighting them, some of these, for 30 years in Nebraska, spending millions of dollars to fight noxious weeds. It's probably going to continue. I don't know that we can claim victory anywhere. We've got issues and we need to fight them. There's nobody going to argue that that phragmites, whether it uses a lot of water or whether it doesn't use much water, I don't know. But they are displacing natural species that used to be there that we'd like to see return. Whether we can return them by spraying and not bringing back the water and the natural flow regime that used to exist in those rivers is the big question. And I don't know that we're going to answer that today. I don't know when we're going to answer that. One thing that I'd like to just mention today from the Game and Parks perspective a lot of the conversation that's starting to evolve around saving water is pointing the finger at all vegetation, whether it's invasive or not. And that's a concern to Game and Parks because we've got conservation efforts that we've been involved in for years with returning the prairie to what it used to be, a conservation reserve program, terraces, waterways, filter strips, all of those things that we used to think were really good things to be doing are now somehow being questioned as water users and maybe not as good as what we thought they were. And maybe we need to be thinking about all of these things on a basis that, what do we really want to see on our landscape? From a Game and Parks perspective, we really hate to think that some of the efforts that we've had in place for years are now a negative, that our fish and wildlife and plant life is all going to be questioned on its water use. I just...I hope that doesn't come to be, and I don't know that that's where we want to be. There is that conversation going on in a lot of circles that we just need a bare earth policy so that we've got runoff and so that we've got the maximum amount of recharge and whatever it is that we want to recover, too. So that would be my concerns to the committee today, that we keep the

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conversation on a common sense basis, that we fight invasives every chance we get because they have shown up and they are detrimental. The rest of this maybe we need to temper down a little bit. [LR106]

SENATOR LOUDEN: Questions for Kirk? Senator Kopplin. [LR106]

SENATOR KOPPLIN: Yes, Kirk. The pallid sturgeons come upstream from the mouth of the Platte quite a ways. Where exactly was that? [LR106]

KIRK NELSON: Right around the...just south of the bridge at Louisville. [LR106]

SENATOR KOPPLIN: Up to Louisville, right south? [LR106]

KIRK NELSON: Yep. [LR106]

SENATOR KOPPLIN: Okay, thank you. [LR106]

KIRK NELSON: Highway 50. [LR106]

SENATOR LOUDEN: Questions? Senator Carlson. [LR106]

SENATOR CARLSON: Senator Louden. Kirk, how would you say our deer population in the Republican compares today to 20 years ago? [LR106]

KIRK NELSON: Quite a bit higher. [LR106]

SENATOR CARLSON: Okay. How about turkey population? [LR106]

KIRK NELSON: Quite a bit higher. [LR106]

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SENATOR CARLSON: How about the goose population? [LR106]

KIRK NELSON: We're doing pretty good in that count, too. [LR106]

SENATOR CARLSON: Would we benefit by reducing some the deer and turkey population? [LR106]

KIRK NELSON: Depends on which side of the fence you're on, on that one. From our private landowners perspective, we need fewer deer, probably fewer turkey. You're right. From a hunting perspective and from watchable wildlife folks and other Nebraska citizens that don't understand all of the balances that are involved, they might like to see more of them, Senator. You know, we've got an education element there that we need to talk to our private citizens and let them know that too many deer are a problem, too many turkey are a problem, you bet. And we're trying to up our effort in the hunting arena to bring about that balance. Hopefully, we can do it. Much of...we heard today that a lot of the land along the Republican River is leased for hunting. And those folks are generating a lot of income from that. That is a major factor in our efforts to control our deer herd. We don't have access to a lot of that private land that we used to have. The average hunter can't afford to pay that...whatever the going rate is to shoot a deer on some of that private land. So we've got folks that are trophy managing, that need to be also herd managing. And that's a continuing effort and we're going to keep working at it. [LR106]

SENATOR CARLSON: I would say that I agree with you in there's a balanced, common sense approach to everything somewhere. And I think that's what we're trying to do as far as the streambed of the rivers are concerned, that we need a place for water to run, and we need a place that floods can somewhat be controlled. I think a secondary advantage of doing something about it is the potential water savings, but that's not really the driver. And I don't believe you and I are as far apart as we might think we are. But we do need a place for water to run and it's not a straight path. We need to leave it as

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nature has provided, a winding river, that serves a purpose. So you've expressed feelings and I reserve the same right to do the same. Thanks for being here. [LR106]

SENATOR LOUDEN: Senator Fischer. [LR106]

SENATOR FISCHER: Thank you, Senator Louden. Thank you, Mr. Nelson, for being here today. I agree with you that we need to keep this conversation on a common sense approach and have that be our focus and the basis for it. I also agree with you that we need to look ahead and I think your words were we need to be concerned and look ahead on how we want the landscape to look in the future. And I know my husband, and children, and many of our neighbors, people say you need to make plans for ten or five years out, ten years out. And many of us in agriculture we make plans for 100 years out on how we want land to look. And so that's nice to know that we agree on that, too, because in order to get there it depends on decisions that we make here today. When you talk about...this is kind of off the subject, but you answered a question on this on hunting. Do you know how many acres of public land there are in the state of Nebraska, whether it's state or federal land that's available for hunting? [LR106]

KIRK NELSON: Game and Parks manages about 400,000, after that you'd have to throw in a lot of the National Wildlife Refuges and the National Forest Service, up in your country. The number that you hear bantered about, and I can't put an acreage figure to it, but they say about 3 percent of the land in Nebraska is in public ownership, and 97 percent is in private ownership. So what's Nebraska? Seventy-nine million acres? What's 3 percent of...you know, do the numbers quick, several million acres is in public ownership. [LR106]

SENATOR FISCHER: I have heard, too, the state's 97 percent in private land ownership. I happen to think that's a strength of the state. Game and Parks, do they manage hunters on that 400,000 acres? Do you have hunters check in, do you make sure that there is wildlife available in certain areas? Do you tell them where you've seen

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wildlife? Do you limit the number of hunters that are going in certain areas, not only for their hunter experience, but also for safety reasons? [LR106]

KIRK NELSON: Certainly. Less of the active part, Senator. That would almost be what we would call a controlled hunting type of situation. And we just don't have the resources to manage to that extent. For the most part, we manage by agreements with a lot of private landowners on bartering type settings where we'll trade hay for fencing or crops, we'll do a crop share situation if we've got those kind of things. Certainly, we do an educational effort to let our hunters know where they can find certain species, and we rely on our law enforcement folks to pinch the ones that get out of line and respond to landowner complaints and try and follow-up on poachers. [LR106]

SENATOR FISCHER: Do you know about how many hunters are, opening day of deer hunting season, do you know how many hunters are going to be in a certain area? Do you have any control over that? [LR106]

KIRK NELSON: We attempt to distribute the harvest by units. The whole state is divided into 17 units. [LR106]

SENATOR FISCHER: Correct. [LR106]

KIRK NELSON: We'll sell permits, rifle deer permits... [LR106]

SENATOR FISCHER: But on Game and Parks managed land, do you manage how many hunters are on that land? [LR106]

KIRK NELSON: No, no, no. It's pretty much a pressure situation. We allow it to regulate itself. [LR106]

SENATOR FISCHER: Do you see that maybe changing in the future? Do you think it

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should be managed? [LR106]

KIRK NELSON: Under an ideal setting, it would be the ultimate for safety and for the quality of the experience for a hunter to have a setting where they're not bumping into one another, you bet. Will we ever get there? I think we're going the other way. Yeah, I'd say we're going to have less regulation, just because of all of our costs are going up. Our income is pretty stagnant. And everything, all our expenses are increasing. And I really doubt that we're ever going to be able to do...you know, I hate to say this, but we're probably at the max right now. And from here on out it's going to be a situation of we're going to be doing maybe some things that we aren't doing right now just because we can't afford to do it all. [LR106]

SENATOR FISCHER: I know on federal lands my observation of the hundreds of thousands of federal lands that I have in my district aren't being managed at all for hunting, whether it's deer or bird. Do you know how many birds are taken off? How many deer are taken off your land that's under your management? [LR106]

KIRK NELSON: We do when they check in deer, we ask the question, did you take it on private land or public land? So we do have some data on that. We wouldn't be able to tell you exactly which areas produced how many deer. But we at least try and figure out where the harvest is taking place in a given unit, and whether it's on private or public land. [LR106]

SENATOR FISCHER: Yes or no, do you think it would be beneficial in an ideal world if you were able to manage that better? [LR106]

KIRK NELSON: Certainly. We... [LR106]

SENATOR FISCHER: Yes or no? [LR106]

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KIRK NELSON: Yes. [LR106]

SENATOR FISCHER: (Laughter) Thank you very much. [LR106]

SENATOR LOUDEN: Senator Christensen. [LR106]

SENATOR CHRISTENSEN: I'd love to continue that discussion,... [LR106]

SENATOR FISCHER: That's all right. [LR106]

SENATOR CHRISTENSEN: ...but I'm going to try to get back to the subject. (Laughter)
Seriously,... [LR106]

SENATOR FISCHER: Oh, seriously, just talk. (Laughter) [LR106]

SENATOR CHRISTENSEN: ...I get real upset when we talk about deer. So your
comments on terracing and waterways, was it pro or against? [LR106]

KIRK NELSON: Oh it...from our perspective anything that puts vegetation out there that
fish and wildlife can benefit from is pro. And terraces and waterways would reduce
sedimentation and also contribute to water quality. So we're going to be pro. [LR106]

SENATOR CHRISTENSEN: Okay. The Republican River is heavy, a runoff river where
you have lots of conservation, and then you throw in no-till and things this way prevents
water from the stream. Does that affect you? [LR106]

KIRK NELSON: You have trade-offs on all of that, sure it does. You will have less
runoff, but you'll also have less erosion, less herbicide, pesticide, you know,
contaminates, so you've got a little higher water quality. There is the balance, that's
where the discussion starts, how much of a good thing do you really need before you

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adversely impact it? We've got fishery biologists that would just as soon not see as much conservation in a watershed because the lakes would be fuller, in their opinion. So we've got internal discussions that go both ways also. [LR106]

SENATOR CHRISTENSEN: Far as the riverbed, if they were treeless, if they were vegetationless, still got sandbars, things that way, that's natural, how would that affect you? [LR106]

KIRK NELSON: It would displace some wildlife. I think even in a solid bed of phragmites you've got trails through that stuff, you've got deer trails, you've got possum, raccoons, you've got all kinds of stuff using that. But...so you're going to displace some of that, but that's part of the trade-off where, hopefully, you get back to a native setting. The riverbed would have been clean under the natural flow regime from 100 years ago. You wouldn't have had any vegetation in there because the spring flows eventually would have just scoured them out. [LR106]

SENATOR CHRISTENSEN: Right. [LR106]

KIRK NELSON: And if we can ever get back to that, then that's the setting that most everything in Nebraska grew up with and, hopefully, would be more in balance. We are never going to probably see that. [LR106]

SENATOR CHRISTENSEN: No, we won't see that. But having clean streams wouldn't necessarily affect the wildlife you guys manage. [LR106]

KIRK NELSON: Not to a totally adverse...like I said, you'll displace some of it because there is some habitat that are down there that are using it now. But you haven't heard anything from us on that up to this point because we've really figured that's going to happen. We need to have a streambed that transports as much water as we can transport, and that's going to be something we're going to live with. [LR106]

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SENATOR CHRISTENSEN: Thank you. [LR106]

SENATOR LOUDEN: Questions? Don't get much from this side of the room over here. (Laugh) Getting back to the pallid sturgeon, and that's kind of a concern with Game and Parks now is, how much water you going to let down that Platte River, and whether you're going to do anything on the Loup Rivers? Is the U.S. Fish and Wildlife concerned about the pallid sturgeon in the Platte River or do they consider that part of the pallid sturgeon's habitat? [LR106]

KIRK NELSON: They're concerned, Senator, and they have...we've been pretty much in agreement with them that the data that we have now shows that the pallid can't withstand further depletions to that Lower Platte. We're both in agreement that the studies that we've been conducting over the past several years have shown that. [LR106]

SENATOR LOUDEN: Now, are they actually, you know, should I say native to that or do they...if there are enough of them in the Missouri River, some of them will certainly come back up the Platte River if there's some water there. So I'm wondering, how much do we have to be concerned about the Platte River, if that was more or less just a sidebar for the pallid sturgeon? This is what I'm wondering. Species move around all the time. If there's an environment that they like, they'll come in there. And, you know, there have been times when the Platte River has dried up before over the centuries, I'm sure of that. So they probably were gone out of there and they came back up. So that's what I'm wondering is, how much effort should we put in there to keep the flow up a certain height in that Lower Platte River there as it comes in past Louisville? [LR106]

KIRK NELSON: Good question. We've been studying it for what, 20, 30 years. You know, the Platte has been flowing for thousands. We'd like to think that, like any stream setting in the spring, you're going to have fish moving up it. That's what they do. They

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wait for that impulse of water and they try and find a stream that is carrying enough water that they can get themselves up, find a mate and start the reproductive cycle. That's what the Platte would have solved...or would have served as. Whether it's capable of serving as that at this point, I don't know. We haven't been able to detect any spawning activity. The current thought is the pallid is using the river because, yes, the flows are there in the spring, the summer they go down so they leave. How necessary the Platte is for their survival, we're going to side on the side of the species. We're going to say, yes, they need it. Can we prove it? I don't know. I'd say the jury is out. They may be able to survive totally in the Missouri River by itself. But right now we're saying they would benefit by the Platte River remaining about the same as it is now. [LR106]

SENATOR LOUDEN: Are there other rivers that they come up on? [LR106]

KIRK NELSON: I think if you get into Montana and they come up the Yellowstone. I don't know that there is... [LR106]

SENATOR LOUDEN: Are those the pallid sturgeon up there? [LR106]

KIRK NELSON: Yeah, yeah, there's pallid in Montana. [LR106]

SENATOR LOUDEN: Um-hum. [LR106]

KIRK NELSON: It's throughout the Missouri River system. The trouble is the data. We just got done spending over \$1.5 million over 5 years on the Lower Platte trying to document the darn things are there. You got to do that with a number of other rivers if you want to say yes or no. And we haven't been doing it because there isn't enough money to get around to sampling it. They may or they may not be. [LR106]

SENATOR LOUDEN: So then the jury is still out to know for sure where they are and how often, that sort of thing? [LR106]

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KIRK NELSON: Well, they like that...the Platte River is somewhat conducive to their habitat with flows and water quality and a sand bottom, that's what we think attracts them. [LR106]

SENATOR LOUDEN: Now when you talk about those up in Montana or North Dakota or something, there's no way they can come down, because you got too many series of dams in it to keep them from ever coming down? [LR106]

KIRK NELSON: That's right. [LR106]

SENATOR LOUDEN: Now, is that...I thought was a different kind of sturgeon up in North Dakota? [LR106]

KIRK NELSON: Well, the pallid is up there. There's several different...there's a shovel-nose sturgeon, there's a lake sturgeon in there. You can find them pretty much throughout the Missouri River system. [LR106]

SENATOR LOUDEN: Because I think I was in, where, Dickinson, North Dakota or someplace there and they were selling caviar from sturgeon, and that's the way, you went out and caught a sturgeon fish and you brought them in and the Game and Parks took the caviar and you got the fish. (Laughter) Is that the way that works? [LR106]

KIRK NELSON: I think they were probably... [LR106]

SENATOR LOUDEN: And they were selling the caviar? [LR106]

KIRK NELSON: Well, I don't know if they're selling the caviar. [LR106]

SENATOR LOUDEN: Yeah, you bought it, I mean it was advertised. (Laughter) You can

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buy it by the cans full. [LR106]

KIRK NELSON: Game and Parks was doing that? [LR106]

SENATOR LOUDEN: Up in...yes, up there... [LR106]

KIRK NELSON: We got to get in on that action. They've been...they hadn't told us all of that. (Laughter) [LR106]

SENATOR LOUDEN: And that's when I said that to people, I said, well, I thought these were an endangered species. And they said, that's how they explained it to me, that that's how Game and Parks in North Dakota was doing it. [LR106]

KIRK NELSON: Well, they're probably running out of money up there. [LR106]

SENATOR LOUDEN: Well, they were doing quite well, I guess, because you could buy the stuff. But I...it was...and they said, no, that was a different sturgeon that was extinct. [LR106]

KIRK NELSON: Oh, okay. [LR106]

SENATOR LOUDEN: Whatever they had there was plenty of them. So that was...to me a sturgeon was a sturgeon. I didn't know the difference in them. [LR106]

KIRK NELSON: Well, it was probably that big paddle...that shovel-nose sturgeon or the paddle fish, and they do harvest... [LR106]

SENATOR LOUDEN: And there's a lot of them up there? [LR106]

KIRK NELSON: Yeah, they congregate below those dams and we snag 'em. I mean,

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you can get a tag and go fishing in South Dakota. [LR106]

SENATOR LOUDEN: Okay. [LR106]

KIRK NELSON: And then if...yeah, if it's in the springtime they might have...they probably have eggs and there's a whole industry developed around caviar. [LR106]

SENATOR LOUDEN: Now do they...and we had this question, I think Lorrie can remember that the other day, we had a presentation to water policy from Game and Parks. Do they cross species? [LR106]

KIRK NELSON: Well, there's evidence that there is some hybridization going on. I think the question is, are they hybridizing? Because if you've watched fish reproduce, I mean, she lays her eggs and he comes over and fertilizes them. Well, I mean, anybody could come over and fertilize them, (laughter) it could be another sturgeon-type. So you know, you got some hybridization going on. [LR106]

SENATOR LOUDEN: Okay. I won't go any further on that. (Laughter) Any other questions? Thank you for testifying. Next testifier. [LR106]

MIKE CLEMENTS: (Exhibit 4) Good afternoon. Senator Louden, and members of the Natural Resources Committee and the Agriculture Committee, my name is Mike Clements. That's M-i-k-e C-l-e-m-e-n-t-s and I'm the general manager of the Lower Republican Natural Resources District. I'm here to testify today on behalf of our board of directors as well as the other NRDs in the Republican Basin. Noxious and invasive weeds, trees, and grasses that are clogging the streams and rivers of our state are evident everywhere you go. The purpose of my testimony here today is directed primarily at the Republican River itself. For those of you who toured the Republican earlier this morning, I think that you saw firsthand just exactly what I'm talking about. I would, first of all, like to thank Senator Carlson for his efforts to include riparian

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vegetation management funding in LB701. The Twin Valley Weed Management received a grant, earlier this year, totalling \$772,500. Thanks to the collaborative efforts of the association, we were able to hit the ground running when our grant application was approved earlier this summer. As we talked about on the tour this morning, phase one of our project, which includes spraying around Harlan County Reservoir and the river channel from Republican City to Hardy, was just completed last week. Phase two, which will include removing downed trees and other vegetation from the river channel will begin sometime later this fall. Year one of our project will be completed on June 30, 2008. I'm sure that positive effects will be seen from this project immediately. What needs to happen and what has been discussed here earlier today is there needs to be a means by which to quantitatively measure the efforts of riparian management. We see vegetation management as a valuable tool that can assist us in delivering more water to Kansas. Nebraska's average annual deficit to Kansas, since 2003, has been 34,010 acre feet per year. A three inch reduction in baseline pumping averages in the Republican Basin by the year 2012 will only net us about 9,000 acre feet of credit per year. Finding additional ways to enhance and augment our water supply is critical to the efforts...it's critical to the economic viability of the Republic Basin. We applaud the efforts of the Natural Resources Committee as we strive to manage invasive species. We see riparian vegetation management as a key piece of a very large puzzle that will help us achieve compact compliance. Thank you very much. [LR106]

SENATOR LOUDEN: Questions for Mike? Senator Kopplin. [LR106]

SENATOR KOPPLIN: Yes. Thank you. Mike, I think I heard this morning that the effects of spraying, there was like a five-year potential. In your opinion, how do we continue to manage this? I mean, we can't spray every other year. [LR106]

MIKE CLEMENTS: No. Actually, what we're planning on doing with our project down here is with the association, the Twin Valley Weed Management Association, we have been able to, in addition to obviously the big funding source came through LB701. But

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prior to that time we had been able to apply for various grants to help us out with some smaller spraying projects. And what we're planning on doing is an ongoing maintenance, if you will, of the systems, starting with next year. Even though there is a five-year warranty on this chemical, there's obviously going to need to be spot spraying and ongoing maintenance that takes place. And we plan on doing that with the agencies that we've got involved in this. Thanks again to LB701, we were able to purchase some equipment that will help us in maintaining the river channel going forward. [LR106]

SENATOR LOUDEN: Senator Christensen. [LR106]

SENATOR CHRISTENSEN: Thank you, Chairman Louden. Thank you, Mike. How do you plan on maintaining some of this? Are you planning on using like a truck tractor and disk and keep it worked down? Is that a cheaper way than spraying things this way? What is the plans? [LR106]

MIKE CLEMENTS: Well, in the short-term, we can't do any disking or anything that's going to disturb the root system of the phragmites, it takes the spray one year to work through...completely work through the root system. But ongoing, after year one, we're planning on doing possibly some disking. I don't think that the...I think that the jury is still somewhat out as are as what some of the ongoing maintenance might be. I think spraying will definitely be a major piece of it. [LR106]

SENATOR CHRISTENSEN: Okay. Am I correct, over here just south of the edge of Alma here, where they've shot off fireworks, there's a cleaner area out in the lake. They mowed that. Was it just one year and we have maintained that clean? [LR106]

MIKE CLEMENTS: I can't speak for how many times it's been mowed. But it has...there has been some maintenance on that area. And it is... [LR106]

SENATOR CHRISTENSEN: But it effectively worked. [LR106]

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MIKE CLEMENTS: Yes. [LR106]

SENATOR CHRISTENSEN: I know they haven't shredded it for at least two years.
[LR106]

MIKE CLEMENTS: Yes. [LR106]

SENATOR CHRISTENSEN: And I don't think they have for three, and it's been maintained probably for five years now clean. I think they only shredded it once, maybe twice. So... [LR106]

MIKE CLEMENTS: Yeah. [LR106]

SENATOR CHRISTENSEN: ...that shows us the benefit of controlling some of this unwanted vegetation in the river still allows the grass, some native grasses that way, but controls some of the trees just by mowing. [LR106]

MIKE CLEMENTS: Yes. [LR106]

SENATOR LOUDEN: Senator Fischer. [LR106]

SENATOR FISCHER: Thank you, Chairman Louden. Thank you, Mr. Clements. I appreciated the tour this morning; that was very informational. I had not been down in this area. Of course, earlier this year we were at Franklin, and Riverton. And it's been very educational, so thank you. When you talk about our project, is your NRD involved in receiving grants for the vegetation management? [LR106]

MIKE CLEMENTS: No. The grant was applied for and received through the Twin Valley Weed Management Association. Our district and Tri-Basin are both members of the

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Twin Valley Weed Management, as the other NRDs, the Upper and the Middle, are members of the Southwest Weed Management Association, and they're doing... [LR106]

SENATOR FISCHER: Okay, so it was through a weed management association then that the grants were received? [LR106]

MIKE CLEMENTS: That is correct. [LR106]

SENATOR FISCHER: Okay, thank you for clarifying that. [LR106]

MIKE CLEMENTS: Yes. [LR106]

SENATOR FISCHER: Also, I don't know if I heard an answer from you from or to Senator Carlson and Senator Christensen's question on, after you spray then what do you do? Are you going to keep spraying? [LR106]

MIKE CLEMENTS: Definitely spraying is probably the key as far as keeping the vegetation down. I know that there has been some talk of doing some disking and maybe even some shredding. But I don't know that the...I do know that the association has not really made any determination as far as what they're going to be doing as far as that. [LR106]

SENATOR FISCHER: And maybe if you could clarify this, as you showed us this morning, the spraying is taking place in the river between the banks. Is that correct? [LR106]

MIKE CLEMENTS: That is correct. [LR106]

SENATOR FISCHER: There's no spraying being done on the side of the banks. Is that

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correct? [LR106]

MIKE CLEMENTS: That is correct. [LR106]

SENATOR FISCHER: So when we talk about maybe introducing native species, that wouldn't apply in the projects that you're talking about because you would like to see that...the river streambed cleaned out? [LR106]

MIKE CLEMENTS: That is our main focus in the short-term. With the limited funds that we have and the area that we need to cover, that's what we wanted to focus on in the short-term. [LR106]

SENATOR FISCHER: Could you tell us how many landowners have property in this area that was funded for spraying, and how many of those agreed to spraying? [LR106]

MIKE CLEMENTS: I believe there were 180, and I believe all...everyone agreed, except 2. [LR106]

SENATOR FISCHER: I don't know if you can tell me this or not, if it's allowed. But the two, are they local landowners or are they what I guess what some of us would refer to as absentee landowners, out of the area or out of state? [LR106]

MIKE CLEMENTS: I really can't comment on that. [LR106]

SENATOR FISCHER: Okay, okay, thank you. [LR106]

MIKE CLEMENTS: I mean, not because I don't want to, because I don't know. [LR106]

SENATOR FISCHER: No, oh, okay. I didn't know if there might be privacy issues involved... [LR106]

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MIKE CLEMENTS: No, no. [LR106]

SENATOR FISCHER: ...there, too. I didn't know. Have you had feedback from the landowners? [LR106]

MIKE CLEMENTS: We have had feedback. We've had a lot of positive feedback. I think one of the key things with a project of this nature, and we talked about this earlier this morning, is communication with the landowners. And we're continuing that, not only following up on the spraying that was done, but working with them on phase two, where we're going to be going in this fall and removing a lot of the downed vegetation that's in the channel itself. We're asking...we have to have their permission to remove it and to place it elsewhere on their property. So it's been positive. [LR106]

SENATOR FISCHER: I believe you told us this morning the banks of the Republican here in your area are lined with trees and brush. Is that true for the majority of the land all along the Republican? How would you put that? [LR106]

MIKE CLEMENTS: I would say it's more true on the southern two-thirds of the river. I think you run into a little bit different situation when you...on the Republican when you get out in the Upper NRD. Down here we have a lot more vegetation that is growing back from the sides of the stream than they do in other parts of the district. [LR106]

SENATOR FISCHER: Were trees sprayed in this grant project that you received this funding for? Were trees in the river banks inside there sprayed? [LR106]

MIKE CLEMENTS: Anything that was in the floor of the river channel was sprayed. So yes, to answer your question trees, small cottonwoods, small willows, anything that was coming up and impeding the river channel itself was sprayed. [LR106]

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SENATOR FISCHER: Were trees on islands sprayed? [LR106]

MIKE CLEMENTS: Trees on the larger islands were not sprayed. They were...the larger islands were basically left intact because, quite frankly, a lot of the landowners didn't want them disturbed for various reasons. A lot of the ground down here is leased for hunting and so that was left in place. The smaller islands that didn't have the larger growth on them, some of those, well like you saw this morning, those were sprayed. [LR106]

SENATOR FISCHER: So trees...the larger trees on the larger islands are in place for habitat then still? [LR106]

MIKE CLEMENTS: That's correct. [LR106]

SENATOR FISCHER: When are you going to see if it helped? [LR106]

MIKE CLEMENTS: I think you can see that it's working (laugh). I mean, the vegetation is dying, you can see the effects on the willows, the cottonwoods. You could see earlier the effects on some of the phragmites before we had some of the frost last week. I guess our concern right now is what...how to quantitatively measure the effects of this. And I think there has been good discussion earlier today. That's critical. I guess we're a little bit selfish down here in the Republican Basin because, obviously, we realize that proper vegetation management throughout the state needs to happen. And we want to see it happen, but we want to see it happen also to help us comply with the settlement agreement with Kansas. And anything that we can do that's going to help us deliver more water to Kansas we certainly want to look into. So we need to find a way to measure the positive effects of this. [LR106]

SENATOR FISCHER: On the tour this morning, one last question, when we went across the Harlan County Reservoir, on the top of that, you made a comment that seven

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years ago there would be how much water released that could travel through the river and this year what was released and it was out of the banks. Could you put that on the record, please? [LR106]

MIKE CLEMENTS: Yes, on the record, previously as much as 2,000 CFS could be released from Harlan, flowing down the Republican River and sent down to Kansas. In 2006, 450 CFS was released and it caused some flooding down hear Franklin. So that is basically what you're seeing is the river has just been choked down to the point where it just won't carry the water supply. [LR106]

SENATOR FISCHER: So maybe in a year or two we'll be able to measure the effect of this project just by the amount of water that's released from the reservoir? [LR106]

MIKE CLEMENTS: I think that would be... [LR106]

SENATOR FISCHER: As one indicator? [LR106]

MIKE CLEMENTS: I think that would be one indicator, that's a good point, Senator. [LR106]

SENATOR FISCHER: Okay, thank you. I'll end on a good point. [LR106]

MIKE CLEMENTS: Thank you. [LR106]

SENATOR LOUDEN: Senator Kopplin. [LR106]

SENATOR KOPPLIN: Yes, I had another question on the larger islands. I think where we stopped at the river there was somewhat a larger island without willows being sprayed on it. But it looked to me like that in itself would be a natural barrier to the whole river. Shouldn't we think about spraying those larger islands also? [LR106]

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MIKE CLEMENTS: I think, you know, if you want to look at ideally what needs to be done, absolutely. I think with the monies that are available right now and us trying to focus our attention on what we feel is the top priority, I don't disagree with you. I think that at some point in time, if the money is available, that starting to attack some of those larger islands would be a very positive move. [LR106]

SENATOR KOPPLIN: Thank you. [LR106]

SENATOR LOUDEN: Senator Christensen. [LR106]

SENATOR CHRISTENSEN: Thank you. On large islands were you allowed to hit the noxious trees, the saltcedars, Russian olives, things that way? [LR106]

MIKE CLEMENTS: I'm not sure if they did or not, Senator. I wish our coordinator was here, he could answer that. I don't know if they did or not. [LR106]

SENATOR CHRISTENSEN: Okay. On the volume of water going down the river, at 400 CSF or whatever, with the lake about full, is that going to get sufficient water down the river to the canal or does the whole canal leave from the Loup City dam? [LR106]

MIKE CLEMENTS: No, basically, what we're delivering via the Republican River is the water that would go to the Cortland Canal at the diversion dam at Guide Rock. So that's what that water is used for is to send it to the Cortland Canal and then deliver it to the Kansas Bostwick Irrigation District. [LR106]

SENATOR CHRISTENSEN: Correct. Now do we have the volume left in the river to deliver when the lake is full like it is? Next year we release water, can we get the volume down the river to handle the canal? [LR106]

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MIKE CLEMENTS: I...that's a good question. I can't answer that. I can say that the ability to send more water, obviously a lot is going to depend on how long the irrigation season is going to be and how long they're going to call for water. But it's more efficient if you can send a larger volume of water down over a shorter period of time rather than sending a lower volume down over a longer period of time. [LR106]

SENATOR CHRISTENSEN: So we could have a situation where we can't even fulfill our irrigator, surface irrigator needs? [LR106]

MIKE CLEMENTS: I can't...I would not feel safe in commenting on that, you know, as far as the river capacity. [LR106]

SENATOR CHRISTENSEN: Thank you. [LR106]

SENATOR LOUDEN: Senator Christensen. [LR106]

SENATOR CARLSON: Carlson? [LR106]

SENATOR LOUDEN: Carlson. How about that? (Laughter) [LR106]

SENATOR CARLSON: Senator Louden. And, Mike, I just want to make a brief comment. I appreciate your enthusiasm and professionalism through all of this, and also appreciate each one of the directors in addition to you, Dan and Jasper and John and their interest, and then the work that Merle and Russ and Charlie and others have done. And we talk about 180 property owners and only 2 saying no, that didn't happen by accident. [LR106]

MIKE CLEMENTS: No. [LR106]

SENATOR CARLSON: That happened because you were well prepared and you paid

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attention to property owners' desires and interests and rights. And so I just compliment you on what you've done and encourage you to keep it up. [LR106]

MIKE CLEMENTS: Thank you. [LR106]

SENATOR CARLSON: Thanks. [LR106]

MIKE CLEMENTS: Appreciate that. [LR106]

SENATOR LOUDEN: Senator Wallman. [LR106]

SENATOR WALLMAN: I want to make a comment. Thank you, Mike. And I, too, want to comment. You did a heck of a job getting that done. [LR106]

MIKE CLEMENTS: Thank you. [LR106]

SENATOR WALLMAN: And also with this...all this water going to Kansas, you know, it always has bothered me, it bothers my constituents, because I'm in the Blue River Basin, and Kansas is watching that also, as you well know. [LR106]

MIKE CLEMENTS: Sure. [LR106]

SENATOR WALLMAN: And do you think there's any chance at all we could revisit that pact, you know, and get some kind of a compromise on the total gallons of water that we have to release up here? [LR106]

MIKE CLEMENTS: I think that from what I've been told that that would be a stretch. (Laugh) It's went,...it has...it was agreed to by the three states back in 1943. It's went to the United States Supreme Court. And I think to get that changed would be a very, very monumental process. I'm not an attorney so I can't tell you for sure. But this is what

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we've been told, that it would not...it's not very probably that that's going to happen.
[LR106]

SENATOR WALLMAN: Thank you. [LR106]

SENATOR LOUDEN: Senator Dierks. [LR106]

SENATOR DIERKS: Thank you, Senator Louden. I should tell you that my mother told me one time that it was better to remain silent and be thought a fool than to open your mouth and remove all doubt. (Laughter) So I'm going to try to remove some doubt now. Mike, you talk about the spraying. Is this the first year you've sprayed the river? [LR106]

MIKE CLEMENTS: Yes. [LR106]

SENATOR DIERKS: And what's the name of the products you're using? [LR106]

MIKE CLEMENTS: Habitat. [LR106]

SENATOR DIERKS: Now is it like a organic phosphate or is it... [LR106]

MIKE CLEMENTS: It's an aquatic version of Arsenal is what it is. And it attacks the root system, it kills the plant through the root system. And it actually, like the phragmites and the saltcedar, it...the saltcedar takes about two years for the product to completely work through the root system of the plant. [LR106]

SENATOR DIERKS: Okay. Then you're talking about not spraying the islands in some cases. [LR106]

MIKE CLEMENTS: That's correct. [LR106]

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SENATOR DIERKS: But if you spray on the bank on either side of the island and you still have phragmites or saltcedar on that island, aren't we losing some...aren't we just taking a chance of reseeding this whole thing again? [LR106]

MIKE CLEMENTS: I think so. And maybe John, he might know, I don't know, or Charlie if...I don't know if they spot sprayed on those islands or not with the chopper? [LR106]

CHARLES BROOKS: Phragmites and saltcedar are designated... [LR106]

SENATOR LOUDEN: If you're going to...you'll have to come up and sign in and do the whole bit, if you're going to testify. (Laugh) [LR106]

MIKE CLEMENTS: Sorry, Charlie. [LR106]

CHARLES BROOKS: My name is Charlie Brooks, that's C-h-a-r-l-i-e-s B-r-o-o-k-s. I presently work for the Tri-Basin NRD and I'm also the Phelps County lead superintendent and presently the president of the Nebraska Weed Control Association. And in answer to that question about the phragmites and the saltcedar on the islands, they are both presently listed as noxious weeds in the state of Nebraska. The phragmites designation only pertains to those areas in the Republican River Basin counties. And so the group spraying would have used a spot spray method to go up onto those islands and sprayed the phragmites or the saltcedar plants. I think that saltcedar is not very much of an issue. From what I understand there's only like three or four plants that have been found, identified, and they were sprayed. But it was by spot method on the islands, as would have been any phragmites plant growing on the bank or the edge of that island. [LR106]

SENATOR DIERKS: Does the spray that you use, is it effective on all vegetation,... [LR106]

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CHARLES BROOKS: Yes, it's... [LR106]

SENATOR DIERKS: ...not necessarily broadleaves, but the whole works? [LR106]

CHARLES BROOKS: Yeah, it's a broad spectrum herbicide that would kill any vegetation it comes in contact with. [LR106]

SENATOR DIERKS: I can remember in 1953 that my father was using Boron crystals to sprinkle on patches of leafy spurge up on our areas, that's 54 years ago. And that spot of spurge is still there and it's been treated every year. It's a booger. (Laughter) And how much...and what are we going to do now with...I mean, this is going to be an ongoing deal we're talking about. We're going to be doing this every year, aren't we, ad infinitum? [LR106]

CHARLES BROOKS: Yes, well... [LR106]

SENATOR DIERKS: I mean we're not going to ever wipe this out, are we? [LR106]

CHARLES BROOKS: Right. The vegetation, you know, hopefully returns. But, hopefully, we see a change in the weather pattern and we use Mother Nature and some higher flows to help scour these islands. And as Mike alluded to, further down the road there might be some shredding possibilities to just remove that top growth so that those smaller islands will scour clean on a higher water flow. [LR106]

SENATOR DIERKS: So really we need to be looking for some pretty major sources of grants and monies to take care of these problems, don't we? [LR106]

CHARLES BROOKS: Yes. [LR106]

MIKE CLEMENTS: Yes. [LR106]

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SENATOR DIERKS: Thank you. Oh and also, thanks for the work you guys do. I'm on this committee that Charlie is the chairman of it right now, and I think we've had two meetings. We've been on the Republican River both times, I think, up in Lexington on the Platte. And we're going to meet in Grand Island, I think, in about three...two or three weeks. And it's been a great revelation to me. We have...we've got a great committee. And these two guys are very valuable help on that committee. Thank you. [LR106]

CHARLES BROOKS: Thank you, Senator. [LR106]

MIKE CLEMENTS: Thank you, Senator. [LR106]

CHARLES BROOKS: Thank you, Senator Louden. [LR106]

SENATOR LOUDEN: Senator Dubas. [LR106]

SENATOR DUBAS: Thank you, Senator Louden. This is obviously a problem in our state, especially due to the drought the last few years. Other states have been in similar situations with the drought. Are other states dealing with pretty much the similar weed issues that we are right now? [LR106]

MIKE CLEMENTS: Yes. [LR106]

SENATOR DUBAS: And is there any federal help available to help us with this issue? [LR106]

MIKE CLEMENTS: There are federal grants that are available. There are conservation innovative grant, a rather large one that we had applied for a year ago, that unfortunately we were not able to receive. But there is some federal money that could be used for some of these projects. Yes. [LR106]

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SENATOR DUBAS: Thank you. [LR106]

SENATOR LOUDEN: One question I have, Mike, in your testimony here you said what needs to happen is to develop a means by which to measure the efforts of riparian management. What Gary Stone and Dr. Hergert had here, is that possible for you people? And how close or near in the future can you use that information? Or what can you do with that material that they're working on? [LR106]

MIKE CLEMENTS: Well, I think that's what we need to take to the next step. Because I'm not sure how much of that is available, has happened down here in the Republican. So we need to see what imagery is out there that we have and if there is some, you know, to what extent we can use it to help us out. I think it's definitely a step in the right direction. [LR106]

SENATOR LOUDEN: I thought I talked to I think it was Jessica Harder, earlier on this year, about some of this. And it was my understanding that there has been some of that satellite work done over the years on the...on this area down here. And is there any way you can find out if some agency has done any of that? Is this something that you're working on or will work on? [LR106]

MIKE CLEMENTS: That's definitely something that we're going to be finding out. Because I could see this as being very, very beneficial to us. [LR106]

SENATOR LOUDEN: Okay, thank you. Other questions? Senator Karpisek. [LR106]

SENATOR KARPISEK: Thank you, Senator Louden. I thought I better get in on it, since everybody else is, too. (Laugh) Thank you, Mike. How do we measure what Kansas is getting from us? [LR106]

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MIKE CLEMENTS: Well, this is not...again, this is not a...our compact with Kansas is not a delivery compact. So although we want to...want for them to be able to get wet water, that really doesn't necessarily mean whether or not we're in compliance with the settlement agreement. It is a consumptive use compact rather than a delivery compact. But like I said, with that being said, anything that we can do to enhance the delivery system and to reduce the consumptive use of vegetation that's clogging the river is going to help us. [LR106]

SENATOR KARPISEK: So there's not a little spin wheel right on the border? [LR106]

MIKE CLEMENTS: Actually, there is. There is a compact gauging station at the state line that will measure the water that's crossing the line, as well as at the diversion dam at Guide Rock. And there's another one at the state line on the Cortland Canal. So it is measured. But that particular...like I say, that particular measurement, I think, can do us some good as far as measuring what the effects of this has been. The problem is, is you have to be able to look at it, as...you know there's a lot of other things from Mother Nature that are...that, you know, okay, how much of this was really attributed to killing the vegetation, and how much was attributed because we had more rainfall or your tributaries were delivering more water to the main stem? I don't know. [LR106]

SENATOR KARPISEK: I guess, that was my thought. If we could measure what's coming in, how much rainfall and what goes out, and look back over the past years and say, well, yes, it's working because I think...I mean, what I'm feeling is we want to know right now is this working or not? (Laugh) [LR106]

MIKE CLEMENTS: I know and I do, too. [LR106]

SENATOR KARPISEK: And I think that...I think we would all agree that it is, but we want to know now. And I think just listening, you have a lot of other ideas. Because the bottom line is the 34,000 acre feet that we're behind and 9,000 on wells. So you're

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trying to do anything we can to make that better. [LR106]

MIKE CLEMENTS: That's right. [LR106]

SENATOR KARPISEK: And this is only one step. So I think that's great. And I think as soon as we can prove that this is working, and then when you try the next thing, hey, they know...they've got some good ideas. So that's my only input is that if any sort of way that we can prove that yes, this is helping, will help the whole situation. Thank you, Senator. [LR106]

MIKE CLEMENTS: I agree. [LR106]

SENATOR LOUDEN: Other questions? Seeing none, thank you, gentlemen, for your testimony. [LR106]

MIKE CLEMENTS: Thank you. [LR106]

SENATOR LOUDEN: Don't be bashful,... [LR106]

DEAN EDSON: He's always had honors. [LR106]

SENATOR LOUDEN: ...we can always take you both at once. [LR106]

ED SCHROCK: I probably should be wise and stay in my seat and not say anything. But for the record, my name is Ed Schrock, spelled E-d S-c-h-r-o-c-k. Probably nothing more pathetic than a former lawmaker trying to give counsel and advice to those who are serving in office now. So I'll try not to do that. Probably...I'll reminisce a little. Probably the most...the question I get asked the most now is, do I miss the Legislature? I miss the people; I don't miss issues like this. This was a tough issue for me when I was in the Legislature. When I say I miss the people, I miss Barb and Jody, they were on my

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staff for 12 years. And I'm sure they're in good hands now, Senator Louden. I didn't address you. Chairman Louden, Vice Chairman Dubas and members of the committee, I should know that, shouldn't I, as many years as I presided. I serve on the NPPD Board now, I'm enjoying that. And yes, we're going to put up some windmills or we're going to contract with privates to put up some windmills. Some of you might be concerned about that. And I'm in favor of that. Maybe a little history lesson here on the Republican River Basin might be in order. My legislative district when I served, that Senator Carlson serves now, about 40 percent of the population is in the Lower Republican NRD. And I was always concerned about what was going to happen here. But a little history lesson. And if I step on some toes, so be it. We had a former Attorney General, who had made a major speech in Holdrege, that said, irrigators in the Republic River Basin, don't worry about the state of Kansas, we'll beat 'em in court like we beat 'em in football. We're not doing very well in football, by the way. (Laughter) And he also said, don't worry if you're a ground water irrigator, because the federal courts have ruled that ground water and surface water aren't connected. How would you like to pick up the pieces after that? And that's what I and the Legislature tried to do. And it's hard to deal with the irrigated farmers down here when they hear that, when you try to tell them, we've got issues here. I wished he would have said, we've got issues we need to deal with, we need to comply with the compact. So it's not been a simple issue. And if you're an irrigated farmer down here, you've got to feel like you're one of those deer in the cross hairs, and what's going to happen? And with commodity prices being very well right now, this water is valuable for irrigation. I wish Kansas was a little more understanding. But when they were told what they were told, years ago, I can see why they're a little defiant also. I like to get along with people. I like to shoot straight with people and I want them to shoot straight with me. Life goes a lot better that way. So, Senator Carlson, I commend you for your concern about vegetation. I should have been on top of that quicker and should have done something about it when I was in the Legislature. Senator Christensen, I commend you for LB701. I think you tried to deal with the issues here and solved some problems. But that's an ongoing process. And I don't know when it's going to end. But have some sympathy and some empathy for the farmers down here

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and what they're dealing with, what they're going through, for the NRDs and their board members, and how much simpler their life would have been if we, as a state, would have directed them to the problem...to the issue that we had problems. I've been in this room down here with about 100 angry farmers. And they were mad at me and they were mad at the Legislature. And they shouldn't have been concerned about us, because we were on their side. It's the state of Kansas they should have been concerned about. And, Senator Christensen, some of those meetings weren't pleasant. And unfortunately, I probably didn't communicate as well as I should have with the irrigators down here. I was busy with my own farm and personal life and grandkids and whatever. It's a tough job serving in the Legislature and having your own family life and still being involved in the farm and everything else. So pardon me for reminiscing a little bit. Do what you can to solve this issue. It's important. Have some empathy. I know one of the things I hear a lot is, that's a Republican River problem, we don't feel sorry for them, they caused their own problem. The state caused it, too. The state should have told them, we've got issues here that we need to be concerned about. And so I don't think we should get too enveloped in this issue of it's a Republican River issue, it's a state issue or whatever; we're all in it. If you hurt the economy down here, you hurt the state of Nebraska. And I think it's almost a crime against God not to use this water we have for beneficial use, but we have to have a balance. And apparently, we have overused in some areas of the state. I was a sponsor of LB962. It was a product of the Water Policy Task Force, it wasn't my product. But I had the bill that created the Water Policy Task Force. The only thing wrong with LB962 is that it should have been passed five or ten years sooner. Now, if I would have tried to pass it five or ten years sooner, I think they would have probably thrown me out of office four years quicker. I wouldn't have had to worry about term limits, because they would have voted me out quicker. But we are a society that we don't deal with issues until they become a crisis. And we had the perfect storm down here. We ended up in court. And no matter how you measure it, yeah, we can declare a victory, but we also lost and we agreed to comply. And immediately we have four or five years of drought. So we had the perfect storm, we caused the perfect problem, we've been out of compliance. I don't know what that means, but it's a concern for the whole

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state. But keep in mind the farmers down here are the ones that could get hurt on this. And so if you have any questions, I hope I didn't state anything incorrectly or...but, Deb, I miss people like you, and I miss Senator Louden. "Cap", good to see you back. You won't see me run for the Legislature again. (Laugh) I like my new job and it pays better, too. (Laughter) [LR106]

SENATOR DIERKS: Anything would. (Laughter) [LR106]

ED SCHROCK: It's kind of ironic, I carried the bill that increased the salary for the power boards. (Laugh) [LR106]

SENATOR LOUDEN: Well thanks, Ed, for bringing back how some of that history on that was. And I don't think anymore that...I haven't heard people say it's a Republican River problem. I haven't heard that for nearly a year now. I think we have so many other river basins that are following the same suit and have problems that everybody is realizing now that this is a statewide problem. I mean, here lately we got the Niobrara River that's been declared overappropriated. I mean, the Niobrara River, for God's sakes, goes through the Sandhills. [LR106]

ED SCHROCK: Is it overappropriated or fully appropriated? [LR106]

SENATOR LOUDEN: Fully appropriated. [LR106]

ED SCHROCK: Okay, there is a difference. [LR106]

SENATOR LOUDEN: But I mean, either way they've put the choke hold on it for the time being. And of course, our North Platte River area, that's a problem there. We got to be very careful with that. There's been some sabers rattled on that. And so it's all clear across the state. And as I said when I started this job, going to be six years ago, that water was one of the major issues. And I think six years from now it will still be a major

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issue, I don't think it will ever go away. And I think this is something that's going to be ongoing. As we get more scientists and some of this work that these...like Gary and Dr. Hergert are doing, I think we'll be able to manage that water more efficiently. And I think that's what is coming in the future. So thank you for being here, Ed. But I'll ask, anybody got any questions for Ed? [LR106]

ED SCHROCK: No tough ones, please. [LR106]

SENATOR LOUDEN: Senator Carlson. [LR106]

SENATOR CARLSON: Senator Louden. Ed, I would just say that, I've said this before, but it's a privilege to...being able to follow you. You've said this a couple of different times and I'll bring it back again. You almost said it today, but...in your message you indicated it. That a well is an asset, not a liability, irrigation well. And that it is, and I believe it is. And you've encouraged us to keep working at this and get something done to help not only the people of the state, particularly the people in the Republican Basin. And as good Nebraskans that means when there are challenges we act like Nebraskans and we figure out a way, when there is money that is due to be paid, that we get it paid. And that wasn't the purpose of this hearing today, but I want to make that statement. And thank you for coming to talk to us. [LR106]

ED SCHROCK: My father, who has been deceased now for six years, said when he was a child he could stand on the river bridge at Odessa, Nebraska and see the river bridge at Kearney, 11 miles away. Now you can't see a mile downstream. That was before Lake McConaughy. [LR106]

SENATOR LOUDEN: I guess nothing else, Ed. So thank you for being here today. [LR106]

ED SCHROCK: Thank you for giving me this amount of time. [LR106]

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DEAN EDSON: Senator Louden, and members of the joint committee, the Ag and Natural Resources, I'm Dean Edson, it's D-e-a-n E-d-s-o-n. I'm executive director for the Nebraska Association of Resources Districts. Senator Louden mentioned earlier about a resolution that the association adopted. I brought copies out for you. And so it's the same language that he entered into the record earlier. I'm not going to take much time. But what I wanted to give you a little background on this resolution where it came from and why. One of the board members of the Papio NRD serves on this Vegetation Task Force. And he's kind of got his eyes open to what the problems are down here. He started paying a little bit more close attention to what's going on at home, after coming down here and seeing the problems we got. And he's starting to...and has talked to some landowners along the Lower Platte River, near Valley. And we're starting to see some of these same species show up on property there. And he's talked to some other landowners in other river basins, and he's starting to see these phragmites, Russian olives, and saltcedar starting to infiltrate on some of the river basins. So what he wanted to do is try to get us on a proactive track and try to work with the Legislature, the Department of Ag, the Department of Natural Resources, Game and Parks, county weed boards, and the NRDs and start looking at a statewide vegetation management plan. I want to be very clear that it's not the intention of this resolution or the individual that was behind this to take any money away from current activities that we're working on in the Platte and Republican. We want to try to see if we can coordinate some efforts with all the agencies, keep these dollars focused here, but expand some of our efforts and address some of these problems in other river basins before they get to this level and try to stay ahead of the curve. With that, I will cut it short and try to answer any questions you might have. [LR106]

SENATOR LOUDEN: Questions for Dean? Looks like you pretty well answered them, Dean. So do you want this read into the record, too, or is it... [LR106]

DEAN EDSON: You can just file it into the record. [LR106]

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SENATOR LOUDEN: What we've already did was good enough? [LR106]

DEAN EDSON: (Exhibit 5) Yeah, as you've done. [LR106]

SENATOR LOUDEN: Okay. [LR106]

DEAN EDSON: Yeah, that's fine. [LR106]

SENATOR LOUDEN: Okay. Thank you for being here today. [LR106]

DEAN EDSON: Okay. [LR106]

SENATOR LOUDEN: Okay. Any other testifiers? Seeing none then, I guess, we're ready to terminate this...close the hearing on LR106. And thank you all for being here today. And again, we want to thank the Lower Republican NRD for their hospitality. [LR106]