

Mike Pelland and Jeff Herrick introduced the importance of reference sheets in rangeland health assessment.

We'll go ahead now and get into the second part of Jeff's presentation which is on reference sheets development and overview of that process.

Thanks Mike, yeah, that's a good point about the Web site and we are gonna show those tomorrow, a couple of locations you can go to. So, on the overview, the reference sheet that we're gonna be looking at here is on page 74, but there is a lot of good information on pages 21 to 25 and 72 to 74. If you haven't had a chance to read this and I realize that nobody likes reading that whole document and we don't like reading that whole document and we've had to read it, I don't know how many times Mike, way too many as we've gone about revising it, but, it is worth reading a few of those sections and I key in on these in particular, those, about seven or eight pages. The important thing is that in these reference sheets what we're doing is describing what we would expect for each of the 17 indicators, including the normal range of variability, spacial and temporal. That reference sheet information then as Mike indicated earlier is going to be recorded, not just in the reference sheet itself, but, also, in the none to slight category for the evaluation Matrix for each ecological site. So, going back then to our state and transition model, what we're describing is the range of variability in the reference state, so, this is where these two are directly connected, the none to slight category which is what's described on the reference sheet,

describes the range variability in the reference sheet state. So, an example, again from page 74 on the reference sheet and we'll talk more about this later on, but, right now, I'd just like to highlight a couple of things, one is the number of the indicators rely on composition, plant composition and it's really important when you're developing that reference sheet to note whether you're talking about composition by annual productions, by foliar cover, or by total biomass. Most of the ecological site descriptions the data that are in there are based on annual production. If you're more comfortable with foliar cover, you need to go out and find, get some data that is similar to the data that's there in the, in the ecological site description to make sure that you've got that down. At the top of it then it indicates what we need to do, we wanna use numbers to the extent possible, be as quantitative as possible and in this, we can't over emphasize. The places that we get challenged on this most is people interpret things differently, the more you can put a number down, don't say a lot of bare ground, say you should have 20 to 30% bare ground maximum, don't say a few rills, say, we should just have one rill every 30 to 40 feet and they should not be any wider than six inches, you'll have a pretty good sense for that and we wanna do that for all the communities for above and below average years in terms of precept. Example here, the rills in this one, I think was actually written pretty well, minimal on slopes less than 10% and increasing slightly, slopes increase up to 50%, that's a pretty wide range and unfortunately, a lot of our ecological sites do have this kind of range variability in 'em and we need to account for that in the reference sheet. So, generating the reference sheet, what do you need to define the potential? There's a lot of

sources of information out there, ecological site descriptions, clearly one, soil survey information. In addition, we usually go to soil surveys because we wanna know what soil we're on and we use that as an initial guide, but, there's a lot of other descriptive information that's gonna tell you about ecological processes on the site that will help you with a lot of these indicators. Ecological reference areas, now, this is something that is often very difficult to find, but, is worth going to and taking some time to find if you think that they might be out there and get out there with several people and talk about what's going on, on those and what you're seeing. Probably, the biggest one in a lot of cases where we don't have a lot of hard data expert knowledge, old timers, in particular, people that's been on the land for a long time, ranchers, people who lived out there for quite a while and then finally, obviously, the scientific literature. Long-term ecological research sites have a lot of long-term data that can help you understand the variability that you might expect to find. So, this is the question that we always get, so, we figured we'd just go ahead and ask it now. What if I don't have any of these, what if I don't have a state and transition model, an ecological site description or a soil survey? This is actually why we developed these reference sheets. Pat and I and a couple of other folks were working out in Western New Mexico and we were in an area, it was up getting towards the forest land, I didn't have a lot of good information, it was a soil survey, but, it looked like it was pretty rough, we were having trouble correlating with what we're seeing on the ground and we dug a pit with the lines and the map. The ecological site descriptions, a few had been written, but, they weren't, again, we weren't sure that we had something we could

use. So, what we did is we sat down with the available information, aerial photographs. Why aerial photographs? One of the most useful new tools that's come out in the last year and a half has been Google earth. You can go to Google earth and you can point to an area and when you're talking about an ecological site, you can go and show people where you're talking about, what part of the landscape, if you got an internet connection if you don't, print it out, get one of those aerial photographs so everybody knows which ecological site they're talking about based on places they have been to. In this case, we had some soil surveys and ecological site descriptions from some other areas that we thought might have some information that might be relevant and most importantly, we had a group of folks in there with a broad range of knowledge. This is a photo in one case we're actually in the kitchen of the rancher and I would point out that the most important thing for this discussion is the cookies on the table; they're in front of Pat, at least from my perspective anyway, but, I have to tell you that's kind of my bias. In any event, there was another discussion we got into involved actually two ranchers and two folks from an environmental community and we got into a discussion about litter and litter cover and a couple of folks were saying, you know, there really shouldn't be anymore than 20 to 30% litter on this site, never seen anything more than that, impossible to have anymore. The other two were saying, no, you guys are wrong, you haven't been around, we've been in a drought cycle for a while, a lot of this land around here has been hit pretty hard, we understand that and you can actually get 40, 50, even 60% during a good year on litter cover. Well, we went back and forth for a

long time and I just kind a kept quite because the folk that were saying that there should be a lot more litter cover were the ranchers, not the environmentalists and we finally came to a consensus on that based on the fact that the ranchers had been there a lot longer and had seen a lot more variability out there. So, generating a reference sheet, the next thing, how do you evaluate the quality information? 1. You go to the source, OR the people who knew that source, if the person has moved on, then ask them, is this somebody that really spend a lot of time in the field, is this a good scientist, have they done good work, thorough work and then most importantly compare different sources. You know, if you've got scientific literature and you got somebody on the ground then say, hey, you know, this doesn't really seem to line up, I wonder why that is and maybe the person on the ground was talking about, oh yeah, that was a different ecological site, a different area or the science a lot of times and we are encouraging folk folks now to include ecological sites in there that they may not have identified where they were working. If you don't have a reference sheet, don't bother going to the field and I cannot emphasize this strongly enough, there is a big (X) across that, you cannot do a good consistent, repeatable evaluation without a reference sheet because if the next person comes along and does it and they go to a different reference area or interpret the ecological site description differently, you're gonna end up with a different evaluation and so, it's very important. A couple of references here that are also posted on the Web site that you are registered on if you're interested in reading more about state and transition models and this integrated approach of using state and transition models

together with the rangeland health assessment ecological sites and monitoring.
Mike.

Great Jeff. That finishes part two of Jeff's presentation. Let's go ahead and take some questions now.

This is Johnnie in Safford.

Go ahead Johnnie.

I think most of us are, you know we're always look to NRCS for the ecological site description and we're kind of wondering, well, do we really venture out and write these reference worksheets for ourselves and then if we go ahead and develop um, do we report those facts to NRCS, kind of a little bit of a switching of the roles here I think people are not familiar with?

Absolutely Johnnie and that's a good, good question. Right now, the process is if there is not an ecological, if there is not a reference sheet out there or an ESD for that matter and you have the resources to generate one of those, by all means go ahead and do it, check around and make sure that one hasn't been developed that you might be able to work with and help critique and edit and so forth, but, for now, what you wanna do as soon as you're done with that, you might even wanna let um know ahead of time that you're working on it in case somebody

else is interested send those along to the NRCS State Office. Again, there is this interagency team that is working to develop a standardized process for all three agencies and we're hoping to see some, a report out of there within the next year or so and there may be a different system for submitting those, but, right now, just get in touch with your , with your state office (NRCS).

Yes and I might add Johnnie, I know a lot of BLM offices are doing their assessment of standards for rangeland health and again, really encourage, well everyone, but, especially, our BLM participants here to get with your NRCS office because number one, don't reinvent the wheel if it's done and number two, your experience and knowledge can be brought into it and then again, these reference sheets are dynamic, it's not once they're done they're done forever because they will be continued to be modified over time to get more information. So, quick question Johnnie, did that answer your question?

Yes, thank you.

Thank you.

We still have time for other questions.

Hey Mike, this is Paul from Boise again.

Yeah, go ahead Paul.

You know under the old system, version 3 when we went out and we found reference quality areas we did fill those reference worksheets out and those could be used on, to develop these newer reference sheets too because I mean, basically, those areas were pristine or close to it or what we thought were of good reference quality and we already have that qualitative data written down and documented with photos, so, that's another tool to use.

Yeah Paul, that's, that's a very good point and I think one thing we wanna make sure we don't do as if we've incorporated a lot more information sources now into the reference sheet, it doesn't reduce the quality of any of the ones that we used before and I'm a big supporter and believer in looking at the reference areas and if you've got information on it, yeah, that's great, not only to do your assessments to feed into the reference sheet development and I'm sure NRCS would be very happy to get that kind of information to help them do a better job or help both of you do a better job in doing reference sheets, so, a very good point Paul.

Absolutely and I just emphasize that and encourage you actually to go back out to those areas, those reference areas that you've identified because that's gonna help you get a better sense for what the temporal variability is on that site and that's one of the things that we're often pretty weak on, or, I shouldn't say weak, but, that we're not as strong as we, we might be. The other thing you wanna do

is be careful, we find reference areas and often they tend to be in that historic climax plant community. If there are other plant communities within that reference state find some of them that are in pretty good shape that are, and you'll get some variability, you can be in, again, one of those plant communities and have some departure on some indicators, but, not on others and so be a little careful about, about selecting multiple reference areas, but, that's a, at least, I think that's a real good strategy.

Yeah, and we still have a section in the technical reference on how to select an ecological reference area, the criteria, so, it's still in there in version 4 as well, so, yeah, thanks for that comment, we sure appreciate it.