

My name is Matt Peterson, I work for SWCA Environmental Consultants, and today we're going to talk about doing a rational, defensible impacts analysis for NEPA. The instruction is going to fall under two modules, the first being developing a cause-and-effect analysis and using it as a planning tool for writing your affected environment and environmental consequences section; and the second part is actually putting in the essential parts of that analysis so you have a defensible impact analysis that will stand up to public scrutiny.

So let's go ahead and start with cause and effect. First off, I'm going to explain what a cause-and-effect analysis is. What a cause-and-effect analysis is, is it allows you to determine the best way to do your impact analysis before you start writing your sections for your NEPA document. Why do you want to do this? It's because the analysis that you're going to be writing has to meet the requirements of what's known under the CEQ regs and NEPA as the Hard-Look Doctrine. A Hard-Look Doctrine refers to an analysis that is scientifically defensible and interdisciplinary. You're not required to do a crystal ball analysis, but it has to take into account relevant factors and it has to be defensible and have good rationale.

Now, a cause-and-effect analysis allows you to map out that rationale for your analysis. It also increases the quality of your communication with other Resource Specialists, which in turn ensures an interdisciplinary approach, and it also allows you to identify potential problems or data gaps early in the process before you write either your affected environment or environmental consequences section.

Now, working a cause-and-effect analysis, the first step is to take your proposed project and alternatives and identify any potential impacting causing elements of those alternatives. For example, if you're doing a fire and vegetation control project, it would

be identifying, Okay, what is going to impact this particular resource? Is it the fire? Is it throwing up fire lines? Is it noise? Et cetera.

Secondly, you need to make sure and account for both the direct impacts, disturbance being, say, a direct impact, indirect impacts such as functional impacts such as sedimentation or things like that.

The next part of that is identifying a resource impact indicator that can be used to measure that impact and can also be used to describe the resource in your affected environment section. An example of a resource impact indicator might be if your project may potentially impact, say, mule deer habitat, an impact indicator would be acres of mule deer habitat that would be disturbed by construction, for example.

The next part of that is, once you get an impact indicator that is quantifiable, is determining a good impact analysis methodology to measure the relative impacts using that indicator between the different alternatives.

And then last is to identify potential data needs to allow you to complete the analysis.

Now, this sounds like a lot of information, but normally a Resource Specialist can sit down and do a cause-and-effect analysis and identify these factors for a particular project in just a couple hours, and then that allows them to map out the rest of their analysis methodology. It also allows them to think about, Okay, if I'm going to be using an indicator to describe impacts, that's the same indicator I want to use when I'm writing my affected environment section. So I can have Chapters 3 and 4 -- if you're writing them in different chapters -- match each other in scope and detail. You want your affected environment and your environmental consequences sections to match each other in what they describe and at what level of detail they describe. It also

allows you to determine impact context.

We're going to be talking later about significance, and CEQ regulations talk about assessing significance through two things... context and severity. And the way to establish context is to indicate what your existing environment looks like and what your impact is going to be in relation to that existing environment. Again, if you're picking a consistent impact indicator between your affected environment section and your environmental consequences section, it's very easy to establish the context of your impact. You also have a consistent comparison between your alternatives because you're going to show that same context of impact and how it varies across alternatives, which provides a good comparison between your alternative impacts for your analysis.

The last part of this, and perhaps the most valuable part, is by doing this cause-and-effect analysis you can get your methodology, your impact indicator and what you perceive as potential impacts reviewed and agreed upon by all the players on an interdisciplinary team. Or if you're working with cooperating agencies or contractor, everyone can have discussion and come to agreement on what potential impacts would be for a certain resource and what the best way to measure those and what the data needs are before you write anything in Chapter 3 or 4. So you avoid wasting time writing about things you don't need to write about or writing encyclopedic descriptions of your affected environment section that end up not being relevant once you start doing your analysis.

So here's an example. This is just a really quick example of a cause-and-effect analysis. If you look here, you say, Okay, I've got my proposed action. I'm going to use prescribed fire to treat decadent sagebrush stands and areas infested by cheatgrass. And you're the Resource Specialist that's dealing with vegetation and

wildlife. Resource affected, sagebrush habitat. Consequently, sage grouse. Then you note, What is the type of potential effect this will have? Loss of critical sagebrush habitat, including sage grouse leks, direct mortality to sage grouse inhabiting that treated habitat. Then you decide what's best indicator to measure this impact, and as you see here, one might be acres of critical sagebrush habitat lost to prescribed fire. We're going to burn 3,000 acres in the area next year, and that will lose that much habitat.

Another for the second one is number of sage grouse individuals killed by prescribed fire. So, you see, that we've got an indicator. Every type of potential effect that's noted we have an indicator to measure that effect.

Now, one of the things you'll note as you start working through this is the first thing you might find out is sometimes you'll pick an indicator that on the outset looks like that would be a good indicator and then you realize that would be very difficult to measure that. For example, look at Number 2, number of sage grouse individuals killed by prescribed fire. You may look at that and say, I don't have enough data to really predict how many sage grouse would actually be killed by a 3,000-acre prescribed burn. Therefore, maybe I'm going to change my mind on that indicator and use acres of inhabited -- known inhabited habitat as a relative measure of potential for mortality because that's something that you can measure. So that's an example of how a cause and effect allows you to start thinking about how you're going to do that impact analysis.

You need to remember, too, that you're trying to predict impacts into the future, and so an indicator that's very easy to measure right now may not be easy to predict into the future. For example, water quality, you can measure water quality very easily

for your affected environment, but it's hard to predict water quality impacts from, say, a prescribed burn without doing some pretty complex modeling exercises, and you may not even have enough data to do that. So be aware and remember that when you're doing your impact indicators, it has to be something that you can predict or measure in the future at a level where you can distinguish between your alternatives.