

Meegan Nagy:

Hi, I'm Meegan Nagy, I'm the Emergency Manager for the Sacramento District of the Army Corps of Engineers, and I've been responsible, over the last several months, of running the inspection program for the Corps. We did a pilot inspection along the American River after some of the new guidance, or new enforcement of the guidance, came out this September. What we wanted to do was take a look at that inspection checklist and identify how that would maybe impact some of our local sponsors.

So, what I'm going to go through here today is: why we did this, what we found. We've been talking a lot about vegetation, but we haven't talked a lot about encroachment, so I'm going to hit on that issue as well, some of the corrective actions that would be required. What are the challenges? What engineering, real estate and environmental challenges are our local sponsors going to face? How long would they have to do this? And, some -- can we take this and look at other areas along our system, and find similarities?

So, as I said, the purpose of this was to take a standardized inspection checklist that we had been using for non-federal programs and see how it would impact our federal programs. We wanted to identify potential system-wide impact; and we also, unique to this area, which is unlike any other Corps district, our state sponsors are responsible for doing the inspections on most of the 1,600 miles of levee. It's a unique situation and we wanted to go jointly with our partners so that we could make sure that we were using this checklist in the same manner.

So, here's the inspection reach that we did, and for folks who are unfamiliar with this area: here's the city of Sacramento right here; the American River is going this way, and here's Watt Avenue up Highway 50. The inspection reach was just upstream of the Watt Avenue area, to the Mayhew Drain; and this is an aerial photo of that stretch. It's about a one-and-a-half mile stretch.

So, here's the result: these are all of the inspection items that are on a levee embankment or just our general check-list. So, the acceptable items: the ONM manual, emergency supplies, and flood preparedness; all of those, we check on every levee district. We make sure they have a copy of their ONM manual. We make sure they're prepared to respond to emergencies, through training and supplies. We also look at the flood cover, depressions and [redding] in the crown, slope stability cracking and closure structures; all of those items were acceptable on the inspection.

One of the areas that we found a problem with some erosion and bank caving; it was a very small area, that we did find. And, according to the check list, the three things that came out as unacceptable were: unwanted vegetation growth, animal control and encroachment.

Here's some of the encroachment problems that we found -- you'll notice in the bottom right there's a fence and perhaps a retaining wall there: an apartment complex. And, as you can tell, it appears that it's getting into the levee tow at this point. On the upper picture -- I think we all know what this is right here -- that's somebody's swimming pool; now, it's debatable, it might be 10 feet from the levee tow at that point, but it was awfully close, and so we wanted to make sure that we identified that swimming pool.

This is an aerial view; there is a park along here. The area of erosion was -- the levee crown itself is along this stretch right here. But, as you saw in some of Steve's presentation, that projected levee slope goes down; and out here there was some bank erosion. So, it was minimally acceptable. We identified it because they needed to take action now before it started to move into the main part of the levee section.

And, right here you can see our ground squirrel, or some other burrowing rodent, activity that we found out there. Now, as we were doing this

inspection, though, the American River flood control district folks were out there patrolling and putting flags next to all of these rodent holes because they were about to go fill them; so, you could tell that they were out there doing it, you just -- it's a constant problem; you have to constantly be out there finding the rodent holes, and filling them, because they're always going to be one step ahead of you.

The unwanted vegetation growth: as you can see here -- here's the slope of the levee, it comes down -- and this, this is, really a bench, but all of these trees in here are at the tow or within a 10 to 15-foot area from the tow. On this side, that's a fairly large tree right at the levee tow -- you'll also see a pool in the background here as well. So, there were both land side and water side vegetation problems that we found.

Here you'll find more wild growth; the dense vegetation that we found. Now, this is more on the bench, but I just wanted to bring it in here as an example of some of the wild growth that you do see in the system on the levee section sometimes. And the picture on the right is actually land side vegetation. It looks to me like it's landscaping. There's a little parking lot right there to get up on the bike path. And so that was probably planted vegetation, but it's dense, and it would be difficult to see a boil if you had it come up in that area.

Let's talk a little bit about the encroachment versus vegetation issue. The encroachment -- they're going to be probably as expensive, maybe more controversial, more difficult -- landowners are -- they're difficult. That's their backyard. They don't want you coming in and taking away their nice landscaping and structures. That's going to be a difficult issue. And, in some cases, the swimming pools or, as somebody said earlier, some of the scariest thing they saw were basements. Luckily, we don't have basements in the Sacramento issue, so usually that's not an issue for us, but people

love their swimming pools. And you also have the [dual] issue. Is somebody's landscaping in their backyard an encroachment or is it unwanted vegetation? Well, it's kind of both. So, you not only have the removal of vegetation, but you also have to deal with the encroachment issue of getting into somebody's backyard to remove it.

For the corrective actions that we found that needed to take place, the inspection reach was 1.5 miles long, and there was about 1.5 miles of tree and wild growth removal. Now, a majority -- a very, very few trees were on the levee section, the actual slopes -- none were on the crown, very few on the slope. Most of these were in the 10-foot easement area. In this 500 feet of complete levee rebuilding, there were two huge heritage oaks right on either side of the levee that were right on each toe, across from each other. And so we looked at that and said, you know, there could be some significant levee rebuilding in this area because you're taking out trees on both sides. As well as -- 1.5 miles depending on how big the root balls were.

You could have up to 1.5 miles' worth of partial rebuilding. As I said, there were the small erosion sites, so there was about 100 feet of bank protection that needed to take place. While they were out there for the animal control program and actively trying to build a [hole], there was little evidence of gape station or some form of active program in the area. Now, that could be we just didn't see it and we need the local district to take us out and show us where it was, but from our inspection, it was difficult to see an active program. And then, of course, the encroachment removal. That took up about 4,000 feet of that section -- was developed.

So, what are the challenges? Well, how many engineers does it take to find the toe of a levee? I'll tell you, every engineer that goes out on the inspection will find a different toe of the levee. So, determining that 10-foot zone was very subjective, and so we needed to be very consistent about where we found that toe. Easement, were they permitted or

unpermitted? Well, you think about an urban area, how many permits does the American River Flood Control District probably have to deal with and keep up with? It's very difficult to know if something has been permitted or unpermitted when you're in the field. Like I said, there were some heritage oaks out there, there were some trees that were probably over 100 years old, so there was some vegetation that outdated the federal project.

As I said before, we have the unique situation here where the local sponsors do self-inspection, so we needed to make sure that the local sponsors were with us, as our partner, so we're being consistent. We tried to estimate how long it would take to do an inspection of this kind using the checklist. To really do it right, you needed to be on foot. When you drive it, at least the first couple times -- we're starting to use a better technology, where we're going to have laptops and everything's going to be electronic, so you can look at the encroachment, but where we are today, we're not quite there yet, so to inspect it well, it's going to take a lot of time to go through there. It took us about four hours to do 1.5 miles. So, we're talking 1,800 miles' worth of levee out there. The state's required to do about 1,600 of that, and they have to do it twice a year. So, it's a significant amount of resources that are required.

The engineering and real estate challenges that we've found. [Slope] stability, that was acceptable. Seepage potential, there's a slurry wall in this section, so that actually was good, but there's tree [wild] growth. It's just the unknown. I put in here potential for unexpected conditions. Because these levees weren't constructed, you find all kinds of creative things in the middle of these levees. So, that's always a question. Real estate challenges. Significant property owner coordination. As I talked about before, the approved versus unapproved encroachment. And who is responsible for enforcement? The state is currently working with the local sponsors right now to try to deal with this issue. The local sponsors are maintaining it, the state is issuing the permit, the Corps is reviewing them

to see if the permits are acceptable or not. So, the state's working with the locals right now -- who should be, who is responsible for being the enforcement authority on these encroachments?

Environmental challenges. This was a big one. Obviously our sponsors have to comply with environmental laws before they go out and do massive vegetation removal. Along this stretch, we had Central Valley steelhead that needed to be dealt with, chinook salmon, and the valley elderberry beetle. There were habitat out there for all of those. Not to mention this is a wild and scenic river, so you have that aspect to deal with. And this is the American River Parkway. There are significant social and recreational benefits on this trail. There are a lot of people that will be very upset if the trees are removed. And so these are the challenges that a lot of our local sponsors are going to be dealing with as we move forward in this. You know, the Mayhew project, which is just upstream from that, had significant opposition to a lot of the tree removal as they were moving forward. So, we can expect a lot of these similar challenges as we move forward.

So, what kind of timeline do our sponsors have to do a lot of this maintenance? Any major construction activities -- they're typically limited to a July through end of October window, and there's two reasons for that. One, we don't like them to work during flood season because we don't want to see them impacting the levee structure during the flood season when the waters could rise and you could find yourself unprotected. In addition, there's work windows for endangered species. So, that's why it starts in July. So, the July through October is really the time they can go out and do major construction. Obviously minor maintenance they can do at any time. And to do a lot of these things, especially the environmental compliance and encroachment, will take years. It's going to take a lot of effort for everybody to work through this.

What did we find -- we thought we'd maybe find in other parts of the system -- well, we picked this because it was a pretty typical urban levee. We expect to find in almost every urban levee encroachment issues and vegetation issues. So, this was a pretty good representative sample. We found that, potentially, sponsors could be considered ineligible for rehab assistance after future inspections if the corrective actions aren't made. And that it's going to be important for us to work with our sponsors to help them identify the risks. And that they need to prioritize the risks as they're doing the maintenance plans, making sure they're dealing with the riskiest items first.

Well, progress is being made. At the time we did this inspection, the checklist was a little different than it is today. At the time we did it, if you had one unacceptable item on the checklist, the whole system was rated unacceptable, which means you would be immediately removed from eligibility for rehabilitation assistance. Since that time, the checklist has been updated, and now if you have an unacceptable item, an engineering determination can be made that says this is now minimally acceptable, and you have a time period to correct those deficiencies not to exceed two years. So, that was a big change from the outcome of this inspection. It would have been rated unacceptable at the time we did the pilot, but today it would probably be rated as minimally acceptable with a two-year period.

Also there was the 15-foot zone for a vegetation zone within the checklist. Since then, that has been revised to say easement area or 15 feet. So, that took away a lot of the property owner issues, the real estate acquisition issues that sponsors would be dealing with if it would have stayed at the 15-foot level. Obviously we prefer 15 feet, but in much of the central valley, the easement area is 10 feet. As we're all here today, we're reviewing our vegetation management standards, so we're here, we're listening, we're learning. And so that is some of the progress being made.

And American River Flood Control District is making strides with property owners to restore levee sections [and] easement areas. Gary Hester was kind of enough to give me some before and after pictures. And I'll be honest, when I was looking through these last night, I couldn't figure out, at first, which ones were before and after, because you couldn't see the things behind them. So, I'll quickly go through, just so you can see some of the significant progress that has been made. This is a levee section where they did tree trimming. Well, you can't see anything behind it. And this is the only way I figured it out -- here's a standing [see metal roof] right here. That's after. So, it was difficult to see where that was, but that's a significant amount of vegetation removal, so you can actually see the area when you're patrolling during [a flood fight].

This is also along the American River Parkway. You can see this concrete area in the lower left-hand part. This is during removal and that's after. So, that's, again, significant progress in the vegetation removal. Again, trees on the levee toe removal, no more trees [at] the levee toe. This one is the encroachment removal. You can see the fence here that would have been, when it [came the whole way across], you wouldn't have been able to see through it. The fence is gone, and now they've moved it back. You can see through the fence. You can see to the boils -- potential boils. Here's an area where there was a large tree.

The fence looks like it might be back, but they were able to restore a patrol road at the toe of the levee, which will allow them room during flood fight. And then some of the fences that were out there and the stairs. So, this is some stair removal projects that they've been doing in that area as well. So, there is significant progress being made. We understand there's challenges. It's going to take time. But the pilot inspection was very good for us to better understand what we're likely to see as we go out and do future inspections. Thank you.