**Steve Testa** [00:00:01] I'd also want to be able to scratch a few notes.

**Steve Tuckerman** [00:00:03] Sure.

**Steve Testa** [00:00:06] As I said on the phone, I wanted to start with having you tell us a little bit about who you are.

**Steve Tuckerman** [00:00:10] So go ahead and start?

**Steve Testa** [00:00:11] Are you ready, Gary? Okay, so we'll just start by you telling us your name and the position you hold.

**Steve Tuckerman** [00:00:17] Okay, my name is Steve Tuckerman and I work for the Environmental Protection Agency, State of Ohio, as an environmental scientist.

**Steve Testa** [00:00:25] And where and when you were born?

**Steve Tuckerman** [00:00:27] Okay. I was born in Ravenna in 1953, and except for a few years living in northwestern Pennsylvania I've been a resident of northeastern Ohio my whole life.

**Steve Testa** [00:00:39] And how about school and growing up? I mean, you said you grew up in the area.

**Steve Tuckerman** [00:00:43] Right. I went to Emma Willard School in Bready Lake and then later went to Kent Roosevelt High School and got my B.S. in Biology from Kent State University.

**Steve Testa** [00:00:57] And when you pursued this career with Biology and then ending up with the idea, was that ultimately your plan or had it developed along the way?

**Steve Tuckerman** [00:01:24] That kind of developed along the way. I lived out in the hinterlands a little bit. It wasn't suburbia, but it wasn't out in the middle of nowhere either. And so I was always, you know, close to Mother Nature, if you will. And so I always had that in kind of the back of my mind and just kind of continued to fall into it. And since you're all educators, it was a principal at Emma Willard School that actually got me going into more academic pursuit of outdoors. When I was a little kid they had just planted some pine trees out near the school yard. And as a little kid, I was just playing around. I was jumping over the trees to see if I could jump over top of them. And of course, I didn't make all of them, so I landed on top of the trees and kind of squished a few and all that kind of stuff, and my principal was up in his office watching me do this on recess. And as I came in, he pulled me off to the side and he says, Steve, I saw what you're doing. He said, you have fun? And I go, Oh, yeah, it's a great time. He says, you know, you killed a few trees probably. I go, yeah. [laughs] And then he said, Well, Steve, trees are really important to us. I want you to write a six-page essay on why trees are important to us. You know, and [to] a little kid, six pages is like a death sentence. And anyway, I got into it and I actually took it somewhat seriously and did some research and just realized how neat some trees and everything were and that kind of got me started on the academic pursuit. You know, I'd always been hunting and fishing and everything with that kind of got me going down that route.

**Steve Testa** [00:02:44] So once you graduated with your degree in Biology, how did you end up, what was the bridge to the EPA?

**Steve Tuckerman** [00:02:50] It was serendipity and pure luck. I had worked for the U.S. Forest Service over in western Pennsylvania for four years, and I was caught in a RIF, reduction in force, and got laid off. And I was working up in a factory to make ends meet up in Cleveland and was driving by Route 82 wihere the office is, and there was a big sign that says Ohio EPA. And I go, hmm, Ohio EPA. That sounds like something for me. So I stopped in and says... And I was all scruffy and, you know, I had a big beard at that time and big fuzzy hair and everything and just kind of walked in and talked to the receptionist and said, Hey, you got a job? And the guy that eventually hired me just happened to be walking by. Otherwise I'd have been thrown out on my ear, I think. And he saw me right away. He knew I was a biologist just from the appearance and everything. And at that time, the Ohio EPA was like 98 percent engineers and they were trying to staff up with more environmental scientists and biologist-type stuff. And so when he saw me, he says, yeah, this is somebody that might be might fit into what we're trying to do. And at that time, almost nobody worked for the EPA because it was a fairly new organization. And so there weren't an awful lot of job job applicants. So when I applied, I went ahead and got the job.

**Steve Testa** [00:04:14] And what was your early role there?

**Steve Tuckerman** [00:04:18] Actually, the early role was basically doing the same thing I'm doing now. Looking at water quality in northeast Ohio, rivers and streams predominantly, although we did some work in Lake Erie and some of the ponds and stuff, but it was looking out after the lakes and streams and make sure that dischargers that had permits were meeting their permit limits and then assessing the receiving streams to see whether or not the water quality standards were being met. The assessment would include water chemistry, sediment chemistry, macro invertebrates and fish evaluations.

**Steve Testa** [00:04:52] We're going to spend a lot more time talking about those kind of things and asking you questions about that. On the phone you had mentioned to me about you had done some private consulting and you worked for the City of Kent. I wondered if you would just tell us about that.

**Steve Tuckerman** [00:05:04] Oh, okay. Prior to my work with the U.S. Forest Service, I worked for the City of Kent at the water treatment center. Basically, I operated a third shift for drinking water to make sure everybody had decent drinking water, so that was, that was an early job. And then after I worked for the Ohio EPA in the water quality division I just mentioned, I went to the Superfund slash Hazardous Waste section—at that time it was combined—and started... helped start the Hazardous Waste section in Northeast District Office and worked on several Superfund sites, including Fields Brook and New Lime and Old Mill and Diamond Shamrock and quite a few other Superfund sites. At that... After that stint, I decided to leave the agency and went to a private consulting firm. Actually I started my own business in a consulting firm and that fell through. And then I went with a private consulting firm doing environmental assessments and Superfund work. I worked for US EPA's Technical Assistance Team and actually worked on the Krejci [Dump] site for emergency removal of the hazardous constituents that were here in the park.

**Steve Testa** [00:06:21] I wonder if maybe you might comment on what was sort of a favorite or one of the most memorable moments in working there before you got to this position again?

**Steve Tuckerman** [00:06:34] Oh, one of the most favorable. It was all fun. Because it was a new program, the quote unquote dark side didn't know an awful lot about the regulations. Hazardous waste was in the news because of Love Canal. They were brand-new regulations, and so we were out there and we basically jumpstarted the program. And the thing that was most gratifying about it is you saw instant results in that you went out to a company that was just a mess with drums and stuff spilled all over the place, and we were able to go in there right away and clean it up. And it was really gratifying. And actually the opposite of that, when it started to become bureaucratic with a lot of paperwork and everything, that was one of the main decisions why I left the agency and went to consulting because it was just starting to get too bogged down with paperwork and bureaucracy and mindless-type stuff like that. So I don't know if I could pinpoint one particular area working on all the Superfund projects. Fields Brook was was very, very good project. We had a pesticide fire down in Alliance. That was gratifying to work on. There's nothing that really stands out above the others. It was just all fun.

**Steve Testa** [00:07:55] What about some projects now in your current position with the EPA that may be specific to the Cuyahoga Valley National Park?

**Steve Tuckerman** [00:08:04] Okay. My current responsibilities include the entire watershed of the Cuyahoga River. So probably half to three-fourths of my waking hours when I'm working—and we do stay awake sometimes in government—is working on improving the Cuyahoga River. Some of the things we're most proud, and I say we because of course it's just not me, there's a huge staff back in the agency that helped work on this, but the new permits, the improvements in the discharge from all of the wastewater treatment plants is just tremendous. Most recently, we were able to remove two dams and Kent and Munroe Falls. Those were my projects that were very gratifying and we saw immediate results. Within just a few months we had full attainment of our water quality standards, which was very unexpected. We knew that we were going to get improvements, but we figured it's going to take several years. But it really came by through really quick. So that was very gratifying. And I guess the other aspect that's very gratifying is just seeing people come back to the river. For the longest time, people had turned their backs to the river. It was a sewer, you know, someplace you don't want to go to and you just stayed away from it. And now it's a drawing card and that's, that's really neat.

**Steve Testa** [00:09:30] With those dam projects, I wonder if you would be a little more specific about how the improvement actually took place, what you were looking at before and what we're looking at now.

**Steve Tuckerman** [00:09:43] Both the Kent and Munroe Falls dam pools, they were... The dams themselves were small, low head dams, about 10 to 15 feet tall. And they were used for back in the Canal era and for water power. And they had outlived their useful purposes. They were just basically icons of the communities. Both Kent and Munroe Falls had those prominently on their letter[head]... stationery and things like that. But as far as any type of useful purpose other than just they were there, it was nonexistent. So the dams created dam pools that really basically eliminated the riverine habitat for the fish. It created a habitat that was neither lake nor river. And basically it was just it was a bad, bad situation no matter what you're talking about, whether you were a lake fish or a river fish. The river was really stagnant. There were big clumps of algae and unsightly. It stank. A lot of people, you know, commented about how stinky it was. And we had very low dissolved oxygen, which again, precluded fish from being in the dam pool. And with the Kent Dam especially, we bypassed it. And as a note to the historians, we kept the Stone Arch Dam, which is an historic structure. The whole project was in a national historic preservation area, historic district. And so we bypassed Stone Dam and we returned the free flow of the river. And as I mentioned earlier, within a few months, we were getting decent fish populations that meet our water quality standards.

**Steve Testa** [00:11:25] And I think there's been some park that has built up in the downtown area there, and as you said, people coming back. I wondered if maybe you'd comment on that kind of social aspect of the positive work.

**Steve Tuckerman** [00:11:39] That was also gratifying. The... After the project was well on its way the city park system decided to go ahead and make a new park out of it called Riveredge Park. And again, it was just real gratifying to see people come down to the river, whereas before they just kind of drove over the bridge. And in fact, some people said, oh, I didn't even know the river was there. But then it became a drawing card for people to go down to the river and you saw kayakers come down, although they were there before. I think they're a lot more prevalent now. And kids were coming down. And one of the design aspects, we wanted to get 'em down to the river. And again, just last weekend, we were down there and their kids walking in the river and dipping their heads in and getting wet and everything. And we're seeing weddings taking place down there, which they never would have done that before as stinky as the old dam pool was. And then also the City of Kent is investigating a grant from Ohio Department of Natural Resources to further develop that area for a whitewater park, for doing whitewater canoeing and kayaking through the city. So they're kind of using that as a downtown redevelopment tool.

**Steve Testa** [00:12:54] What about other dams and blockages or cleanup programs that are either in the future or ongoing right now related to Cuyahoga River?

**Steve Testa** [00:13:04] Okay, well, we got to the really deplorable state of the Cuyahoga over a long period of time. So it's taken... it's going to take a while to get back to where we want it to be. So it's it's been very incremental. But some of the other projects include the State Route 82 Dam, which is the first dam of the Cuyahoga up from Lake Erie. And we're right now going through a feasibility study to see whether or not that's a candidate for removal. And we're about, oh, half to three-fourths of the way through an environmental impact statement for that project to decide what we can or can't do for for removing that obstacle to the river. And again, it's the same type of issues. The Kent Dam, downstream from the dam, we've got full attainment and upstream we don't, and it's it's pretty clear cut. Plus, unfortunately, we've had some deaths from drowning from that dam, so there's a couple of reasons why it'd be a good idea to get rid of that dam. But at the same point, we want to continue to water the Ohio Canal, which is, of course, a big historic part of the park as well as northeastern Ohio. And so that's really the biggest hurdle is how do we get water into the dam, into the, excuse me, the Ohio Canal while getting rid of the dam and all the problems that that entails. Other projects include... There are two small low head dams in Cuyahoga Falls, and we're working with the city to to see if they would be amenable to getting rid of those dams. Again, all of the the dam removals are not under Ohio EPA regulation. We don't have any sticks to get rid of them. It's primarily a bunch of carrots that we try to give people. So we have to work with them rather than dictating what they can do. So it's a little bit different role as a regulator. I can tell you it's a lot easier to tell people what to do than to ask them to do it voluntarily. But it's still just as gratifying when you see the results. In addition to the Cuyahoga Falls dams, there is a Federal Energy Regulatory Commission licensing project on an existing dam in the Cuyahoga River Gorge called Ohio Edison Dam. And I'm in the middle of that also to see whether or not a license is going to be given to that particular project to generate electricity. If a license is granted, it basically means that dam is going to be off hands for 50 years. And so, again, we're very concerned about that. Taking a look very closely at the impacts that that could have on the water quality, if that is licensed.

**Steve Testa** [00:15:40] Let's take both of those statements and kind of explore them a little bit more. First, working with the public and probably political officials, as well as just some PR with neighbors, we'll start with that one about, you know, any of the work in removing any of these kind of dams or doing any project.

**Steve Tuckerman** [00:16:01] Well, the Kent project—I keep going back to the can't because that was, it really is almost a model for how things should be done—City of Kent was very progressive and they knew right up front that without buy-in from the local populace, this would never get done, no matter how much, how many carrots we waved in front of them. So the first thing they did is the City of Kent set up a Kent Dam Advisory Council, which was made up of citizens, prominent educators from Kent State University, scientists, and local politicians. And they specifically did not want anybody from Ohio EPA there. They wanted this to be completely a community-driven thing. What we did is we gave them what needed to be done in order to meet our water quality standards and that it had to be a river that had suitable habitat. It had to have sufficient dissolved oxygen for the fish and fish had to be allowed to freely move upstream and downstream to meet their lifestyle, not lifestyle, but life history needs. And basically, that's the only thing we told them. And after that, it was completely up to the citizens to decide what they wanted to do. And it was a painful process. I don't know how many meetings we went to because they asked us to come in and make presentations about what the problems were, what we wanted to do. And as you can imagine with... The dam is an icon to the city with all of the stationery and everything like that. And whenever you do change, people are just very resistant to it. So it was... it was interesting, but we worked through that process and it came out to be a much better project than than we even envisioned and it really was a big success story. And one of the reasons that it was real successful is that although it was around 2000 or so that we actually proposed this, we actually started educating—and I'm not doing this because you guys are teachers—but we actually started educating folks back in the mid 1990s. We started a series of seminars about water quality. We started with real basic things. This is water. These are the chemical properties of it. It flows downhill. I mean, just real basic stuff and went through and explained exactly why we had some water quality issues in the middle part of the Cuyahoga, because we saw a lot of problems coming to a head and we were trying to to stave those off by educating folks to know what's coming on. And we were hoping for some regional cooperation and collaboration so that there wouldn't be a lot of fighting in what we call water wars. Unfortunately, I think we started a little bit too late because, and I can... I can't remember the exact year, but it might have been right around 2000. Again, City of Kent took the City of Akron to court over the use of the river. Basically, the City of Akron eliminated the flow through Lake Rockwell for the city's drinking water purposes and, which meant that the Cuyahoga River through Kent was a lot less flow than it would have naturally. And they took Akron to court. It wound through the courts and ultimately ended up in the state Supreme Court that basically predominantly sided with the City of Kent and said that Akron had to, had a right to the water, but they had only a reasonable right to that water and reasonable use. And they had to release a certain amount of water to maintain decent water quality for the folks downstream. So that was the end of that. We were trying to stave off that whole process. We didn't quite do it, but we think we laid the foundation for a successful dam removal projects and Kent and Munroe Falls. So that was a long-winded answer to your question.

**Steve Testa** [00:19:50] How would you assess, say, community education today? Are people more aware of this issue. Are they better at understanding?

**Steve Tuckerman** [00:20:01] Yeah, I think they're a lot more, better educated about the issues. And it's not just Ohio EPA, but there's an awful lot of groups, a lot of the watershed groups, the national park, even the generic media, I think are much more in tune about environmental issues and about the subtleties that occur around such environmental issues. It's not the glory days when you have big, stinky black water spewing out of a pipe. Those are easy fixes. Those are the glory days of cleaning up the environment. Now, it's a lot tougher row to hoe. We don't have dead fish like we used to and stinky water and in rivers catching on fire. Those things are easy to rally people around. And now it's a lot more of an educational job to understand the subtle effects that are occurring out there and how those are not sustainable and how without sustainable water resources our society is in trouble.

**Steve Testa** [00:20:59] What would be, say, the most important project that is in the future for the water quality in the Cuyahoga River? I mean, since you said you've already cleaned up some of the easier ones right now, what's the next step?

**Steve Tuckerman** [00:21:15] The hardest part is convincing everybody that they're the problem in that the Clean Water Act has been a phenomenal success in getting decent water quality coming out of our treatment plants, our wastewater treatment plants. Of course not everything's perfect, but it's light years, a sea change, better than what it was back in the '70s when I was growing up, '60s and '70s. So that's been a tremendous improvement, but good water resources, not just clean water. There's a whole lot of things that go with it. One of the problems we have is that everybody has a definition of a stream. It's just a bunch of water flowing in a channel. And a river is much more than that. It's all of the land that connects to it, the trees around it, things that are living in it. So one of the things we have to get out is to educate people that that's exactly what a stream is, a river is. It's not just the water in it, but it's everything that's connected to it. And with some of the highest population centers in Ohio situated within the Cuyahoga River Valley, it's how we manage the land that has a more direct impact on the water than what they flushed down the toilet as it is right now. And getting that, you know, across to people is really difficult because everybody thinks, you know, I'm a good person. I'm not harming the water quality. I just want to have my little nice little lawn without any weeds in it, or I want to be able to build a brand-new house out in the middle of the woods or something like that. And in and of itself, just that one person doing that is not a problem. But when there's tens of thousands, millions of people doing that in a small watershed, those are the problems we have to face with. So, it's much more of a challenge than it was earlier.

**Steve Testa** [00:23:14] What would you like to see, say, an individual community member do that might be an easy fix that would make a tremendous difference in the water?

**Steve Tuckerman** [00:23:28] You didn't say the questions are going to be hard. [laughs] There's a lot of things that folks can do. And they're little things, and when you start talking about 'em, it seems so insignificant and again, just one act is insignificant but when you add 'em up, it can be a tremendous difference. Things like do we really need to have fertilized lawns that are lush green without a spot of weed in them, or can we go with some more naturalized landscape that includes weeds that you don't have to put massive amounts of fertilizer and weed killers on? Nutrients are a big issue. And in runoff coming from fertilized plots of land such as lawns are a big thing. Sustainable use, you know, buy things locally, recycle, reuse, reduce. You know, that whole nine yards. The mantra. It's not sexy, but it's... Small, incremental, continuous progress is what's needed. And it's very easy to stray from that path.

**Steve Testa** [00:24:45] The sustainable comment and buying locally, why would that help?

**Steve Tuckerman** [00:24:52] I think a lot of people get disconnected from the land and disconnected from the watershed. And I think if you have, you know, buy-in to get things that are produced locally, I think they get more in tune with how their farmers are producing their goods, what's coming from the land, and just a better sense of community.

**Steve Testa** [00:25:18] What could a local community do that would make a big difference?

**Steve Tuckerman** [00:25:27] I sound like a bureaucrat, but comprehensive land-use planning, and when you get the land-use planning in there and make sure the communities... There has to be, of course, some type of variances worked into it, but it seems all too common that the variances are basically given out carte blanche in that the variances really are loopholes to the main intent of the regulations. And so that would... Probably be the best thing to do is go ahead and get up a decent set of comprehensive land-use plans, zoning regulations, and then make it very difficult for people to win variances for those those type of projects. And if there's any new development going on that post-development runoff coefficients have to be equal to or less than predevelopment runoff coefficients because, again, stormwater non–point source issues are the biggest things that we're having to deal with in the future.

**Steve Testa** [00:26:31] Recently, we've had some problems with some flooding down Canal area, and it's my understanding that it is because of so much development and so much pavement. And so I wonder if there's any effort taking place right now to sort of go back and correct some of those errors.

**Steve Tuckerman** [00:26:51] Yeah, there's there's a lot of efforts to try to go back, but it's a lot more expensive and a lot more difficult than if you have things in place to prevent it from happening. And again, all of that's on the local level. There are no state initiatives other than we give grants for watershed restoration, for wetland restoration and mitigation, which help, but to actually go back and take out parking lots and put in, you know, pervious parking lots or put in rain, rain barrels and stuff like that. There's grants involved, but there is no mandate from the state for that type of thing.

**Steve Testa** [00:27:29] If the building that's there now and the way that all of this water is controlled now, can this river survive with what's there now?

**Steve Tuckerman** [00:27:41] It could definitely survive, in my opinion. Could it thrive? I don't think so. And if we continue to go the way that we are right now unchecked, I'm really afraid that we're going to lose all the progress that we've made up to this point. I'm very optimistic in the short term and I'm very pessimistic in the long term when it comes to our water quality in northeast Ohio.

**Steve Testa** [00:28:06] Can you elaborate a little bit on the pessimism?

**Steve Tuckerman** [00:28:10] Yeah, again, the the the optimism is that I think we have really good controls on our water quality. And it's going to... It's good right now and it's going to do nothing but continue to get better. The pessimism is that I, I just don't see people willing to sacrifice individual... I won't say rights, but individual lifestyles, for the benefit of the river unless something drastic occurs. Maybe the new generations will change that perception that I have. But I know my generation and older, I think, we're... A lot of us are into me, especially starting with the Reagan era. It seemed like there was a turn from the '60s and '70s where it was more of a a we in what can we do to help other folks. And the '70s or '80s, rather, I think it was a turnabout was me, me, me. What can I get? What can I do for me? You know, and until we change that, I'm very pessimistic.

**Steve Testa** [00:29:15] I want to go back to the other project where you're talking about the electricity produced in the gorge.

**Steve Tuckerman** [00:29:23] Mm-hmm.

**Steve Testa** [00:29:23] And just ask you about really how do you see that working? In other words... Well, first I'll ask you your opinion about what you think might need to be done there or what should be done and then if there's a way that we could sort of bridge having the private electric producer and the water quality.

**Steve Tuckerman** [00:29:43] Right. First of all, no matter where you get your energy, it's not free. And no matter where you get the energy, there's always environmental consequences, even solar energy when you produce the cells, there's environmental consequences. So no matter what you do, you're going to create some type of environmental harm and you basically have to weigh the harm versus the good you get out of it. And my assessment is that there is really not an awful lot of electricity you can get out of the Cuyahoga River at that location, mainly because the City of Akron pulls a great deal water off of the watershed for drinking water purposes. That water is no longer available. The Clean Water Act mandates that you have to have sufficient water to maintain water quality standards, which in Ohio includes fish and macro invertebrate populations. And when you put those two things in there, you only have a minuscule amount of water during high runoff, basically storm events, that you're going to be able to use to generate electricity. And you look at the amount of power that's generated versus the potential of what that river could be without that dam there, and I think it just pales in comparison. There was a court testimony from a First Energy engineer that the amount of power claimed by the applicant, the person that wants to project, is somewhere, somewhat less than two thousand homes. The First Energy engineer stated that in his opinion, the project as as proposed would power somewhat less than three homes on a yearly basis. So when you look at it that way, there's clearly a problem there. And and again, I think you just have to look at all of the cons and the pros, and I think if somebody looked at it from a, from that standpoint, it's clearly not a project. It's going against the will of the people. Everybody in the area wants to keep the river. They don't think it's worth... Also, they don't think it's worth the price of the electricity, and then if you look at the one of the things that is big in the news right now is the carbon dioxide loading to the atmosphere. And so that's one of the applicant's statements, is that it's going to reduce the amount of carbon dioxide to the atmosphere. What he doesn't quite understand is that the reservoir itself is actually creating greenhouse gases from production of algae and in decomposition of the algae, and they're actually... Each reservoir is different, so you can't make blanket statements, but there is a possibility that the reservoir itself could be producing more greenhouse gases through methane and carbon dioxide than what's being saved by burning coal for further electricity that they're gaining. So. So that's that's my process or my belief basically is just looking at the balance sheet and it just doesn't make sense.

**Steve Testa** [00:32:46] A lot of the projects we've talked about so far that you've been involved with were dam removal, free flowing in the water. I wonder if there's another type of project that in fact you've worked on that has been self-gratifying or in fact good for the river.

**Steve Tuckerman** [00:33:02] Yeah, just the the mundane bureaucratic work of monitoring and issuing permits and keeping track on the wastewater treatment plants at the city-owned, municipal-owned wastewater treatment plants. Again, when I was first coming up in the business, the wastewater treatment plants for the places where the dregs of the city went. If if you were having discipline problems or you had any number of issues with the city, you probably ended up with a wastewater treatment plant because it was looked upon as the degrading job and nobody wanted to go there. And again, the turnaround has been remarkable. Most people now have advanced degrees that are working at wastewater treatment plants. It's a well-respected profession. And that's really gratifying to see that change in the response to the river. And it's not sexy like dam removal is. Everybody kind of focuses on that because it's big and it's immediate and it's sexy. But again, the small incremental improvements that we have through our regulations and through changes made by the cities and the wastewater treatment plants and seeing the results is really remarkable. The change in the river is just... I never thought I'd see it in my lifetime. It's it's pretty, pretty gratifying.

**Steve Testa** [00:34:25] Well, I don't know a lot about the Cleveland, you know, wastewater treatment issues, but I know Akron has recently just developed a couple of new sources and ways of handling the water. And I just wondered if you might comment specifically on what these communities are doing that's making the improvement.

**Steve Tuckerman** [00:34:44] Yeah, the improvements they made are are expansion and improvement of the treatment processes at the wastewater treatment plants. And these include what we call advanced secondary treatment, as well as tertiary, which is basically filters. They've also changed their disinfection processes, so we don't have nearly as much chlorine going into the rivers in their byproducts as we used to. That's one issue. The other issue is getting the wastewater to the wastewater treatment plants both in Akron and Cleveland or older communities. And they have what are called combined sewer overflows or, not combined sewer overflows but combined sewers. And combined sewers carry both stormwater and wastewater, and under no rain or a very light rain, all that water from the storm sewers and the wastewater from toilets and industry and everything all mingles in one pipe and goes down to the wastewater treatment plant. It's treated and released into the river. Everything's fine. However, under very high flow conditions like we're experiencing today, the capacity of those sewers to carry the water is exceeded in rather than having the sewers back up into people's basements, which of course, is not a good thing to have. The system was designed to overflow instead of backing up into people's basements. And the theory at the time these were built—and this is again at the turn of the century—was that ,well, it's storm water, there's a lot of water there, it's going to get diluted so it's not a big deal. Well, of course, we know now that that was not necessarily good judgment. So the issue... We're getting really good treatment, but we're not getting all the wastewater down to the treatment plant to get treated. So that's the next big project that both the city and Cleveland have to work on, is delivering the wastewater down to the wastewater treatment plants in both the city and Cleveland, to their credit, have continued to move forward with their combined sewer overflow program, even though we're caught up in legal limbo. But among the Ohio EPA, the U.S. EPA and the cities, as far as what the projects for removal of these codes are going to be and how long it's going to be to to to get that implemented. The City of Akron projects... They just recently completed one which was a big tank out near Cuyahoga Street. And they're also going to be implementing a deep tunnel where they basically bore a, as the name implies, a deep tunnel about anywhere 15 feet or so in diameter, and the wastewater goes down into that tunnel and it's basically stored there and then pumped into the wastewater treatment plant when it stops raining. These have been successful in Chicago and elsewhere. I think Chicago was the first place where they were implemented. Our City of Cleveland has already built, I think, two tunnels with a third one under construction. The City of Akron, I think anticipated bill is five hundred million dollars and the City of Cleveland is well over one and a half billion dollars.

**Steve Testa** [00:38:02] So cost prohibitive seems to be part of the problem with fixing these things.

**Steve Tuckerman** [00:38:06] Right. And as big as those numbers are, trying to separate the sewers, basically putting the wastewater in one pipe and going out on the wastewater treatment plan and the storm sewer going out into the river, is even more costly than that. And the most cost-effective way is to put in these big holding ponds, holding pipes, if you will, and the amount of money is just staggering.

**Steve Testa** [00:38:33] Do you have any... Is that any part of your job with helping to make some awareness of this or raising any of this or even applying for any of this?

**Steve Tuckerman** [00:38:44] I'm there as the technical consultant for the attorneys, basically. So the attorneys get into a match with the city and they go head to head and I basically provide information for them to make their case, so that's where I'm involved in that.

**Steve Testa** [00:38:59] You mentioned a couple of times about the things that we would find in the rivers, some of the fish and some of the sediments and stuff like that, and I wondered if you would tell us some specifically, like, for instance, the fish population that has come back.

**Steve Tuckerman** [00:39:09] Right. Before I tell you what was there, people might not know how bad the Cuyahoga River was at one time back in the '60s. And, God, I sound like an old man. [Effects an old-man voice] Back I can remember when! But in the '60s and '70s, there were no fish between the city of Akron and Lake Erie. In fact, there were very few macro invertebrates that lived in the river. It was mostly all bacteria. And it was pretty astounding. The river contained biochemical oxygen— man, it's the amount of waste that's in the water—and ammonia that we would immediately take people to court if that was coming out of a wastewater treatment plant. But the whole river was that bad. As late as 1984, I remember electroshocking Station Road and we fished for an hour and we caught four fish, and among those four fish I think there are three or four fins. The rest he wrote it off because of the poor water quality that was there, and that was in 1984. And around the 2000... 1996, actually, is when we started to see some really dramatic improvements in the river. And 2000 really solidified that we were making a big comeback. And nowadays, well, my boss, he said, you know, this river has got a lot of potential looking at the habitat and in the physical structure of the river, he says, this is a really a good river. It's got a really good potential to come back, but it'll never be a trout stream. And what's interesting now is we do have reproducing trout in the Cuyahoga River and their tributaries. They're non-native, so I have a little problem with that. They were rainbow trout that are brought from the west over here. But still, the water quality is such that it can support a seasonal salmonid run of steelhead trout in that the... They're actually reproducing in some of the tributaries. So that's pretty neat. We're having smallmouth bass fishery. People left and right are calling me up and saying, did you know this, this and this? And I said, yeah, there's, there's a lot of smallies there. We're catching lots of walleye. And Northeast Ohio Regional Sewer District did some electrofishing surveys recently and found lake trout in the Cuyahoga River, and that's just phenomenal. We're finding golden and silver red horse and black red horse, rainbow darters. And these are not sexy fish like the rainbow trout or the lake trout. But to me, they're even more... They're even better indicators that the river is making a comeback because they need to have a sustainable macro invertebrate population for those type of fish to be there. And the whole community is coming back. The macro invertebrates are nearly at exceptional levels. So that's why the fish are coming back. They got plenty of stuff to eat. And again, it's... The difference is just night and day. It's just really tremendous. And I never thought I'd see that in my lifetime.

**Steve Testa** [00:42:28] What about the banks down by the Flats? I know that creates the problem. I wonder if you would comment about those projects.

**Steve Tuckerman** [00:42:34] Yeah, the navigation channel, that's 5.6 miles from the mouth of the river up to where they stop dredging and it basically makes a 30-foot bathtub in the river. And I kind of refer to that as the environmental sacrifice zone. In order for us to enjoy our standard of living and how we, how our society works, the Cuyahoga River is taking a hit for us, and it's basically allowing transportation of goods and materials up and down that river so that we can manufacture things and continue our society. And that's been the role of the Cuyahoga River for most of the post-Columbian years. It's been sacrificed to man. And that's one of the gratifying things that we're trying to help the river come back a little bit. And thank you for your use and everything, but we're trying to give back a little bit to how it's sacrificed for us.

**Steve Testa** [00:43:35] Is there a viable way of having both transporting all these goods and a healthy river? Is it possible to have, or is it one of those sacrifice one for the other?

**Steve Tuckerman** [00:43:47] I think you have to sacrifice one for the... one for the other. There is... There's other ways of getting material up the river to the manufacturing areas, but it's more costly and it's whether or not that cost would drive some of those manufacturing facilities out of the Valley, move 'em someplace else in the United States or overseas. And I'm not an economist. I don't know. But I definitely know it would be it would be more expensive than the current practice in barging things, not barging but shipping things up on the lake freighters.

**Steve Testa** [00:44:21] And at this point, I guess what you're saying is we're not willing to make that change yet because we're so dependent on needing these industries.

**Steve Tuckerman** [00:44:28] Right. In order for the local economy to flourish, we need to continue that.

**Steve Testa** [00:44:34] I was thinking more personally about the fishing issue when you're talking about it. And I was curious about, I mean, I've seen people fishing down in the river and you mentioned kids playing in the water. And I'm just wondered if there was any warnings about that for people in the local communities.

**Steve Tuckerman** [00:44:52] Yeah, there's two human health concerns associated with the river. One is a consumption advisory for certain fish that's in the river, not all the fish, but a certain portion of the fish to have a consumption advisory. And I don't recall what that is right offhand because it involves size classes in different species. But the concern is basically that the the fish have taken up into their tissues, through the food chain, the environmental insults that we've imposed upon the river in the past. And they've retained those in their bodies and they've actually biomagnified 'em in their tissues. And when we catch a fish and eat 'em, that, of course, is transferred into our bodies. So there is a consumption to limit for certain types of fish. Again, it's [not] saying you can't eat the fish, it's just saying if you do eat them, these are the recommended frequencies that you eat those fish. And again, from my perspective, it's a nice problem to have because at least there's fish there that you can have such a concern about. But it definitely is a concern. The two main contaminants that we're really looking at are PCBs, polychlorinated biphenyls, and mercury. And PCBs are no longer manufactured in the United States. They're banned, but they're persistent. And that's why we continue to find them in the fish tissue. And the mercury is primarily a byproduct of burning fossil fuel, basically coal. And it's ubiquitous, and we have a statewide ban on, not statewide ban but a statewide advisory, on consuming fish because of mercury. So those are some of the issues to do with fish tissue. The other human health concern is bacterial contamination. As we talked earlier about, you know, sewage overflows and raw sewage getting into the river from combined sewer overflows, you can imagine, that bacteria in the associated potential viruses and other health concerns is pretty prevalent. And so after periods of rain there... People should not be going out into the river and recreating whether it be, you know, wading or canoeing or that type of thing, because full-body contact like that carries a risk of disease. That's the bad news. The good news is the Cuyahoga River isn't any different now than than any other river in northeastern Ohio. And that just about any place in northeastern Ohio, because, again, our lifestyles, the way we manage the land, the way we don't pick up after our dogs when they do their business out on the tree lawn, when have big rains the bacteria counts in all of our rivers go up and exceed acceptable limits. The Cuyahoga, like other streams in northeast Ohio, after about three days, it seems like those concentrations go down low enough that it meets our water quality standards. So that's the general rule of thumb is that basically if you're in the water three days after significant rain, you should be in decent shape. And the Cuyahoga Valley National Park, along with USGS, did a survey in a study, and they basically confirmed that I think they got it down to 2.78 days or something like that. They just refined the number, but they basically substantiated that same type of of three-day period following a heavy rain. And, but prior to those three days, there is a risk of contacting an illness because of the high bacteria counts.

**Steve Testa** [00:48:26] I was curious about if you're a fisherman and where you like to go and what recreation you do along the river or in the watershed.

**Steve Tuckerman** [00:48:35] Yeah, I still like the outdoors and I guess I take busman's holidays all the time. I enjoy fishing, although I fish, I live in Twin Lakes and I do most of my fishing on Twin Lake, Twin Lakes, but I still like to come down to the river and fish occasionally. And yeah, I do occasionally eat the fish that I catch, although it's mainly when I don't do it, it's mainly because I'm lazy, because it takes effort to clean the fish. But I really enjoy that. I kayak, so I enjoy kayaking down to the river, hiking, of course, outdoor photography, wildlife photography is another one of my hobbies, and bike riding. So I... Towpath Trail on the Summit County hike and bike trails I frequent very often, as well as the rural roads.

**Steve Testa** [00:49:25] We didn't ask you about your family but do, does any of them go along with you?

**Steve Tuckerman** [00:49:29] Yeah, my wife, my wife enjoys pretty much the same type of thing. We don't have any kids. I'm too selfish for kids. So we go out and have a good time and pretty much the same likes.

**Steve Testa** [00:49:46] That's good. I wanted to give Karen a chance to ask you a couple of questions if she had anything that came up while we were talking,

**Karen Grindall** [00:49:55] The data that you collect on the river, is it public accessible?

**Steve Tuckerman** [00:50:05] In theory. [laughs] Isn't that a loaded question? That's one of the things we do not do a very good job doing is making the data accessible to people. The quick answer is yes, it is accessible, anybody that asks for it. The problem is that it's very hard to pull together because we just don't have the resources to have a good data management system. So we're actually several years behind in putting our data into a national database called STORET, Storage and Retrieval System, that's managed by US EPA and that's where we put all of our data. But for the last couple of years, we basically have to go in and look through our databases and pull it out if somebody wants a particular piece of data for a particular project. It's... We just don't have a really good database retrieval system. Now, having said that, that's for the water chemistry, for our fish database we probably have the best, most complete and extensive fisheries database in the entire world for the State of Ohio. And we have researchers come from all over the place looking at our data to mine it. We also have some of the best macro invertebrate taxonomists anywhere. In fact, the Smithsonian often comes to some of our... we call them bug pickers, our macro invertebrate taxonomists to do positive IDs on macro invertebrates, especially the dipterans, the midges, so that data is is all available and it's actually in better shape than our water quality.

**Karen Grindall** [00:51:44] Is that available like on the Internet or do they need to come to you to get that?

**Steve Tuckerman** [00:51:49] Yeah. Again, we do not have that capabilities to... The state legislature several years ago put forth a bill called the Credible Data Bill that mandates Ohio EPA to make the data more accessible, like you mentioned, so that it would be available on the Internet. Unfortunately, they did not provide any additional resources to do that. And so we're struggling to try to do that and we're trying to do that basically in our spare time. So we're trying to get to that point, but we ain't there yet.

**Karen Grindall** [00:52:24] Okay, thanks. My major concern on that one, as is that if we're working with kids at Cuyahoga Valley Environmental Education Center, helping them understand, then where can they go, or I as a teacher, go afterwards to locate data to help them understand the effect of... we're there four days; if it doesn't rain during that time period, we don't... Their water quality testing is not going to show up, down from...

**Steve Tuckerman** [00:52:52] Right.

**Karen Grindall** [00:52:52] Previous times.

**Steve Tuckerman** [00:52:53] And that's one of the the core principles, that credible data program that I mentioned earlier, in that it's set up three levels of data collection, one, two, and three. And level one is basically—I don't want to put it in the vernacular, but it's the only way I can do to explain it easily—is Boy Scout type data. Where were Boy Scouts or Girl Scouts go out and they collect water quality data just because they want to see what's going on. That's kind of level one data. Then level two would be, and maybe grade schools would fall into that area too, level two would be high school and maybe even college students to go out and collect information. And then level three is the highest level that would stand up in a court of law. And that bill mandates that anybody who collects that type of data send it to us. And then we have it readily available again on the Web to send out to you. So, if we had enacted that bill and we'd gotten money to set up the databases, your problems would be solved in that anybody who collected information on the Cuyahoga River would have that information on the Web that you could readily download. There was a program, and I don't know if it's still in existence, called the Global River Environmental Education Network, and that used to be pretty decent because a bunch of kids get together and that kind of stuff. It's still in existence. That's a good program.

**Karen Grindall** [00:54:19] Yeah, thank you.

**Steve Testa** [00:54:21] I was... There was a couple of things that came up as you were talking. I was wondering about the Countryside Initiative and some of the preserving the rural landscape and if that has any effect on your job or if you have any comment about whether you think this is a good project.

**Steve Tuckerman** [00:54:36] I'm not intimately aware of the project, but just on face value, I think it's real important because it gets down to the non–point source issues and how we deal with the land and how the land transfers what we do, good or bad, to the river. So I think it's a worthwhile project from what little I know.

**Steve Testa** [00:54:55] Okay, I'll let you finalize and ask you if there's anything that you think that perhaps maybe we missed that you would've liked to have said or had thought about before you came.

**Steve Tuckerman** [00:55:08] The only thing... When you mention, you know, coming into interview, I was again thinking about how I grew up along the banks of the Cuyahoga River, my first hunting and fishing and trapping expeditions around the Cuyahoga River. And one of the most vivid memories I have is is going up to the ballpark with my dad. And this shows you how old I am. This predates the the freeway system. So we were going up Canal Road. That was the best way to get up to the Indians stadium. And we'd go up Canal Road, and there are three things that I remember about the trips up to the baseball game. Number one is how green the grass was at the stadium. That was just awesome. Number two is we got up into, I think it's Garfield Heights now, but the landscape was completely orange. The lawns were orange, the streets were orange, the houses were orange, and it was all from air pollution. It was just the most disgusting thing that I... It was just... And again, it's just so vivid in my mind. And then the third thing, which I thought was kind of cool, but it's really kind of sad is coming down Canal Road, we'd go past the the mill there near Pleasant Valley Road and there's a little waterfall there. And that waterfall made the water real turbulent. And there were so much soapsuds coming from Akron that there was soapsuds foaming up 15, 20 foot high and the wind would blow it over Canal Road. And I just thought that was the coolest thing. You know, a little kid at the time. I didn't understand the ramifications of it, but that was pretty neat. And then another vivid recollection on the river was in high school, we went on a canoe trip down the Cuyahoga downstream from Akron. And there were so many, so much flotsam coming from the city that included baseballs and basketballs and footballs and kids' balls and tennis balls that every bend of the river we would—we had two canoes and one guy would go up, go up in front and collect all of these balls and end up pitching at the other guys. And so we just had a battle all the way down the river, and I remember how fun that was. And again, not really understanding what the problem was with that. But and then the final thing, again when I was a little kid, going down Breakneck Creek—and I think I was a mile or two miles from my house, which I thought was out in the middle of wilderness, you know, it was nobody was around, of course,—and went swimming in the river in Breakneck Creek and never quite understanding why every time I went out there, I got sick the next day and then realized later that I was downstream from wastewater treatment plants that were very poorly treated. So those are some of the early recollections I had grown up in the Cuyahoga River. So it's very gratifying to actually be able... a small part of helping it rebound from its really nasty past.

**Steve Testa** [00:58:15] Have you been able to see the film that was recently done and aired on the PBS station about the return of the Cuyahoga?

**Steve Tuckerman** [00:58:22] Yeah, I had a really small part. I think I had two sentences in the film. Yes. So yeah, I did see the film. I thought it was pretty well done. Yeah.

**Steve Testa** [00:58:31] Okay, thank you very much.

**Steve Tuckerman** [00:58:33] Okay. Thanks, Steve.