

**060028 Interviewer:** Tom, thank you for coming today. I'd like to start by getting to talk a little bit about your personal background. Where were you born and raised, that kind of thing.

**060035 Tom:** O.k. I was born in Chillicothe, Ohio. That's actually east of here but north of the Portsmouth facility, the gaseous diffusion plant. So I was familiar with the DOE work early on because my dad did some construction work there so, but I was born and raised in Chillicothe, and went to school there and then went to the University of Dayton for college and got a degree in biology there.

**060100 Interviewer:** What was your sort of interest as a young person to lead you into the natural sciences and biology?

**060105 Tom:** Well, we lived out in the country so I was always focused on hunting and fishing and outdoor activities and farm-type stuff, so it was a natural progression into that arena of biological sciences. Uh, and so initially went into school looking at pre-med, but decided to stick with the biology side of it early on so that was a background and childhood of outdoor activities sort of led me in that direction.

**060134 Interviewer:** When did you get your B. S.?

**060136 Tom:** I got my B. S. in '88 from the University of Dayton.

**060140 Interviewer:** Then you decided to pursue additional education?

**060147 Tom:** Right, yeah. I went to Ohio State and got a Master's degree in natural resources. Between the two schools, the summer after I graduated I interned with the Ohio EPA doing fish surveys. So that sort of got me hooked on heading down the natural resources path at Ohio State anyway. So that's what I went into, fisheries research at Ohio State, and so picked up a natural resources Master's degree there. I graduated from Ohio State in the summer of '90 and I got my master's degree, and in the spring of '90 is when I started working for the agency, in June of 1990.

**060223 Interviewer:** Was that something that the program at Ohio State encouraged students to sort of go out and look for work or was it that something you found?

**060232 Tom:** Well in graduate school, at least the one summer that I was there for was basically a research summer, so and then in between schools the Ohio EPA stuff happened between UD and OSU, so it was really an aspect of looking for a job that would help me decide where I wanted to go. Whether I wanted to go into the environmental clean up, or you know, the environmental regulation side of things or into the wildlife side of things, and so I went to the regulation side of things as a result of that.

**060303 Interviewer:** Either while you were in school or in getting introduced to the Ohio EPA as a place to work, what thoughts did you have or what were you told about role of the regulator

in the larger scheme of the industrial production of the US and the management and regulation of environmental issues?

**060327 Tom:** Well, you know, most coursework covers the fact that there are regulations out there and the agency EPA is both federal and state level, regulates those things. But I don't think any classroom covers the hard cold reality of trying to regulate industry. Uh and so I learned a lot of that in the first summer of interning dealing with folks who had been at the agency a long time and the realities of just because the rule is there doesn't mean it's necessarily enforced or it's effective even. So it is not nearly as cut and dried as it is in the textbook side of things, so.

**060427 Interviewer:** When were you assigned the Southwest District office?

**060432 Tom:** Well, I interviewed while I was in grad school. Actually it was a shot at practicing interviewing really 'cause I interviewed in February and I knew I wasn't going to get out of school until that summer, I was going to graduate. But I got offered the job and I said, "Well, I'll take it but I can't start until June." So they held the job for me, and, I think, my second day on the job I was handed the first ten-pound Fernald document and started reading.

**060456 Interviewer:** What was this position?

**060458 Tom:** It was in with the then, I guess it still exists, but the Division of Emergency Remedial Response, and they were basically the CERCLA side, the Superfund side of the EPA's clean-up program. And so, at that time Fernald was covered under that division.

**060518 Interviewer:** Was there an Office of Federal Facilities Oversight?

**060520 Tom:** No that came like five years, four or five years later, we started that. We started out with a series of agreements with the DOE to provide forward funding instead of retroactive funding. In the original lawsuit settlements, we were given the right to recover costs from our oversight activities at Fernald, and so you know at the end of the year you'd send DOE a bill and they wouldn't know what the bill was gonna be and we would have to argue, "Oh we're going to get this money back so let us spend it." So it was trouble for us, and trouble for them because they didn't know how much the bill was going to be and we couldn't convince folks to let us do what we needed to do. The grant agreements worked out well, where they forward fund us and we knew what we were gonna spend, so uh. The creation of that money also supported the creation of the Office of Federal Facilities Oversight. So that was created, I think, in 1994 or '95.

**060618 Interviewer:** Going back to 1990, as you take on a new position both within a regulatory agency and then a specific focus on Fernald, I'm sure you had to get up to speed on the history of Ohio EPA involvement at the site. If you could take us through a little bit of what you understand as the history of involvement throughout the 1980s with the Ohio EPA and Fernald.

**060642 Tom:** Well, it's all second-hand because I wasn't there for it, but a lot of it still carries forward into the way the world operates today. In the mid-1980s, when I think the state started

realizing what was going on with Fernald and the first sampling of Lisa Crawford's well and the governor's sitting in the Lisa's living room and talking about the results. And the suggesting those folks not drink their water until they had some more data and stuff. That's what began it all and then at that time, you know, the DOE was exercising sovereign immunity saying you cannot enforce the environmental regulations against us. And we did, they did a RCRA inspection at that time and found 80 thousand drums on the Plant 1 pad stacked seven high, you know, and they had holes in them where they had taken a pick ax to them to drain them.

**060735 Interviewer:** What does RCRA stand for?

**060738 Tom:** Resource Conservation Recovery Act. It's a hazardous waste rule that mainly tells how you manage, and store, and handle hazardous wastes. The state did have authority over that. What the states don't generally have authority over is the radioactive side of the house because that's all given exclusivity under the Atomic Energy Act. So you can't necessarily regulate radionuclides, but the handle that the states and even federal EPA have to get in is through the hazardous constituents, which can be heavy metals, solvents and that kind of stuff. So, that's the kind of stuff that was being stored on the Plant 1 pad in addition to the radioactive materials. And so, when the state came in, in the mid-80s, subsequently sued DOE under RCRA, CERCLA, Clean Water Act, and as part of that also natural resource damages. That original lawsuit in the late 1980s basically was an effort by the state to use whatever regulatory tools were out there to try to get DOE to straighten up what they were doing, so....

**060838 Interviewer:** At this point in the mid-1980s Fernald production was still ongoing?

**060847 Tom:** That's, well, actually production stopped in 1988, but prior to that, yeah, in 1985 and stuff like that when the original first inspections occurred, yeah, there was production occurring. But in '88, that's when production ceased, and then it was formally shut down in 1990 time frames.

**060909 Interviewer:** When you started working on this project what were your colleagues telling you about the way regulators were perceived and what kind of challenges were gonna be confronting the Ohio EPA staff person going down to Fernald?

**060924 Tom:** Well, when I first started on Fernald it was the very confrontational attitude between the DOE and the EPA. The US EPA and Ohio EPA, I think, always had a good working relationship together on the site, and that's not necessarily true of all sites. Sometimes there are problems between the agencies and that can make it even tougher, but at least at Fernald throughout the history we have had a very good relationship with the US EPA and that has made it a lot easier to move DOE in the direction. And we also had a very good relation with the stakeholders, being there to tell them originally to tell them about their well contamination and stuff, I think, that has set us down a path where we had credibility with them. And so, between the three of us we were able to move DOE down that path. But when I first started, I was handed, you know, the ten-pound DOE document, setting up in the back room, I was told "read this, and be prepared, and write up comments on it." So that was pretty intimidating right off the bat. And when I started I worked on both Fernald and Mound, both DOE sites. There's

another DOE site, Mound or Miamisburg, it's located in Miamisburg, Ohio, and so it's another facility of the DOE. I was working on DOE sites right from the start. And uh, so I was able to compare and contrast the activities of both of those sites from a clean-up perspective. But when I first started I remember going to the first public meeting. It was a shouting match between DOE and the public, and the US EPA shouting at DOE at the same time. I was just like, "Oh my, what have I gotten myself into? This is down-right scary!" It's incredible to see the public meetings they are today versus then. It was pretty exciting.

**061111 Interviewer:** How did the Fernald site get included under CERCLA legislation? That was sometime in the late 1980's also.

**061117 Tom:** Yeah, you get under CERCLA by being scored by the US EPA, and depending on having the right HRS score, or Hazard Ranking Score, you get stuck on the NPL, or National Priorities List. And that's what happened to Fernald. At Portsmouth, it was just a RCRA site, a Resource Conservation Recovery Act site, so it depends on what happened at a particular time. There was a time when they were adding lots of federal facilities to the NPL, and Fernald certainly presented sufficient hazard to be scored and get on the NPL. One of the big things that gets you in the NPL is groundwater contamination and receptors. And we had both groundwater contamination and receptors at Fernald, not to mention a lot of waste on site. So that's how it got added to the list as a result of its score.

**061208 Interviewer:** When you first got there, where was the DOE in terms of development of the federal facilities compliance legislation that required federal facilities to comply with US environmental laws, including some opening up to public involvement. Where were you in that process?

**061229 Tom:** Uh, I think the FFCA stuff was just beginning when I ..., you know, they were just working on that legislation and we had our suit going to the Supreme Court where Jack Van Clay, the Attorney General's office, was arguing at the Supreme Court about our case against DOE, and so that was all coming together. You had a lot of old school DOE, which was, you know, secrecy and silence and announce and defend and a few new guys around going, "Maybe that ain't the way we should be doing it." And so I came in right at that transition period from the old school of DOE to the folks we see today. And a lot of those folks that are at the site today weren't there when I started, so it's been a significant transition at DOE folks since I've been there, and probably for the better of the organization, so ...

**061323 Interviewer:** Now when you say Supreme Court, was that the Ohio Supreme Court?

**061325 Tom:** No it was the Federal Supreme Court. Jack Van Clay argued our suit against DOE at that thing. Uh, I think it would be defined as we lost because we had sued them for past damages and I think the Supreme Court ruling said, well, you can't go and get them retroactively, but you can say o.k. if you are not fixed by this date you can fine them for forward moving actions. But you can't get them retroactively. But, you know, it was that whole series of legal actions that I think changed the way the DOE did business, between us suing them and US

EPA hitting them for penalties a couple times. After that, the DOE came around to realizing that they had an obligation to clean the site up, and to do it right.

**061415 Interviewer:** Can you explain a little bit how the decision was made to clean up, organize the clean up at Fernald around an Operable Unit concept, and kind of segmenting out different projects, and how, what impact that's had on progress at the site.

**061433 Tom:** Yeah, I don't know how we got exactly to Operable Units because it was sort of in Operable Units by the time I got there, but the mindset behind operable units is you pick areas that have like contamination and geographically similar, so that you can take a small piece and work on it. And that has worked out well for us. Early on what we did because getting to the end was such a far out there picture, that we decided to taking small pieces of the pie was the best way to go. Probably what headed us down the path to success, I think, was the decision early on to implement what's referred to as removal actions under CERCLA. Those are small actions that can have a significant impact, but they allow you to do something and say we did something and get something done. And so, one of the most important of those, I think, was the stormwater controls around the waste pits. Because a lot of the groundwater contamination at the site is a result of the contaminants running off into Paddy's Run, which is then cut into the aquifer, and so water that runs down Paddy's Run basically just drains like a drain in your bathtub, draining into the aquifer under low flow situations. So you had this high contamination of water washing off the waste pits into Paddy's Run it was providing a significant source to the waste pits. Well in the early 90s, like '92, I think that was the time frame, we had implemented the waste pit stormwater removal action and that captured all the stormwater off the waste pits and sent it back into the production side for treatment. And I think today we can see the benefits of that just based on the groundwater concentrations dropping out near the waste pits. It's just as a direct result of implementing that removal action. It wasn't a huge clean up of the whole site scale kind of thing, it wasn't clean up of the Operable Unit that happened over the course of a year, but it had a significant impact. And we think we did like 30 of those removal actions and I think that's really what got us moving forward and seeing can get something done. Then, the Operable Units continued down that path of the Investigation, the Feasibility Study, and the Proposed Plan. And today we're at the point where all the Operable Units have decisions and they are moving forward and implementing those decisions and it's a substantial scale effort that I don't think is occurring at many sites at all around the complex. Uh, so I think the progress that we see here, you won't see on any other field trip to many other sites. So, Operable Units worked out well in allowing us to be able to make the pie a little smaller and to get your hands around it. And to select a remedy that's appropriate for the waste type. For the waste pits and silos we chose remedies that strip that high-contamination material off site. For the buildings and the soils, we decided that those were of low contamination level that they could stay on the site in a properly designed cell.

**061730 Interviewer:** Can you talk a little bit about, you mentioned earlier going to an early meeting where there was a lot of acrimony. Just in general, you've been here over a decade now, can you talk about the evolution of public participation and involvement, commenting when you can about things you know about from the time before you got here, at about the time you got

here, and going forward. What were the challenges initially, difficulties, what progress has been made, and what challenges are still out there for involving the public?

**061803 Tom:** Well, I think that, you know, when I got here and before I got here DOE just saw the public as a problem to be avoided or to announce to or to deal with. At this point, I think they see them as an advocate to some extent. You know, you've gone from a point where the citizens are suing the DOE to the point where the citizens are now going to Congress and advocating for more money to come to the site. That's a huge transition and it didn't occur overnight, but it has occurred and it's worked out well. I think it is incredible the changes that have occurred over time. I think that's a tribute to DOE and their contractors' efforts to bring the public into the decision-making and involve them in the day-to-day and the week-to-week and important decisions at Fernald. But when I went to that early meeting, I still remember Lisa Crawford yelling at the site manager and the US EPA representative yelling at the site manager and the site manager yelling back, "Well, this project is just like working on your bathroom at home, you think it's one tile coming off the wall and the next thing you know the whole bathtub falls to the floor. We just can't scope it right." That's the point when the US EPA saying you did not do this work right and you've got to start it over again. It was interesting, and so and you know the follow-up, follow subsequent meetings, I remember being there where Lisa Crawford would say, "Well, I got a call at the middle of the night about this and tell me about that. Why aren't you doing this and what happened here?" and she was getting better information than we were out of the site. And today, you just don't see that. There are not many phone calls that she gets about what is going on at the site that nobody else knows about. That's a sign that things have been improved and communication is that wide open that she doesn't have to get calls in the middle of the night about what's going on at Fernald that she didn't know about. So yeah, that's been a huge transition.

I think the interesting part is, I think back to those early meetings I think there was probably more public at those meetings. And I wonder, we've talked about this in the office, I wonder if successful public involvement doesn't lead you to have less public coming to your meetings. You know, people only come when they are mad or have a genuine interest. And so know we're down to the small pool of folks who have a genuine interest, and the folks who are mad have gone on to find something else to do on a Tuesday night in the middle of the month. That's the challenge of public involvement I see in the future is, okay, we have the same 6, 7, 8, 10 people showing up for every public meeting and then 20, 30 of us who are paid to work on the site, and we're wondering how do you get more of the public involved. And maybe they don't want to be involved, I don't know. You just have to keep opening that door to 'em and inviting them in and try to find ways to reach out to 'em. But that is the challenge you see is, you know, DOE gets criticized for spending all the money on public involvement when they only have a couple of folks showing up at the meeting. But I think if you stop having those public meetings, and you stop that effort to share information, then you're gonna start getting the angry folks back because they weren't being told what's going on. So I think that's an interesting perspective, and we see that at other sites, too, is, you know, after a while folks just lose interest and you just have to do what you can to involve them. I think as we move into the future use scenario and get people interested in the site. It's going to be interesting to see how we get people involved in that aspect of it.

**062135 Interviewer:** You mentioned a couple of minutes ago that by 1990, when you arrived, that generally speaking there was a decent level of trust between stakeholders and Ohio EPA based on some initial work. Can you think of an example of where Ohio EPA and the stakeholders have disagreed about something and worked it out? Or something were there were a few rough patches there after you arrived.

**062205 Tom:** I don't know, I'm trying to think of any. I can't think of any specific issues where we had real rubs. I know we went through a lot of effort with the public on the disposal cell. And that was educational, I think, for the perspective, when I came in, you know, it was sort of like "we should get rid of all of this stuff." And you have people like Lisa and Pam who had seen the rest of the folks and they know the guy living next door to the site that you send it to. And they'd go, "I don't want you to send it to him, he's got the same concerns we've got about it being in our backyard." So I think we learned from them, at least I know I did from them, that there are other considerations then just moving it out. But there were lots of public concerns about the disposal cell, and it took a long time and a serious effort to move the public in general in that direction to reach agreement that it was the right thing to do, the balanced approach. Send the high-concentration stuff off the site and keep the large volume, low-concentration stuff safely stored on site, disposed on site. And so I think that was probably the most controversial issue that I was involved with on the site. I don't know with regard to specifically FRESH, we were ever really far apart on that issue. There were certainly folks involved with FRESH who had concerns about it, but I think that in general they understood the concern more than the general public did about trying to ship 2½ million yards of stuff across the country to somebody else's backyard. And so that would be probably the most controversial issue, but I don't think we were ever that far apart.

**062340 Interviewer:** And you would consider that decision for storage of low-level waste on site is a fairly major milestone or decision point, you know, in the 1990s? Can you think of any others, maybe related to Records of Decision or whatever?

**062358 Tom:** I think our recent decisions on future land use are equally significant to the disposal cell, how we move forward from that. The decision to move forward with vitrification on the silos may, obviously didn't, work out for us, and had significant implications on time frame, and dollars, and stuff like that. But the decision to dispose on site was obviously one of the biggest decisions with regard to the whole site. The cleanup levels, the FCAB's recommendations with 10 to the minus 5 on site and off site I think had substantial impact. Their recommendation to select a clean up number and move forward with it certainly made the decision process here a lot easier and their support of that decision. There are sites where they can't reach that decision. They are still fighting to this day about what the cleanup numbers should be for the sites, and it's tough to move forward if you do not know what you're cleaning up to. You are sort of shooting in the air, trying to figure out what you're supposed to do until you know what you are cleaning up to. So once we had the cleanup numbers decided on and agreed on that, moving forward on the project and the finding scope was pretty easy. You could decide what needs to be done and move forward to it. So I think that recommendation out by the task force was equally significant to the disposal cell.

**062519 Interviewer:** Can you back up on that a little bit and explain what you mean by risk levels 10 to the minus 5 and what were some of the media or areas of contamination that the Fernald Citizens Advisory Board had to make recommendations on and how that got determined?

**062535 Tom:** Yeah, under CERCLA we cleanup to a risk range which is 10 to the minus 4 to 10 to the minus 6. And the risk is the incremental lifetime cancer as a result of being exposed to contaminants associated with the site. So if you live on farm X or if you live on Fernald, the lifetime cancer increased risk on the Fernald farm would be that 10 to the minus 4 or 10 to the minus 6 probability of cancer ... of getting cancer, not dying from cancer, too. And that's some part of the dialogue that goes on there is the difference between dying of it and getting cancer. But there is a process through which you go through to calculate those risks based on food uptake, groundwater, and then direct radiation is another one that's an issue. And in addition to the risk perspective, we also had to define the cleanup that would protect the Great Miami aquifer, which is a sole source of drinking water aquifer. It provides drinking water from the Ohio River, up way north of Dayton to large communities, it's a large drinking water source. We, as the state, are very interested in protecting that. So, that's one of the other calculations that went into the cleanup numbers. And the FCAB's recommendations also specifically addressed the desire to not have agriculture and not have residential properties or activities on the site after it was cleaned up. And most importantly, I think, is to maintain federal ownership. I think that answers a lot of our problems, for all of us in the future, with regard how we make sure our clean-up decisions are implemented and protected. At sites where you lose that federal ownership component, then there's this whole question of who gets to enforce those institutional controls or those requirements for land use, whether you are not allowed to build houses or you're not allowed to do dairy or whether you are not allowed to do agriculture. Who enforces that is a big issue when DOE walks away from a site or Federal government walks away. But at Fernald, luckily we have in all decisions that the Federal government will stay around, and that's very important, I think. The decision to pick a 10 to minus 5 clean-up level versus a 10 to the minus 6, there is an order of magnitude differences in your clean-up level when you do that. And even in the 10 to minus 5 scenario, with specific contaminants like radium and thorium we run into dealing with background concentrations and trying the separate out what increment above background do we cleanup. That's a very small increment with those specific radionuclides. That's a challenge both from a characterization perspective and an excavation perspective as to how you define a stop point. That's a challenge that we implement every day, so...

**062825 Interviewer:** You have mentioned a number of times that the Citizens' Advisory Board (FCAB) that was originally called the Citizens Task Force. Can you talk a little bit about from Ohio EPA or from your perspective the importance of that group in moving the site cleanup forward?

**062837 Tom:** Right, I remember the original convener pulling together, convener out at UC trying to pull together the Task Force, and wondering how that was going to work out. Ohio is an ex-officio member of the CAB, which now called the CAB. And I think that they have been



instrumental in helping DOE make decisions, not necessarily directing decisions, but helping DOE reinforce decisions that are right, that they may have questioned had we just suggested they do them. So having this group of interested stakeholders provide feedback to DOE on the activities and decisions, I think, leads, provides more credibility to the decisions, both to the DOE side and to the general public's side. If you have this board who is saying, "We really shouldn't cleanup 10 minus six because that takes us out at a 10 mile radius around the site. It doesn't make sense. 10 to minus five gets the job done, gets the real risk removed." And they also say, we are not going to do residential and we are not going to do agricultural here, DOE moved forward with that. So DOE is able to use that backing to make decisions and move forward. You know, the Native American burial stuff is the recent one that the CAB has been working on. And I'm not sure the DOE would ever get around to it without both us and the CAB providing that prodding to them forward on a decision on that. And so I think that they help DOE make decisions that we all know are right, but sometimes can take awhile to make with the bureaucracies that we deal with. And from that perspective, they've been really useful. So ...

**070034 Interviewer:** We wanna go back and just talk a little bit more generally about the ways in which a neighbor's well might get contaminated or might have gotten contaminated though the groundwater from site activities and how contamination might wind up in somebody's well. Can you explain that just a little bit?

**070055 Tom:** Well, there are a couple of important points about Fernald. One, unlike some DOE sites, the nearest neighbor is the width of the road away from the property boundary. And so you've got Willey Road, and you've got Fernald on one side and you got residents on the other. You don't get what other DOE sites, which are miles and miles wide. The other thing is that underlying Fernald is the Great Miami aquifer. And there is under certain portions of the site significant clay layers that overlie that aquifer. Those clay layers prevent contamination, were very effective at preventing contamination from getting down into the groundwater. The problem is at any point where that clay layer is breached, where it is punched through or a stream is excavated though it or is eroded down through it and the stream is on top of the aquifer, that allows contamination to get into the groundwater. So, at the site you had all these production activities including the material that is stored on Plant 1 pad or the waste pits or any other, the southern waste units where it's basically your typical hillside disposal area. In the business, everybody knows this, it's the easiest place to back your dump truck up and dump it is on the side of a hill. Well the hill is actually happened to end up being the clay-like area that I talked about protecting it, and the area at the bottom of the hill ends up being the top of the aquifer. We just completed excavation of that in the past year of that area, and the disposal activity basically they would back the dump truck up the stuff, but it ends up you were dumping product waste materials on top the aquifer. So it provided a significant ...and so, every time it rained on top of this waste the contamination would mobilize and run down into the groundwater. That was one way, waste in direct contact with groundwater. The other way that the groundwater got contaminated, like I said, was stormwater running off the site into these streams that were in contact with the aquifer and infiltrating into the aquifer. The third way that the groundwater got contaminated was in areas on site where the aquifer might have been or that clay layer was breached by activities on the site. One example of that would be in Plant 6 where the foundation of the facility was so large it was excavated through it, literally through the clay and resided right

on top the aquifer. Well, that provided a mechanism for wet operations like acid operations or spills to migrate right down to the aquifer. The same thing happened in the waste pits where the pits are basically sitting right on top of the aquifer so any leakage through the pit ends up in the aquifer, so ... Those are the three real mechanisms, through storm water, waste setting on the aquifer, and then places where the clay has been breached.

Well, the groundwater at Fernald moves basically from north to south in an easy generalization, some areas move east, but that, the easy generalization moves from north to south, along the way that the flow path of Paddy's Run does, so that contamination would move from the site to the south and immediately south was the residential properties that happened to have wells into the aquifer that had such a high yield that it provided a great residential water source from a yield perspective. So that contamination over the years migrated from Fernald down to those properties and, you know, when I first started the plume at Fernald extended a mile south of the property line. That contamination was in significant areas above what we refer to as the MCL or Maximum Contaminant Level. That is the standard for drinking water, what concentration is acceptable in drinking water. And for uranium there really isn't a finalized standard; there's a proposed standard for drinking water, which has been proposed since I started working for the agency. So, I don't know whether that's going to be finalized but that's what everybody uses and that proposed standard is 20 parts per billion of uranium in groundwater. And so, under the standard you can have 20 parts per billion of uranium in your drinking water and that would be acceptable. When those residential wells were first tested they were in the 100s of parts per billion in uranium. And so, that's the well that Lisa Crawford drank and really started the whole ball rolling and the media events and all that. So, we sampled those wells early on, found the contamination, notified the residents. Uh, there had been some early sampling that really led or even fueled the fire even more where they sampled them, they knew they were contaminated and this is where my understanding of the situation is a lot unclear, but to some extent, she was a renter and the owner of the rental property was notified and she wasn't. And so that was the really ugly part of this whole picture was that some folks knew and some folks didn't. It would appear that the DOE knew for a while before they ever told anybody. So that was what led, added fuel to the fire of the residents in the community was that some folks know and some folks didn't about the contamination.

Based on finding that, that's when the agency kicked into its enforcement program. And like I said earlier, at that time, DOE operated under something that was called sovereign immunity. And that is immunity from regulation by outside sources provided under the Atomic Energy Act, which for the sake of national security we don't need to follow those regulations 'cause we're in business to make bombs, sort of thing. So they were self-regulating and they never got inspected by the EPA's, they didn't follow those kind of rules, and they had probably what were called best management practices at that time, but those best management processes weren't necessarily consistent with the regulations. So that's when ... so under sovereign immunity they didn't get inspected, they did what they thought was best, but if what they thought was best also interfered with the doing the job that they had to do at that time, they did the job that they had to do at that time, and well, we'll deal with the environmental stuff later on maybe, or not worry about it. And so, you know, one reason the waste pits got created, as I understand it, is that they had a sister site, Weldon Springs in Missouri, and Weldon Springs started, they'd take the waste and

dry it and blow it into the silos like Silo 3. That material dried, powder-like, and was stored in there and was actually is a pretty safe waste form for long-term storage. Well, as I understand it, Weldon Springs started slurring their waste to pits, and you can slurry waste to pits a lot easier than you can dry it and store it in a silo. And so in order to keep up with the production rate of Weldon Springs, they started slurring wastes to pits, in order to keep up, and thus we got the waste pits instead of more silos with the dry waste form. Those are the kind of decisions that are made when you are operating in the purely perspective of we've got to make material to meet the national demand. And so, the sovereign immunity kept them from basically implementing the regulations as they laid on the books and implemented them as they saw fit to implement them. Until the agencies got involved and like I said took action under whatever, under all the available environmental statutes to us in order to try to get handles on them to control contamination and the way they manage their waste.

One good example is water discharge and uranium content in their water. We to this date don't have authority to regulate uranium contamination in discharge water, but early on they said, "Well, we can't regulate your uranium concentration, but we can regulate your suspended solids." So they jumped in with the Clean Water Act regulations and said you got suspended solids leaving the site, which is basically dirt that's entrained in the soil, or contaminants or stuff that's is suspended in water, and if you let the water settle for long enough those things will settle down and settle in the water bed of a stream and you kill the macro... the aquatic life that lives in the bottom of the river. So, one of the original actions as the result of our activity at the site was the installation of the stormwater retention basins. As you come in the site the giant ponds that you see there, and those are really effective in dropping the amount of contaminants in the water. So if you get the soil to drop out of the water, lo and behold a large portion of uranium will also drop out of the water and so it stays in those ponds as sediment and then they dredge the ponds every now and then to remove the contaminated sediments. So, that was one example of using available legislation that did give us authority to control contamination leaving the site, but we controlled it through controlling the suspended solids in water. So I think that provides a good example of the way ... and even today that occurs. We can't say you can't discharge y concentration of uranium. But as a part of one of the US EPA settlement with them DOE proposed reducing, they fined them or had a penalty for specific projects, and one of the DOE settlement proposals, we'll reduce our uranium discharge off the site. And so they agreed to that as part of the penalty clause, not because we had necessarily the authority to regulate discharge of uranium, but because they had to come up with projects to satisfy US EPA's requirements. And so, reducing or putting a limit on the discharge concentration was one of those proposed settlements. So now there is a discharge criteria for the site both in concentration of uranium and in pounds, total pounds or mass of uranium discharge over the course of the year. Those numbers are there but it's not because there is specific legal legislation that allows us to regulate that.

**071130 Interviewer:** So it sounds like site clean-up activities are driven both by some legislation and regulation that DOE now has to comply with and some aspects of judicial or legal agreements that are a part of litigation between DOE and state and federal regulators. Can you talk a little bit about some of the aspects of the litigation between Ohio and US EPA and the Department of Energy, especially as it relates to ecological restoration activities of the site?

**071203 Tom:** Well, there are two separate agreements on Fernald, and that's different with regard to different DOE facilities. At some DOE facilities you have a tri-party agreement and that's where there's a legal agreement between the state, federal EPA and DOE. But at Fernald, US EPA has an agreement, their Federal Facilities Agreement with DOE, and we have the consent decree, which resulted from our lawsuit with DOE as our legal document. We worked very well together to implement both those legal mandates during our cleanup of the site. Specifically, in the Fernald or Ohio EPA agreement when we sued DOE we sued them for 206 million dollars in natural resource damages under that original lawsuit. Uh, the agreement, the consent decree stayed any decision as to whether, what would happen with regard to the 206 million dollars until the remedies were selected. Natural resource damages address damages caused by contamination or acts of placement of material, of wastes, that destroy habitat or natural resources. Natural resources can include anything from a bat to groundwater to tree resources or, you know, all your bugs and bunnies, that kind of stuff. But specifically groundwater is a significant issue at this site. Like I said, the Great Miami aquifer is a substantial resource that needs to be protected for the long-term viability in these areas for drinking water. So that was a major portion of the state's claim against DOE was the groundwater contamination. But we have formed what's called a Natural Resource Trustees Council and we started that, I don't know, I think four years ago, when we started reaching the Records of Decision. And that consent decree says you'll start making decisions on natural resource damages as a result of once you get to the Records of Decisions. So you really can't decide how bad the damages have been until you decide what you're gonna do and how much contamination is there and that's sort of why it was put off until the Records of Decisions. You know, if we're going to build this giant disposal cell, well, there's more damages occurring as a result of installing that. And, as a matter of fact even with the southern waste units, I mean, that stuff was disposed, you know, fifty, forty years ago, forty years before we started excavating it and it actually had quite a significant tree coverage on it and so, you know, the destroy-it-to-save-it-concept, you know, from a biologist standpoint, you go down there and you are going to mow down a bunch of trees to go get contamination out of the way. And so you certainly had considerable habitat destruction in an attempt to get the contamination. We see today the benefits of that removal of that contamination, groundwater contamination dropped off remarkably as soon as we removed the contaminants that were sitting directly on top of that aquifer. So we understand that something that needed to happen and it was the appropriate thing to do, but in addition there was damages there and compensation needs to be made.

So the Natural Resource Trustees Group is aimed at restoring those damaged resources. And one of the major things that I had been working on since I started managing the project is settlement of the natural resource damage claim, and what we focused on is not we don't want a pay out we want restoration to be incorporated with remediation. So, when DOE decided the site would be focused on natural resource restoration, that's what we wanted to see happen so that we could come back in and restore these areas to natural areas, plant trees, native plants, and restore the area to a positive impact to the community--green space, a park, an educational facility, an environmental education focus to the site after it's all done. And so what we have been focusing on with the Trustee Council is working with CAB on future use, what kind of park and to what extent, and figuring out the best way to integrate restoration with remediation and that's how you

save money. If I'm going to go dig this hole to remediate contamination, do you really want to go and dig another hole someplace else and fill the old hole back up? That's where we all realized that the best thing to do with that hole is to turn it into a wetland, or a pond or a prairie rather than fill the hold back up and put it to grade and try to fill all the excavations in. So we've been successfully doing that kind of activity for the past two years. In areas where we do excavations rather than actively back fill them, we will contour the excavation to support a wetland or whatever kind of habitat we think's appropriate for that area. And thus that saves DOE the money of backfilling all these excavations going and buying soil off site and backfilling excavations and soil isn't created so you got to dig it up from someplace else, so in order to fix the problem here we make one somewhere else. From a Natural Resource Trustee perspective, and I'm looking out for the natural resources of the state, having to dig another hole to fill in this hole just doesn't make any sense. So the best idea at Fernald is to find ways to use the remediation to maximize our restoration potential. And that is what we've been working on.

Hopefully, in the near term we will reach a legal settlement of what we have all been doing all along anyway. So it's sort of the kind of thing where the legal agreement will catch up to us, but we are working on it already today. We have done two very successful projects, a wetland mitigation project and a demonstration forest project that was just completed this year, but in addition we are doing lots of little projects associated with construction activities, that I think will be equally important and effective, working on a day-to-day opportunity with the construction guys to result in a cleanup that's not only clean, but also environmentally friendly at the end as well. And I think that's one of the true beauties of the way the construction work is occurring at Fernald.

**071815 Interviewer:** When was this consent decree initially signed?

**071820 Tom:** I think that the consent decree was finalized in 1989 or '88, one of those two years. It has been revised subsequently to that for both RCRA-stuff, hazardous waste type activities and some other things that we at Fernald, unlike other sites, we have taken the hazardous waste site of it and rolled it into CERCLA so we say that if the CERCLA cleanup gets the job done then we will have met the hazardous waste requirements as well. And so that's kind of unique to Fernald and it provides a way of integrating the regulatory requirements rather than running two separate sets of regulatory requirements that a lot of people have a lot of heartburn over and probably appropriately so. We've been able to successfully integrate the two of them and get two cleanups for the price of one so to speak. That's been really effective.

**071912 Interviewer:** Who else is on this Natural Resource Trustee Council?

**071915 Tom:** Trustees are people who have legal standing for a resource and specifically at Fernald it's Ohio EPA, who is the state of Ohio's natural resource trustee, appointed trustee, it's the Department of Energy because they are the landholder and under federal legislation they are also a trustee. It makes for a unique situation for them where they are both the responsible party, the person who destroyed the resources and one of the trustees responsible for replacing them. So that's kind of unique, but we have successfully worked around that. And then the Department of Interior is the other trustee at this site. At some other sites you'd have, you know, if you were

at a federally recognized tribe had culturally resources on the site, they would be a trustee. If you had migratory fish on a site you'd have the NOAA, National Oceanic and Atmospheric Association, as a trustee, but at Fernald it's those three organizations and the Department of Interior is represented by the US Fish and Wildlife Service, so ...

**072028 Interviewer:** When you say in the mid to late '80s the Ohio EPA sued DOE for natural resource damages, and you mentioned ground water, what were some of the other types of damages that the Ohio EPA was seeking redress for?

**072043 Tom:** As part of the Natural Resource Trustee Council we completed what's called an impact assessment, so that's where you go out and you look at which natural resources were damaged. In looking at that primarily at Fernald the damages relate to groundwater and habitat, and the habitat impact occurs as result of modifications or destruction of habitat in order to waste place or to remove waste. Like I talked about the southern waste units where you had a nice forest cover you had to destroy to get at the waste. Another example is Paddy's Run itself, the stream, it was moving towards the waste pits at the time. So they changed the stream and channelized it, which reduces the natural flow of the stream, affects communities and stuff like that, and so they altered the habitat. And as a result of the habitat modifications you have a damage to the resource. Most of the damages, like I said, are a result of habitat modification, and contaminants being in those, but we don't see any data that suggests that populations were reduced as a result or damaged as a result of contamination. Specifically, the radionuclides at Fernald aren't ones that bio-accumulate. They are naturally occurring radionuclides, they don't bio-accumulate very much. The big bio-accumulators are fission products and those come from reactors and stuff like that. So the Hanfords and the places like that are where you get contaminants that bio-accumulate. And when I talk about bio-accumulate that means say a radionuclide is up taken by a plant, a chipmunk comes along and eats the plant, he gets a little more radionuclide that was in the plant because he concentrated a lot of plants in him. Then a hawk comes and eats the chipmunk and he gets a lot more contamination because he ate all the chipmunks that had contamination in them. So that's where it builds up the food chain and by the time it gets to the hawk, the hawk is in trouble and he can't lay eggs. So it's sort of the DDT scenario for the falcons and all the other ones, is that was a bio-accumulated chemical and so by the time it got to the falcons, they couldn't lay eggs that they wouldn't crush when they sat on them. And so, but from the radionuclide perspective, bioaccumulation really isn't an issue specifically with the kind of contaminants that are at Fernald. Those naturally occurring radionuclides don't bio-accumulate to any extent at all. So, we weren't able to document any damages and you wouldn't expect any damages to population as a result to that and the dose term, which is the radiation you get from the material just setting there. You know, if I sit here and there is a chunk of the right kind of material and can never touch it and get a dose or get radiated by it. You don't have those kinds of source terms that are providing enough dose at Fernald to affect populations either. So you can effect the populations, one, by the contaminants that are taken in and accumulate in a system, or by walking by X chunk of something and getting enough dose that it alters the genetics of the system. And we don't see either of those cases at Fernald of any substance that we've been able to document. The biggest problem that you would see at Fernald is a release of chlorine or some other typical industrial contaminant that might affect a population through toxicity. So you have chromium or something like that which is very

toxic to fish, so if you had a spill or something like that it could be a problem but like I said, we have not been able to document much along the lines of population effects. That's an argument for why Fernald would be such a natural resource restoration opportunity is you don't have these bio-accumulated contaminants, you don't have toxic metals out there in high concentrations that won't be removed. The damages are mainly habitat-specific and groundwater and surface water.

**072439 Interviewer:** Can you talk a little bit about your current job and what things you tend to do on a day-to-day basis as a site regulator. We sort of have a stereotype of a regulator walking around with a clipboard and a magnifying glass or whatever. What is sort of your typical type of activities?

**072452 Tom:** Well, I manage a group of folks who oversee the Fernald project. And there are probably six to ten of us depending on how you count heads that work on Fernald, and we have folks who are assigned to do surface water stuff and air monitoring. We have a monitoring network at the site where we do side-by-side monitoring with DOE stuff and we do independent monitoring. We collect air samples, we collect surface water samples, we collect groundwater samples, we have collected vegetation samples before from local produce vendors, and grass and stuff like that. So I have a group of people that do that monitoring. And in addition to doing the monitoring we do regulatory oversight, which is, you know, it can involve anything from sitting in your office and reading a six-volume set of documents and trying to figure, to decide whether the proposed clean-up methods are the right ones or not or what modifications need to be, to going out in the field and walking between the bulldozers and seeing what they're doing and what's being cleaned up and making sure it's being cleaned up the way they said they were going to clean it up. So, just because I get a document that says we're gonna clean it up this way doesn't necessarily mean that's the way it's gonna get done in the field. So we have folks who go out and check that. So, you know, in a typical day at Fernald we'll come down here and go to the projects that have work going on, look at that project to make sure that they are doing what they said they were doing. And in addition to doing what they said they were doing that they are applying appropriate environmental controls. And two specific controls that we heavily focus on is stormwater controls and fugitive emissions, or dust. And the reason we focus on those is that's how contaminants get off the site. We know historically contaminants got off the site by stack emissions or dust. They also got off the site by groundwater or surface water flow. So if we maintain those two aspects in the culture of Fernald, we can keep additional contaminants from moving off the site as we clean these areas up. By cleaning these areas up we have the potential to remobilize contaminants that were in place and wouldn't have been mobilized otherwise. So you have to be careful that when you do the clean-up, you don't affect that contaminant and let it get out in the environment more than it is. So, we've done a lot of educating on the site and directing and correcting for stormwater controls. And I think to date, you know, you go out there, I think when we went out there early on when they first started construction, none of their stormwater controls worked and they had problems containing stormwater and you had seen dirty, brown water running off the projects and stuff, so now we go out there, they have the silt fence installed where it is supposed to be it's done before we get there, they know we're coming. And they've got a seeding spec that uses native grasses to establish erosion control and we've moved away from the grass that everyone uses on their front lawns to stuff that actually occurred here during pioneer times, which is a significant step towards restoration. If I have to go plant

grass that grows in everybody's yard and I have to go back and kill it in order to be able to do the restoration, that's a problem. So we have been able to incorporate these native plants into their day-to-day construction activities, and so when they get done excavating an area the first thing you do is re-seed it so that it doesn't erode away, so that the water doesn't wash off of it and the dirt wash down the stream and start burying the macro invertebrates. So, we have the stormwater program that's been very effective, and we have these sediments basins that they built to capture sediment in stormwater, and we end up in the end after the construction is done, those are easily converted into wetlands or ponds and that's worked out well.

**080023 Interviewer:** As you see the next decade for Fernald, there's different projections about cleanup time frames, etc. What do you see as a couple of significant challenges for DOE and for the regulators in term of meeting Records of Decision and getting the site cleaned up along the lines that's sort of has been agreed to up to this point?

**080042 Tom:** Well, I think the challenge now and has been historically for Fernald is finances, funding. If they get the appropriate amount of funding, we can move forward. The clean-up at Fernald, the beauty of it is that the decisions have been made, the clean-up numbers are there and the sole limiting factor in most cases is dollars. So if Fernald gets the dollars we can clean it up sooner. If we don't get the dollars, it's gonna take us longer. The problem with these sites is that there is a cost, that just to turn the lights on is huge. To show up every day there is a huge cost. And for everyday you show up that dollar keeps going on. And so when you cut down the amount of funding on a site, if it can cost you 250 million just to turn on the lights and you were gonna get 300 million to work but you only get 290 million dollars, well it isn't an incremental cut across the board, what it cuts is the projects doing work. Because the 250 million dollars turned on the lights, is ..., you're gonna turn on the lights no matter what whether you're doing anything or not. So cuts in funding don't necessarily stop that day-to-day cost; they stop the work that's gonna get done. So that's the real challenge at Fernald is every time you take a hit, you take it to the real work. The benefit of it is for every dollar you get more, you're doing more work, you are not turning more lights on. And so funding is going to decide how long we are gonna be at Fernald. There's no doubt about that. There are some technical challenges, but I think they are all graspable in a near term. But, if you don't have the money then you just don't do the work and it takes longer to do the work and the overall cost goes up. When we looked at what was called the ten-year plan, in I think it was 1996 and they were going to be done by 2006, it showed ... at that time we were talking about a 25-year cleanup. The reduction in schedule to a 10-year plan showed a cost savings at 2½ billion dollars. I think under the current scenario where we're hearing that we are gonna get a 290 million flat-lined budget, we will consume most of that 2.5 billion dollars in cost savings before it's over with, we won't have that savings anymore. We will probably stretch the clean up out into the two thousand teens 15, 12, 13, take your pick. But the job can get done, the scope is understood. That's the case at Fernald, and I don't think that's the case at many sites at all, is that you know what needs to be done, and it can be done. Hanford: you know the tanks need to be cleaned up but nobody knows how to do it. So you have those problems at other sites. They haven't even defined the scope of their problems yet, so they can't move forward. So I think the challenge for Fernald in the future is doing the job, getting the money to be able to do the job. We can do the job; we just need the money to do it.



Uh, and then I think transitioning the site from a clean-up site to an environmental education resource for the area is the next big challenge. Getting over the mindset that it's so contaminated that you shouldn't be there. There are people who don't want anybody on the site even after we clean it up. Despite the fact that there are 2000 people out there today, they don't want anybody there when it's cleaned up. I understand that people have those opinions, and everybody is able to have that. That's the beauty of the country is that you can have your opinion. I hope, though, what we do out of this process is bring the next generation on not fearing Fernald and seeing it as a resource. So that's our challenge is to reach out beyond the folks who know Fernald as the nightmare, the contamination scare, the place that contaminated me, to a new generation that sees it as a resource. And I think efforts we take at Ohio EPA to do that is that we've been working with local schools to raise wildflowers. We'll go in February and plant wildflowers in tubes with them and they'll baby-sit them and we'll baby-sit them through the winter and let them get germinated, and in May we'll go back out and they'll plant those wildflowers at Fernald. And so those kids will drive by with their parents and say, look I planted those flowers. They won't see Fernald as the big ugly monster, they'll see it as a resource and they'll see it as an educational opportunity. So we are getting out to those folks early on. And I think that's one way to do it.

I think, hopefully, we are all moving in the path of environmental education, museum, whatever you want it call on site, I think that's the way we keep people understanding what's at Fernald. Because we will have a disposal cell here and we will need people to remember that's there and we will need people to remember that needs maintenance and monitoring for a long, long, long, time, longer than any of us can probably imagine. So the museum, and museums are one of those things that stay around for a long, long, time. They don't leave once they're established, generally. So if it provides that education to the community so that we developed an institutional knowledge base within the community about what's at Fernald and what needs to be done, then we'll have made a significant step towards making sure that Fernald remains protected. And that it's used for a good contribution to the community. And it becomes a source for school kids to come in and learn about environmental education, learn about groundwater contamination, and how you need to protect groundwater. Learn about native plants and how important they are to maintaining the natural environment that we have. So I think we have a challenge to change the mindset, but also presents an incredible opportunity for the future.

**080614 Interviewer:** Back on the funding for one sec, if you had a free shot at addressing Congress and talking about why, either from a cost saving standpoint or just sort of as a moral imperative or social need, why the nuclear weapons complex needs to get cleaned up to the best extent possible and Fernald, you know, is a place where that should happen also. What would be a kind of statement along those lines about the need to not give short shrift to the clean-up budgets across the complex?

**080653 Tom:** I think if you look at the effort that was put into making the bomb, it's sort of amazing the lack of focus made to cleaning up after the bomb. I mean it's not nearly ..., you look at what they did in such a short time and you go, "Why does it take us forever to do anything?" Compared to what they are able to accomplish in such a short time. And I think it's because they were driven, they had a mission, and they were being told that this is really where

we are going. I am not sure we see that kind of commitment both to ask for the dollars, for DOE to ask for the dollars nor for Congress to say, yes we are committed to cleaning them up. So we see this, lots of other social issues that take money out of the federal budget that they see as priorities over cleaning up the sites. The argument for Fernald is the one I said: "We know what the job is; it's doable and it's purely funding-limited." It's the limiting factor at Fernald. That DOE can get out of that-turn-the-lights-on-cost by doing the job sooner. That turn-the-lights-on-cost will happen every year that Fernald continues to operate. And it doesn't go away until you are done. It may go down a little bit, but I think we'll be amazed how many people are working here the last year that Fernald is getting cleaned up. It may well be, you know, we laugh at the office that we think there may well be 2,000 people there the day we walk out of the site. And so I think that those costs are going to continue until we clean up the site. The only way to save those costs is to do it quicker. The argument is that we know what we've got to do, we just need the money to do it.

**080830 Interviewer:** Back on this creating a positive community resource from Fernald site, Fernald property, there is some talk now about building a community center for education, and historic preservation. What role do you think the local community, area residents and interested stakeholders need to play to make that happen?

**080855 Tom:** Well, you know, for anything to happen at DOE it requires pressure from the local communities, and pressure from those local communities through their Congressmen and stuff like that. So I think that both them pushing us to do it, pushing DOE to do it. I think that you now the state's perspective is that we have been behind the idea since day one, if not one of the original originators of the idea. And so the community is gonna need to be there in order to push DOE in the right direction to do it. It's also gonna be important for the community to help us decide what it looks like, or what should be in it, and how it can be a resource. I don't want to see us build something that no one wants to go to or that only has information that meets the needs of one small group. I think having the schools involved to know, you know, what's going to be good for a third grade teacher to take a busload of kids down to the site to see. And it's definitely not the same thing that a busload of high school kids are gonna want to see or even somebody who wants to go for a walk, you know, with their dog on a Saturday afternoon. So how we make a site that meets those needs will only be understood by that community interaction. That's the role I see them playing is helping us to design a site that's most usable to the community.

**081012 Interviewer:** Uh, just a few wrap up questions, I got here at the end of my list. Sort of ask you to reflect over your 10-year period at the site. From your perspective, can you identify one thing that is the greatest positive thing that's happened, or greatest triumph in terms of interactions between the regulators, and DOE, and community, then one thing that you see as a disappointment or a challenge that is still out there to be met in the future?

**081044 Tom:** I think the success is our ability to work together. When I started, there was only the ability to disagree. At this point, it's working together to figure the best way to do it. It's certainly, very seldom is there disagreement, and it's disagreement on the best way to implement it, it's not disagreement on whether to do it or not in most cases. And so we have a very good

working relationship now. Most of the folks I see not only as peers but as friends. But, challenges, I think goes back to the funding issue. You know we're there, and we're ready to go, we thought we were going and all of a sudden, well, we ain't going to have the money that we told you we will have a baseline on. So everybody's moving toward this target, and then the target gets pushed out further away and then you know, keep racing towards the same target, but after awhile if that cheese gets pulled further and further away from you people will start thinking, "Well, we are really not here to clean things up. Maybe it's just a jobs program." Having people focused on getting done is very important, otherwise they focus on whatever they can do to delay it. There are plenty of things on a DOE site that you can do to delay progress. And so keeping a focus on moving forward and everybody knowing that's our job is to get this thing closed out and go and find another one to start on is a challenge. And the fact that, you know, you get smacked upside the head saying, well, maybe we're not gonna get that funding that we said were gonna get and we're gonna push it out, you know, we're gonna double the length of time that we thought it'd take to get it done. That's demoralizing to the workforce, maybe it's not demo..., maybe they like it, I don't know, but it certainly is from our side frustrating to see that the end was there and it was certainly within reach and now it's a little further away. But I think we'll do it, and it will be ... it's just gonna take a little longer, and it's still gonna be a positive impact for the community when we're done with it, so ...

**081238 Interviewer:** Is the time delay, is that causing any additional risk factors or not?

**081245 Tom:** No, I think that to date our priority has always been addressing the biggest risk factors and I don't think that we will have ... we're working on ... the waste pits are currently under excavation and they will continue to be a priority project to ship that material off site. We've got the worst stuff up off the aquifer, like I talking about. K-65 silos were moving forward on and they will move forward as fast as the designs allow them to move forward. I don't think that there is more risk from delay. It just takes longer and you lose good people in the process because you have less money to keep the good people around and less work and so, people aren't working, the good folks move on to the next job. And we just don't wanna see ..., that's a problem that we need to keep an eye on, so. But no, I don't think there is much risk in the delay, just from a dollar perspective it's risky.

**081341 Interviewer:** Last question on my list. If you come back here with kids and grandkids, let's say in 15, 20, 30 years from now back in this area, what would you like to see out here. Sort of an ideal scenario.

**081357 Tom:** I think a museum that tells the story of Fernald, but also educates about environmental stuff in general. I think a series of paths and boardwalks that folks can walk on and see the fully developed natural resources of the site twenty years from now. I think early on were going to have boardwalks going through sapling groves, or small tree groves, that it won't be quite as impressive. But 20 or 30 years from now, it's gonna be quite impressive, I think. Hopefully, it'll be an asset, a green gem in the community, which we know is expanding this way and the housing developments and businesses are popping up exponentially around it. And I think, you know, 20 or 30 years from now, this may be the green space in this area in association with the Hamilton County parks. I think the importance of it it's only gonna get

more and more as the area gets more and more developed. 20 or 30 years from now folks are really going to see this is an asset to the community and that's what I hope to see.

**081458 Interviewer:** What about lessons learned for society that places like Fernald that hopefully in the future will be cleaned up. What sorts of lessons for future generations should those leave other than natural resources restoration is good, but any other lessons?

**081516 Tom:** That stakeholder involvement is necessary to be successful and to address the needs of everybody. Without it you develop something that probably isn't workable or is certainly going to be fought the whole way. We see that at other sites where you don't have a successful public involvement process. Public involvement in decision-making is critical to making good decisions. And, you know, if we make these decisions for national defense and national issues, we need to make them a priority to solve the problems created by 'em, just the similar priorities. Those are the two issues I see as the biggest lessons learned out of this. And that working together is a whole lot more productive than fighting each other the whole way. The progress we made in the past four years is huge compared to the progress made in the late '80s or early '90s.

**081627 Interviewer 2:** It sounds to me like that thinks are going great. I don't really see why I need to worry. You're taking care of everything, Tom. You're doing a great job. It sounds like I'm gonna tell my kids everything is fine and maybe this should be a chapter of history that should be forgotten. What would you say to someone?

**081644 Tom:** Well, we don't want to forget Fernald because of the lessons that we've learned at it that we talked about a little bit ago. Importance of public involvement, the importance of working together instead of fighting the whole way. But more importantly, we do not want to forget about Fernald because we're gonna have a disposal cell out there with 2½ million yards of waste in it that is gonna have to be monitored and maintenance conducted on it for hundreds, thousands of years, 'cause that stuff doesn't get any better over time. It's not like an organic contaminant that degrades over time. The law of physics says that stuff is gonna be there and stay there and it's not going to degrade or go away. So we have to make sure that that disposal cell operates the way it was supposed to operate for a very long time. That's why we don't want to forget about Fernald. Otherwise, we'll be living Fernald over again. We'll be out here cleaning it up. We'll have public problems; we'll have contamination and stuff like that. That's why we cannot forget about it.

**081740 Interviewer:** That gets back to your earlier ironic thing about successful public involvement in terms of reducing public alarm may lead to less participation, at certain kinds of activity. Where does education play a role, environmental and historical education, play a role in maybe maintaining the public vigilance?

**081805 Tom:** I think that's where you go. I think you have to go from public involvement to education. And that was sort of something that came out of the SSAB workshop in Denver, I think, was that that next step is education. When you can't get them to come to your meetings anymore, then you gotta go to them. There've been people complaining that DOE doesn't get

more people to come to their meetings. Well, you know, from my perspective they make a genuine effort to invite folks. Folks just don't come, and so our only way to continue to carry on the message about Fernald is through education as I see, or the most effective way moving forward. Because there isn't the scare factor there anymore. Like she said that to some extent, you should be comfortable that what is being done at Fernald is making it a safer place and it will be a safe place when we're done. But we also can't forget about it. So the education is the only way to get that word out there to folks. So that's why a museum or educational facility provides such a unique opportunity to bring folks in, educate them about what happened here, educate them about the environment. And send them home remembering that this was a very bad place at one point in time and we need to make sure that it stays the way it is, otherwise it has the potential to be a bad place again. And that's the same way for all the DOE sites, or at least the large majority of them, is that they are gonna have that challenge long-term is to keep an awareness through education, not necessarily involvement.

**081945 Interviewer:** Do you recall ever talking to someone about ..., that was about two years ago when they decided to start holding community meetings on site, this was cost saving things, really, but that kind of notions of a stigma or I don't wanna collect beyond the property because I might glow in the dark or whatever, but at some point I think creating opportunities for people to come whether it's gonna be walking, hiking path or recreation center or what ever, that's gonna come a long way to reducing the stigma?

**082018 Tom:** I don't think that we're going solve the stigma issue in this generation. They lived it, they saw it everyday, they drunk the water out of it. I don't think that we're gonna be able to change their minds. And that's acceptable to me, if I was drinking that water I probably would never buy anyone's story, either. And so, but the next generation is what we have to focus on. They're the ones that are gonna see it as a resource, when all the houses are here, and all the developments are here and a Wendy's on every corner and it's the only green space in town.

**082050 Interviewer 2:** When you say resource, what do you mean? What kind of resource, in terms of a historical perspective?

**082054 Tom:** Well, I think it can provide a resource in several aspects. The environmental education opportunity is one. A place where schools can bring kids and teach them about groundwater contamination, surface water, what kinds of animals live in surface water, why do you need wetlands, why do they provide such good water filtration, and provide ground water infiltration, treatment, they are like the kidneys of the surface water system. Also, what happened at Fernald, you know. Why did we build bomb material here? What did these guys do? What were these guys exposed to? I mean, they sacrificed a lot for their country. So it will provide not only these educational opportunities, but just the value of green space if nothing else, which, you know, if you are in a developed area, lack of green space is a substantial issue and getting more and more so in our society because we just keep moving those suburbs out further and further and consuming green space. And so, you know, if you are from this area, you know it's happening. All you have to do is take a drive down New Haven Road and see the houses popping up. And so I think it's quite clear that in the not-so-distant future and we don't have to wait 20 years to I see this be a valuable piece of green space. Ten years from now or five years

from now, it may well be well consumed by development of one type or another. I think that the resource to the community when I talk about it, I talk about both the educational aspect of it, from the environmental, historical, and we didn't even talk about the cultural aspect of it; the whole history of the Native Americans, which were very, very active in this area. Talk about hundreds of burials within ..., thousands of burials within a mile of Fernald probably; active sites on the Fernald property; Native American re-interment which will probably occur on the site. That perspective of the cultural resources that occur in the area that by the time ten years from now may well all be destroyed. The importance of having one place where folks can go and see those resources and understand why they were important, and what was here, how this area was a part of the historic, you know, population center in the area or prehistoric population center, I guess, is the right word. How that population occurred here. I think that's another resource that hasn't been focused on much, but will be probably the big draw for the kids if I had to guess right. So ...

**082327 Interviewer 2:** One last question, you've touched it already, but again to think about this perspective. You are now working at the Ohio EPA and in a position where you really are dialoguing with the community, and they are involved and you say it's important. When you first came into the position, you said there were the other DOE types people, can you explain what you thought, a little bit more about the secrecy and how that transition happened, in terms of, that must have been really hard for some of those old-timers to think about community involvement and stakeholders? (**Tom:** Yeah, well those guys ...) What did you think about them? How did you deal with that as a regulator? That must have been, was a challenge for you or ?.

**082403 Tom:** It was always a challenge. Two sides of the challenge, the newer one's a pretty interesting one. But, historically, you know, those guys weren't allowed to go home and tell their wives what they did here. So, telling Joe Blow, who walks up to a public meeting what they did here was pretty tough for them. And so, moving from that culture of secrecy, where you can't even tell the folks you live with what's going on to telling anybody who shows up at the front gate what's going on is a huge transition. And from our, from the regulator perspective, everything in our office is public record, so you can come in and get it when ever you want it. So we were coming from a culture where it's all open, dealing with these guys whose culture was all closed, so we definitely had different perspectives on the way the world should work. And from my perspective, it was a huge learning curve right off the bat trying to deal with all these different facets of the pie, and then the public just screaming mad, I mean, they're mad about everything. Mad about contamination, mad about not being told, mad about, you know, helicopters flew over last night, and it must have been you, and you know, that kind of stuff. Made a huge transition from that. You don't see, you know, every time there's a balloon in the sky these days it's not DOE's fault now. But you had all those perspectives, and from that perspective it certainly was an interesting time in the early '90s as to how the site was transitioning. I think the transition occurred just because of a change of management at DOE. You know, if you've spent 30 years playing the secrecy game, breaking it ain't easy. I mean you cannot walk away from it very easily. And so, I think you had the Jack Craigs of the world come in and just change the way that Fernald worked. Through the transition of DOE management, moving folks in who weren't here making material, weren't here running the secrecy. And,

actually there weren't many DOE people here actually when they were a production facility. There were only one or two or three DOE folks on the site at the time of operation. So, more DOE involvement, and you know, development of a public information officer for DOE, those kind of things. Slow and steady culture change for the organization, and then saying, "Hey, guess what, we ain't going to make anymore products here, we're cleaning up." Those ..., that decision that Fernald is not gonna go back to production, we're not gonna start the secrecy thing back up again, we are done and we're gonna clean it up, that was a huge change in culture. And once you decided they were not gonna fire this baby back up then everybody was able to move forward with the concept that we are here to clean it up and everybody needs to know what's here.

**082706 Interviewer 2:** But you were here during that transition. Weren't they embarrassed? Did you find resistance in your own work and how did you work with that?

**082709 Tom:** They were resistant, no doubt about it. And uh, you know, they were only worn down through continued litigation, I would say, and that was a very tenacious US EPA-RPM (Remedial Project Manager), uh, why can't I think of her name, but anyway, maybe it will come to me in a minute, but she was gracious, she would to a meeting and just tear people apart and send them back home packing their bags. It was quite interesting to sit there and be the new guy on the block and watch her take them apart. But the fact was that they were pretty self-righteous folks, thinking that they were here protecting you and me and what we were doing. It didn't matter that we were pouring into the ground out back. We were making nuclear material. And so, they needed it because they had been self-regulating all that time and I don't think we'd be where we are today if Katherine McCord wasn't doing that. Doing the way she was. Now, I'm not sure that it would be productive to have that same personality today, because it doesn't do any good to belittle people when you're working together well. At that time, they needed taken off a step or two. And it happened on a frequent basis, but so it was certainly an interesting thing to step into as the new guy on the block to see these shouting matches at the public meetings and the berating that occurred at the technical meetings. That kind of transition, those folks who, you either changed or you left. That was sort of what had to happen and I think that most of them left. There aren't too many folks even within the contractor organization that are still around that you know, you've got one or two and they were able to change; the Dennis Carrs, I think he did an interview already, he was here all the way through it, and he lived the transition. And you know, he would probably say that the public involvement was huge in that transition.

**082914 Interviewer:** But when the site production stopped in 1989 it was initially on a temporary basis.

**082918 Tom:** Yes that's right. Though you probably couldn't ever have started it up if you had to. But that was the line, was that we're just temporarily shutting down while we evaluate our environmental stuff. And then in the 1990-1991 time frame, they made the official announcement that the site was closed, and that's what allowed them to move forward with actually doing clean-up is that announcement that we're done and we're moving forward. We're moving forward with clean-up and we're not going to turn the switches back on. Turning the switches off was probably one of the biggest problems that ever happened was the day they went

in and threw the switch and the whole line froze up. I mean you have ..., it's a liquid metal process, and when you turn that switch off, everything goes "prccc" hard in lines. So we've spent years and millions of dollars taking the lines back apart to take the material that was holed up in the process, you know. My understanding is that they said "We're stopping" and someone went "shoonk," and down went the system. And, you know, if you had uranium product in a line, that's where it sat. And so, that's probably one of the best lessons for any other DOE facility that's going through shutdown is don't ever throw that switch like that. Run that product all the way through the line until everything is empty and then throw the switch. So, you don't have to have a safe shutdown product like where we did where we had to send people inside of the equipment and chip out the product that's inside of it, so. I don't think they probably could have ever turned the switch back on even if they wanted to. Maybe that's what led them to decide it, one of the contributing factors. But once you have that stuff hold up and freeze up in there you're done for, so. And then that mentality of trying to start up processes like that, there are processes on site that can treat that material, but trying to get DOE to turn them back on then, their whole safety culture kicks in and goes, "Well we can't do that piece of equipment 'cause it's not safe anymore, it's not meeting today's standards." So we can't turn that switch back on. So we went through a long process with uranyl nitrate hexahydrate tanks, which is UNH, it's uranium in a nitric acid solution. You had these giant tanks that were leaking this stuff. And it was dripping, we had five gallon buckets under all the tanks and it was a hazardous waste violation. So we were saying treat it, treat it, treat it, and they were trying to get a facility together that would be able to treat it.