

## **NOTICE**

This transcript contains a Living History Interview conducted and prepared as part of the Fernald Living History Project. The narrations, descriptions, perceptions, opinions and beliefs expressed in this interview are solely those of the interviewee(s) and are not to be attributed directly or indirectly, to the United States Government, to the U.S. Department of Energy, to Fluor Daniel, Inc., to any Fluor Daniel Fernald teaming partner company, to any of their officers or employees, to the Fernald Living History Project or to anyone associated with the Fernald Living History Project.

**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

Name: Dave Brettschneider

Date Interviewed: 4/26/00

Date Transcribed: 7/10/00

Tape: 105

Project Number 20012

---

**Tape FLHP0256**

01:01:07

Q:

All right, the first question is always the hardest. When just need give, have you give us your name and spell it so we get it correct.

A:

Oh, okay. It's David Brettschneider. It's B-R-E-T-T-S-C-H-N-E-I-D-E-R.

Q:

Great, and what is your official title here?

A:

I guess it would be Project Manager of Aquifer Restoration Wastewater Project.

Q:

Great, terrific. We're going to start with a little bit of background, first of all, like sort of where were you born, where did you go ahhhh, reflector (directed to camera crew). We probably, you know what? Put another bag on it. (Laughing) see something that could potentially be a problem there.

A:

That's a good wind catcher.

01:01:50

Q:

It is a good wind catcher; it's like a big sail.

(Cameraman: put it on the short leg.)

A:

Yeah, on this side over here (looking over shoulder).

Q:

Yup, I knew that was potentially a problem. You might want just spot that throughout the entire interview. Just make sure it doesn't blow over. That would be great it went over the process side.

A:

Oh yeah, there you go. Yeah, we've got enough waste over there now we don't need more (laughing).

Q:

You might just want to stay and support it.

**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

01:02:16

Q:

Yeah, where you were born, where you went to school, what you studied.

A:

Well, actually, I'm a native Cincinnati. I've lived here all my life and I went to Western Hills High School and after that I went to University of Cincinnati and, for a degree in Civil Engineering. Bachelor of Science in Civil Engineering and then I worked consulting firm here in Cincinnati for about 15 years before I came here.

A:

And during that time I went back to night school and accomplished most of a masters program in Environmental Engineering. I didn't complete my thesis, so I never got my degree, but I did go through the course work. And then I came here in what, I guess September of 1986. And I've been here in various positions since that time.

01:03:05

Q:

And how did you get your job at Fernald?

A:

Well actually I worked with \_\_\_\_\_ Incorporated and was, consulting firm here in Cincinnati and \_\_\_\_\_ was selected to do what, I guess the EHSI project. Which is the project to increase production and environmental, mostly do the environmental work along with that project.

01:03:30

A:

And a friend, one of the fellows I used to work with was out here and he called me and he said, "Hey, you know, we'd like to have somebody on the other side of the coin that's setting up the projects and laying out the work for the AE firm and stuff like that." And that sounded a little more exciting. Hadn't been on that side of it where actually determined the work scopes.

A:

And, so I said yeah, I wouldn't mind giving it a try. So I put my application in and then slowly, whatever, came out here and joined the team.

Q:

So that was really still during the process years. What was your first impression of the site when you got here?

01:04:05

A:

Well, it was, yeah it was during the production years. Matter of fact one of my first, well one of the projects I was responsible for was kind of supporting, if you would, the Environmental Impact

**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

Statement that was put together that was a global picture of how we could increase production yet doing it in an environmental safe manner.

A:

So that was kind of putting the whole puzzle together and by doing that I really got the opportunity to understand the whole plant, because I had to get into the air discharges, the water discharges, understand the production and so forth. So it was kind of a unique opportunity I think to get in on the overall plan. Because I had to understand the overall picture to put the document together and support it. And so that's how I, it was interesting.

01:04:57

A:

I came down originally to do the wastewater, help set up. They were getting into a lot of wastewater projects, things like that and I had done that in consulting engineering so it was kind of, you know, taken off from what I had all ready been doing in my career.

01:05:12

Q:

Now you came here the same year as Dennis Carr then? I think he got here in 1986.

A:

That probably, I was thinking he was, no he was here before I was.

Q:

Was he, maybe it was '84.

A:

Yeah, he had done some of the air permitting and stuff already on board. Yeah.

01:05:28

Q:

Cool. Now I know that like between 1984 and 1986, there was a lot of stuff going on with Fernald because of the dust collector releases (Comment: right) and those kinds of things (Comment: right). What did they tell you about all that, all those problems when you first got here?

A:

Not much (laughing), but of course in doing the Environmental Impact Statement that became a major part of the emphasis, so I had a pretty good understanding of what had happened here and so forth. So yeah, and I've worked on quite a few other chemical plants and things like that and obviously air discharges, things like that were a common, common problem in a lot of these plants.

01:06:09

A:

You know, it was just a, and the same thing with the stormwater runoff, the contamination, a lot of the

## FERNALD LIVING HISTORY PROJECT

### Transcript

plume that we ended up finding was from stormwater runoff and you know, we're talking probably runoff that wasn't much more than a part per million. Which by today's standards since cleanup levels in the parts per billion, part per million back in the you know, 20 years ago was about as much as you could measure.

A:

Part per million was pretty small and so a lot of plants had the same problem with stormwater runoff, you know, just it was a common problem throughout the industry, throughout the chemical industries. So

what we had here probably wasn't that unique from what I had seen at Union Carbide and \_\_\_\_\_ and other plants that I've worked at, you know. So it was, it was, because it was uranium I think it obviously became more political or whatever, but it was a standard problem throughout the industries, you know.

01:07:11

Q:

And let's talk a little bit about the changes in standards too, 'cause I know I talked to some engineers who said, "Well gosh, before you could spill uranium and pick it up with a shovel." And now you know, things are so much different. What exactly drove the changes in standards?

A:

Technology; technology and an understanding of the risks that were involved. Again I can remember jobs that you know, when I first got into environmental work 25 years ago you know, you think part per million, wow! It's you know, that's pretty small, small increment, but nowadays you know, we're talking, you know, our cleanup standard for the groundwater is 20 parts per billion. So it's, it's just a lot of it's technology. The ability to measure down to those levels.

01:07:52

A:

And then of course since then over the last 20 years there's been a lot of risks analysis, a lot of studies and a lot more understanding of you know, even small concentrations of some of these chemicals and stuff are a problem. And that's, that's basically how we got to where we are. And I'm sure it will, you know, you've seen some stuff that probably will be in the parts per whatever (chuckles). Even smaller, so as time goes on.

Q:

Tell us a little bit too about working in those early years in the late '80s with I guess with what you call like "watchdog" organizations like the EPA.

A:

Well, when I first came here we hadn't been here very long and you know, that was, my impression was that the plant was pretty much closed to the EPA. They didn't really have much to do with it. And I guess the State of Ohio, with the dust collector I guess, started to get into it and I came, and after I was here, I don't know. Probably less than a year, I got involved with the EP-, the Ohio EPA came out with what they called the Director's Findings and Orders.

**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

01:09:00

A:

And they came at us and said that you know, you guys got to fix this and do this and so forth. And I kind of got in the middle of all that negotiations and so forth, and negotiating because they came out and said you know, you gotta do it tomorrow. And you know, gee you can do things quickly but not that quickly and especially with the government funding and the process it takes to fund these projects.

A:

So, I got involved in negotiating you know, what were reasonable schedules and what would it take to accomplish that and that's mostly from the water side. I didn't get in on the RCRA side. I was involved in the negotiations but I mostly did the project side. And there were such things as expanding the

stormwater retention basin to handle a 10-year, 24-hour storm. There were problems with the Bio-Surge Lagoon, the liner was leaking, so we had to back in there and repair it.

01:09:48

A:

And actually we upgraded it to become basically an RCRA-lined pit. It's got three liners on it just to, so environmental concerns of what we had there. So I got involved on the water side in negotiating the projects and stuff. And with that we had to, we started what we called, let's see what were they called? I guess, Technical Review Meetings or, or whatever.

A:

And basically I had to present quite a bit of information to the regulators, you know. To give them a better understanding of what our processes were. And then of course, what I was envisioning, where we would take these projects and what kind of projects would be involved and, and what it would take to address their concerns.

A:

And then give them updates as we got into the projects of what the status was and how these projects were going, and the schedules and so forth and so on. So we, I think we had monthly, monthly meetings with the regulators where we would present lots of information to them and they would ask many questions and next month we would have to search out those answers.

01:10:54

A:

So a lot of questioning and answering and getting them to understand what we were involved with here in the big picture.

(Tape cuts out and begins again)

Q:

You sure you're not getting wind noise (directed to cameraman).

(Cameraman: no, not really)

**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

Q:  
Okay, cool. I'm kind of trying to.

(Cameraman: no everything's pretty cool)

01:11:09

Q:  
Cool, all right (directed to cameraman). Tell us, besides the Ohio EPA and the national EPA, the US EPA (Comment: US EPA) what other regulators did you work with at that time?

01:11:23

A:  
I think what was pretty much the extent, I think, I mean, obviously DOE had had quarter people in here. I mean, like the Environmental Impact Statement, I made quite a few trips up to Washington D.C. and had

to meet with the people up there who were reviewing the document. And lawyers and stuff, you know, but basically between the DOE, US EPA and the Ohio EPA.

A:  
You know, I think the Department, Ohio Department of Health was involved a little bit, but I didn't really work with them too much. But they were, I know, concerned about the uranium that, and the aquifer and the \_\_\_\_\_ property houses and stuff like that. But I think from a regulatory standpoint that was basically those two.

Q:  
And what was the \_\_\_\_\_ test for the Environmental Impact Statement?

01:12:07

A:  
Well, basically what had happened is there was quite an array of projects to upgrade. Actually increase production at this site and then there was a lot of environmental projects to address the air pollution with the contamination, you know with the air deposition that had occurred over at Plant 9, and some of the other things.

A:  
And the idea was to umbrella, put the whole thing together and see how, if we had sufficient environmental aspects to each one of those projects that would address the additional air discharges, the additional water discharges that result from the increase in production. So it was just an environmental impact, just look at the whole thing as a total picture. Put it all together and make sure environmental, you're, you're sound. That what you're producing is within the limits, discharge limits, and so forth. So that was what it was for.

01:13:06

Q:

## FERNALD LIVING HISTORY PROJECT

### Transcript

Now on a real basic level, 'cause I mean, we're not sure who the audience is gonna be for this documentary all the time, how did the uranium get into the aquifer? And can you explain a little bit what the aquifer is and the extent of the contamination?

A:

Yeah, basically the major source of the uranium in the aquifer is from stormwater runoff, okay. The air deposition from the, from the stacks and stuff would get on the ground and then the water, stormwater would come and kind of wash, wash it off, dissolve it and take it on down, down stream. And the site itself is over a fairly thick a glacial till, a clay more or less of similar, fairly impervious for soil; a fairly impervious layer.

01:14:02

A:

But once you get down to the south and over to the, by Paddy's Run Creek, those, those strained areas have eroded that till so that they're actually down to the underlying sand and gravel aquifer. The sand and gravel aquifer was of course brought in when the glaciers came in. Glaciers came in down to this point and basically ended at this point and they dumped all the stone and stuff, the sand that was produced, that was, as it ground along and produced the sand and gravel.

01:14:38

A:

That pushed it along in front of the glaciers and then that was pretty much deposited along this whole area. And that's indeed why the aquifer is here, cause it's, within that sand and gravel there's void spaces and those void spaces are filled with the, with the a, with water and that's really what the aquifer is. It's, it's the filling of those voids within the sand and gravel with water and of course with the Great Miami River right there, they kind of work together.

A:

The river feeds the aquifer in dry times and when the river's dry. I'm sorry, during wet times the river fills the aquifer and kind of works with the aquifer along with whatever falls on the ground reaching down in there. And then at dry season the aquifer kind of feeds the river, so the river stays wet all the time for that reason, you know, it doesn't go dry.

01:15:30

A:

But ah, basically the contamination got there, most of the sources we've seen, the south plume which is the largest of the contamination area which is to the south of us is where what they call the storm \_\_\_\_\_ fall ditch went down and then broke through that glacier till. And kept flowing down into Paddy's Run, but during, during the storm flow and particularly during dry flows when maybe there's residual coming off the plant, that would basically make it through that sand and gravel and kind of do a nosedive down into the aquifer.

A:

So, the major source, and then on the east side we have what we call the Pilot Plant drainage ditch. And up in the waste pit area there were various runoff surfaces and most of that was, was you know,



**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

again these less than parts per million runoff which didn't seem high back in years ago, but it ended up being a problem.

01:16:21

A:

And again it's experienced by most chemical plants, it's a typical thing and it ran off into the, into these drainage ditches and then down, down into the aquifer. So it, and again it was air deposition from the stacks that got onto the ground. And then it was picked up and washed, washed down and there were spills maybe that weren't cleaned up in the past or something or weren't totally cleaned up. And a certain amount would make it into the ground and, you know, that's true around Plant 2/3 and 6.

A:

You would get you know, spills from the processing, some of the process water would be dumped onto the ground and the floors were such that you know, it would seep maybe through the brick tile. Even though they had acid brick on the floor and stuff like that, some of the water would leach down into the ground and eventually over time it became a problem and so forth so.

01:17:13

Q:

So, in your estimation how dangerous is it to the surrounding community?

A:

Well, it's, that's hard to say, back, back at the time, you know, relative now or back when we started? When we started, yeah there was a concern because there were some people that were drinking that water and that, that needed to be fixed. But there weren't a whole lot of people drinking it but it again it was migrating you know, off, farther down with time it does, it does migrate.

01:17:50

A:

And so it needed to be addressed, you know, we don't want people drinking that water. Of course now we've got measures in place that have addressed all that so that nobody is drinking it anymore. But at the time back at the beginning, when kind of things started it became a big problem. There was, you know, people were drinking it and that was a problem.

Q:

Is that real loud (directed to cameraman)?

(Cameraman: no, it was a little, I could never not understand what he was saying. It wasn't that loud)

Q:

That was like really important stuff you were talking about, so I'm going to ask you that question again. What you said was great (laughing) so I mean you can just reiterate pretty much what you just said (Comment: all right). Okay, I'm just gonna ask you, I'll put that question to you again. (Comment: okay). Answer it whenever, however you can - In your estimation how, how dangerous it

**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

that to the surrounding community?

01:18:35

A:

Well, it's dangerous in the aspect that it's above what we would consider to be the drinking water level. And again, that gets complicated in the fact that the drinking water level is based on the fact that the average person drinks two liters of water a day over a period of a life expectancy of 60 years now. You know, most of us don't drink water in a specific area, but those that live here do.

A:

But so the people that lived here yeah, it was a concern because they did drink the water and it was above what we think will become, it's still not a fixed drinking water standard. They're still working on it but it appears that the drinking water standard will be somewhere around 20 parts per billion of the uranium.

01:19:21

A:

And certainly within the plume there were lots of areas that were above that 20 parts per billion, so yeah, there was a concern that those, some people were drinking it and if we stopped, if we didn't stop the migration of it there would be more people drinking it. So we did have to address the problem, yes. It needed to be addressed.

01:19:39

Q:

Let's talk about dealing with the public in the late '80s. I know that we had a lot of public meetings and those types of things (Comment: yes we did) were you involved in that?

A:

Yes I was.

Q:

Tell me the reaction of those folks throughout the process of finding out that there was contamination in their wells, and then fixing the problem.

01:19:58

A:

Well, I think at, at first the public meetings were a little bit, what controversial or there was a lot of strong public opinion, I mean, people were back then, let's face it what was going on here was pretty secretive in the sense that it wasn't just general knowledge. And I think to all of a sudden, very quickly find out that the contamination was there and not to have understood that it was creeping or coming in that direction or whatever, I think the people were pretty upset.

01:20:29

A:

You know, and they took it pretty hard and it was you know, there was some strong words said and there was, and so forth. And let's face it the DOE had been secretive about what was going on here, so

**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

the public didn't know much. So all of a sudden all the information became public and then it was a case of educating everybody and explaining it and of course studying it so we really understood what, what had happened or what the extent of what had happened really was.

A:

So, as those meetings went on then I think they became more technical in explaining what had happened and what we were doing about it to fix it and of course then we were trying to, to do the remedial investigation studies and understand how far the contamination had gone. And looking into, okay what would we do to fix it because it needed to be fixed and it needed to be addressed.

01:21:22

A:

So, you know, at first they were, it was kind of hold on to your, hold on to your hat it was, it was a little bit, you never knew quite what was gonna happen. But then I think that once people realized that the people that were involved in those meetings and they are now, were interested in the cleanup and interested in, in fixing what was perceived to be wrong and I think was wrong, to fix it. You know, then I think the meetings became more productive and more positive and let's get the job done type thing, so.

Q:

So, one step in the process of fixing this whole problem was to find bottled water to a lot of folks who lived in the area.

A:

Yeah, that again, I don't exactly remember the time frame but there was, I was pulled into several meetings where someone had requested bottled water at one of the residents and there was you know, there was, it was a little controversial 'cause it was like well, you know that's.

(Cameraman: stop it - 'cause that's really irritating)

Q:

I'll put that question to you again.

A:

Yeah, you'll have to. I already forgot (laughing).

01:22:32

Q:

One of the steps in the process of fixing the problems was supplying bottled water to a number of residents in the area. Can you just tell us about that a little bit?

A:

Yeah, what had happened, I was pulled into a couple of meetings where you know, one of the, one of the off-site residents had requested, you know, they felt that they were entitled, they didn't want to be drinking the water since we had began to understand the concerns and so forth. And you know, it was

**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

a little controversial, do you set a precedence, you know, how are you going to handle this and so forth.

01:23:01

A:

And at that point I was responsible for the, what we called Operable Unit 5 and that included the groundwater cleanup, so after being in a couple of these meetings I thought maybe it was my responsibility to kind of set up what needed to be done. So, Steve Overjohn, who used to work here worked with me, and myself, we kind of put together a big picture of saying, you know, let's come up with a plan and a policy.

A:

Because we can't just keep handling these on a one-by-one basis, I thought we should take a proactive way of doing things and say, "Okay, let's set a criteria and let's set a basis and let's offer public, let's offer bottled water to these people." 'Cause they are concerned and I think they have a legitimate concern and of course that was early on in the remedial investigation days.

01:23:50

A:

So we didn't exactly know what the cleanup level would be which made it kind of complicated. But when we looked at it basically the feeling was that there really weren't that many people that were initially, what would be affected and it would be better to just say, "Look, let's supply these people with bottled water until we can determine exactly where we're going with this thing."

A:

And it was pretty obvious I guess in the, you know, I guess we had IT doing the remedial investigation. They had already made contacts with Cincinnati Water Works and stuff and there were no plans to bring water into this area for at least the next 20 years and so forth. So, okay let's try and be proactive in doing something, 'cause these people were genuinely concerned and I think they had a right to be concerned and we needed to relieve that concern. Get them off of this, from drinking this water, 'cause they did have true concerns and I think we had concerns about that.

01:24:46

A:

So, we, Steve and I put together pretty much a position paper and a policy and said you know, this is where we ought to think it's for, and basically that was accepted. And then we offered bottled water to anybody within, where we felt it was above background levels of uranium. Because again we weren't sure what level of cleanup would be accepted and the drinking water had still had not been, drinking water standard for uranium had still not been set.

A:

Still is not set today, but we kind of had a, you know, a feeling. But it was a feeling, let's be on the conservative side. Because again, there weren't that many people involved and we felt for the benefits

**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

that we could gain in the, you know, a lot of it's mental. These, you know, the people had a concern about it and I thought we could address the concern.

01:25:35

A:

And so we set that policy and then offered bottled water to those people in the area that were above, above background levels of contamination were found.

Q:

So was that like a two-mile radius or a five-mile radius?

A:

Well, again a lot of our contamination is on the property so; it was the area south of the site, what we call the South Plume Area, because it is south of the plant. And it basically what we, kind of tied in an area that you could pretty well define it out to the river. Once it got to the river, the river intercepted the plume, so it didn't go any further. So there was pretty much a boundary that we could put in and basically offer to those people in that area of that boundary.

01:26:15

Q:

Was that really costly?

A:

No, no, actually the bottled water wasn't that, I mean, relative to the other cleanup actions and stuff. No, I didn't think it, and that's part of what I was trying to convince people that hey, you know, we're not talking that much money. And for the benefits gained and again for the mental anguish that I think these people were going through, the public was going through in those areas, they, they truly did have concerns and it wasn't that expensive at all.

01:26:43

A:

'Course it was awkward 'cause I mean, you know, I don't know if drinking with bottled water is and cooking with bottled water was I'm sure awkward to the people but it was the best that we could do at the time. But it did seem to relieve and of course they were concerned about showering and things like that, which really to us were not that major of a concern.

A:

It's not touching the skin that's a problem; it's the ingestion pathway that was a true concern that we were worried about. But, course they wanted the next step and that was, you know, gee we don't want to bathe in this either and we don't want to swim in it. And you know, it became a little bit of a larger problem. So at that point, you know, once I got into that point we started looking at, you know okay, Cincinnati, and I, and I checked and confirmed with Cincinnati Water Works and so forth that they had no plans to come out here for another 20 years.

## FERNALD LIVING HISTORY PROJECT

### Transcript

01:27:33

A:

So, we started, started looking, and okay what could we do. In the fact that, okay we've gone the step of the bottled water but it'd be nice if we could get something a little more permanent. And at that point, I guess, Albright and Wilson had already sued us because they were getting water that had uranium in it and they were concerned. And basically we'd already determined that we would provide them with an alternate water supply. So we were looking into, you know, where would we put the well field because we would give them a well field.

01:28:09

A:

We would actually install the system, well field, pipelines and so forth and then give that to them as part of that setup. And the feeling was well, my feeling was well they're not the only people that have above, you know, background levels of uranium and if we're gonna do this right we probably ought set up, assuming Cincinnati Water Works would be coming in here.

A:

And Cincinnati Water Works does have the most rigid standards for pipelines and stuff like that. They use what I would call the Cadillac of the piping systems. Maybe what we could do is set up a distribution system where we could also feed some of these other people where they had the high levels of uranium and we would get two well fields, one for Albright and Wilson; and one for this alternate system.

01:28:56

A:

And then maybe we would run it from the plant. So I kind of put together a proposal to Carlos Tellez who was my OU5 counterpart and to Ray Hanson who was up in DOE and said, you know, maybe we ought to consider setting up a public water distribution. Maybe we would operate the plant supply ourselves with water, but supply part of the public with water and so forth.

A:

So we kind of started in that direction. And then at the same time, because we had made the calls to Cincinnati Water Works, at the same time the public was beginning to get, call them. And eventually rather than going with our own system and feeding that water, we did, we were able to work with Hamilton County and kind of pull it all together and put in a, and set it up to bring in a public water supply.

01:29:45

A:

All the way from the Bolton Plant, we paid for a minimum sized transmission main. They put in a larger size for future. But we kind of agreed what parts of the system we would pay for and then they put in a

little bit larger infrastructure that would supply future demands and we put in, I think we paid for a tank, I guess we paid for the whole tank. I think my intention was to pay for part of it, but I think we ended up paying for the whole tank.

**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

A:

I think it's a half a million-gallon storage tank on the system and bringing in public water to that same area where I had picked that we would supply the bottled water. Which again was in areas that weren't necessarily above the drinking water, but were above the background levels because again the RI was not finished back at that time. We didn't know what our cleanup levels would be. So it was a little, little hard, we were on; we erred to the conservative side.

01:30:38

A:

We covered, covered probably more area than we would have in the end, but I think it was worth it. Again, the concern and mental anguish these people were going through I think it was legitimate to, to get them off, to get them off their well systems and get them onto public water supply. So that took several years but we did, we did get that public water supply all, all set up and then.

(Tape ends)

**Tape FLHP0258**

02:01:03

Q:

As far as the public water supply goes, let's talk a little bit about working with Hamilton County. What it was like to work with Hamilton County and the scope of the project, how big it was.

A:

Well, it was interesting cause like I said. We, I made a number of calls, a couple of phone calls at the beginning, like I said IT from their reports on their removal actions and stuff they were putting together said that Cincinnati wouldn't be in for 20 years. And I made some calls over to Cincinnati and pretty much found the same thing. And basically it was getting to the point where Hamilton County themselves, the county felt that they were responsible for the water supply.

02:01:42

A:

So, it was kind of all the sudden shifted over to the county and became more of a county function, which I'm not sure what it had been in the past. I guess it was more of a random occurrence. But the county felt that they needed to take control of the situation and so forth. But so, it moved over there and I got a call from a Jim Kealy and my impression is Jim had retired from Cincinnati Water Works and the county hired him back.

02:02:08

A:

And he said, you know, "Gee, could we get together on this thing? And is there something maybe we could work together on this thing?" And that's kind of how we got started in, to actually then moving, to bringing in Cincinnati Water Works into this area. And again we, we, working with them, actually the fellow that how heads the, who Jim Kealy worked for, Gary Vanheart. I had worked with Gary at \_\_\_\_\_ probably, you know, 30 years ago now, but back then 25 years ago.

**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

A:

So, at least I knew some of the people down there and it made it a little easier to kind of talk to these people and see if we couldn't kind of work together 'cause I think they had concerns. 'Cause they were getting a lot of public calls and stuff that said, you know, gee can you do something about this and so forth.

02:02:58

A:

And of course like I said we were working our end, I was already coming up with a plan to put in our own system and then hopefully turn it over to Cincinnati Water Works someday when they finally came out here and we could shut down the treatment process. So it kind of gradually evolved into a, you know, we submitted some reports and said this is the area that we would like to cover.

A:

Which, again was our South Plume area and all that area that was above background. We felt that at that point we should at least cover that area. And they had, they brought in did some studies and looked at okay, you know, how much would they like to build and what would it require to put in an infrastructure to this area and so forth.

02:03:41

A:

And they kind of worked their plans out. And we kind of got together and then we showed 'em, you know, they reviewed our reports to make sure they were comfortable with the area we were willing to pay for was an area that, that the public would indeed agree to. That you know, we had done our share, we had covered our share of the area.

A:

And that kind of all worked together and, you know, like I said, well what ended up happen, I think Jim just retired here from the Hamilton County just a few weeks ago as a matter of fact. And one of the things he mentioned that this was the largest water project that Hamilton County had ever been involved in. So it was, it actually was a pretty large project.

02:04:21

A:

'Cause we had to bring the feeder, the header main all the way from the Bolton Plant which is, is quite a few miles up the river. So, we had to bring a transmission main all the way down to the site before we could get the distribution. And then of course we had I think a half a million-gallon water tank that we built just to, you know, to keep the supply constant and so forth.

A:

And then of course the problem was that there weren't that many users initially. And the problem is you have to keep chlorine residuals high in the distribution system. And so we went one step further in the fact that we said well, okay, you know, we're trying to go out of business here eventually and we had, we produced our own water here. And the feeling was, well, you know, why don't we hook into the public water supply ourselves and get our own water from the supply and that way we could shut down our treatment systems and start going out of business.



**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

02:05:21

A:

And at the same time we could help them on the quantity of water used to keep their chlorine residuals high enough to make sure their system would work. And Tom Crawford, who works here, worked for me at the time and Tom and I did a study to look at what are all our demands and what kind of a demand would we have, you know, that would be decreasing over time.

A:

Whether it would be a fairly large demand at the initial part, which of course is when they needed the demand because they didn't have the demand initially. And of course the feeling was that the area would expand and create its own demand that would be sufficient. And that looked like that was reasonable so we committed to taking water from the system. A certain minimal amount of water each month and again to make the system profitable for Cincinnati Water Works and also to keep the enough water flowing to keep the chlorine residuals high and so forth.

02:06:16

A:

So, it was a win-win situation 'cause eventually we would go out of the water business and I think a lot of the people even on the site were a little leery of drinking our water here. Again 'cause it, they knew it came from underneath the site. Even though it was cleaned, there was a psychological aspect that, you know. So I think it helped to bring the Cincinnati Water Works water into our drinking water system too.

02:06:38

A:

So, it's I think it's worked out well for all of us, you know. And again, I think the public generally benefited because it did get the people off of, you know, again we gave them the bottled water for drinking water. Of course some people didn't take it, you know, they, but it did also then address the concerns that a number of people had about showering.

A:

And swimming pools and bathing and things like that. So it went the extra mile to really help the psychological aspects of the, of the contamination problems we had here. So, I think it was a win-win situation.

(Tape stops and starts again)

02:07:15

Q:

Okay. One of the issues that I discussed with a lot of the community leaders was, you know, you can't make everybody happy. And there were a lot of people that were not happy about the public water supply coming in because they were responsible for a certain amount of financial, some of them had to pay to have the pipes come through. Could you explain that a little bit?

**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

02:07:38

A:

Well, yeah, basically again, we picked, you know, from our studies we knew the area where there was above-ground contamination. Now, unfortunately the shape of that area didn't fit to bring in a public water supply. Because when you bring in a public water supply you want to make, loop the system and, and of course the tank needed to be at the highest elevation, which was actually outside of the plume area.

A:

So, you ended up having to put mains in, you know, they had to put in a certain minimal infrastructure, if you will, to, in order to address the areas that we wanted covered. And it extended of course, beyond our, our areas. And unfortunately once they did bring in the system, those areas that really weren't to our benefit so we weren't going to help subsidize them.

02:08:28

A:

You know, that wasn't part of the agreement that we made, and unfortunately then, to complete that infrastructure they had to make those people pay for it. Which again, one of the things that's interesting is 20 years down the line, you know, they would have been coming in anyway. What we did is accelerated what would have eventually have happened anyway.

A:

But of course to the people who had to pay for it now, you know, they weren't real happy about it, but, and neither were the people that, we also paid for the tie-ins of those people that, that we felt were impacted by our plume. And of course other people had to pay for their own tie-ins, and you know, once they put in the line they wanted those people to tie-in.

02:09:11

A:

So, they did have to pay for their own tie-ins. And then of course we got phone calls cause no matter where we stopped the next person said well, why not me too? You know, and then of course if you added one more then the next person would have said, well, why not. And that's, that was the difficult part 'cause you did have to draw a line in the sand and say, "Look, this is the area where we have above-background contamination and we feel we would be responsible to help subsidize," if you will. I guess that's the proper term or give a grant to help pay for those areas.

A:

But beyond that it's, it's, you know, it's really Cincinnati Water Works doing their thing. And that does, you're right. I got a number of phone calls and some unhappy campers. It's difficult, you have to do what you feel is right, or at least that's the way I did things and you know, sometimes the chips then kind of fell and you had to kind of take your lumps. But you try and explain the technical basis and that's basically, I'm a technical person so I, that was my job and my responsibility.

02:10:20

A:

And I couldn't, beyond that I couldn't convince them or anything else, but at least I could explain the technical reasons and the justifications for why we did what we did and why we stopped where we did

**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

and so forth.

Q:

Good, good and let's talk a little bit about funding for that project. Where did the money come from?

A:

For the public water supply? (Comment: Um-hum) Well it came out of our budget here. Basically though the way it worked is that DOE kept that money aside so it did not come to the, the operating contractor. They kept a pool of money and then it would be adjusted depending on, there were, obviously as we went along some things arose that caused a little bit of extra cost.

02:11:05

A:

We ran into a lot of Indian burial grounds, things like that, which were, something that, you know, Cincinnati Water Works wasn't willing to pay for and we had to pick those up. So the price tag did go up to pay for a lot of these things, but it was what we felt again, the way we worked out those things, we felt were a necessary so we did have to pay for those.

A:

But basically that would come off the top, if you would, from the funding given to the site that would be set in a DOE reserve and then it would be paid for by DOE. We would pay certain costs and then Hamilton County had to submit their cost to us and we would pay again those certain costs and certain amount of overhead and things like that, that was justified.

02:11:50

A:

And we would get a billing each month and my people would go through it and verify that it was correct and then say, yeah that's a legitimate bill and we would pay the bill then each month.

Q:

So, what's a ballpark figure as far as how much did it cost to bring water into this area? I mean, how much did it cost DOE specifically and the contractor?

A:

Gosh, I'll tell ya. I'm a technical person. I guess money wise what we finally, it was several million dollars. I'm thinking it was approached \$5 million or somewhere in that neighborhood. By the time we got done I think, originally I think we actually had a public meeting where we presented a check to Hamilton County, it was a symbolic check. I think it was quite a bit less than what we eventually paid. 'Cause eventually we did pay for the whole water tank, where I felt we should pay for a percentage of it and so forth.

02:12:42

A:

But you know, in final negotiations and stuff we did expand the scope of what we paid for. So that it did, I think it was somewhere in the main range of \$5 million.

Q:

**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

That's a lot of money.

A:  
Yeah.

Q:  
Okay, let's talk a little bit about cleanup. Exactly what are the plans and what's going on right now to cleanup the aquifer?

02:13:05

A:  
Well, actually, actually we started the cleanup of the aquifer I think back in, actually in '93, once I could see where we were going and it became pretty obvious it was going to take quite a while to set the

remedy. When we decided to go to the operable unit approach, broke the site into operable units; we were already behind the curve of when we were supposed to have all the data put together.

A:  
And as part of that, negotiations we were asked to move forward on some projects. You know, let's do something while we're standing around studying this thing. Let's not just study. And so I offered up, I think we did three initial projects and I offered up two of those. One of 'em was to go down at the leading edge of the South Plume and put in a well field to stop the forward migration of the plume.

02:14:00

A:  
I.E., while we're studying it, let's at least stop it from spreading any farther. So that when the time comes, whatever we do, it's, it's, hopefully it will be cheaper because we haven't, you know, spread even farther 'cause each acre that you spread on it increases the cost. So, one of those removal actions, or response actions was to go and put a leading edge well field.

A:  
And we put that in, I guess I we got that all approved and actually installed that, I believe in '93 we got that working. And at the same time, like I mentioned stormwater runoff, that addressed the stormwater runoff down in the south area. But up in the waste pit area, we had done enough investigations to see that there was, you know, a part per million, or less than a part per million, but there was those kinds of levels in the stormwater runoff up in that area too.

02:14:50

A:  
So we put in what we called the Waste Pit Parameter Runoff Control. Which collected all the stormwater runoff in the area of the, of the waste pits and stopped that from going into Paddy's Run. And brought that into the clear well and then, you know, we stuck that to the river, originally and then we put in treatment plants since then to treat that.

A:  
So, that, '93 was the leading edge well field, we stopped the expansion of the plume, then the RODS

**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

came out. Let's see, I forget exactly what date the RODS came out, but anyway the RODS basically called for a pump and treat action. Where we would extract the water out of the ground, and then treat it, then discharge it to the Great Miami River.

02:15:35

A:

And so, after we got into that we had a plan to put in modules, we'd do it by modules. We went after the South Plume first, and the south field area. Which is on our property but on this side of Willey Road as opposed to the South Plume area which is on the other side of Willey Road, on the off property.

A:

And then we put in what we called South Plume Optimization, which was two wells in the heart of the off-site plume and I think those are two wells at 250 gallons per minute each, so that's 500 gallons there. The leading edge well field, I think is about 1500 gallons a minute, about 2 million gallons a day from the leading edge to stop it.

02:16:13

A:

So then plus the 500 gpm, two optimization wells, and then we put in 10 wells in the south field area, which is where the flyash pits were and some of the solid waste units down there. And those wells I think again, total I think one of them pumps at 300 gallons a minute. What, I guess four of them are at 200 gallons a minute and four of them are at 100 gallons per minute.

A:

So we've got, I guess about 16, and then, I'm sorry. Then we just added two more wells. Last year we were doing hydropunching. Originally the plume was done by wells, we would sink wells and then we'd monitor those wells. We've gone through now what we call geoprobing, where we actually take samples of the plume at 10-foot intervals.

02:17:00

A:

And we take an array of those and determined that the plume was actually a little bit larger on site out there by the south access or by the yeah, by the south access road on the west side. So we did modeling and determined that we needed to install two more wells, again at each one I think is a 250 gallons and then another 500 gallons per minute. And we added two more wells to, to remediate that area.

A:

The hope would be that we get the southern portion and the South Plume cleaned up I think in the next, hopefully in the next three years we'll pretty much have that cleaned up. And then eventually then we'll be moving out to the waste pit area and putting in wells out there to address the plumes that are out there. And the thought was there would be wells around Plant 6 area too. We had originally some area there that was above 20 parts per billion.

**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

02:17:54

A:

But since we've sunk the geoprobes and stuff, we've determined, it appears that there is no area out there anymore that is above 20. But we did find a larger plume, actually in this area (looking over shoulder) in what we call the, oh. What is the name of the ditch? My mind slips. But there's a drainage ditch here (looking over shoulder) and we found that there was contamination, there's a plume that reaches underneath the AWWT facility and over to the lab area, quite a long, narrow plume.

A:

So we're gonna have to add a few more wells in that area and so forth. But we'll be starting the designs of those next year. I think we have money to start the designs next fiscal year. We've been out geoprobing those to define exactly, you know, what we thought in the RI days, what came out in the, the Record of Decision and then what's actually there by more extensive of these geoprobes.

02:18:51

A:

And it is a little bit different shape than what we thought so we've had to realign the well fields and so forth, and we'll set that this year and then we'll start in on the design next year. And then those will be going in the years after the South Plume is kind of coming off-line and those will go on-line. So we'll just constantly keep a flow of water coming into the treatment systems that we've installed.

A:

So, we're moving along. We've got a, we pump a lot of water. And then we've added, as that, we did a demonstration of re-injection. And the idea of re-injection is once you bring the groundwater up and treat it, remove the uranium then you re-inject it so you can help push the contamination, if you would. Set up a steeper hydraulic gradient to increase the velocity and push the water towards the wells.

02:19:40

A:

And so we put in five re-injection wells and we did that a year ago. I think our one-year study ended in, in September of last, last year. We just put together a report and we feel it was very successful, so we will continue with the re-injection and then probably expand that, as we need to in other areas. Again our agreement is that the only water that we would re-inject is groundwater that has been brought up and then removed the uranium and then re-injected.

A:

We will not use any of the process wastewaters or any of the stormwater or anything that might have other contaminants in it. That, therefore the only water that we re-inject is groundwater that was taken out of the ground, we've just removed the uranium and then put it back. So, it's, it's working very well and our report, I think say that there's a significant savings that we can achieve with the re-injection system. So, that will be an ongoing process then too. So, we keep that moving and we're, got a lot going on. It's quite an extensive project.

02:20:47

A:

## FERNALD LIVING HISTORY PROJECT

### Transcript

You know, this, this behind us is our Advanced Wastewater Treatment Facility and we have three treatment systems in here. And this is, one of the treatment systems treats the groundwater. That's the largest system, the 1800-gallon per minute treatment system and that's the water that we use for re-injection.

A:

And then there's a 700 gallon Phase, Phase I system that we treat the stormwater runoff and then of course when there's no stormwater runoff, and that's collected in our Stormwater Retention Basin south of the plant. When there's no water there we'll supplement that with groundwater and treat groundwater. We'll throw groundwater in wherever we can, whatever treatment systems are, have capacity available.

02:21:30

A:

And then we have the Phase I treatment system, which treats the water from the Bio-Surge Lagoon. Which is the water that we collect out of all the cleanup projects that are going on at this site. I think the D&D project, the On-Site Disposal Facility, the Leachate and the Stormwater Runoff and the Waste Pit Remediation Project.

A:

They do a pretreatment step and then we do the final uranium removal here to meet our discharge limit of 20 parts per billion. Concentration of 20 parts per billion or less on a monthly discharge to the river, and that's what these plants behind you do. We have a couple more plants out front, smaller plants that, out at the Stormwater Retention Basin that treat groundwater and then treat stormwater when the basins get too high, we'll throw those over to stormwater to try and minimize any overflow of the basins.

02:22:20

A:

Or minimize the bypasses to the river. Every once in awhile we do have to bypass some of that water to the river to keep those from overflowing. We try to keep the basins from overflowing because that water again, would go down these drainage ditches and go back down into the aquifer.

A:

So we don't want to recreate anymore than necessary. I mean, while we're still down there pumping we can handle a little bit of overflow, but as time goes on we want less and less overflow of those basins 'cause that would re-contaminate to some degree the aquifer.

02:22:49

A:

So it's a pretty complex system that we have here at this point in time. But it's, it's a challenge and I think the people that work for me really enjoy, enjoy the challenge there.

Q:

Great, that's a great explanation. 'Cause I think people, most people really don't understand. Can you stop rolling for just a second? I got paged (directed to cameraman).

**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

(Tape stops and begins again)

Q:

Something that I think a lot of people don't understand is how do you get uranium out of water?

02:23:12

A:

How do you get uranium out of water? Well, we actually do it two ways, (looks over shoulder) right behind us, these tanks here, are what we call clarifiers and some of the uranium is tied up on solids, but we will add chemicals before it hits the clarifiers. And basically they're just big settling tanks and a certain amount of the uranium will precipitate out with the solids and with the chemicals that we add.

A:

We get about a third of the uranium out by clarification. But the most, the bulk of the uranium then, the way we get it down to the 20 parts per billion, is we run it through ion exchangers. And basically ion exchangers, they're designed, the resin, if you will. The resin beads are uranium specific; they'll go after uranium.

02:12:58

A:

They'll absorb uranium. So as uranium water comes through the, basically the uranium is absorbed out of the water onto the resin. And then we load the resin beads up with uranium and at some point they become what we call, well actually what happens is we start to pass uranium through and then we get in trouble on our discharge.

A:

So at that point we have to regenerate those resins and pull the uranium out of the resin and put it into a solid form for disposal off-site. Or we will, actually at times the resins will just become old, if you will, and become broken and smaller pieces. Then we'll replace the resin and that's what some of (pointing to

the side) these white metal boxes contain here, is the resin and then also the sludge that we produce in the clarifiers, all comes in here.

02:24:56

A:

So there is solid waste stream that we do produce and that has to be dried or processed in our slurry de-watering facility and dried as a sludge and shipped off as a low-level waste to EnviroCare or Nevada Test Site for disposal out there. So, basically we're taking the uranium out of the water and putting it into a solid form and then discharging the water to the river, to the Great Miami River.

Q:

Great, great. Let's talk a little bit about sampling around the community. 'Cause I know a lot of the folks that I talked to said, "Hey, this guy in a white suit showed up and sampled my water and looked like he was scared to touch my water, but I've been drinking it for 10 years." Can you address that a just little bit, just from our point of view? What are they talking about?



**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

02:25:40

A:

Well, we still, we have monitoring wells. We have lots of monitoring wells. We have several hundred monitoring wells all around the site and then off the property where our plume is. And we will, and actually some of the people of course had wells before we put in a public water supply. So, we'll go out and sample those wells to see how we're doing.

A:

We have to, you know with this big complex of extraction wells and re-injection wells and so forth, we have to not impact the water table too much and at the same time make sure that we're capturing the plume. And that our re-injection is indeed causing the hydraulic gradient to form the way we had planned it to form.

02:26:26

A:

So we have to run water level measurements, excuse me, all around the area and then we do check to see what level the uranium's at in the plume. See if it's coming down, which is our hopes. Since that's what we're trying to doing, is clean it up.

A:

And so yeah, we have people, we have quite a few people that are out. We do at least quarterly sampling of all the wells. And we report that in what we call the IEMP which is the, let's see all these acronyms, Environmental let's see, I don't know. It's a monthly, quarterly report that we send to the regulators so that they understand, you know, what our environmental impact is to the area and how we're doing on our cleanup.

02:27:10

A:

And then of course we do the, the annual report where we summarize all those quarterly reports and give those to the public and they can see how we're doing on the cleanup. But all that data is important to tell us how we're doing.

A:

Is our cleanup working? Is the re-injection working? Is the extraction working? And where do we maybe need to speed up some wells or slow down some wells or so forth. So we, now that we've got a complex of all these wells we've just got to balance them and make it all work.

Q:

Great, great, how are we doing on time (directed to cameraman)?

(Cameraman: three minutes)

Q:

Okay, cool, that's awesome.

**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

(Cameraman: got a three-minute question?)

Q:

Ah, no. I think I'm almost done (directed to cameraman). Just, I know you've been here for 14, 15 years, and you've probably seen just as much as I have as far as like, well a lot more than I have, as far as cleanup goes. And buildings are coming down pretty fast, what would you like personally to see done with this land once it's all cleaned up?

02:28:06

A:

Oh I, I personally would like to see more, I'd like to see, I think a certain amount, just because this area is developing, I think realistically it will. It's within the area that Hamilton County probably envisions to build, I think it could handle a certain amount of industrial development on the property.

A:

I hate for us, I think we've built a beautiful rail line up there and stuff. I've done work before on rail systems when I was in consulting and gee, I kind of hate to see it go. I think we've done a good job of building it and I'd like to see it used. At one time I'd envisioned that maybe the Administration Building, the Health and Safety Buildings would have been transferred over to community and become maybe their senior citizens center, things like that.

02:28:53

A:

Of course I think they've built one now in the time, but I had a plan where maybe, my vision was that, you know, it'd be kind of a mix of industrial and I could even see some, some well. Personally I could have saw some residential down in the corner at the time. But I think most people are afraid of that. I think personally that once we get done here, this'll probably be one of the cleanest areas within, you know, 20-mile radius.

A:

And, you know, but there's still a concern and I understand that the people have a concern. But I think from an industrial standpoint, commercial standpoint, you know, I think some of the land should be used for that. It seems, and again, I worked with, did work for Hamilton County. I worked on the restoration of Sharon and Winton Woods Lake. Those were two of my projects, so I worked with the Park Board and at the beginning I had some conversations when I was Operable Unit 5 manager, trying maybe to bring the Park Board into this arena.

02:29:48

A:

And kind of work with them on maybe some bike paths through here and things like that. And I would like to see the bike paths extended and brought into this area and stuff. So, that would be my vision, but that doesn't seem to be what everybody else wants so. We'll see. And maybe even a golf course. I, I like to golf so, you know, I could see that this area could be a nice place to golf. To, you know, good use for it.

Q:

**FERNALD LIVING HISTORY PROJECT**  
**Transcript**

Are we running out (directed to cameraman).

(Cameraman: we are)

Q:

Okay, go ahead and pause for a second (directed to cameraman).

02:30:20

(Tape stops and begins again with no sound)