ORAL HISTORY INTERVIEWS

Dess L. Chappelear

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STATUS OF INTERVIEWS:
OPEN FOR RESEARCH

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Interviews Conducted and Edited by:
Brit Allan Storey
Senior Historian
Bureau of Reclamation

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Table of Contents

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OF ORAL HISTORY INTERVIEW OF
DESS L. CHAPPELEAR

1. In accordance with the provisions of Chapter 21 of Title 44, United States Code, and subject to the terms, conditions, and restrictions set forth in this instrument, I, Dess L. Chappelear, (hereinafter referred to as "the Donor"), of Sun City West, Arizona, do hereby give, donate, and convey to the Bureau of Reclamation and the National Archives and Records Administration (hereinafter referred to as "the National Archives"), acting for and on behalf of the United States of America, all of my rights and title to, and interest in the information and responses (hereinafter referred to as "the Donated Materials") provided during the interviews conducted during the week of September 2, 1996, at my home at 13837 Oak Glen Drive, and prepared for deposit with the National Archives and Records Administration in the following format: cassette tapes and transcripts. This donation includes, but is not limited to, all copyright interests I now possess in the Donated Materials.

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Date: 9-3-96 Signed: Dess L. Chappelear
Dess L. Chappelear

INTERVIEWER:_____
Brit Allan Storey

Having determined that the materials donated above by Dess L. Chappelear are appropriate for preservation as evidence of the United States Government's organization, functions, policies, decisions, procedures, and transactions, and considering it to be in the public interest to accept these materials for deposit with the National Archives and Records Administration, I accept this gift on behalf of the United States of America, subject to the terms, conditions, and restrictions set forth in the above instrument.

Date:_____ Signed:_____
Archivist of the United States

Brief Chronology of Career

1930–Born on a dryland farm in southwestern Oklahoma

1948–Graduated from high school in Mountain View, Oklahoma

1948-1950–Attended Cameron Junior College in Lawton, Oklahoma

1950-1954-Served in the U.S. Air Force during the Korean Conflict

1954-1956–Attended Oklahoma A&M in Stillwater where he received a degree in civil engineering

1956–Attended survey camp near Buena Vista, Colorado, in the summer

1956–Went to work for Reclamation on August 1, at Fort Cobb running levels on a survey crew

1956–Moved to Oklahoma City and went to work in the Hydrology Division in the Oklahoma City Development Office where he worked on the Norman Project and Fort Cobb Dam and Reservoir and then moved to the lab during construction at Fort Cobb

1958–Asked to move to Foss Dam

1960–Sent to do preliminary studies during the winter for a dam location for the Canadian River Project. Subsequently, as work at Foss Dam wound down, he moved to Borger, Texas, to the Sanford Dam construction site as the assistant project engineer during construction.

1962-1963–Moved into Amarillo to the Canadian River Project Office where he gathered design data for the second and third reaches of the Canadian River Project Aqueduct System

1964–moved to Lubbock, Texas, to set up the construction office for the last reach of the aqueduct

c. 1966–Attended the Fourth Army management school in San Antonio.

1968- c.1970–Moved to Washington, D.C., to the Division of Land and Water

c. 1970-1973–Chief of the Contract and Repayments Branch in the Division of General Engineering.

1973-1977–Chief of the Division of General Engineering in Washington, D.C.

1977-1985–Moved to Phoenix as assistant project manager for construction of the Central Arizona Project

1985–Retired from Reclamation

Introduction

In 1988, Reclamation began to create a history program. While headquartered in Denver, the history program was developed as a bureau-wide program.

One component of Reclamation's history program is its oral history activity. The primary objectives of Reclamation's oral history activities are: preservation of historical data not normally available through Reclamation records (supplementing already available data on the whole range of Reclamation's history); making the preserved data available to researchers inside and outside Reclamation.

The senior historian of the Bureau of Reclamation developed and directs the oral history program. Questions, comments, and suggestions may be addressed to the senior historian.

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For additional information about Reclamation's

history program see:
www.usbr.gov/history

Oral History Interviews
Dess L. Chappelear

Storey: This is Brit Allan Storey, senior historian of the Bureau of Reclamation, interviewing Dess L. Chappelear, a retiree from the Bureau of Reclamation, and former assistant project manager in the Arizona Projects Office. I'm interviewing Mr. Chappelear at his home in Sun City West[, Arizona,] on September the 3rd, 1996, at about eight o'clock in the morning. This is tape one.

Mr. Chappelear, I'd like to ask you where you were born and raised and educated and how you ended up at the Bureau of Reclamation.

Born in Southwestern Oklahoma in 1930

Chappelear: I was born in the northwest bedroom of a dryland farmhouse in southwest Oklahoma. I was born in 1930. I spent my early days on this farm, and as you may recall, this was Depression days, but even worse than that, it was Dust Bowl days. And I guess it was some of that Dust Bowl thing that got me interested in water. I can remember as a child about four or five years old, setting on the porch on the north side of this old farmhouse and seeing a cloud approaching from the North. And, boy,

I thought this was wonderful because my father had been talking about how we really needed a rain and that sort of thing, and I was tickled because I could see this cloud coming up and I thought it was going to rain. But it turned out that this wasn't a cloud at all, this was some blowing dust and it was approaching rapidly and throwing up a bank there two or three thousand foot high. Then in just a little bit you couldn't see a hundred yards. So I recall the Dust Bowl days as a very small child.

"It really wasn't the Depression that hurt us, it was . . . that we weren't getting any rain. So we . . . managed pretty well through an occupation that my father had. . . . he acquired a water well drilling machine that could go a couple hundred foot deep . . . he was drilling wells in southwest Oklahoma for farmers. When their well went dry during that period, why he was drilling water wells for a dollar a foot for the first hundred foot and a dollar and a half beyond that. . . ."

It really wasn't the Depression that hurt us, it was really the fact that we weren't getting any rain. So we had a hard time managing there in the thirties, and we managed pretty well through an occupation that my father had. When he was younger, he worked in a shallow oil well field there

located between Mountain View and Gotebo, Oklahoma, and he came away from that with the knowledge on how to drill wells. So he acquired a water well drilling machine that could go a couple hundred foot deep, there was a whole set of cable tools, and so early on he was drilling wells in southwest Oklahoma for farmers. When their well went dry during that period, why he was drilling water wells for a dollar a foot for the first hundred foot and a dollar and a half beyond that.

Went to Cameron Junior College in Lawton, Oklahoma. 1948 to 1950

So as a kid, I followed him around and saw the value of water, and I think maybe that's what influenced me to go with the Bureau of Reclamation. I went on and I finished high school there at Mountain View, and from there I went to a little junior college called Cameron located at Lawton, Oklahoma. I spent two years there in '48-'49 and then '49-'50.

Transferred to Oklahoma A&M in Stillwater

And from there why I transferred up to Stillwater, Oklahoma, and was going to go to Oklahoma A&M.

Spent Four Years in the Air Force During the Korean Conflict

About that time along came the Korean thing, and my education was discontinued for four years there and I spent time in the Air Force.

Finished a Civil Engineering Degree on the GI Bill

I went back to school on the GI Bill following my experience in the Air Force, and I went right straight through summer sessions and all and got a degree in civil engineering from Oklahoma A&M. About that time they were changing the name to Oklahoma State University.

Received His Degree in Civil Engineering in 1956

I was really concerned about going back to school after getting out of the service and whether I could make it in engineering, because I'd already had all of my higher math in my first two and a half years. I took a lot of aptitude tests, IQ tests, and they all said you're right on course to make it in civil engineering. After I went back I was a lot more serious about going to school than in my first two and a half years. Also, I was married, had a wife and some responsibilities, so I cut it right on down the road at a high run

and got my degree in August of ‘56.

Chose to Work for Reclamation Rather than Boeing

At that time I had to make some choices as to who I was going to work for. I had three different job offers at the time, and one of them I considered very seriously besides the Bureau of Reclamation. Then I was going to work for Boeing in Wichita. While I was in the service, part of the stuff that I did in there was dealing with hydraulic systems on aircraft, and I was familiar with just about all the hydraulic systems on everything that the Air Force flew at that time, and one of them being the B-47, which was a Boeing aircraft. I don’t know, they sent me, I guess, three different telegrams trying to get me to go to work for them, and they were making a lot better job offer than I was getting from the Bureau of Reclamation, but the Bureau of Reclamation had some appeal to me, and so I chose to go that way.

Started with Reclamation August 1, 1956

I started out with the Bureau of Reclamation. I was supposed to go to the Oklahoma City Development Office, and I went to work for the Bureau of Reclamation

on August the 1st, 1956. But my first thirty days with the Bureau like to kill me.

Did Survey Training During the Summer of 1956

I had put off getting some of my survey training until the summer of 1956 and I went to a survey camp located up in Colorado, and it was located out of Buena Vista. We were working at pretty high altitudes, and I could remember when we started out up there, we were sleeping in tents, and it was just cold as heck at night. I remember sleeping on this old Army cot, and I had my wool socks on and my wool underwear on, and waking up in the morning cold. It was so darn rough.

Ran a Survey Crew at Fort Cobb Reservoir

Anyway, I spent all this time up there where it was nice and cool, came down and was given a survey crew to run around Fort Cobb Reservoir. We were running a bunch of levels around there.

Storey: Around which reservoir?

Chappelear: Around Fort Cobb.

Storey: Fort Cobb?

Chappelear: Yes.

Storey: In Colorado?

Chappelear: No, no. This is in Oklahoma.

Storey: Oh, I'm sorry. I missed something.

Chappelear: I was supposed to go to work for the Oklahoma City Development Office, but they didn't let me move into Oklahoma City, but they did put me out in the field. We were checking some water levels in wells around what was going to be Fort Cobb Reservoir. The dam wasn't built at the time. In the first thirty days why it broke 100 every day and I thought they were going to kill me there with that switch in climate. So I ran some levels around the reservoir area to some different wells. We were just checking elevations in wells.

Moved to the Hydrology Division in the Oklahoma City Development Office

Then after that, why I moved to Oklahoma City and went to work in the Hydrology Division in the Oklahoma City Development Office. Had some real nice people there, some people that I worked for that I thought were really great. Marley

Burger [phonetic][1] was head of this Hydrology Unit. At that time we were studying the potential for a number of different reservoirs in Oklahoma, and some of those were later built. One was the Norman Project Dam there, and the Fort Cobb Dam and Reservoir was being studied, and also a Foss Dam in the western part of the state. Then there were some other jobs that we looked at. So we had all this hydrology work and we were trying to size dams and check flows on reservoirs and see what could be done at some of these different locations.

Did Some Stream Gauging

I had one day out of the office there while I worked in this Hydrology Division that I really enjoyed. They put me out

1. Note that in the text of these interviews, as opposed to headings, information in parentheses, ( ), is actually on the tape. Information in brackets, [ ], has been added to the tape either by the editor to clarify meaning or at the request of the interviewee in order to correct, enlarge, or clarify the interview as it was originally spoken. Words have sometimes been struck out by editor or interviewee in order to clarify meaning or eliminate repetition. In the case of strikeouts, that material has been printed at 50% density to aid in reading the interviews but assuring that the struckout material is readable.

The transcriber and editor also have removed some extraneous words such as false starts and repetitions without indicating their removal. The meaning of the interview has not been changed by this editing.

gauging streams in different locations in southwest Oklahoma. One of them that I did some gauging on *was* this Fort Cobb Reservoir site, a little old stream there. So I did get out of the office and did enjoy that a little bit, but that wasn't a job that I stayed with for very long, about a year, and then they got construction on Fort Cobb Dam under way.

Worked in the Lab During Construction of Fort Cobb Dam

I moved down to Fort Cobb and I started work in the lab there, earth lab, and we were trying to locate embankment materials for building Fort Cobb Dam, and then eventually we got into the concrete work and making concrete mixes. I stayed down there for a couple years, I guess.

C. O. (Spike) Crane

About in '58, I guess it was, I was working on the Fort Cobb Dam, I was working for C .O. Crane [phonetic], "Spike" Crane. Spike was a real nice guy, a fellow that I really enjoyed working with. He called the wife and I into the office and wanted to talk to us. She had just gotten on with the Bureau of Reclamation and she was working

in the payroll section.

Asked to Transfer to Run the Lab at Foss Dam to Calm Personality Conflicts in the Construction Office

So C. O. said, "I'd like for you to transfer up to Foss Dam."[2] They'd had some disagreements up there between the guy that was running the lab and the construction engineer, and that old boy says, "Well, if you bring Chappelear up here," he says, "I'll work for him, but I'm not going to work under–" this fellow that was the construction engineer. So Spike really put me on the spot there and asked me to go up there and take charge of that lab, which I did.

Me and this fellow got along real great and I didn't have any trouble with the other people, too. They were sort of a divided house up there, and I kind of walked the fence all the time I was up there on Foss Dam.

Storey: What kinds of things were they disagreeing about, do you remember?

Chappelear: Mostly I think it was personality conflicts and just didn't get along. Not conflicts as far as

2. This is on the Washita Basin Project. The dam is in the area of Clinton, Oklahoma.

what should be done or how to do it, but just clashes of personalities. I guess those things happen.

Sent to Look for a Dam Site on the Canadian River for the Canadian River Project

[I] worked along there on Foss Dam, we were getting close to completion on it, and another dam was being considered, and this was on the Canadian River Project. About 1960 I spent a miserable winter. They sent me out to this potential dam site to do some degradation studies downstream to see if we could find some control on the river, such as some hard rock or something like that. I went out there with one other fellow, a driller, his name was Marvin Cash. Marvin and I went out there and we jetted down a lot of holes across the [Canadian] ~~Colorado~~ River bottom trying to find some controls, and all we ever found was a deep sandy bottom that went down several hundred feet.

Storey: You said the Colorado River?

Chappelear: No, the Canadian River. I switched rivers on you there. Sorry. But this was on the Canadian River and associated with the Canadian River Project.

Moved to Construction of Sanford Dam on the Canadian River Project

So later we got the Canadian River Project under way with the construction of Sanford Dam. I made a move from Clinton, Oklahoma, to the border of Texas.[3]

Storey: How did that move come about?

Served as Assistant Project Engineer on Sanford Dam

Chappelear: Well, my work there on Foss Dam was just about over with and we were about to complete Foss Dam. Spike Crane was sent out to Amarillo, Texas, under Leon Hill, and Spike was starting to give me some payback for having me make that one move, I think. So Spike wanted me out there, and he brought a fellow in from California, Phil Kinsley, who was going to be the construction engineer on the dam, and he brought me in as Phil's assistant. So I was the number-two guy there on the construction of that dam, but the head guy was Spike Crane, he was the project manager.

Storey: So you were assistant construction engineer for the project?

3. Sanford Dam in just north of Amarillo, Texas, near Borger.

Chappelear: No, for Sanford Dam, not the project.

Storey: For Sanford Dam?

". . . one of the big problems we had with Sanford Dam was we were in an oil and gas area and we had pipelines running all over the place. So one of the first things I did was try and locate all these pipelines that were going to be in the reservoir area and try to get them relocated out of the reservoir. . . ."

Chappelear: Right. I worked there in that area for a couple of years, and one of the big problems we had with Sanford Dam was we were in an oil and gas area and we had pipelines running all over the place. So one of the first things I did was try and locate all these pipelines that were going to be in the reservoir area and try to get them relocated out of the reservoir. We were trying to do that as inexpensively as we could, of course. Then also we had a couple of wells that were in the reservoir area, and one of those we relocated on the downstream slope of Sanford Dam and did some directional drilling so that this well was still operational, which gets me to the story that scared the heck out of me one morning.

". . . one morning. I went out to the job site and here was gas and moisture and stuff being shot

two or three hundred foot up in the air. . . .”

I went out to the job site and here was gas and moisture and stuff being shot two or three hundred foot up in the air. The contractor was placing some waste material on the downstream toe of the dam and he was using some scraper units. Everybody had been in a nice traffic flow pattern except this one old boy. This well had been relocated and there was nothing there but what they call a Christmas tree, which was all the valves and stuff sticking up on it, and he made a *wrong* turn and broke the Christmas tree off from this well. He was one really lucky guy that he didn’t get fried to a crisp. As soon as he hit it, he realized what he had done, he turned his engine off on his scraper, and it didn’t catch on fire. So they were able to get in there and cap that off without too much of a problem, except there was a lot of gas lost in the process of getting it done, but we didn’t have a fire. That was one thing associated with all those relocations there.

So that was one of the preliminary things that I did prior to starting construction. Really getting into construction of the dam was the relocation of these pipelines, and this other followed after we were *in* construction.

Storey: Before we go on, let's talk a little more about this relocated well. Were there, for instance, any claims against the government, first of all, for downtime on the well, second of all, for loss of gas as a result of the accident, those kinds of things?

Chappelear: There was certainly a claim against the contractor for the loss of gas, and I think it was a pretty substantial sum. We realized early on that we were going to have to make this well relocation and we tried to get that going while the well was still productive, and so we had very little downtime.

Storey: So it was planned so that we didn't have to do that kind of reimbursement?

Chappelear: Well, we reduced it as much as possible. I don't think there was hardly any.

Experimenting with Explosive to Consolidate the Foundation of Sanford Dam

Another fun thing that I did on the Sanford Dam site was for practice getting started on construction was, we had all these smart people up there in the Engineering and Research Center in Denver and we were trying to cut the cost of building Sanford Dam. We hadn't been able to find a good

foundation for it from those earlier studies, but they had remembered somewhere over in Pakistan or something someone was building a dam and they had been able to reduce the cutoff trench size by getting in there and placing explosives in the foundation area and just shaking it a little bit and consolidating the sands. Well, we had all these fine sands under the Sanford Dam site, and I think it was Barney Bellport at the time that was saying, "Well, hell, if they can do it over there, we can surely do it in the United States."

So it was part of my job to go out there and plant a lot of different explosive patterns with different times of detonation on them and try and shake down this foundation and see if we could consolidate it. So we were going to remove and have a smaller cutoff trench if we could do this. But, unfortunately, we weren't able to accomplish this to anybody's satisfaction. We could get some consolidation, but it wasn't a significant amount.

So really after doing some of these shots, I can remember it sort of looked like a World War II scene, we'd have the water bubbling up and the gas coming out of the ground and smoke and whatnot. But it really didn't accomplish anything.

Storey: How did you determine whether or not you had gotten adequate consolidation?

Chappelear: In-place density tests and that sort of thing. It was sort of a fun thing, but it didn't work.

Asked to Move to the Canadian River Project Office in Amarillo Where He Gathered Design Data for Reaches Two and Three of the Canadian River Project Office Aqueduct System

As the construction was going along pretty good there on the dam and I'd been there a couple of years, I was asked to move down to Amarillo and get in the project office there, the Canadian River Project Office. I spent about a year there, I guess from about '62 to '63, about '62, thereabouts. I was in the Canadian River Project Office, and I was gathering design data and sending it in for the Canadian River Project Aqueduct System. We had *three* long reaches of aqueduct that we completed in three different sections. One was trying to get the water from Sanford Dam, what was later known as Meredith Lake, down to Amarillo, and then the second section was from Amarillo down to Lubbock, Texas. I was gathering up this design data and submitting it to the E&R Center for the second and third reaches of the aqueduct.

Storey: Who asked you to move?

Moved to Lubbock, Texas, to Supervise Construction of the Third Reach of the Canadian River Aqueduct

Chappelear: Spike did, again. Then finally in 1964, I was asked to move again. We didn't have an office set up at Lubbock and we still had about a hundred and forty miles of aqueduct to build with four pumping plants and a lot of regulating tanks and surge tanks associated with it. So in '64, I moved to Lubbock, Texas, and was put in charge of that last section of aqueduct. This was really the first big break that I'd had with the Bureau of Reclamation in having an office of my own. Of course, I was still under Spike and the project office, but I finally got an office of my own in '64, and stayed there in the Lubbock area for four years building this hundred and forty miles of aqueduct that delivered water to seven different communities in the Texas Panhandle.

Governor of Texas Called to Recommend Someone to Be His Secretary in Lubbock

Had another funny thing, it's funny now, it wasn't funny when it occurred. I had a fun thing happen to me when I went down

there to set up that office in '64. I wasn't very politically active, more just the straight engineering type, and one morning I got a phone call from a guy named Preston Smith, and Preston Smith wanted to talk to me. Right off I couldn't recall who Preston Smith was, but he was the *governor* of the state of Texas. (laughter) But I don't know, it didn't strike me that morning. They didn't say it was the governor when they called and put me on alert. So I had this phone call, and he couldn't talk to me, and so they cut me off and then it came to me who Preston Smith was that was wanting to talk to me. And old Preston was calling me and wanting to recommend a lady to be my secretary when I set up this office at Lubbock.

Of course, I wasn't so naive that I didn't recognize that I shouldn't hire Ruth Broadhurst as my secretary, and I hired her and she turned out to be really great. She was a real intelligent woman. She knew an awful lot about the water business in Texas and she turned out to be quite an asset. I was really taken aback that here I'd got a phone call from the governor of the state of Texas and I didn't realize immediately who he was. He was just another one of the Smith boys, you know. (laughter)

Storey: Speaking of people connected with Sanford, for instance, and construction of the aqueduct system, I think there was one Joe D. Hall working on that project.

Joe D. Hall

Chappelear: Yes. When I first met Mr. Hall, he was working in a pipe plant located at Plainview, Texas.

Storey: Reinforced concrete pipe plant, I think.

Cen-Vi-Ro Reinforced Concrete Pipe

Chappelear: Right. Cen-Vi-Ro of Texas was the name of the plant or the name of the company. They put that tag on it to identify it as a separate little unit, I think, but it was Cen-Vi-Ro of Texas. And Joe was making pipe there in this Plainview plant. He was making pipe for the job that I had there at Lubbock. They made a lot of the pipe for us.

Storey: But he was Reclamation's inspector, wasn't he?

Chappelear: Yes, he was an inspector at that pipe plant, yes.

Storey: He didn't work for the company.

Chappelear: He didn't work for them, he was a Bureau employee.

Storey: Right.

Chappelear: He was overseeing the inspection of the pipe that was coming to this job that I had. And that gets into a rather long-winded story. Here the manufacturers of this pipe were having it inspected by these Bureau of Reclamation employees, and they were inspecting it there at Plainview, and then they were shipping it south. We were getting this pipe and we were also–I had people out there inspecting the pipe on the ground, and we were rejecting some of this pipe that had previously been passed. We got into a big hubbub over, well, where was the pipe inspected. Well, there was no question in my mind where the pipe was inspected and accepted, it was accepted just prior to laying. If it wasn't a good joint of pipe, well, we weren't going to lay it. So we got into a big lawsuit with Cen-Vi-Ro of Texas because we were rejecting considerably more pipe than was being rejected at the pipe plant.

That lawsuit came back to haunt me many years later. After I finished this job there at Lubbock, Texas, I made a move to the Washington, D.C., office. I'd been up there

several years and I got a phone call from Spike Crane and he says, "Hey, we're going to be having some hearings on this Cen-Vi-Ro pipe thing. We'd like to have you testify." And he gave me the name of this lawyer that was going to be taking the testimony in Washington.

END SIDE 1, TAPE 1. SEPTEMBER 3, 1996.
BEGIN SIDE 2, TAPE 1. SEPTEMBER 3, 1996.

Storey: You were saying you had been off the job for three or four years.

Chappelear: Yeah, away from the Lubbock, Texas, area for three or four years when this testimony was needed. This lawyer assured me that, "All that you have to do is show up and say that you wrote and signed these memorandum rejecting this pipe that was built by Cen-Vi-Ro of Texas and your reasons for doing so." Really, all I had to do is identify that this was my signature and I'd written these memorandums in regards to it–well, that's what he told me I was going to have to do.

So I showed up that morning and thought, "Well, that's all there's going to be to this. I'm going to be on the stand five or ten minutes and then I'll be off and gone." But it didn't work out that way. I turned out to be

the first person for the Bureau of Reclamation to testify before this group and they had me on for four hours instead of ten minutes and really had me on the spot. But my testimony turned out pretty doggone good, and so I was pleased with it once it made the record book. But that was an interesting thing associated with Cen-Vi-Ro of Texas.

Storey: Was this in front of a group that was arbitrating or was this a deposition?

Chappelear: This was really an arbitration, I think, of this thing, and they had their lawyers and we had our lawyers and it was really more of a deposition than cross-examination on my part. So they went on to settle the thing. I've got several pages of questions and answers and the settlement of it.

Storey: Could you tell me how to spell Cen-Vi-Ro?

Chappelear: C-E-N, dash, V-I, dash, R-O. Cen-Vi-Ro stands for centrifugal spinning of the pipe. They had forms where they introduced the concrete into these pipes, or forms, which held whatever reinforcement was needed, and the centrifugal force, they spun the pipe as it was being made. They would shoot the concrete in there and it would level itself out by centrifugal force. Then they had the vibrators

on this, and that's what the "V-I" stands for, and all during this process it was rotating.

Storey: Cen-Vi-Ro.

Chappelear: Cen-Vi-Ro, yeah. That was a pipe manufacturing process.

Storey: Was this a new technique for Reclamation, do you know?

Chappelear: Well, I don't think that it was a new technique for Reclamation, because Reclamation never made any pipe, per se. But there were other projects that had used similar manufacturing processes.

Storey: Interesting. We were starting to talk about Joe Hall, though.

Chappelear: Joe was a very ambitious young man and a good speaker and, I think, a good engineer. He went on to do quite well with the Bureau of Reclamation. He wound up being a regional director, as you're aware. I always found Joe to be an interesting character and a very likeable guy.

Storey: What else did you do while you were in Lubbock? What kinds of things were going on?

R. H. Fulton Company Won the Contract for Reach Three of the Canadian River Project Aqueduct And, out of Necessity, Ended up Developing New Ways of Laying the Pipeline

Chappelear: Well, the contract to lay the hundred and forty miles of pipe went to an R. H. Fulton. R. H. Fulton Construction Company was one that was started with this little boy that had probably three or four trucks following World War II, and he just built hisself into a pretty good construction company. But when he bid this pipeline job, he sort of got in over his head. He really saw immediately, because of the materials that had to be excavated there, we had a lot of caliche-type materials, and they were difficult to excavate.

Storey: Very hard, consolidated.

Chappelear: Yes, they were hard materials. And for him to excavate and lay this pipe, and bid the pipe by the methods that were put in the specifications, he saw immediately that he was going to lose a great deal of money and that he wasn't going to be able to get the job done without going broke. So we decided to work with him on trying to come up with a different bedding method on bedding this pipe. He was able to come up with a excavation machine that would form in the

bottom of the trench a circular section in which to bed the pipe. So with this trenching machine, he was able to practically excavate the bottom of the trench to the line and grade that we needed to do.

Then to lay the pipe, we came up with laying the pipe on little sand pads at each end of the pipe and then pouring a little mortar bedding around the pipe so that each piece of pipe was supported by this thin layer of mortar bedding. We worked with the contractor to come up with this concept, and it was one that speeded up the work a great deal, got away from conventional Bureau of Reclamation pipe bedding methods, and was very innovative. It was a very unusual way of bedding pipe.

I worked with a fellow by the name of Emmett Gloyna, who was located in our project office, and he and I wrote a paper on this method of laying pipe. Later I made a trip to New York City to deliver a paper before the American Society of Civil Engineers on this bedding method, and we got a write-up[4] that I can show you here on this innovative method.

4. D. L. Chappelear, M. ASCE, and E. L. Gloyna, A.M. ASCE, "Innovations in the Laying and Bedding of Pipe," *Civil Engineering: The Magazine of Engineered Construction*, 37, No. 12 (December 1967), 57-60.

So that was one thing that I did down there that was interesting and a little bit different. Got a big kick out of that. And the contractor went on to make money, and we got the pipe laid, and they've never had any trouble with it.

Storey: Tell me a little more about this, though, because one of the things that I'm particularly interested in is the relationship of the various offices in Reclamation to one another and who was responsible for what. Now, I presume your Lubbock office was a field construction office.

Chappelear: Yes, that's correct.

Storey: And I also presume, I don't know whether correctly, that the Denver office, the E&R Center, whatever it was called at that time, wrote the specs for laying the pipeline.

Chappelear: That's right.

Storey: So the specs were being *changed*. Who was *changing* them?

Chappelear: Well, certainly we weren't doing it in the field without the concurrence of the Engineering and Research Center. So we laid some of this on an experimental basis, and certainly we had their representatives come down to take a look

at it and that sort of thing, and then they approved it. And so we went on from there to do this.

Storey: Who would you have been working with? Do you happen to remember?

Chappelear: I want to say Groseclose, but that's not right.

Storey: Bill Groseclose.

Chappelear: Yeah. I don't know who came down there. I can't recall who it was.

Storey: Now, how would this have worked? For instance, if you were a field construction office, you worked for the project office and the project office worked for the chief engineer at that time.

Chappelear: Right. Sure.

Storey: Okay, so you would have gone through the project office to the chief engineer's office?

Chappelear: Oh, yes. Spike made the contacts and had the people come and look at it, yeah.

Spike Crane

Storey: Tell me more about Mr. Crane. What was he

like as a supervisor?

Chappelear: Well, I think he was very good. He would give you some latitudes, but he'd give you some overview, too. He was about as nice a man that I've ever worked for. I really thought a lot of him, because, well, for me, he gave me a lot of opportunity and I appreciated that. But I think that he was a very fair, honest man.

Storey: What was his management style?

Chappelear: Well, he would, I think, give you a job and tell you to go do it, and then he came down and took a look-see every once in a while to see that you were doing it in the proper manner. I know that he put me down there, and I'm sure that it took a lot of I don't know what on his part, intestinal fortitude to put me down there and put me in charge of this job at Lubbock. But he did come to Lubbock often and visit with the contractor and with myself.

Storey: How many people would have been in the Lubbock office?

Chappelear: We didn't have too many. We had twenty or thirty people, probably.

Storey: So it was, you know, a medium-sized

supervisory position for you.

Chappelear: Yeah.

Storey: What kinds of adjustments did you notice that you had to make moving into a supervisory position like that?

". . . this has always been a problem with me and the Bureau is that the higher you went with the Bureau, the less fun the job was, and the more administrative and paperwork, and personnel things entered into the job. We never had dual career ladders like some organizations where a good technician could go to the top doing what he did well. . . ."

Chappelear: Well, this has always been a problem with me and the Bureau is that the higher you went with the Bureau, the less fun the job was, and the more administrative and paperwork, and personnel things entered into the job. We never had dual career ladders like some organizations where a good technician could go to the top doing what he did well. You always got into this business of dealing with people more. I guess that's the main thing that I noticed, got more into management and supervisory things and less and less into engineering and engineering works.

Storey: When did you feel that you were beginning to leave behind your engineering specialization? Was it at Lubbock or was it before Lubbock?

Chappelear: Well, I think it came rather gradual. Maybe a little when I was working on Sanford Dam, got more into managerial things and handling people then. Maybe even before that when I first was put in charge of the lab at Foss Dam, I got more into management things and dealing with people. Of course, before that there was just me and what I could do and what I was doing.

Storey: At Foss how many people would you have been supervising?

Chappelear: Oh, ten or less.

Storey: Um-hmm. And then you moved to the project office in Amarillo. Was it co-located with the regional office or did they have a separate location?

Chappelear: Well, no, I moved from there to Borger, Texas, at Sanford Dam as the assistant there.

Storey: Then from Sanford to the Canadian River Project Office.

Chappelear: Yes. Well, there I was just sort of doing an

office engineering function there dealing with design data and that sort of thing and working with a few people in the field and taking the information that they got, trying to make packages to deliver to the E&R Center. And [I] didn't have much supervisory responsibility there at all.

Storey: Were you consciously moving through all these different jobs or was this more Mr. Crane saying, "I really need your help over here now."

Chappelear: I think as much as anything it was under his supervision and direction. I think he was moving me along.

Storey: Were you conscious that he was moving you along?

Chappelear: I realized things were getting better, but, no, I don't guess that I was really that conscious, but as I look back on it many years later, yes, I think that he was in the process of trying to develop me into more responsible positions.

Storey: Had you made any conscious decisions about what *you* wanted out of Reclamation at that time? Do you remember?

Chappelear: Well, I felt like I was getting what I wanted

out of Reclamation. I really enjoyed the construction side of it, and so I was achieving some of the things that *I* was looking for. First, was some construction experience and I was getting that. So from where I was coming from, I felt like I was getting what I wanted.

Storey: Then you were out building a hundred and forty miles of aqueduct.

Chappelear: Right.

Storey: That was fun, I take it?\

People Who Worked the Pipeline Project out of Lubbock

Chappelear: Oh, yeah. Enjoyed it. I had some great guys working for me. I had Bill Moffitt [phonetic] and Bill Seth [phonetic] and Bob Carr [phonetic], three real nice young engineers that were really carrying the load in the field and done a good job for me. Got to give those guys a lot of credit. They made things easy for me.

Storey: They were doing the construction inspection?

Chappelear: Yes. and overview, and laying of the pipe. Moffitt and Carr were doing a lot of the concrete structures. Bill Seth was following

the pipe laying and the inspection of it. Well, Moffitt was also in the pipe some, too.

Storey: What kind of travel would you have been doing? Anything? Would you have been going to training courses, going to conferences, that kind of thing while you were doing that?

Attended the Fourth Army Management School in San Antonio, Texas

Chappelear: Yes. Of course, one of the first management schools that I had an opportunity to go to was really a good one. The Fourth Army put on a management school annually, and I was given the opportunity while I was at Lubbock to go to one of their schools in San Antonio. They took so many civilians into it. They had really top-name executives from large companies that attended those schools and, you know, gave lectures and things of that nature. So that was the first management school that I had an opportunity to go to. I don't remember what year I did that, but it was probably in '66 or thereabouts.

Storey: I noticed you said you had the opportunity to go to. Did that mean that somebody else suggested you go, or was this something you sought yourself?

Chappelear: No, this isn't something that I would–I think here again Spike sent me to it.

Storey: Interesting. And you were there for four years, I believe you said?

Chappelear: I was at Lubbock for four years, yes.

Storey: Right, how did your change come about then?

Chappelear: My change? What change are you–

Storey: To go to Washington, D.C.

Chappelear: How did I wind up in D.C.? Well, that's a long-winded story.

Storey: Good. That's what I'm here for. (laughter)

While in Lubbock His Wife Attended Texas Tech and Earned Her Degree in Elementary Education

Chappelear: Not a long-winded story. Before we get off of the four years at Lubbock, I'd like to point out that my wife has always been a big help and support to me and she had worked for years and years at different kinds of jobs, bookkeeping, bank accountant, and even for the Bureau of Reclamation for a short period of time. But when we moved to Lubbock, she realized that we were going to be there for

several years and she didn't have a college education and she started at Texas Tech and went right straight through and got a degree in three and a half years. She got a degree in elementary education and then she started teaching after that and taught for about ten years after that. But that was not only an opportunity for me at Lubbock, but it afforded her some opportunities, too.

Move to Washington, D.C. to Work in the Water and Lands Division

Now to get back to *your* question, how did I wind up in Washington, D.C.

Storey: Maybe I'm pushing you too fast. Maybe there's more about Lubbock we need to talk about.

Chappelear: No, no, I think that's pretty good.

Storey: Did you have any children?

Chappelear: No, the wife and I are just the wife and I.

Floyd Dominy

But we did get water to those seven cities there in the southern Panhandle. As the job was coming to an end, I can remember

going to a party that the regional office was having. The regional office was having this party because a fellow by the name of Floyd Dominy was coming to town, the commissioner of the Bureau of Reclamation. Leon Hill was the regional director at Amarillo. So all of us Canadian River Project types, well we were invited to this party. I was there and I was talking with Dominy about what I should possibly do with my career. One of the things that was going on in the world that was interesting to me was that in India they were talking about building the Beas [phonetic] Project, and it was going to involve several very large dams. They were going to be earthen-type dams. I'd had experience on three dams and I thought, "Hey, maybe that's where my career should go. I'll go through the Foreign Activities Office in Washington, D.C., and see if I can't go over on the Beas Project."

I offered this up to Dominy as something that possibly I should think about doing, and he immediately went into one of his little cussing sprees and said, "Well, goddamn, son, you're not going to learn anything over there." He said, "You're going to stagnate." He said, "Well, did you ever think about coming in to Washington?" (laughter) So he did give me something to

think about there.

So I thought, "Well, heck, I can give Washington a try." And he'd just about given me an invitation, and so I thought I would apply for a job up there. And I did, and I went to work in the Water and Lands Division there. And I went to work for Roy Boyd.

". . . I wrote hundreds of letters the first year or two that I was in the Washington office. . . ."

We handled a lot of different letters. I think I wrote hundreds of letters the first year or two that I was in the Washington office. Of course, many of those were responding to congressmen that had complaints from people that weren't happy with the Bureau's operation and maintenance of their different projects in the field. Roy Boyd was also the torts claim officer of the Bureau, and many of the letters that I wrote were associated with his responsibility there. So I was really just there working for Roy.

Worked for Morris Langley and Richard Shunick

The heads of the division was Morris Langley and Richard Shunick. And here's where I made the contact that eventually got me back to where I am today sitting here in Arizona,

and that was Dick Shunick. So I was working for Dick and for Morris.

Worked on Compiling the Colorado River Documents

I know that one of the jobs that Morris Langley had me do was to put together a book where we were trying to bind up a lot of odds and ends that really amounted to the "law of the river" on the Colorado. I don't have one of those books, but we only put together three or four of them. That was one job that I did for Langley. I was trying to put all this stuff that happened on the Colorado together in some sort of a chronological order that would tell you why things are the way they are today law-wise.

Well, I puttered around there for several years. Let me see if I can come up with the exact time. I was there from '68 until in 1971. I still had an itch as far as construction was concerned. Ed Blout [phonetic] was chief of the Construction and Contracting Activities Branch there under the Division of General Engineering. Well, Ed had a drinking problem and I don't know what other kind of problems, but Ed wound up shooting himself and that left a vacancy in that particular position. I wasn't sure that I

wanted a job that would drive anybody to drink–

Storey: Much less–

Worked in the Division of General Engineering

Chappelear: Much less the other, but I did apply for that job, and I got it, and I was working for K. K. Young. He was chief of the Division of General Engineering at that time. And of course, all that I was doing was reviewing major contracts that were going to be approved in the Washington office, construction contracts, etc., and I puttered around and worked at that job. Then K. K. Young pulled a big surprise on me. I didn't think he was *nearly* ready to retire, and the rascal retired. I had worked for K. K. for, I guess, about two years.

Then in December of '73 I had applied for and Stamm made me the chief of the Division of General Engineering.

Storey: Stan?

Liked Going to Reclamation's Annual Program Conference to Set the Program for the next Year

Chappelear: Gilbert Stamm. Anyway, for whatever

reason, he made me the chief of the Division of General Engineering, and, boy, that was a job that I really relished and enjoyed and got a lot of satisfaction out of because that put me in a position where I could go to the annual "program conference" that the Bureau had, trying to figure out what jobs we were going to be working on, what capability we had, what expenditures we had, where we were going to put the money, and all that was very interesting to me.

Storey: Tell me how that worked.

Chappelear: How that worked. Well–

Storey: I think it was a week long.

Chappelear: Yeah, that was a nice week-long conference. Of course, much of it was cut and dried before we ever went to the conference. Also, as chief of the Division of General Engineering, we had some annual meetings of the Bureau's construction engineers, got an opportunity to go to Denver and participate in those and find out what the capabilities were at these different job sites, what these people were going to input.

But then the flip side of that I also was able to come into contact with representatives

of OMB [Office of Management and Budget] because they were giving us feedback from up above as to how much money we might have to work with, what cuts we might have to take, and, of course, all this was always going on. I think I enjoyed that part of the job pretty good.

Another aspect of it was that they were *always* running youngsters through OMB, so it was always an educational process of trying to educate some bright youngster that was going up the ladder with what the Bureau of Reclamation's objectives were, what projects we had going on, and just what the heck we were trying to do. So there was always an educational process going on with OMB that I enjoyed.

Also, on that job it brought me in contact with a number of congressmen, and I had friends that I didn't know I had before I got that job.

Storey: Oh, is that right. (laughter)

Jimmy Carter and Reclamation

Chappelear: Well, when you start getting Christmas cards from congressmen like "Bizz" Johnson and others that were interested in Reclamation and

how it progressed, some people wishing you well. But that job went along, like I say, very well, and I enjoyed it very much until along came a character by the name of Jimmy Carter.

". . . Carter, he was wanting to shut down *all* of Reclamation's projects. . . . he did make my life rather miserable. . . . and I got rather fed up with that and decided, "Well, if this is going to be such a hassle, maybe I . . . need to get back to a construction job.""

Of course, Carter, he was wanting to shut down *all* of Reclamation's projects. He had no idea about what the needs were west of the Mississippi River, I don't think. But he and his environmentalists, as I'm sure you're well aware, were trying to shut down all the major ongoing construction of the Bureau of Reclamation, and he thought he was going to get it done. But politically he just wasn't that savvy and there was just too much clout in the West to get that done. But he did make my life rather miserable. I always had some of these people in my office wanting information on the ongoing work, what was going on, *why*, and all that sort of thing.

END SIDE 2, TAPE 1. SEPTEMBER 3, 1996.
BEGIN SIDE 1, TAPE 2. SEPTEMBER 3, 1996.

Storey: This is tape 2 of an interview by Brit Storey with Dess L. Chappelear on September the 3rd, 1996.

So you had a lot of folks [coming into the office] during that period.

Chappelear: Yes, and I got rather fed up with that and decided, "Well, if this is going to be such a hassle, maybe I don't need this job and maybe I need to get back to a construction job."

Dick Shunick Became Project Manager in Phoenix for the Central Arizona Project

Well, things had been progressing on the Central Arizona Project. One of the moves that had been made was that Cliff Pugh, who had been here for years and years doing the preliminary work on the Central Arizona Project, Cliff retired and Dick Shunick got his job as the project manager. Well, activities on the project was authorized and it was starting to get some funding, and it had funding for a couple of years when I applied for the position of assistant projects manager. They didn't have an assistant projects manager, and they created that position because the activity was picking up with the start of construction.

Applied for and Selected as Assistant Project Manager

So I applied for that, as did about thirty other people in the Bureau, I think. I don't remember how many, but there was a lot of people [that] wanted the job. But Shunick, like I say, had known me in Washington, and so for some reason or other he picked me to come down as assistant projects manager.

In Washington, when I first went in there, I told Morris Langley, I said, "Well, don't count on me for more than a year or two and I'm going back West." But they sort of entice you along and give you these raises and whatnot, and I went up the ladder to a GS-15 as chief of the Division of General Engineering. But this position as assistant projects manager down here was a GS-14 job, and I said, "Well, I'll take that job as a GS-14 if I can keep my GS-15 salary," which that was acceptable to everybody.

So I came down here in 1977. The wife and I bought a home in Moon Valley there on the north side of Phoenix. We had offices then in the Valley National Bank. I commuted back and forth every day to that office initially.

Storey: When was this that you moved?

Chappelear: I made the move in 1977.

Storey: You were saying we had offices in the Valley National Bank and you commuted.

Chappelear: Yeah, I commuted back and forth to it. Had a lot of activities going on there. Eventually we got the offices located out near where the canal is. That made my commute a lot shorter and a lot nicer.

CAP Had a Lot of Things to Be Done

The CAP was really a challenge. There was a lot of things going on that hadn't been settled and yet we were trying to build it. Shunick pulled a surprise on me.

Served as Acting Project Director, but Did Not Receive the Job When He Applied for it

He didn't stay hitched very long and he retired, and I wound up being the acting project manager there for a short time.

Ed Hallenback Became Project Manager

I applied for that job, didn't get it, and Ed [Edward M.] Hallenback became the project

manager. Ed was a nice guy. I enjoyed working with Ed.

Given Line Responsibility to Supervise Several Divisions

But with the alignment that we had under Ed, I had direct line responsibility for the Environmental Division, for the Planning Division, for the Lands Division, and for a couple other offices–I don't want to leave any of this stuff out–the Operations Division, and the Office of Distribution Systems, where we had Larry.

Storey: Larry Morton?

Environmental Statements Had to Be Completed, and the Aqueduct Had to Be Sized for the Project

Chappelear: Yes. One of the really major problems in trying to keep the project going was to get *all* this prerequisite stuff out of the way so you could not hold up construction. Those environmental statements had to be taken care of. And, of course, you had to know what you were going to do. But we didn't know how much water we were going to take south and how to size the aqueduct beyond Phoenix. In the authorizing legislation, they said it was going to be a 3,000 cubic foot per second

aqueduct system to bring water into Phoenix. But beyond that we got into some sizing problems.

Tucson Factions Take Positions on the CAP

When I first came to the Phoenix area, there was a minority group down at Tucson that was saying, "Don't push that high-priced water off on us. We don't want the CAP water," you know. That was going on. I probably hadn't been here two years until that flip-flopped and another group emerged saying, "You're robbing us of our birth right, and we want more CAP water."

CAP Was Also Affected by Indian Water Rights in the Area

Then associated with the sizing problems was some changes in the secretary of interior and trying to settle some of the Indian water rights situations within the state. So we had Secretary Andrus making changes in the Indian water allocations. In fact, we got Indian water allocations all the way to the south of the Papagos and the San Xavier area, down south of Tucson, that weren't initially in the plans when I first came on board.

Storey: They weren't in the plans?

Sizing the Salt Gila Pumping Plant

Chappelear: No, no. In other words, they kept adding Indian tribes trying to settle their water claims against the Federal Government. So how to size the Salt Gila Pumping Plant was a big concern of mine and we were getting up against a real tight deadline. And finally I asked the guys in the Planning Division what additional amount of money would it cost to size it where we could take even 3,000 cfs on south if we needed to. We finally made a decision on the Salt Gila Pumping Plant, we oversized it at the expense of a few million dollars so that we could proceed with the construction work, but then all of it sort of fell in place after that. That was the toughest decision, was what size to size that Salt Gila Pumping Plant. It was of great concern to me. It was sort of like trying to hit a moving target because it was changing rapidly.

Storey: I have the sense that the whole CAP was doing that. Things were evolving constantly.

". . . CAP was visualized that initially virtually all the water would go to . . . the different irrigation districts in the state, and then . . . we priced the farmers nearly out of the water-taking business. And we had built a lot of distribution systems that weren't going to be utilized to the extent that we

thought. . . ."

Chappelear: Yes, I think that they were. As you're aware, the CAP was visualized that initially virtually all the water would go to these farmers, to the different irrigation districts in the state, and then by the time we got the project finished and the water priced, we priced the farmers nearly out of the water-taking business. And we had built a lot of distribution systems that weren't going to be utilized to the extent that we thought.

Back when we were in the planning process, how to size these little distribution–I won't say little, some of them were large–but how to size these different distribution systems to these irrigation districts, there was two lines of thought on that. Some of the people were thinking, well, we can give them a small flow into the irrigation district and they can irrigate all their land from it.

But the farmers realized that if they could take their full allocation and at a high rate of speed, they could use almost level farming techniques, flood irrigate the lands, get more even distribution of the water than if you started out down the row and on one end of the field you get a lot of water, at the other end you don't get so much. They were

wanting to go to some of these more modern-day irrigation techniques. So some of the sizing of the distribution systems were based on that, flood irrigating of the lands. So the distribution systems were bigger than what you might have done prior to that.

I know that we were able to get a loan for, say, the Harquahala Irrigation District out here, and they were a progressive and nice bunch of people. Then they decided that, by golly, they couldn't afford to take the water, and so that distribution system is sitting there not being utilized. They made a settlement with the Secretary of the Interior on the repayment of it, and a lot of that water went into a pot for Indian water settlement. So it got very complicated. But back when we were doing that planning and that work, why, we didn't see some of those things. Hindsight's great.

Storey: Yeah. A hundred percent, they say.

Chappelear: Yeah.

Storey: Or is it twenty-twenty.

Central Arizona Project Association

Chappelear: I don't know. (laughter) Had a lot of people

in Arizona that were interested in the project. We had an organization called the C-A-P-A, the Central Arizona Project Association. These people were following the project from day one, wanting to know what was going on, what progress was being made, how could we utilize more money. They were really approaching the project from the political side. I had many, many Friday luncheons with the executive director of the C-A-P-A because they followed the project very, very closely.

Storey: Who was the executive director?

Chappelear: Rich Johnson, the biggest part of the time. We had before her, Zeta Darter [phonetic], Rich Johnson. But those were good people to work with because they were supportive of the project and trying to be helpful.

Central Arizona Water Conservation District (CAWCD)

Then, of course, another factor in the CAP is the Central Arizona Water Conservation District [CAWCD], which is a group that was formed by Arizona law to enter into a repayment contract with the Federal Government to repay the project. Tom Clark started out as the head of that, and he was a

former Bureau of Reclamation employee and he was really a nice guy to work with. As they were trying to build up their maintenance force and take over the operation of the project, the Bureau role became less and less.

Storey: How long were you the assistant project manager?

Served as Assistant Project Manager from 1977 to 1985

Chappelear: From ‘77 until ‘85.

Storey: So you were there when the first water deliveries were made?

Chappelear: Yes.

Storey: Tell me about it.

Chappelear: It was a pretty exciting day. We had a lot of people come out to take a look at the water running in the canal. Always try and make that a big event. You know, all the political types were out, and I guess the commissioner of Reclamation was here and the regional directors and people of that nature. Had a big ceremony.

Storey: The commissioner at that time would have

been?

Chappelear: Oh, who was that?

Storey: Now, let's see, now we're talking about Harquahala, right? In '82 or '83?

Chappelear: Well, let's see. Harquahala, I think the water got to them later than that. I thought you were talking about when the water came to Phoenix, the Phoenix area. That was in '85.

Storey: That still probably would have been Bob Broadbent.

Chappelear: Yeah, I think it was Broadbent. Correct.

Storey: What was he like as commissioner?

Bob Broadbent

Chappelear: I don't think he was a very agreeable fellow. I don't know that he was on top of the job like some other commissioners. Of course, Dominy, I guess, was the man that knew his job and everybody else's more than anyone else. (laughter) Dominy was probably the sharpest character we ever had as a commissioner. And Gil Stamm was a good commissioner. He had been with the Bureau of Reclamation for many, many years.

Storey: He was really the last Reclamation commissioner brought up through the ranks, as it were.

Chappelear: No, I think it was Stamm, Gil Stamm.

Storey: Right. So then we had Keith Higginson.

Chappelear: Yeah, Keith Higginson and Broadbent and whatnot, they were more political types and not as knowledgeable and I don't think had the interest in the Bureau of Reclamation that some of the others did.

Storey: We were talking about the first delivery of water into Phoenix here. What kinds of events were organized, if any?

Chappelear: Well, there was a deal where you opened the gate and you let the water flow and people see the water running in, and there were some events that were located on the bank of the aqueduct just north of Phoenix there. We had the project headquarter's building and people were able to go through the project headquarter's building and they could see the electrical display map of the project.

Storey: Oh, in the control room?

Chappelear: In the control room. I think a lot of people

have gotten a big kick out of that.

Storey: Now, was the control room and the control system built while you were there?

Planning and Building the Control System for CAP

Chappelear: Yes, yes.

Storey: Was that part of your planning work, for instance?

Chappelear: Yes.

Storey: What was going on in the planning of that system?

". . . it was pretty complicated. Ed Hallenback kept a real tight rein on that thing. But some of the choices that had to be made dealt with the system reliability. The final outcome of it went to . . . primarily microwave for day-to-day operation, backup buried line. . . ."

Chappelear: Well, it was pretty complicated. Ed Hallenback kept a real tight rein on that thing. But some of the choices that had to be made dealt with the system reliability. The final outcome of it went to buried line and then also backup–well, primarily microwave for day-to-

day operation, backup buried line. So I think it's a pretty good system and one that's been functioning well.

Storey: Of course, it's an example of the way computers are changing on us, even as we speak.

Chappelear: Yes.

Storey: They have this huge room of a computer that will be replaced, I gather, pretty soon by a couple of PCs, maybe.

Chappelear: Yeah, these computers keep getting smaller and smaller. I've got one in the back room here that would have occupied several rooms a few years ago.

Storey: Were you *seeing* the effects of computerization on the operation of the systems? Was that a new innovation going on, or what?

Chappelear: Well, I don't think all that much. Certainly we were going to be able to monitor all the pumping plants and monitor on each pump all these different things, but I don't think it was that heavy into the computer. I think it was more the old hard wire stuff that we were picking up. I don't think that we were going

to rely on a computer all that much for the operation. You had to be able to operate it manually if you had to.

Storey: One of the things that I gather was unusual about the Phoenix Office was that it was a combined planning and construction office.

Chappelear: Yes.

Storey: Rather than a construction office *or* a planning office. Did you see that there were any issues that arose because of that, that you hadn't seen before in Reclamation?

Chappelear: Well, I think that we had some conflicts, different people wanting to assert themselves and make the decisions and, yeah, I think that there was some of that there.

Storey: Do you remember any specific samples?

". . . Andy Dolyniuk was disappointed that he wasn't calling all the shots, but he really couldn't, and I don't think that he appreciated some of the planning problems that we got into. Some of the planning problems that really required a lot of time and were difficult to resolve was the flood control for the Phoenix area. . . ."

Chappelear: Well, I think Andy Dolyniuk was

disappointed that he wasn't calling all the shots, but he really couldn't, and I don't think that he appreciated some of the planning problems that we got into. Some of the planning problems that really required a lot of time and were difficult to resolve was the flood control for the Phoenix area.

Orme Dam and the Fort McDowell Yavapai Nation

In the original legislation that authorized the project, we were going to have an Orme Dam at the confluence of the Salt and Verde Rivers. The Fort McDowell Indians[5] objected to this and also the environmentalists, and so we had to start looking for small alternatives to Orme Dam.

Control of the Salt and Verde Rivers

How were we going to control the Salt and Verde Rivers?

When we first started looking at the problem, we went back and we reviewed the hydrology for the existing dams on the Salt River, the old Salt Project, the Salt River Project. The first thing that we found out was that by a modern-day hydrology, none of the spillways on those dams were adequate to

5. Fort McDowell Yavapai Nation.

withstand a major flood that we might have.

Plan 6 for the Central Arizona Project, Including Cliff Dam

So that gave us the problem about how can we still provide this flood control and get along with some safety-of-dams problems that we also had on one of the dams in the system and still provide this flood control. So we looked at every scheme and idea that anybody in the Phoenix area could come up with, and finally came up with what was known as Plan 6. In Plan 6, we were going to raise Roosevelt Dam, we were going to build the New Waddell Dam, and we were going to build a dam on the Verde River called Cliff Dam.

Steve Magnussen

To get the Phoenix area, the whole community in on that was a major job. The fellow that headed up the Planning Division for us was Steve Magnussen, a real bright young man and a fellow that did a super job in resolving these issues of flood control and storage for project use. And you've really got to give Steve a lot of credit on this, he was the leader in this program.

But this was one of the major

problems that we had with the planning and not one that you would expect a construction engineer to be able to resolve, because it took a Governor's committee associated with this and input from many, many people to get everyone to agree to this Plan 6, including the environmentalists. But then the environmentalists kicked out on us a little further down the road, swore that there were some nesting eagles up in the Cliff Dam site area, and kept us from ever building Cliff Dam.

Storey: So those were the kinds of things you wouldn't have expected the project construction engineer to deal with?

Developing Environmental Statements for the Central Arizona Project

Chappelear: No. And also you wouldn't expect him to be able to deal with the preparation of the environmental impact statements, because they took a lot of coordination with Fish and Wildlife Service, different groups that you wouldn't expect a construction engineer to be out there doing day-to-day contacts with. And you sure couldn't build a stretch of that aqueduct unless you had a plan, unless you had an environmental impact statement and had the property acquired. And, of course,

those were things that were sort of running along there under my supervision.

Storey: The project engineer at first was Mr. Shunick. Do you have any–

Chappelear: No, not the project engineer, the project manager.

Storey: Excuse me, the project manager.

Chappelear: But before him we had Cliff Pugh.

Storey: Did you ever know Mr. Pugh? You didn't work with him, I don't believe.

Chappelear: I knew Mr. Pugh, yes, but didn't work with him all that much. He kept dropping by to chat with us. See, I didn't come here until after he retired.

Storey: That's right. Did you ever hear anything about how Mr. Shunick came out and ultimately became the project manager?

Chappelear: No, I really don't know the story on that, what connections he had that got him that position.

Dick Shunick

Storey: What was Mr. Shunick like as project

manager?

"He was a good communicator. He didn't have the construction experience, but in dealing with the political types and in dealing with the different irrigation districts that we were trying to deal with, he was a very good communicator. I think that was his strong point. . . ."

Chappelear: He was a very personable man and met and dealt with people very well. He got along with people. He was a good communicator. He didn't have the construction experience, but in dealing with the political types and in dealing with the different irrigation districts that we were trying to deal with, he was a very good communicator. I think that was his strong point.

Storey: What about Mr. Hallenback?

". . . when it came to dealing with the press and some of these other things, Shunick often left that to me and so did Ed. I dealt with the press a lot. I was on TV a lot. . . ."

Chappelear: I think Ed was very good in the electrical field, and that was primarily his background. Ed got along with people very well, but when it came to dealing with the press and some of these other things, Shunick often left that to

me and so did Ed. I dealt with the press a lot. I was on TV a lot.

Storey: How were your experiences in that regard?

Chappelear: Pretty good, but there were some members of the press that you had to be very cautious with, and I always was. This project with CAP was in the limelight so much–

END SIDE 1, TAPE 2. SEPTEMBER 3, 1996.
BEGIN SIDE 2, TAPE 2. SEPTEMBER 3, 1996.

Storey: We had quite a few visitors on C-A-P.

Chappelear: Yes. We had visitors such as Senator [Daniel Patrick "Pat"] Moynihan. You know, not necessarily supporters of the Bureau of Reclamation, but people that were interested in the project. And over the years we had a lot of visitors that came and looked at the project. But I think even Moynihan came around to that it was a project that should be supported and finished.

Storey: You must have been in Washington when the defense of the project was taking place.

Chappelear: When what?

Storey: When the defense against the so-called Carter

"hit list" was taking place.

Chappelear: Yes.

Storey: Do you remember anything about that period of time and the people who were coming in and defending Reclamation projects in Washington?

Chappelear: No, I don't remember who was coming in particularly or if anyone did. I think that the commissioner was doing most of the defending. I was fielding a lot of questions and that sort of thing, as I was telling you earlier. Got a lot of those answers, of course, from the people in the field, you know.

Storey: The Indian water issues must have been interesting. Were you involved fairly directly in any of that?

". . . so much of the CAP is now Indian water, the Federal Government's really gotten itself involved in something that's going to be very expensive in the long haul. . . ."

Chappelear: No, but they're still not resolved. Some of them are, and I think some of these Indians are still looking for more water. But so much of the CAP is now Indian water, the Federal Government's really gotten itself involved in

something that's going to be very expensive in the long haul.

Storey: So you didn't go to meetings with them, for instance?

". . . Indians were going through BIA [Bureau of Indian Affairs] and the Secretary of the Interior . . . probably conducted at a much higher level than here. But the repercussions were coming back to us in trying to deal with the sizing of the system and its operation. . . ."

Chappelear: Well, most of those meetings were probably the Indians were going through BIA [Bureau of Indian Affairs] and the Secretary of the Interior and local politicians and that sort of thing. It was probably conducted at a much higher level than here. But the repercussions were coming back to us in trying to deal with the sizing of the system and its operation.

Storey: And that made it complicated, I guess.

Chappelear: Well, it made us very concerned. I mean, trying to get all the prerequisites out of the way so we could proceed with the construction.

Storey: Who was the regional director when you came?

Chappelear: Oh, let's see, [Nelson W.] Plummer was there for a good part of it.

Storey: Maybe Manny [Manuel] Lopez [Jr.].

Chappelear: Lopez earlier, yeah.

Storey: Bill Plummer.

Chappelear: And who was the last one there? I can't even remember his name now. Lopez was a good guy to work with, he was easy to get along with. Plummer was, too. Are you going to talk to Plummer, per chance?

Storey: Well, I hope so, eventually.

Chappelear: Yeah, well, Bill and I had a good working relationship. I don't know, for some reason or other Bill and Hallenback didn't get along too good and Plummer would come to me instead of going through Hallenback, and that was a very awkward situation for me.

Storey: Um-hmm. I can imagine it would be.

Chappelear: But I don't think Ed gave a damn whether Plummer came to him or not. (laughter) I don't know, it was strange there, their

relationship. Maybe Plummer can explain that to you.

Storey: Was it when Plummer retired that Hallenback moved up there?

Chappelear: Yeah. No, let's see. Who else do we have in there? We had another one in there.

Storey: Well, I've got the list in my briefcase.

Chappelear: No, it was before Hallenback we had another one up there.

Storey: Well, let's see. It went Arleigh West, then it went Manny Lopez.

Chappelear: Yeah. I met West, he came into Washington a few times when I was in there. I simply knew him when I saw him. And then Lopez, and then was it was Plummer after that? And then there was another one in there between Plummer and, oh, hell, I know his name real well, but I can't recall it.

Storey: How about Gene [Eugene] Hinds?

Chappelear: Yeah, Gene Hinds. That's who I was trying to think of.

Storey: In there between.

Chappelear: Yeah. I guess Hallenback was regional director after Hinds, right.

Storey: Well, why did you decide to retire? What was going on?

Why He Decided to Retire

Chappelear: Oh, some of the things that I had been working with were coming to a close. All the planning was done, their land acquisition was essentially completed. It looked like things were just sort of phasing out. I was eligible to retire, and I thought hey, there must be something out there to do, so I retired in '85. Been retired now for twelve years. If you want to know why I can't remember some of this stuff, I think that's contributed to it. (laughter)

Storey: I know what you mean.

Activities since Retirement

Chappelear: And had a lot of fun since I retired. The wife and I have made several good trips. We've been to Alaska. We've been up to Kotzebue, Alaska, north of the Arctic Circle. Then also been to Hawaii, been to the Caribbean, been to Australia, New Zealand. Made a few trips like that, enjoyed all that. I've done a *lot* of

golfing, I'm still doing a lot of golfing. I golf four or five times a week. Hard for me to find time for guys like you.

Storey: You're not working, though. You haven't done any work?

Chappelear: Well, I've done some things since I moved out here. I served on several water committees, [unclear] Water Committee, property owners association, and then we have a recreation centers board. I've served on a water committee for them. So it's hard to get out of the water business altogether.

And since I've retired, one thing that was sort of fun came along. I was a member of USCOLD, United States Committee On Large Dams, and they had an international meeting in San Francisco and they asked me to pick up one of the tours on the Lower Colorado River and show people the dams on the Lower Colorado, which I did. I had a bunch of Englishmen and Frenchmen took a tour, and that was a nice little fun thing that I did since I retired.

And then even here recently, right now I'm lined up to give some testimony as an expert witness in October. One of the local utilities is trying to get a rate increase through

the years on a corporation commission, and this utilities company is lined up to take some CAP water and they're wanting to charge different people for–they're having to pay just to retain the CAP water allocation. I'm sure you're familiar with that. Whether they use any CAP water or not.

Storey: Yeah.

Chappelear: And so I'm going to give a little testimony on those CAP water allocations and make some comments on whether or not they should retain or whether they should be reimbursed for that CAP water allocation. The way that they're approaching it, I don't think that they should at this time. The utility really hasn't done the planning work that it should, and they're trying to broad-brush it and charge everybody the same amount. I think that they need to continue with their planning effort and determine where the water's going to be used and charge those people that are going to benefit from it and not put it on just a broad area and charge everyone the same.

I think whoever benefits from the water should have to pay for it. So that's the way I'm planning on testifying in this particular matter. In fact, I got fourteen pages of testimony that's been turned in on the

thing. So it's hard to get out of the water business entirely.

Storey: Well, it's an important field in the West.

Chappelear: Yes, it is.

Storey: Well, our time is up, I see. I'd like to ask you whether you're willing for the information on these tapes and the resulting transcripts to be used by researchers.

Chappelear: Sure. It's all pretty general-type stuff.

Storey: Good. Thank you very much.

END SIDE 2, TAPE 2. SEPTEMBER 3, 1996.
BEGIN SIDE 1, TAPE 1. SEPTEMBER 5, 1996.

Storey: This is Brit Allan Storey, senior historian of the Bureau of Reclamation, interviewing Dess L. Chappelear at his home in Sun City West[, Arizona,] on September the 5th, 1996 at about eight o'clock in the morning. This is tape one.

Encounters with James Watt

You were just getting ready to tell me about James Watt and your encounters with him, I think.

Chappelear: Well, I didn't have all that many encounters at that high a level, but I remember especially this one that I had with Jim Watt. He had just come in to work in the Under Secretary's Office of Water and Power, whatever we were calling it at that time. I was writing a lot of letters, and I'd written this one letter in response to an inquiry from a congressman. Well, this congressman was of the wrong political party, as far as James Watt was concerned. This letter I'd sent down for the secretary's signature, and he was in the process of reviewing it, and, by golly, he had me down there called on the carpet as soon as he read the letter. He says, "Why are you providing all of this information to this congressman? He's not the right political party."

Watt wasn't very politically-oriented and didn't realize the way that we actually played the game there in Washington and that was that, hey, you didn't deny these congressmen *anything*. It didn't make any difference what their political affiliations were. It would certainly have been bad for the Bureau to have been taking a political stance, so we never did in responding to any correspondence. We always tried to give the best answers and that sort of thing. But that's sort of a funny little tale that I can tell, that

James Watt had me on the carpet and he hadn't been in the department a week, I don't guess, before this occurred.

Storey: This would have been when you were in the Washington office, then?

Chappelear: Yes, that's correct. And I don't remember exactly what time he came in there, but then, of course, he went on to become the Secretary of the Interior.

Storey: Yeah, of course, a few years later.

Chappelear: Yes. He did a lot of things in dealing with people that I heard a lot of stories about him. I had a good friend that worked in the Bureau of Outdoor Recreation, and I thought he gave him a rather bad break. As I was relating to you there earlier, Watt got along on the premise that he was a very religious person and he prayed a lot and he got a lot of his guidance from God, but I never really felt that God was that unscrupulous.

Storey: On another topic, tell me why you became interested in engineering. You were a civil engineer, is that correct?

Why He Was Interested in Studying Civil Engineering

Chappelear: Yes, that's correct. Well, I guess I kind of got off into it innocently, if you will. When I was a kid, I was raised on a farm and when I got older, about fifteen or sixteen years old, my father was in bad health, and I tried to raise a couple of crops and I got a couple of cotton crops up that looked pretty good, and then it turned dry, and I never made anything. I said, "Hey, this farming is not for me. I've got to do something else."

In this little community that I came from, a community of about 900 people, I really didn't have too many people that could give me guidance, but one person told me that, heck, if I got into engineering, it was a good way to go and I could have a good living and would probably be reimbursed financially if I did.

So I really had one teacher that was a good one. Her name was Gertrude McBride, and she was very good in mathematics. I took a number of high school courses under her, and she thought I was pretty good in mathematics and that sort of thing. So I think she gave me some steerage there, although she didn't know a heck of a lot about civil engineering and that sort of thing, but she did recognize that I did have a little aptitude in

mathematics.

So then I went off to college and I thought, well, heck, I went to this little junior college that I was telling you about, Cameron, and I thought, well, I'll just try and–[Tape recorder turned off]

Storey: We were talking about your aptitude for mathematics in Cameron.

Chappelear: Oh, well, I guess when I went to Cameron I decided that I would get all the prerequisites for an engineering degree, so I got into the mathematics there and getting all the little prerequisite stuff in, English literature and writing and all that sort of stuff.

Storey: Then when you came to work for Reclamation, you said they sent you to surveying camp. Was that a training course?

Chappelear: No, no, they didn't send me to surveying camp. I had been at a surveying camp because I was winding up my college education.

Storey: At Buena Vista?

Sent to Fort Cobb Reservoir to Run a Survey Crew

Chappelear: Yeah, up in Colorado. And I was up there in that high altitude and it was just colder than heck up there, I nearly froze to death. Then I came down to Oklahoma and they immediately put me to work running a levels crew, running some levels around on some water wells in the vicinity of what was going to be Fort Cobb Reservoir, if and when we got the dam completed.

Storey: Did Reclamation send you to any training courses or anything?

Sent to Earth and Concrete School by Reclamation

Chappelear: Well, some of the earlier ones was the earth school and the concrete school that Reclamation has, and I can't remember what years I went to those, but the earth school, I remember I went in '59, and I think I probably went to the concrete school in '58, something like that.

Storey: What were they like?

Chappelear: Maybe even earlier than that.

". . . the Bureau of Reclamation had very definite ideas about quality control in both of these areas and had manuals associated with the concrete

work and the earth embankment work, and they wanted to make sure that everyone that was working on Bureau work was well indoctrinated and knowledgeable with these manuals and what the Bureau expected out of them. . . ."

Well, of course the Bureau of Reclamation had very definite ideas about quality control in both of these areas and had manuals associated with the concrete work and the earth embankment work, and they wanted to make sure that everyone that was working on Bureau work was well indoctrinated and knowledgeable with these manuals and what the Bureau expected out of them. So I went to those schools and really enjoyed them. Later on in my college work, I know I told you I wound up four years in the service and then I wound up going to Oklahoma A&M. I was very interested in earth sciences and did pretty well in those. So I really did enjoy the two schools that I went to with the Bureau in that area.

Storey: Where were they held?

Chappelear: They were held at the E&R Center, Engineering and Research Center there in Denver, on the west side of Denver. Denver Federal Center, I think, is the name of it.

Storey: Right. How long were they?

Chappelear: They were pretty short. I can't remember how long they were, about a week, I think, on each one of them.

Storey: So they had Reclamation people come in and teach, or how did that work?

Chappelear: Yeah. Mostly it was Reclamation people that were doing the instructing.

Storey: When you got into the hydrology office in Oklahoma City, what kinds of things were you doing?

"We had a number of different streams in southwest Oklahoma that we were looking at. . . . trying to size dams . . . Much of that work was related to municipal and industrial water supplies which the Bureau of Reclamation was just getting into at that time . . ."

Chappelear: We had a number of different streams in southwest Oklahoma that we were looking at. We were trying to size dams, and so we would put a dam at a certain size on a particular stream and then we would run an operational study and see if the thing went dry and how much overflow we had and how much water we would waste. We were trying to, of

course, reach some optimum size dam on these different streams that we were looking at. Of course, all these streams that we were looking at were in an area where they would meet some existing need for water. Much of that work was related to municipal and industrial water supplies which the Bureau of Reclamation was just getting into at that time, and so they were taking a whole look at some of that.

Storey: What would optimum size have meant to Reclamation in those days?

Chappelear: Well, of course, the big problem with sizing a dam is the cost of the spillway, and so you were trying to, in the design of one, you would try and balance it out where you could minimize the cost for a certain water output. Of course, also we were interested in the reliability of being able to furnish a set amount of water, you know, whatever the water need was. So it varied.

Storey: I don't understand how you were balancing. Were you doing projections at different sizes and then costing out, or how did that work?

Chappelear: Yes, yes, actually that's what we were doing. You know, we would maybe put a size in, a certain size dam, certain size spillway, and

then we would take all the years of record that we had and we would see what would happen to that reservoir under past flow conditions– how many spills you've got and how it would operate.

Storey: Then the idea was, what, to get the most economical dam?

Chappelear: Well, certainly that was all left up to the design boys in the Engineering and Research Center. But it was trying to come up with a structure of a size that would probably also provide some flood control if flood control was needed. Of course, Bill was always trying to work all those things in there. But mostly in the Hydrology Section we were checking out different size dams with different elevations on the height of the spillway, and from that we would try and just determine what would happen on that stream if you put a dam of that size on it and what kind of yields you would get from it.

Storey: Using past water flow records?

Chappelear: Yes.

Storey: How much of a history did you have in that area for the hydrology?

Chappelear: Well, certainly it was not all that long in some cases. Probably less than fifty years, maybe twenty-five, thirty years, forty.

Storey: Is that really adequate or did you have to project back into the past or what happens?

Chappelear: Well, I would say it may not have been adequate in all cases, and we know that that certainly wasn't adequate on the Colorado River with the Colorado River Compact. I think when they came up with the Colorado River Compact and divvied up the water between the upper and low basins, they had less than, I think it was less than twenty years, twenty-five years of records on the flow of the Colorado. And that made them make a pretty bad mistake there.

Certainly since those days when I worked in that Hydrology Department trying to come up with the maximum probable flood, the viewpoints on that have changed drastically, and the maximum probable flood would be much higher today on those streams that we were looking at then what we were saying it would have been. So a lot's happened in that area.

Storey: That's because the field has evolved with better understanding?

". . . turn of the century on the Salt River Project. When they started out with the spillways there on some of the dams that they built after they built Roosevelt Dam, all those spillways are really inadequate under present-day hydrology techniques. . . ."

Chappelear: Yes, it's become a lot more of a science. It's just like at the turn of the century on the Salt River Project. When they started out with the spillways there on some of the dams that they built after they built Roosevelt Dam, all those spillways are really inadequate under present-day hydrology techniques. And as a result of that, that's why Roosevelt Dam was raised, to give it a lot more flood control capacity, and in doing so, made all those smaller dams downstream from Roosevelt, made their spillways adequate. That's sort of jumping back on the Central Arizona Project and away from Oklahoma City, but it's still related.

Storey: You went out to Fort Cobb.

Chappelear: Yes.

Storey: Was that at the point where you took over the lab?

Chappelear: Gosh, no, I didn't take over anything at that point. I went to work for a guy by the name

of Al Kendricks, and Al had run several labs. He set out to educate me in what actually happened in the building of the dam and quality control on embankment and concrete. And he worked me pretty hard. I don't know how many concrete mixes we went through before we came up with one that was satisfactory.

Determining the Cement Mix to Use at Fort Cobb Dam

I know I continued that to the extreme on the concrete at Fort Cobb Dam. I finally got some mixes down there that were looking pretty lean to the project manager, and that was C. O. Crane, we called "Spike." I had a mix there that I was going to save a few more pounds of cement, and old Spike told me, he says, "Well, I think you're getting awful lean on the cement in this concrete. I don't think we need to save that much money." I was making him too nervous because he had the experience, I guess, that I didn't have, that if you did have a little trouble with your control with the batching plant, then you could wind up with some inferior concrete and have a little mess on your hands. So I learned quite a lot from Mr. Crane in time to reach some balance in some of these areas, and that was one of them. He felt I was going to the

extreme in some of these concrete mixes that we were doing there at Fort Cobb.

Storey: Most people who've talked to me about doing lab work talk about testing the material that's going *into* the dam or the earth material that's being compacted at the dam.

Chappelear: Oh, sure.

Storey: I think what I'm hearing you say to me is that you were working on developing the mix that was going to be *used*?

Chappelear: For the concrete structures, but it was an earth embankment dam. Of course, I did a lot of work on the permeability of the soils and in locating borrow areas, drilling out borrow areas to see that we had enough material. We got into some trouble there on Fort Cobb Dam, and one of the problems we had was that in trying to locate these borrow areas we were in an area that had a lot of sandstone, and it was a very soft sandstone. Some of the boys had told us that, well, if you can excavate it with a No. 7 Cat or a D7 Cat, you can excavate it with scrapers and use it in the embankment.

So we went into these areas, we dug some test pits with the Cat and decided that,

well, boy we had all this material available. Then when we got in the actual construction of the dam, we found that, hey, that wasn't a very good criteria, because as soon as we got scrapers in there, pans, trying to excavate the material, when we got down to a certain level and the density got so high in the material, it wouldn't excavate. They couldn't excavate it.

So I got in a little bit of a frenzy there in trying to relocate some borrow areas and locate enough material to build Fort Cobb Dam. That was an interesting little problem that developed there.

Storey: And that happened during construction, I guess.

Chappelear: Yes, it did, and probably was something that we should have known better on, but got some bad advice.

Storey: Well, I'm something of an innocent about concrete. I thought you sort of put together *preset* quantities of cement and aggregate and water and you ended up with your concrete mixture.

Chappelear: Oh, well, of course you do, *but* it can make quite a little bit of difference as to the type of sand that you're using and the gradation of the

sand and the type of aggregates that you're using and the gradation of *it.* So in different types of structures, if you have a lot of steel in it, you may want to go to a small size *maximum* aggregate, maybe three-quarter of an inch. If you had a more massive placement, you'd go to a mix with larger size maximum size aggregate, maybe three-inch.

So it varies a great deal as to the type of placement that you're making and how tight it is. Maybe in small walls where you have reinforcing steel, you have to go to a smaller type maximum size aggregate, and then if you were making a placement where there was a lot of room between the rebars, why you can go to the bigger size rock. But of course, what you're trying to use is use as much rock as you can and as little cement, because the cement is expensive.

So we always made a number of trial mixes, say, using three-quarter-inch maximum, inch and a half and three-inch size aggregates. So we would have a number of different mixes on a particular job. The inspector would call for a certain kind, dependent upon the type of work that he was doing. Does that answer your question?

Storey: Well, it starts, yes.

Chappelear: Oh, okay.

Storey: Tell me what you would do with your trial mixes then.

Chappelear: Well, with the trial mixes, you would vary them out of sand and the amount of rock that you might have, trying to get the best gradation, and then you would also vary the amount of cement. But one of the things that comes into being with any of these concrete mixes is that you have problems in getting concrete into forms and getting it consolidated. You use vibrators to do this. One of the measures of the workability of concrete is slump. You've probably heard of slump cones.

Storey: Tell me about it.

Chappelear: Well, slump cones, a truncated cone that's about twelve inches high, about four inches at the top and about six inches in the bottom, and you'll make a trial concrete mix, mix it up wet, and you'll fill this cone and tap it in with a little tamping rod in three different layers, and then you remove this cone. When you remove the cone, the concrete slumps. And, of course, this is a measure of its workability.

"If it just stands up there and doesn't move, you

know you're going to have a mix that people can't work with in getting it in the form satisfactorily and getting it consolidated. . . ."

If it just stands up there and doesn't move, you know you're going to have a mix that people can't work with in getting it in the form satisfactorily and getting it consolidated.

So in some concrete, if it's a massive placement, we would work with slumps as little as one and a half inches. But if we were going to put it in a wall or something that was pretty tight, then we would try and come up with a mix that would have a higher slump.

". . . we realized that by inducing air entraining agents in concrete we could increase the durability of the concrete and it would better be able to go through freeze-thaw cycles. . . ."

Other things that are associated with these trial mixes, of course, was that in the Bureau of Reclamation we realized that by inducing air entraining agents in concrete we could increase the durability of the concrete and it would better be able to go through freeze-thaw cycles.

Storey: By having air in it?

Chappelear: By having air entrained within the concrete. The air entraining agents would dissipate billions of little tiny bubbles in the concrete, and it would make the concrete better able to go through freeze-thaw cycles and not crack and break up.

Storey: So you would experiment with those entraining agents?

Chappelear: Well, generally we had criteria as to what percentage would be the optimum and, so, yes, we would experiment with how much to put in with a certain mix to get the amount of air retention that we needed. We had little containers where you could put the concrete mixed materials in, strike it off and then put a cover on it, sort of looked like a pressure cooker thing, if you will, and then you would induce pressure on top of this, and from that we can determine the amount of entrained air within this container. So we had a little testing device to check that out.

". . . with all these mixes we took many, many concrete cylinders for testing purposes, and we would break these cylinders in seven days and twenty-eight days, and ninety days so that we could estimate what the strength of that concrete was. . . ."

Then, of course, with all these mixes we took many, many concrete cylinders for testing purposes, and we would break these cylinders in seven days and twenty-eight days, and ninety days so that we could estimate what the strength of that concrete was. For certain type structures, there would be a minimum strength of concrete specified, like 3,000 psi within twenty-eight days would be the minimum, let's say. But these were all aspects of the concrete.

Storey: So from this lab you were specifying different mixes for different kinds of structures?

Chappelear: Yes.

Storey: Did you have any relationship to the Denver labs in doing this, to the Denver office in doing this?

Chappelear: I think that initially, before we ever got into construction, that we would send them some of these test cylinders and with the information as to what went into the mix. They would look at them and analyze them and give us their okay on them.

Storey: Then the other side of this is that you have to have construction inspectors out there to make sure that our contractor is putting in what we

specified, is that right?

Chappelear: Yes, that's correct. We would always have a batch plant inspector there and he would check out the scales in the batch plant and then he would supervise the contractor's batch plant operator in seeing that the right number of ingredients went into the mix. So we had a man at the batch plant all the time seeing that we weren't being shorted on the cement and that sort of thing. And then also during each day's placement we would take the test cylinders just to make sure that the strength of that concrete was up to par and that we were getting the mix that we were specifying.

Storey: Was that the lab staff doing that?

Chappelear: Yes, yes.

Storey: So were you doing that?

Chappelear: At Fort Cobb we had another man doing that.

Storey: Then what happened once he took samples?

Chappelear: Those samples were brought back to the lab. We generally water-cured our concrete cylinder samples and we would break them.

Storey: Tell me what water-cured means.

Chappelear: Well, we would put them in a vat so that they would stay wet and cure out and get their strength back being exposed to moisture. Where if you set them outside and let them air-cure, you'd get all sorts of different test results that might not be accurate. But we would always test cylinders at seven days and we had a little curve there that we could check and if they were that strength we could anticipate what their strength was going to be at twenty-eight days. So we followed the strength of the materials very closely by taking these concrete cylinders.

Storey: What happens if they weren't strong enough?

Chappelear: If they weren't strong enough we would–well, I can't recall any cases where we ran into that problem. Well, let me think a little bit. It seems like we did have a bad day. But we would make the contractor remove that material and we'd start over.

Storey: Wasn't that sort of a problem when you're building a structure? Because you're building up, I presume.

Chappelear: Oh, sure, sure. That would be a major structure. But this is something that occurred only very, very rarely because you've got all these control things going on, your man

watching the lead ingredients go in there and watching the mixing and taking tests almost immediately, like the slump test and things of that nature, on the fresh concrete.

Storey: You were doing that in the field, also?

Chappelear: Oh, yeah. Oh, yeah. Each day that this would go on. At least a couple of times a day they would check it for the air content, check the slump quite often, and so all this testing process was ongoing so we never really felt like we were going to lose control of that. I really can't remember on Fort Cobb Dam ever having an incident where we lost it.

Storey: Did you ever hear of anything at Fort Cobb where there was a conflict with the contractor?

Chappelear: No, I can't remember anything of that nature on Fort Cobb, except we certainly had a conflict when he couldn't excavate the materials in the borrow area, and I'm sure he got a price adjustment on that because we had to relocate and haul all the materials further in, and so I think that was a justifiable problem.

Storey: Reclamation had identified the borrow area?

Chappelear: Yes, that's correct. And we told him the materials were there and it turned out the materials weren't necessarily there.

Storey: Did you also work with earthen embankment testing?

Chappelear: Yes.

Storey: Tell me more about that.

Testing Embankment Material

Chappelear: Well, that was very interesting, the way that the Bureau of Reclamation tested the density in earth embankments. An old boy by the name of Jack Hilf, which I'm sure you've heard of, Jack's a very, very well-known man that's very knowledgeable in embankment materials. He came up with what he called the rapid compaction method, and we used that at Fort Cobb. What this amounted to was taking earth samples. You'd go out and dig a–

END SIDE 1, TAPE 1. SEPTEMBER 5, 1996.
BEGIN SIDE 2, TAPE 1. SEPTEMBER 5, 1996.

Storey: You went out and dug a hole in the completed embankment.

Chappelear: Yes, and in this hole, it was a certain size,

we'd go through about two and a half layers of compacted embankment.

Storey: They were put in maybe in six-inch layers?

Chappelear: And they were put in layers such as you're talking about there. We would excavate this hole under a steel plate and we'd take all the material that we got out of there and put it in a separate can so we would weigh it and know exactly how much material came out of there.

Storey: How could you excavate under a steel plate?

Chappelear: There was a hole in the steel plate. Pardon me, I wasn't clear.

Storey: Oh, it's a measuring device.

Chappelear: It's a measuring device.

Storey: I see.

Chappelear: So you would level off the embankment, put this steel plate down. You had a hole in it and you would start augering the material out and testing some of the testing samples. Really, you're taking a sample of some compacted material. You take this out and put it in a can so that you can take it back to the laboratory and weigh it. Then also you would take a

little sample of that material, put it in the oven and dry it out and determine what the moisture of it was.

Once this hole is excavated, we have what we called a sand cone that we put on the top of this steel plate, and it fit tightly in place, and we would run a calibrated sand through into this hole. And by measuring the sand and knowing what its density was, we could determine the size of the hole. So then we knew what the volume of the excavated material was, we knew what its wet weight was, and then once we got the dry back, we knew what its dry weight was, so we could determine the density of that material.

This material that was excavated out of this test hole was taken back to the laboratory. We had a small steel bowl there that was, I can't remember its exact dimensions, but it was, I think, a tenth of a cubic foot. We had a collar over the top of that so we could put this material back into this container. Then we compacted this loose material with a rod that weighed a certain amount and so many strokes of this rod and you would compact a little bit of this material back in the container. We'd do this in three lifts, and from this we were coming up with what was supposedly called a standard compactive effort by sheep's-foot

roller. Of course, the Bureau of Reclamation required that these earthen materials be compacted by so many passes of a sheep's-foot roller.

So then you could equate what you got by putting a standard effort in there to what the density of it was in the field. Then Jack had his rapid compaction method where you would take some of this material that you excavated from the hole, add 2 percent moisture to it, and you'd find another point on the curve, and then you would add another 2 percent moisture to that and you'd find another curve on it. And from this he had run enough of these soil samples up there in the Denver labs that for a particular-type soil you knew about what the maximum density should be from a standard compactive effort for that soil. Then you would compare what you got in the field to what that standard compactive effort was and it would be a certain percentage of the standard sheep's-foot roller test. Sometimes you'd come up with 102 percent, sometimes you'd come up with 98 percent. There was a minimum amount specified in the specifications that it would be 98 percent of the compactive effort–if it fell below that, you got the result right back out to the inspector on the embankment, then tell them to roll that baby a little bit further and maybe take

another test. So that's how the embankment control went.

Storey: How quickly are we talking about?

Chappelear: Well, trying to get those tests in and out and back out there in an hour, something like that. Short period of time.

Storey: In an hour?

Chappelear: Yeah.

Storey: So the lab was close to the construction site, I take it.

Chappelear: Yes, it was.

Storey: What was the lab like at Fort Cobb?

The Lab at Fort Cobb Dam

Chappelear: Well, it was like a double garage, if you will, with a little room added on the back for curing the concrete cylinders, and so it was relatively small. They figured that there would have to be a caretaker there at the dam, and so one of the first things we did was built a residence building with a double garage, maybe a little extra size added on it, and we used that for our lab, the garage section.

Storey: It's a double garage?

Chappelear: Yeah.

Storey: And how many people worked in the lab? You said you had this man who was running you through your paces.

Chappelear: Well, gosh, I'm trying to remember here. I would say there was nine or ten of us, I don't remember exactly, in that lab. It was pretty small.

Storey: Was Fort Cobb being constructed around the clock?

Chappelear: No. No, I don't recall that it was. Of course, some of the concrete placements might run into the dark, and we would have lights for that, something of that nature. But it wasn't such a big dam that, as I recall, I don't recall that we did it around the clock.

Storey: But I guess the lab would have been operating whenever they were building.

Chappelear: Yes. Yes. Um-hmm.

Storey: Interesting.

Chappelear: But the contractor would run long shifts, you

know. It wouldn't necessarily be an eight-hour day. So we'd have to split the employees to cover the work.

Storey: Um-hmm. As I recall, you were at Ft. Cobb for a couple of years.

Determining Permeability of the Embankment

Chappelear: Yes. Another aspect of the lab that I want to tell you about. Of course, we were always worried about is the dam going to hold water and that sort of thing. We would run permeability tests on some of those earth samples. So I don't remember how often we ran those, it's been a number of years back since I was in this business. But every so often we would take and excavate an additional amount of earth, compact it into another larger-type cylinder, subject it to a water head, and try and determine what the permeability was.

Storey: You'd pour water in on top of this compacted earth?

Chappelear: Yes, and subject it to some head or water pressure, and from that determine what the permeability of the material was. That was another standard earth test that the Bureau does.

Storey: And you were doing all of these tests *often*?

Chappelear: All these permeability tests, we would set those up and run them for a couple of weeks, as I recall. But, yes, we did this pretty often, and each month we sent a report in to Denver of all these tests, the embankment and the concrete. So we had some overview from the Denver labs on this.

Storey: The construction engineer again was?

Chappelear: Fort Cobb was part of the Washita Basin Project, and in the Washita Basin Project we had both Fort Cobb Dam and Foss Dam, and C. O. Crane was over both of those.

Storey: Spike Crane.

Chappelear: Right.

Storey: Who was his boss?

Chappelear: His boss. Oh, gosh. Who would have been his boss? Bellport, I guess.

Storey: The chief engineer.

Chappelear: Yes.

Storey: Barney Bellport.

Chappelear: I think at that time it would have been Bellport.

Storey: The relationship between the Denver office and the regional office is of interest to me. Did you have any insights at that time about how that worked and how that related to the construction office?

". . . the regional office was not all that closely associated with the construction office, and it seemed like we had a lot of rapport going on between the field construction offices and the Engineering and Research Center that didn't necessarily have a great deal to do with the regional office . . ."

Chappelear: Well, to me, the regional office was not all that closely associated with the construction office, and it seemed like we had a lot of rapport going on between the field construction offices and the Engineering and Research Center that didn't necessarily have a great deal to do with the regional office and what they were doing. We didn't see those people all that often and they didn't have any direct supervisory capacity. It was all through Spike and his relationship with the E&R Center. It seemed like to me that the regional offices were primarily concerned with trying to get some planning going to get some more

projects authorized to keep the Bureau going, I guess.

Storey: Of course, a *lot* later, in the late seventies, that relationship changed. Did you have any insights into that change? And it became the regional office that became responsible for construction, and the chief engineer was no longer responsible for the contracting function.

Chappelear: Well, you see, that occurred pretty much after I was out of construction, but I didn't see that as being much of a factor here on the Central Arizona Project. Here again, the regional office I don't think provided that much supervision and direction on the Central Arizona Project, although I think the C-A-P was probably a unique project in that it was so big and there were so many different things going on, that the project office overwhelmed the regional office. In fact, it was called the Central Arizona Projects Office in that any projects that were ongoing in Arizona was still handled through the local office here. But, of course, the planning aspects of it were coordinated with the regional office.

Storey: Tell me more about Barney Bellport, if you would. Did you ever meet him?

Barney Bellport

Chappelear: Oh, yes. Yes, I met Barney.

Storey: What was he like?

Chappelear: Oh, he was sort of a–well, I guess I thought he was sort of a character. He wanted to run the show and he was, I think, a little on the dictatorial side. That was the impression that I had of him. He was not what I would call a smooth manager type.

Storey: Yeah, I think everybody agrees on that one. (laughter)

Chappelear: Oh, is that right?

Storey: Yes.

Chappelear: Okay. Although I like Barney all right, but I didn't like his management style. He wasn't as smooth as a lot of the Bureau's managers were.

Storey: His predecessor was Grant Bloodgood. [Tape recorder turned off]

I was just getting ready to ask you about Grant Bloodgood.

Chappelear: Well, when I first started with the Bureau of Reclamation, Mr. Bloodgood was in charge of the Engineering and Research Center. I met him and that's about all I know about him. I really don't know anything about his management abilities, but he seemed like a pretty nice man.

Storey: What about Barney Bellport's successor, Harold Arthur?

Harold Arthur

Chappelear: I had a lot of dealings with Harold Arthur, particularly when I was in the Washington Office. Had a lot of respect for him. He was a nice man, good manager, and I think did the Bureau of Reclamation an awfully good job. I can only speak quite highly of him.

Storey: Let's see, after Harold came Bob Jansen.

Chappelear: Let's see, where did that get in there? I was thinking of Donald Duck. Do you remember Donald, he was the assistant there under Arthur.

Storey: Yes, he was Harold's assistant.

Chappelear: I guess he left and never did become–

Storey: No, he went to Harza eventually.

Chappelear: Right. I was trying to put him in there. Who did you mention?

Storey: I think it's Bob Jansen.

Chappelear: Yeah, okay.

Storey: He was brought in by Mr. Higginson.

Chappelear: I never had any real dealings with him because I'd left the Washington Office in '77, so I don't know too much about Bob.

Storey: What about Rod Vissia?

Chappelear: Well, I met Rod and I thought he was a very capable man. Didn't have too many dealings with him. My trouble with the Bureau of Reclamation is that as chief of the Division of General Engineering, I met an *awful* lot of people and a lot of it was pretty shallow associations that really didn't get in there, you know, and get to meet these people in depth. So my work there in the department was primarily of a liaison-type endeavor, you know.

Storey: Well, let's change topics, then.

Chappelear: All right.

Storey: Where were you when you heard the Teton Dam had failed?

Teton Dam

Chappelear: Unfortunately, I was sitting in the Washington Office. I was chief of the Division of General Engineering when that occurred.

Storey: But that was on a Sunday.

Chappelear: Oh, oh, okay, you're wanting to get more specific.

Storey: Or a Saturday, I've forgotten which.

Fontanelle Dam

Chappelear: That was a very shocking thing, of course. Certainly no one was ever anticipating a Bureau of Reclamation dam to fail, although that's not to say that we hadn't had some close calls prior to that. I'm sure you've been made aware of the Fontenelle Dam situation, and I think that put a big scare into everyone.

Storey: Fontenelle actually had two near failures, I guess. That earlier one and then a subsequent one in the eighties, I think.

Chappelear: Is that right?

Storey: Yes.

Chappelear: But the Bureau, of course, was pretty self-confident, maybe overconfident, because we hadn't had any failures and probably really missed the bet there on that foundation at Teton that we put some fine-grain material up against a fractured rock and the foundation materials weren't sealed, and they probably needed to be sealed with concrete. When you start dealing with those sandy-type embankments, you've got to be awfully careful with them. You've got to keep them dry.

Storey: So I gather you see this as a design flaw?

Chappelear: Yes, either a case where the people in the Engineering and Research Center didn't have enough first-hand knowledge of what there was in the field–and I found that hard to believe that they didn't go out there and look at it–or maybe a lack of experience on the construction engineer's part not to recognize what he was up against.

Storey: How did people in the Washington Office react to the news?

Chappelear: Well, I guess you can say everyone was in a state of shock. We had, of course, all kinds of hearings following that and all sorts of finger-pointing going on. Let's see, who was it that had those hearings? Ryan, Senator [Leo Joseph] Ryan from California. Is it Ryan? He later went down to South America and got himself killed. But he was coming down very hard on the Bureau of Reclamation. I can remember Harold Arthur coming in there to testify, and I can remember Gil Stamm testifying. I went to a number of those hearings. They were pretty bad. But it's hard to establish blame for something like this when the construction and engineering is put together like it is. There's so many people that have their finger in the pie and have responsibilities and pass on various aspects of the design and the construction.

There was other extenuating circumstances there, the dam was completed, the farmers wanted their water, the dam was filled at a very rapid rate, and maybe if it had been filled at a slower pace, the problem might have been recognized and the failure might have been averted. It's hard–well, I don't know, you can find a lot of reasons for the dam failure and I guess it would be easy to point the finger, but it's hard for me to point it.

Storey: Changing topics again. They transferred you to Foss Dam. They asked you to transfer to Foss Dam.

Transferred to Foss Dam to Head the Lab

Chappelear: Yes.

Storey: To head the lab there.

Chappelear: To head the soils lab and concrete. Well, to head the lab.

Storey: So you had to change the way you thought about doing your job, I would presume, because you went from a non-supervisory to a supervisory position.

Chappelear: Yes.

Storey: What kinds of things were of concern to you in making that transition?

Chappelear: Well, in making that particular transition, there had been a lot of personality conflicts going on up at Foss Dam, and Spike asked me to go up there. And as I think I told you previously, the wife and I were just getting lined out where we were getting ready to get our feet on the ground financially. The wife had a job with the Bureau of Reclamation that

she had taken and she was going to be working in the finance office. I think it was a temporary job. So it pretty well shook our household up to make that move.

But I went up to Foss intending to get along with everyone there and not get caught up in the personality clashes that they were having. I did pretty well do that. I went up there and I just walked the fence, tried to treat everybody the way I'd like to be treated and supervised the lab. The man that was up there in charge of the lab, he said he would work for me, I think I told you this the other day. His name was Sam Wallace. Sam said, "Well, you bring Chappelear up here and *I'll* work for him in the lab and not give anybody any trouble." And he did that. He was able to live up to that.

An Incident with One of the Young Engineers

But certainly it was a change for me in starting out to supervise people in doing things. I can remember one major encounter I had with a young engineer that I had working for me. They'd been going along there, and this is not related to lab work, but it's a personnel thing. We had had a janitor out there that had been taking care of sweeping up the lab and cleaning the latrines and keeping

everything in a presentable manner, and he came down sick and he was seriously ill. So I put up a little roster that, well, "We're going to keep the lab clean ourselves," and here was the roster for the guys to do the sweeping out and doing the latrine and all that sort of thing. I had this one young engineer and when it came his day to do the latrine and whatnot, why, he tells me, "I'm not going to do that latrine." He says, "I didn't go to school all this time to get a degree and have to do that kind of work." But, you know, it was a little unusual circumstances.

I had to tell him, "Well, you better get in there and clean that latrine or you're not going to be working for me tomorrow." I was going to get him out of there.

But, funny how those sort of things happen and how some of these kids react to these situations. I don't think the young man had ever been in the service, ever had to clean a latrine, and he felt that was beneath his dignity. I never felt that way about doing any job. There wasn't anything I couldn't do or wouldn't do, and that was sort of my philosophy. You did what you needed to do to get the job done.

Storey: Did he go clean the latrine?

Chappelear: Yes, he did. (laughter) He didn't do a good job, but he cleaned the latrine.

Storey: You were there a couple years, also, I believe? About a year, maybe. No, two.

Chappelear: About a couple years there, I guess.

Storey: Then you went to the Canadian River Project.

Chappelear: Yes, that's correct.

Storey: I made a note that says you only found sandy soil when you went out with the driller, but you didn't tell me why that was important.

Looking for a Sound Bottom on the Canadian River in 1959/1960

Chappelear: Well, of course, what I was out there with the driller trying to do was determine if there was a sound bottom to the Canadian River anywhere along there that someone had missed. We were drilling. Primarily we were doing some degradation studies. We were going downstream and trying to determine if there was any control there that would stop the degradation downstream from the dam or if we might even find a better place to put the dam. But with the equipment we had, we couldn't go very deep, and all across the river

bottom this fine-grain sand was quite deep.

Storey: So you were looking for a foundation for the dam?

Chappelear: Well, it's possible that if we'd found anything, it might have wound up that way. We might have moved the dam site. But we didn't find anything, and so the dam was put at what presented the best two abutments in the area.

Storey: How do you deal with an issue like fine sand? It sounds to me like all the water would run under the dam and out through the sand.

Chappelear: Well, if we could have found some controls that would have helped us, we might not have had to have as big a foundation trench as we did have. So between the two abutments we wound up excavating this rather deep foundation trench and filling it with more competent materials and some materials that were impervious so as to cut off the flow.

Storey: So when you say a control, what you're talking about is something that would keep the water from going under a dam?

Chappelear: Yes.

Storey: Oh, okay. Interesting. Nobody's talked about

this before. (laughter) There're so many topics that everybody talks about new kinds of things.

Chappelear: Yes. Oh, yeah.

Storey: How long were you out there doing that?

Chappelear: Oh, the tail end of '59. I think I was probably out there about three months in the winter of '59 and '60. I believe those are the right dates for you. But, my, it was cold and miserable out there.

Storey: In the middle of the winter?

Chappelear: Yes.

Storey: You, of course, then went into Amarillo and then you moved–

Chappelear: No, I went to Borger. Borger.

Storey: I mean, you went to–

Moved to Borger, Texas, to Work on Sanford Dam

Chappelear: I moved to Borger. The wife and I moved to Borger to work on Sanford Dam and then later moved to Amarillo.

Storey: Borger is in Texas?

Chappelear: Borger, B-O-R-G-E-R, yes.

Storey: Oh, Borger, Texas.

Chappelear: Yeah. Phillip 66, pretty prominent in that town.

Storey: This was the place where you had to relocate all the pipelines and things.

Chappelear: Yes.

Storey: Why did you have to relocate the lines? Why not just leave them there?

Chappelear: Well, in time, of course, they would have give us problems. I guess they were rusted out. Some of them would have broke and so those gas lines needed to be out of the reservoir area. Probably wouldn't have–well, it could have, I suppose, messed up the quality of the water, too.

Storey: Did you do anything else besides work on that pipeline relocation and that sort of thing?

Chappelear: Well, I told you that I did do some experiments with explosives there in the foundation and trying to see if we could

consolidate those.

Storey: To get it to consolidate?

Chappelear: Yeah. And that didn't work very well.

Storey: How did you test it? I don't think I asked you that on Tuesday.

Chappelear: Well, we took density tests before and after to determine what we had.

Storey: Then you moved to Amarillo?

Chappelear: Right.

Storey: Then you moved to Lubbock?

Chappelear: Right.

Storey: And in Lubbock you were in charge of the construction of this 140-mile aqueduct?

Chappelear: Yes, had field office down there.

Storey: Did you ever have any situations arise with the contractor down there?

Chappelear: Oh, sure, yeah. I'm trying to remember some of the specifics on some of those things, but we did have this one subcontractor that was

doing some concrete work for us and we got into some disagreements with them on how things should be done, and actually went to the E&R Center with some of that to discuss it. But one of our big ones was the–

END SIDE 2, TAPE 1. SEPTEMBER 5, 1996.
BEGIN SIDE 1, TAPE 2. SEPTEMBER 5, 1996.

Storey: This is [tape 2 of] an interview by Brit Storey with Dess L. Chappelear on September the 5th, 1996.

Yes, we talked about Cen-Vi-Ro on Tuesday and you told me how to spell it, but you didn't tell me how to put it together. Is it all one word?

Chappelear: It's got the three little dashes in there.

Storey: The dashes between the three parts.

Chappelear: Right.

Storey: Harold Arthur told me a wonderful story when he was doing construction inspection about the contractor, in effect, suggesting that he might supplement Harold's income. (laughter)

Chappelear: Oh, is that right.

Storey: Did you ever have anything like that?

Chappelear: Oh, yes. I've had some contractors treat me very well, or try to. I think R. H. Fulton was one of those. He would have bought you if he could have, you know.

Storey: He was the aqueduct constructor, I believe?

Chappelear: Yes, yes. He was responsible for laying the pipe.

Storey: And he created that excavating machine and the new technique, too?

Chappelear: Yes. Yeah, and we bought off on that.

Storey: How do these folks approach you about that kind of thing?

Chappelear: Well, very subtly, I think. I've never had anyone offer me any money or anything like that, you know, but they want to give you perks, you know. Dinner and this, that, and the other thing. Of course, at one time I thought that that was probably acceptable in the Bureau. I remember when I first started out, on some of those jobs at Christmas, well, the contractor would give everybody a turkey or everybody a bottle of booze or something like that. And way back then, no one frowned

on that too much. What Spike always said about that was to contractors, "If you're going to do something like that, you do it right straight across the line, no favorites," you know. I mean, if it's a little token something at Christmas, why that's okay. And that's about all of that I ever saw.

Storey: Interesting. As you moved to Lubbock, once again this was a slightly enlarged number of people, I believe.

Chappelear: Yes.

Storey: Did that require any changes in the way you approached the job? Any adjustments in your thinking in your management style?

Chappelear: Well, I was probably emulating Spike's management techniques, and then I think as I also told you, why he sent me to a management school that was a good one.

Storey: Yes, you did.

Spike Crane

Chappelear: I really liked the way that Spike did things and I always tried to operate that way. He never had two agendas or a hidden agenda, and he was never secretive about anything, and

everything was always up front and right out there. I never knew of Spike ever doing anything that just wasn't really aboveboard, and I liked the way he operated in his dealings with people. He was right up front with them. And I tried to be that way with people and I always tried to promote the people that deserved to be promoted, and when it come to filling jobs I never played any favorites. I always felt that if you were going to have a good organization, you had to have the best man that was available to you in whatever particular job you were trying to fill. And throughout my Bureau career I always went with the best man and never got into this buddy-buddy stuff or anything like that.

Storey: Sounds like you saw it, though.

"I got a lot of good treatment from a lot of good people. . . ."

Chappelear: I'm sure that there was some of it in different areas. I don't know, I wasn't subjected to it that often, I don't think, so I'm not going to question anybody's calls in my career ladder and in going up the ladder. I got a lot of good treatment from a lot of good people.

Storey: But then you went from Lubbock to Washington, D.C.

Chappelear: Yes, sir.

Storey: Now, that must have been quite a change in perspective.

Moving from Lubbock, Texas, to Washington, D.C.

Chappelear: Yeah, quite a shock.

Storey: Tell me about it.

". . . it was really an educational thing that I think helped me a lot. It was good to see how the Bureau of Reclamation operated at that level and sort of a hard thing to put your finger on, but politics enters into things. . . ."

Chappelear: Well, you know, when I first started out, it wasn't that bad. In other words, I was so far down the ladder, I think I was a GS-12 and I got promoted to 13 to go to Washington, and I was sitting there in that Water and Lands Division, mostly just writing letters, things of that nature. But it was really an educational thing that I think helped me a lot. It was good to see how the Bureau of Reclamation operated at that level and sort of a hard thing to put your finger on, but politics enters into things.

". . . one of the things about the Bureau that

concerned me . . . was we had all these projects authorized and the funding was never what it should be in relation to the number of projects that we had going. . . ."

I think one of the things about the Bureau that concerned me, that we couldn't seem to do anything about, was we had all these projects authorized and the funding was never what it should be in relation to the number of projects that we had going. In other words, there was always so much political pressure to get these projects started by these politicians, on the commissioners, you know, to get projects started, that the commissioners always had more jobs going than we could efficiently build and complete in a timely manner. I think that was always a Bureau of Reclamation concern. Do you understand what I'm talking about?

In other words, if we had a project to build and it was authorized and you could get it funded at an optimum rate, put the optimum number of people on the job and finish it in a timely manner, you could avoid a lot of waste in personnel and that sort of thing. But we always had all this pressure to get so many jobs started, and then this caused money problems and so some of the jobs weren't funded and completed in as timely a manner

as they should have been. And that was always a concern of mine, but not one in my position I could ever do anything about.

Storey: So for political reasons they were authorizing projects, then you had more projects than they were giving you money for to efficiently do.

Chappelear: Yes. Well, of course, we always had a backlog of authorized projects, but the next big hump in getting a job going was to get it funded and getting it funded and started, everyone was always trying to get their jobs funded. So we'd get more of them strung out than probably we could efficiently handle with the funds that were available.

Storey: We're talking about the period here about '68 to . . .

Chappelear: '77.

Storey: This would have been under the presidencies of, let's see, who, Nixon?

Chappelear: Yeah, we had Nixon in there.

Storey: And Ford.

Chappelear: Let's see, when did Johnson leave out?

Storey: Well, let's see, I'm going to have to figure

this. ‘61 to ‘65 was supposed to be Kennedy. So Johnson finished ‘65 and would have left in ‘69.

Chappelear: Yeah. He was there when I first went to Washington, just for a short period.

Storey: Did you see any sort of ups and downs in the fortunes of Reclamation as you changed from a Democratic to a Republican to a Democratic presidency? Of course, you mentioned the hit list. So that was a down, I presume.

Chappelear: Yes, that was a downer, yeah. That was the big downer, was when Carter came in. But he was unsuccessful in his efforts. We did finish the CAP.

Storey: Yes. Of course, I think it was altered some, probably, by the hit list?

Chappelear: Well, I don’t think the CAP was altered that much by the hit list. But some environmental concerns and Indian concerns altered the project probably more than anything else.

Storey: At this time you had had regional office experience, I believe?

Chappelear: No, no, I was never in the regional office.

Storey: When you were in Amarillo you were in a project office?

Chappelear: I was in a project office there.

Storey: So you had had project office experience and then you went to Washington, you' had a lot of contact with Denver and then there was the region in all of this. *Who* was responsible for *what*? What's your vision of the way that worked? Looks to me like everybody would be stepping on everybody else's toes.

Chappelear: Well, I don't think that was true. My concept of it was that you had a regional office that was concerned with, first, the projects that had been built within that region. They were concerned with the operation and maintenance of those projects in seeing that they were operated as conceptualized. You had the regional office there concerned with further planning within their region and trying to put together projects that were feasible within their region. So that was a planning effort. Well, of course, the regional offices were concerned with getting the projects authorized and taking them up through authorization.

But then when you got to the construction side, more or less, you would put some people in the field to gather a little

design data and things of that nature, but when it became a construction office, I think that the major responsibility was between the field construction office or project office and the E&R Center, and I didn't see that the regions got all that involved. So there was really no conflict there that *I* could see. Of course, you had your regional engineers, but I don't think that they stepped in there and were much of a problem when you got into construction. In other words, I don't think that they were all that involved in it.

Storey: And what about Washington?

Responsibilities of the Various Offices

Chappelear: Washington? Well, I don't think that the Washington office was all that involved with what went on in the regions or the construction offices, other than primarily liaison function, I think. Certainly, no one in my capacity was going to be telling the E&R Center what to do as far as their design work or how they should do their construction and things of that nature. But it was primarily concerned with determining what our field capabilities were, what could we accomplish on the ongoing jobs.

"You know, you have a limited capability on these

projects in that you've got a lot of prerequisites that you had to get out of the way . . . acquisition of land . . . preparation of environmental impact statements . . . acquiring of design data and getting this to the E&R Center. So you had all these prerequisites that had to be got out of the way before you could proceed with any construction . . ."

You know, you have a limited capability on these projects in that you've got a lot of prerequisites that you had to get out of the way and the acquisition of land and the preparation of environmental impact statements and the acquiring of design data and getting this to the E&R Center. So you had all these prerequisites that had to be got out of the way before you could proceed with any construction, and you had to know what the capability of these different offices were. They didn't all have the same capability, of course.

In other words, in a given year maybe you could only build one stretch of an aqueduct because, hey, you didn't have the environmental statements prepared to go further. Maybe if you had an environmental statement, say, on the main aqueduct coming into Phoenix from the CAP, for instance, and then you were going to build the Salt Gila

[Pumping Plant], you still had all these prerequisites to get out of the way as far as an environmental impact statement, the acquisition of the land, the gathering of the design data, and so you might not have this capability to go ahead, even though you had the project under construction, you were wanting to go with it, but you had to get these things out of the way. So there's a capability thing that works in there and when you were looking at all the seventeen Western states and what was going on there, you had to pretty well determine what those capabilities were. I'm sure that the Commissioner probably got a lot of prodding politically and pressures, you know, to push different projects by different congressmen. I don't know how much that entered into it, but determining your capabilities is one thing.

"That was why we would have these program conferences annually and try to determine what these capabilities were. . . ."

That was why we would have these program conferences annually and try to determine what these capabilities were.

Storey: I think we'd better wrap up for today, but I'd like to ask you again whether you're willing for the information on these tapes and the

resulting transcripts to be used by researchers.

Chappelear: Yes, that's satisfactory.

Storey: Great. Thanks.

END SIDE 1, TAPE 2. SEPTEMBER 5, 1996.
BEGIN SIDE 1, TAPE 3. SEPTEMBER 5, 1996.

Storey: This is [tape 3 of] an interview by Brit Storey with Dess Chappelear on September the 5th, 1996. We're resuming the interview at about three o'clock in the afternoon.

Licensed Engineer in Texas

After we quit talking this morning, you mentioned that you were a licensed engineer in Texas.

Chappelear: Yes.

Storey: There are a lot of people in Reclamation who never take that step, and I was wondering if you would talk to me about why you decided to do that and what it involved.

Chappelear: Well, I think that you never get the credibility that you would like to have unless you go ahead and get registered as a professional engineer. And with it I think that the work

you do carries a little bit more weight. It certainly wasn't a necessity within the Bureau of Reclamation, but it was something that the shop supervisors and leaders in Reclamation would *like* for you to do, and so I went ahead and did it.

Storey: What did it involve to become a registered engineer? That's what entitles you to put P.E. after your name, right?

Chappelear: Yes, that's correct.

Storey: Professional Engineer.

Chappelear: Right. In my case I never did take a test; I got it on experience. You know, there's generally two ways that you can get that type of a designation, and mine was based on number of years' experience in the field.

Storey: How many years did it take?

Chappelear: A little over ten years. In my case, I had over ten years' experience when I got it.

Storey: I wanted to ask you, you moved to Washington, I believe it was in '68.

Chappelear: Yes.

Storey: Beginning two or three years before that, we started seeing a series of environmental laws passed. I believe the Wild and Scenic Rivers was maybe the first one, and then the National Historic Preservation Act, you get National Environmental Policy Act in '69 and so on. So you were sitting in Washington during a period of time when a whole complex of new laws were being applied to Reclamation's projects, and I was wondering if you would tell me from your perspective in Washington how that was affecting Reclamation and what was going on in Reclamation to adjust to these new requirements.

Effects of Environmental Laws and Regulations on Reclamation Projects

Chappelear: Well, it certainly took some adjustments. I think it may have slowed things down there for just a little bit until everyone realized what you had to do to get in compliance. In some projects it actually hurt the project. I know that the Bureau of Reclamation was responsible for the Navajo Indian Irrigation Project in northwest New Mexico, and as part of that project we had built the Navajo Dam on the San Juan River. The dam was completed many years before we got around to the irrigation portion of the project, and in that length of time a great fishery developed

on the San Juan River. Then when we got ready to proceed with the irrigation part of the project, we were going to put a powerplant in with the dam and, of course, this had always been considered as a part of the project, and all the tubing and stuff was in there, and we awarded the contract to build the powerplant and the contractor got out there and was starting to excavate the foundation for the powerplant and, by golly, the environmentalists said, "Whoa, you're going to mess up this fishery on the San Juan River." And they actually stopped us from building that powerplant at Navajo Dam, based on these laws, which seemed pretty incredulous to me, because here there was never a fishery before we built the dam. We built the dam and started regulating the flows nicely down the river, the fishery developed and here they say, "If you build this powerplant and start fluctuating the flows in the river, you're going to mess up the fishery." Had you ever heard about that one?

Storey: No, I hadn't heard about this one.

Chappelear: Yeah, well, that was one of my first go-arounds with the environmentalists and we certainly lost that one. It was very strange, in my mind, that something like that could happen.

Storey: Who actually made the decision that we wouldn't proceed, do you remember?

Chappelear: Oh, I think an injunction was brought against us in court. Then the bottom line was that the judge just wouldn't let us go ahead with it. An injunction was gotten against us to stop us from building the powerplant.

Storey: So it was a permanent injunction?

Chappelear: Yes. To the best of my knowledge, that powerplant has never been built. Of course, I've been out of it for so many years, but I don't think it ever happened.

Storey: I remember there was a construction problem. They dropped the gates on the inlet structure or something, down to the bottom on Navajo when they were constructing it? Would that have been while you were there?

Chappelear: I don't remember that. But I might not have remembered it anyway.

Storey: I think Manny Lopez told me about that, maybe. But I get so many interviews, they begin to blend together.

Chappelear: Yeah, I can understand that.

Storey: Were there any other environmental issues, things that came up?

The Plan 6 Planning Process

Chappelear: Well, certainly here on the Central Arizona Project, here in Arizona, we had one that came up. I think I was telling you a little earlier about the long tedious planning process we had to come up with what was known as Plan 6 to take care of the flood control in the Phoenix area and the regulatory storage on the project.

Plan 6 Was Designed to provide Storage for the Central Arizona Project and Flood Control for Phoenix

Then Plan 6, which was pretty universally accepted at one time, we had the New Waddell Dam, which was to provide the regulatory storage for the Central Arizona Project, and then we were going to raise Roosevelt Dam, which was going to provide for part of the flood control through Phoenix and also take care of the inadequacies in the spillways on the structures downstream from Roosevelt Dam on the Salt River.

Then there was another element of the flood control and also to provide additional

storage, and that was a Cliff Dam was to be built on the Verde River in between two existing structures which were not necessarily that big, but Cliff Dam was going to be a much larger structure and provide quite a little bit of additional storage, as well as flood control. Well, the plan was all approved by everyone and some of this work was started, and then lo and behold, one of the environmentalists find there's a pair of nesting eagles up there in the vicinity of Cliff Dam site and they stopped the construction of the Cliff Dam on that basis. Were you aware of that one?

Storey: I think I have heard about. . . [Tape recorder turned off]

We were talking about Cliff Dam.

Chappelear: Yes. Well, the environmentalists were able to squelch Cliff Dam because of the nesting eagles. There was some concern at one time about a pair of nesting eagles up here on the New Waddell Dam site up in the far reservoir area, but they never got us stopped on that one, and, of course, that structure has been completed.

Bad Effects of Not Building Cliff Dam

But there's been some bad effects from not building Cliff Dam. Here just two to three years ago, we had a pretty good size flood that came through the Phoenix area and most of the flood waters originated on the Verde River and they came down through the Fort McDowell Indian Reservation and through an area where there had been a pretty good-sized landfill. Well, a lot of garbage and junk had been put in this landfill and a lot of it was washed out into the Salt River and was strewn from one end of the valley to the other, and some of it actually constituted a health hazard. So that part wasn't too good. It would have been much nicer if we could have got Cliff dam built.

". . . there's some talk here in the Phoenix area of building a third runway at Sky Harbor Airport . . . going to have to extend almost out into the Salt River area. . . . they've forgotten all about our studies saying that they needed that other dam on the Verde River to provide flood control to keep that runway from damage should there be flooding. So it's going to be interesting to see how all that works out. . . ."

Also, there's some talk here in the Phoenix area of building a third runway at Sky Harbor Airport, and that runway, if it's built, is going to have to extend almost out into the

Salt River area. I think the city fathers would like to see that runway, but I think they've forgotten all about our studies saying that they needed that other dam on the Verde River to provide flood control to keep that runway from damage should there be flooding. So it's going to be interesting to see how all that works out.

I don't know whether the Bureau of Reclamation is going to be building any dams in the near future or not. But that was a little run-in with the environmentalists.

Storey: Well, while you were back in Washington in the Water and Lands Division, then subsequently as the chief of the Division of General Engineering, did you have any sense of what environmental studies were costing Reclamation to implement?

"I really was concerned about some of the archaeological studies that were done. . . . and we were doing similar-type studies over and over and over and not finding anything in my mind that I felt was very significant. . . . It just looked like to me that the archaeological community was doing their very best to build little empires and spend a lot of money on these types of studies and really was bleeding the Federal Government to accomplish this end. "

Chappelear: Not nearly as much as I became aware of those costs when I got here on the Central Arizona Project. I really was concerned about some of the archaeological studies that were done. Here we were with building a canal system that was taking a relatively small strip of land out from all the way across the state down to Tucson that was just a few hundred feet wide, and we were doing similar-type studies over and over and over and not finding anything in my mind that I felt was very significant. If they had been finding something that was different and significant in these different areas, I would have said, well hey, maybe this a good thing and this money should be spent.

It just looked like to me that the archaeological community was doing their very best to build little empires and spend a lot of money on these types of studies and really was bleeding the Federal Government to accomplish this end. You know, they just wanted to perpetuate their little society and what they were doing and build up its importance, and I think they built it up way beyond what its beneficial uses were and what knowledge we gained from it. So a lot of money was spent on these archaeological studies.

They did about three different types of things. They went out and they did sort of a reconnaissance study, and then they would do something a little more involved, and then they actually got into some digs at these different sites and all of these cost a lot of money. So I felt like a lot of money was wasted when a great deal was already known about these Indian tribes and their culture, and I didn't feel like there was very much that we could really learn, too much more that we were going to learn about them from these studies, and yet we were really just *coerced* into spending a lot of money that I felt was really a waste.

Storey: Didn't we have archaeologists on staff–

Chappelear: Yes, we did.

Storey: –that would be able to protect us from waste?

Chappelear: Well, that should have been the case, but I don't know that they were able to stand up against these university professors and whatnot. I think they sort of had us in an awkward position and took advantage of us. I kept saying this over and over and over, and, of course, none of those people wanted to hear it.

Storey: Well, I know how they didn't want to hear it, that's for sure. Tell me about Roy Boyd, if you would.

Roy Boyd

Chappelear: Roy Boyd was a real nice gentleman, real hard worker, very sincere man, and he was very knowledgeable on the Bureau of Reclamation and what was going on in the Bureau. He carried a lot of responsibility there in the Water and Lands Division. I think I told you earlier, he was a torts claim officer and he took care of all these complaints that dealt with operation and maintenance of the projects.

Storey: He was the head of Water and Lands Division, right?

Chappelear: No, no. No.

Storey: I've got him confused, then.

Morris Langley and Richard Shunick

Chappelear: No, you've got him confused with Morris Langley. Morris Langley was the head of the Division and the number-two man under him was Richard Shunick. I think the name of the branch was the Operations Branch that we

were in.

Storey: And this was *part* of the division?

Chappelear: It was part of the division, yeah. You know, it was a little subdivision, yeah.

Storey: We talked about this issue in the morning, and that is, who was responsible for what. Why would the Washington office have a Water and Lands Division when the regional office had a similar thing, the operating projects had a similar thing, and they were fulfilling those responsibilities out in the field?

Why Similar Sounding Offices Were Found in the Project, Region, and Washington, D.C., Offices

Chappelear: Again, much of the work that was done in the Washington office was of a liaison type, and that office was there to respond to the Congress and their inquires, to respond to OMB [Office of Management and Budget] and others. So, although they may not have done any actual work, hadn't been too directly associated with some of it, they coordinated the responses and being responsible back to a congressman that had a question.

Storey: So they would have, for instance, contacted the projects or the regions?

Chappelear: Yes.

Storey: To get information and to coordinate the responses to Congress and so on.

Chappelear: Yes, yes. So a lot of that happened that way, yes.

Storey: Would this division have also handled environmental statements that came to Washington for approval and that kind of thing?

Chappelear: The Planning Division, I think, *initially* was into the environmental impact statements. See, it's logical that it would be there, because those two sort of go hand in hand. You can't get one before the other.

Storey: Right. You told me yesterday that you did a lot of letter-writing and that kind of thing.

Chappelear: Yes.

Storey: This was these responses?

Chappelear: Yes.

Storey: Then I believe you were promoted to branch chief or something?

Became Chief of the Contract and Repayments Branch in the Division of Land and Water

Chappelear: Well, I jumped out of the Division of Land and Water and went over into the Division of General Engineering. I was there in the Contract and Repayments Branch, I became the chief of it. That was my next move in the Washington office.

Storey: Once again, would you line out what we were doing in Washington? Is it the same thing, dealing with the Congress?

Chappelear: Well, very much of it was, yes, and dealing with the Secretary's office.

Storey: What were some of the repayment issues that were coming up at that time?

Repayment Issues

Chappelear: Well, often on these Reclamation projects you have a project that wasn't able to meet its repayment obligations and this caused a lot of concerns. But many of those were met by increasing the length of their repayment period, modifying the amount that the projects had to repay.

Storey: That was on the basis of ability to pay?

Chappelear: Yes, but in the branch that I was in, we were primarily reviewing construction contracts and seeing that all the criteria was met prior to awarding the contract, that all the "T"s were crossed and the "I"s were dotted and that sort of thing. Making sure that the Buy-American Act was being complied with and that sort of thing when farm materials were being used.

Storey: But this was at a period when the chief engineer was *definitely* in control of construction.

Chappelear: Well, this is true, but I think that it was still the commissioner's responsibility when you get to the bottom line as to where the responsibility was. I think that that office was there to make sure that the commissioner's dictates were being met and that sort of thing, as far as policy and Reclamation instructions. So it was some overview, but not necessarily the primary responsibility for doing the work.

Storey: So it was basically to protect the commissioner and to protect Reclamation from being embarrassed down the line or from having made an error, I guess.

Chappelear: Well, partially that.

Storey: Was it often that you would find a situation

that required some correction?

Chappelear: No, it wasn't often, no, but occasionally someone would come up with something that wasn't in accordance with the Reclamation instructions.

Storey: How long were you doing that as branch chief then?

Chappelear: Oh, just a couple of years until K. K. Young retired in the latter part of '73. So I went in there in '68 and was–I don't remember exactly how long I was in the Land and Water operations part of it, but a couple of years there. Then a couple of years in the second job, and then when K. K. retired why, then I got his job.

Storey: So you were there maybe three or four years?

Chappelear: Well, I was there–

Storey: As division chief, I mean.

Chappelear: Oh, as division chief, yes, that was closer to probably four years.

Storey: Didn't we talk yesterday about the shift of responsibility from the chief ~~of~~ engineer to the regional offices for construction, or did that

happen a little later when you were actually down in C-A-P?

Chappelear: Actually, I think that that happened a little later, because that responsibility just never existed anytime that I was in a regional office. But the responsibility for the construction, like I was telling you, still was primarily between the E&R Center and the project's office on this project. I don't know whether it was just because this was such a large unique one or not, but I don't think that we operated quite like anybody else was operating.

Storey: I think we talked about the project managers. Is there anything else that we should talk about? You were responsible for the Environmental Division, the Planning Division, the Lands Division, Operations Division, and the Distribution Systems Division.

Chappelear: Yes.

Storey: You know, this is a fairly large project. In terms of money spent, it's the largest ever of the Reclamation projects.

Chappelear: Gone a little over three billion now.

Storey: What kind of special issues came up with

distribution systems? Was this a typical Reclamation project or did it deviate from the norm?

Chappelear: Well, I don't think that it was typical at all, because there was so much money involved and these distribution systems going from the main aqueduct were covered under separate contracts with these irrigation districts, called a 9D contract. So there was a lot of criteria that had to be met to get those loans, and that money had to be made available. But like I say, some of that really hasn't turned out too well on the Central Arizona Project. Many of these irrigation districts got into trouble financially and are still hurting, although some irrigation water is being sold. This year here, I think, marks the first year that they've gone up to a million acre-feet of water distributed by the project, maybe a little over a million. I think they were saying they were going to [go] over it. And [they] still got a ways to go to reach the full capability of the project, but it's approaching it pretty fast.

Storey: I understand they're heavily subsidizing–that the Central Arizona Water Conservation District's heavily subsidizing a lot of the water deliveries.

Chappelear: I don't know how much they're doing that,

but I'm sure that they would like to move some water.

Storey: Now, you came down here as assistant to Mr. Hallenback, is that correct?

Chappelear: No, assistant to Richard Shunick.

How Richard Shunick and Chappelear Split the Responsibilities in the Office

Storey: With Mr. Shunick, how did you split up the responsibilities for who did what?

Chappelear: Really between Dick and I, we didn't have things separated all that much, and verbally we split up some of the work. Like the E-E-O stuff, he didn't want any part of that, and that became my responsibility. A lot of the things dealing with the construction side of it and in areas where I had had work experience, why he let me discuss with the newspapers and all others, some of those things.

How Ed Hallenback and Chappelear Split up the Responsibilities

But when Hallenback came along, he wanted more clear-cut division of powers, and so we drew it up very formally when he came along.

Storey: And is that when you became responsible for the divisions and so on?

Chappelear: Yes.

Storey: When you came to this position as assistant project manager, what kind of a grade level would that have been?

Chappelear: A fourteen, GS-14.

Storey: Was that the same as the division chief in Washington?

Chappelear: No. No, I had a GS-15 in Washington, and you may recall, (Storey: I think you did, now that you mention it.) I think I mentioned this to you, that I agreed that I would come back down here as the assistant project manager if I could bring the salary with me that I had, and that was agreeable with everyone, so that's the way we worked it.

Storey: Right, you did mention that.

Chappelear: My grade level was a GS-14, but I didn't lose any money to come back down here.

Storey: You must have liked it; you stayed after you retired.

Chappelear: Yes. Yes, like Arizona very much, yeah. Nice place to be.

Storey: Is there anything else we ought to talk about?

Liked Working for Reclamation

Chappelear: Well, I don't know, I've been away from it so long, it's hard to recall some of these things. I think that the Bureau of Reclamation is really a good organization to work for, and I think what primarily made it that way was that we had a lot of professional people within the Bureau and we had very clear-cut objectives, and this is something that a lot of bureaus and agencies don't have. In the Bureau it was very, very well-defined what you were trying to do, either in a piece of legislation or what have you, and I think that that helped make the Bureau a *real* good organization to work for. You've got to have clear-cut objectives and I think that's what makes the Bureau of Reclamation a little bit unique in government agencies.

END SIDE 1, TAPE 3. SEPTEMBER 5, 1996.
BEGIN SIDE 2, TAPE 3. SEPTEMBER 5, 1996.

Storey: Let me ask you again whether or not you're willing for this tape and the resulting transcripts to be used for research purposes.

Chappelear: Sure.

Storey: Good. Thank you very much.

END SIDE 2, TAPE 3. SEPTEMBER 5, 1996.
END OF INTERVIEWS.