ORAL HISTORY INTERVIEWS

DAN FULTS

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STATUS OF INTERVIEW:
OPEN FOR RESEARCH

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Interview Conducted by:
Brit Allan Storey
Senior Historian
Bureau of Reclamation

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Table of Contents

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STATEMENT OF DONATION
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DAN M. FULTS

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INTERVIEWER: Bob Allen Stacy
Bob Allen Stacy

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A note on editorial conventions. In the text of these interviews, 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.

While we attempt to conform to most standard academic rules of usage (see *The Chicago Manual of Style*), we do not conform to those standards in this interview for individual's titles which then would only be capitalized in the text when they are specifically used as a title connected to a name, e.g., "Secretary of the Interior Gale Norton" as opposed to "Gale Norton, the secretary of the interior;" or "Commissioner John Keys" as opposed to "the commissioner, who was John Keys at the time." The convention in the Federal government is to capitalize titles always. Likewise formal titles of acts and offices are capitalized but abbreviated usages are not, e.g., Division of Planning as opposed to

"planning;" the Reclamation Projects Authorization and Adjustment Act of 1992, as opposed to "the 1992 act."

The convention with acronyms is that if they are pronounced as a word then they are treated as if they are a word. If they are spelled out by the speaker then they have a hyphen between each letter. An example is the Agency for International Development's acronym: said as a word, it appears as AID but spelled out it appears as A-I-D; another example is the acronym for State Historic Preservation Officer: SHPO when said as a word, but S-H-P-O when spelled out.

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.

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For additional information about Reclamation's history program see:

www.usbr.gov/history

Oral History Interview
Dan Fults

Storey: This is tape one of an interview by Brit Allan Storey with Dan Fults, Assistant Regional Director of the Mid-Pacific Region, in the offices of the Mid-Pacific Region in Sacramento, California, at about 2:30 in the afternoon on November 17, 1993. This is tape one.

Mr. Fults, would you tell me where you were born and raised and educated, and how you came to the Bureau of Reclamation, please?

Early Life

Fults: I was born in Redding, California, and I was raised throughout the West. Actually, my dad ended up retiring as a chief inspector for the Bureau of Reclamation on construction. My dad was working on Shasta Dam at the time back in 1943.[1] Then we moved from there to Yuma, Arizona, worked on the Wellton-Mohawk Project and Yuma's projects down there and moved.

[1] Shasta Dam is one of the primary features of the Central Valley Project and was constructed by the Bureau of Reclamation from 1938 to 1945.

After seven years in Yuma, we moved down to Wellton, Arizona, which is just thirty miles east of Yuma. We lived in a government camp there and worked on the Wellton-Mohawk Project.[2] And then we moved from there to Winters, California, and spent a year on the construction of Monticello Dam, and from there up to Lewiston, California, and worked on the Trinity River Project.[3] That's where I really consider my roots are, because I went to four years of high school there and graduated from Trinity County High School.

Then after the project, Trinity Dam was completed, we moved to Red Bluff, worked on the Red Bluff Diversion Dam and Tehema-Colusa Canal

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[2] The Wellton-Mohawk Division is part of the Gila Project in Arizona. For more information, see Tina Marie Bell, "Gila Project,: Denver, Colorado: Bureau of Reclamation, 1997, www.usbr.gov/history/histproj.html.

[3] Monticello Dam is the primary feature of the Solano Project in California and provides irrigation water to 96,000 acres, along with supplying industrial and municipal water to communities in Solano County. For more information, see Zachary Redmond, "Solano Project," Denver, Colorado: Bureau of Reclamation, 2000, www.usbr.gov/history/histproj.html; for more information on the Trinity River Project, see Eric A. Stene, "Trinity Division: Central Valley Project," Denver, Colorado: Bureau of Reclamation, 2000, www.usbr.gov/history/histproj.html.

facilities.[4] Then I went from high school to Chico State College in Chico, California. Subsequent, during that time, actually after that time frame, my dad retired. I graduated from Chico State in 1966 and went to work for the Bureau on a rotation engineer basis, right after that in Willows, but I'd made up my mind I wanted to work for the Bureau.

Actually, pretty well back in 1961 when I graduated from high school, the Bureau gave me a job as a GS-2 rear chainman, surveying for the Trinity Project, Trinity River Project, part of the Central Valley Project [CVP]. I liked it. I liked working outdoors. I liked the people I was working with. I liked the different aspects of the surveying job, and that's what got me interested and kept me interested in engineering. The Bureau put me on an trainee program, so I had a job in the summertime, went to college during the school year and then went to work for them [full time] in '66 in Willows. I had an assignment there, a three-month assignment, a three-month assignment up in our Carson City office up in

[4] Red Bluff Diversion Dam is on the Sacramento River and diverts water into the 113.4-mile Tehema-Colusa Canal, see Eric A. Stene, "Sacramento River Diversion: Central Valley Project," Denver, Colorado: Bureau of Reclamation, 1994, www.usbr.gov/history/histproj.html.

Carson City, Nevada. I went up there.

I kind of looked at my own personal situation at that time, and I said, "I'm single and I don't have any great debts. I have saved up a little money." So I decided to go back to graduate school. I went down to San Jose State. I took a leave of absence and went down to San Jose, and a year and a half later graduated with a Master's Degree in civil engineering and water resources. That's when I really started more permanent employment with the Bureau. I started in Sacramento. So that kind of gives you a short sketch of my early life.

Storey: Let's go back to Wellton. You lived in a Bureau of Reclamation construction camp?

Wellton-Mohawk Government Camp

Fults: Right. Government camp.

Storey: That was just the government employees?

Fults: Yes.

Storey: What was that like?

Fults: It was all right. There was thirty houses. They had

thirty government houses that were shaped like a "U," how they were laid out, if you took and looked at an overview of it. It had employees from the project construction engineer to every walk of the construction trade that you needed to help manage a construction contract, construction program.

Wellton was a very small town of maybe, I'd say less than a thousand people. The government camp was actually located in the desert out of town a mile or a mile and a half. I got to town a lot by riding my bicycle across the desert to get there.

Storey: How were relationships between the camp and the town?

Fults: Good. Good. Because we all kind of lived together. I mean, I'm sure the government camp was together, too, but we had, you know, Cub Scouts together and Boy Scouts and school activities. The different businesspeople in town, you know, we would shop there. And also then the other non-government employees as far as the children, we all played together and did everything together. It was fun.

Storey: Who was your best friend?

Fults: My best friend actually was Virgil Larson, as I recall,

and I think about him every now and then. His dad worked in construction, worked for the contractor. He was an operator of heavy equipment, like dozers, excavator type of equipment.

Storey: But not a government employee?

Fults: No.

Storey: Did he live in the camp?

Fults: No. He lived in town. We used to stay at each other's house, take turns, and so on. You know how kids do.

Storey: Was it common for there to be a lot of interaction like that between Reclamation employees and the town folk?

Lots of Interaction Among Bureau People and Locals

Fults: Yes. Yes. This was true of Wellton. And actually when we lived in Lewiston, California, and Trinity County, we again lived in a government camp, a much larger government camp, and there was a lot of interaction among the government people or, you know, Bureau people or locals or whatever was very common, yeah. Both places was good, I have very

fond memories.

Storey: Do you ever recall any tensions between the local folks and Reclamation?

Fults: No.

Storey: That you noticed as a kid?

Fults: No.

Storey: You went to school in Wellton?

Fults: We went to school, yeah. I went to elementary school for, I think it was second grade through the seventh grade in Wellton. Well, actually the third grade. I finished the second grade in Yuma, then we transferred to Winters. A government camp, I recall in Wellton the experience of a camp was nice, and I used to be able to mow many of the neighbors' lawns to earn a little money, you know, spending money. And then they would have potlucks together, and we'd have Friday nights. You could always count on Friday or Saturday night being a square dance at the recreation hall. We'd have records and play. My mom and dad and all the rest of them would go up there. The kids would watch. It was just very fond memories. You found good, clean-cut ways to

entertain yourself, people did.

Storey: Did the folks from the Wellton construction camp tend to cluster together? I get the feeling that there weren't cliques, if you will.

Fults: Oh, you mean the camp?

Storey: Yes.

Fults: Not very much. I think that you would, no doubt, like our next-door neighbor was somewhat closer to us because they were just close and easier to walk over there and borrow a cup of sugar than it would be to walk a couple of blocks down to do it, that type of thing. But as far as clustering, as far as us as children knew, there was not any of that. We all wanted to play with each other. That was kind of the way it was, you know. There was only so many kids, a small busload of kids.

Storey: What kind of social activities with the town did the camp have?

Social Activities at Government Camps

Fults: Well, the social activities were very limited in the town. I mean, there wasn't much. They didn't have a movie

theater. We didn't have TV back in that time, even. I remember we finally got TV about the time we left. But social activities, the school would sponsor during the summer, they'd rent movies. There was no movie theaters, but they'd just out on the school lawn set up a movie screen and a projector, and they'd run some of the later movies that were shown, and everybody from everywhere would show up and get together.

There was not much opportunity for socializing unless it was a school activity. Everything kind of centered around either the school or the scouting–Boy Scouts, Cub Scouts, and Girl Scouts. We didn't have any Little League, none of that. That wasn't organized yet. So school activities were kind of the focus, and I even remember that at the high school. My brother was in high school at the same time, and it was very similar.

Storey: Go in for the basketball games and that kind of thing?

Fults: Basketball or the school plays, band concerts, or whatever.

Storey: Did you happen to have any friends who were on farms that were being irrigated by the project?

Fults: No, not at that time. That's what the project was built

for. Back in that time, they were all being irrigated by groundwater, little pumps that each farm had. The Bureau developed the project.

Storey: Did you keep track of any of those folks after you left?

Fults: Some, but I've lost track of them now. I haven't seen any of them for years either.

Storey: Do you happen to know if any of them went back and lived on the farm and continued as farmers?

Fults: Some of them did. I don't know exactly. I lost some history of the Wellton Project, but I think we've reconverted some of that project back to desert. So I don't know. I haven't been associated with that Region for a while, so I'm not positive.

Storey: Let's see. That would be Lower Colorado, right?

Fults: Yeah. Lower Colorado. Now, I did work in the Lower Colorado [Region] for a couple of years, but that was in Phoenix, and I did make a couple of trips over to Wellton to see people that I hadn't seen for many, many years.

Storey: Did Reclamation officially sponsor any of the activities at the camp, or was it just sort of spontaneous?

Employee Associations Provided Social Activities

Fults: Employees Association like we have here, which most offices have some type of an employees association where we have picnics and things like that together. Reclamation did have a recreation hall, like a meeting hall. We nicknamed it the recreation hall and it could be used by the Employee Association. And this was the same thing we had at Lewiston when we were there with that government camp, too. There was a big meeting hall and we used it for Employee Association events, again Boy Scouts and Girl Scouts, Cub Scouts, and all that.

Storey: Social events.

Fults: Yeah.

Storey: Dances. Movies, maybe?

Fults: Dances and movies, a lot of different things, probably things I didn't even know about or wasn't involved in.

Storey: Do you happen to remember the pattern of your life? Was it like Mondays, Tuesdays, Wednesdays you did this, and on Fridays you did this, and so on? Or does a pattern suggest itself?

Fults: No. The only pattern I can kind of remember, you know, a couple of patterns, and that would be like when I was in high school living up in Trinity County, I recall prior to Trinity Dam and Lewiston Dam being in that I would be able to get home from school, if I wasn't–I played school sports. If I wasn't in sports, didn't have anything going on, I could catch the early bus home from Weaverville, which was seventeen miles away from school, and I'd run home and drop my books off, grab my fishing pole, and go down to the river. Invariably, I'd catch a limit of trout every day up there. That's the way it was. It was just that good. And on the weekends we'd fish. You know, me and my friends would fish for steelhead and salmon. A lot of that.

Then if I had a job, sometimes I had part-time jobs and stuff, then we had to have a pattern to be able to get to work, run home and run down to work.

Storey: When your dad was working at Monticello, where did you live?

Fults: Where?

Storey: Monticello Dam?

Fults: Oh, Monticello, yeah. Monticello Dam, right. We

lived in Winters, California, which is about thirty miles west of Sacramento on Putah Creek.

Storey: But that was not a construction camp?

Fults: No. No. That was in town. We lived in town.

Storey: So you were there about a year.

Fults: Yeah. Eighth grade. Eighth grade. Spent a year there. That was to actually help get the project finished up, and then we were, you know, slated to go on up on the Trinity River Division. It was all kind of planned out by the construction staff.

Storey: And then you moved up to the Trinity River Division where you were on another construction camp.

Trinity River Diversion was a Big Camp

Fults: Yeah. That was a big camp. There was about ninety permanent houses, and then there was probably an equal number of mobile home type of arrangements. They were houses.

Storey: This was all government employees?

Fults: Yes. Yes. And then at the same time in Lewiston, the

contractor, who was Guy F. Atkinson Inc., must have had an equal number of contractor housing at another site. You know, you could look across the valley, because Lewiston was in a little valley, and there would be the contractors living set up, their homes.

Storey: The community was Lewiston?

Fults: Right. Probably the original population of Lewiston prior to the project was 500 people. So between the Bureau and the contractor and all of his subcontractors, we probably added another 2,000 people. It was a boomtown. You know, it was like the old Forty-Niner days in the 1800s, you know, you read about the gold mining days, boomtown environment. It was fun.

Storey: What were the social interactions like there among the construction workers, the camp, and the town?

Fults: Well, there was a lot of interaction between all three. One of the things I noticed very early on–I still remember when we moved up there, I was thirteen going on fourteen–is that Trinity County, the people living in Trinity County, were an especially welcoming-type people. They were very friendly and kind, concerned, and courteous type of people.

I think that in my moving around as a young person, young child, you always kind of wonder about that, because you're the new kid on the block and you wonder that, "Hey, how are these people going to accept us in this community?" And whether you wonder or not, you see how you're being accepted, whether you're warmly accepted right off or they take their time or whatever. I would say of any place we moved, Trinity County was the warmest of anywhere and very welcoming people, very friendly and nice.

Storey: What was the basis of the economy in Lewiston before the project?

Life In and Around Lewiston

Fults: It was more like a bedroom [community] of Weaverville, which is the county seat, or Redding, which was about thirty miles away. They were a larger population. But the basic economy for the whole area was lumber. The main thing in the economy was lumber, logging, and lumber mills. I don't remember a lumber mill, per se, being in Lewiston, but they were scattered around within a half-hour short commute of Lewiston.

Storey: And you went to high school there. You said it was fun. What did you mean?

Fults: High school in Weaverville, which was seventeen miles away. But that was a short commute compared to some of my fellow classmates who lived out in other parts of the county. See, there was only one high school in the whole county. Some of them were bused forty-five miles. I was bused seventeen miles, so I had a short commute. A very small high school, a couple of hundred students.

You got involved in everything. There was a lot of love, and camaraderie developed among the students, not just in your class but from freshman to seniors. You all knew each other. You all had interaction together and a lot of development together. So it was a real fine environment to grow up in and have a family, part of a family growing up in that area.

Storey: Did you have a best friend at that time?

Fults: Oh, yeah. I had several best friends.

Storey: Were they Reclamation kids?

Fults: I had some Reclamation kids and some contractor kids and then some kids in Weaverville, too. So it just was a mix. The best man in my wedding, when I got married about eight or nine years later, was actually a local from Weaverville. His dad was a logger, grew

up in the logging business, you know. I mean, he used to go out and cut trees down and that kind of stuff.

Although I feel I had a best friend, also, that his dad was, likewise, a Bureau of Reclamation employee. And then I had best friends that were contractor, you know, sons and daughters of contractors, you know, employees. So it was a mix. At that time, I had more best friends, let's say, had a group of them, a lot of them, yeah. It was very nice.

One interesting thing about it is–and you would never dream it would ever come true–is now a part, and a big part of my job right now, is very involved in the Trinity River Division of the Central Valley Project. So, you know, having grown up there in some way and know a lot of background is really helpful. I still know a lot of the people up there.

Storey: Was your dad trained as an engineer?

Father was an Engineer

Fults: Yeah. He was a graduate metallurgy engineer from, back in those days, in Butte, Montana, was Montana Technical Institute [School of Mines]. Now I think they've changed the name of it to Montana something [Technical Institute] or other.

Storey: When did you start becoming interested in engineering?

"I was Interested in Science"

Fults: I was interested in science, you know. My last couple of years of high school, I did all the exact science and mathematics. Then after I worked as a surveyor that summer, that's when I said, "Well, I'm going to put down my major in college as an engineer." I can always backtrack off of that, because the first year or two are science, very science oriented, and I could major in math or chemistry or physics or whatever, and I just kind of stayed in the engineering. The longer I stayed in, especially when I got into the junior-year courses, I really liked it, because I could see the applications. You know, I kind of got to an area that I had an aptitude for and I enjoyed it.

Storey: How did you choose civil engineering?

Fults: Well, again, I wanted to stay general initially, and that was about the most general engineering you could get, because I wasn't, at that time, positive I wanted to be an engineer. I also had a desire to be a math teacher. I wanted to stay open enough where I wouldn't lose any time in school, you know, take the right courses until I made a final decision.

Storey: Do you happen to remember when you made that decision?

Fults: Yeah. I'd say I probably made it about my third semester in college and decided I would go ahead and strike on ahead into civil engineering and stay in that major.

Storey: Did your interest in Reclamation have anything to do with your decision?

Worked Different Jobs for Reclamation during Summers

Fults: Oh, yeah, the interest did. In terms of what I was doing for summer jobs helped a lot–surveying, working in materials lab, working in contract administration, for payment vouchers to contractors and estimates. It helped a lot, because I could see a direct application to what I was doing in school. I guess being more of the hands-on type of person at that time, it helped me. If I didn't enjoy it, I would have changed majors. I would have, you know, said, "Hey, I want to be a math teacher." And it would have helped me there, too.

Storey: The materials lab, where was that?

Fults: Well, the materials lab that I worked in, the summer

job I had was in Red Bluff.

Storey: That's here in California?

Fults: Yes. I worked in the lab and also out with the drill crew in helping them take samples, drill samples, different type of samples that you take out of the ground.

Storey: Where?

Fults: Up on the alignment of the Tehama-Colusa Canal.

Storey: And what were you testing for?

Fults: Well, what you're testing for is soil strength conditions, so that the designers would know that so they could design the features for the canal, whether it be just the regular canal prism or if we had under drains or cross drains or whatever, so they could know the strengths that they'd be able to design for.

Storey: So wherever they thought they were going to put in a structure, for instance, you would test?

Fults: Right. We'd drill a hole. Yeah, drill a hole.

Storey: Take cores?

Fults: And take core samples, density samples, different types of samples, do soil analysis. We'd take samples back to the lab and run different types of analysis.

Storey: So you worked in the field and in the lab?

Worked in Both the Field and the Lab

Fults: In the lab both, yeah. I got to do what was even more fun, you know, because it was more fun, because it was more of a variety. I got not just be in the office, but I was out, too, with the drillers. Actually, I even helped. If they wanted somebody to carry pipe around or whatever, I'd do that.

Storey: So when you were back in the lab, tell me a little bit more about the kinds of tests you did.

Fults: Well, you'd run Ataberg [phonetic] samples or you'd run compaction samples or you'd do analysis of how much clay was in the material, how clayey it was or sandy, you know, the different soil analysis that you would do, sieve analysis of the material and know what the size of it was, just a lot of different types of laboratory experiments.

Storey: What's an Ataberg sample? I'm an historian. [Laughter]

Fults: You're taking me way back. An Ataberg sample helps tell the strength of the soil, actually, what material you have and how strong it is. It's the same way like a consolidation sample–you put weights on them and test over a period of time how much distance that compresses, and then they can analyze and predict whether a structure, when it's load is so much, whether it's going to sink so many inches or whatever. Those type of correlations.

Storey: So once you all had the data about the soils, then who would be working using that data?

Fults: Well, then your designers. Yeah, your designers use it. That would be sent down here into the Regional Office, and then from there most of our design work was actually done in the Denver Design Office, using the designers.

Storey: You mentioned also that your summer job involved surveying.

Fults: Right.

Storey: What would you be surveying?

"We Did a Lot of Road Surveys"

Fults: Different structures. Again, alignment for canals and roads. We did a lot of road surveys and road realignment, the whole gamut of preliminary surveys to go out and try to figure out where to put the road in the first place, to actually laying out the road that was designed so the contractor could come in and build it, and then going in there while the contractor is building it to make sure he's building it to grade, and all of the other parameters, to make sure it's right.

Storey: And you'd be working with a team of surveyors?

Fults: Yeah. There'd be a party of four, four of us usually, five maybe, sometimes.

Storey: What would each person be doing?

Fults: Well, you have a party chief, and then you have an instrument man.

Storey: The instrument man is the person on the–

Fults: Right. With the instrument, you know. Either it's a level or a survey instrument of one type or another. And then the other two would have various roles. They'd either be rodman or chainman, both, all of those, rodman or chainman type of activities. You needed all four of them to get the job done back then.

Today, with today's technology, I think you only need a one-person surveyor with all the nice computerized–

END OF SIDE 1, TAPE 1.
BEGINNING OF SIDE 2, TAPE 1.

Fults: Yeah. We did surveys for Trinity Dam and the powerplant and Red Bluff. When I worked with the Bureau there, I did work surveys one summer at Red Bluff Diversion Dam and Whiskeytown Dam, surveyed for Whiskeytown Dam, different parts.

Storey: What about other things like maybe transmission lines, pipeline relocations, anything like that?

Fults: Some transmission lines, but not much. I didn't get too much involved on surveys on transmission lines. A little bit, but by then I'd pretty much–I think I spent like three summers on surveys, one in the lab, and the other summer I was in the office or on inspection. Part of it was learning construction inspection.

Storey: You mentioned participating in contract work of some sort.

Contract Implementation

Fults: Well, during the implementation of a construction

contract, you have to make estimates for pay vouchers. That's what I was involved in. We would take the surveyor's data that they, you know, say, partial excavation was done or partial or whatever it is that you're building that's built, you have to make a partial payment on that to keep the contractor going every month. You'd compute out from the survey data the volumes, maybe so much concrete, so much sand, or whatever you're paying on, gravel, you know, whatever it may be, and make your computations, and based upon the contract dollar, give them price figures, compute how much money we owed them for that month.

Storey: Was that when you had advanced in school a little ways?

Fults: Yeah, right. Yeah. Getting close to the end.

Storey: How many people worked in that office?

Fults: There would usually be three or four of us. I don't recall what it was called, a section or a branch chief, some type of a supervisor. You'd have two or three journeymen contract administration specialists, and I was the trainee for any one of them to help them get their job done.

Storey: This would have been sixties, right?

Fults: This was, yeah, during the early sixties, like about '65.

Storey: Do you happen to remember what your pay was as a summer hire?

Fults: Well, I remember my first paycheck as a GS-2 for two weeks, I took home $110 and I thought I was rich. [Laughter] Yeah. Yeah. It was good.

Storey: Were you supporting a car?

Fults: No. I didn't have a car. I was rich. The car I had was borrowing my dad's, so I didn't have to support any car.

Storey: How did you get to work?

Fults: Walked. It was only a few blocks from work. My first job I was able to walk. I didn't have a car clear through when I got a Bachelor's Degree. I never had a car. I couldn't afford it. Finally, after I got a Bachelor's, I decided maybe I'd better have a car. I bought myself an old used car. When I worked, you know, I would just work out in the family, you know, carpooling or helping each other get to work or walk or ride a bike.

Storey: Do you have any other siblings who–

Fults: Yeah.

Storey: –worked for Reclamation?

Fults: No. I have an older brother and a younger sister. My sister did work her first summer out of high school as a clerk-typist for Reclamation one summer several years ago. Yeah, it was good.

Storey: If you think back over those years when you were still at home and your dad was a construction inspector–

Father Enjoyed Being an Inspector

Fults: Yeah, that's what he liked. Somehow or other got into that niche. You know, coming out of the Depression, a job was a job. He liked it, so he stayed in that area.

Storey: Do you remember anything about his job that came up that was discussed at home, some big issue or anything like that that did come up?

Fults: Oh, I think a lot of different things would come up that we'd talk about. In fact, he'd take us out, all of us out, and look at things, too, especially the different types of

equipment that would come along, like a new rendition of a big bulldozer, or a new rendition of a big steam shovel or an excavator, something like that. Wow! You know, we all had to go see that. Those types of innovations, new innovations like moving-earth material with this long, gigantic belt line. I remember we'd talk about those. He'd come home and tell us. Or even innovations in technology in terms of epoxy paint or whatever. That type of stuff. We were always finding out something new. The contractors would come up with something new. It was fine and good. It was fun.

Storey: Do you remember anything about problems that he was having with the contractors, maybe?

Fults: Oh, that went with the job. That's what inspectors were for, to make sure the contractor follows the contract. There was never a time that I remember that any issues, let's say, in terms of contract compliance were never worked out. You know, and I remember issues, different types of issues, whether it be the size of rebar or how long the rebar is supposed to be or whatever, and those were always worked out between the construction inspector, my dad. He may need to pull in the field engineer to help him work on a job, on a project, or work with the contractor's foremen and supervisors. That's just par for the

course.

Storey: I take it that after you had done, what, three summers at least of work, four summers of work with Reclamation, that it was just sort of a foregone conclusion that you were going to work for Reclamation.

"I Made Up My mind I Was Going to Work for Reclamation"

Fults: Yeah, it was. I had job offers from several different sources, and California Department of Water Resources was very actively, aggressively recruiting engineers at the time, because they had the development of the State Water Project going on.[5] In fact, they offered me quite a bit more money, and I thought about it. I made up my mind I was going to work for the Bureau. U.S. Forest Service offered me a job, a couple of other federal agencies. The Navy offered me a job as a civilian. Corps of Engineers.

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[5] California State Water Project "is a water storage and delivery system of reservoirs, aqueducts, powerplants, and pumping plants. Its main purpose is to store water and distribute it to 29 urban and agricultural water supplies in Northern California, the San Francisco Bay Area, the San Joaquin Valley, the Central Coast, and Southern California." See California Department of Water Resources, "California State Water Project," 2014, www.water.ca.gov/swp (Accessed 3/10/14).

Storey: But you chose Reclamation.

Fults: Yeah. They'd been good to me, you know, in terms of giving me a summer job, and I knew some of the people and felt more comfortable going to work for them.

Storey: Do you remember the process that you had to go through to be hired by Reclamation?

Fults: Yeah. As far as a permanent job, filling out a 171 and a couple of other forms I don't remember the numbers of. They were O-P-M [Office of Personnel Management] forms to get on the Cert.[6]

Storey: So you did have to go on to a Cert?

Fults: Yeah. I think Reclamation was given direct hire authority from, but they had to develop a Cert, just the same thing as O-P-M does, and they developed the Cert for O-P-M and then they hired a number of us.

Storey: And that was '66?

Fults: '66, yeah. It wasn't O-P-M back then. What did they

[6] Cert is short for job certification that were part of job announcements for open positions within the federal government.

call it? The Civil Service Commission.

Storey: Yes, I think it was at that time. So you went into the rotation engineer program.

Rotation Engineer Program Assignments

Fults: The rotation engineer program. It normally consisted of four assignments, four three-month assignments, and my first assignment was in Willows Construction Office. I worked three months there.

My next assignment was to the Carson City Lahontan Basin Project Office. It was at that time, during that assignment up there, that I decided I wanted to go back to graduate school.

I graduated in January from school, and my first three months I went sometime in May, January to May, in Willows, and then from May, June, July, after July and August, I was supposed to transfer to another rotation assignment. But rather than do that, they just extended me for another month and a half before I went back to school in Carson City. I just stayed there. And then I went back to school and I spent a year and a half in school.

At the summer break, I did come to Sacramento

and worked, and that was another rotation assignment, they considered it. So I had one more after I finished the Master's Degree. I came back to Sacramento after finishing my Master's Degree and worked. It wasn't in this building. The old Bureau office was down the street about a mile, across the street from Town and Country Village. I worked a three-month rotation assignment there in the Irrigation O&M Branch, and it was very interesting.

That was at the time there was kind of like a slowdown in hiring. So when you finished rotation, you were supposed to go into a permanent slot. There was two of us rotation engineers, and they scratched their head, and didn't know for sure what they were going to do with us. I didn't know if I was going to have a job after that. They kept me. The O&M branch chief wanted to keep me, so he kept me in O&M in a permanent assignment, and then the other rotation engineer went into what we call the Power Division. So they did place both of us. We wondered there for a while whether we would be placed.

Storey: What was your rotation when you were in the Willows Office?

Fults: I was involved in design of canals, that type of design. That was for a couple of months, and then I helped out

on construction inspection, pipe inspection in the pipe manufacturing plants down in the [San Francisco] Bay Area. I went down to south San Francisco for about a month. I'd had experience there in the summer job, and they needed somebody pretty bad, so they asked me to go down there and help them out. So I had two different type of work experiences.

Storey: That was concrete pipe?

Fults: There was coal tar enamel, but I did work on concrete water line and coated pipe. I never did work on cast pipe.

Storey: And then in Carson City what did you do?

Fults: Carson City, I was working more in planning type of functions, and we were doing a lot of the seepage planning studies for the whole Lahontan basin area out around Fallon, Nevada. It's a very sandy type of soil, and project building of canals. Later on we were doing seepage studies to find out how much they leaked, trying to determine that so that designers could be able to come up with a program to seal up the canals.

Storey: Did you get involved in the remedies part or just in the–

Fults: No.

Storey: It was just the measuring part?

Fults: Measuring and analysis to determine the seepage. I don't remember the numbers.

Storey: And then your summer in Sacramento, what was that?

Fults: Sacramento, I was in the Planning Division in hydrology, getting the yield studies for the project, flood studies for the future project.

Storey: Which project?

Fults: I did the original flood routings for the Auburn Dam. The Auburn Dam was actually under construction after that, sizing the spillway.

Storey: And then you completed your degree at San Jose, was it?

Completed a Master's Degree at San Jose State

Fults: Yeah. Master's Degree at San Jose State College in San Jose, California.

Storey: Did it actually take a year and a half for the degree?

Fults: Yeah. It took about a year and a half. Right. I took thirty-five units. I had thirty-five units. Took a year and a half to do it.

Storey: That would be semesters or quarters?

Fults: Quarters. Or, no, semesters. Semesters units. I took fourteen, twelve, and nine.

Storey: Am I right in thinking that engineers with an M-A., that's a pretty advanced degree for engineers, is it not?

Fults: Yeah, it's hard. Yeah. There are more of them around, though. It's hard. It is pretty hard. You have to study a lot, spend a lot of oil, a lot more midnight oil doing that than I did for an undergraduate engineering degree.

Storey: And then you came back for your fourth rotation in Sacramento again?

Fults: Right.

Storey: And that was doing what?

Fults: That was in the Irrigation O&M Branch, 430. MP 430, they called it back in those days.

Storey: And what were you doing there?

Fults: Then I got involved in assisting the field offices for operation and maintenance problems they may have, helping them solve them. We were very heavily involved in the development of methods to automate canals and to help the field offices like the Corning Canal and Tehama-Colusa Canal, and Friant-Kern Canal.[7]

Storey: What do you mean by automating?

Developed Equipment for Automating Canal Features

Fults: With electronic equipment, made it so that you wouldn't have to have as much manual or human in-the-field operation to have to have ditch riders. You'd just have electronic equipment do it for you and keep the canal operating, open up a gate, close it, and turnout to deliver water to a district or wherever.

Storey: Were there a lot of people who manufactured that

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[7] For more information on automating canal features, see Clark P. Buyalski, *Corning Canal Automation Downstream Control Field Scale Application of "Feedback Method": Prototype Test Program Procedure for Test no. 1, 2, and 3, March 11,12 and 18, 1969*, Prepared by Clark P. Buyalski and Dan Fults (Denver, Colorado: U.S. Dept. of the Interior, Bureau of Reclamation, 1969).

kind of equipment?

Fults: No. We were in kind of a developmental stage at that time, and we worked closely with our Denver O&M Office they had back there, and the Denver Research Lab helped us a lot. And then we had close relationship with the University of California-Berkeley, who had a Professor Harder down there, who was probably at the forefront of the field in development for automation, the theory of automation of open channels, and then to implement that into the practical aspects of the actual hardware to do it.

Storey: Am I hearing that we designed the equipment?

Fults: We actually designed and built it. We actually wired it up ourselves. We had the soldering equipment and all to do it. I even remember doing some of it myself. We had our wage board people helping us out in the field build the equipment. There was nothing on the shelf that you could buy. We just did it.

Storey: Is there stuff on the shelf now?

Fults: Yes. Oh, yeah. Hey, technology is so advanced now, we can go buy those black boxes now. It's great. It's so much further advanced now than what it was. This was twenty-three years ago.

Storey: Yes, '66-'67.

Fults: Late sixties, yeah.

Storey: Specifically which project would you have been automating?

Fults: Well, canals. Our test case was the Corning Canal, and then we took that technology, once we had it developed, and carried it over to the Tehama-Colusa Canal and Friant-Kern Canal.

Storey: And these are all on C-V-P [Central Valley Project]?

"Technology Has Advanced Tremendously"

Fults: Yes. They're all C-V-P features. The theory is still all the same. The technology, as far as the application, has advanced tremendously because of the electronics advances that have occurred in the past twenty years. Back in those days, it was all analog type of technology versus today it's all digital technology. We would have to mathematically model the hydraulics of the canal in the control structure and use advanced mathematical techniques.

We did have computers back then. We had the old cards, you know. They used to keypunch the

cards and read them in. We'd model different types of control and different movements of the gates to make sure that we weren't going to overtop the canal. We could set up certain dynamics in the water that would create waves that could overtop your canal, too, or cause damage. And then once we had that modeled, then we would design the equipment that would produce that type of control.

I remember going down to Radio Shack and some of the electronic stores with a purchase order and buying tensiometers and wire and capacitors and different devices, and wiring it up and seeing if it worked. (laughter) And sometimes it didn't work until you got it worked out right, because we were civil engineers kind of messing around a little bit in electronics and didn't know a whole lot about electronics. Then Denver got involved and started helping us more with that. They had pretty good people back there in the lab that were very helpful to us.

Storey: Say you wanted to control a canal. Do you set up a control room or how do you do that?

Plan was to Replace a Ditch Rider with a Computer

Fults: Well, now you do. You could do that. The early

stages on a canal control, you'd have a ditch rider. He'd start at the top of the ditch right where you're coming out of a river or a dam or whatever. He'd open up. So much water would go into it, and he'll drive down the ditch with the water and open up the gates. So everything matches up. He does it manually and by eyeball.

So what you're doing, in essence, is you're replacing that ditch rider with a computer. As long as you've got all the monitoring and to know the water levels and the openings and all that, then you can do the same thing with a computer. Now, you can do it strictly just by computers and hardware and software out in the field located along the canal without having to have a central control center, or you have the option of going to a central control center, too, with somebody on the screen, watching a screen of what's going on and making those changes remotely also. So you can set it up a lot of different ways.

Storey: Back when you started, how did you set it up?

Fults: We just set it up so that we just replaced the human being driving down the canal, with electronic equipment.

Storey: But from a central location?

Fults: No. No. Just took care of itself out at each check structure along the canal. It had a sensing device–

Storey: You programmed it, though?

Fults: Yeah. We had a sensing device that would sense what was going on upstream of a check, the water level going out, and send a signal to our electronic equipment saying, "Okay, you've got to open up this gate. We're getting more water in here than you need, so you need to open up the gate." You'd have a local control; we called it local control. That's how we initially set it up. It's much more complicated than that now with today's technology. Today we use satellites for your communication links and all, which we didn't have. We had hardware, telephone lines we buried.

Storey: You buried it along the canal?

Fults: Yeah. Along with the maintenance road.

Storey: Tell me about some of the problems you ran into as you were developing this system.

Problems Associated with Canal Automation

Fults: Well, we didn't realize we were supposed to shield for lightning strikes, which would send interference into

your electronic equipment. Even if the lightening didn't strike, if it struck nearby, you'd have electronic interference and it would cause your equipment to malfunction, and it would open up the gate completely or close it completely and those type of things. The backup. And that was all the debugging that we had to go through.

Storey: And how did you know when there was a problem?

Fults: When we were testing a canal, we'd have people out there all the time. During the debug phase, you'd always have people there throughout your debug. Then you could set up safeguards to protect yourself. To keep a gate from going all the way open, you could mechanically make it such that the gate wouldn't, it wouldn't go all the way open. Or it would hit a trigger, another sense switch, that would not allow it to go further open.

We'd have lightning strikes. A lot of times the equipment malfunctions because the equipment back in those days just was not made to withstand the environmental conditions, the weather conditions or moisture or whatever at that site, whereas today things are much more tolerant to temperature changes or whatever. It just wasn't made for that. The electronics were made to be put in a radio to sit in a

nice warm room someplace. We didn't have that out in the field.

Storey: How long did you work on this automation process?

Fults: Oh, on and off for about up to two and a half, three years, probably. That was part of the job. You know, it wasn't a full-time job. I had a number of other things to do, a whole handful. Review of Maintenances, writing S-O-Ps [Standard Operating Procedures], helping. If something broke out there, go out and try to help them figure out how to fix it.

Storey: When you say routine maintenance, you mean checking to make sure that routine maintenance is being done?

Overseeing Operations and Maintenance

Fults: Right. O&M reviews.

Storey: So you would go out on the projects and look and make sure everything was being properly maintained?

Fults: Right. Yeah.

Storey: The kind of oversight that we're moving away from?

Fults: Right. Yeah. I was involved with some of that, too.

Storey: What percentage of your time would you think was spent on the automation part?

Fults: Fifty percent. Sometimes 100 percent. But overall, 50 percent.

Storey: About how much time on O&M reviews?

Fults: Oh, 10 percent, somewhere around there.

Storey: When you would do an O&M review, would you go out and do an entire project, or would you just do a feature, or how did that work?

Fults: No, you'd try to do the whole project. Like if we were doing an O&M review for Klamath Project, we'd try to do it in a week.

Storey: You would do the dam, the canal, the delivery system, the features?

Fults: Right.

Storey: And how far out did Reclamation's responsibility extend? How did you decide where your responsibility ended for O&M and somebody else's

picked up?

Fults: Well, pretty much into the minor features we always depended on the districts, and we might take a small representative sample just so you could, you know–they knew that you did take a look at things. It was kind of like a little audit, a short little audit. Not a whole lot of major structures.

Storey: For your O&M reviews, did you deal with any projects where the project had been turned over to the water users?

Fults: Yeah.

Storey: How did that vary from a project where Reclamation was still running it?

Each District Had Its Own Philosophy

Fults: Oh, as far as the type of work that was being done, it varied. It was variable. It depended on the district, the manager, the board. You know, you could walk across the street from one district to the other, and it would be like night and day. One of them would be doing a job much better than we could do, the Bureau of Reclamation. Another one would be ramshackled, by the skin of their teeth, you know, not doing

anything, trying to save as much money as they could. So you'd have both extremes, and they could be a stone's throw apart. Just depends on the district and their own personal philosophies.

Storey: What kind of control does Reclamation have, or did Reclamation have at that time?

Fults: A lot of control. Contractually we did. How much we did about it, we relied on the districts and we still felt it was their responsibility. If a feature did not deliver water, then they were responsible, ultimately responsible for the cost. We would warn them if there was some type of imminent problem. I felt pretty strongly the delegation was to them. If they wanted to have something that they could be proud of, fine. If they didn't, fine.

Storey: But our responsibility was to assure that the project still delivered water, and up to that point we would push on them?

Fults: No, we'd just make recommendations. You know, we'd put it in different categories, one through something or other. And category one might be immediately supposed to go out there and fix it. Category two, you put it into your annual maintenance program and fund it accordingly. We'd just give them

a report, and then if something was left under the category one, you'd go back in a couple of years when you did your biannual reviews, and that was the time–it really wasn't myself. It would be my supervisor, branch chief, would meet with the district board and manager, to try to impress upon them to fix it. And most often things were fixed. I don't recall any time a lack of ultimate cooperation.

Storey: That's about 60 percent of your time. What did you do with the remaining 40 percent?

Fults: The other part was a lot of, let's say, if a feature, if you had a leak, a leaky structure, or you had a broken structure, or somebody wanted to make a change and add a turnout or add something, then I was involved in that. I'd help them do even design parts of it or design analysis or coming up with recommendations or whatnot, you know.

END OF SIDE 2, TAPE 1.
BEGINNING OF SIDE 1, TAPE 2.

Storey: This is tape two of an interview by Brit Allan Storey with Dan Fults on November 17, 1993.

How long were you in the O&M office in that position?

Fults: I don't remember exactly, but I think about three years. Maybe it was four. I'd have to look through my records.

Storey: What did you do next then?

The Central Valley Operations Office

Fults: Then I transferred to an office they called the C-V-O-O, Central Valley Operations Office, and that was the central office for operating the Central Valley Project, coordinating the operations from north to south, to make the day-to-day, minute-to-minute decisions on how you're going to operate the water and power system.

Storey: That was here in Sacramento?

Fults: Here in Sacramento, right. Yeah. It was a Field Office located in the Regional Office, is essentially what it was.

Storey: Not a Project Office.

Fults: No. Well, it was a project office in and to itself, because it was supported by the administrative offices in the Regional Office. But it was considered a field office. It still is. It is today. We have the office here

in the building, but we're still considered a field office. In fact, finally, in another year or so, they'll be moving out of here into their own office, their own quarters, which is good

Storey: What were you doing?

Fults: Then I got involved in the day-to-day operations of the project, the water operations, deciding, you know, based upon forecasts of inflows to the system, how you were going to operate the system to meet the demands and also working through the flood periods and stuff for flood operations. And that's when I got involved in developing mathematical models, computer models, to assist us in making those decisions, because before, everything was done with pencil and a calculator, and computers had come along, but not to give a crunch, a lot of information, so we started modeling project operations to be able to make different type of hypothetical runs, different scenarios, based upon different types of inflows to our system or different demands so that it would help us array out a number of many more options from which to make operational decisions.[8]

[8] For more information water operation modeling, see Dan M. Fults and Lawrence F. Hancock, *Water Resources Optimum Operations Model* (Sacramento, California: U.S. Dept. of the Interior, Bureau of

Storey: This would be about 1970 or so?

Fults: Yeah. About '72 or something like that.

Storey: So you weren't using a desktop computer.

Utilizing Computer Technology to Improve Efficiency

Fults: We had an I-B-M 1620, the Region did, computer at that time. Every year or every couple of years, we kept upgrading the computer system. Advances were coming so fast.

Storey: Was there somebody else working on this with you?

Fults: Yeah. Larry Hancock. You might know who Larry is.

Storey: Yes.

Fults: The Deputy Commissioner and I were both working together.

Storey: He told me about this project.

Fults: Larry and I and Jim Robertson, who was in our

Reclamation, Region 2, 1971).

Denver Office, Don Sparks, who's a computer specialist here in Sacramento, our Sacramento Office, in our Data Processing Office, and there were a couple of more. One other guy, he retired, Glen Logan.

Storey: Obviously this kind of effort is going in for a very real reason. Tell me about what the problems are of flooding and modeling water flow for the project.

Problems Associated with Water Modeling

Fults: Well, the issues involved in water operations are being able to make the most efficient use of your water supply. That's kind of the bottom line of it. If you look at it that way, it becomes an economic issue to maximize revenues, if you want to call it that, or whatever. A lot of the revenues come from power generation. The more water you can put through a power plant rather than run it around the power plant, the more money you make, makes for more repayment for the project. You had a lot of it back at that time.

We did not have the environmental issues that we do today. It's a much more complicated task of operating this project today than it was back then. Back then it was kind of like a two-dimensional thing.

You had water for irrigation and municipal uses, and you had water for power generation. Water users and power users, that was the prime uses. Then you considered recreation and navigation and certain salinity requirements in the Delta [Sacramento-San Joaquin Delta].

Flood control was a major consideration, but it only happened during the wintertime and it didn't happen every winter. So it wasn't a year-round job, you know. You already had by rule, set down statute and rule, Corps of Engineers' flood requirements. So you'd always draw your reservoir down in early winter to meet those requirements and then operate after that.

When storms would come in, you'd get a bunch of storms that really put you into a real flood period where you've got spillways going and outlets going, you know, people potentially being flooded downstream, trying to make the decisions of when and where to make your releases. That happens in a very short period of time, like a week or two, very intense, you know, twenty-four hours a day you have people involved. I went through a few of those periods like that, but it's not like working the day-to-day thing for several years in operations, deciding every day, "Okay, this is how we're going to operate the project today," under your normal operations.

That was during the period in the Central Valley Project Operations that we did plan and design and implement a centralized computer system for project operations, too. It was the first one we had in the Central Valley Project. In fact, we still have the same system and need to replace it. It's way overdue. We put it off because of funding. We're planning to replace it, though, now.

Storey: It's a fairly expensive project?

Fults: Yeah. It is. It's way overdue. We can't even get parts, replacement parts, for the system we have now. We've got a group of people working on developing the plans for replacement, technical aspects of that.

Storey: I think I'm hearing that you have to operate the system under emergency conditions, flooding conditions.

Fults: Right.

Storey: And you also have to be able to operate a system under normal water demands and power demand situations.

Fults: Right. Yeah.

Storey: Is it hard to balance power and irrigation needs?

Fults: Back then, it wasn't too hard. It was complicated from, back then, a technical sense of being able to array enough alternatives that you thought that you had come closer to the optimum decision, and that's where computers could do that for you. We were using what came out of the space technology, called systems analysis operations research, which came out of the space program, and implementing that into our decisions on operating the water and power project. That's where we were using that to computerize so that we could search through many different operating options and come up with the one that maximized your efficiency on the project. We worked closely, again, this time with our Denver Office, and U-C-L-A was involved with us a lot then, an advanced group of people and advanced technology, to assist us.

Storey: Do you remember any names from U-C-L-A and Denver?

Fults: Denver, there was one guy left. I think he was going to retire. Maybe he did retire. Ed Serfozo was out there, and there was a Henry Falby, Hank Falby. Clark Buyalski . Maybe another name or two will come to me. Down at U-C-L-A there was Warren Hall [phonetic], who I think may be–I know he was

for a while, unless he's retired from Colorado State University now. There's a Bill Yeh, Professor Yeh, who's still at U-C-L-A.

Storey: How would you spell that?

Fults: Y-E-H. He's still very actively involved in that science field.

Storey: I gather from my limited experience with Reclamation that it's sort of a science learning how to release water upstream so that it's available at the right time downstream for delivery.

Fults: That's right. Yeah.

Storey: How do you do that? Is it something that is quantifiable so that you can understand it?

Moving Water to Where Its Needed

Fults: A lot of it is quantifiable, because we know how long it takes for water to travel. Like if you released water from Folsom Reservoir here in Sacramento, it takes like a day to get through the [Sacramento-San Joaquin] Delta, whereas we know if we release water from Shasta Reservoir, about 200 miles north of us, it takes five days to get to the Delta. So you can work

with that and overlap those time frames, and you can quantify a lot.

The things that you can't quantify is how much that water or that storm is going to rain on you. You can make predictions and forecasts and the timing of that. You can very closely predict the demands of the crops. If you know how many acres, you can predict approximately how many acres are going to be planted, and then compute out the demand, how that's going to come over the season. A lot of things are accurately predictable. Given all of that, you can then predict and make decisions that are most of the time close to what happens. Not all of the time.

Storey: How does water delivery work as a practical thing? Does the district call up and say, "We need X"? What goes on?

Fults: Generally, a district, and most of them are typical of that, is they'll have a watermaster, and they'll take all the orders from the farmers. In general, most of the time the districts have their internal policies of how they operate, but they'll try to set up so that they will irrigate different blocks throughout the district, different parts of the district, on certain days. So a farmer can pretty well be assured when he is going to get his water on a regular schedule, and he'll confirm

that with the watermaster.

The watermaster adds up all the water needs, and then they'll call the Bureau office, like let's say our Fresno Office, call in there and there's a contact. And our Fresno Office will compile all these needs and then they'll make sure the adequate amount of water is in the canal.

Storey: So it's sent on request from the watermaster. It's provided on request.

Fults: Right. Yeah. As much as possible. There may be times when you don't have enough water or you've got more demand than your canal can carry. So then you have to kind of work back and forth to make those adjustments. People will say, "Okay, well, we can take a little less today and a little more tomorrow," and that kind of stuff, work it out.

Storey: And that's the watermaster's responsibility, working with Reclamation?

Fults: Some watermaster and Reclamation, yeah.

Storey: How did your computer model work out?

There's No Flexibility in Dry Years

Fults: Not very well. What happened is it worked fine in the normal years, but when you went into a dry year, which they went into a drought in the late seventies, '75, '76, '77 was the worst year, and there's no flexibility in the system to make decisions from. You don't have all these options. If you don't have any water, you don't have any options. So actually at that time, the models weren't useful, because you didn't have to use them. You only had one decision: you don't have any water.

From looking at it from that vantage point, they were fine. The models worked fine in a normal year and they'd work fine now. But during a drought, you don't need them. There's no water, no flexibility.

Storey: Do we now have computer models for running the system?

Fults: Yeah.

Storey: Is it the same model?

Fults: Basically the same. It's more advanced in terms of using different computer language, more advanced language and computers.

Storey: It's evolved some.

Fults: Same theory.

Storey: It's a huge complex project.

Fults: Yeah.

Storey: It must be a difficult one to manage for that office.

Fults: Yes, it is. It's more difficult today than when I worked in there because of the competing demands now for the environment. It's a very, very difficult task.

Storey: How many people did it take at that time, and how many people does it take now?

Fults: I'd say it takes about the same number of people, maybe a few more, because technology has helped in time savings, computer technology. I don't recall the exact numbers back then that I worked with. I'm not sure how many they have in there now.

Storey: Are we talking more than twenty people?

Fults: No. On water operations, you're probably talking about ten.

Storey: That would be the entire office?

Fults: Yeah. Then we've got the power operations side, too. But that's [unclear] like you have a division, and you have two branches, water operations and power operations.

Storey: And this is the Central Valley–

Fults: Well, I still go by the Central Valley Operations Office. Its name was changed to Central Valley Operations Coordinating Office. More recently it's been changed to something else. I don't even know what they're calling it. It was just changed in the past couple of months, so the name hasn't stuck with me. They're still C-V-O-O to me.

Storey: How long were you in that office?

Fults: I must have been in there about four years, and then I went from there on to the Departmental Manager Development Program back in Washington, D.C., for about a year, took a training assignment. My family and I packed it up and went back there for a year of training.

Storey: When did you decide you might be interested in adding that direction to your career, and why?

Deciding Career Moves

Fults: I don't know. I think supervision, getting into supervision, into that direction, I probably decided that when I was working in this Operations Office with Larry Hancock. We had a couple of supervisors in there that I really admired a lot. They helped you think about do you want to be a supervisor, and we would talk about it, and they would kind of mentor you, in those terms, or counsel you. One of them was Dave Coleman [phonetic], who just recently left the position of Western [Area Power Administration] regional administrator here [in Sacramento]. The other was a gentleman by the name of Jake Osofsky, who's retired. They were more inspirational than not. You could develop your skills as a supervisor in the human resources end of it.

I had an opportunity to kind of lead the team, let's say, in this computer applications. I thought it was all right. So that's where I thought, "Well, I would like to see and be able to be trained more in supervision and management development," and that's when I applied for the Management Development Program. The first year, I think, I applied, I didn't make it. That's okay. I might have made it the second year. I don't know. One of the years I applied for it, I got accepted and went back to Washington, and that was a terrific experience, terrific from a formal training and experiential, that's what really what helped me

decide I wanted to give management a good healthy try.

Storey: Did you have any qualms about giving up being a practicing engineer?

Fults: Yeah. That was a big part of it. That's why I thought the two supervisors in the office at the time were very helpful, because you could talk to them about those types of things, and they understood that. On the one hand, I thought, you know, you've got to give supervision a try and try to learn about it, learn the rules and all this other stuff, and by the same token, to be able to give up your technical aspects of your profession, too, which is what you do in some ways. But it seemed to work out pretty good.

Storey: Did you have a mentor?

Fults: A mentor, per se?

Storey: Yes.

Fults: I'd say if I had a mentor at any time in my career, it would have been a gentleman by the name of Jack Mistler. He was originally our regional training officer, and then he was our Regional Personnel Officer, and for a while our Assistant Regional Director for

administration. I would look at him more as a mentor than anything, if I had a mentor, per se.

Storey: Who was running the Departmental Manager Program when you were back there?

Management Training in Washington, D.C.

Fults: The departmental [Department of the Interior] contact was Sally Roberts, and then Frank Peckerich [phonetic] was the Bureau training officer who helped us. You know, there was two of us on the program. He helped us a lot on laying out our training program, and then Sally helped a lot in the bigger sense.

I had assignments in Reclamation, and I had one up for the Senate. I worked for Senator [John] Tunney's staff for a while, and then I had a number of different formal training, week assignment, training assignment type of things in terms of like I took a course in the legislative process and budget formulation, budget execution, different types of things that you needed to start understanding management. And then I took some organization development type, a couple of different organizational development courses, which I thought were great.

Storey: Did you take any assignments with other agencies?

Fults: Non-Interior agencies, no. I was all within Interior or up on the Hill. I worked like in P-M-B. It was P-M-B back there, Policy, Management and Budget in Interior. I worked within Reclamation. Back then it was traditional divisions like the Planning Division and O&M Division, or whatever they were called, and the Power Division. I had an assignment in each one of those divisions.

Storey: Sort of covering the major program areas?

Fults: The whole thing, yeah. What they do policy-wise and how they go about it, you know, whether they're making decisions or preparing decision documents or preparing testimony for either the Commissioner or somebody to go up on the Hill.

Storey: Which year was that?

Fults: That was '75-'76.

Storey: And your family was back there with you?

Fults: Yeah. My wife and my son. Just the family, that's it. We packed it up and went back there. It actually ended up being about ten and a half months. That was fun, because from the same sense of being able to get involved, you know, in your work and learning a lot

and making some contributions, but we took advantage of the situation from the historical sense of all the treasure of history of our early nation. It goes back from Gettysburg to Mount Vernon to Williamsburg. We went everywhere. Every weekend we were out lapping up the history of the area. We needed that long to do that. In fact, we missed some things. We still didn't have enough time, but we took advantage of every bit we could.

Storey: Who was the Commissioner then?

Fults: Gil Stamm.[9]

Storey: Did you have an assignment with him?

Time Spent in the Commissioner's Office

Fults: Well, not specifically. A few days I spent shadowing him, but no assignment with him. I worked closer with one of his Assistant Commissioners, Jim O'Brien, who was over Planning and O&M at the time.

Storey: What was he like?

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[9] Gilbert Stamm was Commissioner of the Bureau of Reclamation from 1973 to 1977.

Fults: Good. He was really good, a really good, solid, very energetic, thoughtful, sensitive individual. Sharp. He ended up, the World Bank ended up grabbing him, hired him away from us, got a lot more money.

Storey: Do you know where he worked then?

Fults: He was out of Washington, but he did spend a lot of time traveling, but I'm not sure where. Financially, it was one of those things he couldn't turn down. It was that type of situation where they would offer him a lot more and then a lot more in terms of his family. I think part of the deal was his children's college education and helping him in that cause, big, big boost for him.

Storey: What about Mr. Stamm? What was he like?

Fults: The things I remember about Mr. Stamm was he was a very sharp individual, very intelligent, could sort things out almost instantly. He could understand. You could explain things to him and he'd understand what you were saying without having to go back over it at all. I think he was an economist. I'm not sure. I don't think he was an engineer. But he had a brilliant mind. Politically sharp. A very decisive individual. If you needed decisions, he wouldn't put it off, you know, he would think about it and then make a decision and get on with it. I think he was a good leader, a good

leader for our organization at that time.

Storey: What was your experience shadowing him?

Fults: Well, the experience really was, you know, my observations. My goal for that couple of days that I did was to watch for what his leadership traits may be, and if there's anything in there that I might be able to learn from, and I feel that his ability to focus and very quickly assimilate information and make decisions was just, you know, pretty eye-opening.

Storey: What did you do after your training assignment? Oh, I'm sorry. Before we do that, I should ask you about Senator Tunney's office. What did you do there?

Fults: I don't know. I may want to beg off from this one.

Storey: That's fine, if you don't want to talk about it.

Capitol Hill Assignment

Fults: What happened on Tunney's office was I wanted to get an assignment on Capitol Hill, so I went to my congressman. I think that was "Biz" Johnson back then. And I went to the senator's office, and I can't remember who the other senator was. [Alan] Cranston and Tunney. That was the congressional

delegation basically for me. I made the rounds. I said, "Hey, I'm Dan Fults. I'm on this training assignment." I met their office chiefs. I offered, you know, "Here's my resume, my skills. I'm free help, you know, basically, and I'd like to have an assignment up here on the Hill so I can kind of have a better feel for what it's like."

And they said, "Thank you, and we'll call you."

I thought, "Well, gee, I'll never get an assignment." I'd check in with them every now and then. And I'll be doggone if the Water and Lands person for Tunney didn't get a different job someplace, and they had my name and they said, "Hey, Dan, come on up here for a while until we get a permanent person hired." So I was lucky in that instance. I went up for a couple of months and I covered everything from correspondence to you name it. Whatever Tunney needed, or his actually A-A needed, that was my job to take care of, even taking care of visitors that would come in from constituents.

Storey: You were on the–

Fults: Staff. The senator's staff.

Storey: Senator's personal staff?

Fults: Personal staff, right. And I could have worked, you know, six or seven days a week, ten hours a day, just taking care of the correspondence that comes in there. It was overwhelming.

He had an excellent staff. Excellent. You know, very, very professional. The part that I always wondered about is where the senator was, because I very, very seldom saw the senator. You know, I don't make anything of it, but the senator was not reelected either. So I don't know whether–

END OF SIDE 1, TAPE 2.
BEGINNING OF SIDE 2, TAPE 2.

Storey: Did you work on any legislation for him?

Legislation Work for Senator Tunney

Fults: We got involved in the organic–remember the B-L-M [Bureau of Land Management] Organic Act?

Storey: FLPMA [Federal Land Policy Management Act of 1976]?

Fults: Yeah. We were involved in that, in preparing information for him and his A-A and the budgetary aspects, original type of legislation that he was

sponsoring.

Storey: Was it eye-opening being in a senator's staff?

Fults: It was very interesting. It was eye-opening as far as how hard the staff works up there and how much work they have. It's overwhelming. Very, very much overwhelming. If a person, a young person especially, wanted to get a lot of experience in a hurry, I'd say that's the place to go, because you'll get it. Then you've got to figure out how you're going to get out of there afterwards. After three or four years of experience, you'd want to get out of there. Making a full-time career of that would be hard. It would make an old man out of you in a hurry.

Storey: Some people seem to have the energy for it.

Fults: Yeah. Our Commissioner did. Dan Beard spent most of his career up there.[10] Very successful.

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[10] Daniel Beard was Commissioner of the Bureau of Reclamation from 1993 to 1995. For more information, see Daniel P. Beard, *Oral History Interview*, Expanded Second Edition, Transcript of tape-recorded Bureau of Reclamation Oral History Interviews conducted by Brit Allan Storey, senior historian, Bureau of Reclamation, from 1993 to 1995, in Washington, D.C., Edited by Brit Allan Storey, 2009, www.usbr.gov/history/oralhist.html.

Storey: After you finished your training course, what did you do next?

Assigned to the Arizona Projects Office

Fults: Then I took an assignment to our Phoenix Office, Arizona Projects Office, working on the Central Arizona Project [CAP] for two years down there. What my job was to set up a new division called Operations Division, and it was to begin the considerations of how you were going to actually operate and maintain the project as it started coming on line, when construction of different features was completed. So we had a division to lay out, you know, again how the project was going to be operated and then how it was going to be maintained and then to begin the task of hiring the people and, you know, acquiring the equipment and all to do that. So we developed those type of plans and procedures and started implementing them.

Storey: How large a division was that?

Fults: At that time, it was about twenty people. We had the repayment part of it, maintenance, and then the operations. Subsequent, you know, several years, like about–I left there after two years, and probably within five years after that, most of that division then

transferred over to the district, because the district started taking over operation and maintenance, which was how we set it up, planned to do it, and it worked.[11]

Storey: So if I'm recalling correctly, C-A-P was authorized in '68?

Fults: Right.

Storey: So this is ten years later, roughly.

Fults: This is about, yeah, eight years later.

Storey: Eight to ten.

Fults: In the budget build-up phase, it hadn't peaked. When I went down there, there was over 200 employees, somewhere around 200 employees. I think they went up to 500 or 600 employees, something like that.

Storey: So construction had begun.

Fults: Yeah. They were building the Buckskin Mountain

[11] Reclamation turned over operations and maintenance of CAP to the Central Arizona Water Conservancy District, currently referred to as the Central Arizona Project.

Tunnel, Addison Pumping Plant, and Reach 11 was completed, Hassayampa Pumping Plant was under way, and the siphons were under way. Orme Dam, the offstream storage was a big issue. Offstream storage was a big issue.

Carter Hit List

When [Jimmy] Carter became president and came up with the hit list, Central Arizona Project was one of the–I don't remember–half a dozen projects or whatever it was that was on the hit list.[12] So we had to provide all of the studies and paperwork to support the project, to keep it from being terminated.

That was back in the days in Arizona when you

[12] Jimmy Carter served as President of the United States from 1977 until 1981 after his election in 1976. Within a few weeks of the beginning of the Administration, an internal discussion document accidently fell into the hands of a reporter. The document proposed cancellation of a number of water projects considered environmentally or economically unsound. This proposal came to be known as Jimmy Carter's "hit list." This happened while Commissioner Daniel P. Beard worked in the Carter Administration, and he discussed his perspective on the issue in his Reclamation oral history interviews and in "The Passage of the Central Valley Project Improvement Act, 1991-1992: The Role of George Miller," an Oral History interview by Malca Chall, 1996 for the Regional Oral History Office, Bancroft Library, University of California.

had very strong congressional people. You had Barry Goldwater on the Senate side, and you had John Rhodes, who was Minority Leader of the House. Then you had the Chairman of the Interior Committee was Mo Udall. And they were very powerful politically. That group of people came forward and battled for the project, persuaded the administration to keep it.

Storey: So your office was given this fairly complicated task of figuring out what was going to happen after the project was constructed.

Planning Operations for CAP

Fults: Yeah. Actually, it was two-phased. Certain features could come on while other features were being built, could come on line and be operating, deliver water. So you had the interim period and then the ultimate completion also.

Storey: So you were planning for both of those.

Fults: Right.

Storey: Sort of a phase-in?

Fults: Yes. That's what we did.

Storey: So were you planing for the phase-in and the completion stage, or just the phase-in?

Fults: No. No. We did both. It was actually one report that said, "This is how you do it. This is what you need to do, you need to hire these people here, put this equipment here," or whatever. You know, need so many dump trucks or whatever it is to maintain the system.

Storey: But you weren't involved in the construction, per se?

Fults: Per se, the part of construction that we were involved in, was any designs that came in, we would review from the vantage point of making sure the designs were compatible with being able to operate and maintain those features. We had a good deal of input. We'd always sit on the design committees and so on. Worked closely with Denver, again.

Storey: Who was the Project Manager at that time?

Project Office Organization

Fults: Project Manager then was Cliff Pugh. He'd been there probably for thirty years or more. And then they had an Associate Project Manager, who it was kind of like a planned turning over of the throne, by the name of

Dick Shunick [phonetic]. He transferred there out of Washington, and both of them were very good, just really topnotch managers, topnotch. After the first year that I was there, Cliff retired and Dick inherited the throne, and we got along with running the project. It worked very well.

Storey: Were you out there north at that time on the canal?

Fults: We were down at Valley National Bank. We were still downtown.

Storey: And it was a large office?

Fults: Two hundred people. Well, downtown there was probably about 100 people. People out at 43rd Avenue. We had our whole field [construction] crew out over at Colorado River there [at the] Havasu Pumping Plant. That's where most of our people were.

Storey: You were working on C-A-P mostly, but it's the Arizona Projects Office.

Fults: Yeah. Right. I did work some with the Salt River Project people, you know, and other small Reclamation projects. We had that under our division, small Reclamation and distribution system [unclear]

out of our office.

Storey: You had decided you wanted to be a supervisor and you got the training, and then you had a division of twenty folks. Did you like it?

Project Manager, North Platte River Project

Fults: Yeah. I enjoyed it a lot. And then I decided, "Well, this is pretty good. I like it. I want to be a Project Manager." So I applied for a project manager's job in–well, I had applied for a few jobs, but one of them I applied for was for the Project Manager in Casper, Wyoming, for the North Platte River Project, and I got it.[13] I got offered the job and took it and went to Casper, Wyoming.

Storey: That would have been about 19–

Fults: 1978. For two years.

Storey: North Platte River Project, right?

Fults: Casper. Well, it's in Mills, Wyoming. It's a suburb of

[13] For more information on the North Platte River Project, see Robert Autobee, "North Platte River Project," Denver; Colorado: Bureau of Reclamation, 1996, www.usbr.gov/history/projhist.html.

Casper, I guess you'd say. We lived in Casper.

Storey: I would like to go on, because this has been fascinating, but we have spent our two hours.

Fults: My goodness. Didn't time go by when you're having fun?

Storey: Well, it's been a very interesting interview. I appreciate your taking time.

Fults: Great.

Storey: I want to ask you now if you are willing for the tapes and the transcripts of the tapes to be used by Reclamation researchers and outside researchers working on Reclamation?

Fults: I would say with the exception of the Senator Tunney part, I'm probably okay with that. I don't want to impugn anybody without, you know, offering up any evidence to that. So I wouldn't want it to sound like I was impugning his performance.

Storey: Okay. Well, good. I appreciate it. Thank you.

END SIDE 2, TAPE 2. NOVEMBER 17, 1993.
BEGIN SIDE 1, TAPE 1. AUGUST 30, 1994.

Storey: This is Brit Allan Storey, senior historian of the Bureau of Reclamation, interviewing Dan Fults, Assistant Regional Director of the Mid-Pacific Region of the Bureau of Reclamation, in the Regional Office, on August 30, 1994, at about ten o'clock in the morning. This is tape one.

Fults: . . . River Projects Office. It was plural. I always kind of got a kick out of the title "projects" because what it covers is different authorizations of Congress, different projects that were authorized by Congress in this river system, the North Platte River system.

Storey: How many were there?

Fults: There must have been about four different. I don't recall the names of all of them, either. They were all under the auspices, though, of this Pick-Sloan Missouri River Basin Program that was developed by Congress, actually by the Bureau and the Corps of Engineers, and then authorized by Congress, back in the thirties, I think it was.[14]

Storey: There's that old rule that says that 90 percent of the work is done by 10 percent of the people, and all of

[14]Congress authorized the Pick-Sloan Missouri Basin Program in the Flood Control Act of 1944.

that. Which of the projects was the 90 percent of the work for you?

Responsibilities for the North Platte Project

Fults: Well, the main stem of the North Platte River, of operating and maintaining that. The project itself, the project area, covered a series of dams on the upper main stem of the North Platte River. It was still in Wyoming, the upstream part of the North Platte River, clear across Wyoming and into the panhandle of Nebraska. I think it was near Scott's Bluff or something like that. Lake McConaughy, if I recall. I'm not even sure I remember all the names of the dams and everything. But a series of dams with their associated power facilities that also were built with them, and then some irrigation facilities as part of the projects, and then the related recreation and environmental portions of the projects, too.

Wind Turbine Project

One of the interesting projects that I worked on while I was there was this wind generation, or electrical power generation, and there were a couple of people in the Regional Office. Ab Watts [phonetic] was a power division chief, and one of his mechanical engineers by the name of Stan Hightower had thought

up this idea of placing large wind turbines out in the Medicine Bow area of Wyoming. The wind blows a lot in Wyoming, you know. When the wind would blow and generate electricity, then we could use the reservoirs as your battery, and rather than releasing from the reservoirs, and releasing water through the turbines, the hydroelectric turbines, you would hold those off. Then, therefore, you'd be storing energy, just like in your battery in the reservoirs, and generating the energy with the wind. Then when the wind died down, you would have that energy left in the reservoirs to generate hydroelectric energy.

The concept worked very well, and in order to construct such a massive 300-foot-tall facility, 300-foot-diameter propeller on it, was an engineering nightmare, which never was successful. There was an attempt made at that after I left. My understanding is that just the forces and the sheer forces upon the material that the wind generator was made out of just couldn't hold up to the stresses that were involved structurally.

Cleaning Up an Oil Spill

I had some interesting times there. One occasion, we had an oil spill where a pipeline that paralleled the North Platte River, downstream of

Casper, Wyoming, broke and spilled, must have been 40,000 barrels or something like that, of oil into the North Platte River, and as the river flowed, the oil flowed with it, and it just caused a lot of local environmental impacts, especially to waterfowl. That was interesting, being involved in that activity, in terms of the clean-up activities that were involved in it, too, working with the Environmental Protection Agency [EPA] and actually the U.S. Coast Guard gets involved in it, too. That made for real interesting work.

Overall, I would say the job that I had there as Project Manager was a very interesting job. I thoroughly enjoyed it. I spent two years there and I thoroughly enjoyed it, in terms of the work that I had to do, and the different variety and the breadth of work that was involved.

Storey: What did we have to do to deal with the oil spill?

Fults: Well, what we did, that Reclamation did, we provided support activities. If it's an inland spill, E-P-A controls it. If it's an ocean spill, the Coast Guard does. So the leader in this case was E-P-A, and we provided support to them, in terms of changing the flows if we could, in the river, by reducing the flows so the oil wouldn't spread as fast, and then we provided support

in terms of resources to boom off the oil and keep it from moving further downstream, and to provide cleanup activities in terms of trying–you put these skimmers in the water and skim off the oil, and retrieve it.

And then we also–we were fortunate that we had a couple of pretty experienced biologists on our staff, and they set up a recovery group for clean-up of the waterfowl that were captured that had oil on them, and they set up a whole program of clean-up, or rescuing those waterfowl.

Storey: Do we have emergency plans that go into effect for that kind of thing, or how does this work?

Fults: Yes, we do. On oil spills, we do have emergency plans on how to handle those, and we have materials, too, actually stored away in various locations, whether they be absorbent materials that'll absorb oil or whatever the contaminant is, booms and that kind of paraphernalia. So it is thought out ahead of time, and we were fairly well prepared, the Bureau of Reclamation was, and E-P-A was. They know what to do, too, in terms of being able to move out on it.

I think the least amount of preparation was in terms of what do you do to help rescue the waterfowl,

and, fortunately, our biologists had been involved in similar efforts in their career, and so we just essentially asked them to go ahead and set it up, and they trained the rest of the people how to clean up waterfowl and rescue them.

Storey: Where did the supplies come from? Did you have them on the project?

Fults: We had them on the project, stored in the powerplants already. Most powerplants have oil-spill clean-up paraphernalia, because your transformers have oil in them, so you have to have an oil spill contingency plan prepared ahead of time, and you go through mock exercises occasionally, too, so that your people are aware and sensitive to the requirements.

Storey: The wind generation I'm particularly interested in. Where did you come into that project? Were you there at the beginning, middle, end? How did that work?

Arrived During the Planning Stage of the Wind Turbine Project

Fults: I was in the middle. I was during the middle of the project. I came in, the plans were in a conceptual stage, and so I was involved in the actual planning

effort and site location efforts, the NEPA [National Environmental Protection Act] compliance for environmental compliance efforts that were under way. We took that all the way to–about the time I left, they were into the final designs for the power facility, and after I'd left they'd awarded a contract and built a turbine up by Medicine Bow.

Storey: And who did the designing?

Fults: The designing, actually, well, it was actually done–well, our Denver Office, but they had NASA doing a lot of the support efforts, and their engineers were doing most of the actual fine designs on it.

Storey: But you didn't have any personal experience, once the implementation phase got into it?

Fults: No, I was gone. I'd left.

Storey: That's an interesting concept, using the storage reservoirs for batteries, in effect.

Fults: You know, in a simplistic fashion, that's a good idea. And it still has merit, and maybe someplace in the future it'll come to light, with a different type of design on the wind turbines. I'm sure it could be done.

Storey: Who was the Regional Director there then?

Fults: Joe Hall was Regional Director. It was called, at that time, the Lower Missouri Region, located in Denver.[15]

Storey: So he selected you for the position?

Fults: Yeah. In fact, Joe did select me to go to Casper. Prior to that, I was located in Phoenix, Arizona.

Storey: How did you and your family like being in Casper?

Fults: We didn't like it.

Storey: What was wrong?

"Living There (Casper, WY) was Pretty Hard on Us"

Fults: Living there was pretty hard on us. We weren't used to the harsh winters and those somewhat isolated conditions that you had there. Probably that was the two factors that made it kind of hard on us. As far as

[15] During the regional realignment in 1985, the Lower Missouri Region was absorbed into the Upper Missouri Region, which became the Missouri Basin Regional Office in Billings, Montana. In 1988 it became the Great Plains Region after the closing of the Southwest Region Office in Amarillo, Texas.

job-wise, it was a great deal of job satisfaction, from a professional sense. As far as personal-wise, it wasn't that good.

One enjoyable thing that we did have–there were several, but one of the most enjoyable was being involved in the Junior Ice Hockey Program. Our son was of the second grade, I think, so he was able to join an ice hockey team, and I actually ended up coaching a team, and that was fun. I enjoyed that a lot. And then I did enjoy the summertime, in terms of the fishing opportunities that were available in the area. It was very good. But overall, it was kind of different for us. We weren't used to that type of climate, and don't know if we'd ever get used to it.

Storey: What did you decide you ought to do next? Well, let me ask you a different kind of question, if I may. How did you plan your career? Was this something that was very methodical with you, or was it just something that happened?

Personal Goals for Working in Management Weren't Clearly Identified

Fults: I think, no, up to that point, there was some type of a plan. It wasn't that clearly identified, but there was a plan. I did have some ideas what I wanted to do, and

I'm going to take you through that just in a few short minutes here.

I'd worked in Sacramento, in Irrigation O&M, when they called it the old 430 Office, and then I transferred into the Central Valley Operations office, and I worked right in operations, day-to-day decisions on how you operate the Central Valley Project. And so I had, from a regional office perspective, a fair idea of how things happened. I'd been involved in a lot of different things. I wanted to get on a training program to give me training in supervision and management, so I got on a Departmental Manager Training Program, and it lasted about a year, and I went to Washington most of that time, and I got some excellent experience and exposure.

At that time I knew that as part of my career I needed field office rather than regional office experience, so I'd applied for a number of field jobs at the end of the program, must have been a half a dozen of them, and I happened to get the one in Phoenix, so I went to Phoenix, worked there a couple of years. That was a very large construction office and growing tremendously. You know, it was still on the growing end of things.

I knew from there I wanted to get some field

office O&M experience, and if I had an opportunity, I did want to get some power O&M experience also, just so I'd have a touch on it. I'm a civil engineer, but I still wanted to know something more about power. So I applied for, well, several positions, and I got the job in Casper, Wyoming, and that kind of would broaden my background and experience, in terms of I would know more about the Bureau, I would have worked in a regional office, I would have worked in a couple of project offices, one in construction and one in O&M, and also I would have worked in several regions. It kind of fit in the growth curve of advancement. I'd be better able to do jobs as I advanced, if I advanced, too. You don't know if you're going to.

So that's about as far as my career planning went, and then after that I really don't think I've had much career planning, or any plan. You know, things just kind of happened, more or less.

Storey: What happened out of Casper?

Project Manager, Klamath Project

Fults: Well, after Casper, I'd been there a couple of years, and actually what happened to me, in a personal way, I had personal needs to move back closer to Redding,

California, actually. That's where my father-in-law lived, and he'd had a heart attack, and my wife was spending a lot of time out there. So we said, "Hey, you know, it would probably fit better if I could get a transfer closer to there. Then you don't have to spend so much driving or on the airplane." So we said, "Okay, well, we'll do that." There was a position opened in Klamath Falls, Oregon, as a Project Manager, so I applied for that, and got that position, and moved over to Klamath Falls. Klamath Project Manager, it was called. That was fun. I spent seven years there. That was really fun.

Storey: So that would have been about '80 to '87?

Fults: 1980 to '87, yeah.

Storey: And your predecessor would have been Ray Willms ?

Fults: Ray Willms, yeah. Good old Ray. He was there. I came in after Ray. Ray went to Pueblo or someplace.[16]

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[16] Ray Willms participated in Reclamation's oral history program. See Raymond (Ray) Willms, *Oral History Interview*, Transcript of tape-recorded Bureau of Reclamation Oral History Interviews conducted by Brit Allan Storey, senior historian, Bureau of Reclamation, in 1994 in Denver, Colorado, edited by Brit Allan Storey, 2010, www.usbr.gov/history/oralhist.html.

Storey: He went to Fry-Ark [Fryingpan-Arkansas Project].

Fults: Fry-Ark, yeah.[17]

Storey: What were the major issues up there on the Klamath Project when you got there?

Fults: At the time I got there, the major issue was water supply. And by that, I mean we were in kind of a mini-drought at that time, and so the worry was of having enough water for irrigation and refuge uses. Well, we got through it. We were able to get through that. And then you ended up a few years into flood operations in the wintertime.

Storey: How did you get through the sparse years? Did we limit water to the water deliveries?

Water Deliveries During Periods of Drought

Fults: Yeah, we had to make some water limitations to have increased efficiency of water use, and we actually had

[17] The Fryingpan-Arkansas Project in Colorado is a transmountain diversion bring water from the western slope of the Rockies to the Arkansas River Valley. See Jedidiah S. Rogers, "Fryingpan-Arkansas Project," Denver, Colorado: Bureau of Reclamation, 2006, www.usbr.gov/history/projhist.html.

to reduce downstream river releases, under what you'd normally do in a normal year. An average year, you might release, as an example, 1,500 second-feet, and we would reduce that down to, say, 1,200 or 1,000, whatever was necessary, to be able to hold enough water in the reservoir to provide the contract needs.

Storey: When you say that the water supply is limited, how do you work that out? Does Reclamation, for instance, just say, "Hey, we're going to give this to you," or do you sit down with the district and work out what is going to be done and when it's going to be done?

Fults: The normal operations, what you do under normal year type of operations, which is your average year, is we would do forecasts, and by that I mean there are snow courses where they'll go out and measure the depth of the snow and the water count in the snow, in January and February and March, once a month, every month. Based upon the quantity of water and historical conditions and antecedent type of conditions that you have in the watershed, you can project just what type of inflow you're going to have into a reservoir for that year. It's called a forecast. And based upon that quantity of water, you know how much water you have to release down the river for fishery conditions, so then you know how much water

you've got left for your other needs in the basin.

We would know the historical irrigation pattern and the use pattern of the districts and of the refuges, so based upon that, we would allocate out, make preliminary allocations of water supply to these entities, and we would have a meeting. We would call them all in. We'd all sit down in the conference room and pass this information around and talk about it. And then if there were adjustments to be made in that, we'd get that information from the districts and make adjustments to it, and then come up with a final operating forecast for that month.

And as you move from February, March, into April, especially into April and then May, you're pretty certain by then how much water you have and who's using what, and your water year is fairly well set, and then you just commenced to operating. In a dry year, it's a little different, because you don't have enough water to meet everybody's needs, as compared to a normal year, you've got enough water to meet everybody's needs.

So that's when you need to–if you're going to make cuts in a river downstream, you'd need to–we met with California Fish and Game, Oregon Fish and Wildlife, U.S. Fish and Wildlife Service, and those

entities that are involved in the stream downstream. Say, "Okay, how much water can we get by with and still provide an adequate fishery and to keep the fishery viable?" We'd come up with a figure there and then we'd know how much water we would have left in the basin, and then we would work that out and then come up with some preliminary ideas of how the water might be allocated, and then we'd pull everybody in again, and spend part of a day, working it out and figuring out how much water each district is going to get, and how we're going to operate.

Storey: You have all these interests involved in the water that Reclamation is supplying.

Fults: Right.

Storey: After you've provided that basic run of river, is it called?

Fults: Right.

Storey: Flow for the fisheries, does everybody then get a fixed share of the remaining water?

Water Delivered Based on Priorities

Fults: It depends on their contract. There's actually three

levels of priority in the Klamath [River] basin: what you call your "A users," they get a full supply; the B is kind of next on a priority scale; and then the C users. If you start making cuts contractually, how they're written, our repayment contracts, the C users get cut first, then the B users start getting cut after the C users are turned off, and it just works its way up the priority scale for water supply.

Storey: How are these contracts arrived at? Is there some reason that an entity is an A user, as opposed to a B user, as opposed to a C user?

Fults: Yeah, there's reasons for that. Under Reclamation law, our facilities are repaid by the beneficiaries, and in this case, the beneficiaries up there in the Klamath basin are the irrigation districts. So the first districts that came on back in the early 1900s, actually, the first water was run in the Klamath Project in 1906, first deliveries were made. But in the 1900s, all of your deliveries were made downhill of the canals, so they were gravity deliveries, took advantage of gravity. And those were the A users. It's somewhat like appropriative water rights law. First in time, first in right. So these blocks of districts signed on to take

water.[18]

And then about twenty years later, an additional block of districts came on, and they were able, with the advancement of technology, to pump water uphill. So they took water, not only–there was some gravity use, but there was also more pumping usage, and they were called the B users. And then along about another twenty years or so later, a small group of other lands were added to the project for irrigation, and they were called the C users.

So it's kind of first in time, first in right, and that's how the contracts were actually set up with them. The

[18] "The doctrine of prior appropriation, sometimes characterized as 'first in time, first in right,' is the law generally throughout the water-scarce Southwest. A prior appropriative water right is established by applying water to a beneficial use either by diverting from a stream or by pumping groundwater. Beneficial use is usually defined by statute or case law as the use of water in some productive capacity. The priority date establishes the superiority of one's right to the use of water and is usually the date of the first application to beneficial use. The quantity of water that can be appropriated under this system is limited to the amount needed to irrigate land to which the water is appurtenant. A prior appropriative water right can be lost through nonuse by forfeiture or abandonment." See Charles T. DuMars, Marilyn O'Leary, and Albert E. Utton, *Pueblo Indian Water Rights: Struggle for a Precious Resource* (Tucson, Arizona: University of Arizona Press, 1984), 3

first block of contracts gave them a certain supply of water, and then based upon shortages, they would share equally in the shortages. That was called the A users. Then the second block of users had a supply of water, too, but then they had a share of shortages, but then they shared shortages before the people that had come on board twenty years before then. So that's essentially how it was set up.

Storey: So now if I'm understanding this, the C users might be, in a bad year, totally cut off?

Fults: Most often, yeah. Any dry year, your C users are out of water. So they'll grow a crop, and they're very aware of this, and they'll grow a crop maybe only two out of three years, or something like that. They know that. They run their business like that. But a C user, usually a C user, that's just a small portion of some land that is A or B, you know. A farm up there now may have A, B, and C lands in it, because the farms have been bought and sold over the years, so they kind of mix and match now, so they know a farming operation can still remain in business.

Storey: So what I think I'm hearing you say is that on each Reclamation project, the way the water is distributed is going to vary, dependent on the historic circumstances and what deals were made

contractually.

Water Distributions Different on Each Project

Fults: Yes, it would vary. Yeah, it could vary. The Central Valley Project would be a little different. Probably other projects throughout Reclamation would be a little different. They all, though, in terms of repayment, are founded upon our repayment rules and regulations that we had at the time, which is based upon whatever the authorizing legislation is for the project.

Storey: For instance, when you were at the North Platte River Projects Office, were you dealing with a number of different water users?

Fults: Different districts, yes.

Storey: Were they ranked that way also?

Fults: They had some different priorities also, and they would have different priorities of use, though certain water districts would have a higher priority of use, and if you had a dry year, then they would get water for a longer period of time than somebody with a later priority.

Storey: To clarify this a little more in my own mind, these

priorities were determined contractually, rather than in the state water-rights system? Is that correct?

Fults: Well, both. It's both. They're consistent with state water rights. They're determined contractually, but it's consistent with state water rights.

Storey: Okay. So it gets even more complex the more you get into it.

Fults: It's just institutionalized, contractually institutionalized, what the state does. Yeah, according to state law, right.

Storey: By the eighties, when you were up at Klamath, you mentioned the refuges before. A lot of environmental issues were up then?

Fults: Very large refuges. Yeah, there were five refuges superimposed upon a project, and it's a part of the Pacific Flyway, which is one of the main north-south flyways for waterfowl in the United States. The refuges also, they had to have water for waterfowl, as far as for them to have places to have for habitat. But also the refuges had their own farming operations, so that they would be able to raise grain to provide feed for the waterfowl, and they would do this through their own force-of-count operations. They would have

sharecropping operations with farmers, where a farmer might plant 100 acres of grain, and the farmer would be able to harvest half of it, and leave the other half for the waterfowl.

And then there was approximately 25,000 acres worth of refuge lease lands that was under the operation and maintenance of the Bureau of Reclamation, where we would, under certain authorities of law, Reclamation would lease out this land for refuge. It was primarily for refuge purposes, but agricultural uses.

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BEGIN SIDE 2, TAPE 1. AUGUST 30, 1994.

Storey: The land up there, on average is–

Reclamation Would Lease Land for Refuge Purposes

Fults: The land, on average, is leased out in 100-acre lots. We would lease 100-acre lots for a five-year period. Actually, it's a one-year lease with options for renewal by either party, up to five years. And then they could grow certain crops, and they'd grow grains, different types of grains, wheat, oats, barley. Certain areas we would allow row crops to be grown, such as potatoes, onions, sugar beets. This cropping pattern was all–we

had a land management plan that we had developed–was all in concert and complementary to the refuge system.

We would take the revenues from that lease land and actually it would help augment the project, and part of the lease revenues, by law, were given to the counties, three counties that the project's located in, for in-lieu tax purposes, at a certain rate that was described in the law, and then the other funds were used for our cost for operating and maintaining the program, and then the remaining funds could be used for project purposes. If there was something that needed to be done in the project, we'd have that revenue supply available to use to repay if we needed to build or something, I don't know, you know, or a culvert, whatever you might need.

That was an interesting part of the overall project. Lease revenue, on an annual gross, lease revenues probably varied anywhere from a million and a half to two and a half million dollars a year of income, gross revenues. And probably our cost and the in-lieu taxes was probably a half a million a year, $600,000, somewhere around there, something like that.

Storey: Were those refuges there when the projects began?

Congress Authorized Refuge Creation

Fults: No. The refuges weren't there when the original project began, but the refuges were authorized, I guess that's how you set up a refuge, by Congress, after the project was in place, in concept. Let's say the project was authorized in 1906, I think it was, and then sometime later, the refuges were authorized, and then what happened was, under the development of the project, the project's development was under the old homestead acts, and there was–I'm not sure if I'm real accurate on this, but I recall a number like thirteen different homesteadings on the project, where World War I and World War II veterans were given the opportunity to homestead, you know, 100 acres or whatever it was, up in that area, and that's how most of it was developed.

This went on up until the fifties, the early fifties, after World War II, and then I think it was like in the mid-fifties, there was talk of another homesteading, and at that time then there was a good deal of political support to freeze the land, the public lands that were still available, into federal ownership for refuge, primarily for refuge purposes, but they'd already had this pattern of agricultural use established and the law just says to continue the pattern of agricultural uses, under a leasing program.

Storey: I was wondering if water is being, if you will, converted from irrigation use to refuge use up there, if that was a process that was going on?

Fults: No, not particularly. No. The water was already being used. It was not a refuge use in the legal sense, but the land was already being used by waterfowl, and all it was, was big swamps and bogs that were already being used just naturally, so Congress saw fit to say, "Okay, well, we'll establish this as a refuge," which was good.[19]

Storey: One of the things that Ray Willms mentioned in his interview was a lot of relations with the community. Did you have that?

Relationship with Neighboring Communities

Fults: Oh, yeah, everything, yeah.

Storey: What was the nature of those?

Fults: I could have ran for mayor up there, probably. Well, the nature of it is just about every different aspect of

[19] In 1986 Congress passed the Klamath River Basin Restoration Program Act to provide for the restoration of fishery resources.

life up there I was involved in, from professional to personal. There's two main industries up there. Agriculture is one of them and the other is lumber, and lumber was on the way down, and agriculture remained a steadfast base of your economics. And so given that agriculture is based upon irrigation, and the primary supply of water is the Bureau of Reclamation. So every facet of life in that whole basin, that whole valley, was attached somehow or other to the Bureau of Reclamation, and so I had lots and lots of interaction and communication throughout the whole valley, all of the town of Klamath Falls, the city, to all of the small communities around, and all of the districts, all of the farmers, the Farm Bureau, the Granges, you name it. I knew them all. In fact, I just had one of them call me up this morning, wanted to talk to me, from Tule Lake, and I've been gone from there for about seven years now. But they still communicate with you.

And given that, you permeate–the Bureau is looked on very highly up there, too. They like the Bureau. The Bureau has provided a lot of leadership and a lot of assistance in developing the way of life up there, and we continue to do that, so we're looked on in a very good light.

Given that, plus then I was involved in many

community activities. I was heavily involved in a Rotary Club up there, and we did a lot of civic things for the community. One of our primary projects was to assist in the annual county fair up there. We were very instrumental in running that whole program or providing for it, assisting in it. And then I was very involved in all of the youth sport activities in terms of coaching and refereeing and just being an overall assistant wherever needed, to help the kids in the area.

I got to know about everybody, you know, and there's probably in the whole basin maybe 40,000 people around there, and I didn't go anywhere without knowing somebody at any time. And even my wife and family were the same way. After you live there seven years with that small an area, you get to know a lot of people. It was great.

Storey: You enjoyed living there.

"It was a Nice Tour of Duty"

Fults: I thoroughly enjoyed it. It was great. Yeah. It was a very nice tour of duty.

Storey: Were there any environmental issues on the Klamath Project?

Fults: Yeah. Yeah, we had our share of them, and you just try to work them out, you know, whatever they may be. If it's working with the refuge manager, I became very close to the refuge manager. We became good friends, but we also respected each other's jobs and what we had to do, and the decisions we had to make. And helping him, and him helping me, in return, to provide the best conditions for the waterfowl in the area, and allowing agriculture and waterfowl to coexist, in such an overlapping and close environment, and then we had additional environmental issues in terms of there was a blue ribbon trout fishery downstream of our dams that we needed to maintain. It was a great fly-fishing area.

Storey: And you would work with who to do that?

Fults: Mainly Oregon Fish and Game. They were the most instrumental people in that department to work with, on maintaining that fishery, besides the local fly-fishing organization that made sure that we did things right.

We had other environmental issues in upper Klamath Lake. It's a lake with large eutrophication going on. It has tremendous algal blooms during the summertime and the water-quality conditions, as least from an aesthetic point of view, are just not very good aesthetically. Actually, water-quality-wise, it isn't all

that bad, of water. It's good enough for–you can grow the best crops in the world with it. Waterfowl don't mind it at all, but it sure doesn't look good when you reach in and your hand pulls out green, or blue-green.

Storey: And was Klamath Lake one of ours?

Fults: Yes. Klamath Lake, actually it's a natural lake that has a small dam on it that raises the elevation of it about eight feet, so the lake is a naturally occurring lake that we also dammed up and provided a little additional storage on.

Storey: Sounds to me as if you were pretty well settled in, enjoying the job, enjoying the community, and then you decided to move on, right?

Fults: Yes. It was interesting. I had been there for, I think it was four years, and normally, in Reclamation, as a manager, you don't spend all your time in one place. Whether it's through happenstance or whatever, your managers tend to move. They're mobile, and it's good for management. It's good for the organization to be able to have a broader background.

And after I'd been there for four years, I knew I had to be thinking about another move. I wanted to

do that. My family knew it. They understood it. But I didn't want to just go anywhere, but I didn't know for sure where I wanted to go, either. But I didn't want to go anywhere, and so I waited until various positions opened up.

"I Always Wanted to Go to Fresno"

I always wanted to go to Fresno, because that's the plum of the field jobs in terms of the Central Valley Project. They deal with the most and the biggest, and the most complicated irrigation districts in the Central Valley Project, and I always wanted that challenge, and that position came open three years later. And so seven years, the position came open and I applied for it, and I got selected for the position.

Storey: That would have been '87 then?

Fults: '87.

Storey: What is it that they control, a little more specifically?

Fults: Out of Fresno?

Storey: Yes.

Fults: It's the Friant Division of the Central Valley Project,

and they operate and maintain Friant Dam, which is right outside of Fresno, about twenty miles, and then the Friant-Kern Canal, which goes from Friant Dam clear down past Bakersfield, which is maybe 130 miles, and then northward, the Madera Canal, which goes north about forty-two miles, or something like that.[20] And it provides irrigation water to over a million acres worth of land, and has high-value crops. In this area, many of the crops are permanent crops, such as trees and vines type of crops, grapes and all kinds of orchard crops. Very high valued. It's very intensive, highly efficient irrigation practices, such as the drip irrigation and the specialized irrigation practices. There's a real challenge there in terms of a limited water supply and a high demand for water.

One of the interesting parts about the project is there's a lot of conjunctive use that goes on, and by that I mean there's a combination of surface water use, and groundwater use, and these are operated in close coordination to maximize the efficiency of both. During the times when there's a surplus water supply, the water is actually taken and spread in certain particular areas, spreading ponds and things, areas to

[20] For more information on the Friant Diversion, see Robert Autobee, "Friant Diversion: Central Valley Project," Denver, Colorado: Bureau of Reclamation, 1994, www.usbr.gov/history/projhist.

recharge the groundwater supply. There are certain areas, geologically, in that part of the San Joaquin Valley that are conducive to that. Then in the dry times, you're able to draw on that bank of groundwater supply that you've built up.

Storey: How many different water users would you have had down there? I mean, like districts or whatever.

Forty to Forty-Five Districts Within the Area

Fults: Oh, there must have been–the ones that I mainly dealt with, there were probably districts–maybe around forty, maybe forty-five. I don't know. Somewhere around there. The largest district in Reclamation was there, one of our districts, Westlands Water District, which has had a lot of controversy over the years, which, they irrigate 600,000 acres themselves, provide water to–

Storey: I somehow thought they were on the west side of the San Joaquin Valley.

Fults: Some. They go both.

Storey: They're on both sides.

Fults: They cover the whole valley in certain areas, but they

were run out of the Fresno office.

Storey: Am I correct in my understanding that the Friant Division, you called it, doesn't have formal connections to the west side of the San Joaquin, and the canal system over there?

Fults: Well, it's not exactly true, but it's close. For a while there, there was no physical connections, and then there was a private facility built called the Cross Valley Canal, down in, south of Bakersfield, southwest of Bakersfield, that was built by some of the Kern County water agencies that connected the west side to the east side.[21] And so through that connection, we are able to move water actually from the west side over to the east side, and we've actually even put in some pumps to pump water back up the Friant-Kern Canal northward. It's not a great deal of water, but if I remember right, it was somewhere around 130,000 acre feet a year you could move back and forth, so it's still a sizable amount of water that was put in.

Storey: For instance, groundwater recharge. I don't know if I

[21] In1975 the Kern County Water Agency completed construction of the Cross Valley Canal to bring water from the California Aqueduct to the east side of the southern San Joaquin Valley.

know how to ask this question, exactly. I'll put it crudely, and you'll know, I think, what I'm trying to get at. Basically, Reclamation is selling water in return for repayment for the project, so when we're recharging the groundwater, who's paying?

Fults: The district that it's in their area, their geographic area, they're paying for it.

Storey: So the benefit goes to the district in which the–

Using Underground Aqueducts for Storage

Fults: I'll describe an interesting one that we have, very interesting to me. For the city of Fresno, they have a 60,000 acre foot contract with us, the Bureau of Reclamation, for water. They don't have a pipe at all for delivery of that water, or a canal. We take that water, we run it down the Friant-Kern Canal, and we deliver it to groundwater recharge ponds in the vicinity of Fresno, and Fresno spreads that water out in these large ponds, several thousand acres, and it recharges the groundwater, and then they'll just pick that back up in wells throughout, located strategically in the city of Fresno, in different locations. So they use the groundwater as their plumbing system.

Storey: And other districts do this also?

Fults: Similar. Not quite on that extensive a scale, but some do.

Storey: This is the conjunctive use you were talking about before?

Fults: Conjunctive use. Yes. Another interesting project I was involved in while I was in Fresno was the Kesterson program.[22] My job there was–actually, I was given the duties of a construction engineer to oversee the construction program for rehabilitation of the Kesterson Reservoir site. That must have been–I don't recall what the cost of that was. Twenty million dollars comes to mind, but I'm not sure whether I'm right or not. It might have been in that size range.

Mediating Kesterson Issues

But we had to go in and remediate the Kesterson site to provide conditions at Kesterson that were no longer harmful or potentially harmful for selenium impacts to waterfowl. That's what our

[22] For an overview of the Kesterson National Wildlife Refuge issue and Reclamation's mediation efforts, see "Selenium Case Study: Kesterson National Wildlife Refuge," www.northtrinitylake.com/water/SeleniumCaseStudy.pdf (Accessed 3/11/2014).

specific task was. There was our Regional Engineer's Office and working with the designers in Denver, provided a design and specifications, and we implemented those.

Storey: But you were there during the–

Fults: Construction.

Storey: The construction phase.

Fults: Actually, I was there before. What happened, I was in Fresno and they were planning on remediation of the Kesterson Reservoir site, and they had developed several options and different designs, and they had settled on a program, and they knew they needed a construction engineer to run the job, and they weren't having a whole lot of success in acquiring somebody to do that, take on that task, And so the Regional Office asked me if I would, as part of my duties, and I said, "Yes. Yes, boss, I'll be glad to help you out." (laughter)

So I packed up my suitcase and lived in a motel most of the time over in Los Banos, and ran that job. And then at the same time we detailed in somebody to essentially act as an assistant for me over in Fresno, to pick up most of the day-to-day duties that I had to

leave behind in Fresno during that period of time, which was almost a year, of the time I was in Fresno.

Storey: And who was that, that was detailed in?

Fults: Bill Luz [phonetic] was. He was detailed down from our Regional Office here. In fact, he's now the Area Manager there.

Storey: Down in Fresno?

Fults: Yes.

Storey: Kesterson, of course, was an environmental problem.

Fults: Yeah, right. Big one. Drainage problem.

Storey: That was the drainage off the San Luis, was it?

Fults: Yeah. It was off of the west side area of the San Luis Project.

Storey: Were there other environmental issues that you had to deal with while you were in the Fresno Office?

Fults: Not of any major significance that I can recall. Mainly, it was overshadowed. Anything we did was overshadowed by Kesterson, really. There was such

a mass of media coverage on that.

Storey: What kind of staff was there in that office?

Fults: In Fresno?

Storey: Yes.

Reclamation Had a Varied Staff at Fresno

Fults: We had a variety of staff. Varied between a resource specialist, some engineers, civil engineers, to your office administrative assistants. We had a large group of repayment compliance specialists to ensure compliance with Reclamation law, and then we had a number of wage board employees, consisting of–what do you call those?–mechanics, or powerplant type of mechanics, but they're not powerplant. We didn't have any powerplants there. Can't remember exactly what their formal title is right now. They were under I-B-E-W [International Brotherhood of Electrical Workers], you know, union wage board employees, and they were located out at Friant Dam, most of them.

Storey: Do you remember how many people were involved?

Fults: I think we had–when I was there, there was around

fifty, something like that. You know, maybe fifty-two. I don't know.

Storey: Dealing with forty different water groups?

Fults: Oh, yeah. Yeah. Massive number of districts. And then when we ran the Kesterson job, we picked up, probably transferred in, maybe another, but they were located in Los Banos, probably another fifteen or twenty people to do that.

Storey: Was the Fresno Office dealing with acreage limitation problems?

Acreage Limitation

Fults: Yeah. Probably the biggest one and biggest group in Reclamation. The most experienced people in Reclamation were there. They were good. I was fortunate to have walked in to a real experienced staff. Highly professional group of people.

Storey: From your perspective, why was Reclamation having the problem?

Fults: Well, my perspective is, it was just a matter of, was interpretation of the law or the rules and regs that were formulated as part of law. In terms of acreage

limitations, it is very difficult to write rules and regulations to cover everything that could possibly happen. And so given that, very highly skilled attorneys can find a way to do what they think they can do and still be in compliance with law, and that's what I would suspect that many of the landowners were doing. The large landowners were having their attorneys find the loopholes in the law.

Now, most of your farmers in the Friant Division, per se, were in compliance, because many of them are truly your small family farms, whereas you get into the corporate farms further out westward into the San Joaquin Valley, where you get your large farms, and then they would legally, and it was truly all legal, find ways to farm more than what you would expect under acreage limitation, and that was very difficult to cope with. I believe that R-R-A [Reclamation Reform Act] helped a lot in helping get at those issues.[23]

Storey: Was it the Project Office or was it the Regional Office that was wrestling with those kinds of issues, or was it shared?

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[23] In 1982 Congress passed the Reclamation Reform Act which increased the acreage limitation from 160 acres to 960 acres and eliminated the residency requirement for project farmers.

Fults: The project. Well, it would be shared, but we knew we had the best–in comparison, and it's not a matter of trying any one-upmanship or anything, the good people were located in Fresno. Forrest Coleman [phonetic], who was the head of that group, was probably the best Rec Reform Act person in the Bureau, you know, knowledge of it, and so his staff learned from him, and so we had the staff located right there in Fresno, so that they could perform all of the compliance activities right there.

Now, there was a compliance shop in Sacramento, in the Regional Office, but it really handled the rest of the region, whereas Fresno handled all of the work in the San Joaquin Valley, most of the San Joaquin Valley. Certain portions, not, but given Westlands and the Friant Division, mainly.

Storey: We've heard a lot about water spreading recently.[24] Was that an issue in that area?

Fults: It's not that much of an issue in Mid-Pacific Region at all. It's more of a Pacific Northwest issue. It is an issue there.

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[24] Water spreading is the unauthorized use of water, ranging from unavoidable irrigation of small pieces of unclassified land within a farmers field to flagrant diversion of water without a federal contract.

We've got about ten more minutes.

Storey: How long did you stay in Fresno?

Fults: Two years. Little over, maybe. Two and a half. And kind of opportunity knocked. What happened was then I came to this position here I'm in.

Storey: Which is?

The Assistant Regional Director Position

Fults: The Assistant Regional Director in Sacramento, in the Mid-Pacific Region. And what happened was, this position came open and I applied for it, and went through all these interviews and all the rest of the stuff you go through, and I got the position, so we moved up here to Sacramento. Moved back north again.

END SIDE 2, TAPE 1. AUGUST 30, 1994.
BEGIN SIDE 1, TAPE 2. AUGUST 30, 1994.

Storey: This is tape two of an interview by Brit Storey with Dan Fults on August 30, 1994.

Fults: Where I got to Casper, you know, to where I got to Sacramento, there was no plan. No. I don't know. You know, it kind of–things happened. The timing

was right, or my experience was right, or whatever, for the position, but there was no–I'd have never been able to project anything like that then. I just didn't have it figured out.

Storey: Who was the Regional Director who selected you to go to Klamath?

Fults: The Regional Director was Mike Catino, here. He was Regional Director in Mid-Pacific Region.[25]

Storey: And then who selected you to go to Fresno?

Fults: Fresno was Dave Houston. He was Regional Director. And then to come to Sacramento was Larry Hancock. So three different regional directors for the same region hired me for positions in the same region.

Storey: There are three assistant regional directors in this position.

Fults: Yes.

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[25] Mike Catino participated in Reclamation's oral history program. See Mike Catino, *Oral History Interviews*, Transcript of tape-recorded Bureau of Reclamation Oral History Interview conducted by Brit Allan Storey, senior historian, and Donald B. Seney, both of the Bureau of Reclamation, from 1994 to 1995, in Sacramento, California, Edited by Brit Allan Storey, 2010, www.usbr.gov/history/oralhist.html.

Storey: How are the responsibilities split up?

Responsibilities of Assistant Regional Directors

Fults: There's a now and a past. The responsibilities in the past were split up where, this position I'm in would handle construction, planning, and then some other ancillary things, I guess. Construction, design, and planning. And then another Assistant Regional Director had all the administrative activities–property, procurement, all of that stuff. And then the other Assistant Regional Director had operation and maintenance.

Well, it doesn't work that way anymore, especially between me and the Regional Director and the operation and maintenance, former Operation and Maintenance Regional Director, especially. We do what's needed to get the job done, and we overlap. We do different things in each other's area where we consider ourselves each other's alter egos, although we do know that we do–there is one boss, which we still need. You still need one boss, although I do more now acting as a Regional Director than I have ever done, and the boss is fine with that. That's what he wants, so he can get his job done better.

And so we overlap an awful lot, and so it's no

clear boundaries anymore. I do O&M. I have specific line authorities for O&M, and I know my peer counterpart Regional Director does planning things. Whatever it takes to get the job done. We do work close enough where I know that certain things come in less. As an example, in my "in" basket, and that's something that Frank's taking care of, another Assistant Regional Director, where I don't have to get that deeply involved in it then, and he knows vice versa. There's something that comes in that he knows that I'm handling it, and so he doesn't have to spend a lot of his time on it. We just share in overall responsibility of the directorate, is really what it is now. It's moved in that direction, especially in the last year, and I like it a lot.

Storey: Does one of you, for instance, take, I think it's Title IV, the Central Valley Improvement Act? Is that it?

Fults: Yes, Frank has that. In fact, he's got overall responsibility for implementation of the Central Valley Project Improvement Act. One of the areas that I have overall responsibilities for is the Bay/Delta issues, which is massive issues in regards to environmental and water supply issues for the state of California.

Storey: Complex?

Fults: Yeah, very complicated.

Storey: And that leads me to another question that I'd like to talk about. You were talking about how the relations between the water users and Reclamation were very smooth up in Klamath, and I gather that because of the issues of the Delta and water supply and so on down here in the Central Valley, the relationships between many of the water users and Reclamation aren't so smooth.

Relationship Between Reclamation and CVP Water Users

Fults: That's a good statement. They're not. That's a fact of life. We still work with each other, and we have a broader mission and a broader constituency than just the water users anymore, and they understand that.

Storey: Well, I'm very interested in you saying "anymore," though, because it used to be that a lot of people perceived us as being "in bed" with the water users. What do you think has changed, and why is it changing?

Fults: Well, I think laws have changed. The recognition that water is a much more scarce resource than it was previously considered, and the need to work with a

broader constituency is recognized, and the rising recognition of environmental concerns has helped us recognize that we need to be sensitive to those concerns.

Storey: Well, I think our time's almost up.

Fults: Real good.

Storey: I'd like to ask you if researchers from within Reclamation and from outside Reclamation can use the tapes and transcripts from this interview.

Fults: That'd be fine.

Storey: Thank you.

END SIDE 1, TAPE 2. AUGUST 30, 1994.
END OF INTERVIEWS.