ORAL HISTORY INTERVIEWS
Charles (Charley) A. Calhoun

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STATUS OF INTERVIEWS:
OPEN FOR RESEARCH

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Interviews conducted–1995-2009
Interviews edited and published–2009
Revised edition published–2010

Oral History Program
Bureau of Reclamation
Denver, Colorado

SUGGESTED CITATION:

Calhoun, Charles (Charley) A., ORAL HISTORY INTERVIEW. Transcript of tape-recorded Bureau of Reclamation Oral History Interviews conducted by Brit Allan Story, Senior Historian, Bureau of Reclamation, from1994 to 2009, in Salt Lake City, Utah, and Denver, Colorado. Edited by Brit Allan Storey. Repository for the record copy of the interview transcript is the National Archives and Records Administration in College Park, Maryland.

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OF ORAL HISTORY INTERVIEWS
OF
CHARLES A. CALHOUN

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INTERVIEWER: _____
Brit Allan Storey

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Introduction

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

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

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

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Oral History Interviews
Charles A. Calhoun

Storey: This is Brit Allan Storey, Senior Historian of the Bureau of Reclamation, interviewing Charles Calhoun, the Bureau of Reclamation's Regional Director in the Upper Colorado Region, in Salt Lake City, Utah, on June the 27th, 1995, at about nine o'clock in the morning. This is tape one.

Born in Hattiesburg, Mississippi, and Raised Around the South

Calhoun: . . . Calhoun. I was born in Hattiesburg, Mississippi.

Graduated from the University of Mississippi in 1961in Civil Engineering

I lived around the South growing up, and graduated from high school in Hattiesburg and went to Ole Miss, University of Mississippi, and about finished in 1961, but about sometime in 1960, the Dean of the Engineering School in one of the senior courses told us about an agency that, in his mind, epitomized some of the best engineering professional opportunities anywhere, and that was the Bureau of Reclamation. I had not had exposure to the Bureau of Reclamation, being from the South, and the Bureau operating in the seventeen Western states, but it certainly made it sound appealing.

Offered Job at the Bureau of Reclamation Upon Graduation

As I learned more about the mission and the program of the Bureau of Reclamation and the work in water resources, it had a great deal of appeal to me.

Worked in Various Jobs in Denver from 1961 to 1980

So when I was offered a job upon graduation in June of 1961, I came to Denver and worked in a variety of jobs in Denver from June 1961 until 1980.

Moved to Amarillo in 1980 to Be Chief of Water, Land, and Power for the Southwestern Region of Reclamation

I got a promotion to go to Amarillo, Texas, as Chief of Water, Land, and Power for the Southwestern Region of Reclamation, and from there in 1983 I transferred laterally over to Albuquerque to head up the Albuquerque office as project manager.

In 1983 Moved to Albuquerque as Project Manager

I stayed there nine years and went to Boulder City, Nevada, as assistant regional director.

Moved to Boulder City as a Assistant Regional Director for a Couple of Years

I was there a couple of years, and then I've been here in Salt Lake.

Moved to Salt Lake City in 1994 as Acting Regional Director

I came in acting, January of '94, upon the retirement of Roland Robison, and I got the job permanent about a year ago, July 10, '94, as regional director here. That pretty well speaks to my career.

Started at Reclamation as a Practicing Engineer and Then Moved to a Management Focus

Early on, I was a practicing engineer, probably midpoint of my career. I shifted more from practicing engineering to an engineering background, but a management type of focus.

Storey: When do you think that happened? In your transfer to Amarillo or before that?

In 1975 Moved into Management as Branch Chief in Water Operations in the Lower Missouri Region in Denver

Calhoun: No, it was before that. It was probably sometime in the middle seventies. In 1975 I became the Water Operations branch chief of the Lower Missouri Region in Denver and that put me in a position of supervising some real good talent, some of which have gone on to a lot bigger and better things. We were blessed with a small branch, but a really outstanding talent. We were responsible for the water management of that region.

Both the Lower Missouri Region and the Southwest Region Closed after He Left Them

It's kind of interesting to reflect back that both the L-M Region–Lower Missouri Region and the Southwest Region are now extinct, and it kind of looked like I stayed one jump ahead of them, these regions going out of business for a while there, but that was part of the consolidation back in the eighties as the Lower Missouri Region was incorporated and put under the Billings office, combined with the Upper Missouri, and then in 1987 the Southwest Region was split up between Billings and Salt Lake City and we closed the office in Amarillo.

At that time as a projects manager in Albuquerque, with responsibility for most of New Mexico and the Rio Grande drainage in southern Colorado, I came under Salt Lake City Regional Office.

Storey: I'm presuming you were born about '39 or '40?

Born July 4th, 1939

Calhoun: July the Fourth, '39.

Storey: Did you live in Hattiesburg or outside Hattiesburg?

Father Held Various Civil Engineering Positions in the South

Calhoun: We lived in Hattiesburg. My father was a civil engineer for Mississippi State Highway Department. We moved during the war. He worked for the Corps of Engineers. Then we lived over in Louisiana for a while, ended up at the end of the war in my mother's home town of Lucedale, Mississippi, and my father worked for the *shipyard* in Mobile 'til the end of the war. And then he went back to work for the Highway Department after the war and then we got back to Hattiesburg, where I attended fourth through twelfth grade of school before I went off to college.

Storey: So you weren't raised on a farm or anything?

Calhoun: No, but my father was, and I spent a lot of time with my grandparents, who lived on a farm, a lot of time in the summers, and plus we always had a garden and tried to *sustain* a sense of self-sufficiency. Indeed, that was a real strong value in his family. Growing up, they produced almost everything that they consumed–with the exception of coffee, tea, and salt.

Storey: Of course, in that area there would have been no irrigation.

Calhoun: Not with sixty inches of rain a year, you don't need irrigation. You get some dry spells, you'll miss rain for a week or two, but mostly you need drainage to take care of excess runoff.

Storey: Do you have any brothers and sisters?

Calhoun: I have one sister who is three years younger than me, and she is married to a civil engineer, he works for TVA in Chattanooga, Tennessee.

Storey: What got you interested in civil engineering?

Father Influenced Him to Become a Civil Engineer

Calhoun: My father. He had a *strong* influence on me. I remember when I was in about the tenth or eleventh grade we would sit down on the back steps talking about careers, and he asked me what I wanted to *study* when I went to college.

"It was always assumed that I'd be going to college. . . ."

It was always assumed that I'd be going to college. I told him, well, I thought maybe I wanted to be a forester and live out in the forest with Smokey the Bear, and that seemed to me like a rather romantic, idealistic lifestyle. He said, "Well that's fine if you kind of want to live off by yourself, but if you want to have a family and kids and support them, you better have something a little bit more realistic than that. Those people don't always get paid very much." And I guess at the time that was true. At least that was his prejudice.

Then another time we talked about careers, and as I got closer to finishing high school, I said I thought a career in geology would be good. It's very interesting to study

the earth and what's here, and rocks and fossils and that kind of thing. Once again, he intervened and said, "Well, that's fine, one year you'll have a good job and they'll pay you a lot of money, and then the next year the oil business, or whatever, will go bust and you'll be out of a job and you'll really want to watch out for a career in geology, because the jobs are too cyclic." Well, it slowly dawned on me that he was pointing me in a certain direction. It kind of came down to civil engineering was what *he* thought was the best career since that was his and his father–well, my grandfather was not a civil engineer, he was the county surveyor, had a strong pre-engineering background. So there was a definite focus or push in that direction, particularly on the part of my father. to the point that he said, "You know, we've always assumed you'd go to college and I've been buying these war bonds for you and your sister's college education. Now, if you want to study civil engineering, we won't have any problems, but if you want to study something else, we're gonna have to talk about it."

That kind of set me back a little bit, to the point that I nearly flunked out of my freshman-, sophomore year, but I got into things, got into the technical aspects of civil engineering, and discovered that, to a large extent, he was right. It's been a fascinating profession and one that has served me well, even though I have not practiced it, *technically* speaking, for the last nearly twenty years.

Storey: Was there ever any consideration of a school besides [Ole] ~~Old~~ Miss?

Calhoun: Not too much. He went there and finished in '27. When it was time for me to go off to school in '57, it just seemed like, well, that's what I'd do. I had a first cousin who was two years ahead of me, who was studying geological engineering, and so it was kind of like I could associate with him and his friends quite a bit too. Which I did.

Storey: In the engineering school, did you ever consider any other forms of engineering, or by that time was civil engineering pretty much the objective?

Liked Civil Engineering

Calhoun: Well, yeah, it was pretty much the objective. Electrical engineering always seemed too abstract. *Chemical* engineering was too smelly. Mechanical engineering was too, oh, I don't know, too much a matter of connecting parts and the dynamics of mechanical systems, and civil was kind of what seemed the most interesting to me, especially once I got into it and got into some hydraulics and soil mechanics and some of those aspects.

Storey: The dean who talked about the Bureau of Reclamation, do you remember his name?

Calhoun: Yes. Kellogg. Dean Kellogg. He had worked on the Panama Canal with the Corps of Engineers and was a pretty topnotch consultant around the country on a number of major projects, particularly foundation consultation. He was keen on big projects like some of the big dams that were being built.

Storey: Of course, Reclamation actually designed one of the dams on the Panama Canal, too.

Calhoun: I didn't realize that.

Storey: Yes. I've forgotten the name of it right now. Were there any other professors at Old Miss that influenced you substantially in civil engineering?

Calhoun: Or there were a few, yes, there were kind of characters or whatever, but Dean Kellogg was the one that really planted the seed of the Bureau of Reclamation and what a topnotch engineering and professional organization it was. That really gave a career in the Bureau of Reclamation a lot of appeal to me.

Storey: Do you remember how you applied to Reclamation for a job?

Applying for a Job at Reclamation

Calhoun: Yes. They had an interview process. On campus in my senior year, like at the beginning of the last semester, sometime January-, February-, March-, in that time frame, we were interviewed by a number of firms and agencies.

Reclamation Was the Least Pay of the Three or Four Job Offers Received upon Graduation

I had three or four job offers, of which Bureau of Reclamation was the least pay, but I got married while I was in college, and my wife thought that Denver, Colorado, would just be a great place to live, too, and that was also a factor and consideration.

Storey: Was she from the South?

Calhoun: No, she was from Springfield, Illinois.

Storey: Had visited Denver?

Calhoun: Yeah, she had an uncle living in Denver and she had a greater sense of knowledge of Denver than I did.

Denver in 1961

Denver in 1961 was in many ways still kind of the Queen City of the Plains. I recall it didn't seem to have the pollution or the congestion or the problems that developed during the sixties. In the *early* sixties, I don't ever recall seeing smog in Denver. Maybe it was there and I just wasn't aware of it. We bought a home on Green Mountain in 1963 and the picture window just captured the downtown Denver State Capitol and business district of downtown Denver, although it was probably eighteen miles away, and I don't recall during the early sixties there ever being much of a *smog* problem.

Leaving Denver in 1980 Was Not an Easy Choice

It seems like even in the winter when you have an inversion, you'd still have basically clear skies and that sort of thing, but by the late sixties and early seventies, with the population growth and increased use of automobiles and everything else, in my opinion, the quality of life deteriorated in Denver so that by the time I left there in 1980,

it was with some misgivings because the longer you stay in a place, the tougher it is to leave, but after nineteen years that was not an easy choice going to Amarillo, Texas.

". . . in 1983, Albuquerque . . . reminded me of Denver in the early sixties . . ."

But yet by the time I ended up in Albuquerque in 1983, Albuquerque in many ways reminded me of Denver in the early sixties in that it wasn't as big and crowded.

Storey: Do you remember any of the names of the people who interviewed you at [Ole] ~~Old~~[1] Miss?

Calhoun: I remember his face, but I *don't* remember the name.

Storey: Do you remember whether he was an engineer or whether he was in personnel?

Calhoun: Naw, he was in personnel–personnelist.

Storey: Did they any subsequent interviews beyond the first one?

Offered a GS-5 in Denver

Calhoun: No. No, they just did the interview on campus, gave you the forms to fill out and that sort of thing. They offered me a job as GS-5 starting at $5,345 a year and some partial *moving* expenses to relocate to Denver, as I recall. I put everything in a U-Haul and took off.

Storey: Beyond your wife's familiarity with Denver, was there anything about working for the Federal Government that was of interest to you at the time?

Hopes as an Engineer

Calhoun: Well, I very much wanted to pursue my career in civil engineering and I wanted to *accomplish* some things that were rather idealistic, that I felt would benefit the human race. I think that is something that most civil engineers, probably most engineers, have kind of as a base value. Developing water resources in the West and making the desert bloom was still a concept that had value and that you could associate with at that time.

Philosophical Discussions about Role of Federal Government Versus Private Enterprise

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

The transcriber and editor 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.

There was a lot of work, a lot of interesting, *demanding* work. I recall, early on, some philosophical discussions among the work group there in Denver over whether or not the Federal Government should be in the hydropower business and that sort of thing, and there were some strong feelings. One fellow was leaving the Bureau, going to work for a private consultant, and said that part of his reasons for leaving were really that he felt that the Federal Government should not be in the hydropower business, the Federal Government should not be socializing activities that could be better taken care of by private enterprise. I recall discussing that at some length over lunch. We'd play bridge at lunch and talk about these things. We really seemed to hammer on that for several days, and it was a significant discussion in *my mind* because it helped me better lay out just what role the Federal Government should have and should not have.

Didn't See Any Problem with Federal Hydropower

I didn't see any conflict with the Federal Government developing water resources and the associated hydropower to assist in the payment of these projects, because the tie there was in order to accomplish the development of the water, the power was a secondary but very important aspect of it. That, to me, philosophically, that made sense, and why not develop the full package of resources for the benefit of the people in the area, rather than just for a single purpose or a limited development that would only tap a small amount of the potential.

But it's always been an interesting–this was like in the sixties–'62, that's always been an interesting dialogue, and continuing today with the defederalization after the [Bill] Clinton Administration and the current Congress defederalized and you get the Federal Government *out* of efforts that are not critical or national.

Storey: Of course, when you went to Reclamation, that was *one* generation away, in terms of jobs, from the initiation of that controversy in the late twenties, and it's been going on ever since. The [Dwight D.] Eisenhower Administration ten years previous to your arrival had been very opposed to public power.

Senior Employees Recalled the RIF under the Eisenhower Administration and Suggested Keeping Alert to Future Changes

Calhoun: Yep. And with some rather drastic changes and shifts in number of employees and focus of Reclamation's programming. The senior professionals that I worked with when I started in '61 were still very much aware of what had gone on in the late forties and fifties, and there was almost instilled in me a sense of, "Well, keep your eye out two or three years ahead, because you never know when a RIF [Reduction in Force] will occur and things will turn sour and another administration will come in and decide this program is not what they want to support," whatever like that. So it did instill a sense of awareness, or even concern, that I guess I've carried with me most of my career.

Worked for the Department of Agriculture While Going to College

I failed to mention that I worked for the Federal Government while I was going to college. The last year and a half, I was fortunate enough to get a job with the

Department of Agriculture–they had a sedimentation laboratory there at the university, and I started as a GS-1, I think, making $1.69 an hour, taking sediment samples and doing some soil mechanics. Most of it was just basic math work, and they did also tie in well with the [unclear] in a direction of civil engineering. And it helped me put some food on the table, since I'd gotten married and needed some extra money to support myself and my wife, even though my folks were still helping pay for my college basic expenses.

So my service computation, they worked it back to the equivalent of the fact that I was working part time going to college, like since October of 1960. So I'll have thirty-five years of government service coming this fall, which is kind of nice from the standpoint of retirement benefits. It's kind of scary to think that you could work for the government that long.

Storey: I was wondering about your decision to work for Reclamation. Did stability of employment have anything to do with that?

Calhoun: Oh, I think yeah, or at least the perception of stability had something to do with it. I had a wife and a kid and another kid on the way. When you get out of college, you certainly want to be able to have some sense of stability, and at that time working for the Federal Government certainly gave you that impression.

Rotation Program When He Came to Reclamation

Also it's difficult to capture *some* of the enthusiasm of some of the political correctness at the time of the situation. In March of 1962, as part of my training program, I was rotating around in different assignments.

Worked in Los Banos, California, on the San Luis Unit and California Aqueduct

We went out to Los Banos, California, and I worked on the San Luis Unit, California Aqueduct, San Luis Dam, and I guess probably June of '62 while we were out there, there was a big ground-breaking ceremony and J-F-K [John Fitzgerald Kennedy] came out and flew in in a helicopter and Governor Pat Brown and the whole California political scene showed up for that. It was quite an affair, the ground-breaking of San Luis Dam. Of course, John F. Kennedy carried an aura of Camelot and a sense of kind of the golden touch, a sense of that this is a good thing for the country, this is a good thing for people, the development of water resources is critical. California, of course, has always been the garden state, in many ways furnishing the produce for most of the country during the winter and that sort of thing. So it was a great spirit of enthusiasm and commitment and a sense of purpose to doing a very good thing. We were caught up in that.

We stayed out in Los Banos for seven months from March until October before we returned to Denver, and I completed my training program and went to work with design in Denver.

Storey: This was in '82?

Calhoun: '62.

Storey: '62, excuse me. You said earlier that you worked on the San Luis Project and the California Aqueduct. Did you really mean to say that? The reason I ask is the California Aqueduct is part of the State Water Project and the Delta-Mendota Canal, I believe, is our part of the San Luis Project, and what I'm wondering is if there was interaction–

Reclamation Built the California Aqueduct for the State of California

Calhoun: Yes, Delta Mendota, Tracy Pumping Plant. Delta-Mendota Canal was built in the late forties or early fifties, and they're exclusively a Bureau of Reclamation project. The California Aqueduct or San Luis Canal, and San Luis Dam were built in the sixties, starting in probably the late fifties, early sixties, and that's what I worked on in 1962. Parallel to the Delta-Mendota Canal is the California Aqueduct. Reaches one, two, three, four and five were built by the Bureau of Reclamation. They were turned over to the State of California and renamed the California Aqueduct in an effort to appease the State Water Resources and the State of California. But in reality, they were very much a Bureau of Reclamation project, planned, designed, and constructed by the Bureau of Reclamation.

Now, when you tied all that in with the state project at Oroville, the big dam and storage facility in Oroville, and the system conveying the water below the Tehachapis from the San Joaquin Valley on into Southern California, that portion, both the Oroville to the north and the portion below the Tehachapis to the south, was built by the State of California. The Bureau of Reclamation built the portion from the Sacramento Delta to below Coalinga. Do you know where Coalinga is?

Storey: Roughly. I've not been down that far yet.

Subsidence on the West Side of the San Joaquin Valley

Calhoun: And there were some very interesting aspects to that. The San Joaquin Valley, particularly the west side of San Joaquin Valley, is subject to subsidence, the ground dropping, both shallow subsidence caused by initial wetting of soils that had flowed out from the arroyos and normally dry streams with a real fluffy type of soil matrix, and as soon as that was saturated it collapsed and it settled maybe several feet.

Groundwater Mining in the San Joaquin Valley

In addition, there was the groundwater *mining* and the deep pumping that was occurring in the San Joaquin Valley. And as a result of that, there was a deep subsidence or collapse of the soil, structured so that that also resulted in the dropping of the surface, with the net result that it was anticipated the surface of the ground would drop as much as twenty feet in some locations where we were building the San Luis Canal. So that had to be factored in the design and construction in order [to] function over the life of the project. Which for the most part it did.

Storey: I gather you have to presume consistent subsidence along the length of the canal?

Calhoun: Well, no. It *varies*. It depends upon the nature of the surface soils because that could be pretty spotty. You could have a zone of maybe five miles that was, in effect, the Delta, one of these arroyos that originated up on the Coastal Range but emptied out in the San Joaquin Valley, with this type of material that had never been fully saturated. And so when you went through this Delta and you saturated it, it would collapse, more so in the *middle* of the Delta than on the fringes so that they then–

END SIDE 1, TAPE 1. JUNE 27, 1995.
BEGIN SIDE 2, TAPE 1. JUNE 27, 1995.

Storey: So perhaps you would be building across the Delta from one of these arroyos and you'd have more subsidence in the middle than on the edges, and so on.

Calhoun: Yeah, and that would be the shallow subsidence, and you could address that by saturating some of the–the way we solved it is we just built ponds and saturate the soil so that it would go ahead and collapse before the canal was built, and that would take care of the shallow subsidence.

The *deep* subsidence, of course, was something that had been taking place for some time, and it was not just a sudden phenomenon, like the saturation of the soil almost immediately. It was a long-term situation. And, of course, that's had to be addressed in a number of places around the world, from Venice in Italy, to Houston, to Long Beach, to a lot of places in this country that had the same type of deep subsidence, or in this case, the mining of the groundwater resulted in the collapse. That was more a matter of just building additional sideboard and additional capability in the canal section to accommodate that over a period of time. But that was the type of interesting problem that we got into out there and that I found very challenging from a professional standpoint.

Storey: Did the State of California pay for the construction of–let's see, you called it the San Luis Canal?

Calhoun: Yes. Yes, it was a partnership. It was a cost-share deal. I don't remember the exact percentages. It was something close to but other than fifty-fifty.

Storey: One of the things that I would expect you to run into is that the State of California wasn't building and wasn't designing, but they wanted their finger in the design and the construction. Did you see any of that while you were there?

Calhoun: No, not so much. I think that's probably an accurate assessment, but at the time they were pretty much fully occupied with completing Oroville and looking to the reaches of the conveyance below the Tehachapis. They had their hands pretty full just kind of taking care of their end of the bargain, and I think it was clearly more of a partnership going into it, but it was one of these things that when it was all said and done and you went back out there and visited and you didn't see much recognition of the Bureau of Reclamation, it did kind of gall you, but that's pretty typical of our agency. We've been almost modest to the point of not even requiring recognition to the contribution we make

in places [unclear].

Storey: When you went to Denver, what was your first assignment?

In Denver Went to the Canals and Pipelines Section of the Design Division

Calhoun: I went to work in the Canals and Pipelines Section of the Design Division.

Worked on the South Gila Pipe Distribution System in the Yuma Valley and Projects in Kansas

Some of the projects we worked on that first summer of '61 was the South Gila Pipe Distribution System in the Yuma Valley of Arizona, some irrigation projects out in Kansas, maybe Cedar Bluff, and pretty quick after that we got into some pipe distribution systems, some pressure pipe distribution systems.

Worked on Design and Analysis of Pressure Pipe Distribution Systems

When I came back from California, that's *really* what I got into big time was the design and analysis of pressure pipe distribution systems.

Jim Mandry Headed the Office, Was a Workaholic and Had Done Analysis of Pressure Pipe Systems

The fellow that was the section head, a GS-14, was Jim Mandry. He was a little short, sawed off little squirt, about 5'5", probably weighed about 120 pounds soaking wet, but he, next to my father, was probably one of the more complete workaholics I'd run into in my life, and he took special interest in a couple of us young engineers, Leo Kinney and myself.

Worked with Leo Kinney

Leo still works there in fact, and Leo and I had gone to school together. So Leo and I would work on his analysis of some pipe system during the day, and then at night he would take his briefcase home with the next day's work load, and he'd pretty well do it that night.

Then that's what we'd do the next day is check his work and go over it, and it was kind of a learning process and one that was pretty *exciting* for a young engineer to have that opportunity. Everything worked well until Jim Mandry died of a heart attack in October of '66, because probably he just pushed himself too hard and then he had such an intense approach to things.

But he had taken some work that Professor [Thomas R.] Camp at M.I.T. [Massachusetts Institute of Technology] had done back in the thirties, and published in the ASCE proceedings in the hydraulics journal. What the effort was all about is to take the pipe distribution system, it's like a tree and you have a source of water which is like your arm, and the water flows from the source through some main conveyance system

out to the various laterals and pipelines to serve points. In the case of your hand, you have five points that would be delivered water. And what you want to do is you want to *optimize* the cost of that pipe system in terms of the absolute *minimum* cost of pipe to serve these various points with the appropriate amount of water at the appropriate *pressure*.

Professor Camp had taken a calculus approach by finding a relationship of the cost of pipe to the hydraulic requirements, and differentiating it and setting it equal to zero, the usual optimization in calculus. And Mandry had taken that a step further and put into a tabular form where for any pipe system, instead of five points of delivery like you would have on your hand, you might have a thousand in a very complex pipe system. So we'd sit there on Marchant calculators and punch in numbers and grind through this tabular process that Mandry had developed, following up on Professor Camp's. Professor Camp later became a partner in one of the top consulting firms in the country, Camp, Dresser & McKee. This was going along pretty well.

Kinney and Calhoun Took FORTRAN Course at CU Denver

About the time Mandry had his heart attack, Leo and I had gotten into computers and had taken a FORTRAN course at the University of Colorado, Denver Extension. We were always encouraged to take additional graduate courses in engineering, particularly *there* because you could do it at night at no big expense to the government. They'd pay you back for your book and your course tuition when you successfully completed it.

Kinney and Calhoun Began Developing Software for Analysis of Pressurized Pipeline Distribution Systems

So it became pretty obvious that this tabular analysis of this optimization could be put into a computer package, so Leo and I started developing the software for that, and, sure enough, we got it computerized. It was so exciting back then, the computer system was very archaic in comparison with today, of course, and you had to punch cards, enter your data, and then you'd make a run, and if you were real lucky, you'd get the results back the next day, and you'd make some modifications and changes and you'd make another run. So we found a way to kind of speed up the process. They'd usually run the first batch of runs in the evening, and if you'd come out about midnight, you could make the changes and you could save a day, so you could double up in terms of your effectiveness.

So nights and weekends and that sort of thing we'd pretty regularly slip out, anticipating some minor changes and getting another run we could kind of double up on our effectiveness in terms of developing the software and also doing some preliminary work in terms of computerizing this optimization work that Camp had started in the thirties and Mandry had extended in the fifties and sixties. It was only later, when I took some operations research courses in systems analysis at the Colorado School of Mines, that Leo and I discovered that we really had achieved a type of linear programming, at that time a very advanced type of dynamic programming in doing this optimization work. That was kind of a–well, with the sadness of Mandry passing, but the recognition that this thrust upon, well, okay, who's got the lead on this now–okay, must be Charley and Leo, and I mean, we were young GS-11 engineers.

Then Leo got called up. He was in the Air National Guard, and he got called up in the *Pueblo* incident in the late sixties there, and his guard unit got activated and he had to go away for a period of time. So it just sort of left *me* in the position of continuing the development of this kind of state-of-the-art computer work. It was just exciting to the point of–it's hard to describe in terms of the sense of enthusiasm and all that you have for that. Part of the *challenge* was sharing this knowledge with others, though, because it's one thing to develop it, but it's a much better thing if you can spread it and many people can learn how to use it. It was with some misgivings that we did that, but that was obviously the thing to do.

Felt He Deserved His GS-12

Things were rocking along well there, through the sixties until about 1970, when there was a reorganization and the chief engineer became the assistant commissioner or some other title. Barney Bellport was no longer the chief engineer, and there was a shift and a change. By then, I thought I deserved a 12, and the folks in design said, "Well, as soon as somebody dies or retires, Charley, you'll probably be next, but, you know, you've just got to be patient and wait and see."

Darrell Webber Offered Him a GS-12 to Move to ADP

Well, Darrell Webber had become head at some point of ADP [automatic data processing], and because I'd done this work in systems analysis, he offered me a 12 to leave Design and go over there in '70. I did take that offer, which was kind of traumatic, and even at the time it seemed like a mistake because the work that I ended up doing at ADP was not nearly as exciting or thrilling as that breakthrough state-of-the-art [unclear]. Leo came back from the air national guard and he stayed with it, and to this day he's probably one of the world's foremost pipe distribution system optimization experts. He's on many technical committees, ASTM, AWWA, and a real resource that is probably not fully appreciated and is, in my mind, the epitome of the kind of technical professional knowledge base that the Denver office has that isn't always accepted, acknowledged, or appreciated.

Storey: His last name again?

Calhoun: Kinney. K-I-N-N-E-Y. Yes, you ought to look him up. He works on the eleventh floor.

The ADP thing wasn't too well figured out and was kind of like, well, the Bureau needs to get caught up in this stuff. What are we going to do? We've got a visiting Ford Foundation professor by the name of Keith Yarborough, and I kind of fell into him and said, "Well, you know, here's what we've been doing and what we need to be doing." And a lot of this stuff throughout the organization applying computer system analysis optimization techniques, not just pipe distributions but everything we're doing, well, that's pretty extreme. I was instrumental with Professor Yarborough and others in setting up this special cadre of Denver folks that then went out to the Colorado School of Mines about '69, '70, '71, '72 and took courses, on government time, pursuing mathematics and operations research and that sort of thing.

Worked in Canal System Automation from 1970 to 1975

Leo and several of the others went on and got their master's. I wasn't as diligent as I could have been. I had the opportunity to do some work with the water systems automation, kind of on special assignment, and I got off in water systems automation canal automation, and stayed in that field of endeavor for about five years from roughly '70 until '75.

Foreign Activities in Soviet Union and Spain

Got in some real neat foreign activities. There was a great deal of interest in this in the Soviet Union. Entertained Soviet engineers over here with ~~Deputy or~~ Assistant Commissioner Ed Sullivan, and accompanied him over to the Soviet Union for a couple of weeks in '74.

[We were] "looking for ways . . . so that you could have an open channel delivery system through canals that could be as responsive as turning on the faucet in your home, giving that type of immediate hydraulic response. . . ."

I went to Spain for a couple of weeks in '75, early '75, and entertained Spanish engineers over here, all of which we were looking for ways to achieve an operation of open channel canal systems that would more or less duplicate what you'd have with pipe distribution system so that you could have an open channel delivery system through canals that could be as responsive as turning on the faucet in your home, giving that type of immediate hydraulic response. That effort continues today in Denver primarily over in the hydraulics area.

In 1975 Moved to the Lower Missouri Region as Chief of the Water Operations Branch

Then in '75, I had the opportunity to leave the Denver office, the main office, to go to the regional office, and I got another promotion to a 13 as Chief of Water Operations Branch.

"The story that I got was that I was the *fifth* choice for that job, that there were four people ahead of me, and one by one they were offered the job and for some reason it didn't work out. . . ."

The story that I got was that I was the *fifth* choice for that job, that there were four people ahead of me, and one by one they were offered the job and for some reason it didn't work out.

"There was a great reluctance on the part of the regional offices to hire . . . people from Building 67 or 56 because it was felt that they were not very practical and they tend to gold-plate things and they weren't . . . in the real world . . ."

There was a great reluctance on the part of the regional offices to hire, even then, people from Building 67 or 56 because it was felt that they were not very practical and they tend

to gold-plate things and they weren't, kind of, in the real world, so to speak.

So it was with some misgivings I guess, on the part of the regional management, that I ended up in the Water Operations Branch Chief position in 1975, but it worked out great.

Worked for Willis Ervin in the Lower Missouri Region for Five Years

I got to work for a guy named Willis Ervin, who was the 400 chief. Willis is someone else that you ought to check out. He has taught a lot of folks a lot of things in the Bureau of Reclamation and he has a tremendous knowledge of Reclamation law and repayment in economics. He lives in Evergreen, Colorado. E-R-V-I-N is his last name. He's probably had as much influence on Bureau of Reclamation as most anybody else, I'd say. He sure had a tremendous influence on me, on Roger Patterson, and Ron Johnston.

So I was there five years and then went to Amarillo.

Storey: Let's go back to your rotation program. How was that set up?

Assignments During Rotation Program

Calhoun: Well, you work three months and four different assignments so that over a year's time typically started off in your home base, which my home base was canals and pipelines, worked there for three months.

Storey: Why did you end up in canals and pipelines?

Calhoun: Because they had a vacancy that they needed filled.

Storey: So they offered you a position in canals and pipelines?

Calhoun: Yes, that was the job offer I got from the Bureau of Reclamation, was to become a design engineer in canals and pipelines. And in order to achieve that, I was expected, and fortunate, to have the opportunity to go through a one-year rotation program. So I spent three months in canals and pipelines, I spent three months in contract administration doing construction contract work, three months in the soils lab over in Building 56 here in soil mechanics, and then three months out in California in Los Banos doing some field work, preconstruction construction work.

There was great need at that time for people in California, so rather than *three months*, I ended up staying seven or eight months, since I was on per diem at some enormous rate of $8.60 a day. That was like an added bonus. Besides, even though it got extremely hot in the San Joaquin Valley, it was very interesting to see. There wasn't much to see in Los Banos, but you could run over 100 miles to Yosemite, or 120 miles up to San Francisco, or 110 miles over to Monterey, or just– it was just really a neat experience.

Storey: For your three months in canals and pipelines, what were you doing in your rotation?

Bird Limed a Drawing Prepared in the Canals and Pipelines Section

Calhoun: I was working on a drafting table, doing the layouts and designs, and about halfway through that three-month period I worked on a drawing that was going into a set of specifications, and worked on the drawing for about a week. I wasn't the neatest and greatest draftsperson. I never really did pride myself on that, but the design for this check structure intake was coming along real well and I'd put a lot of time and effort into it.

Our location for the section was in a *wing* of Building 53, and there was no air-conditioning. You'd just open windows up in the summer, and this was June, July and August, and there was no screens on the windows, so you had to be careful where you put your lunch. There was usually mice around. You didn't want to leave any food out overnight. And *birds* would occasionally fly through. After I'd worked on this drawing for about a week, this robin flew through and crapped on my drawing, and I decided right then and there that I probably wasn't going to make a career out of that type of drafting and design.

Birdie Hurlbut Rescues a Robin in Building 53

I was ready to bring a BB gun and shoot the robin, but we had a lady named Birdie Hurlbut, who was sort of like the senior steno in the steno pool, and "Birdie" was her nickname because she was an old maid and she wore clothes that her mother had crocheted. She was a very unique character in many ways, kind of almost an institution there in the Bureau in the sixties.

She got wind that we were going to do this bird in, because the bird was kind of trapped in this big long office, and it was just flying around in a panic, so she came back and pretty well straightened us out that we weren't to harm a feather on that poor bird, and somehow we assisted her in capturing it and getting it released and we got it out of there.

Storey: Yes, she's famous. (laughter)

Calhoun: You know, she'd find swallows or other birds that somehow had become injured in fall and winter in Denver and they needed to be in Phoenix where it was warm for the winter, so she'd arrange for someone to carry them to Phoenix to release them, or something, you know, things like that. So you know about Birdie.

Storey: Yes, I know a little bit about her. Who was your supervisor?

Organization of the Section

Calhoun: The section head was Jim Mandry, and the 12 under him was a guy named Moe [Elmore] Bishard, B-I-S-H-A-R-D. Then in the 13 between Moe and Mandry was Bob Vance. It was kind of a hierarchy, almost a militaristic organization. In fact, Mandry, Vance, and Bishard were all World War II vets, they were all three officers, Mandry in the Navy, and Vance and Moe in the Army, and they tended to relive World War II on occasion, given

the opportunity. They'd take a coffee break and stretch it into some tale of, "Well, on this day in 1944, I was involved in the Battle of the Bulge and got shot," or something like that, which to me at the time, was kind of remote, didn't have much to do with the business at hand. It was interesting, it just seemed to some of it was kind of a waste of time.

Storey: So was Mandry your actual supervisor, or did these other folks supervise?

". . . all three of them were actively engaged, to my benefit, in seeing that I had the opportunity to understand and participate. . . ."

Calhoun: These other two were between us. I was actually supervised by Moe, who was a 12, but all three of them were actively engaged, to my benefit, in seeing that I had the opportunity to understand and participate. They were, for the most part, very encouraging, very nourishing, kind of like, "Well, you're a young engineer that has some potential. We hope that you'll achieve your potential," was kind of the sense that I got from them.

"There were some spots in [the] design [division] that were kind of like . . . the Black Hole of Calcutta. . . ."

I think that was a warmer, richer relationship than in other locations in design. There were some spots in design that were kind of like–I think Spillways and Outlets was kind of like the Black Hole of Calcutta. I don't know. It was a combination of work and management, that they just wanted just assholes and elbows. You were just supposed to work eight hours a day at your drawing board, not look up, and there was not much of a sense of *learning* or *growth*. It was a matter of, "We've got this work, and we've got to get it done, and you may take a short coffee break, but *don't ask* questions, just do what you're told." Whereas we were *encouraged*, I think, to ask questions about, "Well, *why* are we doing this? Isn't there a better way? Why is that assumption correct here and not make this assumption?" So I felt very fortunate to have worked with those individuals.

When Mandry died, George Birch came in as the section head, and he was also a very benevolent, very committed, nice engineer, who had a very positive influence.

Storey: What was the workday like? When did you start and end, and all that kind of stuff?

The Workday While He Was in the Section

Calhoun: Started at 7:30 in the morning. Quit at, I think, *four* in the afternoon, and they gave us a thirty-minute lunch hour, which we typically would bring sandwiches and a piece of fruit, and play bridge for thirty-five or forty minutes and stretch the lunch hour a little bit. Maybe take a break, morning or afternoon, maybe not, just depended.

Storey: Who was in your bridge group?

Calhoun: There was half a dozen of us or maybe more. Leo; Joe Gant, a black engineer who came to work with us from Maryland; Jim McDill, who was another fellow from Mississippi

who had come out to work for the Bureau; Al Davis. McDill and Al left some time in the sixties there.

"The *Bureau* was considered in some ways almost a *graduate* school at that time for young engineers. . . ."

The *Bureau* was considered in some ways almost a *graduate* school at that time for young engineers. You could come into the Bureau and get some *very good* experience if you were fortunate enough not to fall into black holes, but work in a more enlightened area. In two, three, four, five, six years, quite often you were presented with an opportunity to get an increase in pay and go to work for a private consultant or some other outfit. I had several opportunities like that during the sixties, some of which would have probably turned out pretty well.

Storey: Where were the black holes?

Some Other Black Holes in the Organization

Calhoun: Well, I mentioned, I think, Spillways and Outlet Works. Some parts of the Mechanical Branch. Some parts of the Hydraulic Machinery. Maybe one of the other sections in the Canals Branch.

"Our Canals and Pipelines Section had this real strong competition going with the Canals and Bridges Section. . . ."

Our Canals and Pipelines Section had this real strong competition going with the Canals and Bridges Section. Canals and Bridges, in addition to bridges, their responsibility was for municipal water systems, and ours was for primarily irrigation water systems.

". . . the section heads were competitive to the point that they *would not* share breakthroughs in technology, even though it would benefit the other group. . . ."

There was a rather intense competition, almost to the point of being a negative thing, between Mandry in pipelines and Bob Saylor, followed by Olander in bridges. We worked in the same wing, one of those wings that juts out in Building 53. Bridges had the section closest to the main part of the building, we had the back half to the west. There was a row of map drawers separating us. The young guys, we'd all BS, play bridge together at lunch, and socialize, but the section heads were competitive to the point that they *would not* share breakthroughs in technology, even though it would benefit the other group. They went to *pains* to compete for the design work, and to show superiority, almost like competing consulting firms. That was interesting. What it was, was just egos mostly on the part of the section heads. I guess the beneficial part of it was, it did–I mean there was a real push for, "We gotta get ahead and stay ahead of *those* guys, or else they'll get *all* the work and we won't have any." That was kind of the way it operated.

Leadership of the Branch

Then you had the leadership of the branch, which was Frank Rippon and Pete Terrell. Frank was a GS-15 and Pete was his GS-14 assistant. They were responsible for these five sections in Canals, of which I think the most intense rivalry was between us and bridges. Sometimes if you'd go their office to explain something or whatever–

END SIDE 2, TAPE 1. JUNE 27, 1995.
BEGIN SIDE 1, TAPE 2. JUNE 27, 1995.

Storey: This is tape two of an interview by Brit Storey with Charles Calhoun on June the 27th, 1995.

Calhoun: So you had the Canals Branch, which was one of the branches in the Division of Design,[2] and in some ways almost a lesser professional–I'm missing the word. The real elite people in design were the earth dams designers and the concrete dam designers. This is usually where the leadership of the Design Division came from. So that Jack Hilf, who was the Chief Designing Engineer, came up through Earth Dam Design. Dutch Lewis, his assistant, came up through Concrete Dam Design. They're both dead now.

"The big exciting dams, of course, were what got all the play and all the recognition, but the work that we were doing was exciting. . . ."

It was kind of like canals were little bit over the edge of the real breakthrough. We weren't doing the big exciting dams. The big exciting dams, of course, were what got all the play and all the recognition, but the work that we were doing was exciting. I mean, what could be more beneficial than delivering water from the source of supply or reservoir to someone who needed it?

The Navajo Indian Irrigation Project Was to Be a Pressure Pipe System

I particularly felt a sense of that when we were given the Navajo Indian Irrigation Project in '64, and the decision was made rather than open canals system, it should be pressure pipe system. Okay, how do we go about doing this? It was the sense of really almost a sacred trust that we were going to help the Navajos come into the twentieth century. We were going to give them this very modern, very solid irrigation system that would allow them to advance from the nomadic, hogan, sheep culture to very effective irrigation farmers, and we went at it with just that sort of enthusiasm and purpose. Unfortunately, we didn't factor in a few cultural aspects of it, or the long, drawn-out, slow funding, or the intricacies of a BIA [Bureau of Indian Affairs] project being built by the Bureau of Reclamation. That in and of itself resulted in delays in funding. So we're still building the Navajo [Indian] Irrigation Project thirty years later. We're still completing it.

Storey: NIIP, I believe it's nicknamed.

2. In 1969 the organization was as follows: the Division of Design included several branches, one of which was the Canals Branch which included five sections: Canals and Bridges Section, Canals and Drains Section, Canals and Headworks Section, Canals and Pipelines Section, and the Canals and Tunnels Section.

Calhoun: Yep.

Jack Hilf

Storey: Tell me about Jack Hilf. Did you have any interaction with him as the Chief Designing Engineer?

Calhoun: Yep. Everybody knew who Jack was. The guys that I worked with, of course, had known him when he came to work with the Bureau as a young engineer. He was a Jew out of New York City. He had come to work for the Bureau with a bachelor's degree, and somehow managed to take these courses that we're all encouraged to take in graduate studies in civil engineering, and put it all together into a Ph.D. at the University of Colorado, Denver [Extension] Center. He very much liked to be called Dr. Jack Hill. He was very prideful of his work. He was an *outstanding* engineer, he got a lot done.

"There was a sense of resentment on the part of the senior engineers that I worked with that somehow Jack had manipulated the system to get ahead of everybody . . ."

There was a sense of resentment on the part of the senior engineers that I worked with that somehow Jack had manipulated the system to get ahead of everybody, but to his credit, he did a lot of good stuff.

Took a Course in Embankment Dams from Jack Hilf

My closest association with him was a graduate course I took in '78, I guess, called Design of Earth Dams and Embankments. At that point he taught a good course, it was like a graduate course at CU Extension, and there were probably thirty or forty people in the class, half of us from the Bureau, half of us from outside consulting firms.

"A great deal of the course . . . was devoted to his defense of Teton and the fact that dams leak, all dams leak. . . ."

A great deal of the course, perhaps more than it should have been, was devoted to his defense of Teton and the fact that dams leak, all dams leak. It's a matter of degrees and how you control that leakage, so that you don't end up with a catastrophic failure such as occurred at Teton, which, from his point of view, was a result of improper construction techniques as opposed to anything that had anything to do with design. Yeah, Jack was an interesting guy. Kind of narrow in his career development, what with the focus on dams, but that's where the greatest emphasis was.

"Mandry . . . was sometimes kind of bitter about who had gotten ahead and who hadn't. . . ."

Mandry must have finished at Utah State University probably like '37, I guess, and he was sometimes kind of bitter about who had gotten ahead and who hadn't. Well, bitter isn't quite the right word. He said that when he and Rippon, for example, came to work,

Rippon is from Coalville, Utah, I think they were both going to Utah State, he worked about the same time, '36, '37 or something like that, he said Frank joined the *bowling league* and Mandry went to graduate school and Mandry got his master's in civil and had always pressed hard to pursue his professional development. Frank had done real well in the bowling league and that's how he ended up with a 15 and Mandry ended up with a 14. It's kind of Mandry's sort of joking. It's sort of like Jack [Hilf] somehow manipulated the system to get that Ph.D. and get all the glory, but this is just kind of office politics and that kind of thing.

Storey: Well, isn't it also that people may be extremely expert in technical areas, but they don't really have the interest or the flare or the expertise or whatever you want to call it, for *management* kinds of things? Doesn't that contribute to this kind of thing?

Calhoun: Sure, sure, yeah.

Storey: A lot, I think.

"I think everybody should pursue their education . . . but the people who get things done in this world are usually the people who can work the *other* people in some sort of team arrangement or some sort of a organizational arrangement . . ."

Calhoun: Sure. I told my kids many times that I think everybody should pursue their education to whatever appropriate level, you know, because education is almost a holy quest, and you should be knowledgeable and it's great to have a profession, but the people who get things done in this world are usually the people who can work the *other* people in some sort of team arrangement or some sort of a organizational arrangement, and oftentimes the ones who know the *most* aren't the ones who can do the best job of leading that and really producing the service or the product.

"You *need* the knowledge and you should quest after it, but *more important* in terms of getting things accomplished is your ability to work with other people. . . ."

You *need* the knowledge and you should quest after it, but *more important* in terms of getting things accomplished is your ability to work with other people.

Storey; And your willingness to do management. You know, I've seen this with historians. They want more money, but they *don't* want to take on the management stuff. (laughter)

Calhoun: Yep. In the Bureau of Reclamation, typically you could only advance to a certain level, a 12-, 13-, or 14- depending, without taking on the management responsibilities, whereas USGS, for example, you could have a Ph.D. as long as you publish *beaucoup* papers, and you haven't got your recognition in a narrow field, you could oscillate career-wise in and out of management and it would be a 15 senior executive. Reclamation never had that.

Storey: I believe you said your second rotation was–

Rotation Program When First Arriving at Reclamation

Calhoun: Contract Administration.

Storey: Did you have much choice about where your rotations were?

Calhoun: Yeah, I think so. I think we were encouraged. "Okay, here is something you ought to consider. Here's kind of the menu, kind of like a Chinese menu, pick four out of eight, or something like that, but these are the ones that *we* think will benefit you the most," kind of like that.

Storey: Why did you choose contract administration?

Calhoun: I'd not had much experience/involvement construction contract administration, and that's an important part of getting something done. It's kind of the extension of design into construction and into [unclear].

One Phase of Rotation Program Was in Contract Construction Administration

Storey: Who was your supervisor and what were you doing?

Calhoun: I think Leon Thygesen was my supervisor, and I was mostly just handling routine correspondence and responding to contractor inquiries and claims and that sort of thing. The whole thing seemed rather boring and a little bit tedious and legalistic and rather *bound up* in the correspondence and the claims and the submittals and a bunch of stuff that was *important*, but it wasn't of great interest to me. It wasn't the engineering, it wasn't the *technical* flavor that I was into.

Storey: Were you ever involved in any of the negotiations of claims?

Calhoun: Oh, just peripherally, just providing support, yes, that's kind of what the assignment was. There was a bull pen of like fifteen, mostly GS-12s, and you'd kind of sit over in the back corner and work kind of trickled down through the thing, and you kind of end up with the more routine stuff, and if you really showed a flare for it, then they would invite you to stay or come back, because they always needed more people, too.

"That was the kind of concept in the rotation program that if you found a niche . . . then it was acceptable for you to come back when it was over with. . . ."

That was the kind of concept in the rotation program that if you found a niche, you were kind of expected to go back to your home base, but if you found something that there was a great need and you had a special interest in and it worked out better, then it was acceptable for you to come back when it was over with.

Storey: But it sounds like Contract Administration wasn't your niche.

Calhoun: No, it wasn't.

Storey: You were a GS-5?

Calhoun: Yeah, and I got a GS-7.

Storey: Working with all of these 12s. How did the interaction work with you and the higher-graded folks?

Calhoun: For the most part it was one of encouragement and kind of development and that sort of thing. For the most part it was positive, and there were some journeymen 11s in the mix, too. A couple in particular there in Canals and Pipelines were Roy Dobrinski and Frank Miswinski, as their names would imply, of Polish ancestry, but I mean, they were like good, close friends, and just neat, neat people. They smoked, and smoking has always bothered me, and that bothered me, but aside from that, they'd take their shirt off their back for you, and you'd hope to be able to repay them someday. I was very fortunate to have the opportunity to work with the quality of people that I did in the Pipeline Section. They were good folks. There were a couple of stinkers, but they were mostly good folks. The stinkers, we all bitched and fussed about anyway.

Mike Rufatti was a 13, opposite Vance. Mike ran a liquor store in Arvada, and from time to time, he'd tell us all that he was the most important person there because he paid more in taxes the last year in his liquor store operation that his wife ran than the salaries of the entire section combined. Well, that was a slight exaggeration, because alcohol taxes being what they are, it was probably so, but he didn't pay it. The customers that bought his beer, wine, and liquors paid it. So we always kind of kept our eye out for Mike with a sense of mistrust and misgivings, but he was really an okay guy, he would just spout off on something like kind of half piss you off.

Storey: The third rotation was–

Worked in the Lab for Soils Mechanics

Calhoun: Soils lab, soil mechanics.

Storey: And that was doing lab work?

Calhoun: Yes.

Storey: How did that go down with you?

Calhoun: It was interesting, and it was an extension of the work that I'd done as an engineering student. Some of it was kind of fun. You could get dirty. We were doing *large*-scale testing of soil, everything from large gravel to sand, silt to clay, for permeability, settlement, to shear strength. One of the fellows, he was actually a technician, Carroll Coffee, he was sort of like the preeminent person. He was a technician, he wasn't a graduate engineer, but Carroll Coffee knew more about the *testing* of soil materials than anyone, just about, over there. I think he retired fifteen years ago, and just kept coming back as a retired annuitant. I don't know if he's still around someplace [unclear]. But he was top notch.

Wes Holtz [phonetic] was the Branch Chief with the soils lab. Wes was kind of a spinoff from Jack Hilf. He was in that top cadre, published quite a bit in ASCE and that sort of thing, and was world-renowned as a soil mechanics expert. It was *interesting* work. What they had us doing was sort of a mixture of professional and technician's work, because just the nature of the work that needed to be done.

Storey: Yes. And his name was Charles Coffee?

Calhoun: Carroll Coffee.

Storey: Carroll Coffee. Is it spelled–

Calhoun: C-O-F-F-E-E, I think. He was from Kansas, Nebraska or someplace.

Storey: Who was the supervisor there?

Calhoun: Gibbs. Gibbs. I don't remember his first name. Kind of an eccentric character. Bridge was kind of a social event in the sixties. I remember while I was rotating through there one Saturday evening, someone hosted a bridge party, and my wife and I went. We were playing this cutthroat bridge at work, which was a real high-paced game. The dummy would always be dealing the next hand, and so you pick up your hand, and it was extremely fast paced. So then when you go to a social game of bridge with wives in a social setting, we were kind of like on a different wavelength. So one of our favorite things at work was if you had three passes and you had thirteen to fifteen points, you'd just [bid] three no trump. Do you know anything about bridge?

Storey: Yeah. I've never heard of this bid, however. (laughter)

Calhoun: Pass, pass, pass, you've got thirteen to fifteen points, evenly distributed, you bid three no trump. About two-thirds of the time, you'd make the contract. So we'd do some of these weird techniques like that. And old Gibbs, boy, this just blew him away. He was into rubber bridge and all that kind of stuff. I was sitting there with my legs jumping, waiting for the pace to pick up, and bidding three no after three passes, stuff like that. I guess he thought I was a hopeless case both as a bridge player and as a soils engineer, so we didn't get along too well after that.

Rotation on the San Luis Unit of the Central Valley Project

Storey: Then you went to the San Luis Project. Who was the supervisor there that you worked with?

Calhoun: Buckholtz was the Construction Engineer.

Storey: Out of Los Banos.

Calhoun: Yes. Buckholtz was the Construction Engineer, Bob Towles was there as his assistant part of the time. Bixby [phonetic] was one of the guys I worked for. Okowski [phonetic] was another one of the guys I worked for.

"Got to know California pretty well. . . ."

It was an interesting time. Neat to see some things going on. Got to know California pretty well. My second daughter got valley fever. Her fever jumped up to 105, 106. The incompetent doctors who were [unclear] in Los Banos said, "Give the kid half a baby aspirin. She'll come through." Fortunately, we had a neighbor and friend who was nurse, said, "Get her in a bathtub full of cold water and sponge her down." A few little vignettes like that.

We had a next-door neighbor there, we were living there in an apartment, a next-door neighbor named Chester Escobar, who came to the Los Banos area in about 1907 as a sheepherder from the Azores, sort of an Azore-Basque type. I don't know, I think the Basque people, I don't *guess* they're associated with Azores, but yet there are similarities that they herd sheep. He had this beautiful little garden I would look over his fence and chat with him there in the apartment, his garden. He grew these lovely purple onions, as big as a saucer, he'd give you one every now and then, and I'd just chat with him. It was interesting to get his perspective on things. He would say things like, "I came to this country in 1907 and I still don't understand these crazy Americans."

Storey: What was it you were doing specifically on the San Luis Project?

Worked on a drill rig obtaining soil samples

Calhoun: I did a variety of things. I worked on a drill rig taking soil samples, Dennison samples, undisturbed foundation samples of materials under the alignment of the canal.

Did Some Surveying and Office Engineering

Did quite a bit of surveying, did a little office engineering processing, probably mostly sampling of the soils, working on the big drill rig taking those samples. You had to be very careful not to contaminate them, [unclear]. Working with the geologists, drillers, a little different exposure than I'd had.

Storey: This was to determine subsidence issues and other things?

Calhoun: Yeah, foundation conditions and subsidence of the foundations along the alignment of the canal and the structures.

Storey: When you say you did office engineering, what does that mean?

Calhoun: Sort of like the contract administration stuff. Some of it is contract administration, some of it was design data compilations and getting it together and sending it in to Denver. Development of designs and specifications.

Storey: Did you do any construction inspection, by chance?

Calhoun: No, there wasn't much of that going on just yet.

Storey: And your family was there?

Calhoun: Yes.

Storey: What kind of opportunities did that offer you for excursions and things?

Calhoun: Lots. On the weekends, we would blast out to Yosemite or Monterey. My first wife, she had friends in the San Francisco Bay Area, so we would go up to visit them, or they would come down and visit us.

Storey: And then you came back to Denver and spent several years in Canals and Pipelines.

Calhoun: Yes, until '69.

The Concept for the ADP Job Wasn't Well Worked Out

Storey: Until Darrell Webber stole you away. I got the impression you didn't much care for ADP.

Calhoun: Well, the assignment was not well developed and it was kind of like, "Okay, we're going to capture half a dozen of you bright and promising young folks who have done some computer work, and then *you're* going to figure out what you are going to do. Somehow we're going to achieve this quantum leap, and it's up to you to do it." Well, in a bureaucratic organization, I mean, it's kind of like, you know, capture all the good stuff and then disseminate. Well, the good stuff was back where the folks were actually doing the work. I mean, it was a mistake to pull some of the sharp people who were doing good stuff, and say, "Okay, now we're going to put you in a special box and we'll really do great things, but we're really not sure what those great things are, so you figure it out and then disseminate it back into the organization." So this special group lasted about a year and a half. Gradually *we* kind of figured this isn't going to work, so we split off and took other opportunities.

Storey: Still in ADP, though?

Calhoun: Some of the people are still in ADP. Paul Lunning, for example, is still in ADP, I assume, if he hasn't taken the buyout.

Storey: Well, didn't you stay in ADP for several years then? No?

Began to Look for Special Assignments

Calhoun: No, about a year, year and a half maybe, less than a year in that kind of field. I started looking for these special assignments, or volunteering for these special assignments, so I ended up with my old section head, George Birch. He was named the chairman of the team to look at the Bureau's involvement on the lower Colorado River. The new regional director had come into Boulder City and there was a great deal of controversy. We were

just starting to get in environmental awareness. We had a dredge crew, a couple of dredge crews going full bore down on the lower Colorado, just dredging the river like crazy, and we were starting to get some criticism from state agencies.

The State of California was saying, "well this is fine that you guys could run the water, but you've got the salinity problem you've got to address," and just a lot of conflicting perspectives, most of which were not a *positive* assessment of what we were doing, so the new regional director, [Edward A.] Lundberg, in '69, asked the Commissioner, Ellis Armstrong, to appoint a select team to look at what Reclamation was doing on the lower Colorado River and made some recommendations. George Birch was named chairman of that team and there were half a dozen of us, and I was kind of like the *junior* member of the team. George–I'd worked for him in Design and he figured I could kind of take care of a lot of the report writing, pulling the stuff together and learn a lot in the process.

Worked on a Report Regarding Dredging on the Lower Colorado River

He was right. It was like a four- or five-month assignment. We spent a lot of time down on the lower Colorado River, on the river itself, with the dredges, spent a lot of time in Phoenix, and Arizona, Southern California, and Boulder City, and put together a report and recommended that the Bureau derail some of the dredging activities [by] going to a more environmentally enlightened approach to the work that we were doing on the lower Colorado River and Yuma. And that was really a neat experience. I mean, it gave me some involvement in something that if I'd stayed in design I never would have had that exposure.

Storey: Did you actually contribute to the study or were you just writing up the other people's?

Spent Six Months Working on Canal Automation

Calhoun: No, I went to all the meetings, I asked all the questions, and do whatever I wanted to. I guess I was a 12, and most of them were 13s and 14s. Then from there I got into this canal automation thing, and they decided that we needed to understand how to automate canals, and so I was still in ADP, but I went off for six months to do this special assessment of what Reclamation needed to do to get into the canal automation business. And that, in turn, led to my next job, and I kind of created the job.

The Canal Automation Assignment Led to His next Job, 1970-1975

I think they advertised it in about '71 or something like that, and I stayed in that until '75.

Storey: I'd like to pursue that further, but our time is up for today. I'd like to ask you whether or not you're willing for researchers, both inside and outside Reclamation, to use these tapes and transcripts for research purposes.

Calhoun: Yes, that's fine.

Storey: Good. Thank you.

END SIDE 1, TAPE 2. JUNE 27, 1995.
BEGIN SIDE 1, TAPE 1. JUNE 28, 1995.

Storey: This is Brit Allan Storey, Senior Historian of the Bureau of Reclamation, interviewing Charles Calhoun, the Bureau of Reclamation's Regional Director in the Upper Colorado Region, on June 28 1995 at about nine o'clock in the morning. This is tape one.

Work on Canal Automation

Yesterday you had just started on your special project for canal automation, and I was wondering if you would tell me what that involved and the details of it.

"Open channel water conveyance systems generally are not as responsive to changes in demand as closed pressure pipes are . . ."

Calhoun: Okay. Open channel water conveyance systems generally are not as responsive to changes in demand as closed pressure pipes are, and that's just because of the very nature of conveyance. So as the result worldwide, irrigation in most cases is irrigation water historically has been conveyed in some open ditch from a source of water supply, be it a stream, or reservoir, or spring to the point of use through an open canal ditch system. If it's a long distance of conveyance and requirements change at the point of use, say you have a rainstorm and you no longer need the water, it's very difficult to reject the water that's in transit, because it's flowing through the open channel system and you must accommodate it. Typically the way this has been accommodated is through waste ways, so that when the water *arrives* downstream or downhill, and it's no longer needed, you must dispose of it some way, typically waste it back to the stream, maybe a stream of origin or some other regulating reservoir or something like this. And that's the nature of open channel irrigation systems for the most part since irrigation was first developed in the Middle East how many thousand years ago, or in this country by the Anasazis, or whoever.

Well, water is a precious commodity and no one should be wasting water. Even though we say it's wasted, quite often it's ridding results in considerable benefits by flowing back to the stream because it provides instream flows or whatever. The point is that if *that's* the use of it, it shouldn't have been taken from the stream in the first place, it should be maybe left there, or left in storage, or whatever. So how do you modify this irrigation delivery system to being more responsive to changes in demand? Obviously in our *homes* that's no problem. When we want to get a drink of water out of the kitchen sink, we turn on the faucet, water runs into our glass, the glass fills, we turn it off, and the same with the shower, fighting a fire, or whatever use with it.

With a pressure pipe system, the entire system is under pressure and there is no *requirement* to waste or dispose of the water in transit, it stops and you close the valve.

". . . how do we make an open channel system operate similar to a pressure pipe system . . ."

So the concept has been for some time has been how do we make an open channel

system operate similar to a pressure pipe system, recognizing that open channel systems are much less expensive to build and construct than a pressure pipe system. There was some pioneering work done on this by the Bureau of Reclamation back in the sixties, as well as the State of California in their operation of some of their conveyance systems, as well as other people around the world, Israelis do it, and the Soviets, and others. So the gist of this effort was to establish a water system automation team *in* the Bureau of Reclamation that would kind of be the cadre of the center for this research and development of open channel automation.

"I was given a lot of responsibility and not much authority, and typically that results in a frustrating experience which it did here because I had to kind of beg, borrow, and steal to get talent and resources committed to this effort. . . ."

That was pretty much my job. I was given a lot of responsibility and not much authority, and typically that results in a frustrating experience which it did here because I had to kind of beg, borrow, and steal to get talent and resources committed to this effort. I got a lot of lip service from everybody, from Jack Hilf to Kurt Kober, who was the head of O&M in Denver, and a lot of support and even pressure from the field saying this is something that Denver needs to be doing, we *need* this technology, but when it came down to getting the funding, and the human resources, and the computer resources devoted to it, like I say, it wasn't all that clearly spelled out.

Went to Lower Missouri Region to Head the Water Operations Branch

So it was an interesting assignment and it was a challenge and we accomplished some things, but not as much as we should have, and so when I left that job in 1974, '75 to go over to the LM Region as head of Water Operations Branch, I left it with some frustrations, and I took some comfort in the fact that I left it as a GS-12 and they filled it as a 13 and gave the position more authority to go along with the responsibilities. That's an effort that's continuing today, I think, in Denver, and certainly here in our Provo Area Office, there's some real good work being done over there in open channel automation and this effort as well as with a number of other places worldwide. So that's just about the gist of it.

Storey: So the idea is to computerize what?

Downstream Control in Control Theory and on Canals

Calhoun: If you construct an open channel conveyance in a manner that provides sufficient freeboard, and you install check structures at appropriate locations, you can achieve an operation of the canal that responds very quickly to changes in demand downstream. This is called "downstream control," and in control theory, downstream control is just as the name implies, a series of devices and facilities that can accommodate requirements at the end of the line, so to speak. This concept shows up not only in water systems, but there are many applications in process control that you can achieve similar, or strive for similar algorithms to make the system respond in the appropriate manner, but the system has to have the capability within itself to accommodate that.

You Have to Build Storage into the Open Channel Canal

In an open channel canal, you've got to have storage built in the system that can change very quickly to accommodate this operation.

Storey: That's what you're referring to as freeboard?

Calhoun: Yes, freeboard and check structures and other devices to reflect, to *make* the system operate somewhat as a system of interlinked reservoirs rather than just as an open channel.

Storey: So the idea is that by having extra space in the canal and check structures, you can close the check structures and basically you're storing it, en route, instead of–

Calhoun: Yeah. And under full demand, everything is wide open and everything is flowing free, under full demand. As the full demand changes to partial demand, then you start shutting down, and, in effect, storing the extra in the system, rather than flushing it on through.

Storey: It must have been difficult to have been in Denver, where we don't have any system, as it were, other than the labs, to begin to work on these concepts. How did you do that?

Fieldwork for Canal Automation

Calhoun: Oh, there was a lot of field work involved, and I got out to all the regions and a good many of the project areas, because at that time the Bureau of Reclamation was still operating quite a few main canals and conveyance systems, and even some distribution systems. The field operators had developed a number of devices, just kind of on their own, some of them in their garages at night, that they would use to automate to varying degrees, usually the check structures on the canal system.

Part of Canal Automation Was to Pull Together Things Around Reclamation into a Unified Effort

So there was work under way, and part of the challenge was to kind of pull this very diverse effort that was spotty here and there around the Bureau, kind of pull it all under *one* unified *effort* so that you could kind of pull the information together and share it with people who had an interest within the Bureau and outside the Bureau.

Canal Automation Was of Interest Outside Reclamation

What we found is that outside the Bureau there was a tremendous interest, particularly on the part of the Soviets, and particularly over in Soviet Central Asia and the Tashkent area and the Fergana Valley where they had tremendous canals.

Irrigation Development and Aral Sea

At the *time*, they didn't realize the environmental devastation they were doing to the Aral Sea but these canals were built by the Soviets starting in the thirties to irrigate vast

acreages of primarily Amu Darya and the Syr Darya, which were the two rivers that fed the Aral Sea, in order to obtain the water supply to irrigate this enormous area to grow cotton. At the time *I* was over there in '74, they were very much interested in automation for the same reason everybody else was, that they had a limited water supply, they had almost an unlimited land area, and they wanted to make maximum utilization of the limited water supply. In other words, they didn't want to *waste* any of their water; they wanted to use it more effectively.

Tajo-Segura Aqueduct in Spain

A similar situation in Spain on the Tajo-Segura Aqueduct, which is an open channel system in Spain built to divert water from the Tajo River in the central part of the country where water supply is plentiful down to the Mediterranean coast to the Segura River system in the vicinity of Valencia, which was a highly, *very good* irrigated agriculture economy down in Valencia area with a lot of citrus, a lot of winter vegetables, and that sort of thing. So the Spanish Government, once again, wanted to be able to operate the Tajo-Segura Aqueduct in a manner that provided for the same water saving and efficient operation.

Part of their consideration was the pumping costs, the energy costs associated with delivering that water through several hundred miles of open channel and they didn't want to–I think it was not just the cost of the water, but the cost of the energy. They particularly did not want to lift the water up several hundred, or maybe a thousand meters running down to the Mediterranean and have it not used in the event of a–

Storey: Have it wasted.

Calhoun: Yes, have it wasted.

Storey: I gather that we began talking to them about these kinds of issues.

Calhoun: In the case of the Soviets, President [Richard M.] Nixon's détente afforded an opportunity for technical exchanges between the United States and the Soviet Union, and the State Department and *others* were actively pursuing non-military applications of technology where we could share and build trust and understanding of the two countries, and this was one of *many* such applications that the Bureau of Reclamation was involved in and one of *many* such exchanges that involve the Soviets coming over here and us going over there.

In *Spain*, because of the United States' air bases in Spain, the Spanish Government received a credit of many millions of dollars a year that was to be used, I think some of it was a direct payment, and some of it was supposed to be technology exchange, and in the case of this canal automation it was also one of a series of technical efforts that were led at the time by a guy named Phil Roth, who was the Bureau of Reclamation's Spanish, kind of like Sammy Guy is today, only he just focused on Spain, and we had similar efforts going with desalination and water resource planning.

Storey: That was in Spain?

Calhoun: Yes.

Storey: Who learned the most from these exchanges?

Calhoun: I think it was of mutual benefit. I don't think it was so much a matter of competing to see who learned the most as, certainly from my perspective, it was a matter of what can we do to maximize a better understanding on the part of all parties. From the standpoint of exposure to other cultures, *I* certainly benefitted from that. From the technical standpoint, *we* probably had more going–we *definitely* had more going in terms of the research and development and the capability, through marketplace economics, to produce whatever there was a need for in this country.

Both the Soviets and the Spaniards had very impressive credentials and very impressive theoretical capabilities. In many ways, I think their science and their engineering theory was better than ours, but one of the obvious drawbacks of the Soviet system is so much of their economy was focused towards the military, and that's something that the Soviet engineers and scientists, after you've had a couple of drinks or you were just visiting with them, would often discuss with great frustration, that all that they could get their hands on in terms of equipment and that sort of thing was whatever the military had used and made available as surplus or something like that. But that was typical of the whole communist bloc at that time. The economy was directed to a *great extent* just towards the military establishment as opposed to the domestic requirements.

Storey: Did you go on trips or tours to Russia, to the Soviet Union and to Spain?

Calhoun: Yes.

Storey: What were those like?

Touring with Soviet Delegation in the United States

Calhoun: Well, it was very, very interesting. First of all, we'd usually have their delegation come over here, so that in June of '74 I had a team of four or five Soviet engineers in this country for two weeks, and it was my job to herd them around. I met them in New York, and pretty much covered the western United States in a two-week period. The first stop was in St. Louis, just changed planes. They wanted to see the Gateway Arch. We zipped from the airport to the Gateway Arch and almost missed the plane getting on from there to Nebraska.

We spent a couple of days in central Nebraska. The Central Nebraska Irrigation District had developed some canal automation that we wanted to see, and we wanted to visit with them. They were a very kind and hospitable host.

From there I think we touched base in Denver and went on out to California and spent quite a bit of time, like a week, in California, pretty much covering the San Joaquin Valley and ended up down on the weekend in L.A. at Disneyland. The Soviets wanted to see Disneyland. [Nikita] Khrushchev having seen it not too long before.

Then we zipped across, hit the Imperial Valley and zipped across to Arizona, spent some time on the Salt River Project, and ended up back in Denver and completed the two-week trip back in Denver. I had them all out to the house. I'd been told to have the vodka at zero degrees Fahrenheit and plenty of food and we'll do okay. The head of the delegation from the Soviet Union was Dr. Belik. Belik was a communist Jew from Kiev, and that was the way he described himself.

When we were in California on the weekend, we were in a gift shop and he purchased a gold cross and a chain. I guess the look on my face had some question, and he turned to me and smiled and said something to the effect, "I know you must wonder why a communist Jew would be buying a cross," and something to the effect that, "It pays to have all your bases covered." (laughter) I think it was, in fact, a gift for someone who was a Christian that he worked with, or maybe a family member. But it was interesting.

The delegation also included Kurinchenko, who was a professor of electrical engineering in Frunze or Kirghia, USSR, and he was really an outstanding engineer of tremendous knowledge of process control, electrical engineering, and hydraulics, plus for a guy in his middle forties, he was built like a grizzly bear. I recall at one of our stops one evening we all hit the swimming pool, and after we had splashed and swam a little bit, he jumped out of the pool and walked around the perimeter of the pool on his hands, which was a feat that I found pretty amazing, that he was that strong of his upper body, that he could be that balanced. He was also quite a good musician, and a very interesting fellow, the kind of person after spending two weeks with him, you felt like you would really like to stay in touch with as a friend.

Tour to the Soviet Union in 1994

We did go to the Soviet Union in September of 1994 and spent two weeks over there in a variety of facilities. Kurinchenko, when we were in Frunze late one September evening, offered to show me his dacha, which was up in the hills above Frunze. We ran up and he had a little *shack* in this apple orchard. The apples were ripe and it was an early snow, and the snow on the apples was a very beautiful scene, somewhat influenced by the alcohol that we had consumed earlier that evening, but the apple was the best apple that I've ever tasted in my life. It was crisp. It was a remarkable experience, and he made a point of telling me that this was close to the origin of apples, that apples that originated there in Central Asia and that he kind of had the corner on the market in terms of his apple orchard. It was the very best apples in the world, and I could not disagree.

Storey: That's interesting. Tell me about your trip to the Soviet Union.

Calhoun: Well, that *was* the trip to the Soviet Union.

Storey: Where did you go? What did you see?

Calhoun: We went to Moscow and stayed there for several days. Then we went down to Soviet Central Asia where the irrigation canals were located. We went to Tashkent, from Tashkent to Samarkand and visited the irrigation projects. The Soviet Union at that time

had a Ministry of Reclamation similar to the Bureau of Reclamation, whose responsibility [was to develop water] resources and then deliver it to the equivalent of the Department of Agriculture. I learned that there was intense competition between the agencies, and the equivalent of Bureau of Reclamation took great delight in making life difficult for the people, their customers who received water from these big projects, and they thought it was rather hilarious when they would change the supply of water or some other way mess up and make difficult the life of their customers who were the recipients of the water supply. To me, that was just incomprehensible, I mean, but it reflected the bureaucracy at its worst and a sense of competition gone awry so that you ended up with these governmental agencies, rather than cooperating, fighting each other, just kind of doing perverse things just, I guess, for entertainment, kind of, and a sense of, "Well, we can look good if they look bad." And they were pretty open and candid about that sort of thing.

At Samarkand, which had been sacked by Alexander the Great when he breezed through there about 300 B.C. or whenever it was, a city of probably 250,000-, 300,000 people, we were sitting there drinking beer in the evening, warm beer, and when you poured it, you would see stuff floating in it, kind of like a poor grade of home brew. I told him, "Well, when you return to our country and come back to my house, I'll serve you cold beer." Because they were always making friendly jabs at us about problems in our society and our culture, that we said one thing but we didn't really treat people equally, or whatever like that, and that we weren't all we're cracked up to be.

And next thing I knew, I was drinking cold beer. They'd gone and found some ice cubes, probably one of the few refrigerators in Samarkand, and put it in my beer. Well, the ice melted and all the little bugs came out of the water that you weren't supposed to drink. The next morning I was very sick and regretted that I had made any remarks about cold beer. (laughter)

Storey: (laughter) Yeah, I guess. How was the State Department involved in these interchanges?

Calhoun: They had a strong interest in seeing that this was truly a détente-type effort. They provided a State Department interpreter or a contract interpreter who accompanied us on these trips. They had a strong interest and concern that this was a legitimate exchange of the technology and information and it was truly building a better understanding of the relationship between the two countries.

Storey: Did their involvement cause Reclamation any problems or help Reclamation in any particular ways?

Calhoun: There maybe was a little more red tape in terms of the reports required and all that, but you needed to do those anyway.

Storey: Did you have to have meetings to arrange tours and that kind of thing? Did they participate in that, or did they just say, "Go do it"?

Calhoun: They pretty much said, "Go do it," but, "How are you going to do this?" As long as it

made sense, they were very cooperative. I think the funding came from the State Department for most of these travel expenses.

Storey: What about security? Did you have to have *extra* people along in the United States, for instance?

Calhoun: No. I wasn't aware of any. The guy from Moscow, both in this country and over there, was a KGB, I was told later. He was also an electrical engineer and seemed like a decent fellow to me, but I was told later that he was the KGB spy. Each one of their teams had a KGB person undercover, so to speak, along. To my knowledge, we didn't reciprocate. We pretty much just let it float.

From Samarkand we went to Frunze, and from Frunze back to Moscow, and Moscow through Leningrad, and Paris and then home. The flight from Frunze back to Moscow was very interesting. The Soviet airliner, the jetliner, the domestic flights were kind of like getting on the train in a Third World country. I mean the people–

END SIDE 1, TAPE 1. JUNE 28, 1995.
BEGIN SIDE 2, TAPE 1. JUNE 28, 1995.

Calhoun: ...in the Soviet Union so that people could *apparently*, through their own efforts, obtain produce or chickens or whatever and fly a thousand or two miles with their commodity to sell in the market in Moscow and then return. Somehow this was a profitable endeavor. So it was interesting, the Aeroflot, the Soviet airline, when we flew on international flights, the stewardesses were slim, trim, blonde, petite, very attractive young women. On the domestic flights, they were like 200-pound linebacker women, and they didn't take any shit off anybody. I mean, you could tell, it was kind of like, okay, everybody is packed in here, no seats are empty, most of the customers were carrying some other commodity. (laughter)

Storey: Like chickens? (laughter)

Calhoun: Yeah, like chickens. (laughter) And it was the smelliest–one of the more difficult airplane rides I'd had, because I think that was maybe a couple of thousand miles from Frunze back to Moscow, and it was obvious it was not a direct flight. Instead of a diagonal flight, it was like you'd go north, and then you'd go west, and then you'd go north and west, kind of a zigzag flight.

Interviewed by the CIA after Returning from the Soviet Union

When I was interviewed by the CIA a couple of months after I'd got back from that trip, he asked me, "Well, what did you see that we'd be interested in?" And, you know, I kind of discussed it like I'm doing now, the peculiarities, *nothing* of any great significance. But I said, "But, you know, that was peculiar, the way the airplane traveled. Why was that?"

And he said, "Well because if it had gone in a direct path, it would have crossed over their Space Center." They obviously didn't want us spying on their Space Center.

Also it was an area where they'd done a lot of nuclear testing there in Kazakstan, and so they routinely did not allow any domestic air travel over those regions.

Storey: But it was a nonstop flight?

Calhoun: Yes.

Storey: But it was just flying a zigzag route to avoid you being able to see things.

Calhoun: Or *anybody* being able to see things.

Storey: Sure. How do you spell Frunze?

Calhoun: F-R-U-N-Z-E. That's the capital, or was the capital of Kirghiz, one of the seventeen Soviet Republics. Another thing that was interesting over there is any of the Soviet Republics, any of the seventeen republics, were *headed* by the majority nationality or ethnic group that was in that area. There was a Kirghiz head of the government, or head of the agency, or whatever. The number-two person, invariably, would be either a Russian or a Ukrainian, and you got the feeling that the number-one person was a figurehead position, and the number-two person was really calling the shots. They did this with almost constant communication back to Moscow. Moscow was *really*–I mean, it was a very militaristic, hierarchal organization or arrangement that gave the *impression* of total local control and autonomy, but the number-two person was really calling the shots behind the scene.

Their treatment of women–there were many women engineers who were involved in these discussions, and some very sharp professionals, but when it came time to get coffee or tea, they were the ones who invariably were expected to go take care of the chores, so to speak. I found that kind of demeaning and a little bit hypocritical.

Storey: Did any women come to the United States on the tour?

Calhoun: No.

Storey: It was only over there you met them.

Calhoun: It was over there.

Storey: Did they all speak English, or did you need the interpreters?

Calhoun: We needed the interpreters. We needed the interpreters more for us than for them, but we needed the interpreters.

Storey: Tell me more about the CIA. How long was your interview?

Calhoun: About an hour or so.

Storey: Where was it done?

Calhoun: In Denver, in my office.

Storey: They came in?

Calhoun: Yes.

Storey: And did they interview everybody who went on the trip?

Calhoun: I presume so.

Storey: What did they do, just call up and say, "We'd like to come talk to you"?

Calhoun: Yeah. Kind of like this.

Storey: Did they tape-record?

Calhoun: I think so.

Storey: What about your trip to Spain? You went to Spain on a tour also, and they came over here?

Trip to Spain

Calhoun: Yeah.

Storey: Could you tell me about those trips, please?

Calhoun: Yes. Well, it was similar in terms of the intent, technical exchange, and a little more *structured* in terms of the technical aspects of it. I presented a paper similar as you would to a professional association here, to an audience of maybe a hundred engineers in Madrid, and then we spent considerable time touring the Tajo-Segura Aqueduct and ended up down in Valencia, and visited with the local irrigation district in Valencia. The president of the board was a fellow who went the nickname of El Morro, the Moor. He was of dark complexion, and very much–you could see his Arab ancestry. And *yet* he was the most prominent member of this irrigation district. He drove his Mercedes Benz out to his orange orchards, and told us to help ourselves to some very delicious navel oranges.

When we got back to the district–at that time in Spain everywhere you went there was a picture of Generalissimo Franco, but at the irrigation district there was no picture of Generalissimo Franco, there was a bust of King James the First. I inquired "why do we not see the usual picture of Generalissimo Franco, instead we have a bronze bust of King James the First," and he said, "Well, that's a good question. King James the First granted our water rights to this district in 1270, and he's the most important person that ever existed, as far as we're concerned." I thought that was interesting. I'm not sure about the date, but it was something of that vintage.

Water Banking in Spain

They were very much like irrigators in this country. They seemed to be good business people and committed to growing crops and producing an income stream that benefitted the Spanish nation. They *had* developed something of a water bank over several centuries there in Valencia, and this is documented in a number of books. What it amounts to is that once a week during the irrigation season, the irrigators would meet on the steps of the cathedral in Valencia, and anyone who had extra water or needed water, they would buy and sell shares and allotments of water for that week. It is a very good concept and one that had been around apparently for several hundred years, and one that we are still trying to achieve in this country in terms of both constrained within certain parameters but yet an open market exchange to maximize the beneficial use of a limited water supply.

Storey: Did you get to do any sightseeing while you were in Valencia?

Calhoun: Yeah, some. The Spanish were excellent hosts. We didn't drink as much alcohol as we did in the Soviet Union, because you got the feeling that the Soviets were *really* wanting to get us drunk and they were a little *sneaky* about it. They'd start drinking with the noontime banquet, and they'd go on for a couple of hours, and drinking toasts, and of course you had to at least do the symbolic toasting. Then following that, typically, they'd have an impromptu visit from a member of the press who would ask pointed questions. If you weren't on your toes, there was always the opportunity to put your foot in your mouth, especially after you'd had too much to drink.

The Spanish, on the other hand, typically the day started with just a light continental breakfast, maybe some coffee and a roll. You'd go to work, work with them, say, from 8 to 1:30. At 1:30, we'd knock off for lunch and go eat at some fabulous restaurant, everything from roast suckling pig to great seafood, eight-course lunch that would go on from 1:30 to 4:30. At 4:30 we'd then maybe go back to work 'til 7:00. They'd knock off for the day, and say, "Okay, we'll meet at 9:00 and go to dinner." (laughter) And then dinner would go on to midnight, or entertainment, or whatever like that. If you were lucky, you got to bed by midnight, got up the next morning at 6 or 7. Well, after a few days of that, I kind of learned to knock off the 9:00 dinner. You didn't really need another eight-course meal. But it was interesting.

The people, the professionals that we were traveling with, were outstanding. For the most part they had advanced degrees from M.I.T. and other prestigious universities in this country, and they knew their engineering theory very well. They were very much interested in what we had to share and offer.

In both countries, I think there was a genuine sense of desire to get to know you on an individual basis, to know about your family, and a personal contact. Neither country afforded us the opportunity to visit in their homes. Obviously in the Soviet Union, homes are not something they wanted to show off, because they were cramped apartments and there wasn't much to show, with the exception of this guy's dacha up in the mountains. It was just a shack, but it was a wonderful apple orchard. But in Spain, we went to these tremendous restaurants or country clubs for entertainment and that sort of thing. In both countries, we were exposed to the culture, the ballet, the Bolshoi, the

flamenco dancing, whatever was the local specialty.

Storey: Did you get over to Seville, too?

Calhoun: I don't believe so. In our country, we did not have the expense accounts. We were on a more constrained budget. So consequently part of any time we were in Denver I'd have the delegation, whoever, over to my house, and my wife and I would prepare, or attempt to prepare, an appropriate meal and that sort of thing, and they genuinely appreciated that. I had just built a new home in '73 myself, that I took some pride [in] because I was the prime contractor. It was up in Applewood just north of the Federal Center. It was a nice home for entertaining. So we had some good evenings there, and developed some friendships that I regret I've not maintained.

Storey: The Tajo River, I believe you said, in Spain?

Calhoun: The south of Spain, yes.

Storey: How do you spell Tajo?

Calhoun: T-A-J-O. No, no, no, no. The Tajo, I'm sorry, runs through the center part of Spain and exits Spain into Portugal, before it flows to the Atlantic Ocean. It's a large river. The Segura, S-E-G-U-R-A, I guess, is the *smaller* river in the south of Spain that flows into the Mediterranean. The Segura was the very *limited* water supply that was to be supplemented by this aqueduct from the Tajo.

Storey: Back in the States, am I to understand that you were computerizing the canals in this automation process?

Canal Automation

Calhoun: Well, that was part of it. There's various levels of automation. Under the *ultimate* control, as I described earlier, it would require computerization and *typically* some sort of supervisory control with monitoring of all the critical points along the conveyance from the user back to the source of water, but there were other devices that provided local automation, just maybe one check structure or one gate, or this sort of thing. The ultimate development, on the one hand, did require computers, whereas the local controllers were maybe just more simple devices that had been rigged up to facilitate the operation at that one location.

So there was a wide range of control devices, and the use of the computers was also critical in modeling, because you could effectively model the canal system and *predict* the type of operation, and we were doing a lot of that. That was the greatest use of *in-house* computers at the time was the actual modeling of the operation, to see just how this control algorithm would handle the physical system we were attempting to automate.

Storey: How many people were in your group for canal automation?

Calhoun: There were a half dozen scattered around. None of them were working probably full

time on it, but most of them were working part time, Ed [Edward A.] Serfozo in electrical design, Clark Buyalski over in the hydraulics lab. I think both of them are retired now. And three or four others.

Storey: Did you actually go out and automate a canal? How did the interaction between the Denver office and the real canals work?

Calhoun: Well, it worked in several ways. We were to gather the information and disseminate. We did that in the form of written bulletins and also I put on a workshop at the annual Water O&M Workshop that's still held, usually in February, and I think there is still a session like that that's part of that workshop each year. In addition, we *would* go out in the field and either try to improve the operation of the existing system or maybe more significantly incorporate into the construction of a new water system the appropriate level of canal automation. Probably the biggest challenge, or one of the great bigger projects that was being conceived and the designs being developed was the Granite Reef Aqueduct, which is the 200- or 300-mile-long conveyance for the Central Arizona Project, to carry water from Lake Havasu on the Colorado River to Phoenix and ultimately the Tucson area in Arizona.

Storey: And how was canal automation involved in the Granite Reef Aqueduct?

Calhoun: Well, the concept was that we would be able–there are not many *wasteways* on the Granite Reef Aqueduct. The concept was that it would operate in a manner that achieved this demand downstream control. I think, for the most part, that was accomplished. It's a very complex system with use of regulating storage at New Waddell Dam and Reservoir, as well as the storage in the canal system.

Storey: I think perhaps I'm not asking my question correctly. Was Denver sort of a concept development center, with other people implementing canal automation, or was Denver doing implementation also? How did this work?

Calhoun: Well, it was kind of a mixed bag. We sure didn't want to control anybody. If somebody had a good idea in the field, or an application, we just wanted them to share it with others, and we wanted to support that. But there was a need in Denver to apply the new technology to the new systems or the new facilities that were being designed there such as Granite Reef or whatever. So there was some of both.

Denver was supposed to be maybe the center and the focal point for this development, but it was never intended that Denver would have a corner on the market to the exclusion of someone in a region or a field office applying some of this technology. In fact, what we wanted to do is we wanted to encourage that, and just make sure it was shared.

Storey: When you put in automation on a canal, how did you prove it, or did you just assume it was going to work correctly?

Calhoun: Well, you'd run some tests and check it out, but the proof was in the operation. Sometimes devices fail and sometimes with ~~very~~ what could be catastrophic results. One

of the biggest problems was lightning, lightning and just the environmental conditions that existed in the field where temperatures ranged from lows very cold to highs very hot, humidity and all that kind of stuff, and some of these electronics devices had to be protected. It was very difficult to accommodate the extreme environmental requirements in the field conditions for some of this stuff. Lightning zapping–that continues to be the case today with this type of automation.

There's a parallel not just in water systems, but electrical systems apply some of the same technology and obviously some of the same difficult field conditions. Maybe you've got a big hydropower plant, say, in one of the dams. How do you tie it in with the existing network of electrical supply to meet the demands of the area and not lose control when you have a change in the system or this sort of thing? There is a parallel there. The electrical engineers attempted to kind of bridge that gap between the two systems, either one of which, under adverse conditions, things can go haywire. In the case of an electrical system, you have a blackout or burn something, burn up a transformer or something like that, in the case of a water system, you could overtop a canal or something else with pretty bad consequences, and those kind of things happen, but that, of course, was what you were striving not to do, was to afford a safe operation. But even today, we don't always meet our expectations in terms of the control devices. We're still–

Storey: Still working at it.

Calhoun: Still working at it. Will be.

Storey: There are a couple of tendencies, I suspect, in water projects. One is that the water users tend to be very careful of their money and they tend not to like to spend it if they can avoid it. There is also this concept of, "This is my *property*. This is *my* water, *our* water," however you want to look at it. I'm wondering if you saw any situations where the water users would rather waste water than spend money to automate.

Economy vs. Water Conservation

Calhoun: Yeah. Yeah. I think you pretty well captured it. Oftentimes it boils down to an economic decision, and if you're not paying very much for the water, then you can't afford to invest a great deal in conservation or the best, wisest use of it. I think that's a dilemma that in a free market enterprise system can be addressed in the marketplace, if you open it up for broad use. That's one of the tough philosophical arguments that have been made regarding Federal subsidies and the Federal Government's involvement and role in resource development. And it's not just water. You can apply that to mining. The 1872 Mining Act needs to be amended and tightened up to reflect current-day situations. The grazing subsidies in the West, the timber subsidies as well as water subsidies. I think that there's been many success stories, and the Colorado-Big Thompson Project is held up generally as a success story because the broad authority back in the thirties, the Colorado-Big Thompson Project was built for irrigation and other purposes, and this broad *authority* allowed the irrigators to sell some of their water rights to developing municipalities in the front range of northern Colorado. Many of them became very wealthy as a result of this, realized windfall profits at the government's

expense, so to speak, but yet the net result is that water *has* been allowed to flow to a higher use. And that, overall, serves the public well, as opposed to a project that had a very narrow authorization, and legally it was difficult, if not impossible, to divert water from irrigation to other uses such as municipal problems.

So consequently you have situations where an irrigator is getting highly subsidized water supply, depending on the state law in which state they may in fact have a genuine property-right interest in that water that transcends the Federal development of the water supply, or whatever like that. And yet they are constrained from applying marketplace economics, and you may see the very wasteful use of that water.

This isn't just true to Reclamation projects. There are many locations in the West where people are irrigating mountain pastures with six or more acre feet of water per acre simply because the water is there and that's how they are used to doing it, whereas beneficial use of that water supply may be less than half that.

Storey: Three acre feet.

Calhoun: Or less, in terms of evapotranspiration requirement.

Storey: Did you see any situations while you were doing the canal automation where the districts or the water users didn't want to put money into automation? Or was it more that you were drawn into the situations where they did want to automate?

Calhoun: It was more the latter. I think I saw more of that conflict that you are describing there as more of the situation when I was the O&M Operations Branch Chief in the LM Region from 1975 to 1980, and then in my other career assignments since then, too, when I was the 400 chief in Amarillo, the projects manager in Albuquerque. There's always the opportunity for the more efficient, effective use of the water resources, and often it's an economic decision as to what investment should be made to achieve that more efficient use, who is going to pay, and who is going to benefit.

Storey: If you think back to those days when you were in the Denver office, that would have been, what, about ten or twelve, fifteen years?

Calhoun: I was in Denver starting in '61 and I moved from the Denver office, as you describe it, in '75 over to the *regional* office.

Storey: So, sixteen years.

Calhoun: Fourteen.

Storey: Fourteen. If you think back to those days, what was your sense of the relationship among the Denver office, the regional offices, and the Washington office?

Relationships Between Denver, the Regions, and Washington, D.C.

Calhoun: For the most part, between the Denver office and the regions and the field offices, it was

a kind of competitive cooperation. For many people in Denver, it was important to sustain the leadership and control that Denver had over the field offices, even to the point of keeping the field offices in their place–

END OF SIDE 2, TAPE 1. JUNE 28, 1995.
BEGIN SIDE 1, TAPE 2. JUNE 28, 1995.

Storey: This is tape two of an interview by Brit Storey with Charles Calhoun on June the 28th, 1995.

Calhoun: The Commissioner's Office, of course, in Washington never was a *large* number of people, at most maybe two hundred people, and you certainly had to be responsive to the commissioner and the assistant commissioners in Washington and their staff. But early in my career, the real heart in *my* end of the Reclamation organization was in Denver, and there was such a strong vested interest to sustain that and protect that, and to keep the *best* jobs and the best work and the best, most talented personnel in Denver was not a totally beneficial concept for the organization, but I think that was a very real effort, not on the part of *everyone*, but on the part of the leadership in Denver, to a large extent, and that is even part of the mistrust and misgivings that we're still getting over today.

Storey: Did you ever meet Grant Bloodgood?

Grant Bloodgood

Calhoun: Yep.

Storey: What was he like?

Calhoun: He was a bald-headed old guy that sat up in Mahogany Row of Building 53 and figured he ran the Bureau of Reclamation as Chief Engineer. I don't think anybody argued with him about it too much.

Storey: An autocratic management style, would you say?

Calhoun: Yes, probably.

Storey: Did you know him well enough to have a sense of how he treated people and that kind of thing?

Calhoun: Mostly just by hearsay and what people that I worked under had to say about him.

Storey: What did they say?

Calhoun: Oh, I don't know. I think there was a sense of respect for his technical ability, but mostly you wanted to stay out of his way. And I think that was pretty much the case with his successor, Barney Bellport.

Barney Bellport

There was nickname for Barney Bellport, it was Barney Ballpoint, they'd call him behind his back a little bit. He had apparently a little a bit of flamboyant side to his personality that you wouldn't anticipate.

"He signed all his correspondence and official documents with some chartreuse green ink . . ."

He signed all his correspondence and official documents with some chartreuse green ink that had a peculiar impression.

Storey: What was he like as a person? Did you know him much?

Calhoun: Not too much. I met him a time or two. You know, you'd see him around. The management style of the chief engineers was they were kind of up there next to, or even ahead of, the commissioner.

Floyd Dominy

Now, of course with *Dominy* as commissioner, there was only one Floyd Dominy, and he pretty much ran the organization hell-bent for leather, and there's plenty of evidence of that I'm sure you've run into.

Dominy had both a positive and a negative influence upon the agency. The positive was, he had a unique capacity for dealing with Congress and getting projects authorized and getting them built. He was a very immoral person in terms of his dealings with other people, and particularly womanizing aspects. He, I think, had a negative influence upon the organization in that there are a lot of stories about his requirements for women on his trips out to the regions and field offices.

I've never experienced that kind of pressure or had to put with that kind of crap in my career, and I'm happy to say that that's not been the case. But when I got to Albuquerque, one of my predecessors who is now dead, a fellow by the name of Ace Elliott, was describing when he was projects manager in Albuquerque sometime there in the fifties, I guess late fifties, maybe early sixties. He said he got a call from the regional director, Leon Hill, and he said, "Ace, Floyd and I are going to be coming into El Paso sometime," I don't know week after next, whatever the day was," and we want you to meet us in El Paso with the government car. We want to go over to Juarez and party a little bit, and we want you to come along and take care of us."

Ace said, "Yes, but Leon, you know I can't do that with a government car. That's use of a government vehicle, and that's just not right."

Leon threatened him with his job, so on the appointed day and hour, Ace said he was in El Paso with the government car, was embarrassed that Leon Hill, the regional director, and Floyd Dominy, the commissioner, more or less fell off the plane in a drunken state, to the embarrassment of anybody with any normal sense of dignity, whereupon they ordered him to take them to a bordello in Juarez where they hung out for

a couple of days in an inebriated state. He nursemaided them, got them back, and Leon Hill caught a plane back home to Amarillo and Floyd Dominy caught a plane back home to Washington. And according to Ace, this is how it was and how it happened.

To me, somebody should have lost their job. Things shouldn't be that way, but that's apparently the way they were. I feel very fortunate that I've never been exposed to the requirement to accommodate any kind of bullshit like that. But when you consider what was going on in society at that time, apparently there was a fair amount of that stuff in the Congress. LBJ [Lyndon B. Johnson] was noted for extracurricular activities.

Storey: [John F.] Kennedy.

Calhoun: So was John F. Kennedy, we found out after the fact. So I don't know. I'm not a Puritan, but I certainly would not want to have to be put in that type of situation.

Storey: Did you have any other impressions of Dominy? I presume you met him at various points.

Calhoun: Yeah, but it was just superficial, I think probably maybe shook his hand once. Certainly he was out to Los Banos with Kennedy, Pat Brown came to that ground-breaking ceremony.

Storey: Was he impressive on the platform, speaking?

Calhoun: Oh, I don't know. You know, the image of Dominy is captured in–Mark Reisner captured it pretty well in *Cadillac Desert*. It all kind of blurs in. He's still alive, you know.

Storey: Oh yeah, I spent five hours with him a year and a half ago.

Calhoun: And his son, maybe his son's retired now from the Corps of Engineers. His son was a General in the Corps of Engineers.

Storey: Yes. Was Dexheimer gone when you came to Reclamation?

Calhoun: I think so. I don't remember Dexheimer.

Storey: What about Ellis Armstrong?

Ellis Armstrong

Calhoun: Ellis Armstrong was commissioner for some time there in the late '60, early '70. He was kind of a colorful character, and he's still around here someplace. Have you interviewed him?

Storey: Yes, I interviewed him two years ago. I saw him yesterday afternoon for a few minutes.

Calhoun: Oh, really. How's he doing?

Storey: Well, he's doing all right, I guess. You know he had a stroke about two and a half years ago, and he seems to be doing real well. He doesn't get around very well, but otherwise fine. What were your impressions of him when you met him, or did you meet him?

Calhoun: Egotistical. Not a very good public speaker. Self-centered, but yet with a certain air. Certainly he meant good things for the Bureau of Reclamation. I just never could figure out how he got to where he got to, but if you listen to his side of the story, it was self-evident. He'd call an all-employees' meeting in Denver, and typically he'd get everybody over in Building 56, and he'd stand under that big Universal Testing machine, you know the big three-story concrete, steel tension compression, and he'd rattle on for half an hour or so. He'd usually try to start off telling some corny joke that was probably inappropriate. Get around to the fact that he wanted to make a point about something. I think his intent was good, but left a little something in terms of implementation both as a manager and as a public speaker, and whatever. He was the commissioner, as well as the Director of Public Roads, and whatever, the St. Lawrence Seaway, and various and sundry other things.

Storey: Somebody told me in the last couple of years that they were talking to him one time and they said to him, "Why did you become the Commissioner of Public Roads?" And Armstrong said, "Well, you know they called me up and asked me if I wanted to be commissioner, and I said, 'Of course!' And I didn't know it wasn't the Commissioner of the Bureau of Reclamation until afterwards."

Calhoun: (laughter) Which he only achieved later on. Right.

Storey: And I told him that story Monday afternoon, I think it was, and he said, "Yeah, that's right. That's true." (laughter)

Calhoun: That's pretty good.

Storey: It was interesting. He wanted to work for Reclamation. That's what he wanted to do when he graduated college.

Gil Stamm

Calhoun: Yeah. Then Gil Stamm was the commissioner, I guess, after Ellis. Gil was a career Bureau person.

Failure of Teton Dam

Gil was the commissioner when Teton Dam failed. I was the 430 Branch Chief in Denver. It was a Saturday afternoon, June whatever it was, in 1976. I was working in my garage on an old Jeep pickup and I had grease from head to toe, I was a complete mess. The phone rang, my daughter said, "Dad, it's Joe Hall." Joe was the regional director for the L-M region.

Joe said, "Charley, we've got a problem. The Teton Dam apparently has just failed, and Commissioner Stamm is coming through Denver on the Bureau plane from

Washington on his way to Idaho, and I thought I'd run out to the airport and just kind of meet with him on his layover and everything, and I thought you'd be a good person to come along with me. Are you available?"

I said, "Joe, what are you talking about?"

He said, "Well, I'm leaving right now from the house, and I could be at your place in five minutes."

I said, "Joe, I can't get ready. I'm a mess. I've been working on my pickup and it'd take me a half hour to get cleaned up."

He said, "Okay, that's no problem. I just kind of thought you might want to ride along." I always figured I kind of missed one of those career opportunities.

As it turned out, of course, the effects of Teton were so devastating upon the Bureau of Reclamation at the time, that probably wasn't something you wanted to get too close to if you could help it. That's just one of those little vignettes that sticks in your mind.

Storey: How did people react?

Calhoun: Oh, pretty much the designers said the construction people screwed up, and the construction people said the designers screwed up. And nobody wanted to get caught stuck with it. There were a lot of ramifications to it. Harold Arthur was the chief engineer, or chief of design, one or the other, at the time.

Storey: He was the successor to the chief engineer. They had changed the title at that time.

Calhoun: And there was a congressional inquiry, a congressional hearing. Congressman [Leo J.] Ryan, who was later killed in that Jonestown massacre in Guyana, held a hearing, and he was very critical of the Bureau of Reclamation. And Harold Arthur, in his attempt to defend the Bureau of Reclamation on the Teton disaster, Harold made the serious mistake of losing his temper and getting angry with the congressman, and that did not serve Reclamation well.

I'm trying to remember the name of the individual who was with the Bureau and then he was with the House committee, the staffer, and then he headed up NWRA for a while, I believe. He told us in Denver sometime there about 1978, he said, "You know, Reclamation before Teton was like the South before the Civil War; it was arrogant and powerful. After the Civil War and after Teton, the South and the Bureau are still arrogant, but they are no longer powerful." And he says, "There's a lesson to be learned for a government agency and for any entity; you can no longer afford to be arrogant if you are no longer powerful."

Those words were *painful*, but I tried to reflect on them and learn something. I don't think that there's much justification for arrogance or *power* in the sense that it existed. I think today we're much better served with a sense of cooperation and public service. I think Dan Beard has reflected that during his tenure, and the need to direct Reclamation

more to an environmental commitment and service through our area offices and our area managers.

Storey: When you went into the office after the Teton failure on Monday, I presume you went into the office–

Calhoun: Yes.

Storey: –how were people reacting to it?

Calhoun: Stunned. Shocked. But with a sense of "What can we do to help?"

Storey: Tell me more about Stamm. Did you meet Stamm?

Calhoun: Oh, yes, I got to know Stamm pretty well. He had close ties with the folks that I worked for in O&M there in Denver.

Storey: He was the head of O&M in Billings or–

Calhoun: Boise.

Storey: In Boise, someplace, wasn't he?

Calhoun: Yes. He was, if anything, too egotistical, but he was a devoted civil servant, and I think a pretty effective Commissioner. He certainly seemed to stay on top of things and had a strong interest in staying on top of things. When I went to the 430 job in the L-M Region [Lower Missouri Region], periodically we'd have O&M conferences and he invariably would come out and address us, or whoever was Commissioner. That really afforded you a chance to get to know these folks.

So probably after Armstrong, I knew the Commissioners much more on a personal basis because of my position. It afforded me an opportunity to have some dialogue with them or something like that from time to time.

Storey: What was Stamm like personally, with staff and so on, in meetings?

Calhoun: Oh, I think, I don't know, the folks that *I* knew *liked* him and *respected* him, for the most part. He was not an engineer. He was, I think, an economist by training, and so the engineers sort of smirked about him being involved in engineering decisions without having that technical background. But he certainly knew O&M and he knew the water user community. For that matter, Floyd Dominy wasn't an engineer, either.

I think that that's been a source of conflict and unspoken concern, or maybe unofficial concern, is the mainstream engineering community of Reclamation employees have preferred an engineer as Commissioner, but the fact of the matter is, engineers have not necessarily been our most effective Commissioners.

Storey: How was it and why was it that you decided to change jobs and leave the canal

automation project?

Calhoun: It was a promotion. I got a promotion from a 12 to a 13, and it seemed to me like it was a good career choice, to broaden my exposure. I had some mentors and friends who were from time to time telling me, "Hey, you might amount to something, and you really ought to broaden your horizons and you ought to think about getting some field experience, and you shouldn't just confine your career to Building 67." And they were well intended. It was good advice.

Storey: What attracted you to that position? How did you become interested in it, do you remember?

Moving over to the Lower Missouri Region

Calhoun: I knew a little bit about it. I had worked for some of the people in the branch as part of this automation effort, and been out in the field in Kansas and Nebraska and northern Colorado, and it seemed to me like that job at the time *epitomized* some of the most exciting work in the Bureau of Reclamation. The fact of the matter is I think the 430 job, in terms of water resource management is indeed, even to this day, one of the best jobs in the Bureau of Reclamation. The 430 job, it's no longer called that, but the Water Operations Branch, or whatever that entity is.

I was very fortunate. Like I say, I was number five, I think, on the list, and over a process of weeks and months, the four ahead of me were chosen, or unchosen, as the case may be. I ended up with the job, ended up with some people that were working under me that knew more than I did or had greater capabilities than I did, and we tried to work as a team. I have very fond memories of the five years that I had in that job, even though during that time, my first wife left me and I went through a divorce and a very *difficult* period personally, the association with the people that I worked with, including Willis Ervin, who was my boss that I mentioned yesterday, and the people in the branch such as Roger Patterson and Larry Dozier [phonetic], Ron Johnston, and Tom Williamson, it was a good place to be.

Storey: Who was the regional director then when you went in?

Calhoun: [James M.] Ingles. Ingles retired within a matter of months, and Joe Hall became the Regional director. Joe Hall was regional director for most of the five years. He left Reclamation shortly after I left that job, when I went to Amarillo. I went to Amarillo in February, and he left Reclamation in June of 1980. Joe Hall's a colorful character. You've no doubt interviewed him.

Storey: Couple of times. I need to do more. He was one of the first interviews, so I didn't know some of the questions I should be asking. (laughter)

Calhoun: Joe was in a meeting with me Monday in the Commissioner's Office, with Beard and others.

Storey: Really?

Calhoun: Uh-huh.

Storey: Over privatization maybe?

Calhoun: Transfer of title, right.

Storey: Tell me about Ingles. What was his first name?

Regional Director Jim Ingles

Calhoun: I don't remember. Jim? I guess Jim. Jim Ingles.

Storey: What was he like?

Calhoun: I didn't really know him that well. I understood he had an alcohol problem. He had been the project manager, project construction engineer out at McCook. I think he kind of got the Regional Director's job somewhat by default. He never seemed totally comfortable, and I wasn't sure *exactly* what went on at his departure. It was a short period of time, just maybe a matter of a few months.

Storey: So tell me what you did as Chief of the Water Operations Branch in Denver.

Calhoun: Well, in the L-M Region we were responsible for everything that went on water-wise in the region, even though the actual operation was being done by the people in the field offices, in the project offices. We were involved in just the water resource management. We had to contact the Solicitor's Office on any legal issues, of which there were *many*. Just a real interesting, exciting job and effort.

Drought of 1976-1977

Some of the things we got into, for example, during the five years from '75 until '80, we had the drought of '76-'77, which was one of the worst droughts since the thirties, throughout most of the Western United States.

"Denver was storing water in Dillon Reservoir, out of priority . . ."

Denver was storing water in Dillon Reservoir, out of priority, and that was quite a deal.

Glen Saunders Represented the Denver Water Board

Glen Saunders was the attorney for the Denver Water Board, and we met with him in our Solicitor's office, and told him that they were violating the law and they needed to change their operation or we were going to get after them. Saunders was real crusty. You know who Glen Saunders was.

Storey: I've heard of him, yes. And I've heard he was crusty.

Calhoun: And he questioned our authority. The Secretary of the Interior had authority to operate

Green Mountain Dam. *Show* him the document, the paperwork, that the Secretary delegated that authority to the regional director. You know, this kind of legalistic bullshit. So I said, "Fine. Show us the paper authority that you speak for the Denver Water Board, because you're just a staff attorney." And that made him mad, embarrassed the Solicitor. Jack Little, the regional solicitor, took me aside at that point, and said, "Charley, he who the gods would destroy, they would first make angry. And you got angry today. And you're going to mess up if you don't watch that. You've got to take Glen Saunders' shit, and let it roll off. You can't react like that." Well, I didn't see that big of a problem. I mean, I was just giving him back what he was dishing out. But Jack was not pleased, and he told me so, and I took it under consideration.

Storey: If I'm correct, they were storing water out of priority. That would mean they were preventing it from flowing to Green Mountain, which is our project.

Calhoun: Right. Yes. And a senior project, too.

Storey: Yeah. So, in effect, they were taking our water.

Calhoun: Yep. And we threatened legal action, and they quit storing out of priority. And it worked out. But there were discussions that went on even after I went to Amarillo in terms of resolving some of that and working out the details.

Storey: What other kinds of legal issues would come up?

Bessemer Ditch Case

Calhoun: Lots. Bessemer Ditch case. Have you ever heard of that?

Storey: No, I don't think I have.

Calhoun: When we built Pueblo Dam on the Arkansas, Bessemer Ditch was located downstream there at a little dinky diversion dam, and Bessemer Ditch served some irrigated land in the vicinity of Pueblo, Colorado. A real piss-poor little setup, just sort of a shoestring operation. Well, we built Pueblo Dam, and, as reservoirs do, it became a sediment trap, and silt clay particles that previously flowed down the Arkansas River and were diverted as part of the water in Bessemer Ditch were no longer available. They were diverting clear water. The clear water, in a dinky little canal system like that, in a very short period of time tends to leak.

So all of a sudden, people in Pueblo were having basements full of water because Bessemer Ditch was leaking much more than it had in the past, and they sued us over depriving them of their sediment supply as a result of building Pueblo Dam. The argument was, "Well, yeah, but we improved the water quality greatly." Well, it was an interesting case. We ended up, through a political compromise, kind of buying them off. We ended up giving money to align part of their system to compensate for the problems. The legal aspects of it were interesting. It seemed like it's always the Bureau of Reclamation's straw that breaks the camel's back. Invariably, the Federal Government has deep pockets. You've got some outfit that's limping and just barely getting along,

probably in a matter of time is going to go out existence anyway. Here comes the Bureau of Reclamation and the Federal Government along, and all of a sudden, they're fixed for another hundred years, or whatever.

Storey: The idea being all this sediment would sort of line the canal and keep it from leaking?

Calhoun: Yes. Exactly.

Storey: I've run across that somewhere else, I've forgotten where.

Annual Operating Plans for Lower Missouri Region

Calhoun: That was another one. Those sort of things. We worked very closely with the Solicitor's office. One thing that we did that was in existence when I got there that was just a very proactive, solid thing was an *annual* operating plan, in which we *looked* at the past year's record and documented that for the operation of Colorado-Big Thompson and other projects, all the other projects in the region.

The Operating Plan Was Submitted to the Public in a Forum

We looked at the past year's record and documented that, we made a forecast of the runoff and the conditions in terms of the normal situation, above 10 percent probability of high, 10 percent probability of low, then made a projection for the upcoming year's operation, and then presented that in a public forum at a number of locations. That *model* is an excellent one for *any* public agency in terms of *documenting* what you've done and why, and projecting what you anticipate to be for the coming year–or period. And it's one that was so successful–

END SIDE 1, TAPE 2. JUNE 28, 1995.
BEGIN SIDE 2, TAPE 2. JUNE 28, 1995.

Storey: You wanted to use that kind of forum in Amarillo, also.

Calhoun: Yes.

Storey: And Albuquerque?

Calhoun: Right.

Storey: Did you accept comments at these presentations?

Calhoun: Yes. Pretty much.

Storey: And did we receive comments that caused us to change our projections and so on?

Operations Plans and Issues That Arise

Calhoun: Well, not so much the projections, because that was largely a matter of whatever the

forecast indicated in terms of water supply, but in terms of the intricacies of the operation, yea, or the effect of environmental impact on a stream or something like that, there was almost always some issue of conflict of water use.

Seminoe Reservoir and the Platte River

For example, on the North Platte system, in the '76-'77 drought period, the Miracle Mile, which is the stretch of the North Platte below Seminoe Reservoir, is one of the finest blue ribbon trout fisheries in the nation. And so it looked like we were going–and the requirement for that I believe is 500 cfs minimum release from Seminoe, and so we sat down with the Wyoming folks and said, "Look, we need to cut back on that minimum release because otherwise we're going to drain Seminoe." And so you had this conflict with the Wyoming State Fish and Game. The instream folks said, "Fine. Drain Seminoe. You've got to maintain that 500 cfs because that Miracle Mile is such a tremendous trout fishery that we don't ever want you to deviate from that minimum release."

On the other hand, there were folks saying, "When's the last time you drained Seminoe Reservoir?" We never have. Well, when you drain a reservoir, you create some very adverse conditions in terms of sediment. The reservoir no longer acts as a sediment trap, but you're *passing* everything right through, including some of that accumulated sediment. Maybe you've got pockets of water that you can't drain from the reservoir pool. So you've got the fish trapped. You've got stagnant water. You've got real serious health and safety concerns. You never want to find yourself in a situation where you don't *weigh* all these problems. You don't just go into a situation where you're draining the reservoir *just* to maintain instream flow, without considering at what price.

Storey: And what was decided?

Calhoun: The state pretty much held that we had to maintain the 500 cfs release. We did. And fortunately, we didn't *quite* run out of water in the reservoir. But that was a real serious conflict and a real serious issue. You find that a number of places around the West. I ran into it when I went to Amarillo with some of the reservoirs we had in the Southwest Region and on the Rio Grande.

Elephant Butte and the Rio Grande

Elephant Butte, the history of operation at Elephant Butte, which is kind of like the cash register of water on the Rio Grande in many ways, the Rio Grande Compact, international commitment to Mexico, Elephant Butte filled and spilled in '41, '42. We then went into a drought in 1950 and Elephant Butte was *drained* in the middle fifties, and it was a real *bad* situation in terms of dead fish, poor quality of water and that sort of thing. Then Elephant Butte *filled* and *spilled* in '85, and we've been blessed with a very good water supply on the Rio Grande for the last decade or longer.

But we were operating on the Rio Grande and the Colorado River system with an experience base that most of the state officials and the people that we worked with in terms of the water resource community had been through the serious drought of the

fifties and kind of good and bad years in the seventies and then a serious drought in the sixties, and then a serious drought in the seventies, so when we came into abundant water supply in the eighties on these river systems, the mentality of the professionals was, "Well, don't run any water out until you have to because we'll probably go right back into a drought again."

There Was Serious Conflict about How to Operate on the Rio Grande

That was a real serious conflict on the Colorado River system and on the Rio Grande systems, is how do you operate, faced with a future that's by no means certain, and when you base your operational philosophy on your past experience and the past experience has been dry and it turns out wet, you guess wrong, you don't do as good an operation when you look back on that as if you'd anticipated the flood releases and that sort of thing.

Storey: Well, if we knew the future, we could all manage better. (laughter)

Calhoun: Yes, but you can't just operate on the basis of what your *career* experience has been either. You need to look at the long range, and typically the long range is very limited. Hydrographs are only–you know, we only have accurate records of a little over a hundred years in these streams and yet the better history of hydrographs, the better job you can do in anticipating these high and low extremes. That's been a big part of the second half of my career, is just *matching* the operational experience in hydrographs of the last hundred years with the uncertainty of the future and what do you have to work with there. To me, that's been a very exciting, demanding career aspect, or career role.

Storey: How accurate can we be?

Calhoun: Well, it depends. For one thing, you can't measure water *extremely* accurately, simply because the measuring devices are limited. Typically, if you could measure discharge within 5 percent, you're doing pretty good. Of course, it depends on what you're measuring and how you're measuring. Discharge is one thing, volume of water in a reservoir is another thing. We can measure volume of water in a reservoir probably a little more accurate than we can discharge, if we have current, varying capacity curves, knowledge of the reservoir.

Becoming a Manager in the Lower Missouri Region

Storey: At the time you went over to the Lower Missouri Region as the Head of the Water Operations Branch, had you decided to become a manager, to make a *career* change, in effect?

Calhoun: Yeah. I was pursuing my career within the constraints and limits of the organization, and it just seemed to me like I ought to attempt to take advantage of promotional opportunities if I felt like I could contribute something and handle the job. So that was sort of my philosophy. I didn't have any specific schedule or goal of reaching a certain grade at a certain point in time or anything like that. I just felt like I ought to kind of keep my eyes open, be a little opportunistic, and continue to try to grow and develop

professionally. Of course, you had to give up some of the technical professional capability for some of the managerial capability.

Storey: Did you set yourself a training program or anything?

Calhoun: Yes and no. Reclamation did a pretty good job of exposing, and they still do, people who have an interest in management development to certain training opportunities, you know, over time. So I tried to take advantage of those as they presented themselves but not necessarily any specific goal or objective. I kind of took it as it came and just took it one step at a time here.

Criticism by Bill Plummer

I was criticized by Bill Plummer, who was assistant R-D under Joe Hall for part of the time there in that five-year period, and Bill Plummer said that you ought to always be reaching up the ladder a couple of rungs so that you never stop climbing, you should always be reaching, not just for the next rung, but for the rung after that and you should *aggressively* be pursuing that, and he felt that I was not *aggressively* pursuing my career, I was just more lackadaisical reaching at the rung on the ladder, pausing and resting, and then considering the next one after that. And that was just a difference in personality and a difference in philosophy, but I remember a rather pointed discussion we had.

Storey: What was Mr. Plummer like, other than that?

Calhoun: Kind of a bull in a china shop, a little bit. I got along good with him. He certainly has a strong work ethic.

Joe Hall

Storey: What about Joe Hall as a regional director?

Calhoun: Entertaining. Interesting.

Storey: Was he erratic, dictatorial?

Calhoun: He would make commitments that he couldn't necessarily achieve, but I think Joe's a pretty good politician. I think Joe always has had his eye on the commissioner's job. I think Joe would still like to be Commissioner of Reclamation. He had a very clear goal and objective. Joe could entertain–I've seen him address an audience of four or five hundred people, and tell corny, dumb jokes and have them laughing, almost rolling in the aisles. I mean, very effective.

I've also seen Joe in a congressional hearing before George Miller with a glass of water in his hand, shaking so bad that he almost spilled the water. That's the *only* time I ever saw him in that condition.

Storey: Because he was upset, you think?

Title Transfer Hearing

Calhoun: I think he intimidated by Congressman George Miller at the hearing that we were at. I was there in support of Joe as acting commissioner in September of '89 on the matter of title transfer. Three bills had been introduced for title transfer– Sly Park and Solano in California and Platoro in Colorado. I was there to support discussion on Platoro. He and I go way back. I have benefitted from my relationship with Joe, and I appreciate the working relationship that we've had and the contribution that Joe has made to the Bureau of Reclamation.

We're going to have to wrap this up pretty quick.

Storey: Yep. Actually, we're at a good point to stop right now. Why don't we just do it. Once again, I'd like to ask whether or not it's all right for Reclamation researchers and researchers outside Reclamation to use these tapes and transcripts for research.

Calhoun: Yes.

Storey: Good. Thank you very much.

Calhoun: Like any oral history, this is just my perspective. I'm trying to generate the facts as I remember them.

Storey: That's one of the things we're interested in. But oral historians know that and take that into account.

END SIDE 2, TAPE 2. JUNE 28, 1995.
BEGIN SIDE 1, TAPE 1. AUGUST 14, 1996.

This is Brit Storey, senior historian of the Bureau of Reclamation interviewing Charles A. (Charley) Calhoun, on August the 14th, 1996, in his offices of the regional office of the Bureau of Reclamation in Salt Lake City, Utah. This is tape one.

Calhoun: We have spent a lot of development in the last two decades

Storey: In water systems automation.

Water Systems Automation at Reclamation

Calhoun: In water systems automation, yeah. Reclamation has continued an effort, it has changed somewhat away from just the Denver focus, but it continues to be some good work being done in water system automation.

Trip to Turkey Where There Is Strong Interest in Canal Automation

Back in May of this year I was asked to be a member of the Reclamation team that went over to Turkey, and they have a great deal of interest in canal automation over there. And I was able to garner up some information on current work in Reclamation and send

it over to some of the engineers that we met with in Turkey while we were over there. So, the work is continuing, and its good to see that. I am no longer personally involved in it, but just something that I think back that I feel like I made some contribution to.

Changes in Canal Automation During His Career

Storey: How would you characterize canal automation in the early '70s when you were personally working on it? And nowadays. How has it changed?

Calhoun: Well I think the equipment that's available, the technology has advanced significantly in terms of the equipment that's available for field application plus the modeling has improved significantly.

Modeling Improvements for Canals

In the '70s we were just *really* getting into digital modeling–computers were just becoming available that gave you the capability to model complex water systems. Before that the modeling was done mostly with analogy, electrical, as opposed to digital, and there were some real good analog modelers in Denver in the design office in Denver, but the digital modeling gives you a great deal more flexibility and really a more accurate means of determining how a water system is going to behave under automated control or just in terms of transience moving through the system.

Storey: So you're doing this in order to see how the water is going to flow and how the system is going to react? This modeling.

Analogy Between Electrical Systems and Canals

Calhoun: Yeah, basically. With most any system you want to be able to make changes in your operation and not create instability. There are a lot of analogies between water and electrical systems, and the recent power outages, like this last weekend, where, you know, the western states from Washington swinging around California to Texas were shut down as a result of a disturbance in the system. That's a real *massive* example of what can happen in a system. Similar things can happen in a water system–particularly open channel water systems if you don't *dampen* the disturbances. There is a tendency, under certain circumstances, for the disturbances to build on each other and create serious problems in an open channel system with an overflowing and damage to the facilities. So that's something that you'd want to avoid.

Storey: When you are automating a water system is it tough at first to get it to work properly?

Calhoun: Well, it depends on how complex the water system is and what all you're attempting to automate. Yeah, usually in a very extensive system it can be quite difficult. That's the advantage of modeling it so that you find out, you know, what your problems are going to be and how the system is going to behave.

Storey: And where do you tend to find problems in the modeling. In other words, when you apply automation to a system, where do you find that you've had areas of your model that

haven't proven out? Or are there any?

Calhoun: Yeah, there are usually problems with this situation, this instability, where you're creating disturbances or perturbations and they're–instead of dampening out they're increasing. That's typically a real serious area of concern. Or just accurately modeling the system itself. Going into a digital model to capture what your canal system or your water supply system accurately in the computer software.

Storey: Is that more a problem of knowing what's going to be there, or a problem of programming? Or of telling the programmer what to design or what?

Calhoun: Well, it's more a matter of just accurately capturing the equivalent in a software program as to what will usually later be built or complete in terms of concrete and steel and all that.

Storey: When you say instability in the system, what are we talking about?

Calhoun: Well, any system has degrees of instability. You know, for example, your body has some automatic devices from your brain and just any organism or any system of interacting components generally speaking has the ability to self-regulate or somehow compensate for outside forces. For example, if you sit in this room all day and it's air conditioned at a comfortable 78 degrees, and you go outside and its 102, your body will make some adjustments. Maybe you'll perspire more and your heart rate will pick up. Maybe you'll breathe a little faster just to compensate for that difference in temperature that's been imposed upon your body, and if your automatic controls, so to speak, aren't functioning right maybe you would get a high temperature. Or maybe something else would happen that would make you sick or even kill you. Similarly, in water systems or electrical systems, you know, everything is usually fine as long as its kind of a static condition. Its just that nothing stays static very long and so when some change is imposed–typically in a water system change in demand or change in supply, and similar in an electrical system–then you want the system to accommodate that change you act in a manner that adjusts for it, but then reaches another level of stability, so to speak. Just like going outside and your body adjusting to the temperature. Well, what can happen is these systems can over-correct or over-react. Then that creates a whole new series of waves or disturbances in a system and if you have an unstable situation these can grow and amplify instead of dampening out. And a lot of this is really the essence of control theory, and I'm not a specialist in control theory. I'm just giving you my thoughts on a subject that I was involved in more than twenty years ago, and just in terms of development of technology within the Bureau of Reclamation, and as such I'm by no means current or expert in this field of endeavor. It just to me an interesting period of time in my career when I worked in the field that is still challenging and interesting, but I'm, for various and sundry reasons, I'm no longer directly involved in it. Probably that's about enough on water system automation because there are a lot of folks around, you know, that are currently up to speed on it. But I think it is interesting in that here I can reflect back on my career and say that here is a very specialized effort that I think was important at the time and continues to be important, and hopefully I made a small contribution to it.

Storey: I would assume that our projects are designed, for instance, so that normal flood runoffs wouldn't affect them. In other words, they wouldn't flow into the system and overtax it. That sort of thing. So this is not the kind of instability you're talking about.

Calhoun: Generally speaking, no. (Storey: It's more supply and demand things.) Yeah, and how you react to changes in demand.

Storey: Okay, now, when your automated system, the one's that I've seen, you have the system so that it can be controlled from a controller.

Supervisory and Local Control of Systems

Calhoun: Well, that's one type. That's supervisory control where you have overall comprehensive control from one location, but also you can have local control that pretty much functions in the field at each critical location in a manner that doesn't *necessarily* require that all that information come into a central supervisory control location. There's two concepts there, and in some situations you would want to have both.

Storey: Uh-huh. Are most systems a combination of both? Or do you pick one or the other often?

"The bigger systems almost invariably will have some degree of supervisory control. . . ."

Calhoun: The bigger systems almost invariably will have some degree of supervisory control. Where you have a central monitoring or control location just to keep up with what's going on throughout the system. An example of that would be the Central Arizona Project Granite Reef Aqueduct system in Phoenix there. They've got a big mock-up, a big board in a control room that illustrates the components of the canal system and with lights and buzzers and whistles and all to alert the operator as to what's going on. Now in addition, they have some degree of localized control at each of the check structures and pumping plants and that sort of thing.

Most Systems Use Both Supervisory and Local Control

So its usually a combination, but we are doing some real good work down in our Provo office here–Roger Hanson and *others* in terms of localized control–going into these older canal systems [which] were maybe built fifty years ago and installing a limited degree of local control just to help the operators do a better job of managing their water supply on these older systems. And that's really interesting because there is so much application worldwide for that sort of thing.

Using Solar Power in Remote Locations

Plus they're developing some solar powered equipment that you may be miles and miles from a dependable electrical power supply, but with the solar power you have capability of avoiding the expense of electrical transmission lines and that sort of thing.

Storey: So it's a continually evolving process.

". . . as time goes on we realize that there're not many situations where we can afford to be wasteful in our use of water, and we need to try to make the very best use of this finite resource . . ."

Calhoun: Uh-huh, and I would imagine that would be case on into the future, particularly as the true value of water is recognized, you know, many places in the western United States, I think water has been taken for granted, maybe more in terms of flood or drought. In periods of abundant water supply you could slop it around and not worry too much about your efficiencies and that sort of thing, but as time goes on we realize that there're not many situations where we can afford to be wasteful in our use of water, and we need to try to make the very best use of this finite resource, and these are tools to help and assist us in that.

Optimization of Piped Water Systems

Another area I might have mentioned in the earlier discussion that I ran into over in Turkey was the work that I had done back in the '60s in terms of optimization of pipe systems. This was an effort that I was involved in from the middle '60s until about 1970. And I'd written several professional papers as to methods for optimizing pipe systems–both gravity systems and pump systems.

Recognized in Turkey for a Publication on Pipe Line Optimization

And when we arrived in Turkey and we visited with the director general of the equivalent to the Bureau of Reclamation–DSI, development of water resources–for the nation of Turkey the director general went through his presentation to explain to us the work of his agency and then asked us to identify ourselves and tell a little bit about our careers, and I just stated my name and my present job, and he said "Well, did I happen to be the same Charles Calhoun who had written the paper on optimization of pipe systems." And I said, well, yes, I had, and he said "well as professor at the water resources graduate school there at Ankara, Turkey, he had used that paper for nearly a decade in his classes because it was very illustrative of the . . . Director General Alkin Beelik (phonetic) inquired about this work that I'd done back in the '60s, and I was very pleased to discuss it briefly with him. The other seven members of the United States delegation said that I immediately got the big head and I was hard to live with a for a few days after that, in terms of the recognition that I had received. I told them that thirty years and going to Turkey was a pretty extreme price to have to pay to get proper recognition for ones professional works.

Storey: It's often interesting how people don't recognize the influence of things they've done like that, and that's one of the things in Reclamation we're trying to document is that kind of innovation that went on. One of the things I was interested in was whether you worked on any specific projects for canal automation back then.

Calhoun: Yeah, we were working on a number of different projects that were underway. I think we were–I personally was more into coordinating the development of the tools to be

applied, but, certainly, some of the preliminary work on the Central Arizona Project, Granite Reef Aqueduct we were still working some on the California San Luis Unit of the California Water Plan–the California Aqueduct. As well as a number of smaller canal systems, probably one in nearly every region–each of the seven regions of Reclamation there was some sort of effort going on either in terms of canal automation or diversion dam or wasteway operation some automated gate or series of gates that would reduce the requirement for human intervention and provide more efficient operation.

Storey: Now this would have been when you were in the E&R Center, is that right?

Calhoun: Un-huh, right.

Roger Patterson and Canal Automation in McCook

Storey: Roger Patterson, I believe worked on canal automation out at Grand Island.

Calhoun: He was at McCook, and we had some diversion dams out there that we were automating that I recall–Culbertson, Red Willow, and a couple of others.

Dan Fults and Canal Automation on the Central Valley Project

Storey: And I believe Dan Fults was working at one point in the Central Valley Project on canal automation out there.

Calhoun: Yeah, Dan was working also just in terms of application of computer technology. He and Larry Hancock were quite involved in that sort of thing in Sacramento.

Storey: Well, then you transferred over to the Water Operations Branch as the head of that branch in the Lower Missouri Region I believe.

Calhoun: Yes, in 1975.

Storey: An you mentioned in our first interview that you made a transition from being an practicing engineer to being a management engineer. Did you do that consciously or did it just happen?

Decision to Move into Management

Calhoun: Oh, I guess it was conscious in that I had been advised by some real good friends and some senior mentors in Reclamation that I really should broaden my experience from just the engineering and research center and that I should get some field experience and when this vacancy came out I guess I made a conscious decision to move from a more specialized technical effort to a more general field of management and responsibility of supervising a branch in the Water Operations Branch, in this case.

"I did not come by the job [head of the Water Operations Branch] very easy. . . ."

I did not come by the job very easy. The predecessor, Warren Jameson, had left in

October of '74 and gone up to Bismarck to head up the Garrison Project and the division chief advertised in October of '74 for the vacancy. I, and a lot of other folks applied for it, and Willis Ervin was the selecting official. He started interviewing people.

". . . I was number five on his list of possible people . . ."

And, I guess, I was number five on his list of possible people in ranking–and that's pretty far down the list. But, over the months–October, November, December he would interview these people and for various reasons they would turn the job downs or their wife didn't want to move to Denver or he had some concern about them, and, finally, along about January I was asked to interview, as I recall, of '75.. Just by happenstance I somehow persevered and ended up with the job, but it was kind of a reality check that I kind of needed to keep in mind that I wasn't the first choice for the job. But it was just kind of like one of those things that if you hang in there sometime you still end up Okay. The branch consisted of some outstanding people that Warren Jameson had selected, and they were good folks to work with and they'd had some say in the selection of their branch chief too.

"So, it worked out well, and it did give me some degree of field experience and a different perspective on the Reclamation organization. . . ."

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"I think that there, in the past, has been a tendency, or almost a prejudice against selecting people from the Denver Office to move out of Denver into the organization and vice versa. . . ."

I think that there, in the past, has been a tendency, or almost a prejudice against selecting people from the Denver Office to move out of Denver into the organization and vice versa.

"It's perhaps more understandable as to why people wouldn't be brought in from the field into Denver . . . the jobs in Denver were pretty highly specialized and it almost required some period of time where you were honing that specialty . . ."

It's perhaps more understandable as to why people wouldn't be brought in from the field into Denver sometimes because oftentimes in the past the jobs in Denver were pretty highly specialized and it almost required some period of time where you were honing that specialty and honing it. So I felt fortunate to be selected, and I moved over into that position in February of '75–nearly five months after the vacancy had developed. And, really got to know the Lower Missouri Region quite well because as Water Operations branch chief, our branch was involved in the whole gamut of water management in that region which was eastern Colorado, the Platte River Drainage in Wyoming, most of Nebraska, all of Kansas, and a portion of Oklahoma.

Drought of 1976-1977

We were particularly involved in the drought activities–the very serious drought of '76

and '77 put a real strain on the water system.

Legal Confrontation with Denver over Their Dillon Reservoir Entitlement

We got into a legal confrontation with the City of Denver. The City of Denver was diverting water out of priority beyond their entitlement at Dillon Reservoir that affected our ability to store water at in Green Mountain Reservoir as part of the Colorado-Big Thompson project. And so I got involved *very* deeply with the Solicitor's Office, Justice Department pursuing possible litigation to protect the Reclamation rights–project rights. Again against the infringement that was going on from Denver. So that gave me some experience with the Solicitor's Office and the legal protection of water rights that I really found quite fascinating and stimulating and exciting in that it was real time "what are we going to do now?" In terms of seeking temporary restraining order or another means to protect our vested interest, and there were all kinds of political implications to that as well as long term relations with the City of Denver and the other folks.

Dealing with the Press During the Drought

In addition, there were opportunities that I had not had in the Denver Office as a technical engineer in that there was a great deal of press interest in the drought and what Reclamation as a water management agency was doing to assist with the critical water supply situations. So I remember Bob Palmer, who was then I believe reporter with Channel 7 news called up and wanted to come out and interview the regional director about Reclamation's drought program and what we were doing to address the concerns. Joe Hall was the regional director and, for whatever reason, Joe didn't want to be bothered with an interview that day, so he asked Bill Plummer, who was assistant RD if Bill would take it, and Bill said naw, he had something else going on so they asked Willis Ervin, my division chief, if he would handle the interview, and he said no they really want to talk about water–"Let's let them talk to Charley." So I felt a little bit like that Life cereal ad where Mikey ends up trying the Life cereal, but it was a great experience to be interviewed by Bob Palmer and that was my first television interview in which he asked some pretty specific questions about *what* we were doing as an agency to address the effects of the drought, what our carryover storage was, how we were operating our reservoirs, and that sort of thing. So it was–I really looked on it as an opportunity.

Drought Assistance Program

Likewise then Congress authorized a drought assistance program where monies were made available to help the water districts and cities and all with maybe restoring some wells that where going dry or putting some water conveyance in pipe. There was a lot of money available to *invest* through this program in more water efficient facilities, and I was the coordinator for that and, as such, I got to go down to Governor [Richard (Dick)] Lamm's office a couple of times and brief him on our program and what we were doing in the state of [Colorado].

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Funding and the *requirements* for the entities within the state that they could utilized this drought assistance, drought relief program.

"So I was taken from a somewhat sheltered career in the technical areas into the real world of politics, and law, and management, you know, in just a couple of year period. . . ."

So I was taken from a somewhat sheltered career in the technical areas into the real world of politics, and law, and management, you know, in just a couple of year period. All this was going on, and I realized how fortunate I was to have this type of opportunity and looked on it as a real challenge.

Storey: You've given several glimmers in this conversation of what Reclamation does in water management during a drought, but could you talk some more about it? You know to an unsophisticated person, either you have water or you don't have water.

Drought Management in the West

Calhoun: Yeah. Droughts are a reality in the western United States. They recur on about a twenty to twenty-two year cycle. There are a lot of theories that they are associated with sun spot activity and El Niño and there are other empirical indicators that, you know, we can pretty well figure that they're going to cycle through.

Looking Back at Climate History Indicates We Will Have Periodic Droughts

You can look at the tree rings, study the tree rings going back for a thousand years or more and see some indications of this cyclic recurrence so it shouldn't be as any big surprise that they're going to happen again in the future in this country we're all somewhat aware of the dust bowl conditions of the '30s. When it was so dry and because of poor agricultural practices a great deal of the Southwest–you know, the top soil was blown away and people were displaced–driven off their farms. And then in the '50s we had an extremely dry period in the middle '50s–some locations much worse than others. So in '76 and '77, when we had some *record* low precip and record low streamflows you could look back and say, "Yeah, well it was right on schedule." I think what we need to be applying is the fact there here it is in the '90s, in the middle-'90s, and while we had an abundant water supply in the northern states, the southern states this last year were extremely dry and remain so. The Rio Grande, as a case in study, we only experiences a 12 percent of normal inflow in the Elephant Butte Reservoir this year. Extremely low snowpack and water supply.

Storey; As I sit at my cabin at [Lake] Granby, and it's full.

Water Year in the Upper Colorado Region, 1996

Calhoun: Yeah, and its amazing where that line, you can almost draw that line, we see it in this region–the difference between the San Juan River system where we have 35 percent of normal inflow in Navajo Reservoir this year, and the Gunnison, just the next major stream to the north, which right at normal or a little bit above normal in terms of

snowpack and runoff this year. You can also associate the jet stream activities and the jet stream when it stays north the storms and the snow fall is associated with that it didn't push south and that was apparently, in Colorado, that was the break in western Colorado between the Gunnison drainage and the San Juan drainage.

"Now, each time that we've gotten into these severe drought situations Congress . . . has reacted with . . . various types of assistance . . ."

Now, each time that we've gotten into these severe drought situations Congress, the country, has reacted with programs, various types of assistance, grants, loans, and that sort of things to provide financial support to the communities and the districts and the entities that are most effected.

Maryanne Bach Has Been Appointed Reclamation's Drought Coordinator

This year you might want to capture real time experience from Maryanne Bach there in Denver–she's just come into the Denver Office from begin the deputy regional director in Billings, and she just this week has been named Reclamation's drought coordinator. Having worked with Neil Stessman who was doing that job as regional director [in the] Great Plains Region, and, once again, we are looking at programs to make money available in the most severely affected areas–Texas, New Mexico, Arizona, southern Utah. There're some folks that are saying "wait til next year." Its going to be even worse next year because the tendency start maybe south and move north and that sort of things. And the pattern–it would not be surprising for it to be not just one year low snowpack, but two or three year, in which case the longer it goes on the more difficult it becomes in drawing reservoirs down, the effect on fish and wildlife and environment, and just the basic water supplies needed to sustain life.

Storey: What do we do, for instance, do we have somebody who is managing the San Juan and south out of your region or out of the Albuquerque Office or how does that work–the drought issues I mean?

How Drought Is Handled in the Regional Office

Calhoun: We have a drought coordinator here for the UC region–Mike Stuver in this office. He's looking at, you know, kind of the overall picture and making assessments and needs and as we get into this financial assistance he'll be processing the applications and that sort of thing. But to really answer your question is I think in the fullest sense its just something we've got to live with.

"We've all got to keep in mind . . . we're in this thing for the long haul if this goes on for a series of dry years we'll have a very difficult time. . . ."

We've all got to keep in mind and reflect on and realize that if we're in this thing for the long haul if this goes on for a series of dry years we'll have a very difficult time.

There Are Prehistoric Indications of Extended Drought in the Area

And there is indications of that. You know the Anasazi left Mesa Verde and other places in the 1300s, probably because there was something like a twenty year drought that occurred and it dried things up and chased them out. And, best indicators are they vacated most of the Four Corners area and moved down to the Rio Grande and the Pueblos along the Rio Grande, its generally felt, trace their ancestry to the Anasazi who were up in the Four Corners area at Mesa Verde and elsewhere.

"We're very fortunate that we have . . . *tremendous* carryover storage capability in the *Colorado* River system. . . ."

We're very fortunate that we have carryover storage. We have *tremendous* carryover storage capability in the *Colorado* River system. We don't have that much in our other systems.

"But . . . in a series of dry years we would need to draw the system down . . . you will see *enormous* conflicts for the limited water supply. . . ."

But just the fact that in a series of dry years we would need to draw the system down it's hard to describe what all would happen because you will see *enormous* conflicts for the limited water supply.

". . . generally speaking, the highest priority will be for human consumption–for the requirements of the cities and then after that the irrigation projects. . . ."

And, generally speaking, the highest priority will be for human consumption–for the requirements of the cities and then after that the irrigation projects. Now that's not to say the irrigators won't need to be compensated if push comes to shove and their water is used by a city they would normally be compensated for it.

"But, there'll be a lot of people that have recreated on, say, Lake Powell, and they've enjoyed a relatively full reservoir for fifteen years or more now, and their assumption is that's the way its supposed to be . . ."

But, there'll be a lot of people that have recreated on, say, Lake Powell, and they've enjoyed a relatively full reservoir for fifteen years or more now, and their assumption is that's the way its supposed to be–that its supposed to stay thataway all the time, and when they get there and it's a lot smaller and going down they won't be happy campers, and they'll let their political spokespeople know about it, and then we'll hear about it.

Interregional Planning for the Colorado River

Storey: One of the issues on the Colorado system, as I understand it, Upper [Colorado] and Lower Colorado regions get together every year to talk about planning for how to operate the river and for whether or not there's going to be a surplus declared. And California, of course, always wants a surplus declared. How does that operate from your perspective up here in Upper Colorado?

Calhoun: Well the meetings are actually a lot more often than once a year. It's more of a

continuing dialogue so to speak in terms of assessment of the situation and where we are. And, in the meetings we have different formats and different levels of involvement in the meetings. The one I think you're referring to is actually the basis of our annual operating plan where the two regions get together to develop the annual operating plan with input from the seven basin states and any [and] all parties–the Indian tribes are represented, the environmental organizations, independent parties if they so desire–now, to try to look at the water supply and the demand requirements. In addition, next week on Tuesday, we'll have an Upper Colorado-Lower Colorado regional coordinating meeting–we try to have those quarterly or so. Just for in-house, within Reclamation, discussions on these matters.

Declaring Surpluses on the Colorado River

And, certainly, the surplus determination that Bob Johnson and I jointly made here a few weeks ago is an example of that and one that does have some controversy. On any water resource system, and particularly the Colorado River, if you can make water available when its needed, such as we're doing with this surplus determination, you actually increase the amount of water that's used over a period of years, and that's essentially our assessment.

"Experience has been that in the Colorado River we will periodically fill the system and spill . . ."

~~There's~~ Experience has been that in the Colorado River we will periodically fill the system and spill–such as we did in '83, ,'84, '85, '86. Storage filled in '83 and we passed more than 50,000,000 acre feet of water through the system that was beyond our ability to store it. And, so, you know, what is it we're trying to do? Well, we're trying to utilize this water supply in the most effective means to meet the needs of the people. And California is *highly* dependent upon the Colorado River system.

". . . our analysis indicates that there is a *high* probability of spilling . . . and by making this relatively small amount of additional water available through the surplus determination we will not increase the risk significantly of a shortage . . ."

And our analysis indicates that there is a *high* probability of spilling and spilling the system again under the present operation and by making this relatively small amount of additional water available through the surplus determination we will not increase the risk significantly of a shortage, but we will decrease the probability of that spill condition occurring in the next twenty years or so–so that's essentially kind of how we got to that, and it's a joint determination the Upper Basin states wanted additional leverage put on California to make California commit to developing other sources of water or staying within their allotment. The allotment on the Colorado River, of course, is California has the largest amount of any state at 4.4 million acre feet a year. Arizona has 2.8, and Nevada has 300,000 acre feet a year allotment for a total of seven and a half million to those three states. In addition, the Republic of Mexico has an entitlement of a million and a half acre feet a year, and the Upper Basin states, Wyoming, Colorado, Utah, and New Mexico, share an allotment of seven and half million.

"The Upper Basin states . . . do not in near future appear to be anywhere close to their full utilization of their allotment. So that gives us a little flexibility in the system. . . ."

The Upper Basin states, with the possible exception of New Mexico, have not and do not in near future appear to be anywhere close to their full utilization of their allotment. So that gives us a little flexibility in the system. California will exceed that 4.4 million acre feet this year. They'll be using something close to 5 million acre feet, and that is cause for concern. That's not a long term situation that should be sustained because Nevada and Arizona will be needing their full allotment in the future, and, general speaking, Mexico *always* uses their full amount. So we looked at it this year and made the determination, but that's not to say that that's an automatic determination for next year or for years in the future, *particularly* if, as some people say, this drought will move north and will have a low water supply in the winter of '96-'97.

Storey: When I read things written about the Colorado River Compact by historians, who aren't necessarily very sophisticated about water operations, the general consensus seems to be that the Colorado River Compact in 1922 allocated seven and a half million acre feet to the Upper Basin and seven and a half to the Lower Basin and there isn't really that much water in the system. It's more like, maybe fourteen million acre feet or something. Am I hearing you say that, because we have the storage capability, that when we have above average years that we come out much better than this and that *overall* we come out better than this.

The Upper Basin States Aren't Using Their Full Colorado River Allotment

Calhoun: But also, bear in mind the Upper Basin States are not using their seven and a half million yet. Colorado's only using two-thirds of their entitlement; Wyoming's using probably half, or less; Utah is not anywhere close to using their full allotment of the Colorado River. (Storey: Is that for economic reasons? Or is it because they haven't developed enough?) Primarily. Well, they haven't developed enough because of the economic reasons, yes. It's very expensive to build water projects. You know, for example, here in Utah, the Colorado is way over in the eastern and south-central part of the state and the population is here along the Wasatch Front so we do bring water over, but it's very expensive, and the Central Utah Project completion which will be largely carried out by the Central Utah Water Conservancy District with assistance from Reclamation and the Department of the Interior as a result of Public Law 102-575, that water will be quite expensive. It'll be the municipal and industrial water will be somewhere in the neighborhood of $200 an acre foot for wholesale. And that just reflects the cost required to bring that water over. You know, that's a big part of the controversy over the Animas-La Plata Project in southwestern Colorado is the economic cost and the environmental cost of that proposed project.

Denver and Green Mountain Reservoir

Storey: The threads of these conversations I find wonderful because we come from the late '70s to the present following *one* thread of what's going on. I'd like to ask you talk more about Denver and our legal confrontation over Green Mountain. I thought the State

Engineer was supposed to be overseeing all of this and that if we went in and said, "Wait a minute, Denver is taking too much water" [that] he'd go out and say "Quit doing this." He doesn't function as a watermaster also?

Calhoun: Well it varies from state to state, but generally speaking, yes, that is the role of the state engineer. *However*, in the situation in 1976 that we found ourselves in the Denver Water Board was represented in legal counsel by Glen Saunders, who was one of the more notable water attorneys in the state of Colorado, and Mr. Saunders had the ability to be rather intimidating, and he had developed a legal theory that, at least in my opinion, he was able to bluff a number of parties into accepting, at least for some period of time, his theory of Denver's entitlement to allow them to store additional water in Dillon than we felt clearly they were entitled to.

Face to Face Meeting with Glen Saunders Regarding Denver's out of Priority Storage in Green Mountain Reservoir

So we'd have these–as soon as we became aware of it we called for a meeting to sit down face to face to discuss the situation, and Saunders, as part of his intimidating legal strategy, he'd pull out Senate Document 80 that would describe, you know, how we'd intended to operate the Colorado-Big Thompson Project. And he said, well it says here the Secretary of the Interior is authorized to construct, operate, and maintain the Colorado-Big Thompson Project, including the Green Mountain Dam and Reservoir. I understand that, but I don't see the Secretary of the Interior here in this meeting. Well, of course, that's delegated to the Bureau of Reclamation and in turn to the regional director's office. Well show me your letters of delegation that provide for this. And, you know, this was generally understood, and you could certainly develop that documentation, but it wasn't normally something that we had to be confronted with on a day-to-day basis. And, I took a little bit of that and figured what's good for the goose is good for the gander. I said, well, now Mr. Saunders you tell us that you're representing the Denver Water Board which I believe consists of five individuals. By the same token could you show us your letter of delegation that demonstrates and documents that you're the spokesperson for the Denver Water Board? Otherwise we should be meeting with the full board, it would seem to me.

"The lawyers thought I was being a little smart ass . . ."

The lawyers thought I was being a little smart ass, I guess. It was just the kind of thing, it seemed to me, like two could play that game. Our regional solicitor at the time in Denver was Jack Little, and he took me aside and told me "Charley you can't get sucked into these emotional confrontations with Glen Saunders. You must remember he who the gods would destroy they would first make angry, and I saw you getting angry today and you've got to watch that." And I thought, "well, Jack, I guess you're right I do need to *not* get caught up in emotions of it, but on the other hand if you don't feel very strongly about your job and your responsibilities and the position you're not going to be very effective either."

Storey: It's awfully hard to . . . (Calhoun: How's that?) Oh, you know, the history program it constantly got little *issues* coming up about who gets the budget the history program or

these folks, and all of that. What kind of legal protection did we decide on there, or did we? Did we just bluff them out or did we wait out the drought, or what happened?

Reclamation Threatened a Restraining Order Against the Denver Water Board, but Eventually the Parties Developed a Long-term Understanding

Calhoun: No, we threatened a restraining order, and then we reached a tentative agreement that later on, after I left that job in 1980, Roger Patterson, who succeeded me as the branch chief in that water operations branch, and Willis Ervin worked out some long term understandings that are in-place today. And pretty much secured the position of the–you know, the prior, Green Mountain Dam had been there for twenty years longer than Dillon Dam. (Storey: Yeah, it was built in the '30s.) Right and Dillon was completed in early '60s.

Storey: So we never really had to go to court?

Calhoun: No, we did not have to go to court on that one.

Storey: Tell me about the legal implications that you mentioned. I mean, excuse me, the *political* implications. Were there congressmen or senators supporting Denver, or how was this working?

". . . it wasn't a fight you wanted to get in lightly or without some due consideration of the political implications. . . ."

Calhoun: There were certainly hints of that. Denver Water Board's a very, very powerful entity because, you know, that's the water supply for the city of Denver and much of the surrounding suburban area. So it wasn't a fight you wanted to get in lightly or without some due consideration of the political implications. I think Governor Lamm and, for the most part, the political players were more interested in, hey what's a fair and reasonable approach to this situation and what are you as a government agent and what is your agency doing that can be of assistance here in a positive, proactive way?

East Slope-West Slope Tensions in Colorado

That's not to say that, you know, some of the East Slope-West Slope, north and south aspects of Colorado water management–they're there on a constant basis. You need to kind of look at the particulars of some of our projects, and *anytime* you develop a transmountain diversion project, such as Colorado-Thompson, Fryingpan-Arkansas, or San Juan-Chama in southern Colorado-New Mexico, you know, there is a sense that you are taking something away from somebody that they're entitled to. And certainly that's some of the feeling towards Denver and some of the other metropolitan areas there in Colorado that depend on West Slope water supplies for their drinking water. The Colorado-Big Thompson Project is planned and authorized in the'30s and built in the '40s provided safeguards to the Western Slope of Colorado and to the Colorado River drainage. And that safeguard was essentially in the form of Green Mountain Dam and Reservoir so that you'd catch water in priority, in your appropriate water right, store them in Green Mountain, then when you were making diversion at Granby and Grand Lake

into the Alva B. Adams Tunnel you could make the releases out of Green Mountain to make up for those waters that you were pulling over to be used in eastern Colorado. So that's why it was very critical to us to protect the water right in Green Mountain.

During Trip to Turkey met with President Suleyman Demirel

Just to jump around again, in time in this very, very interesting and stimulating eight days that I spent in Turkey, we had the opportunity to meet with the president of Turkey, President Suleyman Demirel, he had trained with the Bureau of Reclamation as an engineer trainee in the late '40s, early '50s and had very *warm* and *fresh* memories of his experience *in* this country and with Reclamation, and to a limited extent with TVA. When he came over to the United State to Washington in March of this year and met with President Clinton he invited a delegation and TVA to come back and see the accomplishment that Turkey had made.

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BEGIN SIDE 1, TAPE 2. AUGUST 14, 1996.

Storey: This is Brit Allan Storey with Charles A. Calhoun on August the 14th, 1996.

Calhoun: Really the highlight of our visit to Turkey was an audience with the president in his office there in the Capitol. He chatted just in polite terms, for about fifteen minutes with us, and then he said, "You know, I've got a better idea. Let's go over to the Presidential Palace and have a drink." Great. So we then all hopped in the limo and zipped across the way to the Presidential Palace.

We sat in the presidential garden, around a big table, and were served drinks–Scotch, whatever you wanted, pistachio nuts, snacks. Then he reflected on his career and the very warm memories that he had from associating with our agencies and with our professionals during his training period, and also a real keen memory of the details. We were kind of sitting there, just an extremely warm, friendly visit with the President of a country. So he's reflecting upon some of the things that he experienced in addition to getting to know Americans.

He said his advice after he came back to Turkey to other engineers who were coming over for similar assignments, "Take your wife. Take your children, so that you get to know the Americans. It's something that you'll benefit from and your families will benefit from, if you have that experience." Then he turns to me and he says, "We want to show you some of our accomplishments during the week ahead. And as a young engineer, I was very impressed with your Colorado-Big Thompson project. Mr. Calhoun, I believe that the diameter of the Alva B. Adams Tunnel is approximately 4.5 meters. Is that correct?"

"Yes Mr. President." You know, I'm automatically converting English to metric, which, unfortunately, we still are encumbered with English with the rest of the world metric. But, "Yes, Mr. President, that's correct."

"And the Alva B. Adams Tunnel is a little over ten kilometers in length, is that

correct?"

"Yes Mr. President, that's correct."

"Well, Mr. Calhoun, we want to show you and the delegation a tunnel that we've recently built that is three times that size in diameter and more than three times that length."

"We look very forward to seeing that." (laughter) And sure enough, we did, and got out and saw it.

So after an hour and a half or so, very, very interesting and just impressive with the president reaching back and capturing that kind of detailed information and visiting with us in that manner, we departed company, and he presented each of us with a very nice little silver bowl in a velvet box just as a token of our visit. The Turkish engineer who was our host from DSI, the agency, as we were leaving, said, "Have you had many audiences with your president?"

"No, 'fraid not!" (laughter) In fact this is the first one I'd ever had. It was really quite, *quite* an event.

Ataturk Dam on the Euphrates River and Controversy about Syria's Water Supply

And sure enough, the Turks *have expanded* upon what they have learned from us in several areas over there–Ataturk Dam on the Euphrates, the tunnel system that will supply irrigation and municipal water to a *large* area in the extreme southern part of the Anatolia region of Turkey. There is some controversy. Syria has been receiving the full water supply of the Euphrates, and Syria is concerned that this upstream development will result in less water supply for them. Then in turn, the Euphrates flows through Syria to Iraq.

"The Turks are developing water projects on both the Tigris and Euphrates. So there is quite a bit of controversy associated with that. . . ."

The Turks are developing water projects on both the Tigris and Euphrates. So there is quite a bit of controversy associated with that. But a very, very interesting trip and one that's certainly a highlight of my career.

Flood Management While Head of the Water Resources Branch

Storey: Another thing that you worked on was flood management, when you were head of the Water Operations Branch, I believe.

Calhoun: Yeah.

Storey: What was involved there?

". . . the flip side of a drought, of course, is floods. . . . you can anticipate periods

of abundant water supply or surplus water supplies, not necessarily with the same frequency as the droughts, but somewhat similar. . . ."

Calhoun: Well, you know, the flip side of a drought, of course, is floods. Similar to the drought cycle, you can anticipate periods of abundant water supply or surplus water supplies, not necessarily with the same frequency as the droughts, but somewhat similar.

Colorado-Big Thompson Flood in July 1976

Probably the event that stands out, the most significant in the period that I was in Denver was a tragic event that occurred Saturday night July 30, I believe, 1976, and that was the storm that was centered north of Estes Park, Colorado, on the Big Thompson drainage, that resulted in the Big Thompson flood that killed, I believe, 137 people, most of whom were trapped in a canyon and campgrounds and weren't aware that the stream would totally inundate the lower portion of the canyon. It swept away people in their tents, campgrounds, roads, vehicles.

"I got a call around midnight that there was a problem. . . . precip, was eight to ten inches in locations in the evening. . . ."

I got a call around midnight that there was a problem. The storm, I think started around eight and probably was maximum rainfall, precip, was eight to ten inches in locations in the evening.

Reclamation Mobilized in Response to the Flood in the Area of the Colorado-Big Thompson Project

So we mobilized, and the assistant regional director, Bill Plummer, and I went up, met at the airport at seven Sunday morning. We had the helicopter, Reclamation's helicopter, available, and we went up and surveyed the situation, landed at a couple of sites, made an assessment of Olympus Dam, which is right near Estes Park.

"The main storm event . . . eroded the toe of Olympus Dam, but had not done significant damage. . . ."

The main storm event had occurred up the North Fork of the Big Thompson, and had eroded the toe of Olympus Dam, but had not done significant damage. We were interviewed by the press there, and then we returned to what was then the Activity Center near the mouth of the Big Thompson. Because there were still people who needed to be evacuated, they were trapped up on ledges, and in pretty bad shape, we turned the helicopter over to the emergency evacuation people, and just made our assessment with the Reclamation project people, Bob Burling and others out of Loveland.

". . . damage to the Reclamation water conveyance across the mouth of the canyon there where the Big Thompson comes out of the mountains . . ."

There was damage to the Reclamation water conveyance across the mouth of the canyon there where the Big Thompson comes out of the mountains, was damaged and

had to be replaced.

Storey: That was that huge pipe?

Calhoun: Yeah. And there was other damage, but it was just indicative of the type of event that you can get when you get one storm over another and then you get a large amount of precip in a pretty limited area. It created this enormous amount of water surging down the canyon and scouring everything out.

"The flood *did* attenuate very rapidly because the precip event did not take place over a very large area, and the other streams were not so overflowing. . . . so it didn't do a lot of damage on further out . . ."

The flood *did* attenuate very rapidly because the precip event did not take place over a very large area, and the other streams were not so overflowing. So by the time the water got out to about Fort Morgan and the Platte, it had kind of leveled out and attenuated, so it didn't do a lot of damage on further out, but it was millions of dollars worth of damage, and I believe 137 lives were lost in the Big Thompson Canyon itself, as a result of that. That certainly left a lasting impression upon me in terms of the suffering and pain, but also realizing that any of these canyons that seem so pristine and ideal probably got that way as a result of one of these precip events or something else that actually scoured them and molded them over a period of time. So it's not that unusual to have that sort of event occur. Probably it won't occur there for hundreds or maybe thousands of years *exactly* like that, but it'll occur someplace else.

The Colorado-Big Thompson Flood Occurred During a Drought Year

The other aspect of flood management, that occurred in a drought year, low water supply, low snowpack. It was just a summer thunderstorm event that just *dumped* on this one location in what was otherwise a pretty dry year, an exceptionally dry year.

". . . the pattern out here in the West, is that in years that you have a low snowpack, you can have these *big* thunderstorm events [that are] . . . localized and they don't . . . [make] up for the seasonal lack of water. . . ."

That's usually the pattern out here in the West, is that in years that you have a low snowpack, you can have these *big* thunderstorm events, but they're usually localized and they don't produce that much water in terms of making up for the seasonal lack of water.

In 1985 the Rio Grande Had a Big Snowpack

Down in Albuquerque, I moved down to Albuquerque in '83 as projects manager, and the Colorado River system of course had an *enormous* snowpack that came late in '83. We had more of a normal snowpack in the Rio Grande in '83 and '84, above normal, but not real big. And then in '85 we had a real big snowpack, and we had system water that we had to manage in the Rio Grande, similar to what had to be accommodated in the Upper and Lower Colorado regions starting in '83.

". . . more than fifty million acre feet that passed through the Colorado River system from '83 to '86, and we had a much smaller but similar experience in '85, '86 on the Rio Grande . . . ."

I mentioned earlier that more than fifty million acre feet that passed through the Colorado River system from '83 to '86, and we had a much smaller but similar experience in '85, '86 on the Rio Grande, where it becomes a matter of, okay, how do you get all this runoff cycled through, scheduled through, pushed through the system without creating a worse flood event, how do you moderate it, how do you stay ahead of it and make early releases, and spread them out over a long enough period of time so that you don't have the real high peaks that will do a lot of damage to the developed areas.

So those are two different experiences in terms of flood operations that I think pretty well cover the range of my experience, from a single isolated event that could be very deadly to more of a river basin-type event, where you're working with everything. I'm thinking also of other experiences in New Mexico in the nine years that I was in Albuquerque.

". . . one that we *always* were warned . . . to watch out for, was the Rio Puerco. . . ."

The one that we *always* were warned to be concerned about, to watch out for, was the Rio Puerco. The Rio Puerco is a tributary to the Rio Grande that comes in about halfway between Albuquerque and Socorro. The Rio Puerco drains close to ten thousand square miles of central and northwest-central New Mexico. Heads up near Cuba, and out near, close to Gallup, and then funnels down into this stream that feeds into the Rio Grande.

". . . the Rio Puerco . . . has one of the highest sediment concentrations of any stream on earth. . . .So it's not just a matter of managing the water, but sometimes the sediment can be a real problem, too. . . ."

In the twenties, the Rio Puerco had had some exceptionally high flows that when the Puerco *runs*, it has one of the highest sediment concentrations of any stream on earth. USGS actually has a sediment measurement of 600,000 parts per million, which is just a mudflow. With all this tremendous sediment, it drops its load in the Rio Grande, and it pretty well wiped out the village of San Marcial at the headwaters of Elephant Butte in the twenties. So we were always concerned about rainfall or snowmelt events on the Puerco, and we would experience some, not every year, but every other year, something like that, you'd get a spike flow, but nothing that approached the magnitude of the twenties. I think '28 was when the village of San Marcial was pretty much covered with eight feet of mud at the upper end of Elephant Butte. So it's not just a matter of managing the water, but sometimes the sediment can be a real problem, too.

Storey: When you were up in Lower Missouri Region, you were in the regional office, and the facilities that were damaged were all part of the Colorado-Big Thompson, is that correct?

Calhoun: Yes.

Storey: What kind of a relationship was there between what the *region* would do in terms of flood repairs, to flood damage, and what the project office had responsibility for in repairs?

The Field Office Was Mostly Responsible for Repairs after the Big Thompson Flood

Calhoun: Well, it was mostly a matter of the project office, as the field office, had the responsibility for the day-to-day operations and the actual accomplishment of the work, and the regional office had oversight and review responsibility. At that time, Reclamation was more of a hierarchical organization than we are today. There was less empowerment, and more of a chain-of-command-type concept, even extending to Denver, with Denver's overall *technical* control. This resulted in conflicts and misunderstandings from time to time.

The project manager at Loveland, I think his career goal was to get a GS-15, and he saw the way of accomplishing that was by expanding his responsibility and kind of capturing some neighboring turf, so to speak. There was usually a conflict between him and the project manager in Casper over who was really directing the operation of the Pick-Sloan Eastern Division of the Platte River system, in terms of power operations and water operations.

The region would usually be right in the thick of it. I recall one management discussion with–Joe Hall was the Regional Director and Bob Burling was the project manager at Loveland. Bob Burling was not being very diplomatic about things. He thought he was making a case for why he ought to get a promotion, but it was kind of going the other way and he didn't realize it at first. He said, "You know, we make *all* the management decisions that are of any significance on the entire Platte River system. Those guys up in Casper, really what they do is they just push the buttons and operate the power plants and the diversions after we make the real management decisions."

Joe Hall said, "Well, if that's all the Project Manager in Casper is doing is pushing buttons, he ought to be about GS-7, don't you think?" And that really wasn't quite the tack that old Bob wanted to make there, but he succeeded in getting the regional director at the time pretty angry, and I don't think he ever got his 15 out of the deal.

But, yes, there was a fair amount of bureaucratic maneuvering, turf, depending on the personalities and that sort of thing, but essentially we were a hierarchical organization that was carrying out the mandate of Reclamation to develop the water resources of the West, and the *big* thrust still was to plan, design, and construct water projects, and, when appropriate, turn them over to the locals to operate and maintain, and in other situations, for Reclamation to maintain that hands-on operation and maintenance control. Since then, in the intervening twenty years, we've looked for more and more opportunities to transfer the daily operation and maintenance to the local entities, and, indeed, today we're engaged in transfer of *title* of *ownership* of facilities and projects *if* they are single purpose and *if* they are non-controversial.

Storey: Who was responsible for the budget for repairs, for instance, on Colorado-Big Thompson? How did that work out?

Gordon Wendler, in the Region, Was Responsible for Funding Repairs after the Big Thompson Flood

Calhoun: Well, in a word, Gordon Wendler, Gordon was the program coordinator for the LC Region and Gordon kept a pretty tight handle on every dollar that came into the region, and he made the project manager sweat it out as to which piece of equipment was going to be replaced or where the dollars were going to go and what the priorities were. So that was another example of how you kept control in a hierarchical organization that today, two decades later, we are much more empowered at the area office level in terms of what are the requirements to carry out our responsibilities. And I must say that for Reclamation as a whole, there's been a lot of work the last two decades in terms of coming up with a system of prioritizing O&M dollars so that we can address not only drought, but just the day-to-day management responsibilities of Reclamation.

Storey: Would the region go outside the region to get special moneys for a catastrophe like the Big Thompson flood? How did that work?

Calhoun: Yeah. There was a network of going right to the Commissioner in terms of, "Hey, here's an immediate crisis and we need help. Where is money available anywhere in Reclamation?" Or additional appropriations, even from Congress for a situation like that.

Guess we're going to need to wrap this up here at ten, right?

Storey: Yes, I'm planning on that.

". . . while I was in Boulder City. The Gila in Arizona had like a 100-year flood event on it, just as we were at a critical point in the rehabilitation of Roosevelt Dam. . . . [where the] coffer dams were completely flooded. . . ."

Calhoun: One other flood event that stood out career-wise that I want to describe just briefly, and that was in 1992 or '93, while I was in Boulder City. The Gila in Arizona had like a 100-year flood event on it, just as we were at a critical point in the rehabilitation of Roosevelt Dam. We built temporary coffer dams to protect the exposed area that we were working on as we brought Roosevelt Dam up. These coffer dams were completely flooded. They weren't supposed to take water going over them, but we had so much water in the system that it overtopped the coffer dams. It was a real touchy, critical situation that we got through in *good* shape, without any loss, but it was an event for several weeks there in January and February that we were just hour by hour, day by day, on top of things.

As a result of all that water in the upper portion of the Gila and the Salt River drainage, much of it passed on through Phoenix and ended up in the Corps of Engineers' Painted Rock Dam, midway between Phoenix and Yuma, on the Gila. Painted Rock has a normal capacity of two million acre feet. The Corps couldn't pass all the flood waters. They went into surcharge, and they actually had 2.8 million acre feet of water in Painted Rock at the peak. It is a flood-control facility. There's no permanent pool there. The

Corps then released as much as they possibly could into the normally *dry* downstream Gila system. This did quite a bit of damage to our facilities in the vicinity of Yuma, Arizona, so we were down there working once again with the Yuma Project people as they, first, tried to protect what they could, and, secondly, tried to repair what was damaged.

"A very interesting outcome of this was the enormous amount of sediment that was deposited in the lower Gila and the Colorado River just below where the Gila came in. . . ."

A very interesting outcome of this was the enormous amount of sediment that was deposited in the lower Gila and the Colorado River just below where the Gila came in. The Mexican Government chose to try to capture as much of that water as they could at Morales Dam. Consequently, the whole system got plugged up. There is still an enormous amount of sediment, and we've been trying to assist the Mexican Government with dredging and other means to provide for the delivery of water to Mexico out of the Colorado.

Storey: Let me ask, what was your grade level when you were Head of the Water Operations Branch?

Calhoun: I was GS-13.

Storey: And you had started with Reclamation probably as a GS-7?

Calhoun: No, I started with the Federal Government while I was in college as a GS-2, as a technician while I was a junior in engineering school. And then on point of graduation, I came to work in Reclamation as a GS-5.

Storey: Well, I know you have a meeting, and our time is up, so I'd like to ask whether you are willing for us to use the information on these tapes.

Calhoun: Yes.

Storey: Thank you.

Calhoun: Thank you.

END SIDE 1, TAPE 2. AUGUST 14, 1996.
BEGIN SIDE 1, TAPE 1. FEBRUARY 3, 1998.

Storey: This is Brit Allan Storey, Senior Historian of the Bureau of Reclamation, interviewing Charles A. ("Charley") Calhoun in his offices at the Bureau of Reclamation regional office in Salt Lake City, Utah, on February the 3rd, 1998, at about 9:30 in the morning. This is tape one.

Calhoun: ... on some topics that I think are of considerable significance.

Storey: During our conversations today and tomorrow.

Topics to Discuss in These Interviews

Calhoun: Right. Right. I would like, today, to address the events of the fall of '97, and then tomorrow I would like to focus on some of this litigation that we're involved in on the Rio Grande Project in New Mexico and the El Paso area of Texas, in the Pecos, where we're *defining* these Federal responsibilities, ownership, and *role* in terms of mature water projects. I think that's a very important topic that will be with us for some time in the future.

October 8, 1997, Plane Crash That Killed Eight Reclamation Employees

So, today let me try to capture, and I've got documents that I'd like to submit as part of this, that capture the tragic events of October the 8th, 1997, when a chartered plane left Montrose, Colorado, that morning shortly after 7 a.m., with eight Reclamation employees on board and a charter pilot for Scenic Airlines. After being in the air for some fifteen minutes, the plane crashed, with the loss of life of everyone aboard, and we lost eight of the employees of the UC Region. The Bureau of Reclamation lost eight very valuable employees.

Staff from the Power Operations Group

That's a tremendous loss to an organization like our power operations group here in this region. We lost talent that we will not be able to replace. We lost people whose lives have touched us in a very meaningful way, and I think we would do *well* to *document* this event and what we've *done* to make a record of the careers of these people that we were fortunate enough to work with for a time.

The personalities involved are very diverse. We had, from Montrose, Al Inman and Jon Nees, both of whom had been in Montrose for less than a year. Al Inman had come down from the Burley, Idaho, office of Reclamation, and Jon Nees had come from the Phoenix construction office. Al was the head of the Montrose office with responsibility for the Aspinall Unit, the operation of three dams and hydropower plants, Blue Mesa, Morrow Point, and Crystal. Jon Nees was the area *safety* manager. Like I say, they and their families had only been in Montrose for less than a year when this occurred.

From Page, Arizona, we had Bill Duncan, who was the *head* of the office there in Page, the Glen Canyon Dam operation. Jeff Waite, a powerplant operator in Page, Jim Bloomfield, an electrical engineer, Dee Holliman, a computer specialist. Let me pause just a minute and remember Walt Kaltmaier, an electronics engineer, and Catrina Wall, a computer specialist. So, six employees from Page and two from Montrose, *including* the heads of the respective offices.

Actions Taken in the Region

Upon learning that the plane was *overdue* in Page, Arlo Allen, our chief of our power office and Ann Gold, our head of human resources, were in Page, anticipating the

arrival of the plane for a meeting that had been scheduled. They, of course, were concerned when the plane did *not* arrive. It was only an hour or so flight. The meeting was postponed and they awaited further word. By that afternoon, it was obvious that something was amiss, and they notified the family members that the plane was overdue, and that we had some concerns, but we hoped to get good news that the plane was okay and we'd be back in touch. So, Arlo Allen and Ann Gold had this *difficult* job of *accepting* the fact that something was wrong and notifying the immediate family members.

I was in a meeting at Phoenix, Arizona, at the airport with the seven basin states of the Colorado River at the time, and I was notified by phone around noon that the plane was overdue. As the afternoon progressed and no good news was forthcoming, it was clear that we had a serious situation and that we just didn't know. We followed through in terms of notification of the plane being overdue and missing, and a search was initiated from Montrose.

The flight path from Montrose, Colorado, to Page, Arizona, is somewhat treacherous, and planes *have* been lost, have crashed along that route in the past. It's perhaps even more dangerous because of the *nature* of the terrain and the fact that the topography rises as the ground surface slopes *upward* from Montrose to the southwest along that flight path from around 5,000 feet at Montrose to around 10,000 feet going over the Uncompahgre Plateau, and it's a very *gradual* rise and one that the pilots and the equipment don't always take into account that significant increase in elevation, the requirement.

Awaiting the Report of the National Transportation Safety Board

We're still waiting to hear from the National Transportation Safety Board. Typically their reports follow these crashes by about six months. We're still waiting to hear their official report on the cause of the crash and, to the best of their ability, a determination of exactly what happened. But the plane did crash close to that ridge line. There was a radar track of a portion of the flight, and that was of value in terms of locating the plane.

The crash occurred Wednesday morning. The search commenced Wednesday *afternoon*, all day Thursday, and the plane was found, with no survivors, Friday morning. Recognizing the *critical* situation, I changed my plans to be here in Salt Lake City until we had some knowledge of the situation. The commissioner, Commissioner Eluid Martinez, changed his plans. He was at the airport leaving for a week-and-a-half trip to Australia with Bob Johnson, the regional director in Boulder City, that had been previously arranged. They were on a speaking tour in Australia, and the Commissioner canceled his trip, to stay in the United States and be a part of the effort and address this situation. We really appreciated that very much.

Flew to Page, Arizona, and Rick Gold Flew to Montrose, Colorado

Upon the discovery of the plane Friday morning, we went through the channels and notified–I'd been in touch with the commissioner two days before, and, of course, we were all hoping for any word, any chance of survivors, and that was not to be. As soon as the plane was found, we arranged for Rick Gold, my deputy, and myself to travel to

the locations to visit with the work force and the family members. I flew to Page, Arizona, and Rick took our plane on to Montrose, Colorado, where we had all-employee meetings in each respective location and then visited with family members to reflect on the very tragic situation that we found ourselves in.

A lot of press interest, a lot of press coverage, some of it not in the best spirit or what you would like to see. The press can be very unfeeling, very *obnoxious*, very painful when they *thrust* a microphone in the face of a family member or an employee and express some question regarding, "Well, the plane is missing. You're awaiting word. How do you feel under these circumstances?" And that's *not* something that serves the press and the public well in my opinion. It's something that has to dealt with and makes a difficult situation even more difficult, and that was what we experienced at Page and Montrose. I was able to take some of the brunt of that in Page with a couple of interviews, TV and newspaper, but it was certainly not something that family members or most employees wanted to have to experience. I think that's pretty well an assessment of the *life* and the conditions that we work and live under anymore. It's just something that we noted as a matter of concern.

Visit by Commissioner Eluid Martinez

The commissioner, wanting to do all that he could, came out the following Monday, and we traveled from Salt Lake City to Page, spent time at Page, once again, with the employees and family members, the survivors, and then went on to Montrose. Did the same there, spent the night in Montrose.

Commissioner and Calhoun Went to Burley, Idaho

We went out to Burley, Idaho, because Al Inman had been such a key figure in the Bureau's operations in Burley, Idaho. John Keys, the regional director, wanted to have all employees meet there to address the loss of Al, and John and his folks did a real good job with an all-employees meeting in Burley that the commissioner and I spoke at. From there, the commissioner returned back here to Salt Lake City before going back to Washington. We certainly appreciated his commitment, his involvement, and his personal attention to this tragic situation.

There were a lot of details that had to be addressed in terms of recovery of the plane, recovery of the bodies. The plane, while it remained pretty much intact, it was smashed rather flat upon impact, and the bodies were not easily identifiable. They *were* identifiable, but it was only with considerable effort on the part of the recovery team, *including* dental records, which were limited by fingerprints, DNA, and that sort of thing. Once again, our human resources folks, personnel folks, were involved in these efforts to obtain the information, to assist in the identification of the remains. Very difficult chores but very necessary.

Of course, I mentioned the National Transportation Safety Board, the local law enforcement, the sheriff's office, the coroner's office there in Montrose, *all* did excellent jobs of meeting their responsibilities and addressing this tragic situation.

Regional Office Represented at All Funerals

We then followed with a series of funerals and memorial services, and we made a commitment that Rick Gold and I would cover *each* of these, not necessarily *both* of us at each one, but between us we would cover each of these services, and we did that. In some cases we both were there. This went on for a period of a couple of weeks. Once again, very difficult situations. At times, in expressing yourself, words sometimes are not only difficult to come by, they don't really meet the emotions of the moment, and sometimes the best that you can do is just a good handshake or a hug and acknowledgment of the loss.

Memorial Service in Page, Arizona, at Which Secretary of the Interior Babbitt Spoke and Many Reclamation Executives Attended

This activity went on throughout the month of October, *culminating* in the memorial service that was held November the 6th in Page, Arizona, in which the Secretary of the Interior, Bruce Babbitt, spoke, a very significant message–I don't know what's the appropriate way to capture that as part of this oral history, but we'll figure that out and add a copy of the videotape to share with you. The Department of the Interior, led by the secretary and the assistant secretary for water and science, Patty Beneke, the commissioner, *each* of the regional directors, the top folks in Denver, Felix Cook, head of technical services, Margaret Sibley, acting as the P-A-O [Program Administrative Office] the other half of the organization, were all at the service.

Reflecting back on things, we're still awaiting the final report of the National Transportation Safety Board. We got full commitment and involvement and support from the commissioner and the Secretary's Office, Washington, Denver, and the entire Reclamation organization. We've been told that the effort was handled in a very appropriate way, and while we never want to have to face this sort of thing, *ever*, and certainly never again, we see some benefit and utility to documenting it and sharing this because these sort of tragic things happen. You're never ready for them, but you sure want to try to do the very best job you can under the circumstances.

Moving forward, it was important to the employees and the family members that we acknowledge this loss and, over a period of time, that people get on with their lives, and we certainly tried to accommodate that. We've had very capable individuals step in in *acting* capacities, particularly to head up the organization in Page and Montrose. We're in the process of filling behind these employees and getting on with the requirements of the organization, but to say that it's a milestone in my career is putting it mildly.

It was a very tragic situation that we've gotten through, and I think the most *important* thing is to recognize the role that each of these folks had, what they gave to the Bureau of Reclamation and the Federal Government. It also reflects on the essential message that the Commissioner gave, and that is we all need to recognize that we're here for a limited period of time, and we need to live our lives in a manner that doesn't just reflect on our work and our job, but also reflects on our whole being and our commitment to our families and friends as well as to ourselves.

So that pretty well addresses that point that I wanted to make, and I'll provide you with additional information, and we'll incorporate it in here somewhere.

Storey: Okay. Good.

Calhoun: Let's see. Where do we want to go from here now?

Storey: Are you asking me to ask questions?

Calhoun: Yeah.

Storey: Okay. One of the themes that I see through your career, you were in Albuquerque, and you had floods, '83, '84, '85.

Calhoun: Right.

Storey: Then you came here, and you've had floods here. Maybe that's a good sign for the water users when you're around, but, more importantly, what kinds of special issues and problems does flooding raise for Reclamation? What kinds of things do you see as requiring attention, requiring concern, and so on?

Issues Related to Flooding

Calhoun: Well, the very nature of flooding, of course, implies damage, a potential for property damage and loss of life, and that's something that you want to try to prevent or minimize. We in the Bureau of Reclamation share authorities for flood control and flood operation with the [U.S. Army] Corps of Engineers.

Corps of Engineers' Role in Flood Control

The Corps of Engineers 1944 Flood Control Act, for the most part, gives the Corps of Engineers the authority to direct operations of dams, Corps of Engineer dams, and other agencies during flood control operations, *if* there is an authorized flood control purpose at that dam and reservoir, which, in most cases, that's the situation. So, we work very closely with the Corps when we're in a full-blown flood control operation.

Expects Flood Forecasting to Improve

Now, *anticipating* the flood event is a critical part of this, and this year, we're gaining enough knowledge on the El Niño phenomenon that we can, we hope, do a much better job of forecasting and anticipating these flood situations. There's a lot of press coverage, a *lot* of public interest, as there should be, not only in the potential of flooding, but also just the general climatic and global events that bring these things about. *Tremendous* press coverage on El Niño that we've seen, that we're into this time.

1983 Was a Big El Niño Year

I think it's certainly prudent to *learn* from the 1983 experience, which was a *big* El

Niño year in the Colorado River drainage. The precip was not really above normal during most of the winter and early spring. It was only l*a*te in the spring of 1983–April, May, into June–that we had the tremendous precip that led to the enormous amount of water that we had to accommodate in the Colorado River system.

It's Hard to Anticipate Operations When There Is Heavy Moisture Late in the Season

That's tricky, because if you have the snow pack building up over the entire winter and spring period, you can anticipate much better what your operations will have to be to be to accommodate that snowmelt and runoff. When it occurs *late* in the year, as it did in '83, you can really get in a squeeze.

". . . we're running extra water through the system this year *just* to be on the safe side . . ."

We want to avoid that now and in the future, so, at the present time, we're running extra water through the system this year *just* to be on the safe side in the event that '98 is very wet in April, May, and into June, as it did in '83. If it turns out dry, we'll probably be criticized for over-anticipating, and, quite frankly, we'll just have to wait and see. The flood operations on the Colorado are different than the ones I experienced in Albuquerque on the Rio Grande. For one thing, the annual discharge of the Colorado is about an order of magnitude or approximately ten times what we have on the Rio Grande. We're talking in terms of 15 million acre feet a year on the Colorado, as opposed to some 1 to 2 million acre feet on the Rio Grande, and yet very much similar problems and concerns.

"On the Rio Grande, the *Corps* of Engineers is a much bigger player because they have their own facilities to operate as well as Reclamation's. . . ."

On the Rio Grande, the *Corps* of Engineers is a much bigger player because they have their own facilities to operate as well as Reclamation's. The Corps has a major dam at Abiquiu on the Rio Chama, a tributary of the Rio Grande, and also at Cochiti, on the mainstem of the river and above Albuquerque. Reclamation and the Corps work very closely and *carefully* together to accommodate the operation of Reclamation's dams and reservoirs at Heron, on Willow Creek, a tributary of the Rio Chama, El Vado on the Rio Chama, and then Elephant Butte and Caballo downstream of Albuquerque on the river and mainstem. So it's much more of a coordinated–two Federal agencies coordinating the operation there, as opposed to the Colorado River where, essentially, all the dams and reservoirs belong to the Bureau of Reclamation.

Two Regions Involved in Operation of the Colorado River

We do have two *regions* involved. This is the Upper Colorado Region, headquartered here in Salt Lake City, and the Lower Basin Regional Director's office is in Boulder City, Nevada, and the dividing point, of course, is Lee's Ferry, which separates the upper basin from the lower basin for [Colorado River] Compact and other purposes.

". . . we have a *total* of around 60 million acre feet of *storage* on the Colorado River stream system that has an annual discharge of around 15 million acre feet. . . ."

The two big storage features on the Colorado River system are Glen Canyon Dam, which we operate, and Hoover Dam, which is under Boulder City. Together, these two reservoirs, Lake Mead and Lake Powell, can accommodate in excess of 50 million acre feet. We have an additional approximately 10 million acre feet of storage in the system at other, smaller reservoirs, so we have a *total* of around 60 million acre feet of *storage* on the Colorado River stream system that has an annual discharge of around 15 million acre feet. So you can see there's almost a four-year *carryover* capability when the reservoirs are full.

". . . on the Colorado River system . . . we had three wet years in a row. The system filled and spilled . . . and, in addition, we passed in excess of *50* million acre feet of water through the system . . ."

Not only was '83 a wet year, but on the Colorado River system, '84 and '85. So we had three wet years in a row. The system filled and spilled, all 60 million acre feet of storage was pretty much spoken for, and, in addition, we passed in excess of *50* million acre feet of water through the system above the requirements of downstream users in the United States and Mexico.

"Immediately following the . . . wet years, after '86, we went into a six-year drought on the Colorado River system . . ."

Immediately following the '83, '84, '85 wet years, after '86, we went into a six-year drought on the Colorado River system where, for *six* years, we averaged only two-thirds of normal runoff. So the system worked well in terms of addressing both the floods, the extra water, in the wet period and the following dry period.

". . . since '92, '93, we've been into essentially a normal and above-normal runoff . . ."

We're now into–since '92, '93, we've been into essentially a normal and above-normal runoff, and we're very closely monitoring the situation this year, because, as I mentioned, the obvious–

END SIDE 1, TAPE 1. FEBRUARY 3, 1998.
BEGIN SIDE 2, TAPE 1. FEBRUARY 3, 1998.

Storey: ... that's right, because of the '83 El Niño experience.

Glen Canyon Dam Is Operated Differently Now than in 1983

Calhoun: Yeah. Monitoring and just doing our job. We have some *different* activities and *different* modes of operation now than we had in '83.

Grand Canyon Protection Act of 1992

Adaptive Management Work Group for Glen Canyon Dam

For one thing, the operation of Glen Canyon Dam was addressed in Public Law 102-575 in 1992, which gave us the Grand Canyon Protection Act,[3] which authorized an adaptive *management process* to *assist* the Secretary of the Interior *and* the Bureau of Reclamation in the *operation* of Glen Canyon Dam so that, to the extent possible, the resources of the Grand Canyon are more adequately addressed and protected. This is a process that we're *following*, and it's working out quite well.

Glen Canyon Dam Adaptive Management Work Group Has Met Twice

The adaptive management work group has met twice. We met first, the initial meeting, last September in Phoenix and the second meeting last month, to *consider* the *opportunities* for operating Glen Canyon Dam in a manner that, as the *act* requires, protects the resources of the Grand Canyon. These resources are *diverse* and, at times, *competing*.

Endangered Species in the Grand Canyon

For example, the endangered species in the Grand Canyon in the area below Glen Canyon Dam, of course, the Endangered Species Act requires that we take these into consideration. We do not want to *lose* any of these species. The big river fish have been a matter of concern throughout the entire Colorado River drainage. The four species of fish are the Colorado River squawfish, the razorback sucker, the humpback chub, and the bonytail chub. In the Grand Canyon reach, it's particularly sensitive that we address the requirements of the humpback chub.

Colorado River's Natural Hydrograph

The natural hydrograph for the Colorado River featured very high flows during the spring runoff and generally *low* flows during late summer, [and the] following winter.

Colorado River Conditions for Native Fish Evolution

These fish *evolved* in an environment that was usually *turbid*, high sediment concentrations, and an extreme range of *discharges* seasonally and from year to year in that system.

Dams Modified the Environment of the River and Exotic and Predator Species Were Introduced

With the construction of dams, of course, we modified that environment, and perhaps even *more* significant has been the introduction of new species of exotics, predators such as the striped bass, catfish, even some of the smaller panfish that prey upon the native

3. Title 18 of the Reclamation Projects Authorization and Adjustment Act of 1992, is the Grand Canyon Protection Act of 1992.

fish, and particularly consume the young fry and essentially just *decimate* the *annual crop* of these native fish to the point that it's very difficult to sustain the populations.

So we have, you would think, well then, let's look at the operation of, say, Glen Canyon Dam so that we more closely mimic the natural *hydrograph* to *accommodate* the habitat requirements for, in this case, the humpback chub.

Artificial Flood Flows Through the Grand Canyon in 1996

We achieved this in 1996 with an artificial flood flow. Late March, early April of '96, we released a higher flow than we had achieved at any point since the high flow years of '83, '84, '85.

". . . it had been ten years since we'd had a flow that exceeded the powerplant capacity. . . ."

So it had been ten years since we'd had a flow that exceeded the powerplant capacity. The powerplant capacity at the Glen Canyon Dam is around 31,000 cfs. We had been well below that, both on account of the six-year dry period that I mentioned and also attempting to achieve less fluctuations in the river system.

The Artificial High Flow Was Aimed at Habitat Requirements like Backwaters and Building up Beaches

So, in '96, in order to address some of the habitat requirements of the endangered humpback chub, but also to better utilize the *sediment* in the river system, to build up beaches and to restore some backwater *habitats*, we initiated this high flow of approximately 45,000 cfs for a week-period. Tremendous press coverage.

Secretary of the Interior Kicked off the High Water Release

The Secretary of the Interior was there to kick off the initial release. He opened the first bypass valve. I was able to open, I think, the second or the third one as we achieved the operation that's *documented* with the picture on the wall in terms of the full bypass as well as full powerplant capacity for a period of a week.

Kanab Amber Snail

We achieved much of what we set out to do in terms of increasing the beach areas and improving the backwater habitats. But there are other species that are endangered in that reach of the river that are not necessarily benefitted from high discharges. For example, we have the Kanab amber snail, and part of their habitat extends right down to the water's edge. So it was a matter of concern how do we protect the equally endangered Kanab amber snail so that we don't flood them out and wash them away as part of this operation. This was done through a rather intensive effort at the one location that the Kanab amber snail is found in Grand Canyon, and that's Vacey's Paradise. Since then we've determined that we can better accommodate the requirements of the Kanab amber snail by *locating additional populations* of these in secure sites that would not be

affected by flooding. So, through the cooperation of the Fish and Wildlife Service, National Park Service, Arizona Game and Fish, Reclamation, and others, we're now setting out to establish other populations at suitable locations for the snails. Other endangered species that are affected include the bald eagle, the peregrine falcon, and some of the other fish.

"We have created a blue-ribbon trout stream with the cold water, clear water releases from Lake Powell. . . ."

One *improvement* that has resulted from the operation of Glen Canyon Dam is typical of many streams below our dams in the Western United States, and that's the reach of the Colorado River immediately below Glen Canyon Dam for about fifteen miles down past Lee's Ferry. We have created a blue-ribbon trout stream with the cold water, clear water releases from Lake Powell. The trout just flourish and thrive. The rainbow trout fishery is noted, and it's something that's very *keenly protected* by the trout fishermen and the fishing guides who make their living taking fishermen along this reach to catch the trophy trout.

"This is an example of a *competing* interest that's very *significant* in the minds of Trout Unlimited and the trout fishermen . . ."

Rainbow trout are an *exotic*, introduced species in this location, so there are some that would say, well, they don't deserve the consideration that the native fish should have. They're *certainly* not covered under the Endangered Species Act because they're not endangered. This is an example of a *competing* interest that's very *significant* in the minds of Trout Unlimited and the trout fishermen, and one that has to be taken into consideration with our operation of Glen Canyon Dam, but it sometimes is competing or even at cross purposes with the native endangered fish requirements.

I've gotten quite a bit aways from the flood control operation–

Storey: That's fine.

Calhoun: –and your question, but I hope I've gotten into some interesting aspects of the operation of our facilities. As I indicated, the operation of Glen Canyon Dam and Hoover Dam are linked very closely because the two of them constitute such a high percentage of the total storage available in the Colorado River system.

Southwestern Willow Flycatcher

Now, there are other endangered species that, under the Endangered Species Act, we certainly want to protect and meet our requirements for. One that's a recent interest is the Southwestern Willow *Flycatcher*. This is a *neotropical* bird that *visits* the southwestern United States during the warmer part of the year and during winters in Mexico or Latin America. The Southwestern Willow Flycatcher *is* endangered.

Lawsuit by the Southwestern Center for Biodiversity over the Southwestern Willow Flycatcher

A portion of their habitat is the *upper* end of Lake Mead, and litigation was brought by the Southwestern Center for Biodiversity out of Phoenix, who alleged that, with our *operation* of the Colorado River system in the last several years, and particularly the operation in 1997, we would be filling Lake Mead to a *higher* level, once again because after the six years of drought in the late eighties and early nineties, we'd drawn Lake Mead down, and willow and other vegetation had developed at the upper end of the reservoir that was being inundated as the water level came up in the reservoir, and the Southwestern Biodiversity group felt that this was not to the benefit of the Southwestern Willow Flycatcher. Some of their nesting area would be inundated, and the loss of the vegetation, particularly the willows, would be detrimental to the birds, so they sued in Federal court to prevent the filling of Lake Mead last year. In fact, their suit *required* that we should *lower* Lake Mead and pass water through the system in order to prevent the inundation of this upper end of the reservoir.

This was matter of great concern to the seven basin states as well as to the Bureau of Reclamation and other Federal agencies. The litigation was defended in Federal court by the Solicitor's officer, and we were successful in prevailing against that. It's been a very interesting *example* of the type of activity we get into in pursuing *conflicting laws*. You know, on the one hand, you could say, "Well, but prudent flood control operation would be to store that water in the reservoir and release it gradually and utilize the full reservoir capacity, and yet here was at least an *unsuccessful* attempt to *restrict* the use of Lake Mead from doing just what we thought was clearly authorized to do. I'm sure we'll continue to be challenged as these competing interests are worked out in both the courts and through other *processes*.

". . . advantages of an adaptive management process that provides a forum for all these competing interests . . . to discuss the *varied* concerns and interests and try to work this out . . . as opposed to litigation . . ."

I'd like at this point to once again emphasize the advantages of an adaptive management process that provides a forum for all these competing interests to get together and to discuss the *varied* concerns and interests and try to work this out through adaptive management and discussion and scientific study, as opposed to litigation, and I think that's *exactly* what we're about with our Glen Canyon Dam Adaptive Management Work Group.

Grand Canyon Monitoring and Research Center

We're assisted by a new entity, and that is the Grand Canyon Monitoring and Research Center. This is housed in Flagstaff, Arizona, headed by Dr. Dave Garrett [phonetic]. He has about ten employees who are *continuing on* the scientific studies that were initiated back in the early eighties by Reclamation to determine just what *is* the effect of our operations of Glen Canyon Dam on the Grand Canyon.

". . . the beaches are of particular interest to the rafting community, which is a significant interest group . . ."

Not only are we concerned about the biological endangered species, the sediment–I might just digress a minute and mention that sediment is particularly of concern to the rafters, who like to, as they raft and flow through the Grand Canyon–of course, to cover the entire Grand Canyon is typically a two-week trip, and at nights it's nice to have a sand beach to camp on as opposed to the rocky points. So the beaches are of particular interest to the rafting community, which is a significant interest group there in the Grand Canyon, as well as elsewhere. Once again, an interest that may be somewhat in competition or even opposed to some of the other values.

Native American Issues

Other responsibilities include the cultural resources. The Grand Canyon is very rich in cultural resources associated with a number of Native American tribes. The Navajo Nation has some very strong cultural ties to the Grand Canyon and adjacent areas, as does the Hopi Tribe, the Paiutes, the Hualapais, the Havasupais. The latter two, of course, actually *occupy* portions of the Grand Canyon. Some of the other tribes visit the Grand Canyon and have visited it for many centuries as part of their–in the case of the Hopis, there are some very significant religious aspects to locations within the Grand Canyon. So these are also responsibilities that we address, and the Native Americans are well represented in the Adaptive Management Work Group efforts, as are the environmental groups, the recreation groups, the other Federal agencies. It's a worthwhile endeavor and one that we are committed to.

Storey: All of these interest groups make it difficult for Reclamation to manage, I would think. How do you get a system that works that eliminates the tensions somehow, or do you?

". . . I don't know as you'll ever eliminate the tensions of the competing interests, but . . . *factual* information and data, *that* goes a long way. Now, this doesn't come without cost. . . .

Calhoun: Well, I don't know as you'll ever eliminate the tensions of the competing interests, but to the extent that you can develop knowledge, do scientific studies to *address* these concerns and present *factual* information and data, *that* goes a long way. Now, this doesn't come without cost.

"We're investing around 7 million dollars *a year each year* . . . in the Grand Canyon Monitoring and Research Center effort . . ."

We're investing around 7 million dollars *a year each year*, continuing, in the Grand Canyon Monitoring and Research Center effort to conduct these scientific studies in the areas that I've outlined here, ranging from cultural resources to the biological aspects, sediment, recreation.

Reclamation and the National Park Service Share Responsibility

It's a *shared* responsibility; it's not just the Bureau of Reclamation. Of course, the National *Park* Service has jurisdiction over most of this area. Grand Canyon National Park is one of the crown jewels of our national park system in this country, if not in the world, and has *tremendous* public support and public interest. I don't know as we'll ever eliminate the competing interests or, for that matter, even laws that are sometimes at

cross purpose with each other in terms of addressing these resources, but to the extent that we can sit down and discuss them and direct scientific studies and gain better information on the *effect* of these operations, that's a lot better than fighting it out in court.

Storey: True, but say you have a scientific study on the Willow Flycatcher, one side says one thing; one side says the other. How do you make the studies work for Reclamation? What's the process?

Calhoun: Well, my response, of course, is, it depends. In the case of the Southwestern Willow Flycatcher, we have teams in Reclamation that are working with teams in Fish and Wildlife Service and other agencies, both state and Federal, to gain a better understanding of this bird and what its requirements are. There are many people that feel that the Southwestern Willow Flycatcher, in that its habitat requirements particularly for nesting and during the summer months are riparian areas adjacent to streams, they see this bird as an indicator of the overall *health* of the ecosystem, and to the extent that the riparian areas have been degraded by perhaps *overgrazing* or *inundation* or other activities of man, *consequently* this bird that perhaps never was as widely spread or in such numbers as other species, we need to gain more information. What are the requirements of the bird? Where else is it located? What is its range of habitat? How *critical* is this location as opposed to some other location? So that we do take *positive* efforts to not only prevent the bird from becoming extinct, but to recover it to a reasonable degree.

Upper Colorado River Recovery Implementation Program

In my opinion, *that's* the essence of the implementation of the Endangered Species Act, is to look at the individual species that are in jeopardy, try to gain a better understanding of what their life cycle requirements are, and take appropriate steps to protect them. We're doing this in the *upper* Colorado River system through our Upper Colorado River Recovery Implementation Program, addressing the requirements of the *four* big river fish that I mentioned earlier.

Lower Colorado Region Approach to Habitat and Endangered Species

In the Lower [Colorado River] Basin, Reclamation is pursuing a slightly different tack through a multi-species conservation program that looks at a much broader range of animals and plants, to some extent, through the multispecies habitat conservation program that will look at only requirements of the endangered species on a more comprehensive habitat requirement basis. Different approaches by different agencies, different professionals have varying support for these activities, but the bottom line is they're *all intended* to address the needs of the endangered species, which *generally* amount to protecting and improving the habitat requirements.

Storey: Let me try to ask it a little differently. If I'm understanding adaptive management, it's taking into account a lot of varied interest groups' concerns and carrying out studies so that Reclamation can best manage the resources in the public interest. How do we go through a process where, even though we're not satisfying everybody, we get them to buy

in so that we don't end up in court? Is there some sort of a *system* that you see forming here?

Calhoun: Well, I think we're developing that with this adaptive management work group. You know, once again, it's not just Reclamation and Reclamation's authorities and responsibilities at stake here. You've got Reclamation's operation of Glen Canyon Dam that affects the resources downstream, *particularly* through the Grand Canyon National *Park*. So how *do* we meet our responsibilities under the law and address these competing interests? The way we're going about it is we sit down in a room around a big table, with an agenda of concerns, and walk through it over essentially a day-and-a-half period twice a year. The representatives *at* the table are appointed by the Secretary of the Interior.

Originally the Mandate Was to Maximize Power Production at Glen Canyon Dam

One group that's very important that I failed to mention that is provided under the Grand Canyon Protection Act are representatives of the states, the seven basin states are there at the table, *as are* representatives of the power customers that benefit from the hydropower that's generated at Glen Canyon. You know, Glen Canyon Dam, being built back in the sixties and operated for the better part of two decades, according to the law, we were to maximize the hydropower production at that facility, and that's what we did.

Powerplant Discharge Varied a Great Deal

As a result of that, we had some severe fluctuations with the powerplant being operated to meet the load requirements of the electric utility system in the southwestern United States, and the river bounced around quite a bit, with powerplant discharge varying tremendously over a period of time. That resulted in strong concerns that eventually resulted in the Grand Canyon Protection Act that set up this adaptive management *program*. This *concept* is *being* applied elsewhere in the world, but I think we're right at the very cutting edge of addressing these problems that are *typical* of the operation of major dams and river systems around the world. I think that as we *progress* and *learn* and *go forward* with this, not without some difficult, *tough* discussions and difficult decisions–[Brief interruption.]

Storey: So it sounds to me like you have a room with maybe forty-five or fifty people in it?

Calhoun: Yes. I think there's twenty-six Adaptive Management Work Group members, and then, typically, each member has a staff support person sitting behind him. So, yeah, that's about right, probably fifty-, sixty people.

Storey: And you can do this in a day and a half.

Calhoun: Well, yeah. I have to tell you that there is a strong sense of commitment to the concept and, in a *degree*, to seek consensus, and that has worked *very well* in the two meetings that we've had. Now, there's *also* an effort that needs to be discussed here.

The Glen Canyon Dam Adaptive Management Work Group Has Technical Work

Groups That Focus on Specific Topics and Meet More Often

In addition to the Adaptive Management Work Group, there are technical work groups that *focus* on *specific* areas of concern, and the technical work groups meet much more often than that. That's more of a continuous effort on their part, including *monthly* meetings.

At the present time, we're *looking* very *closely* at this spring *runoff,* and if this turns out to be a wet year and above normal, and we won't know that probably until late in the spring, as I discussed earlier, we would like to have another *high flow* artificial flood. We would very much like to achieve that. That's the consensus. There're some concerns. Once again, the amber snail, Kanab amber snail, and other concerns, particularly biological concerns that maybe we don't *know* enough to say with a complete degree of certainty this will benefit this particular species, but generally there is a consensus that we should strive to achieve these floods, these high releases, *if* the hydrology provides–if the natural runoff provides the opportunity to do that. We *won't know* that probably until April of this year. Right now, it looks like about a 10 percent chance, but you can't wait until April and then pull this off in a matter of a few days or a few weeks. We need to make preparations.

Some of the agencies that are represented at the work group, like National Park Service or Arizona Game and Fish, require *permits* in order to *access* the area of the raft trips necessary to conduct the scientific studies that would *occur* during such a flood event. You don't get the *permits* in a matter of days; it takes weeks to get the paperwork all done. Everybody's working together and cooperating, but these are the type of issues that we get into, too: How do we address the–

END SIDE 2, TAPE 1. FEBRUARY 3, 1998.
BEGINNING SIDE 1, TAPE 2. FEBRUARY 3, 1998.

Storey: This is Brit Allan Storey with Charley Calhoun on February the 3rd, 1998.

... fortunate enough to actually have a high moisture year.

Calhoun: Right. And that was big part of what our discussion centered around last month, with the commitment to go forward *if* we have the water to do it with another flood flow. It's particularly opportune at *this* time, because in the late summer and fall of '97, the tributaries that come into the Colorado River below Glen Canyon Dam flowed, particularly the Paria River, which is dry most of the time, we had probably something close to a ten-year frequency event on the Paria in August and September that kicked a *lot* of sediment into the stream system. Rather than that sediment just washing on down to Lake Mead, we'd like to have a high flow event to *push* some of it up *out* of the bottom of the river onto the adjacent banks, *build* up these beaches, improve these backwater habitats to achieve a more natural condition in the Grand Canyon.

You think of sediment, mud, silt, clay, sand as something that's kind of to be avoided, but it's a real *critical* resource in the Grand Canyon because that's what allows vegetation to take hold, provides for these beaches for the rafters to put their sleeping

bags on at night, and also the *backwaters* are important *nursing* areas for the young humpback chub.

Reclamation Is Looking at a Temperature Control Device for Glen Canyon Dam

One other activity that we discussed, that Reclamation's pursuing at Glen Canyon Dam is similar to what we've done in Shasta Dam and other locations, and that's we're studying a temperature control device that would allow us to adjust the temperature of the discharge in the water coming out of Glen Canyon Dam to more closely mimic the natural conditions. As I mentioned earlier, without the dams, the Colorado River was a very muddy river that varied tremendously in the amount of discharge and also the temperature of the waters. In the winter and early spring, with the spring snowmelt, the waters are quite cold. Then as the summer progresses, the waters would warm ~~to~~ significant[ly]–that's no longer the case because the tremendous reservoir that discharges from Lake Powell at something in the forty degree, forty-five, forty-eight-degree range year 'round. That's okay during the spring and early summer, but the young *native* fish need the warmer temperature later in the summer and the fall in order to survive.

So we're looking at a temperature control device that would allow us to *direct* water from the upper part of the reservoir that's *warmer* in the summer months to meet the habitat requirements of the endangered fish. That's different, of course, than the situation at Shasta in California, where the requirement was to achieve *cooler* water downstream late in the summer. *There* the salmon and trout were suffering from releases that were too *warm*. So it kind of depends on which fish you're working with, which are you trying to benefit.

Storey: But either way you go, it's an expensive proposition to put this temperature curtain on.

Calhoun: It certainly is.

Storey: Who's going to pay for it?

Reclamation Believes it Has Authority to Build a Temperature Control Device That Is Nonreimbursable

Calhoun: *We believe* that Section Eight of the Colorado River Storage *Project* Act clearly *authorizes* nonreimbursable appropriations to address the fish and wildlife opportunities or requirements in the Colorado River system. *That* was the funding that was used for the temperature control device at Flaming *Gorge* Dam upstream on the Green River, and that's been very successful, and that's been in place for over twenty years now. That works very well. We'd like to do something similar to that at Glen Canyon.

Storey: 1961 you went to Denver, 1980 to Amarillo, and 1983 to Albuquerque. Back in those days, would you have ever been having a conversation like this?

Calhoun: Well, not *exactly* like this, but *certainly* to the extent that we can gain from the experiences of others who've been at it for a while, yeah, I've very much benefitted from discussions with senior employees, peers, supervisors, or folks that I worked with in

terms of just *learning* from their experiences, and that's kind of what I consider this oral history to be, is a sharing of experience, sharing of knowledge.

I've had many mentors, many acquaintances, many *friends* in my career in Reclamation that were very willing to *share* their knowledge and experiences, and, you know, to the extent that you can learn from that, that's well and good. Some notable examples–when I got to Amarillo in 1980 as head of Water, Land, and Power Operations, there was an individual in Water Operations who'd lived most of his life in the Texas Panhandle, a good engineer, a good solid water person. As a very young child, he had seen the Canadian River, which is the dominant river system there in the Panhandle in northern Texas, flood in 1941 and wash out all the bridges so that *access* between communities was cut off for some period of time. When Richard Oakes described the last bridge being washed out in the flood of 1941, I kind of sat up and took note, you know, and paid attention. That was probably one of these once-in-a-century-type flood events that certainly left an impression on him and gave me some insight into what could happen when that happens again, and it certainly will happen again.

Reclamation on the Canadian River System

We've made significant changes in the Canadian River system, *notably* the *Canadian* River Project that Reclamation built back in the sixties consists of the dam, Sanford Dam, which contains water in Lake *Meredith*. That water is used as a municipal water supply for eleven cities in the Texas Panhandle, from Amarillo down past Lubbock. Flood control is also an authorized project purpose there. I'll just throw out some examples of this sort of thing. Certainly, the regional director in Amarillo when I got there, Bob Weimar, had had the job that I occupied, and this is sometimes kind of both a blessing and a curse, because if your supervisor has had the job that you've had, then they have certain expectations about how you ought to do the job and that sort of thing. Of particular concern to Bob Weimar when he'd had the job that I occupied in Amarillo was some of the flashy flood events and some of the safety-of-dams concerns we had, particularly over in Oklahoma.

Altus Dam

There are a number of projects in Oklahoma that Reclamation built and turned over to local water users, and some of them were–the operation of Altus Dam, for example. There was always a concern that the spillway at Altus Dam was not *adequate* to address the largest *flood* that could occur. So we, usually in the spring starting in March through into the summer, there was always a concern over high precip event that would occur in the watershed above Altus.

Weimar made it pretty clear that when he had my job, he stayed pretty close to the telephone on the weekends in case a National Weather Service weather alert came through, and he expected the same with me because, as regional director, he no longer figured that was his responsibility, to have to worry about that. You know, you sit up and take notice and pay attention to that sort of thing.

Native American Issues in Albuquerque

When I went on to Albuquerque, I was visited by a retired gentleman, Ace Elliott, who had had that job, and he said, "Well, how are you getting along with the Indians?" The Native Americans are a *special* concern to Reclamation in Albuquerque with that area office because we have some *very* significant responsibilities, *particularly* to the six southern pueblos. His concern was, "How's your relationship with the six southern pueblos?"

I said, "Oh, I think it's pretty good. We certainly have contact. We stay in close touch with them. What was your experience?"

". . . you need to realize that *water* and *water* in those ditch systems through those pueblos is a religious thing, and it's *very*, *very* important to those pueblos that they be able to see the water flowing through the ditches in each of the pueblos. . . ."

He said, "Well, it took me a while to understand this, but you need to realize that *water* and *water* in those ditch systems through those pueblos is a religious thing, and it's *very*, *very* important to those pueblos that they be able to see the water flowing through the ditches in each of the pueblos." As we put more emphasis on water conservation and more efficient use of water, we also need to understand that, from their perspective, just the fact that the water is *there* is critically important to them. So we need to factor that in as we go about our *water* management responsibilities, and if there's a situation where you need to maybe *curtail* the use in a canal system someplace, try to do it in another location than in that upper portion from Cochiti Dam down to Albuquerque, because *five* of the six pueblos were there, and you need to operate that system in a way that provides for this water flowing through their ditch system.

You know, I pondered that. Well, gee, that's kind of contrary to maybe good water management and efficiency, but in discussing it with the staff and kind of following up on this, I appreciated him sharing that insight. He said that early on they had *cut off* the water for some period of time because nobody needs the water flowing through their ditch all the time. That's just not good water management practice, and he caught hell for this, and he was good enough to share his experience with me. So he gave me some insight that–I think that we continue with that type of concern in our operation today.

Storey: How have Reclamation's contacts and work with Native Americans changed over the years, or have they, in your experience?

Trust Responsibilities for Native Americans

Calhoun: I think Reclamation, the Department of the Interior, and the Federal Government, I believe, and I certainly hope, take much more seriously our trust responsibilities today than we have in the past. I think this is the result of a greater *awareness* and *appreciation* of the Native American cultures and *also* a clear delineation of their legal entitlements, and that's the way *I* see it. Now, that's not to say that we still don't have a lot of work to do and a lot of responsibilities as we go forward.

"In many *instances* . . . Native American water requirements were not fully addressed, and *today* we're having to come back and accommodate that in a number of locations, and it can be very expensive . . ."

In many *instances* in the western United States, for whatever reason, the Native American water requirements were not fully addressed, and *today* we're having to come back and accommodate that in a number of locations, and it can be very expensive to secure a water supply for a Native American tribe when the water's already *spoken for* and being put to other uses.

Storey: Are we running into that in this region?

Calhoun: Yeah.

Storey: Upper Colorado?

Calhoun: Oh, yeah. Very much so, at a number of locations. I think we are throughout Reclamation.

Storey: What about changes over the years in Reclamation in environmental issues, say, from the time you were down in Amarillo and Albuquerque to up here? Has there been a change that you've noticed?

National Environmental Policy Act and Changes at Reclamation

Calhoun: Yes, but I think a more profound change has occurred during my career. I started with the Federal Government in 1960 in college and came to Reclamation in '61. The National Environmental Policy Act [NEPA] of 1969 and subsequent amendments and follow-up implementation have had a very *profound* effect on *all* Federal agencies, particularly on the Bureau of Reclamation. The *NEPA* process is just ingrained into the Bureau of Reclamation as the way we go about our business. It *provides* us with the opportunity for public input, public involvement, scoping, and *looking* at the impacts of our actions in a manner that addresses the environmental concerns and issues. If we didn't have it, we would *not* be able to do as good a job as we do. It's a very important, ingrained part of our culture. That was not always the case.

". . . it took the Federal Government a while to set up the procedures for implementation of [NEPA] . . ."

It *took us a while*. I think it took the Federal Government a while to set up the procedures for implementation of the act, but when you combine the National Environmental Policy Act with the Endangered Species Act, and they work somewhat separate and apart, but mostly hand in hand, you *must* have a concern for the natural ecosystem and what impacts are resulting. This *can* result in less development, less damage.

Some people would say it's an impediment to progress. Others would say it's not *nearly enough* of a *safeguard* from damaging activities on the part of the Federal

agencies or other parties. Certainly the focus, the main *burden*, of each of these laws is on Federal *agencies* and, to a lesser extent, on the non-Federal entities, but I think we've incorporated the concepts and requirements of the law into our day-to-day activities. That's not to say we always agree with the Fish and Wildlife Service or environmental *litigants* who are saying that, you know, we're not doing enough and might bring suit, as in the case of the Southwestern Willow Flycatcher.

Storey: But on the other side we have the water users who, at a guess, are often saying, "You're doing far too much with *our* water."

Concerns of Water Users about New Trends at Reclamation

Calhoun: That's true. Yeah. We might just get into that a little bit now and hopefully further in the next session, but that's a *big* concern that's driving a *lot* of things in Reclamation today.

Let me kind of recast the statement as a situation where you have an endangered fish that historically has occupied a stream and now, because of drought and depletions to the stream, you no longer have adequate water supplies in the *stream* to allow this fish to continue to survive. What are you going to do?

The Silvery Minnow on the Rio Grande

That's *exactly* the situation we found ourselves in on the Rio Grande between Cochiti and Elephant Butte in 1996. We were suffering *very* low, like one third of normal, snowmelt runoff. The conservancy district, Middle Rio Grande Conservancy District was taking *all* the water and diverting it from the river into the canal system, and the river was drying up. The endangered river and silvery minnow were *dying*, and I mean just as the pools dried up and the river went away, tremendous loss of an endangered species.

Reclamation tried to be persuasive to the conservancy district to allow some water in the river. The conservancy district and their legal advisors took the position that, no, they required *all* of the water for their irrigated area, for their irrigators to use, and *we* were headed towards some *real* serious legal confrontation.

Reclamation Was Able to Use Surplus Albuquerque Water to Protect the Silvery Minnow

Reclamation took the initiative to work with the city of Albuquerque and utilized some of their temporary *surplus* waters to direct them into the system so that the city of Albuquerque's temporary surplus waters could be used by the irrigators, and this would free up some of the natural river water to at least get by a very critical period for the silvery minnow. We got through just by the skin of our teeth in '96.

'97, last year, we had a *good* water supply, and things were not nearly so critical, but it created a *climate* of concern, if not *hostility*, that, "Now, wait a minute. Who owns the water? Who gets to call the shots here? In an even drier situation, who's going to prevail? Will the fish get the water or will the people get the water?"

Tension over Use of Rio Grande and Pecos River Water During Droughts Has Resulted in Several Court Cases

This is now resulting–this and some other actions have been under way–in some very interesting *court* cases in New Mexico, particularly regarding the Rio Grande and the Pecos [rivers].

Elephant Butte Reservoir and a Lawsuit over Who Owns the Water

On the Rio Grande Project, further down river below Albuquerque, the Rio Grande Project, of course, is one of our *older* Reclamation projects. Elephant Butte Dam, completed in 1916-1917, is the major storage for the project. There's approximately 150,000 acres of irrigated land along the Rio Grande in southern New Mexico and the El Paso area of Texas, and the question before the court is, who owns the water? We're taking the position that the Bureau of Reclamation *owns* the water in storage in Elephant Butte Reservoir *for* the beneficial use of the irrigators who have used the water all these many eighty-something years, and that we need to be responsive to changing needs, changing public requirements for this water.

In the future, the highest and best use of the water may not be just for irrigation; it may be for municipal requirements in El Paso, Las Cruces, or possibly some environmental requirements, particularly with endangered species, and *we* think we can work together *with* irrigation district, *with* the farmers, and with the other *parties* to meet *all* these requirements in a way consistent with Reclamation law.

". . . Elephant Butte Irrigation District takes the position that they have paid off their repayment obligation to the United States for the Rio Grande Project and they own the water rights clear and free and that we have *no significant* role in the determination of the use of these water rights. . . ."

The Elephant Butte Irrigation District takes the position that they have paid off their repayment obligation to the United States for the Rio Grande Project and they own the water rights clear and free and that we have *no significant* role in the determination of the use of these water rights. That's essentially the *question* that's before the judge.

El Paso and Ciudad Juarez Are Going to Have to Turn to the Rio Grande for Water Because Their Groundwater Sources Are Depleting

El Paso, with a population approaching a million people, Juarez in Mexico, with a population of *over* a million people, both of these cities in the past have depended upon *groundwater* for their water supplies for the cities for municipal, industrial purposes, drinking water, household use, fighting fires, whatever. They pretty well depleted the aquifers adjacent to where they're located. The *life* of the groundwater supply is limited, and they've looked at groundwater in the adjacent areas, and it's of limited quality and quantity. So, *naturally*, the Rio Grande is their long-term requirement for water supply.

So we've been working with the El Paso Water Utilities Board, the water entity for

the city of El Paso, to try to bring about the conversion of some of the irrigation water supplies to municipal and industrial uses. We feel like we can do this in a manner that *serves* the public purpose. There's a tremendous need; it's obvious the need's got to be met, that protects the Federal investment, that protects the irrigation district–the El Paso Water Improvement District Number One, is the entity there in west Texas–and the *farmers* who have used this water supply historically.

"What we want to do is *contract* with the city of El Paso so that the Bureau of Reclamation *facilitates* this conversion of waters from the river and project water supply that are no longer needed for irrigation purposes . . ."

What we want to do is *contract* with the city of El Paso so that the Bureau of Reclamation *facilitates* this conversion of waters from the river and project water supply that are no longer needed for irrigation purposes so that water can be put to the city's use.

***". . . likely* we will craft a contract that provides for the city to pay a much *higher* rate . . . [that] will *reflect* a consideration for the investment cost that the United States made . . . [and] keeping the district *whole* . . ."**

We're making good progress there, not as *quickly* as the city of *El Paso* would like, but we are making good progress in cooperation with the district, the city and the farmers, and *likely* we will craft a contract that provides for the city to pay a much *higher* rate for the water than the farmers have been paying for the irrigation use. This higher rate will *reflect* a consideration for the investment cost that the United States made back in the early 1900s to build that project. It will reflect keeping the district *whole* so that the district's cost of maintaining and improving their conveyance and delivery and drainage system will not suffer as a result of this change in water use. The district will be kept whole. It'll also provide a financial incentive to the farmers to convert this water from irrigation to this other use. We think that this is the pattern that will bring this about.

There are a *lot* of folks watching very closely. There's other litigation going on. I mentioned some of the background of that litigation.

". . . Elephant Butte Irrigation District . . . feels very *strongly* that they are the *sole* owner of the water supply of the Rio Grande Project . . . *Historically*, the *split* has been 57 percent of the water supply of the Rio Grande Project went to the Elephant Butte Irrigation District in New Mexico, and 43 percent to the El Paso District . . ."

The Elephant Butte Irrigation District, which is upstream in southern New Mexico, feels very *strongly* that they are the *sole* owner of the water supply of the Rio Grande Project in their service area. *Historically*, the *split* has been 57 percent of the water supply of the Rio Grande Project went to the Elephant Butte Irrigation District in New Mexico, and 43 percent to the El Paso District, with an additional requirement of *60,000* acre feet a year to the Republic of Mexico. We delivered it to Acequia Madre in Juarez. So that's kind of the background on it, and we'll try to get into some of the litigation and varying philosophies on that tomorrow. Do we need to kind of phase this one out for today, or

where are we?

Storey: We can talk for another ten or fifteen minutes, or if you need to leave sooner. Why don't you just begin. I think you sort of had an outline in your mind.

Calhoun: Yeah, I did, and some of it is still under development just because of where we *are* with proceeding with this.

Storey: I would think the states are reacting in all of this also because of their water law.

Interaction of State and Federal Water Law

Calhoun: Well, yes, not only *their* water law, but the 1902 Reclamation Act that is our founding set of *law*. Section Eight of the 1902 Reclamation Act says that waters will be administered by the respective states. So what is the role of the state of Texas in this matter? The state of Texas has taken the position, "Well, step back, Bureau of Reclamation. Step back, El Paso Water Improvement District Number One. We are going to proceed to adjudicate–"

END SIDE 1, TAPE 2. FEBRUARY 3, 1998.
BEGIN SIDE 2, TAPE 2. FEBRUARY 3, 1998.

Texas Asserts Authority over Water out of Elephant Butte

Calhoun: "We're going to possibly *reallocate* some of this water *away* from the irrigators to the city to meet the pressing public needs."

And we're saying, "Time out, state of Texas. There's some Reclamation *law* that you have to consider here in terms of how did this water supply come into being in the first place? Through the Reclamation project, Reclamation Law. We want to work with you, but you need to recognize the *longstanding roles* and relationships that exist here almost without any *active* participation by the state of Texas. So, don't come in now in 1997-98 and say you're going to change all this stuff without incorporating the authorization for the project and the upstream *features* that you have no control over. Okay, state of Texas, how are you going to control the operation of Elephant Butte Reservoir, which is the water supply that you want to reallocate here, when you can't reach up into the state of New Mexico and direct that operation?"

Their response has been, "Oh, well, we don't intend to do that. We only want to take control of it when it crosses the state line into Texas."

"Okay. Well, that's well and fine, but what if it never gets there?"

"Well, that'll have to be addressed."

"Well, yeah, that's what we're *talking* about."

I'm simplifying this, and I'm giving you *my* perspective on it that probably would be

countered if a state of Texas official were sitting here at the table with us, but still, it reflects, you know, some of the differences.

Litigation and the Elephant Butte Irrigation District

Storey: Isn't there sort of a history of litigiousness with this particular irrigation district?

Calhoun: Yeah, the Elephant Butte Irrigation District, we've been in litigation with them on a number of issues for more than a decade. Essentially, they feel like Reclamation Law provides special status to irrigators and to water users who have these old contracts and that the whole thrust of the Federal Government, Reclamation in particular, should be towards their *financial* benefit. And we don't agree with that. We think that's not consistent with the law, or our interpretation of the law. Of course, they have their interpretation of the law.

Rio Grande Compact

But, yes, in addition, there's a very important *compact* here, the Rio Grande Compact, that was developed starting back in the late twenties and ratified by Congress in 1939, that speaks to the allocation of the water supply *of* the Rio Grande among the three states that are involved, namely Colorado, where *most* of the water originates, New Mexico, and the Rio Grande, of course, bisects the state of New Mexico north to south, and is pretty much the riparian lifeblood of the state of New Mexico, and then Texas. Of course, the Rio Grande flows and forms the international boundary between Texas and Mexico for 1,200 miles, from El Paso to the Gulf of Mexico.

"The Rio Grande . . . is really more like two separate streams. . . ."

The Rio Grande, having said that, is really more like two separate streams.

". . . upper Rio Grande, which flows from Colorado to New Mexico and is pretty much depleted just downstream of El Paso . . ."

There's the upper Rio Grande, which flows from Colorado to New Mexico and is pretty much depleted just downstream of El Paso, and even most of the time ceases to exist as a river.

The Rio Grande ". . . picks back up again with the big tributaries that come in from Mexico down around Presidio . . ."

It picks back up again with the big tributaries that come in from Mexico down around Presidio and then there's a much *larger* river system that flows on down through the international reservoirs at Falcon and Amistad before it goes into the Gulf of Mexico.

". . . the Rio Grande Compact speaks to the *upper* Rio Grande. The Mexican Treaty of 1906 . . . the delivery . . . *to* Mexico at Juarez . . ."

We're concerned about the upper Rio Grande, and that's our area of responsibility

here in this region, and the Rio Grande Compact speaks to the *upper* Rio Grande. The Mexican Treaty of 1906 addresses the requirement of the delivery of 60,000 acre feet of water a year *to* Mexico at Juarez, except in periods of extraordinary drought, when it's reduced by a pro rata amount based on the shortage that *all* the parties suffer.

". . . the Rio Grande Compact essentially provides a sliding scale of water supplies to each of the states, depending on how much water is available. . . ."

But the Rio Grande Compact essentially provides a sliding scale of water supplies to each of the states, depending on how much water is available. So, Colorado, depending on how good of a water year you have, Colorado gets to use so much, New Mexico gets to use so much, and then Texas gets the remainder. The cash register, so to speak, is Elephant Butte Reservoir. It's the largest reservoir in the system, and it provides the carry-over storage and *the* water supply for the Rio Grande Project to meet the requirements to the Republic of Mexico.

Storey: I believe it was partially built to meet the Mexican Treaty requirements.

Calhoun: That's correct.

Mexican Water Treaty and Protocol of 1944 Coverage, Including Allocations on the Lower Rio Grande

Storey: And then it was reaffirmed in the Treaty of '44, was it?

Calhoun: Yeah. The Treaty of '44 also provided the water supply requirements for Mexico on the Colorado River, namely a million and a half acre feet a year at the international boundary on the Colorado River.

Storey: Yeah, and Tijuana.

Calhoun: And Tijuana, and also the lower Rio Grande, the allocation between the United States and the state of Texas and the Mexican interests along the lower Rio Grande.

Storey: So it doesn't affect the upper Rio Grande so much.

Convention with Mexico for the Upper Rio Grande, 1906

Calhoun: No. The Treaty of '06 is the one that pretty well spells out the upper Rio Grande–

Storey: That's interesting. Well, we're almost at time. Why don't we discontinue today. I'd like to ask whether or not you're willing for the information on these tapes and the resulting transcripts to be used by researchers.

Calhoun: Sure.

Storey: Great. Thank you very much.

END SIDE 2, TAPE 2. FEBRUARY 3, 1998.
BEGIN SIDE 1, TAPE 1. FEBRUARY 4, 1998.

Storey: This is Brit Allan Storey, Senior Historian of the Bureau of Reclamation, interviewing Charles A. Calhoun, "Charley" Calhoun, in his offices in the regional office of the Bureau of Reclamation in Salt Lake City, Utah, on February 4, 1998. This is tape one.

You were talking about the need to–

Calhoun: We were discussing some current litigation and its *impact* upon the Reclamation program and the future of Reclamation. Our agency, of course, was founded on the 1902 Reclamation Act, which *authorized* the Federal Government to be involved in water resource development in the western United States, the seventeen western states. The intent was to plan, construct, and implement water resource projects. Originally, the focus was primarily on irrigation, to make the desert bloom, to satisfy the needs for water supply for an agricultural enterprise at many locations in the West.

"Over time, the needs of the public have changed . . ."

Over time, the needs of the public have changed, and today, our purposes, in *addition* to irrigation, are water supplies for cities, domestic use, hydropower generation, flood control, fish and wildlife, water quality, and recreation and other *purposes*. This has been reflected in changes and additions to the original 1902 act.

Management of Reclamation Projects

The 1902 act *framed* an arrangement between the Federal Government, state, and local governments so that there's a sharing of responsibility, and we have *implemented* that on somewhat of a project-by-project basis, with each project authorization varying in degrees, so that *today*, of the projects that the Bureau of Reclamation constructed and were authorized either by the Congress or the President, the Secretary of the Interior, are being managed day-to-day either by the Bureau of Reclamation, in the case of our large mainstem facilities such as Glen Canyon Dam or Hoover Dam or Grand Coulee Dam, each of which has a large power-producing powerplant associated with it, or we have transferred the operation and management, the day-to-day responsibility for these projects over to the local entities.

For example, here in Utah, that's almost *exclusively* the case here in this part of Utah. The Weber Basin Water Conservancy District, for example, does the day-to-day management and operation of the facilities in the Weber Basin Project. This includes a half dozen dams, some of which have hydropower capability, but they're *smaller* facilities, *not* the big *mainstem* facilities that I mentioned earlier that have interstate or even international impacts.

Storey: Things like Hoover and Coulee and Glen Canyon.

Calhoun: Yeah. The big ones. We've continued to do the O&M ourselves. The '02 act, as I mentioned, arranged for this partnership, if you will, between the Federal Government,

state, and local, with shared but separated responsibilities. A case in point, on the Rio Grande Project in southern New Mexico and the El Paso area of Texas, Reclamation built Elephant Butte Dam, completed in 1916, to provide storage water for some 160,000 acres of land to be irrigated *along* the Rio Grande in southern New Mexico and the El Paso area in Texas, two states involved plus the Republic of Mexico, which receives a water supply from the project. The day-to-day management of the irrigation facilities were transferred to the Elephant Butte Irrigation District in southern New Mexico and the El Paso Water Improvement District Number One in Texas.

Transfer of Title for Drainage and Distribution Components of the Elephant Butte Irrigation District and the El Paso Water Improvement District Number One

Public Law 102-575 in 1992 went a step further and authorized the Secretary to transfer *title* of the *drainage* and *distribution,* water conveyance, facilities to these two districts, and this was accomplished in 1994, late 1994, and so now the United States no longer holds *title* to these facilities. The United States does hold title to the *diversion* dams and the *storage* facilities with the Rio Grande Project.

". . . the local districts, particularly the Elephant Butte Irrigation District, have sought even *greater* local autonomy and control to the *exclusion* of the Federal Government, and it's their *legal* position that they *own* outright the water rights, and they feel that they also *own* the *total project*. . . ."

With this development of a sense of autonomy and local control, which was *intended* up to a certain extent, in my opinion, the local districts, particularly the Elephant Butte Irrigation District, have sought even *greater* local autonomy and control to the *exclusion* of the Federal Government, and it's their *legal* position that they *own* outright the water rights, and they feel that they also *own* the *total project*. They have satisfied the requirements of the repayment contract, which was a *highly subsidized* repayment of irrigation's share of the project cost, and they feel that this puts them, you might say, in the driver's seat as far as ownership of everything, and that the role of the Bureau of Reclamation should be as a *trust* responsibility, a fiduciary *agent,* to *maximize* opportunities of financial [gain]–to benefit the districts.

Elephant Butte Irrigation District Asserts Ownership of the Water Rights in Elephant Butte and Caballo Reservoirs

We *don't* agree with that position, and we're in court right now and pursuing these issues in court. The water rights litigation brought by Elephant Butte Irrigation District over a decade ago has now ripened in the state of New Mexico *courts* to the point where the judge has been inclined to support the district's position, and this causes us some *concern*. Within the *last year*, it appeared that the state court would agree with the Elephant Butte Irrigation District's position to the point that it would *jeopardize* the *Federal* Government's ability to meet its responsibilities to the downstream district in Texas and the international treaty requirements of delivery of water to Mexico.

So, last summer the Justice Department, with the support and full participation of the Department of the Interior Solicitor's office and the Bureau of Reclamation, pursued

a *quiet* title action in *Federal* court to clarify the ownership of the waters in Elephant Butte and Caballo reservoirs in the name of the United States.

"This created a big furor because the locals saw it as an *attack* upon their *strategy*, moving in just the opposite direction to minimize the Federal role and rights, and it also *raised* the question of what's the role of the state . . ."

This created a big furor because the locals saw it as an *attack* upon their *strategy*, moving in just the opposite direction to minimize the Federal role and rights, and it also *raised* the question of what's the role of the state of New Mexico and the state of Texas in these matters? We would hope that as these proceedings go forward, that this is clarified and we have a clear picture of what the respective roles and responsibilities, entitlements of the Federal Government, in this case the Bureau of Reclamation, the two states, and the local districts and entities would be.

There are many other parties that are *involved* in this that have come into the action. For example, New Mexico State University derives its water supply from shallow wells along the Rio Grande, the city of Las Cruces and *other* parties, and they have joined in this action. *Further*, the state of Colorado *upstream*, which is the major source of water in the Rio Grande has said, "Look. Wait a minute. We can't be left out of this. If this results in a greater demand and increased burden of responsibility on the state of Colorado to deliver water downstream under the Rio Grande Compact, which we discussed somewhat yesterday, then we need to know that. We need to be a party to these proceedings."

Faced with so many parties coming in and so many diverse interests, it would appear that there's an opportunity for negotiated discussions and possible settlement of these issues, and it has been suggested that alternative dispute resolution might be a tool or a mechanism to use, rather than just leave this in the courts where you could have a protracted litigation over several decades costing maybe *millions* of dollars.

Results on the Rio Grande Could Establish Precedent Elsewhere in Reclamation

So we've been pursuing that, and at this point in time, *all* parties, with the *exception* of the Elephant Butte Irrigation District, have agreed to negotiated discussions and possible consideration of alternative dispute resolution in this matter. That's an issue that the Commissioner is *personally* involved in and has a great deal of interest in, and we're watching very *closely*, because *not only* do we have a lot at stake in terms of the ultimate determination of *our* role in the Rio Grande Project, but we're also establishing precedent for the Bureau of Reclamation elsewhere.

". . . if the courts rule that we have a very *limited* role, . . . that's going to significantly *curtail* our ability . . . to *bring about* changes in use of these Reclamation projects to meet changing public requirements in the future. . . ."

For example, if the courts rule that we have a very *limited* role, entitlement, ownership in these water rights, then that's going to significantly *curtail* our ability and the ability of the Federal Government to *bring about* changes in use of these

Reclamation projects to meet changing public requirements in the future.

". . . 'Blueprint for Reform' . . . *speaks* to the need to *look* for opportunities to meet additional requirements . . . through the *conversion* of existing irrigation uses where appropriate . . ."

Former Commissioner Dan Beard in his "Blueprint for Reform" that he put forth shortly after he became Commissioner in 1993 *speaks* to the need to *look* for opportunities to meet additional requirements for municipal/industrial water supplies, environmental restoration, Native American water entitlements through the *conversion* of existing irrigation uses where appropriate, and to *minimize* structural solutions to these emerging water needs. In other words, *if* there's a water supply available for irrigation, that could be used more efficiently, more effectively for an investment in, say, converting open ditches to pipe and that sort of thing, we could, in *partnership*, make those investments, *achieve* the greater efficiencies and *meet* the additional needs in that region *without* building new dams and major construction projects. I think, for the most part, that concept has been well received in many quarters but probably not so with some of the vested interest of the irrigators in the irrigation districts who felt like, "Wait a minute.

Some Irrigators Fear Loss of Their Property Rights in Water

This is an effort to take something that we've worked hard to acquire, that we've had the use of for many decades and maybe convert some of our property in the form of this water without our full benefit."

". . . there's tremendous revenues to be gained from water passing to a higher and better use. . . ."

I think that pretty well frames the issue. *Obviously*, there's tremendous revenues to be gained from water passing to a higher and better use. An example of this would be the Colorado-Big Thompson Project north of Denver. Reclamation built this project in the 1930s and '40s with a very broad authorization.

". . . municipalities . . . have looked at the Colorado-Big Thompson Project as their future water supply, and they've been willing to pay the farmers to *acquire* their water rights from this project . . . "

It was primarily for supplemental irrigation and other purposes, and over the years the other purposes, namely the development of water supplies for the municipalities ranging from the suburbs north of Denver-Broomfield, up to Fort Collins and out east to Fort *Morgan*, have looked at the Colorado-Big Thompson Project as their future water supply, and they've been willing to pay the farmers to *acquire* their water rights from this project so that a water entitlement that originally cost the farmer maybe a *dollar* an acre foot or some very small amount, they've been able to sell to the municipalities for several *thousand* dollars. Of course, there's been a period of several decades involved during which the land, the value of the land in some of these locations, increased from maybe a hundred dollars an acre to many *thousands* of dollars an acre, too.

"The Colorado-Big Thompson Project has been held up as an example of marketplace economics dictating the *ultimate* use of the water supply, and in the view of many . . . this is a very *good* thing, something that should be *encouraged* . . ."

The Colorado-Big Thompson Project has been held up as an example of marketplace economics dictating the *ultimate* use of the water supply, and in the view of many economists and other folks, this is a very *good* thing, something that should be *encouraged*, because it does *not* lock in use of a very precious resource to a status quo or use that would prevent accommodation of the changing public need. Other locations have not been as fortunate.

". . . Nevada only . . . received 300,000 acre feet of water a year *from* the Colorado River . . ."

For example, Southern Nevada, Las Vegas. At the time of the Colorado River Compact, the Nevada representatives back in the 1920s saw *no need* for irrigation water supplies in that portion of southern Nevada, and they did not foresee the development of the gambling industry and the urbanization that has taken place in the Las Vegas area. Consequently, Nevada only asked for and received 300,000 acre feet of water a year *from* the Colorado River as opposed to California's 4.4 million acre feet and Arizona's 2.8 million acre feet.

So that the seven and a half million acre feet of water supply that *annually* passes *to* the three lower basin states, Nevada only receives a very small portion of that, because, at the time, that was all it appeared they needed. Well, here today that's not adequate to meet their needs, and southern Nevada is looking in every way *possible* to increase their water supply now and in the future. If they'd *had* an irrigated base to work with and make improvements in or convert, they would have been very *fortunate*. So that's the comparison that I would make between southern Nevada and, say, the Colorado-Big Thompson Project area along the front range and East Slope of Colorado.

Marketplace Economics in Conversion of Water from Irrigation to M&I

Getting back to the point, though, of the *value* of these water supplies, often these older projects, the water only costs a few dollars an acre foot because the capital costs have been repaid and there is a small operation and maintenance charge, so this is very cheap water. When the opportunity presents itself for a conversion from irrigation to M&I, oftentimes the alterative sources of water available to the municipality or industry are several thousand dollars an acre foot. So they're willing to pay something between several thousand dollars an acre foot to develop a new supply in order to convert these existing irrigation water supplies, and you see marketplace economics come into play, and the farmer having to make a conscious decision, "Do I want to continue, say, raising alfalfa with a net profit of a couple hundred dollars an acre on land that maybe requires five acre feet of water a year, or instead of taking that enterprise with a future return of $200 an acre, why not turn around and somehow convert a portion or *all* of that five acre feet of water a year to what might be a ten-thousand-dollar-an-acre windfall profit."

Looking at the Federal Investment in Highly Subsidized Water Development as Related to Changes in Use of Water

At that point, other parties come into play, namely the Bureau of Reclamation saying "Wait a minute. There was a Federal investment here in these facilities that made this possible. What about the return to the Federal Government for a *highly subsidized* irrigation investment?"

Water District Concerns about Changing Uses for Water

The districts typically take the position that, "Wait a minute. If this water's no longer going to pass through our district facilities and we don't have the opportunity for some kind of a *charge*, we'll be eventually left with a small portion of a project operation that's not financially justifiable. So we need some protection to cover our sunk cost and to provide for the future well-being of the district's operation of the remaining irrigation."

These three parties, as well as the state officials, then kind of line up and say, "Okay, who's going to get what here and how do we accommodate this tremendous *opportunity* on the one hand that will have long-range, irreversible impacts on the other, namely the conversion of these water supplies?"

Water Transfers on Federal Projects Require a Cooperative Approach by Several Parties

Earlier Authorities for Dealing with Changes in Uses of Water

We *think there's a way* to work together to achieve this. Our Solicitor's office tells us that on the older projects, older than 1939, we can work with the 1920 Act which provides for the conversion of water from irrigation to other purposes. That act states that the Secretary of the Interior, and that's usually delegated to the Bureau of Reclamation, has the *authority* to approve or disapprove changes in use as *long* as the district approves of it. So we see an opportunity for sharing the gains and working together in a manner that *accommodates* these conversions. We don't see it as exclusively a windfall profit for the farmer. I think the litigation that we're currently involved in has been sort of a wake-up call for us, including our Washington office, that it's not *exclusively* a *Federal* decision or a *Federal* activity on these older projects, but it has to be something in cooperation between Reclamation, the districts, and the farmers to pull this off, as well as the city that's putting up the money to receive these water supplies.

Transferring Water to the City of El Paso

That's exactly the situation we find ourselves in down in El Paso, where the city of El Paso desperately needs additional water supplies. They've depleted their groundwater to the point that that's no longer a reliable source of water, and they're looking at the Rio Grande Project waters to meet their future needs, and *we think* we can put this together. But, as I say, some of the litigation that's going on will shape and move this one way or the other.

Elephant Butte Irrigation District Thinks it Controls the Water of the Rio Grande Project

Certainly, from the standpoint of Elephant Butte Irrigation District, the Bureau of Reclamation has a *minor* or almost no role in this determination. I think the district sees themselves as the *water–they* are the *water* entity, the *water broker*, the water czar for that region, and they will work with their irrigators in a manner to maximize benefits to the district and to the district's constituency, namely the irrigators in the district.

You know, that's their *prerogative*. It's just that we don't believe that's an *appropriate interpretation* of the law nor is that a wise course of *action* for our agency to take, so we're in court fighting that out. But the courts *oftentimes* make rulings that are contrary to what either party may feel is appropriate, and you have to live with that. These can be *long, drawn-out*, very expensive litigations that require decades to *resolve* with the appeal process. So we think that a negotiated settlement would be appropriate. However, to have a negotiated settlement, you've got to have all the parties involved at the table, and if one of the parties, in this case the Elephant Butte Irrigation District, don't agree to be there for whatever reason, then it makes it very difficult to achieve that negotiated settlement. *I believe* that we've set in place some actions here that will *clarify* the Bureau of Reclamation's roles and responsibilities, not only on the Rio Grande Project but Westwide in terms of just where we're going.

On Projects Authorized since 1939 Reclamation Has a Much Clearer Role and Authority

Now, on the newer projects that have been authorized since 1939, generally speaking, the Bureau and the Secretary of the Interior have a much *clearer* authority and role, and we are a stronger player in these conversions. I think the authorities in Section Nine of the 1939 Act and other subsequent authorities *create* a *clear legal* authority for us to work under. But on these *older* projects, and these older projects are oftentimes located in situations or areas of tremendous demand for water for these other purposes, *we* will continue to pursue this.

"Hopefully, we will develop solutions that meet the broader public needs . . . [failing that] there's always the opportunity for *Congress* to direct us through additional law and clarify or for the courts in their rulings to do so. . . ."

Hopefully, we will develop solutions that meet the broader public needs and requirements. If they fail to do that, then there's always the opportunity for *Congress* to direct us through additional law and clarify or for the courts in their rulings to do so. That's probably the most significant concept I wanted to express this morning. This is just the situation that we're in, and it's really quite an exciting, interesting, stimulating situation, a little scary even.

Why the Middle Rio Grande Project Suit Is in State Rather than Federal Court

Storey: The first question that comes to my mind is why are we allowing it to go on in the state court? I would think, as a Federal agency, we would immediately say, "You can't sue us

in state court."

Calhoun: Well, yeah, that's a good question. This action was originally brought by the Elephant Butte District *against* the state engineer of the state of New Mexico, and we were not originally directly involved. We were brought in later. I really need the benefit of our solicitor, our lawyer, Chris Rich, to address your question better, and that's something that we should follow up and do, but the McCarren Amendment and other Federal laws and policy *do provide* for the determination of water rights in state courts. Generally, the Justice Department has *looked* at this question very *seriously*, and if a determination is made that we're *not* getting a fair hearing, then we can move to Federal court, and that's *exactly* what we did with the *quiet title action* for the ownership of the waters in Elephant Butte Reservoir.

Utah and New Mexico Claims on Lower Colorado River Basin Water

Storey: Oh, Okay. One question on the Colorado River Compact. During *Arizona v. California*, Keith Higginson was working here in Utah for the state engineer's office, and he went out and did studies, I believe it was on the Virgin, for Utah's claim on the Lower Colorado Basin waters. Is there any Utah claim that was established or that exists that you're aware of?

Calhoun: Yes. St. George, Utah, and that area currently utilizes water supplies associated with the Virgin River and tributaries for their water supply. So, yes, very much–

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Storey: You never hear any of this mentioned, though, when people talk about the allocation of the waters of the river. They talk about Arizona's entitlement in the Upper Basin. I believe that's 50,000 acre feet.

Arizona's Entitlement in the Upper Colorado River Basin

Calhoun: That's correct, yes, a very small amount, but Arizona does have an entitlement in the Upper Basin of the Colorado River, and New Mexico has an entitlement in the Lower Basin, because the Gila River originates in the state of New Mexico. However, the attempts to develop that water supply for New Mexico have not gone forward because of environmental and economic concerns.

But you raise an interesting point. The Colorado River Compact addresses the requirements to meet the needs of the seven states in some sort of an *equitable* manner so that Wyoming, Utah, Colorado, and New Mexico, the four upper basin states, each receive a percentage of the water supplies available from the Colorado and its tributaries. The state of Colorado, where most of the water originates, receives the largest percentage, something like 56 percent. New Mexico is the *smallest* state of origin, you might say, so it receives the smallest percentage, only like eleven and a quarter, 11.25 percent, and that's associated with the tributary of the Colorado River, the San Juan, which does flow through the northwestern corner of New Mexico.

New Mexico's Allocation Is about Used up

New Mexico has pretty much utilized its entire allocation through a variety of projects, including the Navajo Indian Irrigation Project and the San Juan-Chama Project.

"The other Upper Basin states have not even come *close* to utilizing their full allocation. . . ."

The other Upper Basin states have not even come *close* to utilizing their full allocation.

Tributaries in the Lower Basin Do Not Count If Developed Before They Enter the Colorado

Now, you go on down, then, to the lower basin, and I mentioned earlier California with the 4.4 million acre foot entitlement, Arizona with 2.8 million acre foot and Nevada with the remainder of the seven and a half million or 300,000 acre foot entitlement on an annual basis. This does *not* take into consideration the *tributaries* that flow *into* the lower Colorado *if* the diversion takes place upstream of the confluence with the Colorado. For example, the Gila River supplies Arizona with *well over* a million acre feet of additional water supplies each year *above* the 2.8 million acre foot entitlement from the Colorado River. Arizona's position very strongly has been, "Well, as long as the tributary water is used before it's mingled with the Colorado, then that's the intent of the compact."

The other states are not *currently* pursuing a different position very strongly on that matter, but there is still *probably* the opportunity at some point in the future to revisit or reopen that. In the case of the Virgin River, which is a tributary of the lower Colorado that originates in Utah, flows from Utah to Arizona, then into Nevada before entering the Colorado River in an arm of Lake Mead, yes, Utah uses a portion of that water supply. Arizona and Nevada use very little of it. The water quality of the Virgin is a *real* problem, with salt levels exceeding 2,000 parts per million in terms of dissolved solids in the water in the *lower* Virgin, and, of course, 2,000 parts per million is enough of a salt load that it eliminates use for many purposes. That's not something that you typically want to pour in your glass and drink if you had some other options.

Las Vegas Wanted to Use Lake Mead to Transport Water of the Virgin River down to the City's Intakes on Lake Mead

I mentioned earlier the need for southern Nevada, for the Las Vegas area, to develop additional water supplies. They *made an effort* about five or six years ago. Their position was, "Well, we want to capture that roughly 100,000 acre feet of water in the Virgin that flows into Lake Mead every year, and we want to utilize that. That's going be *our* future water supply, but we *don't* want to put the diversion on the Virgin to direct that water into our system because the water quality is so poor. We want to, instead, *tag it* and take it out of Lake Mead after it mixes with the Colorado River water."

The position of the Bureau of Reclamation and the other six basin states, "No. That's too late. You can't do that." Now, you probably *could* divert it in the state of Nevada before it enters Lake Mead and put it to use. You would only do this at great

cost, because you'd have to essentially construct and operate a desalting plant to make it useable. You have the prerogative of doing that, but you *can't mingle* it in the waters in Lake Mead and then *tag* it and *pull* it out again. That's pretty much the situation with the other tributaries, of which the Gila is the big one. But there are also smaller tributaries in Arizona, the Bill Williams River and the Little Colorado River. Arizona's position is, "As long as we utilize these tributary waters before they mingle with the Colorado River, then that's our business."

California is in a unique position–well, somewhat unique–in that there are no tributaries. The California shore, side of the Colorado River is essentially a desert.

Storey: They contribute nothing to the river.

Calhoun: Yes. There are no live streams that flow from California into the Colorado, with the exception of maybe some return flows of, say, the Palo Verde Irrigation District.

Issues That Show up When Water Districts Operate Projects

Storey: You've talked about turning projects over to water users for operation and maintenance. What kinds of problems does that cause Reclamation, or maybe I should say, what kinds of issues come up there? Because I would presume we need to protect our *investment* somehow.

How Reclamation Protects the Federal Investment

Calhoun: Well, not only do you need to protect the investment, but you need to assure that the project purposes are being *met* and that the *safety* of the public is being addressed. These are not *always* guaranteed or assured. Let me *clarify*. It is the policy of the Bureau of Reclamation to transfer operation and maintenance of facilities, when appropriate, to the local entity, and in the majority of our projects, this is exactly what has happened. It's only in the larger hydropower *special* multi-state international projects that we've generally not done that. There are some exceptions, but that's generally the case.

The question you raise really comes down on us *hard* in the case of an operation of the storage reservoir and a dam. Maybe it's a marginal project and the economics are such that the district feels it cannot pay to do adequate maintenance, or they're not *willing* to pay the cost of *staff* to do a professional job of operating. In the case of a major dam, this can get to be a serious concern, particularly if maintenance is not carried out on a regular basis and over a period of time conditions deteriorate to where you have a safety-of-dams concern. This is *exactly* the situation that we face in some locations today.

Now, under the repayment contract, invariably we have the legal authority to step back in and take over the operation of these facilities, *do* the corrective action, and *charge* it to the district, or the water users, but if they're so poor and it's such a marginal operation, sometimes that's easier said than done. There're some situations. There are other situations where the district may be quite well off financially, but they take a different position on the maintenance or the management of the facilities. Sometimes

they feel that, "Bureau of Reclamation, you guys are not *practical* enough. You're *too* conservative. You're not *willing* to take risk or you over-design. Your requirements are too stringent." And we have to sit down and work through those. Generally, while that occurs, we generally resolve those type of situations. But if *any* facility is not adequately maintained over time, it will deteriorate. Well, I mean, over time they're going to deteriorate regardless, but even *more so* if they're not adequately maintained. And that's a concern. Does that answer your question?

Storey: Yeah.

Title Transfer

Calhoun: We've also looked at opportunities to transfer title, and this concept has been around for the last couple of decades, and is it absolutely necessary for the Federal Government to continue to *own all* of these facilities? This was argued out in Congress a number of times over the last couple of decades.

I know *I've* participated in a hearing before Congressman [George] Miller's committee in 1989 with Acting Commissioner Joe Hall, in which we were looking at title transfer legislation that had been introduced for three facilities: Solano, Lake Berryessa, and Sly Park in California and Platoro Dam and Reservoir in Colorado.

Administration Supported Title Transfer at Platoro

Administration Did Not Support Title Transfer at Solano

The administration at that time actually *favored* the legislation for Platoro in southern Colorado but *did not* support the legislation for Solano, where Solano County was essentially seeking the water rights from Lake Berryessa and desired to leave the Bureau of Reclamation and the Federal Government the responsibility for water quality and recreation in a very controversial and difficult situation that the upstream county, Napa County, opposed and we opposed.

Title Transfer Issues at Sly Park

Sly Park, at the time it was felt that this dam and reservoir near Placerville, California, would kind of disintegrate the Central Valley Project, and there were concerns about carving out a portion of the Central Valley Project and turning it over to local ownership.

"Title Transfer Initiative" Provided Some Guidance

As a result of that hearing and other activities, in 1995 the Bureau of Reclamation put forth the Title Transfer Initiative in which we promulgated some guidance where we would favorably *consider* transfer of title, ownership, to facilities from Reclamation to the appropriate entities. This created quite a bit of interest in Congress and among the water user organizations. The guidance seemed to me to be pretty straightforward. We wanted to protect the Federal investment; we wanted to look at the *broader* public needs,

including *environmental* considerations and opportunities; we wanted to protect the Native American trust responsibilities; and we wanted to be sensitive to interstate or international implications.

In spite of our efforts to spell out what we felt was pretty clear guidance, there's been a lot of frustration and concern because many water user organizations have taken a position, "Wait a minute. This is an older project. We've paid off our repayment obligation. *Just give it to us* and don't worry about the details," and that's pretty much–and legislation has been introduced in several cases that is about that simple, and we've *opposed* legislation where we felt it didn't protect these broader interests and broader responsibilities that are outlined in our guidance.

Now I understand that Congressman [John] Doolittle has expressed frustration over the lack of progress on title transfers, and *he* will be conducting *hearings* this spring to kind of kick off an easier approach to title transfer. Of course, if Congress authorizes a transfer of title, we will try to the best of our ability to follow the mandates of the Congress.

Title Transfer of Conveyance and Drainage on the Rio Grande Project

That's exactly what we did with the Rio Grande Project where Public Law 102-575 authorized the transfer of title to the conveyance and drainage systems on the Rio Grande Project.

Vermejo Project Title Transfer

It also clarified the transfer of title on the Vermejo Project to the Vermejo Conservancy District in northeastern New Mexico, and in *both* of those cases, we *have* successfully completed those transfers, and that title is no longer held by the United states but is held by the local district. For some time we were *hung* up with the Vermejo transfer because the Vermejo Conservancy District *insisted* that they receive the water rights along with the title to the facilities. The legislation, the *law* did not specifically state that they were entitled to receive the water rights, so the solicitor's office took the position, understandably, that this was not authorized, and this was a problem that we could not *overcome* for some period of time.

Finally, with the assistance of the Washington office and the solicitor's office, we kind of finessed it by agreeing with the conservancy district that they would take *title,* and I must say, the Vermejo Project is a project that has not been very successful. It's had a deficient water supply, and consequently they've not had the revenues to repay the Federal Government, so it was relieving the Federal Government of the burden and the liability, so we certainly thought we should pursue what Congress had directed us to do. Rather than continuing to be hung up on this water right matter, though, we finessed it by saying, "Look, if you go to the State Engineer in New Mexico and request a change of ownership of the water right from the United States to the Vermejo Conservancy District, we will not fight it. We will not protest it. We'll remain silent," and that's essentially what they *did,* and we were able to consummate the intent of Congress.

Storey: That one's just in the last couple of months, I believe.

Calhoun: No. It's been a couple of years now.

Storey: Oh, it has? Okay. I didn't realize that.

Title Transfer of the Boulder City Pipeline

Title Transfer of the San Diego Aqueduct

Calhoun: Yes. More recently we've had some title transfer activities and completions–Boulder City Pipeline [in Nevada], in the Lower Colorado Region, I think, the San Diego Aqueduct. We have, in both those cases, successfully transferred title to the local entity.

Title Transfer at the Okanogan-Tonasket Project

And then up in the P-N Region, perhaps you might be thinking of the–I believe it's the Okanogan-Tonasket Project where we were in litigation. The local district said that we didn't construct a very good project. It didn't meet their expectations in terms of quality of construction on several issues, so they sued us over deficiencies in construction, and as part of the settlement, there was legislation that authorized transfer of title and settled the argument over the deficiencies in the construction. That's another one we've racked up, and that has been just in the past–certainly in the last year.[4]

Storey: Well, let's see. You came here in '94.

Calhoun: Right. January 3, 1994.

Storey: That, I think, would have been about the time or just after the transfer of Central Utah Project away from us.

Calhoun: Yes.

Storey: Tell me about the issues on the Central Utah Project, from your perspective.

Central Utah Project Completion

Calhoun: Public Law 102-575,[5] the first *four articles* of it, address the completion of the Central Utah Project, and, essentially, that law *took* the completion of *construction* authority from the Bureau of Reclamation and gave it to the Central Utah Water Conservancy District. The district and state of Utah officials were frustrated that Reclamation had not made sufficient progress in completing the Central Utah Project. There were, like so

4. See also the oral history interviews of John W. Keys III in which he discusses this title transfer.

5. Public Law 102-575 is the Reclamation Projects Authorization and Adjustment Act of 1992. Title II of the act is the "Central Utah Project Completion Act." Title III–Fish, Wildlife, and Recreation Mitigation and Conservation at "Sec. 301. Utah Reclamation Mitigation and Conservation Commission" established a commission to oversee on the Central Utah Project the issues cited in the title. Title IV–Utah Reclamation Mitigation and Conservation Account. Title V–Ute Indian Rights Settlement.

many water resource projects, there were some real serious environmental and economic issues that were difficult to *resolve*, and as time went on, the district took the position that they could complete the project in a more efficient manner than the Bureau of Reclamation, and that's what's provided for with the passage of that law in 1992.

Now, the law *provides* that this won't just be a matter for the Congress to put money in the hands of the Central Utah *District* for them to do this job, but there would *also* be some oversight and surveillance carried out by the Secretary of the Interior, as opposed to the Bureau of Reclamation, and this would be through the Assistant Secretary for Water and Science. A position was created locally, that there would be a Program *Manager*, GS-15, who would report directly to the Assistant Secretary of Water and Science and who would, with a *small* staff of a half dozen people, provide this management and oversight of the district's activities.

Asked If He Was Interested in Being Regional Director in Salt Lake City

When I received a phone call from Dan Beard, who was Commissioner of Reclamation, in December of '93, I was then the assistant regional director in Boulder City, had been for a couple of years, going on a couple of years, and he asked me if I'd be interested in the regional director's job for the U-C Region. Roland Robinson, the regional director, had announced his intention to retire shortly after the first of the year, and Dan Beard was looking for a replacement for Roland, and I told him I certainly would be interested and that this was *exactly* consistent with *my* career goals and objectives and I would *very much* be interested in such a consideration. He said, "Well, get on a plane, come back to Washington next week, and let's sit down and talk about it face to face," and I did.

Asked If He Could Support Completion of the Central Utah Project in Accordance with the Mandate of Congress

After we had met for perhaps an hour, Dan Beard expressed that one of the key requirements of this position would be the successful completion of the Central Utah Project and the support for the program manager, who did not work for the Bureau of Reclamation but worked for the assistant secretary. Would I have any problems with that? I told him no, I didn't think so. I knew the individual who was in the position. I'd worked with him earlier. We'd both worked at water operations in the old L-M Region in Denver, and I knew that I could work successfully with Ron Johnson. And that pleased the Commissioner.

Then after we'd talked about other matters for about an hour, he then brought in the lobbyist for the Central Utah Water Conservancy District, Marcus Faust, and we further discussed the intent of Public Law 102-575 and the district's role in the completion of construction, and while the Bureau of Reclamation no longer was authorized to complete that project, that we still had a role of support and working towards fulfilling the intent of that legislation.

It was pretty clear what the expectation was. I agreed to that expectation, and, I think, to the credit of the people in the Bureau of Reclamation here in this office and our

Provo Area Office and then in our Denver office, we've tried to meet that expectation, and I think we've been quite successful in doing it. That has required us to take a different *role* than what we were used to, but I think the relationship of the district with the program manager for the department has improved significantly in the intervening four years, and we're *committed* to making this work, and it is working.

That's *not to say all* the problems have gone away, and there's still serious environmental and economic issues associated with the project. We're working in a *different* capacity, we're working more in a capacity of *support*, but there's a *lot* that the Bureau of Reclamation can do. Currently, working very closely with the solicitor's office, our land acquisition people are carrying out some of the land acquisition requirements for the district, and this is a shared responsibility but one that we can do very effectively and efficiently, and the district has asked us to carry it out.

Construction Management of the Diamond Fork Pipeline

Our *Provo* Area Office has been directly involved in the construction management of the Diamond Fork Pipeline, and this job was completed under budget and in a shorter time period, and the district's been very *pleased* with our construction contracting capability and has indicated they would like to use us further as this construction goes forward.

Storey: Were they absolved of any environmental responsibilities?

Calhoun: No. No. Under that legislation, the district was *given* the role of a Federal agency as far as the environmental responsibilities. So they have generated NEPA documents. They've been very much involved in addressing endangered species requirements, particularly on the Duchesne River, and they have an environmental staff that we work with that is actively engaged in these activities.

Storey: How is the work going?

Diamond Fork Dam Cancelled

Calhoun: It's going pretty well. I mentioned the Diamond Fork Pipeline that conveys the water that originates, is captured in Strawberry Reservoir on the Duchesne River, brought through a divide tunnel into [the] drainage on this side of the Wasatch Mountains. A *portion* of that project was the Monk's Hollow Dam to provide regulatory storage at the upper end of Diamond Fork Canyon, and, as with many dams, that received an enormous amount of concern and criticism from the environmental community, and just in the last few months the district has decided, *wisely*, *not* to pursue the construction of Diamond Fork Dam, and they will make some other adjustments in the plumbing to bring this water from Strawberry *through* the tunnel into Diamond Fork Pipeline for delivery for use in the other counties on this side of the Wasatch Range.

Environmental Issues on the Duchesne River

There are still some real serious issues over on the Duchesne River, and, of course,

the Duchesne is a tributary of the Green, which, in turn, is a tributary of the Colorado, but the water supplies of the upper Duchesne are used to provide water that comes over to be used in Central Utah Project, and there are a number of issues. There are some Native American entitlements with the Ute tribe in eastern Utah. There are some endangered species concerns with *fish* in the lower Duchesne. There's still quite a bit of work to be done.

Storey: Is the work progressing faster than if Reclamation had had it?

Calhoun: That's hard to say.

Storey: Because we don't have it any longer.

Calhoun: Right.

Animas-La Plata Project

Storey: How about Animas-La Plata? What's going on over there, from your perspective?

Calhoun: Well, that's a very difficult project. The Ute Water Rights Settlement Act of 1986[6] provides that the Federal Government, the Bureau of Reclamation, in conjunction with the states of Colorado and New Mexico and other entities would build a project to take water from the Animas River that would be used to meet the water right entitlements of the Southern Ute Tribe and the Ute Mountain Ute Tribe in southern Colorado. Also, planned uses of *other* waters from that project would be to meet municipal and industrial requirements for the city of Durango. The San Juan Water Commission, which is in New Mexico, addresses water needs for Farmington, Aztec, Bloomfield, and that area, as well as some irrigation.

The project, as earlier planned by the Bureau of Reclamation, featured a pumping plant on the Animas River that would pump water *up to* an off-stream storage [reservoir] just southwest of Durango called Ridge's Basin. There would be a *major* dam essentially in a dry basin there that would create a new reservoir from the water that was pumped up from the Animas. The water then would flow from Ridge's Basin back *into* the Animas during dry periods when it's needed downstream in the Animas *or* piped over to the La Plata River drainage for use–

END SIDE 2, TAPE 1. FEBRUARY 4, 1998.
BEGIN SIDE 1, TAPE 2. FEBRUARY 4, 1998.

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6. Public Law 100-585. Colorado Ute Indian Water Rights Settlement Act of 1988. A Reclamation website [http://www.usbr.gov/uc/progact/animas/pdfs/1_ALPCostSharingAgt313_02.pdf] accessed on November 19, 2008, at about 10:15 A.M. states:
"On June 30, 1986, the United States, the State of Colorado, the Ute Mountain Ute Tribe, the Southern Ute Indian Tribe, the Colorado Water Resources and Power Development Authority, the Animas-La Plata Water Conservancy District, the New Mexico Interstate Stream Commission, the San Juan Water Commission, and Montezuma County, Colorado, entered into the Agreement in Principle Concerning the Colorado Ute Indian Water Rights Settlement and Binding Agreement for Animas-La Plata Cost Sharing . . ."

Storey: [This is] Brit Storey with Charley Calhoun on February 4, 1998.

Calhoun: Any construction of a large dam is very controversial and certainly the case on the Animas-La Plata Project. Reclamation initiated construction, but litigation was brought by the Sierra Club Legal Defense Fund that *terminated* construction. Reclamation has been through a number of efforts to address NEPA and Endangered Species Act requirements, Clean Water [Act] requirements and *other* Federal legislation to the *point* that we have *not* been able to reinitiate construction. The parties, the environmental and other parties, that were *opposed* to the project took a very strong stand. Conversely, the project's supporters, particularly the two Ute tribes and the local water user entities in southwestern Colorado and northwestern New Mexico have been–well, I guess you could safely say *all* parties have criticized the Bureau of Reclamation either for lack of action or too much action.

This thing was pretty much at an impasse *over* a year and a half ago when *Governor [Roy] Romer* and Lieutenant Governor [Gail] Shetler of Colorado said, "Look. Let's get all the parties to sit down and talk about their differences and see if we can't *resolve* these differences." And this became known as the Romer-Shetler process in which the governor early on and, after that, the lieutenant governor took a direct and personal involvement in these discussions in these meetings. It did *not* achieve the goal of a consensus or an agreement, but it *did* result in the project supporters coming up with a proposal which has been called A-L-P Light, a smaller, *reduced* version of the project that's very similar, but eliminated most of the irrigation and *some* of the more controversial aspects of the project. The project supporters are saying, "Well, let's go now, Animas Light." And both the Ute tribes and *both* the governors, Governor Romer of Colorado and Governor [Gary] Johnson, [New Mexico] have endorsed A-L-P Light.

The project opponents, on the other hand, are still concerned about the impacts of a major dam and structural solution to the Indian water supply problem. They feel that a more *appropriate* alternative would be to *acquire* water and land rights through *purchase* in the surrounding area and direct these additional water supplies to the two Ute tribes, and this is kind of a combination of purchase of water and land and some *re-operation* of existing Reclamation projects. For example, Lemon Dam[7] near Durango could be enlarged, heightened, to create additional storage, and this additional storage water supply could address the city of Durango's requirements.

So this all kind of came to a head here this last *October*. The governors have written the Secretary endorsing A-L-P Light. Reclamation, has had under *active* consideration an *analysis* of these two alternatives. There're some other alternatives that were put forward, but these are the two *major* alternatives. We expect to have that analysis completed here in the next two weeks, by the middle of February, when it'll then go back to Washington for review and be available for discussion. I anticipate that *Congress* will be considering legislation. Probably the project supporters will have the Colorado delegation, to some extent, supporting the additional authorizations and *re-authorizations* to go *forward* with the construction of A-L-P Light. I'm sure there will be members of Congress that will want to know what about the other options, the

7. Lemon Dam is on the Florida Project and is located northeast of Durango, Colorado.

nonstructural solutions, and we hope to have, as I say, this analysis complete.

This is being carried out by a *team*, a number of Denver office employees and Technical Service Center professionals, as well as Reclamation employees here in the regional office and in the Durango field office. So, we'll see. We'll probably try to do what Congress tells us to do.

Storey: I happened to be in Washington in July when the A-L-P Light announcement was made in a news conference at the Capitol, and the thing that struck me most was that they want to build the project, but they don't care about the delivery system, apparently. Is that a correct impression?

Ute Mountain Ute Tribes Aren't too Concerned about the Delivery System for Animas-La Plata Project

Calhoun: Well, that's been a critical criticism of the project for some time, that if you just build a pumping plant and Ridge's Basin Dam and Reservoir, how will you ever get the water, say, forty-, fifty miles west to the Ute Mountain Ute Tribe? The Mountain Ute Tribe says, "That's for us to worry about. We'll take care of that. You get the water where we can see it and give us ownership, and we'll take care of the details." Now, the *Southern* Ute Tribe is in a more advantageous position because their lands are adjacent to the Animas. Actually, their lands, to some degree, surround Ridge's Basin Reservoir, and so there are a number of ways the Southern Ute Tribe could take delivery of water.

Ute Mountain [Ute Tribe]–there are plans that have been looked at for *pipelines* to run from Ridge's Basin over to serve the Ute Mountain area, and some of the cost of that delivery system in the *earlier* agreement would have been covered by the state of Colorado's cost-sharing portion. Critics have said, "Well, that may never happen." The Utes have said, "Well, let us worry about that. That's not your worry." So it's an interesting question, and it has only been answered to a certain extent.

Storey: I guess I had the impression from that press conference that the Ute Mountain Utes were saying, "You give us the water. We're going to use it the way we want to," and my impression was it wasn't going to be anywhere near the reservation.

Calhoun: Maybe. Maybe not. You know, one *direct* way would be through conveyance, pipeline, canals from the Ridge's Basin Reservoir over to the west, into the La Plata drainage and to the service to the Ute Mountain Ute tribal land. Another way would be to release the water from Ridge's Basin back down the Animas, flow into San Juan down to the Ute tribal lands that are just north of the San Juan near the boundary of Four Corners area. Beyond that, there may be other options.

Storey: I'm a little confused. I thought it was the Northern Utes there at Ignacio.

Calhoun: No. It's the Southern Utes.

Storey: It's the Southern Utes. So I *am* confused. Okay. You worked with Willis Ervin, I think, for a number of years.

Calhoun: Five years, 1975 to 1980.

Storey: Tell me what he was like as a manager.

Calhoun: Willis is just one of the *great* personalities in *Reclamation*. Tremendous knowledge of Reclamation law; Nebraska origin; a good work ethic; had worked out in the field offices in Nebraska in McCook and Grand Island; had seen the development of some of the Pick-Sloan projects out there; had gone back to Washington and worked in Washington in repayment contracts. Willis' academic background, I believe, was agricultural economics, certainly not engineering, but he was involved in so much Reclamation law and so many Reclamation projects that when I had the opportunity to work for him in 1975, it was pretty obvious that here was a fellow that you could learn a lot from, and I sure benefitted from that exposure, as did many other folks. I know Roger Patterson *followed* me in that job in Water Operations Branch Chief under Willis, and we just really appreciate all that Willis gave us in terms of better understanding. Have you interviewed him?

Storey: No. I'm hoping we're going to do that pretty soon.

Calhoun: He's up in Evergreen.

Storey: Yeah. I was having trouble with his name spelling for a little while. I couldn't find it, but now I've gotten that straightened out.

What do you think the best job in Reclamation is?

Likes the Area Manager and Regional Director Jobs

Calhoun: Oh, I'm kind of partial to this job. I really like this job. My family very much enjoys the Salt Lake area, and I just am really, still, after four years, quite *thrilled* to have the opportunity to work in this job. But, you know, I've felt that way about a number of jobs. I certainly liked being projects manager in Albuquerque because the *actual* field office experience is hard to beat in terms of a sense of accomplishment and getting things done. So I'd say either an area manager job or regional director job would be pretty hard to beat.

Storey: Is there anything else you'd like to talk about regarding Reclamation?

Calhoun: I've enjoyed my career since 1961 with the Bureau of Reclamation, and I intend to work for a few more years. I might even get in forty years if I'm lucky. I've certainly benefitted from the career, and I hope that I've made a contribution. That's probably a good place to stop.

Storey: Okay. Let me ask you if you're willing for the information on these tapes and the resulting transcripts to be used by researchers.

Calhoun: Sure.

Storey: Good. Thank you very much.

END SIDE 1, TAPE 2. FEBRUARY 4, 1998.
BEGIN SIDE 1, TAPE 1. APRIL 23, 2009.

Storey: This is tape one of an interview by Brit Storey with Charles A., Charley, Calhoun, former regional director of the Bureau of Reclamation's Upper Colorado Region. It is April 23rd, 2009, and we are in Building 67 on the Denver Federal Center.

Activities since Retiring from Reclamation

Well, Charley, I know I interviewed you just before you retired, and ~~since than~~ I wanted to cover what you have been doing since you left Reclamation.

At the Suggestion of Acquaintances Applied to Be Federal Commissioner and Manager of the Pecos River Commission

Calhoun: Well, I guess primarily, a year or so after I retired, I had contact with some of the people that I worked with in Texas and New Mexico, and they said "The federal commissioner and Chairman of the Pecos River Commission–that position is vacant, why don't you apply for it."

And I said, "Well, you know, I don't know–why should I?"

And they said, "Well, you ~~don't~~ have nothing to do, and [it'll] give you some involvement in water resources and you know the Pecos River system quite well, and we think highly of you–that you would serve in that capacity and serve us well."

"'Do you know of anyone that would be opposed to your appointment to this position that would cause embarrassment to this Administration.' And I said, 'No, but if you find somebody like that, just give them the job.'"

So, I said,"Well, all right, kind of set me up some stuff." So there's some paperwork and it's a presidential appointment. And so I filled out the paperwork and sent it in and got some response from, this is in 2003 to the effect of–a number of questions. One of which was, "Do you know of anyone that would be opposed to your appointment to this position that would cause embarrassment to this Administration?" And I said, "No, but if you find somebody like that, just give them the job." (Laughter) They didn't ask me many more questions after that, but I didn't hear much for several months. And then there was a press announcement from the White House that a number of appointments had been filled, including this one, and I was appointed as the federal Commissioner and Chairman of the Pecos River Commission, in October 2003.

Pecos River Commission Meets Once or Twice a Year

And since then we've met once or twice a year, usually just once a year for the annual meeting. It rotates between Texas and New Mexico at various locations from Austin to Albuquerque and usually points closer to the Pecos itself. For example, this year, 2009, we met in Carlsbad April the 21st. And it was a good meeting.

On April 21, 2009, Announced His Intention to Resign from the Pecos River Commission

Went through the usual reports of the agencies and the officers of the commission and I announced that I intended to write the president and resign after six years of serving in this position and let somebody else have a chance at it. So that's the primary water resources effort that I've been involved in. I've also been involved in a number of other things. Volunteer work and projects in the area of south Mississippi–that we now live in.

Storey: Oh, so tell me about that work in Mississippi, if you would

Volunteered Time and Expertise on the Lucedale Depot Creek Greenway Project in Lucedale, Mississippi

Calhoun: Well, I was registered professional engineer in the states of Colorado, New Mexico, and Mississippi, and I kept that registration active after retirement. Just because, I guess. And the mayor of the small town that we live in–in Lucedale, Mississippi, found out that I was a registered professional engineer in the state of Mississippi, and he had a greenway project that was an environmental enhancement project to build an elevated boardwalk around a large wetlands area to provide access for school kids and bird watchers and anyone else that would be interested in having access to a pretty neat little area that would be very difficult to get to otherwise. (Storey: This is Lucedale?) Uh-huh, right. And it was on land that was *donated* to the Land Trust for Coastal Mississippi. And there was already an effort underway to receive a federal grant for 80 percent of the funding. It wasn't a big project. A total of about three-quarters of a mile around the perimeter with a combination of elevated boardwalk and improved hiking trial and a parking lot.

And so I took the job on and learned pretty quick that the federal money was coming through the Mississippi Department of Transportation, and their specifications and contract requirements were all geared towards like a twenty million dollar *highway* project, and this was a very small modest little quarter of a million dollar project. Nevertheless, we had to meet their requirements. We ended up with a good set of specifications. And a good contract. And a good contractor. And we successfully completed the job this last January.

But I put, probably, four hundred hours into it this last year in terms of my involvement, and [I'm] really pleased to see people using the facility and taking a personal sense of ownership in it. So that's always good for . . . (Storey: What, they're using it for wetlands education?) Yeah, and just for people just kind of to have a good place to take a stroll, take a walk in the evening and a lot of kids and all sorts of folks seem to be enjoying it, and they speak of it as *our* boardwalk and our greenway, and

so that's good because there's always the concern that vandals might damage something, you know. And that sort of thing. So that pretty well speaks to that project.

Storey: Any interpretation?

Calhoun: Yes. In fact, we have eight locations where we have signposts and information on the various flora and fauna. The mayor, himself, built these neat little birdhouses that go atop those posts to side of the walkways. And Bluebirds are already nested in those. So it's going to be a nice little setup.

Storey: Great. And does it have a name?

Calhoun: It's the Lucedale Depot Creek Greenway. (Storey: Like D-E-P-O-T.) Yeah. The railroad that served the town for the last hundred-plus years extends along a portion of it, and then the topography drops off into what was once a little flowing stream.

And I had a personal sense of involvement there back sixty years ago when I was about eight years old. A couple of my cousins and I went down and used our dads' fishing rods and reels and artificial lures, and I caught my first fish on an artificial lure in that stream down there. So I had a sense of personal involvement–and going back for a long time. But we have beavers, lots of birds–different herons and ducks and hawks–turtles, snakes, fish and reportedly at least one alligator. (Storey: <<Laughing>> I was wondering about alligators.) Maybe they'll keep the beavers in check.

Storey: Interesting. Any other things like that you've been doing?

"I've found that at my age I really enjoy clearing brush. . . . of course, in south Mississippi with close to sixty inches of rain, there's plenty of brush to be cleared. . . ."

Calhoun: Just pursuing some improvements of properties. I've found that at my age I really enjoy clearing brush. This is something that supposedly Ronald Reagan and George Bush enjoyed on their ranches, and I certainly enjoy that. Just, of course, in south Mississippi with close to sixty inches of rain, there's plenty of brush to be cleared. (Storey: And it keeps coming back, I'll bet.) It keeps coming back, right. But it is, you can manage it like so many places, with clearing some of it and then some control burns periodically. Course a couple of my controlled burns did become *uncontrolled*, and my wife threatened to take the matches away from me for a while, but *no* serious damage, but I've enjoyed that. And cut a lot of firewood for us to use and friends.

Effects of Hurricane Katrina in Lucedale

I guess one of the more significant events during the last seven or eight years was Hurricane Katrina in 2005–August 2005. That really changes things a lot in our area. We're about thirty miles north of the coast. And while we didn't have the damage that the people right on the coast did, we still sustained close to $20,000 worth of damage

to our home in terms of roof damage and windows, and that sort of thing. Wore out a chainsaw just clearing out the tree limbs and everything–the debris from the hurricane.

Storey: You moved back to, I believe you told me, that's where you were raised–at least part of the time.

Moved Back to Where He Was Raised after Retiring from Reclamation

Calhoun: Yes, that's correct. And it's also my wife's hometown, and my mother's hometown. It's just a small town of about 2,500 people. Like I say, about thirty miles north of the Gulf of Mexico, and about thirty miles from Mobile, Alabama. And, so, I've got friends and cousins that go way back.

I only went to school there–started school in the first grade and went through the third grade before we moved back to a larger town– Hattiesburg, which is sixty miles from there. But, it's good to have friends that you can go back and reconnect with and its worked out well.

Storey: Yeah, my wife's aunt Hattie Lee comes from Hattiesburg.

Calhoun: Is that right!

Storey: Tell me a little more about Katrina. Did you stay in your home? When that was coming?

Caring for Mother-in-law

Calhoun: Yes, we did. And, one of the reasons we moved back there is my wife's mother. We realized something was amiss ten years ago, but we didn't know quite what. And as we learned more as I approached retirement, it became obvious that my wife needed to be back closer to where she could care for her mother. It turned out she had early Alzheimers that developed into full-blown Alzheimers. And at the time of the hurricane Paula's mom, Nell Malone, was in an assisted living facility which was a good transitional situation, but they closed it down and evacuated everybody for the hurricane. So we, Paula and I had her mom at the house, and we set up a special set up for her so she'd be comfortable and everything. But then we were without power for a week, and Nell would go around switching the light switches on and off and saying "I don't know why Charley won't let Paula use these lights." Just little things like that, but we managed to get through.

". . . *ice* was a very precious commodity. . . ."

It's amazing when you run out of power. People really tended to help each other, including a close friend of mine bought a new generator and said "Hey, just take my old generator." So we used his old generator and got by. But one commodity that is very precious when the–because immediately after the hurricane, even though we got eight inches of rain, the temperature shot back up into the nineties and the humidity was in the nineties, and *ice* was a very precious commodity. So that was something

that was very valuable. And, of course, without air conditioning, which we've all become accustomed to in that time of the year. (Storey: Yeah, we sure have.) The best you could do was have the generator running some and use a fan some, but we got through it.

Replaced the Roof on the House

Came through in relatively good shape. In fact, our roof was past half its life, and we got a new roof out of it from the insurance company. So kind of have to look at the bright side of things, too. But, it was traumatic, and yet in a way it was exciting and stimulating because you see nature in its fury. It was something to behold. I wouldn't have wanted it to be any worse than it was, but we came through it in good shape.

Storey: Good. Good. And Nell is one "l," two "l"s?\

Calhoun: N-E-L-L. Right

Storey: Well, tell me about what the Pecos River Commission does.

Pecos River Commission

Calhoun: Well the commission, as established by Congress in 1948 addresses the water issues between New Mexico and Texas.[8] The intent was to recapture the situation in 1948 in terms of deliveries *from* New Mexico to Texas.

Most of the Water in the Pecos River Originates as Snowpack in New Mexico

Course, like a number of the western states, New Mexico being the *upstream* state that's where most of the water originates from in the form of snowpack in the Sangre de Cristo Range, and the Pecos then flows south kind of splitting the eastern *half* of the state of New Mexico and flows into the state of Texas near Red Bluff, Texas, [Reeves County] right below Carlsbad, and then the Pecos joins the Rio Grande, it's a tributary of the Rio Grande, near Amistad Reservoir on the International Border with Mexico.

Exploitation of High Quality Groundwater in New Mexico Reduced the Flow of the Pecos River and Deliveries to Texas

New Mexico, early on, sixty or seventy years ago or even earlier, found that there was some very high quality groundwater that could be tapped for irrigation, primarily, and other uses. And New Mexico did a lot of that development. The results were that the flows of the Pecos were diminished and the deliveries to Texas were reduced, and this went on for a number of years, and there were some serious legal arguments that ended up in the Supreme Court of the United States and the Supreme Court ruled in

8. The compact was signed by the commissioners for the states of New Mexico and Texas, in Santa Fe, on December 3, 1948, and was thereafter ratified by the legislatures of both states. In 1948 Congress passed an act granting its consent to the Pecos River Compact in the Act of June 9, 1949, ch. 184, 63 Stat. 159.

favor of Texas and said "New Mexico you *will* deliver a certain percentage, basically, of the flows of the Pecos to Texas. And not only will you do that in the future, but we are going to penalize you for your past actions with a significant monetary fine as well as a close monitoring in the future to assure that Texas gets its share of the Pecos.

"The Pecos, like a number of western streams, has had periods when it would have a *lot* of water in it, and other times when it would be completely dry, and, of course, fish don't do too well without water, and the Pecos River Shiner is a minnow that has been of some concern as endangered species and recently the things have been looking up. . . ."

That now has been pretty much resolved. The agencies involved–the federal agencies, the Bureau of Reclamation, Corps of Engineers, share the management of the major reservoirs. USGS, U.S. Geological Survey, is involved with the water measurement, and Fish and wildlife Service is *greatly* involved with both the number of wildlife refuges, but also with the addressing the endangered species requirements. The Pecos, like a number of western streams, has had periods when it would have a *lot* of water in it, and other times when it would be completely dry, and, of course, fish don't do too well without water, and the Pecos River Shiner is a minnow that has been of some concern as endangered species and recently the things have been looking up.

Meeting of the Pecos River Commission on April 21st Went Very Well

This annual meeting, as I said that was held last Tuesday the 21st of April, came off real well. The Fish and Wildlife Service reported that the minnow is increasing in numbers, and Reclamation has become almost an extended manager and provider of the water necessary to meet the requirements for the Pecos bluntnose shiner. And so everyone was pleased that things were going well. That's not always been the case, as I mentioned before, nor has it always been the case during the six years that I've served. But right now things are–New Mexico is meeting its obligations to Texas, the endangered fish are doing quite well, and everyone seems to be getting along quite well.

Issues with Interior Least Terns at Brantley Reservoir

One exception in terms of the endangered species is the Interior least terns, which is a bird, that's endangered. And, it had *not* had much presence in the Pecos River Valley. It had not been noted until Reclamation built Brantley Dam, and Brantley Reservoir then created a pool of water that the terns *liked* and started nesting.

Monsoons, Which Can Be Very Important to the Annual Water Supply, Flooded Tern Nests at Brantley in 2008

Unfortunately, with a reservoir that fluctuates, this last year we got some, what is referred to as "monsoon"–let me back up just a little and just explain that–I mentioned earlier that the snowpack, which is the basis for most of the water, but also the summer rains, monsoons, are a critical component, in *many* years, of the total water supply. And these can come as a result of any sort of situation. I'm reminded of what we

experienced up here in Colorado with the Big Thompson Flood, I believe in 1976, but this last year there was the remnants of Hurricane Dolly–the clouds were pushed up against the mountains near Ruidoso, and this caused some serious flooding problems in Ruidoso, but it did generate some high flows in the tributaries that flushed a lot of water down through the Pecos. As a result, Brantley Reservoir came up and the Interior least tern were about to be flooded so Fish and Wildlife Service and Reclamation attempted to move the nests, but as is the case sometimes with animals, the parents didn't appreciate the efforts and rejected the nests. (Storey: They were picky about their locations.) And they didn't want people messing with them, I'm sure. So that was one issue, but everybody recognized that the circumstances were such that it couldn't be avoided. Is this the kind of thing that you (Storey: Yes, absolutely.) want for dialogue?

Storey: So we didn't, for instance, do extraordinary releases in order to protect the tern nests?

Didn't Make Releases to Avoid Flooding Tern Nests Because of Flooding and Water Accounting Issues

Calhoun: No, we did not. And part of the reasons were just the sudden onslaught of water, and you would have probably created a flooding problem downstream in Carlsbad and other locations if you had not of tried to contain that flood. And also, the water accounting is very complex in terms of not only the deliveries from New Mexico to Texas, but also the *use* of the water within the state of New Mexico.

Storey: Yeah, let's talk more about that. I think what I heard you say was that New Mexico is obligated a percentage of available water–*not* a set amount of water.

Calhoun: That's correct. Because you never know from year to year how much you are going to have.

Storey: So how do they know? How do they know what their obligation is?

The Requirement Is a Percentage of Available Water, and There Is a Sliding Scale Dependant upon the Quantity Available

Calhoun: Well, you can project it. For example, if you get X amount of total flow then, maybe, 65 percent is the delivery requirement. On the other hand, if it is 2X then maybe that would only drop to 50 percent of the total. It's kind of a sliding scale, and this is the case on many of the western compact requirements. For example, the middle Rio Grande where similarly you've got New Mexico and Texas, but also Colorado and the Republic of Mexico involved, in terms of those delivery requirements. And then, of course, on the Colorado the seven basins states of Colorado, Utah, New Mexico, Wyoming, the Upper Basin States, have a requirement to deliver to the Lower Basin states of Nevada, Arizona, California, and then the Republic of Mexico, also received approximately 10 percent of the flow of the Lower Basin States.

Storey: Unlike on the Colorado where we say you get 1.5 million acre feet a year?

Calhoun: Right, yeah, and the 1.5 million is typically Mexico's entitlement, and California gets the largest portion followed by Arizona and Nevada gets the least of the Lower Basin states.

The Way the Pecos River Compact Allocates Water Makes Stream Gauging Extremely Important

Storey: So if I'm understanding this on the Pecos, then, stream gaging becomes extremely important.

Calhoun: Yes, it does.

Storey: Commissioner Martinez at one point asked me to go to Carlsbad and see if I could assist them because there was a dispute, if I'm understanding it, between Carlsbad and the well users up to the north–I've forgotten the name.

Calhoun: Right, in the Roswell area.

Storey: Up in the Roswell area. And the state engineer was apparently trying to transfer water rights from Carlsbad Project to the more recent deep wells up there, and I'm interested in how groundwater plays into this formula that you talked earlier about how the groundwater had depleted the Pecos, but how did they figure out how much of this is groundwater replenishment, how much of it is Pecos River Water, that kind of thing.

The New Mexico State Engineer Is Responsible for Measuring Surface and Groundwater to Deal with Compact Issues

Calhoun: Well, that's the responsibility of the state engineer of New Mexico. He has that charge, and he and his staff have to monitor the uses very closely.

". . . the bottom line as the Supreme Court decree indicated, regardless of what circumstances are you will meet this delivery requirement. So New Mexico has a pretty difficult burden of doing that . . ."

And the bottom line as the Supreme Court decree indicated, regardless of what circumstances are you will meet this delivery requirement. So New Mexico has a pretty difficult burden of doing that, and some aspects of it are still in transition, are still in development.

In the Roswell Area a Lot of Acreage Has Gone into Pecans Which Use a Lot of Water

For example, driving through the Roswell area as I did just earlier this week, there is an *enormous* amount of acreage that has gone into pecan orchards, and pecans are a very good crop–high yield, high value, and yet pecans are also an extremely high user of water. You know, say cotton, an acre of cotton would probably require something on the order of two and a half acre feet per acre to get a crop of cotton. Pecan trees are going to require twice that much. They're going to require five to six acre feet per

acre. (Storey: They spread out from the Southeast from the sixty inches a year of water.)

"So there is a greater burden on the state engineer and his staff on the Pecos. But, they've been doing a good job, and Texas has no complaints. . . ."

Yeah, so this is the kind of thing that the state engineer and his staff monitor closely, and they keep accounting of not only the surface flows, but also of the groundwater depletions and manage that. And this is a, once again there is a strong parallel between this situation and the situation on the Rio Grande except that things are different set up with the Rio Grande because Elephant Butte Reservoir–Elephant Butte Dam was built by Reclamation–is operated and managed by Reclamation. But it's kind of the cash register for the Rio Grande, whereas the Pecos its not tied down quite that well. So there is a greater burden on the state engineer and his staff on the Pecos. But, they've been doing a good job, and Texas has no complaints.

Feels the Supreme Court Should Have Taken Land and Water Quality into Account in its Decision Regarding the Pecos

Let me kind of give you my opinion just a little bit (Storey: Sure.) because this does bother me a little bit. Like so many western streams, the *quality* of the water decreases as you go downstream. The salt content increases, and so the *water* in New Mexico is a better quality, just naturally, than it is further downstream in Texas, and consequently some of the best most productive lands and best use of the water are in New Mexico because there have been severe salt problems in the area of Texas that was irrigated or is irrigated now. I don't think the Supreme Court took this into consideration. I mean, it's kind of like–what is the best overall welfare for the public in this region and not just so much on a state by state entitlement. It's my opinion that the Supreme Court failed to really take that into consideration. That *maybe* New Mexico *should* have utilized, because they could utilize the water more effectively, a little better break on things than the folks in Texas. But maybe there could have been some kind of monetary consideration or some other factor other than just acre feet of water based on acre feet of water available. But that's my opinion, and probably some others may share that–particularly I'm sure the people in New Mexico would feel that way. But, on the other hand, you've got to strike a balance in terms of fairness and what the intent of the compact agreement in 1948 and the *wording* in the compact spoke to. And of course that's where the lawyers get involved, and as Steve Reynolds, the former state engineer in New Mexico was fond of saying "Water *does* run uphill to money." And that's been the case many places.

Storey: So, now, the commission is sitting there, it meets twice a year, is that right.

Meetings of the Commission Annually

". . . the fact of the matter is much of the technical accounting and the ins and outs are best settled by the technicians, the professional staff, the engineers. And they've done a real good job in that regard. . . ."

Calhoun: Once or twice a year, most of the time just once a year. There are also engineer advisor meetings to kind of work out the details on a lot of this stuff. And, those who've been very effective, I think, in the past, a lot of the concerns didn't get resolved, and they came to the annual meeting. And the fact of the matter is much of the technical accounting and the ins and outs are best settled by the technicians, the professional staff, the engineers. And they've done a real good job in that regard.

"Texas has been served for the last several decades by Herman Settemeyer . . ."

Texas has been served for the last several decades by Herman Settemeyer, an individual that has a really strong background and knowledge of all of Texas's interstate streams.

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Storey: [What about] New Mexico?

Estevan Lopez Is New Mexico's Interstate Stream Engineer

Calhoun: New Mexico has had quite a transition in their state. ~~Their state engineer,~~ Estevan Lopez, is a real strong capable individual. He's the interstate stream engineer for the state of New Mexico. But his staff under him, they've had a number of people come and go. So there's always a learning curve, you know, for new people coming onboard in this situation.

Storey; So the technical staff is provided by the states, basically?

Federal Bureaus and the Engineer Advisor Meetings

Calhoun: With Bureau of Reclamation, Army Corps of Engineers, and USGS. They are *all* typically involved in, not only in our annual meetings but in the engineer advisor meetings and discussions.

Storey: So does the commission have any staff, *per se*?

Staffing of the Commission and Issues That Have Arisen Recently as the USGS's Traditional Role in Staffing the Commission Is questioned

Calhoun: Well, that's an interesting questions, and one that's been quite a sensitive area recently.

Several Western Water Compacts Specify the USGS as Responsible for Running the Business of the Compacts

Several of the compacts in the West–Congress in the authorization, authorizing legislation, established the USGS as the agency to pretty much take care of running the business of the commission. Keeping the records, keeping the financing.

Fiscally, Stream Gauging Is the Primary Cost

The financing typically, the requirements, the biggest requirements for money are maintaining the gauging stations. And that cost has typically been split between the states for about one-half and the federal government for about one-half through USGS appropriations. Recently, this last year, USGS did an internal audit or review of these functions regarding the Pecos River Commission and they concluded that it was no longer appropriate for USGS to provide the secretarial services, the clerical services, the treasury services, all these things that they'd done in the past. So this created quite a furor several months ago. Fortunately, an individual, Robert Gold, who retired from the USGS a couple years ago, but he had done this job. That had been pretty much his job in USGS is to keep up with not only all the clerical, but also the water end of things. When he retired a couple years ago, he stayed in the area in Albuquerque and has been substitute school teaching and enjoying retirement. But with this USGS taking this hands-off policy, the commissioners from New Mexico and Texas were fortunate to talk him into re-assuming his old job somewhat, and he'll do that out of his home. You know, I can see both sides of that. Well, actually, some of the compacts the legislation speaks very clearly–USGS will provide this service and take care of it. On the other hand, I'm sure USGS, like any other agency, is probably saying, "Well, wait a minute where can we cut back. You know, we've got some budget restrictions we're faced with. What is our essential mission, and is it appropriate for federal agency to take on clerical and bookkeeping responsibilities, so to speak, that could be done by someone else?" And you could even take that issue further, in my opinion, and say that some of the endangered species act requirements that the federal government has been very generously *covering may* well become the responsibility of the states and the local entities who have the ultimate responsibility for water in the river, let's say. You kind of catch my point there?

Storey: Yeah, I think so, but they're trying to transfer away fiscal responsibilities they've assumed in the past.

Calhoun: Right, and, you know, what is the role of a federal agency. Certainly if it affects the entire United States or large regions of the United States, that's an appropriate role. But if it's a localized area just within one state or even shared by two states, you could make the case "Hey, wait a minute, the locals need to take more responsibility because its their actions that are largely responsible for the lack of critical habitat and this sort of thing."

Storey: So the commission meets, and I assume you talk about all of these various issues.

How the Meetings Are Run

Calhoun: Yes, well, we pretty much–well here, I'll leave this agenda from our recent meeting with you. You know, the chairman calls the meeting to order, introduces the two state commissioners who in turn introduce their staff and the people that they represent, typically a short report from the state agencies, then a typical parliamentarian meeting–reading of the minutes of the last meeting, report of the chairman, report of the secretary, report of the treasurer, report of the audit, and then you get down to the real nitty-gritty report of the commission committees.

". . . then you get down to the real nitty-gritty report of the commission committees. . . . a budget committee, a legal committee, and an engineering committee. And they provide the information that's really the crux of what the commission activities amount to. These budget, legal, and engineering committees are staffed by the state employees who make that up. . . ."

There's a budget committee, a legal committee, and an engineering committee. And they provide the information that's really the crux of what the commission activities amount to. These budget, legal, and engineering committees are staffed by the state employees who make that up.

Cooperating Agencies Also Have the Opportunity to Report

Then you hear the reports from the cooperating agencies or any others that want to give a report. Typically U.S. Fish and Wildlife Service–and that's usually been the most controversial in the past–because of the concerns over the endangered species. Followed by the Bureau of Reclamation, U.S. Geological Survey, and Army Corps of Engineers.

". . . sometimes you get sidetracked for hours on some of these controversial issues . . ."

And then any other business, and sometimes you get sidetracked for hours on some of these controversial issues, but this last meeting everything went extremely smooth, and it only took us a little over two hours to take care of the business of the commission for the year. And you would hope that would go so smoothly for folks in the future.

Storey: So then the result of the meeting is what?

Commission Recommended to its Congressional Delegations That the Federal Government Continue to Fund Half of the Water Gauging Activities

Calhoun: Well, we took some specific action. And among the resolutions that were passed was a petition or a resolution sent to the delegation strongly recommending that the federal government continue to fund the water measurement stations one-half, and one-half by the states. In the past that's been pretty much a given. But, once again, with the burden upon the federal government to reduce costs, USGS has seen that as a way to reduce *their* costs some. And that's–you could make a case, "Well, Okay, the states and the locals ought to pick up more of that tab,' and I'm sure someone will make that case, but that's something it's *really good* to have the third party involvement of the USGS, and this cost sharing seems to be something that's not only traditional but worth supporting in the future.

Storey: Well, and they've been doing it for a lot longer than a hundred years.

Calhoun: Yeah, that's right. Yep, that's true. Some of their gauging stations go back a hundred and fifty years.

Storey: So you say you recommended to the delegation, this is New Mexico and Texas's . . .

(Calhoun: Right. That they support . . .) congressional delegation. (Calhoun: Right.) And what else comes out of this meeting?

Robert Gold Agreed to Take on the Secretary-Treasurer Role for the Commission

Calhoun: Well, a number of other actions, for example, *fortunately* this, what was a touchy situation with USGS stepping back from their involvement, was resolved with appointment of Robert Gold as the secretary-treasurer and his agreement to do that. That appointment did not come easy, but it was resolved before the meeting. Otherwise we would have probably spent several hours with the, particularly the Texas commissioner, expressing his frustration to USGS over them taking this action.

J. W. Thrasher Has Been Texas's Commissioner for over a Decade and James Renfrow Served New Mexico for the Last Two or Three Years

The Texas commissioner, J. W. Thrasher, is the senior member of this. He's been the Texas commissioner for the last, oh, more than a decade, and commissioner [James] Renfrow from New Mexico has only been onboard for the last two or three years. It's also interesting, this is just an aside, the Texas commissioner is funded. He has a budget of approximately $3,000 a month, which is not a lot of money, but it certainly affords him the opportunity to do things and pursue what he thinks is in the best interests of the state of Texas. The New Mexico commissioner received approximately $300 a month, an order of magnitude less, and the *federal* commissioner receives $0–except for payment of travel expenses.

Believes There Should Be a Small Stipend for the Federal Commissioner to Permit Monitoring of the Water Situation

I want to make a point in my resignation letter to the President that they consider some stipend for the federal commissioner. It's not so much just coming to the annual meeting and chairing the meeting, but also to do the job right, I felt the necessity, and I think most people would, of monitoring the situation on a pretty continuous basis through the years, particularly as the snowpack develops and then the monsoon rains, and this sort of thing. And with the internet and a computer, this is *not* that difficult to do because the Bureau of Reclamation especially has been *good* about weekly updates on the management of the reservoirs on the system in the Pecos and, of course, if you're going to do that and send it to the state agencies, one more addressee on there, and in this case it's been my name, affords me the opportunity to stay abreast of things. And, of course, you can always make a phone call and/or a question on the internet as to some particular issue that might not be clear there. So it takes time. It takes effort.

". . . to do the job right you really need to have some sense of the physical system, too. . . ."

And to do the job right you really need to have some sense of the physical system, too. Fortunately, in my forty year career in Reclamation I did spend quite a bit of time on the Pecos while I was in Amarillo, Texas, regional office, in the Albuquerque Area Office, and then also in the regional director's office in Salt Lake City. Each of those provided me the opportunity to have knowledge of the Pecos as well as other rivers

systems.

The Two States Each Have One Vote and the Federal Commissioner Does Not Have a Vote, Even to Break a Tie

One interesting point, though the commission as authorized by Congress provides for a *vote* to be cast on issues by the two states, and the two states each have one vote. The federal commissioner does not have a vote so you can't break a tie if there is an impasse. Typically what happens, a motion is made, a discussion, and then if it's seconded by the other party, then that's tantamount to passage, and that's the way I've run the meetings for six years. With an up-front,okay folks, this is the way I say we're going to do this. I'm not the greatest parliamentarian, but Texas if you make the motion, or New Mexico if you do, and conversely if Texas or New Mexico seconds it after discussion, then that means we're in agreement, right? Right! So they passed it. (Storey: And they voted.) So that's certainly facilitates keeping the meeting moving along–thataway, so folks think about it when you *make* a motion and its, you know with discussion, and its seconded, because that's tantamount to passage. And everybody kind of chuckles and agrees–hey that works, you know. It may not be the best parliamentarian process, but under the circumstances (Storey: It works find.) it's worked fine.

Storey: But I'm having trouble understanding what the commission does. I understand you're there to sort of oversee the Pecos, but how does it exercise influence, who does it report to, what kinds of recommendations does it make, how are those recommendations implemented–if they are, and that kind of thing.

The Commission Annually Reports to the President and the Two Governors

Calhoun: Okay. Yeah, and the commission reports annually to the president and the governors of the two states with an annual report. You know, here's what transpired this year. Here's the amount of water we had to work with. Here's the amount of water that was delivered from New Mexico to Texas, and either we're all kind of copacetic and happy or there is an issue. And during my tenure, very fortunately, there have not been many unresolved issues. Now, interestingly, *one* issue that did crop up three or four years ago was an accounting, a money, issue, but that–because Texas was going through a transition in state government, and they changed their fiscal year dates, and they could not meet their state obligations to pay the cost of these measuring stations and the other costs of the commission and so there was a difficult transition there, but then it got resolved.

". . . as long as this process is working as it should and New Mexico is meeting its delivery obligations to Texas, then a lot of this is almost *pro forma*. . . ."

But, anyway, the annual reports to the president and to the two governors and then as long as this process is working as it should and New Mexico is meeting its delivery obligations to Texas, then a lot of this is almost *pro forma*.

". . . as a result of the Supreme Court decree, there is another important position that was established, and that is the river master. . . . Professor Neil Grigg, who's a retired professor at Colorado State University in Fort Collins. . . ."

Okay, this is okay, but in the past this has not been the case, and as a result of the Supreme Court decree, there is another important position that was established, and that is the river master. The river master for the Pecos River is Professor Neil Grigg, who's a retired professor at Colorado State University in Fort Collins. And he absorbs all this information, and he makes the cut. He's the disinterested third party that makes the cut in terms of–okay this is what New Mexico did, this is how much they were obligated to do, and either they're okay or they're not. And that's a very important function, but it's not–he does not attend these meetings. He's almost like remote up in Fort Collins, but he's receiving all this information and making a cut on it.

Storey: And when you say "This is what New Mexico did." You mean this the amount of water they delivered. (Calhoun: Yes.). Okay.

Calhoun; This is what they had to work with. This what was available, and this is how much they delivered. And so, that's a very important function and to some degree takes some of the burden of that away from the commission itself and leaves it with this river master.

Storey; With the watermaster. I remember when I was down there, that would have been the Clinton Administration because it was Eluid Martinez, the manager spent a couple of hours and took me out and showed me . . . (Calhoun: Yeah Tom Davis was the manager then.) yeah, I think so, McMillan and some other places, and he pulled up to the river gauge there below the dam and he said something to the effect "Yeah we're delivering water to Texas, and I want to make absolutely sure they have nothing to complain about." (Laughter.) Something along those lines. I've forgotten exactly what it was, but it was interesting to me.

Sometimes Carlsbad Irrigation District Was Shorted Because They Were the Last New Mexico Water User on the Pecos

Calhoun: You know, over the years before I was retired from Reclamation over the years, many of the meetings–Carlsbad Irrigation District was somewhat in the same boat as Texas because Carlsbad was being shorted because they're the last entity in New Mexico, and to the extent that the well pumpers or users up in the Roswell area were depleting the flows, Carlsbad had a senior right, but they weren't getting it because of their location in the system–they were further downstream. That was the issue that I think the commissioner discussed with you.

I remember one meeting, this must have been two decades ago, and the Texas folks were saying to the Carlsbad Irrigation [District], "You may be in New Mexico, but we're closer aligned, Texas and the Carlsbad Irrigation District, than you are with the rest of New Mexico, because we're in the same boat." You know, if Carlsbad Irrigation District gets the water, chances are Texas is going to get the water. But the problem–so many years in the past it never got to Carlsbad, or their share of it never got there.

Storey: And I think the state engineer who succeeded Eluid as state engineer was arguing somehow that some of those water rights should be transferred upstream, maybe.

Calhoun: Well, I think some of it was just economics, too, I mean, because, once again some of the best arable land is in the Roswell area that would produce higher net yield per acre foot or per acre, but how do you balance that against "first in time, first in right."

Storey: Being in their vault was an extremely interesting experience. (Calhoun: I'll bet, yeah.) Actually, at that time, I think they've moved now, they have a two story. It was an old, I think it might have been the old Reclamation office, but they had vaults stacked one on the other, and upstairs were all of the old Reclamation records–the USRS records. And I found it extremely interesting because there was a lot of stuff not from Carlsbad but from the Lower Rio Grande and other projects all around. (Calhoun: That became the repository for . . .) I think they were trading information, they were trading design and blueprint and sections back and forth among themselves increasing their engineering knowledge.

Working in FORTRAN Computerizing Some Calculations Functions

Calhoun: Yeah, just think about the situation back in the early 1900s. Here's Reclamation, a new agency that's cutting edge in terms of design and construction techniques, the use of earth as a building material, soil mechanics, concrete technology, just hydraulics, so many things. And even in my career, you know I started my career here in Denver in 1961 right out of college, worked in Building 53, over here, in a design group–canals and pipelines–and had the opportunity to work for some outstanding engineers. Been there a few years when computer, in the middle sixties had the chance to take a FORTRAN course at the University of Colorado extension downtown, and it became obvious to me and some other young engineers that, hey, we can write some pretty effective computer programs that will reduce some of this manual pounding calculators eight hours a day. (Storey: Yeah, the Marchant calculators.) Yeah, and the Freidan and Marchant calculators. I mean, you had professional engineers, you know, that were actually pounding those things for eight hours a day when a computer could . . . I mean and so one fellow that I had dinner with last night, Leo Kinney and I developed some really groundbreaking computer programs for doing this sort of thing. We were remembering last night–we would do it with punch cards, and we were able, Reclamation had an agreement with the NOAA folks up at Boulder, at that time up at Boulder that was like the biggest computer around. I mean it was one of the biggest in the world at the time. You know, this was the middle sixties. We would actually go up there with our punch cards and submit a run, look at it, make some adjustments, make another run, and then come back. And then, finally, when we acquired Control Data Corporation, I think, 3600 machine here on the Federal Center, we would actually do turn arounds on the weekend. We would come out on Saturday evening just to get another run in and maybe Sunday afternoon so that Monday morning were would have a . . It was amazing what you can do with a little PC that we were making a tremendous improvement over punching those Marchant calculators, but still you can do all that now with the memory and everything that's available [in a] PC. So we were just kind of remembering back over . . .

Storey: Yeah and you talked to the younger guys in concrete dams or something, and they don't know what the trial load method was. You know, as far as they are concerned, they put numbers in the computer, and it takes care of it.

Calhoun: Yeah finite element analysis, boom–there you go. But, yeah, so we've gained a lot, but we've probably lost something in the process too. But that's interesting about those archives at Carlsbad. Some of the names, I'm sure, that were associated with that, were some of the early leaders in Reclamation.

Storey: Oh, it was. I think one of them was Schlichter–he did a report three inches thick on the Colorado River break, when was that, 1904, 1905, whenever it was.

Calhoun: Yeah, uncontrolled flows created Salton Sea–or recreated it, I guess.

Storey: Well, you mentioned at earlier meetings that there were some tensions over things. What kinds of things come up before the commission like that.

The Endangered Species Act and the Knowledge That's Needed

Calhoun: Oh, anything from personalities to interpretation of information, data, or the results. Probably during my tenure the greatest tension has been over the requirements for the Endangered Species Act. And, there's a lot that we *don't* know about most of these species. (Storey: There sure is.) One thing is pretty clear. Fish need water to survive.

Pecos Bluntnose Shiner

But, having said that, it looks like the Pecos bluntnose shiner reproduces *best* when you get these *big* spring inflows. They need that big slug of water to, I guess, get their hormones working, or whatever. And, if you just got a, you may have water in a stream all year, but if it's a constant discharge, they don't go into this breeding mode and propagate, you know, lay eggs and things that fish are supposed to do to sustain the species.

Carlsbad Irrigation District Would like to Move Water Through the Upper Pecos Quickly to Avoid Pumpers Upstream Taking the Water, and That Happens to Be Good for the Endangered Pecos Bluntnose Shiner

So you need this big slug of water. So that's–of course Carlsbad Irrigation District has for a number of years said "Well we like those big slugs of water because that's a more efficient way of getting the water to us–all those pumpers can't steal it if you run in a two week period and then shut it off for a month."

Storey: (Laughter.) All those wells up at Roswell, huh?

Calhoun: Yeah, and particularly the ones that pump right directly out of the river. So then you've got, well, okay, but how do we find that balance so that you have some water to sustain the fish but that also you–this peak discharge is not a bad thing in and of itself, as long as you have some *modest* base flow. And that's been an issue that's been hard to get a handle on, but I think we certainly this last year have worked out well. Years in the past, either Fish and Wildlife Service might take the position very strongly opposed to those slug flows, but they really didn't have enough information about the species that there was some benefit to that. They were looking at it from a typical stream help that, well,

you just need to have a constant flow. So that's an issue that I would hold out as an example.

Least Tern Issue

Others like this Least tern didn't used to be there, because of Brantley it's there, change . . . (Storey: Brantley's been there, I've forgotten how long, but it's been a while.) Yeah, its been there for the last, going on twenty years, I guess.

Salt Cedar (Tamarisk) Control

Salt cedar[9] control. That's been an activity. You know Reclamation's has, I wouldn't say love/hate, mostly hate relationship with Salt cedar, an endangered species that was brought in to control erosion and pretty quickly becomes a monoculture . . . (Storey: An endangered species?) Uhh, not so much, I think overall most people would say salt cedar is detrimental to *most* species the critters. (Storey: Oh it affect the endangered species.) Yeah, how do you control it. Do you control it through extensive mechanical means, or do you spray it with an herbicide, and then when you spray it with an herbicide what are the residual effects of that. You know, a lot of give and take there. But the animals that seem to like Salt cedar are, of course, the honey bees–they use the flowers of the Salt cedar, and (Storey: An herbicide won't do them any good.) no, the beekeepers were having a tough enough time with bees now supposedly we're losing enormous amounts of bees. (Storey: The mite infestations.) And then the doves like Salt cedars because they nest . . . for the most part Salt cedars have been . . . and Reclamation has, probably for three decades or more, at least funded, and support partial funding for the state of New Mexico phreatophyte control program in the Pecos. It's now carried out by the Carlsbad Irrigation District. But the funding comes from Reclamation and the state on New Mexico. Anytime you're using . . .

END SIDE 2, TAPE 1. APRIL 23, 2009.
BEGIN SIDE 1, TAPE 2. APRIL 23, 2009.

Storey: This is tape 2 of an interview by Brit Storey with Charles A., Charley, Calhoun, former regional director of the Upper Colorado Region of the Bureau of Reclamation. It is April 23rd, 2009.

You were talking about chemicals . . .

Calhoun: Yeah, herbicides to control something–that gets pretty controversial. Because there's always the possibility of some drift or some damage to adjoining fields or people perceive that it's not good for their health, and that sort of thing. That's been one that's been discussed in the past.

Storey: What's Carlsbad [Irrigation District] doing. I presume with Reclamation money, then.

9. Also known as tamarisk (*Tamarix)*, salt cedar is an invasive plant introduced from Eurasia and/or Africa. There are over 50 species of tamarisk.

Calhoun: Yeah, they're pretty much root plowing using be heavy equipment with root plows to come along and cut the roots off the salt cedar. Pile the brush up and let it just deteriorate, or burn it in some cases.

Storey: So, how do these discussions get resolved. You know, Texas is obviously looking over New Mexico's shoulder (Calhoun: Very much so.!) As is the watermaster.

How Disputes Are Resolved in the Commission's Work

". . . there're some things that really don't seem to get too well resolved. . . ."

Calhoun: Usually just by give and take in any situation, but there're some things that really don't seem to get too well resolved.

Issues on the Rio Hondo

One is the situation on the Rio Hondo. The Rio Hondo is a tributary of the Pecos that heads up near Ruidoso, and comes off the high mountain range to the west and flows generally eastward to the Roswell area and then empties into the [Pecos] ~~Rio Grande~~. The Corps of Engineers has a dam, a flood control dam, ~~Three~~ [Two] Rivers Dam, and typically there is an area upstream and downstream of that dam that are supposed to have a certain channel capacity in order to release the water as *quickly,* and as *efficiently,* and *effectively* so that it gets to the Pecos and then it gets to Texas in turn. Well, the landowners in certain reaches have been very reluctant to do any canalization or anything that would effect–I mean, they kind of enjoy the water coming in and staying there as long as possible in recharging their groundwater and that sort . . . particularly in the upper reaches of the Rio Hondo. That's been a bone of contention with the state of Texas is that the state of New Mexico has not done enough to assure that that canalization work is done for the *quick* flow of the water through there. And also some criticism of Corps of Engineers operation–"Wait a minute, you're holding onto that flood flow too long, and you need to release it in an expeditious manner that maximizes delivery to the Pecos. And, of course, the Corps said, "Well, if we don't have channel capacity downstream, maybe we have only 500 cfs[10] channel capacity, even though a thousand is authorized. We can't just run a thousand just to scour everything out because that's going to damage. . . . We need to make the–the local and state flood authorities need to make those improvements." So that sort of thing gets kicked around, you know. (Storey: Uh-huh.). As an example.

Storey: Now what about water users? Do they participate, how do they participate?

Water User and Interested Party Participation in the Commission's Annual Meetings

Calhoun: Yes, they're always represented. Certainly the ones from the big districts, CID, PVACD–the Roswell (Storey: Pecos Valley [Artesian] Conservation District) right represents the groundwater users in the Roswell area. And others, some of the smaller

10. Cubic feet per second.

districts, some of the local entities like the one particular landowner along the Hondo has been there and takes umbrage Texas's remarks about that channel capacity. "Well, you got to realize that's *my* land, and you're not going to just come in there and bulldoze, and destroy my beautiful cottonwood forest, *bosque*, just because you want the water to run downstream quicker" or something like that.

For Whatever Reason, Acequias on the Upper Pecos Are Not Represented

The people who probably have not been represented that could be, I found this interesting, are the *acequia* up at the upper end of the Pecos–you know, right when you come out of the mountains. (Storey: People up there at Pecos and . . .) and Santa Rosa, yeah, between Pecos and Santa Rosa. There are a number of old, *old*, *old* acequias that come out, and it's probably marginal irrigation, but it's part of the tradition in other places in northern New Mexico. And there, for whatever reason, probably just the distance and time and expense they're not represented, but I have to assume they are represented, once again, by the state engineer of New Mexico, who monitors *their* use of the water, and a lot of those are pretty senior rights, you know. They may be a modest amount, maybe it's only ten cfs that they divert, but that's another entity.

Reclamation Is Interested in the Fort Sumner Irrigation District

Another group of interest that Reclamation had involvement with is the Fort Sumner Irrigation District. Now, you know where Fort Sumner is, of course, the home . . . where Billy the Kid is buried and all that. And it's (Storey: And I think there's a dam there isn't there?) There's a diversion dam–yeah, there's both a storage dam *upstream* Fort Sumner, and also downstream Fort Sumner there's a diversion dam that serves the irrigation district there, and they produce a real high quality alfalfa hay that's favored by horse people in the western United States.

". . . Fort Sumner Irrigation District has an entitlement to the first hundred cfs of water in the river that comes through there, and they pretty much *grab* that and use it. . . ."

So it's a economic consideration, but they've got a–Fort Sumner Irrigation District has an entitlement to the first hundred cfs of water in the river that comes through there, and they pretty much *grab* that and use it.

A Party in Santa Fe Is Proposing to Move Fort Sumner Irrigation District Water to Santa Fe

Now there's a party of interest in Santa Fe that's saying ""We're proposing to buy up some of the Fort Sumner irrigators' entitlement, capture that water, and put it in a pipeline to bring it to Santa Fe for people to use in Santa Fe. And here are all the things we're willing to do to make this worthwhile." Well, there are a lot of folks who're saying, "Hold it just a minute." And, that's an issue that going to be–it's just starting to rise to the surface, and I'm sure it won't–the state engineer will have a strong say in terms of the procedures, water right procedures, and certainly Texas will be watching that one real closely too.

Storey: Yeah, I had a friend [Roger Maas] in Philadelphia who's getting ready to retire, and he said, I didn't know this before, but he comes out for two weeks every year to Santa Fe and arrives the week of New Year's and spends two weeks. I said, "Well are you going to retire to Santa Fe." And he said, "Oh no, I don't trust the water [supply]."

Calhoun: It's about that serious. It is.

Storey: The last time I saw him–and my response was, what you've already said. "Water runs uphill to money, and Santa Fe will get the water. Don't worry about it." But he ultimately chose a Maine retirement home, on the coast up there [at Castine] because of that.

Calhoun: Yeah, well, certainly there is an abundant water supply up there, as well as right now an abundant lobster supply that's nice to have certain times of the year, too.

Storey: Tell me about the water users In New Mexico on the Pecos [it] looks to me like there's a lot of irrigation and so on. What about when you cross the border into Texas? Is that water mostly going into the Rio Grande to be used downstream or is it actually being used along the Pecos, or how does that work?

Most Irrigation on the Pecos in Texas Occurs in the Red Bluff Irrigation District

Calhoun: Both. Both. The Red Bluff Irrigation District in Texas is the entity that *most* of the irrigation takes place, and those folks are always present at these meetings too. They usually always have representation there.

". . . approximately 10 percent of the flow water into Amistad comes from the Pecos. But *30 percent of the salt* in Amistad comes from the Pecos. . . ."

Commissioner Thrasher made an interesting–another issue that we've kind of skirted around is the salinity issue. And some of the water does go to the Rio Grande. Commissioner Thrasher stated Tuesday, approximately 10 percent of the flow water into Amistad comes from the Pecos. But *30 percent of the salt* in Amistad comes from the Pecos. So, you know, it's a very strong concern not only for the United States, but for Mexico. What can we do to control this salt. Which, a lot of it's natural. A lot of it's return flows.

Reclamation's Malaga Bend Project to Reduce Salinity in the Pecos River

And Reclamation's been involved in that in the past. I don't know if you ever knew of the Malaga Bend Project below Carlsbad?–which was a really high salt natural deposit that as the river flowed through there the seepage really was a high concentration of brine. (Storey: No, I didn't know about that. I'm more aware of the salinity issues on the Colorado.) Colorado, but similar here and so Reclamation had a project to capture some of that brine flow and pump it over to an evaporation pond. This, of course, resulted in a depletion of flows, but it also reduced the salt. And this was pursued for a number of years, and then lack of funding, lack of support, it was–probably as a result of the depletion of the water it was dropped.

A Number of Enterprises Have Tried to Produce Salt Commercially at Malaga Bend

But, since then a number of entities have attempted to commercially mine some of that salt and also benefit the river. And it's almost like every three years somebody'd come in and say "Okay, we've got the fix. We can do this." They put lot of money into and then two years later they give up and they're gone because of technical problems, corrosion, whatever. The market changed, or whatever. This has been a cycle.

Now there is supposedly some new approach that is being proposed and there's hopes that it will succeed in reducing that salt load to the river. That's another item that was discussed at some length there Tuesday. The individual that, while he did not represent the parties that were going to be making this investment, he had been in contact with them. He was sort of like the economic development person for the Carlsbad area. And he thought that they had a good chance at succeeding in this endeavor.

Storey: Any other issues? Let's see, we've done salinity, endangered species, *water* delivery, . . .

Cloud Seeding Is a Possible Issue

Calhoun: I think at times in the past probably cloud seeding, you know, the possibility of enhancing precip has been a . . . (Storey: Operation Skywater.) yeah, you know, which we never quite got to its full potential.

Storey: Well, you know, I think in the end you see yourself saying "How do we *prove* we aided the precipitation?"

". . . I think what we will see is the people will get the water because the people will pay for the water. And you'll see a diminishment or a reduction in irrigation and a higher requirement of water for domestic and industrial purposes, but you'll also see the industries that require large amounts of water probably relocate to areas of the country or the world where water's more plentiful. . . ."

Calhoun: And if you did, did it show up here or somewhere else downwind or . . . I don't know, kind of stepping back away from this, I consider it a privilege to have served in this capacity at this stage of my career and to have stayed involved in it. I think probably on a larger scale, while I'm not convinced that global warming is as much a man-made phenomenon as a natural phenomenon, and certainly we *are contributing* to it, but maybe not to the extent that Al Gore thinks we are, your friend's concern about water for Santa Fe is one that, you know, the entire western United States needs to become much more concerned about and much . . . and I think what we will see is the people will get the water because the people will pay for the water. And you'll see a diminishment or a reduction in irrigation and a higher requirement of water for domestic and industrial purposes, but you'll also see the industries that require large amounts of water probably relocate to areas of the country or the world where water's more plentiful. (Storey: Yeah, there are a few of those areas. *Canada*.) Yeah. (Storey: Canada seems to have a *big* supply of water they don't use.) Yeah, yeah. But . . .

Storey: So you've been on the commission six years now. May six, eight meetings, something like that? (Calhoun: Yeah. Right.) And how do you oversee, or does the commission oversee the work of these sort of subcommittees, or is that really Texas and New Mexico are overseeing that. How does that work?

How the Commission Oversees the Work of Subcommittees

Calhoun: Texas and New Mexico share that, and they report to the commission, and certainly if there's a controversy or a question or a disagreement with a position, you know, that's part of the proceedings. It's captured in the minutes of the meeting. I don't–would this be of any value to you? To just kind of glance at the minutes of the last . . . (Storey: Well, that would be nice. Those are public, right? So I could put them at the end of your oral history interview?) Yeah, that was my intent was to give you some of this–I just brought extra copies that–and besides I'm going to be reducing my file. (Laughter) Well, why not? (Storey: I'd be happy to do that.) Getting back to the crux of your question, "Okay, Charley what did you really *do*, what does the commission really *do?"* (Storey: And what's your role in the commissioner as federal commissioner?) And, as chairman, and it's pretty much to run the meeting and to keep a keen sense of involvement and ask pertinent questions and clarify issues, but beyond that a lot of it is–it depends on what you make of it.

Tried to Assure Federal Perspectives Were Aired During Commission Meetings

I tried to stay personally involved, and informed ,and ask pertinent questions, and make pertinent points that I felt needed to be made, maybe from the federal perspective that neither one of the state commissioners would feel like it was necessary to cover.

Question Arose Whether Commission Meetings Could Proceed If the Federal Chairman Was Not Present

The question came up, what if I can't make the meeting, what if I'm sick, and the lawyers for the two states said "Well, we can't have a meeting." Because the federal commissioner, the authorization requires the three commissioners *meet*, and I said, "Well, can't someone substitute for me?" "Well, if you can get the White House to approve as a substitute." And I said "Wait now, come on guys, you know, on the one hand the reality is this is kind of a big to-do over not that much. I mean, on the other hand we can't, without the President approving, you can't have a substitute?" "No, its legally this is the way it's gotta be."

Concerns about Lack of Support for the Federal Commissioner/Chairman

And one of my frustrations is, see, each state has, I mean they're sharp legal staff involved in this. But as the federal commissioner, where's my legal staff. You know? (Storey: Yeah.) Hell I didn't even have a federal ID. I mean, I told USGS, I said, hey give me some kind of a little card so when I'm traveling I can say I want your government rate for the motel. (Storey: And they wouldn't do that?) Well, no, we can't do that. You're not a USGS employee. Well, no I'm not. (Storey: But I'm a presidential appointee. That's an interesting conundrum.) Yeah, it's a weird deal, you

know. And so I just said, well, I'll make every effort to be there, and you know it'd be a heck of a thing, but you guys you need to think about this. What if my plane's delayed. What if my car breaks down? Because you have these meetings in rather remote locations sometimes. Now it's one thing to get to Austin where some of the meetings are held, another thing to get to Albuquerque where some of the meetings . . ., or even Santa Fe. But Monahans, Texas, Fort Stockton, Texas, Carlsbad . . . (Storey: Yeah, I flew to El Paso and drove to Carlsbad when I went.) Yeah.

Storey: Anything else we should talk about from your retirement period? Have you done any consulting–paid consulting?

Hasn't Done Any Consulting Work

Calhoun: No, I haven't. If I'd stayed out in this part of the country I most certainly would have, but with our family situation and all I've not sought it, and I'm healthy, for the most part I'm happy, and I'm glad to have had this opportunity, just like I very much appreciate the opportunities I had in my forty year career with Reclamation.

"I still dream about Reclamation and *work* . . ."

I still dream about Reclamation and *work,* and I–my good friend Steve Magnussen, who passed away this last year, I called him when I learned that he was sick again with cancer. And I said, Steve, just want to tell you how much I enjoyed working with you and everything, and you probably think this is crazy, but I still dream about work. In fact, I dreamed about you just the other night. He said, "If you're crazy, I am too, because I still dream about it too." And I guess that was just such an important part of our lives.

Storey: Well for both of you that was *the* lifelong career.

Calhoun: Yeah, sure enough.

Storey; Fortunately, I got a lot of oral history with Steve.

Calhoun: Oh, such a wealth of knowledge of Reclamation, and worked in so many different areas too.

Storey: Yeah, he was in Sacramento, I believe Steve was the one who told me that he left Sacramento because he didn't like the style of the regional director.

Regional Director's Job in Sacramento Is One of the Most Difficult in Reclamation

Calhoun: Yeah, probably so. And they had some interesting ones–they did. And that regional director's job was *often* one of the most *difficult* in Reclamation. But they had some folks that probably extended their authorities a bit too, I suspect.

Storey: Well, you know, Don Glaser is there now.

Calhoun: Yeah, and oh, Don, look where all he's been and what all he's done. (Storey: Oh, yeah.) Interesting guy.

Storey: Well, if there's nothing else, I really appreciate your coming out of your way to do this for me.

Calhoun: You're most welcome.

Storey: And I'll ask you again if you're willing for the information on these tapes and the resulting transcripts to be used by researchers both inside and outside Reclamation.

Calhoun: Yes, I don't think I've said anything that would incriminate you or me, so . . .

Storey: Good, thank you.

Calhoun: You're welcome.

END SIDE 1, TAPE 2. APRIL 23, 2009.
END OF INTERVIEWS.

Appendix 1: Newsletter Story on Plane Crash

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

THE SPILLWAY

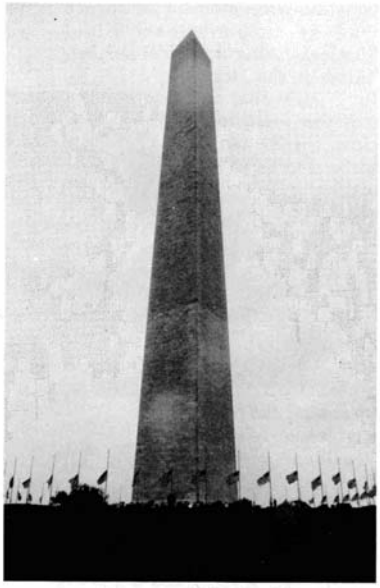
Upper Colorado Region *Special Edition* *December 1997*

Bureau of Reclamation Mourns the Loss of Eight Upper Colorado Region Employees

Jayne Kelleher, Writer/Editor, Salt Lake City, Utah

U.S. flags at all Department of the Interior facilities across the country flew at half-staff October 15 through October 17, 1997, to honor eight Bureau of Reclamation employees who died in an airplane crash on October 8, 1997, in Colorado.

Killed were eight employees of Reclamation's Upper Colorado Region and the pilot of their chartered Cessna 208. On board from Montrose, Colorado, were **Allen E. "Al" Inman, Jr.**, age 47, Manager, Curecanti Field Division, Reclamation employee since 1980 and **Jon E. Nees**, age 42, Safety and Occupational Health Manager, Reclamation employee since 1979. The passengers from Page, Arizona, included **William H. "Bill" Duncan**, age 46, Manager, Glen Canyon Field Division, Reclamation employee since 1976; **Jeffrey E. "Jeff" Waite**, age 41, Powerplant Operations Manager, Glen Canyon Field Division, Reclamation employee since 1988; **Dephina D. "Dee" Holliman**, age 37, Computer Assistant, Reclamation employee since 1996; **Walter A. "Walt" Kaltmaier**, age 62, Computer Specialist, Reclamation employee since 1988; **Catrina M. Wall**, age 33, Computer Specialist, Reclamation employee since 1981; and **James L. "Jim" Bloomfield**, age 43, Electrical Engineer, Reclamation employee since 1983. The pilot, **Robert Armstrong**, a 63-year-old Phoenix, Arizona, resident, had been flying with Scenic Airlines for ten years.



All flags on Interior lands, including the Washington Monument grounds, flew at half-staff October 15-17, 1997, to pay respect to Reclamation employees killed October 8, 1997. Photo by Tami Heilemann.

The single-engine plane took off from the Montrose Regional Airport Wednesday morning, October 8, 1997, on what was to be a 90-minute flight to Page, Arizona, where employees were to attend a general power office meeting. The plane quickly vanished from radar. After two days of searching by the Civil Air Patrol, National Guard, and sheriff's ground crews, the plane was located about 9:30 a.m. on October 10, 1997, by a ground crew. There was no sign of fire at the site, but the ground was saturated with aviation fuel. The aircraft was completely destroyed.

The plane, which appeared to have gone down at about an 80-degree angle, crashed on the rugged Uncompahgre Plateau about 18 miles southwest of Montrose, Colorado. It apparently dropped straight out of an overcast sky shortly after takeoff and crashed in a stand of 100-foot-tall spruce trees. The plane crashed belly first in a descent so vertical that only a single tree branch was broken. More than a dozen National Transportation Safety Board investigators searched the wreckage for clues to the cause of the crash. The NTSB refused to

(Continued on page 2)

From Regional Director Charles A. Calhoun

The most aberrant year that any of us hopefully will ever face in our careers is now drawing to a close. It has been a year of tragedy, challenge, frustration, and exhaustion. And yet, through it all, it has also been one of the most reaffirming years of my life.

As you may quickly see, this isn't a typical "End of Year" message from the Regional Director. It hasn't been a typical year, no matter how you look at it.

We contended with a big winter snowpack and a prolonged spring melt and heavy runoff throughout the region. The problems were especially pronounced in the Colorado River drainage. We struggled with how to get the runoff in and out of the reservoirs under control, without creating worse problems downstream for our friends in the Lower Colorado Region.

On the Green River, the runoff never seemed to end. We came to the top of the bank in Green River, Wyoming. Downstream, we were forced to release high volumes of water from Flaming Gorge Dam, creating downstream impacts for the Forest Service. We strived to not only control the runoff, but to provide an operational cushion to enable us to meet our commitments later in the summer and fall to the endangered species.

In the midst of this, we experienced the failure of an outlet tube at Flaming Gorge Dam. The resulting flood of the powerplant took us off-line for a week. Heroic measures by our employees, working through the night in arduous conditions, prevented further losses to the facility. The event was complicated by the extreme measures it took to maintain flows and temperature in the Green River, thus avoiding a loss of trout and endangered species of fish.

In New Mexico, the United States filed the quiet title suit, U.S. vs. Elephant Butte Irrigation District, in order to protect our ability to meet lead responsibilities to deliver Rio Grande Project water as created by international treaty, interstate compact, federal statutes, and contracts. The resulting battle has been exhausting for all associated with the issue.

Meanwhile, in Salt Lake City, we were dismayed to find our anticipated move from the unsafe Federal Building was pulled out from beneath us. After months of work, at the last minute, the building owner objected to our assuming the unexpired lease of the previous tenant. Efforts to relocate to a suitable site in downtown Salt Lake City, Utah, are now back on track. Currently, we are finalizing specifications for a solicitation-for-offer which will be sent to prospective landlords. We expect to receive proposals in January, with evaluations and an award to follow no later than March. Our target date to relocate to new space is July 1998.

While that was happening, the idea of draining Lake Powell was being advanced by some in the private sector and the media. Many of the arguments put forth represent a complete distortion of data and reality. Reclamation and the Department told Congress at a special hearing in September that the idea is not realistic or economically feasible.

The worst event, of course, was the tragic death of eight of our finest employees and friends in the plane crash October 8, 1997, near Montrose. The sense of frustration as we searched for the plane, the empty feelings we experienced in our hearts as the worst possible news was conveyed, and the difficulty in facing the loss are things we will never forget.

But through all the tragedy and troubles, I have seen the true heart of the Bureau of Reclamation and you, my fellow employees, who make this agency what it is. I have seen and experienced acts of kindness and love for one another. I have watched as families have drawn together and as entire communities have rallied around Reclamation employees. I have seen acts of heroism at places like Flaming Gorge. I have shared some late nights and long weekends of work across the entire region with employees giving that extra effort.

Finally, I listened with pride as the Secretary of the Interior spoke to the heart of what it means to be an employee or a family member of a Reclamation employee. I heard the Secretary tell the people of Page, Arizona, and America, of the incredible sacrifices made in service to our country. He spoke of how the American west has water and power for both consumptive use and a bountiful environment because of our work. As he and others spoke, I saw the pride reflected in the faces of the families of our employees who were killed in the line of duty as speaker after speaker stood to recount why America is better because of the accomplishments of their loved ones.

When I reflect on 1997, I also turn my attention to the success stories of the past year. They are plenty and stretch from one end of the region to the other. In all cases, they are attributed to you, the people of Reclamation.

My holiday wish for you is simple. I hope you will take to heart Commissioner Eluid Martinez's message and find balance between work and family, and that we will all live lives rich in service, fellowship, and happiness.

In closing, I dedicate this message and the coming successful ventures of 1998 to the memory of ***Jim Bloomfield, Bill Duncan, Dee Holliman, Al Inman, Walt Kaltmaier, Jon Nees, Jeff Waite,*** and ***Catrina Wall.*** In life they served themselves and the public with distinction. In death, they have rekindled a sense of community and family within Reclamation that we shall never forget.

*U.S. GOVERNMENT PRINTING OFFICE 1997-0-673-420/20056

Appendix 2: Regional Director Plane Crash Anniversary Message

UC-100 SENT VIA LAN **OCTOBER 8, 1998**

MEMORANDUM

To: All Reclamation Employees

From: Charles A. Calhoun
Regional Director
Upper Colorado Region

Subject: One-Year Anniversary of the Loss of Reclamation Employees in an Aircraft Accident

One year ago today we suffered the single greatest tragedy in the history of the Bureau of Reclamation when a charter plane crashed, killing eight of our friends and fellow employees. Unfortunately this was not the first time we had suffered the loss of an employee, but we had never experienced a collective loss of this magnitude.

As the year passed, we held Jim Bloomfield, Bill Duncan, Dee Holliman, Al Inman, Walt Kaltmaier, Jon Nees, Jeff Waite, and Catrina Wall and their families in our thoughts and prayers. We pledged to the families that their loved ones would not be forgotten. We held a Reclamation and Department of the Interior memorial service in Page, Arizona, and another smaller private memorial service in Montrose, Colorado. As the Page service was happening, we asked all Reclamation employees west-wide to pause in tribute from their tasks at hand. We restored the fountain at the Carl Hayden Visitor Center at Glen Canyon Dam and dedicated it as a memorial fountain through which the life-giving waters provided by Reclamation dance and flow. An eternal monument was dedicated at the cemetery in Montrose. The employees in Montrose created a memorial site on the grounds of that office. Hundreds of employees and public sector friends contributed thousands of dollars to a memorial fund dispersed last spring to the families.

Equally important, we as an organization collected ourselves to jointly continue the work of Reclamation in spite of the overwhelming loss we faced. As difficult as it was, we filled the positions left behind and all of you have gone out of your way to assist those selected in becoming comfortable with their new responsibilities.

Over the past year, we learned a lot about who we are, individually and collectively, and what it means to balance the demands of our careers with family and personal responsibilities. I believe we have reaffirmed all that is positive about careers of public service coupled with a deep sense of caring for each other as diverse individuals.

Today, I ask each of you to pause for a moment to reflect on the lives of Jim, Bill, Dee, Al, Walt, Jon, Jeff, and Catrina and to give thanks, in your own individual ways, for their service to the American people and their friendship we shared.

IS! **CHARLES A. CALHOUN**

Appendix 3: Retirement Announcement from Calhoun

Dear Fellow Workers,

I have served as your Regional Director for nearly 7 years now. It has been a privilege and a pleasure to work with so many fine, dedicated folks. We have faced many challenges. Together, we have accomplished a great deal and I am proud of our collective record.

One very troublesome concern for those of us who work in Salt Lake City has been the earthquake risk of this building. We learned earlier this year that GSA plans to start construction in February 2001 to correct the problems. They expect to have the work accomplished by February 2002. This accomplishment is a great example of the dedication, determination, skills, and teamwork that you bring to the table every day. I am convinced this work will be done because of Reclamation's tenacity and professionaljudgment. This success story could be replicated a dozen times over on a host of subjects-something that makes me very proud.

Last month, Commissioner Martinez presented me with a 40-year pin based upon my service computation date of October 4, 1960. 1 know I have enjoyed my career immensely because every morning (well, at least most mornings) I look forward to coming to work. Even on the most difficult days, the association with all the fine people I work with softens the issues. However, after raising kids and working for the Government for four decades, it is time to retire.

Paula and I sent our youngest son off to the University of Utah this fall. Eric reports that life is good in the dormitory on campus and tells us he is seriously pursuing his studies (and, of course, reminds us he could always use some more money.) The combination of my 40 year service award, our last child leaving home, and the realization that Paula and I would like time to pursue other interests has led us to this decision.

My first inclination was to try to list all the projects and accomplishments we have collectively produced for our customers, stakeholders and the taxpayers. But, I've decided to put that off for a bit and use this note as a personal effort to reach all of you spread out over our vast region and thank you for all you have done. In doing so I, again, reflect on those horrible days after the 1997 airplane crash that claimed the lives of eight of our friends and fellow workers. Commissioner Martinez admonished us, as we grieved, to always keep our families and friends first in our lives and to strive for balance in what we do. As all of us do, I've tried to balance family and work for 40 years and now I have the opportunity to focus on family and other interests.

Commissioner Martinez and I have asked Rick Gold to step in as Acting Regional Director, effective December 3, 2000. 1 will continue to serve the Commissioner in a special advisory position until December 30. Rick knows our issues inside and out and I am very pleased to know that the transition process should be seamless.

Paula and I would like to invite each of you to lunch on Wednesday, December 27, from 11:00 to 2:00 in Room 8102. If any of you from the Area Offices are in town, please come join us. We will have pizzas, salad, and soft drinks followed by dessert. This will give us a chance to visit. reminisce and personally thank you again for the opportunity to have worked together in the

Upper Colorado Region of the Bureau of Reclamation.

Appendix 4: Retirement Press Release

Salt
Lake City, Utah
Barry D. Wirth (801) *524-3774*
E-mail: bwirthuc.usbr.gov
For Release November 17, 2000

CHARLES A. CALHOUN RETIRES AS RECLAMATION'S REGIONAL DIRECTOR

A career spanning 40 percent of the history of the Bureau of Reclamation will come to an end with the close of the year 2000 as Charles A. Calhoun, Regional Director of the Upper Colorado Region, retires. Working from the region's Salt Lake City, Utah, office, Calhoun has been responsible since 1994 for delivering water, generating hydropower, meeting habitat needs of endangered species, and providing water-based recreational opportunities across portions of seven western states.

"Charley Calhoun is one of the last of an amazing group of managers within Reclamation," said Commissioner Eluid Martinez. "Charley's career began 40-years ago as a GS-2 employee in the Department of Agriculture and now concludes as an officer in the Senior Executive Service of the Federal Government. This is analogous to a military career that began as a private and ended as a general," the Commissioner said. Also, in terms of tenure, Calhoun is the senior manager in the Bureau of Reclamation.

Calhoun helped lead Reclamation's evolution in the 1990s from a construction and project development agency to a resource management and water stewardship agency. By example, several highlights include the finalization of the 1996 Operation of Glen Canyon Dam Environmental Impact Statement and the initiation of the Glen Canyon Adaptive Management Program (AMP). The AMP is regarded as the world's ground breaking laboratory in the process of incorporating ongoing scientific monitoring and research coupled with citizens' recommendations in the evaluation and management of an environmentally impacting facility - in this case Glen Canyon Dam. During this period, Calhoun directed the now-famous test of the BeachlHabitat-Building Test Flow through Grand Canyon in March of 1996. This experiment demonstrated the ability to use controlled floods as a management tool in the Grand Canyon.

Commissioner Martinez also pointed out that Calhoun has been a leader in seeking long-term resolution to critical water issues in New Mexico and Texas related to water supplies and endangered species. He was responsible for the first Bureau of Reclamation transfers of title for federal irrigation facilities from federal ownership to local water district ownership, thus improving project efficiencies through increased local management control while ensuring that the federal financial investment was recovered. Those facilities are in New Mexico and Texas.

As Regional Director, Calhoun oversaw management of 19 hydroelectric powerplants annually producing over 6 billion kilowatt-hours of electricity, enough to meet the annual residential electrical needs of over 1.2 million people. The Upper Colorado Region also delivers about 4.4 million acre-feet of water annually. An acre-foot is generally sufficient to meet the annual needs of a family of four people.

An accomplishment of note is the substantial progress of the Colorado River Basin Salinity Control Program. Under Calhoun's direction, projects in the headwater states of Colorado, New Mexico, Utah. and Wyoming have improved water quality downstream for the benefit of Arizona. California.

and Nevada, along with Mexico. To date, 23 projects have demonstrated a three-fold increase in effectiveness at reducing salinity while costs have dropped by over *50* percent.

Also noteworthy are the accomplishments of the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin and the San Juan River Basin Recovery Implementation Program. These programs have united federal, state, and tribal governments along with water users, hydropower generation customers, and special interest groups in a common effort to recover endangered fish in the Colorado River system. Significant progress has been measured, which in turn enables the states to continue to develop and utilize their entitlements to Colorado River water.

Prior to his present position, Calhoun worked in Reclamation's programs in Colorado, Nevada, New Mexico, and Texas. He holds a Bachelor of Science in Civil Engineering from the University of Mississippi and is a registered Professional Engineer in Colorado, Mississippi, and New Mexico. Calhoun and his wife Paula plan to remain in Salt Lake City for the immediate future.

Commissioner Martinez has also announced that effective December *3,* 2000, Rick L. Gold, currently the Deputy Regional Director of the Upper Colorado Region, will be appointed Acting Regional Director until the position is filled. Gold holds Bachelor of Science and Master's Degrees in Civil Engineering from Utah State University, is a registered Professional Engineer in Colorado, Montana. and Utah, and has worked previously in Reclamation offices in Colorado, Montana, Utah, and Washington D.C.

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Five Unpaginated Documents from the Pecos River Commission:

Minutes of the Fifty-ninth Annual Meeting of the Pecos River Commission, Calendar Year 2008

Report to the Pecos River Commission by the Bureau of Reclamation, USGS Letter to the Commission on Fiscal Matters, Agenda of the Sixtieth Annual Meeting of the Pecos River Commission, and, Resolution of the Pecos River Commission Recognizing the Six Years of Service of Charles A. Calhoun as Commissioner for the United States

MINUTES OF THE EIGHTY-FIFTH (FIFTY-NINTH ANNUAL) MEETING

of the

PECOS RIVER COMMISSION

Monahans, Texas

April 8, 2008

The Pecos River Commission (Commission) 59th Annual Meeting (85th meeting) was called to order by Federal Commissioner Charles Calhoun. Commissioner Calhoun thanked Commissioner Thrasher and the Monahans Chamber of Commerce for their hospitality and for the reception the previous night. He asked that all attendees sign the roster at the front desk, and called on Commissioner Thrasher to introduce attendees from the State of Texas.

Commissioner J.W. Thrasher welcomed meeting attendees to Monahans, Texas and thanked the Monahans Chamber of Commerce for the reception. The following people were introduced from the State of Texas:

Herman Settemeyer – Engineer Advisor for the Pecos River Compact and four other compacts with the State of Texas
Tom Bohl – with the Texas Attorney General's office
J.A. Lazarus – staff to Texas State Senator Uresti, the Senator for the district of which Monahans is a part
Mike Booth – attorney to Senator Uresti's office
Alyson McDonald – Texas AgriLife Extension, Fort Stockton, Texas
Clay Lee – on the board with Reeves 3
Hughes Simpson – with the Bar Service in Lufkin, Texas
Mike Dorsey – U.S. Geological Survey (USGS), Texas
Jonnie Sherwood – Pecos, Texas
Arlen Gentry – new extension agent in Monahans, Texas
Logan Lair – new extension agent from Pecos, Texas
John Robinson – Pecos 2
Randall Hartman – Red Bluff, Texas
Robin Pruitt – Red Bluff, Texas
Lucas Gregory – Texas Water Resources, Texas A&M

Commissioner Thrasher noted that in the eight years that he has served on the Commission, Texas has had a good relationship with New Mexico, and that, in that time, New Mexico has over-delivered 60,300 acre feet of credit water to Texas.

Chairman Calhoun called on Commissioner Renfrow for introductions from the State of New Mexico. Commissioner Renfrow thanked Commissioner Thrasher and the City of

Monahans for the reception, and introduced the following attendees from the State of New Mexico:
Sara Rhoton – Engineer Advisor to the Pecos Bureau of the New Mexico Interstate Stream Commission (ISC)
Tanya Trujillo – attorney with the New Mexico Interstate Stream Commission
Brent Bullock – Pecos Valley Artesia Conservancy District (PVACD)
Robert Calloway – PVACD
Dick Smith – PVACD, manager of the Chaves County Flood Control Commission
Estevan Lopez – director, New Mexico Interstate Stream Commission

Mr. Lopez delivered remarks concerning the ISC. He began by thanking Commissioner Thrasher and the City of Monahans for the reception, and the Corps of Engineers for their entertainment. He then talked about items of continuing interest to New Mexico, as they related to the Pecos Compact.

First, regarding Compact compliance, New Mexico began Calendar Year 2007 carrying a record delivery credit of 67,300 acre feet. During 2007, New Mexico did not secure water leases from the Carlsbad Irrigation District for state deliveries. However, nearly 20,000 acre feet of water allotted to lands owned by the ISC, within the Carlsbad Irrigation District, were delivered to the state line. Preliminary accounting by ISC indicates that New Mexico met its delivery obligations during 2007. New Mexico anticipates building on the existing 67,300 acre feet delivery credit in the 2007 Calendar Year.

New Mexico has worked for the last several years on implementing the Pecos River Consensus Plan and settlement. From a long-term Compact compliance perspective, New Mexico continues with activities for implementing the Consensus Plan developed by the Lower Pecos River Basin Committee in January of 2002. The Consensus Plan calls for the purchase and retirement of 6,000 acres of land, with water rights, within Carlsbad Irrigation District and 12,000 acres above Brantley Reservoir, primarily in the Pecos Valley Artesian Conservancy District, but also beyond that.

The New Mexico Legislature enacted Statute 72-1-2.4 in 2003, to encourage the development of a settlement agreement and to authorize the Interstate Stream Commission to purchase the required land and water rights. Also in 2003, the United States, the State of New Mexico, the CID (Carlsbad Irrigation District), and PVACD obtained approval from the State Adjudication Court of an agreement confirming the Consensus Plan.

Consistent with the provisions of the settlement agreement, in 2007, the New Mexico Legislature passed legislation that allowed the Interstate Stream Commission to purchase water rights without the land to which those water rights are appurtenant, to continue implementation of the settlement. These purchases will help provide additional flow at the state line, by providing water to augment Pecos River flows through an augmentation well field. To date, the New Mexico Legislature has provided funding adequate to purchase about 12,000 acres of land with water rights, and to construct augmentation well

fields with a combined capacity of 15,750 acre feet per year. These numbers represent the minimums that are required to implement the Pecos settlement.

To date, the Interstate Stream Commission has acquired just under 4,700 acres within the PVACD, and just over 4,300 acres within the CID, with additional acreage under contract. Within the next couple of months, New Mexico will be close to the settlement minimums, and has also developed 100 percent of the required augmentation pumping capacity to allow for settlement implementation. New Mexico is well on its way to fully implementing the settlement and is confident that the settlement will be successfully implemented.

With regard to Endangered Species Act depletions, revisions to the Sumner Dam operations to provide flows for the federally threatened Pecos Bluntnose Shiner have resulted in additional depletions of the Pecos River water. Since November of 1998, on average, about 5,200 acre feet per year have been bypassed through Sumner Dam for the needs of the Shiner. Additional net depletions resulting from these bypasses have been as high as 50 percent of the bypass water. The U.S. Bureau of Reclamation has successfully offset the additional net depletions through leasing of other water rights. New Mexico is continuing to work with Reclamation to obtain assurances that Reclamation will continue to offset these depletions in the future, and is close to an agreement. In addition, New Mexico has acquired nearly 1,000 acres, with groundwater rights, upstream of the Upper Critical Habitat of the Shiner. A nearly two-mile-long pipeline was completed last June, with the purpose of delivering water to the Pecos River right above that Critical Habitat. The pipeline capacity is about 15 cfs, with water supply from 11 wells that presently produce close to 11 cfs. The Interstate Stream Commission has leased this water to Reclamation to maintain the flows required, under the 2006 Biological Opinion for the Shiner.

Another continuing effort is phreatophyte control. New Mexico continues to cost-share with Reclamation in maintenance, with nearly 34,000 acres of salt-cedar-cleared areas on both sides of the Pecos River, near Fort Sumner Dam and the state line. The New Mexico Interstate Stream Commission contributes $150,000 per year to that effort.

This concluded Mr. Lopez's report. Chairman Calhoun stated that one of the reports indicated that the pipeline mentioned in Mr. Lopez's report had leaks, and asked if that had been corrected. Mr. Lopez responded that testing of the pipelines as they are constructed has located leaks, which are being repaired as part of the contract. The system is about to the point of being functional. He further stated that in the Fort Sumner area, where water is being delivered for the fish, an existing pipeline was acquired, which is old and has a lot of leaks. A contract was just issued to repair the entire pipeline, which should be leak-free within a couple of months.

Commissioner Thrasher added his thanks to the Ward County judge for the use of his courtroom for the Commission meeting to his earlier comments.

Chairman Calhoun asked for a motion to approve the minutes of the meeting held April 19, 2007. The motion was made by Commissioner Thrasher and seconded by Commissioner Renfrow. Chairman Calhoun explained that the two state commissioners have the only voting power on the Commission. If one commissioner makes a motion and the other commissioner seconds it, the motion is considered passed, unless there is further discussion. With that, Commissioner Calhoun declared the minutes of last year's Compact Commission meeting passed.

Chairman Calhoun gave his report. He stated that this is his fifth year serving as Federal Commissioner, and that it has been a pleasure to come out to New Mexico or Texas each year and serve in this capacity. He said that he appreciates the opportunity to stay involved, after working on Water Resources for 40 years throughout the United States. That concluded his report.

Chairman Calhoun called for the Secretary's report. The Secretary stated that her name was Anne-Marie Matherne, and that she is with the U.S. Geological Survey, and also serves as Secretary to the Pecos River Compact. She stated that the following duties were performed for the Compact in Calendar Year 2007:

1) distribution of the transcript of the 2007 Annual Meeting and preparation of the edited minutes;
2) processing and sending of a letter, describing the activities of the Commission to the State Governors and the President of the United States;
3) providing support work for the Federal Commissioner;
4) aiding the Commissioners in the day-to-day operation of the Commission, including the arrangements made for the Annual Meeting.

This concluded the Secretary's report.

Chairman Calhoun asked for the report of the Treasurer. Dr. Matherne stated that the Treasurer of the Commission, Robert Gold, was unable to attend the meeting, and that she would give the Treasurer's reports. Copies of the two reports, and of the Auditor's Report, had been distributed to the members of the Commission.

The Treasurer's report was for Fiscal Year 2007, which is July 1, 2006 to June 30, 2007; and a part of Fiscal Year 2008, from July 1, 2007 to February 29, 2008. For Fiscal Year 2007, the balance, as of June 30, 2006 was $155,938.78 in the Bank of America checking account. Total receipts, including interest accrued by the checking account, during the Fiscal Year 2007, amounted to $73,153.45 Total disbursements during the year amounted to $144,996.22. That left a balance on-hand in the checking account, as of June 30, 2007 of $84,096.01. Based on projected receipts and disbursements due in the Fiscal Year 2007, the final balance in the checking account was estimated to be $45,901.65, at the end of the fiscal year. Fiscal Year 2008, through February 29, 2008, total receipts, including interest during that period, amounted to $109,826.46. Total disbursements amounted to $148,030.49. This left a balance on hand in the checking account, as of February 29, 2008 of $45,891.98. Finally, based on projected receipts and disbursements,

the balance in the checking account was estimated to be $42,899.48, on June 30, 2008. That concluded the Treasurer's report.

Chairman Calhoun asked for the report of the Auditor. Dr. Matherne said that this information was included in the Treasurer's reports, and that the Auditor's report was included in the folders given to the Commission members.

Chairman Calhoun called for the reports of the Commission committees. He called first for the report of the Budget Committee.

Herman Settemeyer, Engineer Advisor to the Texas Commissioner, presented the budget for Fiscal Year 2009 as follows:

For streamflow activities by the USGS New Mexico Water Science Center, the cost to the Pecos River Commission will be $109,432.00; and the cost paid by the USGS will be $100,806.00. There are no water quality activities proposed by the New Mexico Water Science Center for Fiscal Year 2009. For Special Studies conducted by the New Mexico Water Science Center: expenses incurred by the Pecos River Commission will be $22,696.00; and expenses incurred by the New Mexico Water Science Center will be $7,400.00. The cost of engineering support services from the New Mexico Water Science Center for 2009 will be $16,664.00 borne by the Pecos River Commission; $5,940.00 borne by the New Mexico Water Science Center.

Total expenses for activities by the USGS New Mexico Water Science Center: borne by the Pecos River Commission will be $148,742; borne by the New Mexico Water Science Center will be $114,146.00. For streamflow activities in Texas for Fiscal Year 2009, the Pecos River Commission will bear $8,572.00, and the USGS Texas Water Science Center will also bear $8,572.00. Total expenses proposed by the Pecos River Commission for Fiscal Year 2009 are $157,364. The Coop portion from the USGS Water Science Centers will be $122,718.

Mr. Settemeyer noted and thanked the U.S. Geological Survey for including the Artesia gage under the National Streamflow Information Program (NSIP). The Artesia gage will be fully funded by USGS New Mexico Water Science Center out of the NSIP program. Mr. Settemeyer thanked the USGS in the name of the Commission, saying that this enabled the Commission to go forward with the budget for this fiscal year. He added that the Engineer Advisors are extremely concerned about the increase in costs of the gages associated with the Pecos River Commission and throughout New Mexico. Some of the costs have gone up very significantly from 2008 to 2009.

Mr. Settemeyer said that he thought that without inclusion of the Artesia gage in the NSIP program, most states would have been hard-pressed to approve the budget which would be approved at the meeting. He informed the chairman that, in that regard, a meeting was scheduled with the New Mexico Water Science Center for July 21, in Albuquerque, New Mexico, to discuss the Coop program, the NSIP program, the

prioritizing of streamflow gages and, basically, budget concerns. The Engineer Advisors would report back to the Commission after the July meeting.

This concluded the budget report.

Chairman Calhoun called for the report from the Legal Committee. Tom Bohl introduced himself as the legal advisor to the Texas Commissioner. The legal committee had no charges from the last meeting, and so had no report.

Chairman Calhoun called for the report of the Engineering Committee.

Herman Settemeyer introduced himself again as the Engineer Advisor to the Texas Commissioner. The Engineer Advisors to the Pecos River Commission met in Albuquerque on February 11, 2008. They received reports from the U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and the U.S. Geological Survey. New Mexico Game and Fish attended the meeting.

Mr. Settemeyer noted that the Engineer Advisors had a good meeting, although the Texas representatives were two hours late because of fog in Midland, and were able to accomplish everything needed.

The Bureau of Reclamation reported on their Supplemental Water Program and discussed their Supplemental Water Environmental Assessment. This Environmental Assessment Project is, essentially, to comply with the 2006-2016 Biological Assessment. The Biological Opinion and Environmental Impact Statement are to commit Reclamation to operate the Carlsbad project with a target flow of 35 cfs at the Taiban gage, and to keep the river continuous to conserve the Pecos River Bluntnose Shiner.

Reclamation is working to obtain supplemental water to provide operational ability to release 2,500 acre feet from Sumner Lake to keep the river continuous. The Fort Sumner Irrigation District is looking at a 10-year lease with Reclamation for a fish conservation pool at Santa Rosa or Sumner Lake. Reclamation anticipates that a final environmental assessment will be completed this spring. Also, the New Mexico Interstate Stream Commission and Reclamation are nearing an agreement relating to the depletions of supplemental water releases for the Bluntnose Shiner.

U.S. Fish and Wildlife Service primarily discussed two Section 7 consultations of interest to the Commission. The first consultation was the New Mexico Interstate Stream Commission pipeline to deliver groundwater to the Pecos River and the railroad bridge over the Pecos River. The Service discussed the Rio Grande Silvery Minnow reintroduction in the Big Bend area, and indicated that there was little chance that the Silvery Minnow would reach the Pecos River.

Ongoing Pecos River Bluntnose Shiner monitoring results were presented to the Engineer Advisors. There was considerable discussion about the New Mexico Interstate Stream Commission population estimates. The depletion methods used to determine these

population estimates were discussed at length. The seepage study of the Pecos River below Santa Rosa Dam was addressed. This seepage study is to obtain discharge and water quality measurements to determine whether this area can sustain a second population of Bluntnose Shiner.

The Corps of Engineers discussed their 2007 water operations at Santa Rosa. They discussed the three block releases that were made from Santa Rosa. There were no flood operations for 2007. The estimated snowpack was about 85 percent.

The Two Rivers issue and the channel capacity was discussed with the Corps. Work is still being done on the channel capacity issues. They are continuing to work with the City of Roswell.

The Engineer Advisors met with the Corps the previous day, before the Compact Commission meeting, on the channel capacity issue, and are working with the Corps and, hopefully, with the City of Roswell, to continue efforts to rectify this issue.

The U.S. Geological Survey presented the budget for 2009. The continuing increased costs and decreased Coop contribution from the New Mexico Water Science Center was discussed. As stated earlier, the increased NSIP funds enabled the USGS to fund the Artesia gage.

Regarding other issues that were discussed at the Engineer Advisors' Meeting, the Commission has been very proactive in trying to address issues within the Pecos. The Pecos River Commission, by a letter dated February 11, 2008, has asked the Corps of Engineers to initiate a project under the Water Resources Development Act, Section 56, the Rio Grande Environmental Management Program in Colorado, New Mexico, and Texas, to study, account for, and ultimately intercept sources of salinity in the Pecos River Basin from Santa Rosa Reservoir in New Mexico to the confluence with the Rio Grande, including Amistad Reservoir in Texas. In that regard, the Engineer Advisors recommended that the Commission draft a letter to send to the appropriate congressional delegations and to the governors of both states, requesting that Section 56 of WRDA be completely funded as proposed, at about $15 million for the entire Rio Grande and tributaries.

Regarding Malaga Bend, there were no diversions for salinity control at Malaga Bend in 2007. There are investors still trying to secure some additional funding so this project can move forward.

Regarding Macho Draw, the diversion dam at Macho has been breached, and no diversions occurred for Macho Draw in 2007.

That concluded the Engineering Report. Mr. Settemeyer asked Ms. Rhoton if she had anything to add, and she said no, that the report had been very thorough. Chairman Calhoun asked the date of the letter to the Corps of Engineers mentioned in the

Engineering Report. Mr. Settemeyer said that the letter was dated February 11, 2008, the day of the Engineer Advisors Meeting.

The Chairman asked for additional questions. There were none. He added that it appeared that the Engineer Advisors had a very effective meeting, which was able to clear up a lot of the business that the Commission needed to cover in the formal meeting. He said that it was good to have that effort continuing each year.

Mr. Settemeyer asked if the Commission needed to take action on the Engineer Advisors' request to draft a letter to the Congressional Delegation. Commissioner Renfrow moved that the letter be drafted and sent. Commissioner Thrasher seconded the motion.

Mr. Settemeyer then told the Chairman that the Engineer Advisors had once again prepared a resolution for the Commission to consider, regarding the funding of streamflow gages, which they would like to read into the record and have the Commission take action on. Chairman Calhoun asked if the resolution would be similar to last year. Mr. Settemeyer said yes. He then read into the record the following resolution:

Resolution of Pecos River Commission Regarding the Funding of Streamflow Gages
April 8, 2008, Monahans, Texas.

Whereas the Pecos River Compact that was signed in 1948 and approved by Congress in 1949 obligates the State of New Mexico to deliver Pecos River water to the State of Texas, based on 1947 conditions of development in New Mexico;

Whereas the two states, ultimately, could not agree on the accounting of water deliveries by New Mexico, resulting in litigation before the U.S. Supreme Court;

Whereas the U.S. Supreme Court issued a decree in this case, which enjoined the State of New Mexico to comply with its obligation under the Compact, they appointed a river master to calculate New Mexico's obligation, pursuant to methodologies set forth in a river master's manual adopted by the Court;

Whereas the calculations required by Compact and court decree were prescribed in the river master's manual, necessitating the maintenance of streamflow gages along the Pecos River and its tributaries, at critical locations to measure the flow of water;

Whereas it is critical for the administration of the Pecos River Compact and U.S. Supreme Court decree that these streamflow gages be maintained;

Whereas the U.S. Geological Survey has historically entered into cost-share agreements with cooperators to maintain a nationwide streamflow gage network, using the USGS Cooperative Water Program;

Whereas the Cooperative Water Program has served over 110 years as a federal, nonfederal partnership which, historically, was funded through a 50/50 cost-share agreement, today, the majority of the funding for the Cooperative Water Program comes from nonfederal sources, due to lack of increase in federal appropriations in the Cooperative Water Program, and due to the nation's increased need for water resources information;

Whereas the ability to maintain the network of national streamflow gages to meet long-term federal goals has declined, due to a loss of cooperators because of the increased cost of funding, which prompted congressional establishment of the National Streamflow Information Program;

Whereas the USGS established goals to satisfy minimum national streamflow information needs, with the attempt to support these gages entirely with federal funds;

Whereas a priority goal of the National Streamflow Information Program is to meet legal and treaty obligations on interstate compacts and international waters;

Whereas a streamflow gage that is necessary to administer the Pecos River Compact qualifies under this priority goal for full federal funding under NSIP; now therefore be it resolved that the Pecos River Commission requests that Congress fully fund the NSIP gages associated with the Pecos River Commission and the USGS place a priority of funding these gages under NSIP.

Be it further resolved that funding of the Cooperative Water Program be restored to ensure the historical partnership match of 50/50, as Congress initially intended when establishing the program.

Be it further resolved that a copy of this resolution be sent to members of the Congressional Delegations of the States of Texas and New Mexico, the Secretary of the Interior, and the Director of the USGS.

Signed by Charles A. Calhoun, Chairman and Commissioner for the United States, and James D. Renfrow, Commissioner from New Mexico, and Julian W. Thrasher, Jr., Commissioner for Texas.

A motion to approve the resolution was made by Commissioner Renfrow and seconded by Commissioner Thrasher.

Mr. Settemeyer said that this completed the business of the Engineering Committee.

Chairman Calhoun said that the Commission usually took a 10-minute break around 10:00, but that he wished to proceed with reports from the cooperating agencies and take a short break at the appropriate time. He called on the report from the U.S. Fish and Wildlife Service.

Howard Schaller greeted Chairman Calhoun and the Commission, and introduced himself as the New Mexico State Administrator for U.S. Fish and Wildlife Service. He thanked Commissioner Thrasher and the Chamber of Commerce for the reception the previous night, saying that it was nice, after dashing out of Albuquerque late and not realizing the time-change, to get a warm greeting and some food. He introduced Dr. Marilyn Myers, the Senior Aquatic Biologist and lead on Pecos River issues, saying that if there were specific questions on the Fish and Wildlife report, she was there to provide specific answers. Mr. Schaller then delivered the following report for the U.S. Fish and Wildlife Service:

The Fish and Wildlife Service report to the Commission summarized the activities conducted at the New Mexico Ecological Services Field Office, the Fishery Resources Office, and the Bitter Lake National Wildlife Refuge. Extra copies of the report were available for anyone interested.

Four consultations were completed in the Pecos River Basin in 2007; three were informal and one was formal, regarding the Pecos Sunflower.

For river operations, the Bureau of Reclamation continues to operate under the 10-year Biological Opinion issued in 2006. The Service coordinated closely with Reclamation throughout the irrigation season to watch river flows. The Service said that they were pleased that continuous flows had been maintained for the last two irrigation seasons, and believed that, as a consequence of those continuous river flows, Pecos River Bluntnose Shiner numbers are increasing.

As part of the 10-year Biological Opinion, Reclamation is responsible for completing two habitat restoration projects, to benefit the Pecos Bluntnose Shiner. The Service coordinated with Reclamation on a proposed habitat restoration at Bitter Lake National Wildlife Refuge, and is moving forward on coordination of this project with staff from Reclamation, the Service's regional office, the Refuge, and the field office.

The Service coordinated with Reclamation on creating a supplement to the 1966 Fish and Wildlife Coordination Act Report. The report was originally written to suggest mitigation for natural resource impacts caused by Brantley Dam. Fish and Wildlife Service is coordinating meetings between the New Mexico Department of Game and Fish and Reclamation, to modify the original mitigation plan so that the fish conservation pool could be augmented for the benefit of the Bluntnose Shiner.

Under the category of Threatened and Endangered Species Recovery, the Service published a proposed rule and draft of environmental assessment on September 5th, 2007, for reintroduction of the Rio Grande Silvery Minnow into the Big Bend region of the Rio Grande. The Service held public meetings in Alpine, Texas, in October (2007), to discuss the proposed rule. There were two public commentaries: the first period ended two months after the proposed rule was published; the second ended on March 10 (2008). The Service anticipates that the rule and environmental assessment will be complete in the fall of 2008.

There is a possibility, but as Mr. Settemeyer stated before, remote, that the minnow would eventually make its way to the Pecos River. However, because the population is designated as what the Service calls a nonessential environmental population, if it were to reach the Pecos, it would be treated as a proposed species for consultation purposes.

The final rule, for Pecos River Sunflower Critical Habitat, was published in the Federal Register on April 1 (2008). Bitter Lake National Wildlife Refuge is included in the habitat. However, because the sunflower does not occur along the river, the Service does not expect that the designations will affect consultations on the river.

Work on a five-year review for the Pecos Bluntnose Shiner and Pecos Sunflower continues. These reviews will allow the Service to determine if a listing designation is appropriate, or whether either of those species should be delisted or uplisted. In the case of the Pecos Bluntnose Shiner, the review will provide the Service with baseline information needed to begin revision of the recovery plan.

Regarding activities of the Fishery Resource Office, this office is the agency which monitors the Pecos Bluntnose Shiner. They continue to use the techniques they have been using since 1992 to sample fish. In 2007, they monitored nine sites within quality habitat, and five sites, downstream, within poor quality habitat.

Monitoring frequency was increased in the quality habitat area, as required in the Biological Opinion, to determine if lower wintertime flows will have an effect on Shiner population. Table 2 and Figure 1 of the Service report show that abundance of the Bluntnose Shiner has slowly increased since 2005, and also that the numbers are well above the levels established for take. Based on this, the Service believes that maintaining these continuous flows is responsible for this increase of the Bluntnose Shiner.

The Service coordinated and cooperated extensively with other agencies, over the year, particularly the Bureau of Reclamation and the Interstate Stream Commission, and believes that their staffs are working well together. The Service also partners with the World Wildlife Fund. New Mexico's Interstate Stream Commission received a grant of over $500,000 for habitat restoration on the Pecos River. This project will occur just upstream of the Bitter Lake National Wildlife Refuge, as Reclamation proposed.

At Bottomless Lakes State Park, the Bureau of Land Management is instituting a new concept, that of nominating the saline wetlands at the park and on the refuge as a Ramsar site. This is not a regulatory designation. The primary purpose of the designation is to bring local, national, and international attention to the unique characteristics of the site. It is anticipated that this designation would enhance tourism and bring heightened scientific interest to the area.

Bitter Lake National Wildlife Refuge continues to actively manage its land for the benefit of waterfowl and threatened and endangered species. Details of the projects are provided in the Service's annual report, which shows that the Refuge is the site of several research

projects on a variety of topics, highlighting once again the importance of these biological communities. The Service is very pleased that negotiations with the Office of the State Engineer to quantify water rights to protect spring systems on the refuge are complete. Water rights will protect the springs on the refuge, without disrupting other existing water rights or interstate compact deliveries.

This concluded the Service's report. Mr. Schaller thanked the Commission for the time to relay the Fish and Wildlife Service issues and asked for questions.

Mr. Settemeyer's question related to the Bluntnose Shiner and whether, after completion of the five-year review, the Service would evaluate the need to revisit the recovery plan. Mr. Schaller said that they would evaluate the need to determine the listing stats. Mr. Settemeyer asked whether, basically, after the five-year review, Service was going to determine whether "threatened" is still reliable for the Bluntnose Shiner. Mr. Schaller said that this was correct. Mr. Settemeyer asked if there was any thought to revisiting the recovery plan. Mr. Schaller said that the Service was trying to initiate efforts to revise the recovery plan. Mr. Settemeyer asked if there was a likelihood that this might occur within the next year. Mr. Schaller replied that the Service couldn't guarantee this, given the workload they have, but that they are trying to start the recovery plan process as soon as possible.

Commissioner Renfrow asked if the Service has a completion date for the five-year review. Dr. Myers said that the target date was in Fiscal Year 2009. Commissioner Renfrow asked how the review would be published and noticed, and if there would be a comment period. Mr. Schaller replied that reviews are usually sent out for a comment period and then published. Commissioner Renfrow noted that Mr. Settemeyer mentioned the "threatened and endangered" terminology, and asked whether Mr. Schaller had a feeling of where that was heading. Mr. Schaller said that the Service would have to go through the review process and the five factors associated with that process.

Commissioner Renfrow noted that the chart Mr. Schaller had mentioned showed a nice, steady improvement, on a pretty straight line. He asked when the recovery plan was going to get underway. Mr. Schaller replied that, as he had said, the Service had other workloads associated with their field office, but was trying to get the revision of the recovery plan to the top of the list and get it started.

Commissioner Renfrow said that he understood that a workshop with panelists to help aid the discussion on how to sample and monitor the fish population was scheduled for the coming June, and that the Commission would like to express its support for that. Mr. Schaller said that Fish and Wildlife Services was excited about the workshop, and was glad that they were going to be able to work together to look at a broad, scientifically supportable management for monitoring.

Ms. Rhoton asked whether efforts regarding the recovery plan was a process that included participation by cooperators and a larger group of agencies, championed by the

Fish and Wildlife Service. Mr. Schaller said that including cooperators was a typical approach supported by Fish and Wildlife.

Chairman Calhoun thanked the Fish and Wildlife Service for their report, and called for a 10-minute break before hearing from the Bureau of Reclamation.

On reconvening, Dr. Matherne commented that if presenters had written comments that they could pass on to the court reporter, this would help her with some of the technical language.

Chairman Calhoun noted that once again, there was quite a good audience in attendance, and said that he hoped that everyone had signed the attendance roster.

Commissioner Thrasher said that following the Compact Commission Meeting, if anyone involved in the desal project up and down the river would stay, there would be some questions and answers. He added that J.A. Lazarus, with Senator Uresti's office, was present, and if anyone had questions for her, she was there to answer them. He said that they would stay and answer questions, because if there was a misunderstanding about the desal program, they wanted to clear it up. All of the people were there who were involved in it, and it would be a good time to get some answers.

Chairman Calhoun called on the Bureau of Reclamation. He said that part of the presentation involved a visual aid, and asked members of the Commission to move aside.

John Poland greeted the members of the Commission and guests, and introduced himself as the Area Manager for the Albuquerque Area Office of the U.S. Bureau of Reclamation. He thanked Commissioner Thrasher and the Monahans Chamber of Commerce for the reception the previous night. He said he would also like to thank the Albuquerque District singing engineers/cowboys and cowgirls or Federal cowboys or engineers. He said that the Corps of Engineers had laid down the challenge, and that there were no guarantees, but that Reclamation was going to try to pick up the challenge for next year.

He introduced his staff, Leann Towne, Water Management Division Chief, and Gary Dean, Fish Biologist with the Environmental Division. He said that Gary is kind of an ambassador for the Environmental Division. He joked that Reclamation brings Gary to these events to kind of work the crowd, so that everybody is on their side.

Mr. Poland began his report by discussing responsibilities. Since Reclamation owns Sumner, Brantley, and Avalon Dams, they must offset depletions caused by the minnow bypass operations for instream flows. This is done through leases and agreements. Reclamation must meet Bluntnose Shiner instream flow requirements at Taiban gage as part of their 2006 Biological Opinion. Reclamation leases water from willing lessors, some of which were mentioned earlier by Mr. Lopez, including the Vaughan family, the Lynch family, and, the State of New Mexico. This water is directly supplied to the Pecos River. The 1,000 acre-feet fish conservation pool in Santa Rosa, on Sumner Reservoir, is

established by pumping of Reclamation water rights directly into Brantley Reservoir. This is in exchange for the use of the Carlsbad Irrigation District, and is used when the natural flow is low and bypass for block releases are not available.

Following are the items to be discussed. Detailed information can be found in the 2007 report to the Commission, of which everyone at the front table had been given copies.

The Carlsbad Project. Reservoir entitlement storage for the Carlsbad Project started at 73 percent full, at the beginning of the year, and ended with 50 percent entitlement storage on December 31, 2007. Runoff was estimated at 50,000 acre feet.

The Sumner Dam. Sumner started at 28,915 acre feet, and ended with 24,389 acre feet in storage. About 4,721 acre feet were bypassed for endangered species compliance between January 1 and February 12, 2007. During irrigation season, a total of approximately 1,000 acre feet were released from the fish conservation pool for purposes related to the Endangered Species Act.

700 acre feet of this 1,000 were released in July for the fish conservation pool, to supplement flows to the Taiban gage. The remaining 300 acre feet of water were released during the nonirrigation season, from December 1 through December 31. Reclamation is working with the Carlsbad Irrigation District to schedule repairs for the radial gates at Sumner Dam.

Brantley Dam. Brantley Reservoir started the year with 2,278 acre feet in storage, and ended with 11,505 acre feet. Two releases were made to assist the New Mexico Interstate Stream Commission in meeting Compact obligations to Texas. One was made in May, and the other was made in November.

Brantley's annual comprehensive facilities review was completed in December of 2007. A total of 12 recommendations were made, and six of those recommendations were completed in 2007.

Avalon Dam. Storage began with 1,466 acre feet and ended with 1,925 acre feet. Carlsbad Irrigation District irrigation operations began on March 3 and ended on October 31, 2007. Carlsbad Irrigation District received about 75,320 acre feet of water in 2007. 8,954 acre feet of water was released from Avalon, to the New Mexico Interstate Stream Commission and CID, under the lease agreement.

The Avalon Dam also had a facilities review in 2007. There were six recommendations, and five of those recommendations were completed in 2007.

Fort Sumner Project. Fort Sumner Irrigation District (FSID) started calling for their water on February 15. Their operation ended October 31. A total of 39,273 acre feet of water was delivered into the FSID main canal. 31,132 acre feet were delivered into irrigated lands, for a total of 4.5 acre feet per acre. A total of 3,476 acre feet of water was bypassed by the FSID to the Sand Gate weir, as reported by the USGS. The forbearance

lease agreement between Reclamation and FSID to fallow lands ended on August 15, 2007.

Discussed next were topics regarding the Pecos River. Mr. Poland presented a slide figure representing the total conservation storage for the four reservoirs on the Pecos River. Shown for each reservoir was the respective entitlement storage for the minimal pool, estimated sediment accumulation and the pool conservation storage. Their elevations were noted, with the comment that, as the sediment accumulates, the elevation will go up as well. Mr. Poland also clarified that NAVD88 refers to the North American Vertical Dam.

Water Salvage Project. Under the authority of Public Law 88-594, Reclamation continues to control salt cedar growth from Sumner Dam area to the New Mexico-Texas state line, as mentioned by Mr. Lopez. The original authorizing legislation allowed clearing of approximately 58,000 acres. Pecos River lands cleared in New Mexico totaled approximately 33,200 acres. Reclamation spent $287,720, or $8.66, per acre, clearing salt cedar. The New Mexico Interstate Stream Commission funded $150,000 of assistance as well. From a biological control standpoint, the use of beetles as a cost-effective maintenance alternative continues to be investigated. Although the program did not achieve the original acreage intended, the water salvage project is, to date, the largest and most successful effort to control the growth of salt cedar in the Pecos Valley.

The Endangered Species Act and the National Environmental Policy Act. Regarding the Bluntnose Shiner, Interior Least Tern, and supplemental water at Bitter Lake, this was discussed previously by Fish and Wildlife Services.

Mr. Poland wished to mention in passing that the Forest Guardians, who are now known as the Wild Earth Guardians, filed a Notice of Intent to Sue the Bureau of Reclamation and the Army Corps of Engineers on August 21 of last year, citing alleged violations of the Endangered Species Act. Reclamation immediately responded to Wild Earth Guardians, answering all of the proposed suit's allegations, and going further to outline what Reclamation is doing proactively on the Pecos River. As a result, Reclamation has no new information regarding this Notice of Intent to Sue.

As was stated by the Fish and Wildlife Service, preliminary reports are that the Pecos Bluntnose Shiner numbers are up and are overall improved since 2005.

A slide was shown of the Interior Least Tern, with the joking comment that it was not named after the Department of Interior. Reclamation added 56 more acres of created habitat to the 28 acres of existing habitat that was created in 2004, for a total of 84 acres of nesting and breeding habitat. The southern extent of the habitat was inaccessible prior to the breeding season, due to high water levels.

Heavy equipment could not remove the vegetated growth on the Brantley Lake shoreline, due to high reservoir levels as a result of the spring runoff and higher than average spring rainfall. Only five adult Terns were seen at Brantley during the 2007 breeding season.

As stated previously, supplemental water is needed to provide operational flexibility to comply with the 2006 through 2016 Biological Opinion. To meet the target flow of 35 cfs at Taiban, and to keep the river continuous to conserve the Pecos Bluntnose Shiner while keeping the Carlsbad Project water supply whole, Reclamation uses three different kinds of supplemental water to maintain the Bluntnose Shiner flows. First, when water is available, above the FSID conversion entitlement, Reclamation can bypass the excess. When bypass water is not available, Reclamation may use the leased water. When the bypassed and leased water are not available or sufficient, Reclamation may use water from the fish conservation pool.

Reclamation increased its existing fish conservation pool capacity in Lake Sumner from 500 acre feet to 1,000 acre feet in 2007. Only 700 acre feet of this water were used during the irrigation season to supplement flows at the Taiban gage.

Reclamation leases water rights from willing sellers to offset depletions from ESA compliance activities. Reclamation leased 3,774 acre feet of surface water rights from seven Pecos River pumps and 507 acre feet of water from the Hagerman Irrigation Company irrigators. Reclamation leased 1,800 acre feet of artesian well water from the New Mexico Interstate Stream Commission, in addition to 900 acre feet of existing water rights.

Reclamation entered into an agreement with New Mexico Interstate Stream Commission to deliver a minimum of 1,100 acre feet per year for the next 25 years. New Mexico Interstate Stream Commission purchased water rights from the Vaughan family of Fort Sumner, New Mexico, through the New Mexico Strategic Water Reserve Program, and built pipeline capable of delivering a maximum of 15 cfs of supplemental water to protect the Pecos Bluntnose Shiner. Mr. Poland addressed Sara Rhoton, to verify that the water was expected to be available by mid-summer. Ms. Rhoton said that this was correct.

Mr. Poland showed slides of a celebratory event at the Vaughan Farm involving a bucket brigade contest between Reclamation and friends, against the Interstate Stream Commission. He pointed out that ISC had coordinated uniforms, while Reclamation just came as they were. He said that he still didn't understand the rules regarding how many buckets had to be filled at the brigade. He showed a further slide of the bucket brigade contest, and noted that Reclamation at least came in second.

The Carlsbad Irrigation District Water Lease. The release of 8,954 acre feet was made in November, 2007, under a 40-year lease agreement between Reclamation and the Carlsbad Irrigation District (CID), for water leased in 2006. This agreement allows the NM Interstate Stream Commission to enter into third-party agreements with CID from district water users, for use of water from state-owned lands within the Carlsbad Irrigation District. No water leases occurred during 2007.

Reclamation is also working with Fort Sumner Irrigation District and New Mexico Interstate Stream Commission to create an additional 2,500 acre foot fish conservation

pool, which would bring the total volume of supplemental water to 3,500 acre feet. Reclamation is proposing to obtain supplemental water with a 10-year lease from the Fort Sumner Irrigation District senior water rights, for up to 2,500 acre feet of water yearly. Over a 10-year period, 25,000 acre feet of water would be delivered to the Santa Rosa Reservoir and Lake Sumner system. This water would be part of the supplemental supply for keeping the river continuous, while ensuring that there is enough water at Brantley Reservoir to meet the contracted irrigation needs of the Carlsbad Project. Reclamation is still negotiating with the Fort Sumner Irrigation District, the Office of the State Engineer, and ISC, on those permits.

Bitter Lake National Wildlife Refuge. This is one of two habitat restoration projects that come under the Biological Opinion referred to previously by Fish and Wildlife Services, and in which Reclamation has a part. Reclamation, along with the Fish and Wildlife Service, New Mexico Interstate Stream Commission, and other federal, state, and private stake holders, began organizing and planning the first of two major restoration projects on the Pecos River under the 10-year buyout.

Initial planning started in the fall of 2006. In January of this year, Bitter Lake National Wildlife Refuge in Roswell, New Mexico hosted a workshop to bring all the participants together, to reveal those plans. Reclamation's portion of the restoration activity is only a small part of the larger plan by the Fish and Wildlife Service to restore a 12-mile stretch of the Pecos River on the Bitter Lake National Wildlife Refuge.

Reclamation plans to restore one-and-a-half miles of an abandoned oxbow. Mr. Poland pointed out the site at the bottom of the project area, shown in a slide. By restoring the oxbows, Reclamation believes that the Shiner habitat and its numbers will be much improved. The Bureau of Reclamation has a challenge grant program called Water 2025. As part of the Pecos River settlement agreement, $930,600 was awarded to the New Mexico Interstate Stream Commission for the construction of a pipeline delivery system at Seven Rivers, which is located directly above Brantley Dam.

Mr. Poland pointed out an error in a slide, corrected by Sara Rhoton, joking that it proved that the people at Reclamation were human. He said that a release for state line delivery occurred from November 1 to November 12, 2007, and was actually 17,908 acre feet, twice the number shown. He thanked Sara Rhoton.

Mr. Poland then said that the briefing would not be complete without some talk about accounting. Accounting is completed annually to evaluate net depletions to the Carlsbad Project water supply as a result of bypasses for the Shiner, with consideration for Carlsbad Project water acquisition.

Net depletion definitions. There is a difference between depletions with actual operations, that include bypasses and CPWA (Carlsbad Project Water Operations), and depletions for a baseline scenario. The accounting year runs from November 1 to October 31. The fish conservation pool and Seven Rivers Exchange, the thousand acre feet spoken of earlier, are not included in this accounting.

Bypasses to meet target flows at Taiban occur predominantly in the winter, because inflows above entitlement are rarely available in the irrigation season at the same time that bypasses are needed. CPWA has included river pumper leases, a lease with Hagerman Irrigation Company, and a lease with Clint Lynch for pumping into the river.

Accounting calculations are completed with an annual accounting workbook, developed as a result of the effort led by the Interstate Stream Commission. Parameters for methods were developed using the Pecos River RiverWare Model. Work is being completed on an agreement with ISC that would entail using the Annual Accounting Workbook to complete calculations for the next five years. Reclamation has a draft users manual, with documentation on methods and instructions, for the annual accounting workbook which has been developed. Results of the accounting calculations completed for 2003 through 2007 show a net credit of 8,535 acre feet.

The development and use of the most current Pecos River RiverWare Model has continued to analyze proposed actions for preparation of the Supplemental EAs which were discussed earlier. Continued model administration and further enhancements are planned to further improve the model and ensure the model will meet future modeling needs.

Mr. Poland said he wished to turn briefly to 2008. Reclamation has used 232 acre feet of Fish Conservation Pool water for the Shiner, with 767 acre feet remaining, as of April 3 of this year. Reclamation is still negotiating with the New Mexico Office of the State Engineer on the agreement with the Fort Sumner Irrigation District discussed earlier, to increase Reclamation's Fish Conservation Pool. The availability of Vaughan pipeline water has been delayed until mid summer, and Reclamation's ability to meet Taiban flow targets may be affected by those conditions.

Mr. Poland showed data from what he described as Reclamation's friends at the Natural Resource Conservation Service. The April to July forecast for the inflow into Santa Rosa Lake was at 96 percent of a 30-year average.

Mr. Poland concluded with a slide of the Reclamation team. Unlike ISC, Reclamation had to do some recruiting. He pointed out Kelly Gibson, who works for Senator Domenici, Rick Gold, who is out of Reclamation's Salt Lake City office and is the former regional director, and Ray Kapler and Bill Ahrens, from the Carlsbad Irrigation District. He ended by saying that believe it or not, Reclamation still came in second, and asked for questions.

Ms. Lazarus said that she was not familiar with the water challenge grant money, and asked if the Bureau of Reclamation issues those funds. Mr. Poland replied that the money is authorized through Congress and that Reclamation does have that ability. Ms. Lazuarus asked if there was a local match requirement for the money. Ms. Trujillo replied that she thought it was 50 percent. Ms. Lazarus noted that her group was not quite sure about their regional office setup, and asked if these funds could be used only for projects in New

Mexico, or if they could also be applied to projects for the river in Texas. Mr. Poland replied that the funds were for projects that fall under the auspices of the Albuquerque area office. He added that in the El Paso area, Reclamation services both Texas and New Mexico, under the Rio Grande Project. In that case, the funds could be applied to projects in Texas.

Ms. McDonald asked if there was anyone present who could speak to the historic hygrograph, prior to river regulation in the Santa Rosa and Sumner area. Specifically, was flow intermittent during the winter months? Ms. Towne said not as far as she knew. Ms. McDonald clarified that Ms. Towne meant that prior to river regulation, it was not intermittent at any time. Ms Towne repeated that up in that area, as far as she knew, it was not intermittent, and added that this reach was not intermittent now, but has flow.

Ms. McDonald said that she noticed that there were references to the Fish Conservation Pool. She added that she was not quite sure where it's supposed to be located, but asked if it was correct that there are credits given to Brantley, which is much further downstream, to compensate for removals upstream. She said that they're far removed on the river, and that she was unclear about that, because she thought they were trying to compensate for intermittent flows further upstream. Ms. Towne said that no, it was not further upstream.

Mr. Poland said that Reclamation wants the Fish Conservation Pool as high in the system as possible. He said that when Reclamation pumped directly into Brantley Reservoir, he thought it was 700 acre feet. Then evaporation and things of that nature have to be considered, so Reclamation has 1,000 acre feet credit up north in the Santa Rosa-Fort Sumner reservoir system. He then said that he could see that he was not answering Ms. McDonald's question, and apologized.

Commissioner Thrasher interjected to clarify that Reclamation releases the water upstream, to keep the habitat wet all the way down, and then replaces the water they use upstream, into Brantley. Ms. Towne added that the area of concern for intermittency is in the Acme area.

Chairman Calhoun asked the speakers to identify themselves for the court reporter. They identified themselves as Leann Towne and as Alyson McDonald of Texas AgriLife Extension Service.

Commissioner Renfrow asked for an explanation of the $8.50, referring to the salt cedar removal, and whether Reclamation could give a total cost for water leases.

Mr. Poland defined cost per acre as, Reclamation spent X number of dollars and cleared X number of acres.

Commissioner Renfrow asked if Reclamation was saying that they can remove salt cedar for $8.50 an acre. Ms. Towne said that the cost was for maintenance, not initial removal. The lands were initially clear and, through the Water Salvage Program, Reclamation maintains that.

Mr. Renfrow said that his second question was regarding the total cost for water leasing. Ms. Towne said that she didn't have that number with her.

Ms. McDonald asked who actually evaluates the success of that Water Salvage Program, and how the quantity of water salvage is determined. Ms. Towne said that Reclamation doesn't have a specific method to determine the quantity of water salvage. It's a program Reclamation has had with the State of New Mexico for a number of years, and they don't have a method to quantify salvage.

Ms. McDonald asked for clarification that it's called a Water Salvage Program, but it's unknown how much water is being salvaged, or the reduction in losses from phreatophytes. Ms. Towne said that this was correct.

Chairman Calhoun remarked, regarding the last question, that there have been studies in the past, by the USGS and other agencies, that indicate that salt cedar that are introduced as non-native plants do consume somewhere from 6 to 10 acre feet per acre of water per year. He added that it's been very difficult to quantify the amount of savings that results from managing the plant, and that this is pretty much true throughout the western United States.

Chairman Calhoun called the USGS.

Marie Stewart began by apologizing that her voice was going, due to a sinus infection she'd had since the Rio Grande Compact Meeting, asking the group to bear with her because her voice was just a little squeaky. She introduced herself as Marie Stewart, Assistant Director and Data Chief of the USGS New Mexico Water Science Center. She said that she would be presenting a summary of the report of the USGS for Calendar Year 2007, which had been presented to the Commission.

She introduced other members of the USGS who were present, Mike Dorsey, her counterpart in Texas, who is working with the Pecos Compact; John Unruh, the new Carlsbad office chief; Tim Evans, lead technician for Carlsbad; and Bob Moquino and Patrick McKnight, technicians out of the Albuquerque Field Office. She then presented the USGS report:

Hydrologic data were collected by the USGS at 18 reservoir and streamflow gaging stations, in cooperation with the Pecos River Commission. Data were collected at 46 stations supported either solely by the USGS or in cooperation with other agencies. Eight of these gages are operated as part of the USGS National Streamflow Information Program, otherwise known as NSIP.

In addition, six low-flow gaging stations are operated on the Pecos River in Texas, and 17 crest-stage gages are operated in cooperation with the New Mexico Department of Transportation in New Mexico. The USGS operates a total of 87 gaging stations of

various types within the Pecos River Basin and collects water quality data at three locations.

Activities during 2007 included the computation of the 2006 gain in base flow between Albuquerque and Artesia gaging stations, and the flood inflow from Carlsbad to the New Mexico-Texas state line. In the Malaga Bend area, collection of discharge data continues at the Pecos River at Pierce Canyon Crossing gaging station.

Four new low-flow gaging stations were installed on the Pecos River in Texas in cooperation with TCEQ, as part of the TCEQ water quality monitoring program. Five gaging stations in New Mexico received high data rate radio upgrades in 2007, using USGS NSIP funding, for a total cost of $25,641.

A total of 25 gaging stations from the Pecos River Basin are scheduled for upgrade in 2008. The USGS received one-time federal funding through the Bureau of Reclamation in the current fiscal year for upgrades to gaging stations in the Rio Grande Basin. Seven of these gages are in the Pecos River Basin.

All equipment for upgrades to the 14 NSIP sites has been purchased and installation is in progress. The equipment funded by the Corps of Engineers was purchased in 2007. In total, the contribution for upgrades is $44,729 from the USGS , and $11,700 from the Corps of Engineer. The contribution from the Bureau of Reclamation will vary depending on work required at specific gages, and is estimated to range from $29,015 to $59,199. Equipment for the Reclamation funded sites will be purchased as soon as funding is in place in USGS accounts.

19 cableways for gages in the Pecos River Basin will be upgraded in 2008 and 2009. Cable cars will be replaced in six locations; and 13 sites retrofitted to safe standards. Several cable cars on back order will be received this month. The current back order on cable cars is two years. Ms. Stewart said that there is fabrication, but that she guessed USGS would get them when they got them.

The cableway at Pecos River at Damsite 3 near Carlsbad, New Mexico is considered unsafe. It will be removed and cannot be replaced due to a lack of funding. A major upgrade to the cableway is needed at the Pecos River near Malaga, New Mexico. This will include replacement of two A-frames and the cable car, at an estimated cost of 60 to $70,000.

Routine maintenance to gages in the Pecos River Basin has continued throughout the year. Specific improvements in the past year, and planned improvements in the coming year are as follows:

(1) The muli-port pressure system planned for Santa Rosa reservoir gage has been put on hold because on-site personnel would not be able to reset the gage when necessary to compensate for instrument drift.

(2) A dual orifice line will be installed at Fort Sumner Reservoir. A new upper orifice line was installed in April 2008. The lower line will be replaced when the lake level declines.

(3) The orifice line upgrade needed at Pecos River above Canon del Una is scheduled for completion this year.

(4) Two radar units would be installed at the gages Pecos River near Artesia and Pecos River near Acme, to eliminate the problems with silting and channel migration. Currently, one radar unit had been purchased using NSIP funding. The purchase price is approximately $5,500 before installation.

The Pecos River near Artesia upgrade will be completed first. The USGS is currently seeking permission from the New Mexico Highway Department to install the equipment on the bridge. This upgrade would improve the stream flow record during flashy runoff events.

All Pecos River sites upstream of Artesia will be operated this year from the Albuquerque Field Office, due to a manpower shortage in the Carlsbad Field Office. Questions related to operation and maintenance of these sites will be directed to Tino Quintana at 505.830.7924. Lynn Miller, the current field office chief, is retiring on May 2. Mr. Quintana will be acting field office chief until further notice.

The road into Pecos River above Santa Rosa Reservoir has been cleared of rock debris from a rock slide that occurred last winter. The road into Pecos River near Puerto de Luna has become dangerous and needs improvement this year, so USGS can continue to get back into the site.

Total operating costs for Fiscal Year 2007, ending June 30, 2007, was $281,360, of which $140,180 was borne by the USGS, and $141,180 was borne by the Pecos River Compact Commission.

Ms. Stewart ended by saying that a meeting will be held at the USGS Water Science Center in Albuquerque, on July 21, at 10:00 a.m., to discuss possible prioritization systems for the allocation of USGS Coop Funding and NSIP Funding. All are welcome to attend. Anyone interested in attending, please see Ms. Stewart or Anne Marie Matherne so USGS can send them more details.

This concluded the USGS report. Ms. Stewart asked for questions.

Ms. Rhoton asked for clarification as to whether the USGS report stated that the Artesia gages are being replaced this year and, if so, when this is anticipated to take place.

Ms. Stewart said that the equipment has been purchased using NSIP funds, and has arrived. USGS is currently seeking permission from the Highway Department, and this is

the only thing holding up the process. USGS is planning to install the equipment as soon as they get permission from the Highway Department, in maybe three months.

Chairman Calhoun called on the Corps of Engineers, and thanked the Colonel once again on the Corps' entertainment the previous night.

The Colonel began by saying that, if everyone could hear him, he would not use the microphone, because he had a little stage fright. He greeted Chairman Calhoun, Commissioner Renfrow, and Commissioner Thrasher, and introduced himself as Lieutenant Colonel Bruce Estok with the Federal U.S. Army Corps of Engineers in Albuquerque, and said that he was thankful to join the Commission in lovely Monahans, Texas.

He said that he wanted to repeat the gracious comments of his counterparts with respect to having everyone in Monahans, and the very wonderful reception that was put on by the State of Texas and the Monahans Chamber of Commerce. He added that he was even more thankful that after the Corps' performance the previous night, they still had the opportunity to briefly present comments on their report to the Pecos Compact Commission regarding activities over the past year, as well as items of current interest.

The Albuquerque District has responsibility for executing the Corps' flood damage reduction and environmental issues in six basins. Colonel Estok said that, all musical musings aside, the fact is that the Corps does take these missions seriously. The Pecos constitutes the District's second largest program within the Corps's watershed Civil Works approach. The Corps is well aware that, in the Pecos, water is even more important and can be even more dangerous when storm events do come.

Colonel Estok introduced his staff, beginning with Mark Yuska, the Operations Division Chief. He said that Mr. Yuska had been promoted since the meeting last year. Colonel Estok said that he thought they had a really good leader for their Operations Division that does all of Mr. Yuska's water work. He said that Mr. Yuska was really committed to it and had really proven himself over the year.

Colonel Estok introduced April Sanders, Interim Chief of the Reservoir Control Branch. Colonel Estok said that Ms. Sanders was filling in behind Mark Yuska, as the Corps went through the process of making a permanent selection. He said that the process was slow but that he promised that there would be a permanent person long before the next Compact meeting.

Introduced next was Mark Mendenhall, the Pecos Basin Manager in the Reservoir Control Branch. Susan Bittick was presented from the Civil Works Branch, here, as mentioned by Commissioner Thrasher earlier, to participate in the follow-up meeting of the salinity study that would take place after the Commission meeting.

Colonel Estok first talked about water operations and noted that there were no flood damage reduction operations in 2007, saying they were thankful for that. It was an ideal

water year within the Basin. The record 2006 monsoonal rains alleviated the necessity for the planned third block release and replenished a much-needed water supply throughout the basin. So Santa Rosa, with a benefit, had, at the tail end of 2006 and 2007, nearly a full storage allotment of 80,000 acres of water. Through effective communication among the entities involved, the three block releases were coordinated to not only maximize water delivery, but also to improve water quality and replenish base flows to critical habitat areas, once flows receded below the Biological Opinion requirements. This multi-purpose planning was essential to providing another successful irrigation and endangered species recruitment season, despite the mere 66 percent of average snowpack in 2007, which was actually seven-and-a-half times that experienced in 2006.

The Rio Hondo Basin's well below normal 2007 runoff, at 41 percent of average, did represent an increase from the virtually nonexistent 2006 snowpack. So overall, only about 3,500 acre feet of wet water passed through the Two Rivers Project and, on the Hondo, there were no real monsoonal events.

The Corps expects 2008, based on the forecast, to be somewhat similar to 2007, with snowpack slightly above average in the Upper Pecos, and well below normal in the Hondo, with runoff already having occurred.

The Corps has three block releases planned for the current year, one of which has been completed. The release started in about the middle of March and totaled 27,000 acre feet. Again, the releases need to be well-coordinated to optimize the overall benefits within the Basin, and any conservation measures that can be taken should be.

Colonel Estok said that, not knowing what Mother Nature would bring, current climatic indicators pointed to very warm and dry season ahead. The last couple of years exemplified both the seasonal and climatic variations that can be experienced within the Basin. He said he had talked about what there was not a lot of, but there were good monsoons in 2006. He said that the obligation that we, as water managers, have is to make informed, multi-objective decisions, while dealing with our precious water resources, while also being ready for any wild cards.

He said that despite the benign nature of 2007 and what is expected to be similar in 2008, the Corps is fully committed to moving forward in partnership with the Compact states, the City of Roswell, and the Chavez County Flood Control Commission, to address the long-standing channel capacity issue downstream from Two Rivers. It is critical that federal projects operate as they were intended to, in the event that Mother Nature is not so benign. As discussed the previous night with the Engineer Advisors, in the months ahead, the Corps is going to work to ensure that there is a common understanding of the current hydrology associated with combined outflows from the Two Rivers Project, as well as other downstream sub-watersheds, prior to considering alternatives developed by Roswell and Chaves County to safely and efficiently route this water through Roswell to the Pecos.

Discussed next were some ongoing activities in terms of design and construction planning, highlighting a few of the various construction activities throughout the Basin in the last year.

Under the Safety Program, by which small community ditches are rehabilitated, work continued on the Los Gonzales diversion dam. The Corps also got a new project near Santa Rosa called the Labadie Community Ditch, which they had an opportunity to go out and see a few weeks ago.

Under Section 595 of the Water Resource Development Act of 1999, the Corps is authorized to provide assistance to nonfederal sponsors within the State of New Mexico to design and construct water-related environmental infrastructure and resource protection projects. Currently, there were two such projects ongoing in the Basin. One includes upgrades to the Village of Pecos' Wastewater Treatment Facility. The other includes dredging and outlet improvements at Santa Rosa's Blue Hole.

Discussed next was the Continuing Authorities Program. Nationally, demand for projects under this program exceeds the available federal funding. Federal projects under the CAP program include Section 1135, Ecosystem Restoration and Section 206, Aquatic Habitat Restoration. Because of the shortfall in federal funding against all the requirements, the priority is on completing projects that are already in construction, as opposed to starting new things.

Colonel Estok said that the Corps is fortunate, here in the Pecos Basin, to have a two-phase Section 206 project at the Bottomless Lakes State Park, near Roswell. It is unknown if this project will successfully start, but the first phase was awarded this fall, a lot of that being due to the New Mexico State Parks Division, the Corps' partner in the project. They went to Washington, D.C. and talked to the assistant secretary regarding the Civil Works, and the Corps was recently given the word that they could proceed.

Congress also passed the Water Resources Development Act in 2007. This is the first time the Corps has had that in seven years. It provides the Corps with numerous authorities, some of which will have potential for positive impacts in the Pecos. One provision creates a parallel authority in the state of Texas to the New Mexico Section 595 Program talked about earlier. Colonel Estok said that he thought this was important because that particular program allows the Corps to help partner with smaller communities in river projects in a more rapid fashion than in their normal Civil Works process. In general, the time from project inception to start of construction is about three years.

Colonel Estok said that he thought that the second important thing that came out of the WRDA of 2007 was the Rio Grande Environmental Management Program, which was previously mentioned. That program allows the Corps to assist in planning, construction, and evaluation of measures for fish and wildlife habitat rehabilitation and enhancement from the headwaters of the Rio Grande in Colorado to the Gulf of Mexico, including all tributaries. It also provides mechanisms for long-term monitoring, computerized data

inventory, performing analysis, applied research, and adaptive management. As mentioned earlier, in the Pecos, that is being capitalized on with the salinity study from Santa Rosa Dam down to Lake Amistad.

Colonel Estok said that he appreciated the states working together on this important study for the benefit of the whole basin, and that he thought the project would get started in 2009, pending availability of federal funding. He added that he thought that the draft letter that Mr. Settemeyer read into the record earlier to be sent to Congress from the Commission would help in those efforts.

Colonel Estok said that he wished to conclude with a few words about involvement in the Corps' top two missions, support to the War on Terror and Disaster Recovery. He reminded the Commission that it was on the news 3-4 weeks ago that the U.S. has been in Iraq for five years and Afghanistan for six, and noted that it will soon be three years since the devastating hurricanes in 2005. He added that as he was leaving the hotel that morning, he noticed that General Patreas, for whom he worked about 10 years ago, and who was the commander in Iraq, was reporting to Congress this morning. Colonel Estok said that he was proud to say that Corps of Engineers volunteers from the Albuquerque District have been with the disaster response and fighting forces throughout this time.

Colonel Estok said that 32 District members had deployed this year alone to either Iraq, Afghanistan, the Gulf Coast, or the wildfires in California. Currently, the Albuquerque District had seven employees in harm's way, and two more preparing to deploy. He felt that it was also noteworthy that members of the Operations Division, with whom the people present at the Commission meeting work most, really had that expeditionary mindset the Corps likes to have, where their people will go where things are happening and be involved. He said that while that may appear to be leaving their collaborators short somewhere, the Corps has people step up and brings in people from other districts to make it all work.

Colonel Estok closed by saying that, prior to taking questions, he wanted to conclude by saying that with his time in command of the Albuquerque District going into its final few months, it had been his privilege to work with and learn from those present. Through everyone's combined interests on the Pecos, he had come to appreciate the many complex challenges that we, as a water community, face. When Colonel Estok's commander was out from San Francisco three weeks ago, the District showed him Two Rivers with Mr. Smith. At the end of the site visit, the commander said that he was optimistic that the issue could be worked through, but that the District was right, the issue was very complex.

Colonel Estok said that he felt privileged to work with those present on these challenges and had enjoyed getting to know people beyond the business through some of the interactions at these meetings and other opportunities to get together.

He said that this was not an early farewell or a sign of a soldier stacking arms, because there was plenty of work to do, which his successor would carry on. This was just an

acknowledgment of how fortunate he felt to have walked among the people here, going on two years, and really learning a lot.

This concluded the Corps' report. Colonel Estok said that he'd be happy to answer any questions, with the assistance of his staff, if necessary. If not, there was an eight-hour drive back to Albuquerque, with plenty of time to practice their singing.

Commissioner Thrasher thanked Colonel Estok for his tour in New Mexico. He noted that Colonel Estok was going to a hardship assignment in Hawaii, and that, although everyone couldn't go there with him, maybe he'd have room for visitors. He said that Colonel Estok had done a good job, and that the Commission appreciated it. Commissioner Renfrow seconded those comments, and wished the Colonel the best of luck. He asked whether the people that the Colonel mentioned as being in Iraq from the Albuquerque District included many civilians.

Colonel Estok said yes and, in fact, there were only four military in the District, all of whom had been to Iraq at different times, three more recently. All the people mentioned were civilians. Civilians in the Corps don't have to volunteer to go to Iraq and they go for many different reasons. Economically, the pay is good, but beyond that, many of them express the feeling of an obligation to serve. Some of them express agreement with the Corps' contention that in a year over there, you get five years of experience, because it's a mile a minute. And you're making things happen. Colonel Estok said that, when he asked one gentleman why he was going, the gentleman said that he had wanted to do this for a while, was getting near the end of his time with the Corps, and just wanted to go do this to prove something to himself and his family. The reasons that people volunteer vary, but the people who volunteer are all civilians. "The army guys, they give us orders," he said.

Commissioner Renfrow said that this is what he thought, and it was great.

Chairman Calhoun asked for other questions or comments, and once again thanked Colonel Estok, saying that the members of the Commission enjoyed working with him and appreciated his good efforts. He moved on to Unfinished Business, asking about the Rio Hondo Channel Project. Commissioner Thrasher said that he thought this was covered pretty thoroughly the previous night.

Chairman Calhoun asked about the Malaga Bend Project. Commissioner Thrasher asked Mr. Hartman if he would like to report on this project. Mr. Hartman said that there was no report and no activity.

Chairman Calhoun moved onto New Business. He asked if there was a date for the 2009 annual meeting. Commissioner Renfrow said that they were thinking in terms of a Carlsbad location. Chairman Calhoun said he assumed it would be sometime in April. He asked Lucas Gregory if he would like to mention details concerning the Climate Control Meeting in Austin. Mr. Gregory had heard of the meeting but didn't have any details. Commissioner Thrasher said that in the last week of April, Texas A&M, San Marcos, and

Texas State are going to host a 3-day conference in Austin on the effects of climate change on water. He said that information was available on the Texas A&M website. Mr. Gregory gave the web address as twri.tam.edu, saying he was sure there was a link. Commissioner Thrasher said that it was going to be quite a conference if you were interested in climate control and its effect on water.

Commissioner Renfrow said that the Compact meeting date for next year was Thursday, April 21.

Commissioner Thrasher amended that the climate conference would be held in San Jacinto.

Chairman Calhoun said that the next annual meeting for the Pecos Compact Commission was tentatively scheduled for April 21, 2009, in Carlsbad. He asked if there was any other business. There being none, he once again thanked those present for their attendance and participation, and declared the meeting adjourned.

(Whereupon, the proceedings concluded.)

These minutes are a summary of the verbatim transcript of this meeting and reports presented.

APPROVED:

Charles A. Calhoun
Chairman and Commissioner Representing the United States

James D. Renfrow
Commissioner for New Mexico

J.W. Thrasher, Jr.
Commissioner for Texas

RECLAMATION

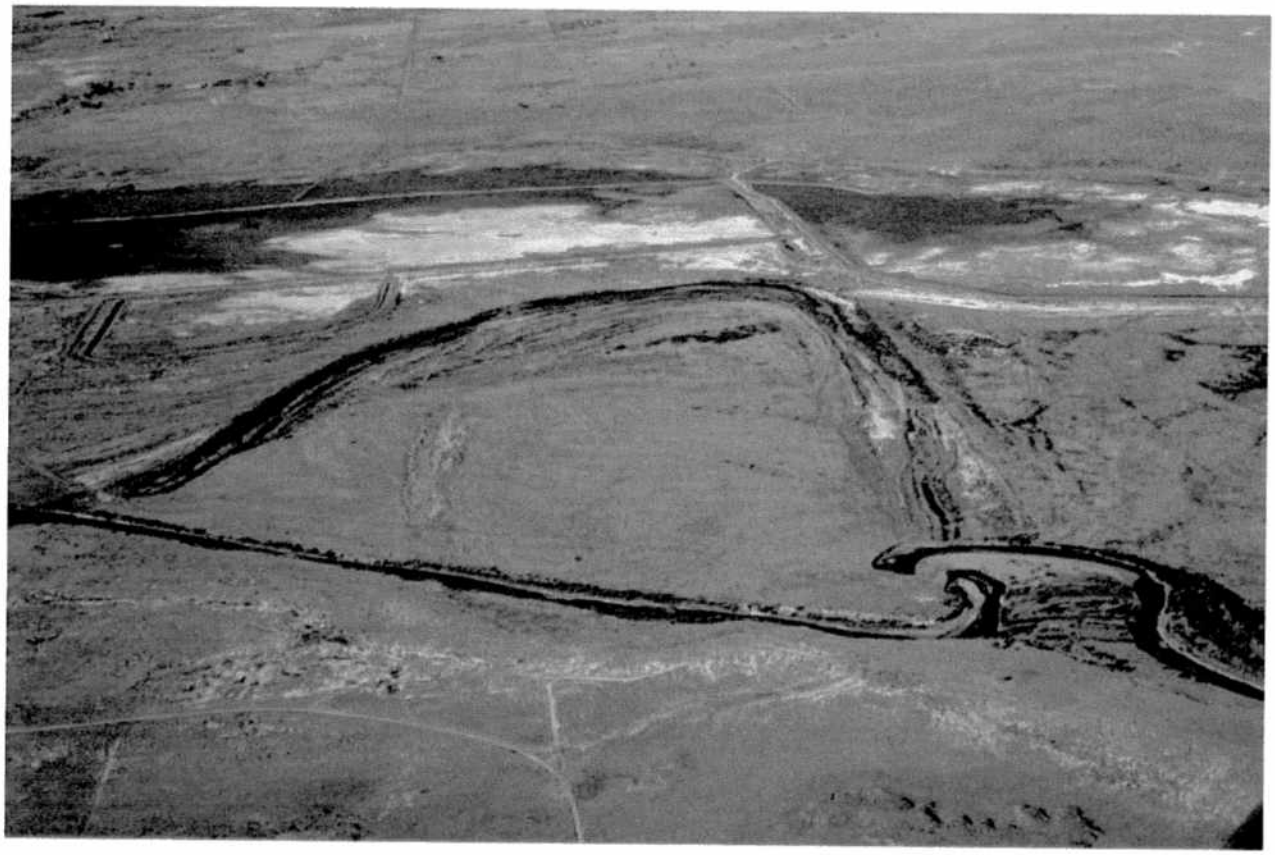
Managing Water in the West

Calendar Year 2008 Report to the Pecos River Commission

NEW MEXICO
James D. Renfrow

TEXAS
Julian W. Thrasher, Jr.

FEDERAL CHAIRMAN
Charles A. Calhoun



Department of the Interior
Bureau of Reclamation
Upper Colorado Region
Albuquerque Area Office
Albuquerque, New Mexico

April 2009

MISSION STATEMENTS

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Cover photo - Aerial view of Bitter Lakes River Restoration Project site near Roswell, NM. Photo taken February, 2009.

RECLAMATION

Managing Water in the West

2008 Calendar Year Report to the Pecos River Commission

Department of the Interior
Bureau of Reclamation
Upper Colorado Region
Albuquerque Area Office
Albuquerque, New Mexico

April 2009

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Introduction

The Albuquerque Area Office of the Bureau of Reclamation (Reclamation) is responsible for operation, maintenance, and oversight of three projects on the Pecos River. These projects are: the *Carlsbad Project*, which includes Sumner, Brantley, and Avalon Dams; the *Pecos River Basin Water Salvage Project*; and the *Fort Sumner Project*, which includes the Fort Sumner Diversion Dam. Figure 1 *Project Map of Reclamation's Albuquerque Area Office* depicts the general location of Reclamation's Projects under the Albuquerque Area Office's jurisdiction.

This Annual Report to the Pecos River Compact Commissioners is intended to convey all reporting requirement information on the three projects mentioned above, as well as inform the Commission of proposed changes in programs and management activities and strategies that may affect operations, operating conditions, and/or the Compact, including ESA issues.

Reclamation's Carlsbad Field Office now reports to the Albuquerque Area Office's Facilities and Lands Division. An agreement between Reclamation and Carlsbad Irrigation District (Carlsbad District), finalized on October 2, 1989, provided for the Carlsbad District to operate and maintain Brantley Dam, Avalon Dan, Sumner Dam, and the Pecos River Water Salvage Project. Reclamation continues to be responsible for assuring that this work is accomplished in compliance with all applicable agreements, contracts, regulations, compacts, and other related laws.

Reclamation also has a Resource Management Planner working in support of the Bureau of Land Management (BLM) in BLM's Carlsbad Field Office as lead for Reclamation in the implementation of Section 365 of the Energy Policy Act of 2005 Pilot Project. This position coordinates with and assists BLM to identify efficiencies in processing oil and gas leasing and development activities.

The gage data used within this report is provisional and was downloaded from the United States Geological Service web page, http://waterdata.usgs.gov/nm/nwis/dv. The reservoir elevation data, which is provisional as well, is recorded by the dam tender and reported to Reclamation on a monthly basis.

Pecos Basin Water Accounting

Reclamation and the State of New Mexico Interstate Stream Commission have nearly concluded negotiation on a 5-year Depletions Agreement for ESA water use (2006-2012). A draft Pecos River Annual Accounting method document and a draft User's Manual have been produced.

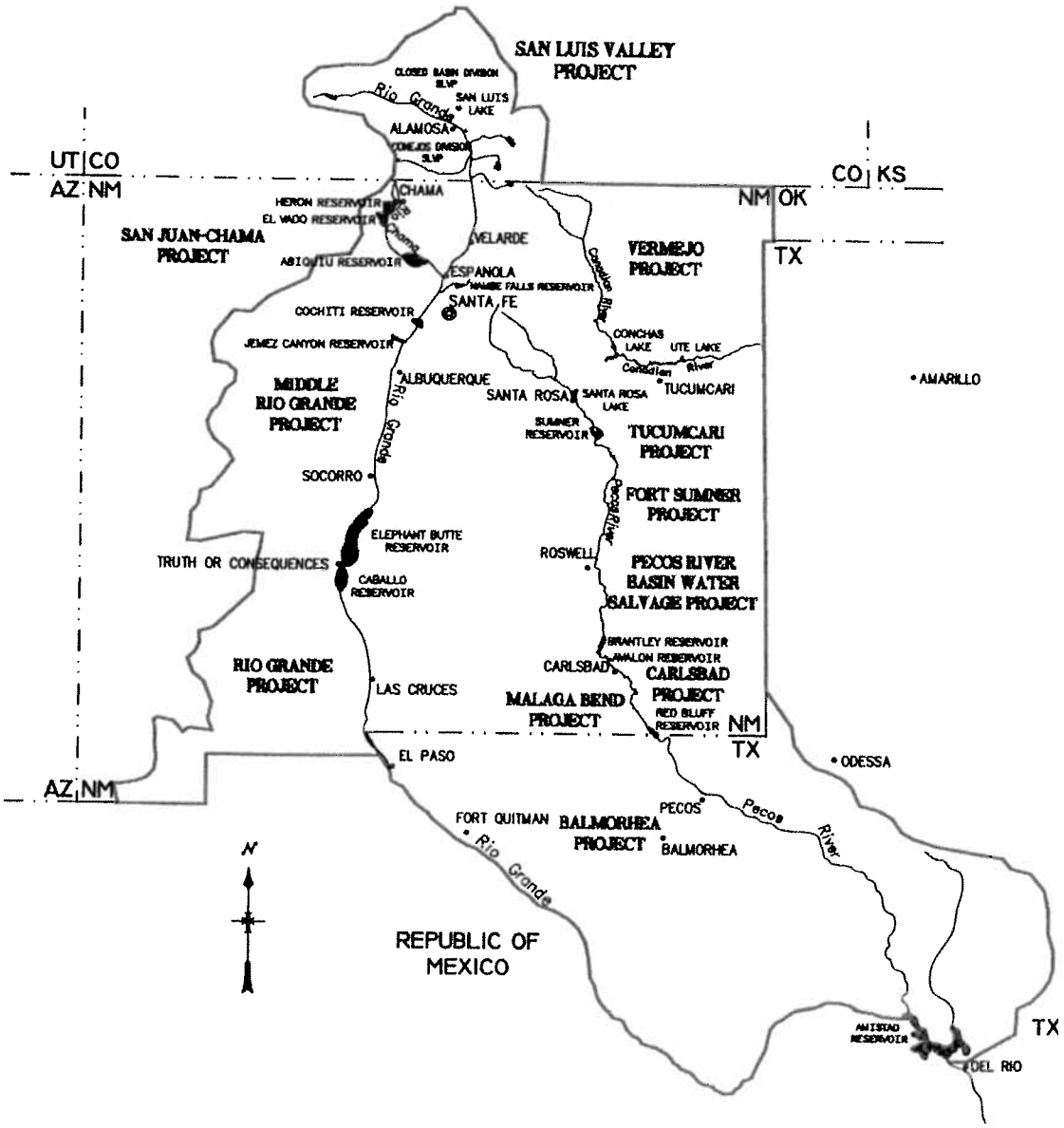

Figure 1. Project Map of Reclamation's Albuquerque Area Office.

Reclamation intends to construct an accounting model for the Pecos Basin, based on RiverWare®, as a tool for water management and accounting. This management and accounting model may eventually be proposed as a replacement for the spreadsheet accounting detailed in the Depletions Agreement.

Carlsbad Project Operations

Crop Production

As of the printing of this report, Reclamation had not received Carlsbad Irrigation District's (CID) 2008 crop and water data. This information is generally received in mid to late spring of each year and will be provided in the 2009 Calendar Year Report to the Pecos River Commission.

Since Reclamation had not received CID's 2007 crop and water data at the time of the printing of the 2007 Calendar Year Reports to the Pecos River Commission, this information is now being provided. As reported by CID, crops grown in the 2007 water year were as follows: alfalfa hay, cantaloupe, corn, cotton lint, grass, irrigated pasture, oats, pecans, peppers, silage, sorghums, watermelon, and wheat. Out of a total irrigable area of 25,055 acres, 17,520.20 acres were irrigated in 2007. Crop and water data submitted by the district did not contain total gross crop related income, therefore the average crop value per irrigated acre is not provided. Of the total water diverted, 56,510.48 af were delivered to irrigated lands for a total of 3.23 af per irrigated acre.

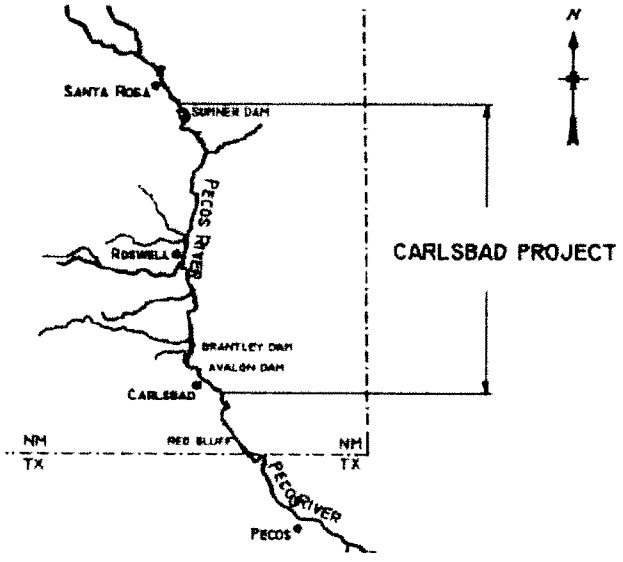

Figure 2. Area map of the Carlsbad Project.

Reservoir Storage Entitlements

All Carlsbad Project reservoirs were operated in accordance with the requirements of the Pecos River Compact and U.S. Army Corps of Engineers' (Corps) flood control criteria. Figure 2 *Area map of the Carlsbad Project* depicts the location of the Carlsbad Project Storage Dams on the Pecos River.

The Corps determines area and capacity tables for Santa Rosa Reservoir. Reclamation calculates annual total conservation storage entitlements for the Pecos River reservoirs that are in New Mexico. Table 1 *2008 Pecos River Reservoir Storage Entitlements* presents the calendar year 2008 storage entitlements for the four Pecos River Reservoirs.

Table 1. 2008 Pecos River Reservoir Storage Entitlements

Reservoir	Entitlement Storage (ac-ft)	Minimum Pool (ac-ft)	Estimated Sediment Accumulation Since Last Survey (ac-ft)	Total Conservation Storage (ac-ft)	Conservation Elevation (feet)
Santa Rosa	92,500	0	4,492	96,992	4,744.98
Sumner	40,134	2,500	292	42,926	4,262.88 (NAVD 88)
Brantley	40,000	2,000	1183	43,183	3,256.31 (NAVD 88)
Avalon	3,866	600	0	4,466	3,177.40
TOTAL	176,500				

Operation of the dams on the Pecos River is a joint effort between Reclamation, Carlsbad District, and the Corps in coordination with the Fort Sumner Irrigation District (Ft. Sumner District) and the State of New Mexico. The Corps has flood control responsibilities at Sumner Dam when the reservoir gets into the exclusive flood control pool (elevation 4262.88 to 4283.88 feet (ft) from May 1 through October 31, and 4269.16 to 4283.88 ft from November 1 through April 30). The Corps has flood control responsibilities at Brantley Dam when the reservoir elevation is above 3271.00 ft up to 3283.00 ft. Elevations are referenced to the North American Vertical Datum (NAVD 29).

The 2008 start-of-year total Carlsbad Project conservation storage in the four Pecos River reservoirs (Santa Rosa, Sumner, Brantley and Avalon) was 54 percent of entitlement. Santa Rosa, Sumner, Brantley and Avalon reservoirs on the Pecos River were at approximately 55, 61, 46, and 50 percent, respectively, of each reservoir's entitled conservation storage. The March 1, 2008 most probable forecasted snow melt runoff inflow into Santa Rosa Reservoir was

approximately 66,000 acre-feet (af) or 125 percent of the 30-year average.

The actual March through July 2008 inflow to Santa Rosa Reservoir was approximately 48,974 af, 92.4 percent of the 30-year average. On December 31, 2008, the total Carlsbad Project entitlement storage in the four Pecos reservoirs was 40 percent of entitlement. Santa Rosa, Sumner, Brantley and Avalon reservoirs were at approximately 34, 47, 46 and 57 percent, respectively, of each reservoir's entitlement storage.

SANTA ROSA RESERVOIR

Estimated Sediment Accumulation and Entitlement Storage for CY 2008

Estimated Sediment Accumulation:

Sediment accumulation calculations for Santa Rosa Reservoir are made by the Corps of Engineers. The Corps of Engineers performed a new sediment survey in 1996. The new area-capacity table was retroactive to January 1, 1997. Below is an annual tabulation of estimated deposition since January 1, 1997.

Calendar Year	*Sediment Accumulation (acre-ft)*
1997	760
1998	475
1999	532
2000	537
2001	327
2002	89
2003	81
2004	341
2005	711
2006	375
2007	264
	Total: 4492

The estimated sediment deposition since the last sediment survey is 4,492 ac-ft.

SUMNER RESERVOIR

Estimated Sediment Accumulation and Entitlement Storage for CY 2008

Estimated Sediment Accumulation Computation (Ratio Method):

Estimated sediment accumulation calculations for Sumner Reservoir are based on the ratio of total sediment deposition to total inflow during the period between the May 1989 and May 2001 sediment surveys. The USGS gage, Pecos River near Puerto De Luna, NM, (PDL) is used to measure inflow to Sumner Reservoir. The total sediment deposition during this period is the difference in contents between 1989 and 2001 surveys at the top of conservation pool, elevation 4,262.88 feet (NAVD 88 vertical datum, 4261.00 feet previous local area-capacity vertical datum). The total sediment deposition is divided by the total inflow to obtain an average ratio of sediment deposition to inflow during this period. Sediment deposition after the 2001 survey is estimated by multiplying this ratio by the calendar year inflow.

Calendar Year	*Inflow (ac-ft)*	*Sediment Accumulation (ac-ft)*
6/2001-12/2001	68,140	29
2002	74,938	31
2003	77,328	32
2004	110,815	47
2005	121,739	51
2006	123,937	52
2007	120,163	50
2008		
	Total:	**292**

The estimated sediment deposition since the last sediment survey is 292 ac-ft.

BRANTLEY RESERVOIR

Estimated Sediment Accumulation and Entitlement Storage for CY 2008

Estimated Sediment Accumulation Computation (Ratio Method):

Estimated sediment accumulation calculations for Brantley Reservoir are based on the ratio of total sediment deposition to total inflow during the period between the September 1988 and May 2001 sediment surveys. The USGS gage, Pecos River near Lakewood, NM, (Kaiser Channel) is used to measure inflow to Brantley Reservoir. The total sediment deposition during this period is the difference in contents between 1988 and 2001 surveys at the top of the designated conservation pool, elevation 3,272.69 feet (NAVD 88 vertical datum, 3271.00 feet previous local area-capacity vertical datum). The total sediment deposition is divided by the total inflow to obtain an average ratio of sediment deposition to inflow during this period. Sediment deposition after the 2001 survey is estimated by multiplying this ratio by the calendar year inflow.

Calendar Year	*Inflow (ac-ft)*	*Sediment Accumulation (ac-ft)*
6/2001-12/2001	28,124	50
2002	77,850	139
2003	54,828	98
2004	140,612	250
2005	130,068	232
2006	125889	224
2007	106,655	190
	Total:	**1183**

The estimated sediment deposition since the last sediment survey is 1,183 ac-ft

Sumner Dam and Reservoir

Sumner Dam Operations

The operation of Sumner Dam is to divert to storage the available natural inflow above Fort Sumner Irrigation District's allotted direct diversion water right, when bypassing this water is not required to meet the 35 cfs target at the United States Geological Survey (USGS) gage Pecos River Below Taiban Creek Near Fort Sumner, and to maintain continuous flow in the river. Fort Sumner Irrigation District has a direct diversion right of up to 100 cubic-feet-per-second (cfs) of the natural inflow above Sumner Reservoir as calculated (2-week average inflow calculation) by the New Mexico Office of the State Engineer.

Releases of stored Carlsbad Project water occur as block releases for the Carlsbad District. The duration of block releases is restricted to a maximum of 15 contiguous days, and the cumulative annual duration of all block releases is restricted to a maximum of 65 days. Block releases are scheduled so that there is not less than 14 days between releases, and scheduling block releases during the six week period around August 1 is avoided if possible. Block releases are scheduled to alleviate river intermittency as long as this scheduling does not constitute a wasteful use of water due to excessive net losses accrued during transit, or due to excessively high net downstream reservoir evaporation. Reclamation directs the Carlsbad District dam tender on gate adjustments and the Carlsbad District is responsible for all maintenance activities. This operating procedure does not alter the normal operations of Avalon and Brantley Reservoirs for the purpose of delivering water to the Carlsbad District.

Under a water right permit granted by the State of New Mexico, the Carlsbad Project is allowed to store up to an additional 20,000 af in Sumner Reservoir from November 1 to April 30 each year, provided that the entitled conservation storage of all four reservoirs on the Pecos River in New Mexico does not exceed 176,500 af. No additional storage under this water right permit occurred in 2008.

Sumner Reservoir began the year with 24,464 af in total storage. An early spring peak total storage of 28,612 af occurred on February 17 prior to the reservoir being drawn down by evaporation and block releases for the Carlsbad Project. Sumner Reservoir's lowest total storage occurred on October 31, after the reservoir was drawn down to 11,156 af by the third and final block release of the year. Sumner Reservoir ended the year with 18,781 af in storage.

Three block releases occurred during the 2008 calendar year. The first block release was initiated on March 6 and terminated on March 15 at a rate 1,400 cfs, for a total release of approximately 28,245 af. The second block release occurred on June 16 through July 1 when approximately 34,881 af was released at 1,400 cfs. The third and final block release for 2008 occurred from August 22 through August 26 at the rate of approximately 1,470 cfs for a total release of 10,897 af. The total for all three block releases was 74,023 af.

Non-irrigation season ESA-related bypasses were initiated for the 2007-2008 winter season on November 20, 2007 following the release of the remaining Fish Conservation Pool water. Figure 3 *2008 Sumner Dam Bypass / Release and Total Storage* illustrates Sumner Dam's total storage, bypasses, and releases. A total of approximately 6,823 af were bypassed for ESA related purposes for 2008. A total of approximately 1000 af were released from the Fish Conservation Pool for ESA related purposes.

The effects of these modified operations on the Carlsbad Project water supply are discussed in the section on Reclamation's water offset program. Reclamation has leased water from river pumpers and the Hagerman Irrigation Company to replace the depletions associated with the modified operations.

During 2008, Reclamation stored 1,000 af in Santa Rosa and Sumner Reservoirs to provide releases to achieve target flows at the Taiban gage and avoid intermittency in the river. Reclamation replaced the water released out of Sumner Reservoir with 750 af of water pumped directly into Brantley Reservoir. During 2008, releases from the Fish Conservation Pool were made as needed during and after irrigation season at rates from 5 to 20 cfs.

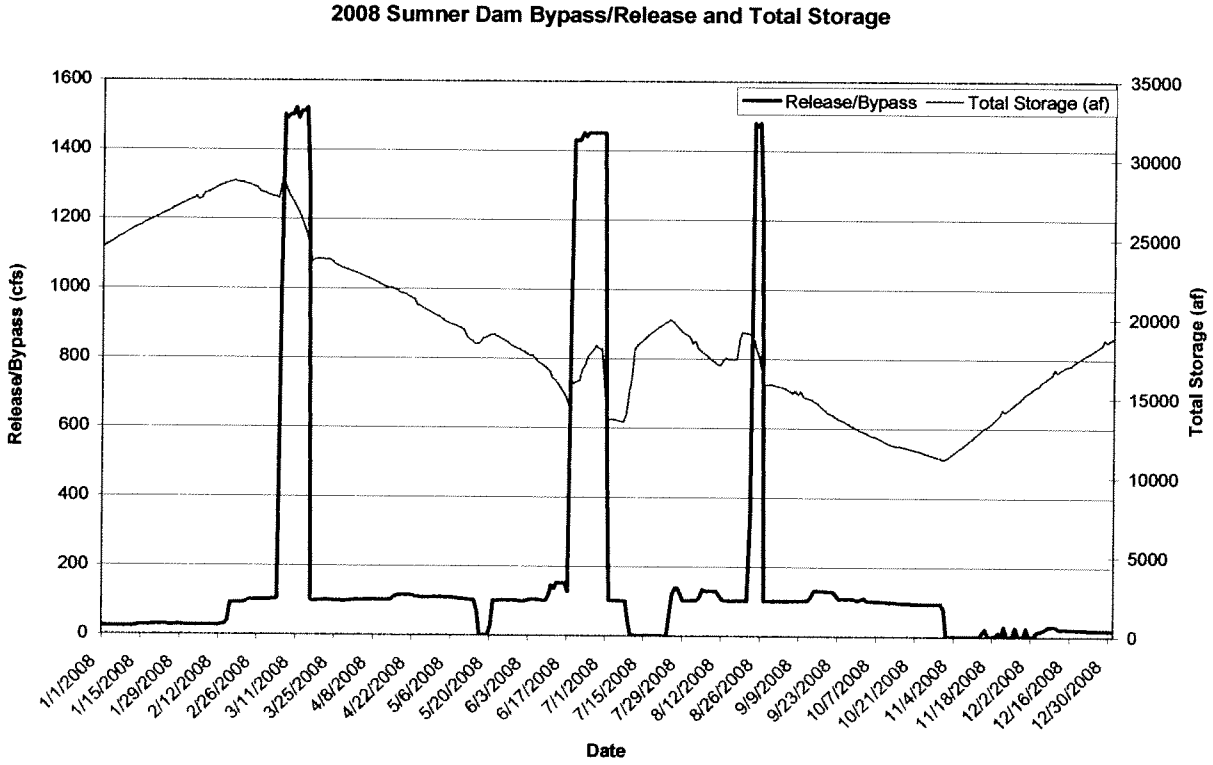

Figure 3. Calendar year 2008 Sumner Dam bypass/release and total storage (discharge downloaded from USGS web site on 02/25/2008).

Sumner Dam Facility Review and Safety of Dams Programs

All three radial gates at Sumner Dam, with a total design capacity of up to 56,000 cfs, are in need of repairs. CID is responsible for the repairs and for 68.36% of the cost and Reclamation is responsible for 31.64% of the cost. Reclamation has budgeted for their portion, ~~but CID has not yet scheduled for this repair~~.

Sumner Dam Standing Operating Procedures (SOP) and Emergency Action Plan (EAP) were completely revised and the EAP was removed from the SOP in 2008. The SOP and EAPs are scheduled for distribution in 2009. The Sumner Dam Periodic Facility Review (PFR) (examination) was completed in June 2008 and the report is scheduled for distribution in 2009. There were a total of three incomplete O&M recommendations for Sumner Dam in 2008; four O&M recommendations were completed in 2008.

Brantley Dam and Reservoir

Brantley Dam Operations

During periods without irrigation releases Brantley Dam bypasses mitigation flows of 20 cfs. During the irrigation season (normally March through October), releases are made from Brantley Dam to Avalon Reservoir at the rate necessary to support the diversion into the Carlsbad District's main canal, generally between 75 and 350 cfs, as required by irrigation demand. Releases from Brantley Dam were also made in May and November of 2008 (17,050 af) to assist the New Mexico Interstate Stream Commission (NMISC) in meeting its Pecos River Compact obligations as discussed in the sections labeled Water Release and Replacement Agreement for State Line Delivery and Carlsbad Irrigation District Water Lease Program. Figure 4 *2008 Brantley Dam Bypass/Release and Total Storage* depicts Brantley Dam's Total Storage, Release, and Bypasses.

The Corps has flood operation responsibility once the reservoir rises into the flood pool, which is identified to begin at elevation 3271.00 ft (NAVD 29) in the Corp's Water Control Manual for Brantley Dam. The top of the conservation or entitlement pool for Brantley Reservoir was calculated to be elevation 3254.61 (NAVD 29) as stated in the 2008 Pecos River Storage Entitlements. Therefore, Reclamation is responsible for control and operations until elevation 3271.00 (NAVD 29) is reached, regardless of the conservation elevation in the respective year, at which point the Corp assume operational responsibility.

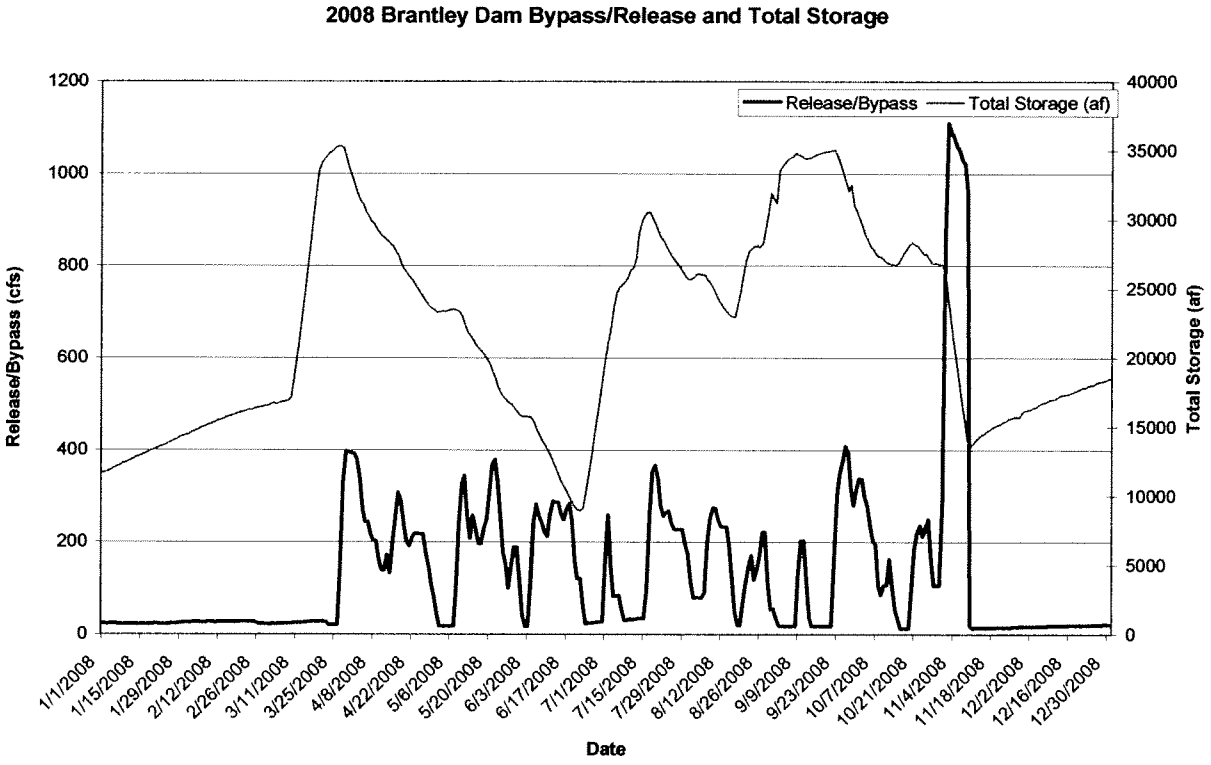

Figure 4. Calendar year 2008 Brantley Dam releases and total storage (discharge downloaded from USGS web site on 02/25/2008).

Brantley Reservoir began the year with a total storage of 11,635 af. Irrigation releases from Brantley were initiated on March 6 and then stopped and started as needed to meet demand and to conserve water. The final irrigation release from Brantley Reservoir occurred on October 31. Approximately 64,093 af were released from Brantley for irrigation during this period. Brantley Reservoir reached a maximum total storage of 35,302 af on March 27, 2008. The lowest total storage occurred on June 22 with a volume of 8,930 af. Brantley Reservoir ended the year with a total storage of 18,497 af. There was also a release at the beginning of November for a state line delivery to Texas, which is discussed in detail later in this report.

Brantley Dam Facility Review and Safety of Dams Programs

The Brantley Dam Emergency Action Plan (EAP) was completely revised and was removed from the Standing Operating Procedures (SOP) in 2008. The SOP and EAPs are scheduled for distribution in 2009. The Brantley Dam Periodic Facility Review (PFR) (examination) was completed in June 2008 and the report is scheduled for distribution in 2009. There were a total of four incomplete O&M recommendations for Brantley Dam in 2008; four O&M recommendations were completed in 2008.

Sinkholes exist on the left side, upstream and downstream of Brantley Dam. The sinkholes are

visually monitored on a regular basis and are surveyed every six years. The latest survey was completed in April 2004. The next sinkhole survey is scheduled for March 2009. Currently, the sinkholes are not a structural threat to the facility.

Avalon Dam and Reservoir

Avalon Dam Operations

Due to the small reservoir capacity and the location of Brantley Dam 10 miles upstream, Avalon Dam is used primarily as a diversion dam to meet irrigation demand for the Carlsbad District. Water is released from Brantley Dam and the small reservoir at Avalon is used to fine tune the releases into the Carlsbad District Main Canal. Avalon Reservoir began the year with conservation storage at 1,925 af. A total of approximately 8,954 af of water was released from Avalon Dam directly to the Pecos River in 2008 for the NMISC and Carlsbad District lease agreement. Avalon Reservoir end-of-year total storage was 2,204 af.

Diversions into the Carlsbad District Main Canal began on March 3, and ceased on October 31, totaling approximately 75,320 af. Carlsbad District diversions are presented in *Figure 5. 2008 Carlsbad Irrigation District Main Canal Diversions.*

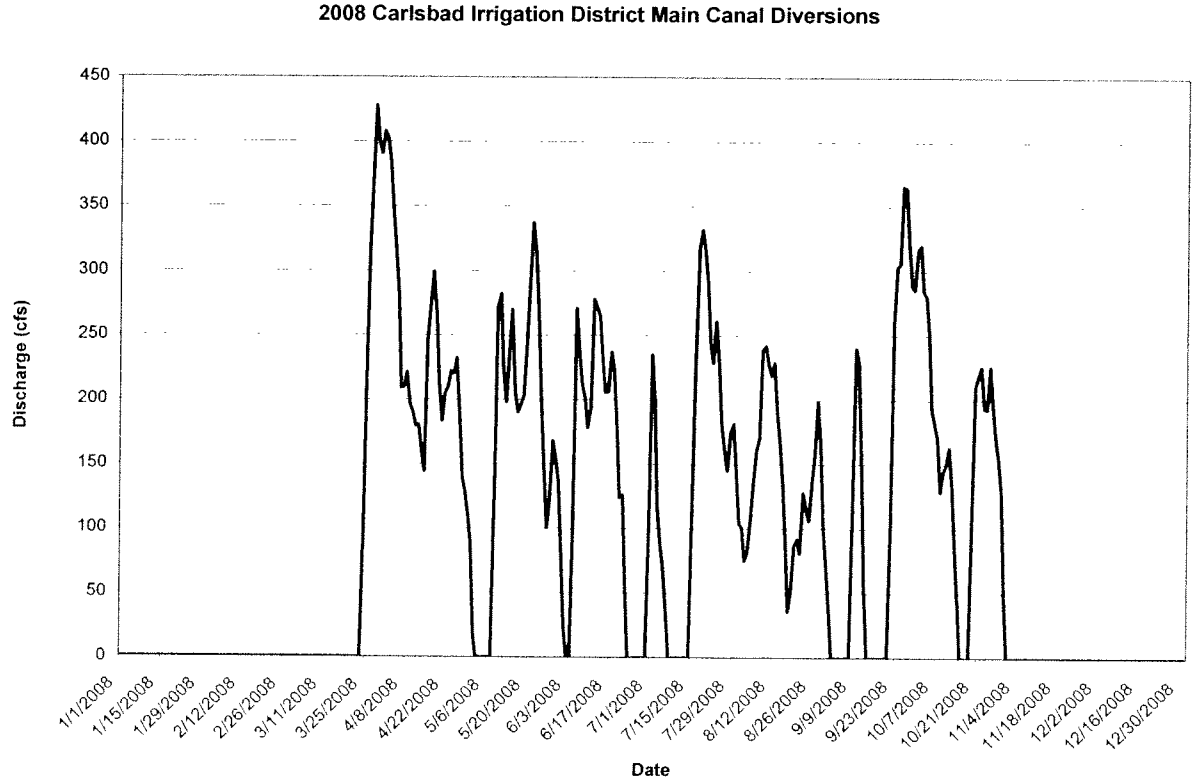

Figure 5. Calendar Year 2008 Carlsbad District Main Canal Diversions (graph downloaded from the USGS web site 02/09/2009).

Avalon Dam Facility Review and Safety of Dams Programs

Avalon Dam Standing Operating Procedures (SOP) and Emergency Action Plan (EAP) were completely revised and the EAP was removed from the SOP in 2008. The SOP and EAPs are scheduled for distribution in 2009. The Avalon Dam Periodic Facility Review (PFR) (examination) was completed in June 2008 and the report is scheduled for distribution in 2009. There were a total of three incomplete O&M recommendations for Sumner Dam in 2008; two O&M recommendations were completed in 2008.

Carlsbad Project Environmental Compliance

Endangered Species Program for Water Operations

Pecos bluntnose shiner

Reclamation continued into its second year of monitoring flows under the Biological Opinion (10-year BO) for Reclamation's Proposed Carlsbad Project Water Operations and Water Supply Conservation EA, (2006-2016, Cons. #22420-2006-F0096) implemented in August 2006.

Flows remained continuous throughout the 2008 calendar year on the Pecos River between Santa Rosa Dam and Avalon Reservoir, a distance of nearly 300 miles. Reclamation received an annual update on the Status of the Pecos bluntnose shiner (shiners) from the US Fish and Wildlife Service (Service). The running two-year average catch rate for the first trimester period (January through April) in the was 7.2 fish/100m^2, ±1.3 (one standard error). The catch rate was almost three times higher than the required incidental take set by the Service. The running two-year average catch rate for the third trimester was considerably higher, 14.3 fish/100m^2, ±4.5 (one standard error). Again, this catch rate was about three times higher than the incidental take required by the Service. The two-year running average catch rate for any trimester was 9.7 fish/100m^2, well over three times the required incidental take set by the 10-year Biological Opinion..

There were no shiners collected at either Old Fort Park in the Tailwater section below Sumner Dam or at the Brantley Reservoir inflow.

The Vaughan Pipeline provided 770 acre-feet (af) of 1,100 af purchased for the year of 2008. Delivery of the "Vaughan" water was stopped on Friday, December 5, 2008 due to flows undermining the gravel substrate at river outfall. The balance of the remaining water, 330 af, was not pumped in 2008. Reclamation is working with the State of New Mexico, Interstate Stream Commission and the Vaughan Family to correct that situation. Bypass flows were available to supplement the target flow at Taiban gage. As of the date of publication, Vaughan pipeline is operational again and is expected to be used through 2009 as water is needed to meet the targets.

The Supplemental Water Pool in Sumner Lake and Santa Rosa Reservoir was completely released prior to the end of 2008. Reclamation started the 2008 year with 1,000 acre-feet (a-f) of water. In February, Reclamation released 133 af of water in order to prevent a drying event. An additional 99 af of water was released in March, and 263 af of water was released in November. The remaining 532 af of supplemental water was finally released by December 30, 2008.

Bitter Lake National Wildlife Refuge (NWR) Restoration Project

Reclamation ended the 2008 year completing the Environmental Assessment and ready to sign

the Finding of No Significant Impact determination in January 2009. Reclamation's Socorro Field Office will start moving their equipment into place at the Bitter Lake National Wildlife Refuge around the first of February, to start work shortly after. The project will take approximately 3 months to accomplish.

Reclamation plans to restore 1.5 miles of cutoff oxbow in Reach 4 at the bottom of the project area (see cover photo). The Service believes that restoring flow to this oxbow will benefit the shiner's overall habitat, thus potentially improving the shiner's population status. Restoration of Oxbow 4 is a part of a larger effort to restore several oxbows above and adjacent to this oxbow, that have been cut off by natural fluvial processes.

Interior Least Tern

The 10-year BO included coverage for the Interior Least Tern, which was discovered nesting in 2004 at Brantley Reservoir. In 2008, Reclamation cleared and maintained a total of 84+ acres of nesting and brood-rearing habitat for use by terns.

Life-sized Least Tern decoys were again used on these created habitat sites in an attempt to establish a breeding colony outside of the Brantley Lake conservation pool (at or above 3256 feet elevation). Fifty decoys were placed in pairs in the southern-most created habitat site in early May 2008 and monitored throughout the spring and summer. No use of these sites was observed.

A maximum of 12 terns were observed at Brantley Reservoir on 26 June 2008. These birds attempted to nest within the reservoir pool on lake-bottom mudflats. A total of five nests with five eggs were subsequently inundated during the course of a block release that was initiated prior to the discovery of the nests. This incidental take of Interior Least Tern nests is within the allowable annual take, per the 2006 BO.

Reclamation biologists are currently working with the USFWS and the New Mexico Department of Game and Fish to develop solutions to allow for successful tern nesting and to avoid incidental take of terns in the future.

National Environmental Policy Act (NEPA) Activities

An Environmental Assessment (EA) on the 7-Rivers well pumping/pipeline has been tiered off the Long Term Miscellaneous Purposes Environmental Impact Statement (EIS) and was completed with a signed Finding of No Significant Impact (FONSI) April 16, 2007. This project was funded by Reclamation's Water 2025 Challenge Grant Program – the water is required for state line deliveries to meet the requirements of the Pecos Settlement Agreement.

Three EAs were/are being tiered off the Carlsbad Project Water Operations and Water Supply Conservation Environmental Impact Statement: **(1)** the Pecos River Restoration at Bitter Lake National Wildlife Refuge EA (ISC/FWS agreed on the depletions issue) to meet RPM #1 in the BiOp – completion date for this project is 2009, **(2)** the Pecos River Supplemental Water EA to meet ESA requirements (see below), and **(3)** the Long-Term Lease of Groundwater Rights, Pecos River near Ft Sumner, NM (Vaughan Pipeline – 25 year lease). The Long-Term Lease of Groundwater Rights draft EA was finalized July 25, 2007 (FONSI signed) without the FCP included (http://www.usbr.gov/uc/albuq/library). The ribbon cutting ceremonies were July 25, 2007 for the Vaughan Pipeline. The pipeline was on-line as of July 2008 producing 10-13 cfs, and shut down for repairs to the outfall in December, prior to full delivery of the annual contract volume.

Pecos River Channel Restoration at Bitter Lakes National Wildlife Refuge Environmental Assessment

Reclamation and NMISC are currently conducting other projects and NEPA actions in the Pecos River basin. Relevant activities include river restoration at Bitter Lake Wildlife Refuge to create fish habitat for the Pecos bluntnose shiner (project). Both Reclamation and ISC are parties to a Settlement Agreement, dated March 25, 2003 which among other things provides for ISC to use Carlsbad Project Water for state line deliveries to meet its Pecos River Compact deliveries.

The project is needed to comply with the 2006-2016 Biological Opinion for the Carlsbad Project Water Operations and Water Supply Conservation Environmental Impact Statement (EIS), June 2006. The Biological Opinion and EIS commit Reclamation to operate the Carlsbad Project with a target flow of 35 cubic feet per second (cfs) at the Taiban Gage and to keep the river continuous in order to conserve the federally protected Pecos bluntnose shiner. In addition to providing adequate water to keep the river continuous, the purpose of the project is to meet the contracted irrigation needs of the Carlsbad Project, to avoid hindering New Mexico delivery requirements to Texas, and to establish partnerships in the basin.

The Bureau of Reclamation (Reclamation) is preparing an EA for the Project. The Project would be entirely within the boundaries of the Bitter Lake National Wildlife Refuge (BLNWR) near Roswell, New Mexico, which is managed by the US Fish and Wildlife Service (Service). The purpose of the proposed Project is to improve riparian and in-channel habitat, extending the reach of connected good quality habitat for the benefit of native aquatic and riparian plant and

animal communities. Reclamation and the Service would improve habitat for the Pecos bluntnose shiner (shiner) by restoring parts of the river to more natural flow conditions within the context of the modern hydrologic regime, including reconnecting the river to the floodplain. A variety of restoration techniques may be used such as removing vegetation, lowering banks, changing the channel morphology, and restoring flow into historic meanders. Some or all of these techniques may be implemented, and work may be conducted in phases by agencies and entities other than Reclamation.

As part of the consultation process under the Endangered Species Act (ESA), the Service issued a Biological Opinion (BO) (2006 – 2016) on the selected alternative from the Carlsbad Project Water Operations EIS. One of the provisions of the BO was for Reclamation to partner with Federal, state, and private entities to participate and assist in the completion of ongoing habitat improvement projects on the Pecos River and to restore 1-1.5 miles of quality habitat within the Farmlands reach by 2009 and another 1-1.5 miles by 2014. According to the BO, activities that restore and optimize the interaction of river channel and floodplain habitats with available flows will be most successful in mitigating the observed displacement of shiner eggs. The reach that would provide the most benefit for the shiner is from the BLNWR south to Hagerman where flows are perennial due to inflow from the Roswell Basin and habitat is degraded.

The government to government letters, interested parties letter and the cooperating agency letters are all out and completed. Signed MOA between Reclamation and FWS is completed. A workshop was held January 15 and 16, 2008 at BLNWR in Roswell. The 404/401 has been completed as of June 2008. The draft EA was out for public review as of September 19th, the comment period ended October 20, 2008. The Finding of No Significant Impact was signed January 30, 2009 and is posted at http://www.usbr.gov/uc/albuq/index.html.

Pecos Supplemental Water Environmental Assessment (EA)

The Bureau of Reclamation is proposing to obtain supplemental water to provide the operational ability to release approximately 2,500 acre-feet of water out of Sumner Lake per year to keep the river continuous, while also ensuring that there is enough water at Brantley Reservoir to meet the contracted irrigation needs of the Carlsbad Project.

The project is needed to comply with the 2006-2016 Biological Opinion for the Carlsbad Project Water Operations and Water Supply Conservation Environmental Impact Statement (EIS), June 2006. The Biological Opinion and EIS commit Reclamation to operate the Carlsbad Project with a target flow of 35 cubic feet per second (cfs) at the Taiban Gage and to keep the river continuous in order to conserve the federally protected Pecos bluntnose shiner. The purpose of the project, in addition to providing adequate water to keep the river continuous and meeting the contracted irrigation needs of the Carlsbad Project, is to avoid hindering New Mexico water delivery requirements to Texas, and to establish partnerships in the basin.

FSID is still considering a 10 year lease (with renewal option) with Reclamation. FSID may lease up to 1600 af of its 100 cfs water right that is not required for FSID use.

Reclamation will transfer title of any Ft Sumner Project facilities (diversion dam) held by the US to the district and relieve the remaining payment obligation under current contract subject to congressional authorization. FSID will not divert any water Reclamation releases for preservation of the PBNS and will pursue ESA Section 10 consultation with the FWS for their activities on the Pecos.

Any water provided by the district to Reclamation under the contract and not release by February 15 (CID still negotiating) of the subsequent year will be treated as Carlsbad Project water and made available for block release.

A second scoping letter was mailed November 13, 2007 to update interested parties. The Draft EA is out for review with comments already received from the Corp of Engineers and internally within Reclamation. Further alternative development and assessment is pending the outcome of discussions with the State Engineer and a decision from Reclamation management on how to proceed.

Pecos River Basin Water Salvage Project

Under the authority of Public Law 88-594, Reclamation continues to control salt cedar growth from the Sumner Dam area to the New Mexico-Texas state line. This excludes the area between the Artesia bridge and north boundary of Reclamation's Brantley lands. Reclamation contracts with the Carlsbad District to perform the mechanical removal work. Salt cedar removal is primarily accomplished utilizing rubber-tire tractors with root plows, and caterpillars with rake attachments.

Pecos River lands cleared in New Mexico total approximately 33,200 acres. Federal lands in the program make up about 36 percent of the cleared areas, and private lands make up about 64 percent.

The original authorizing legislation allowed clearing for approximately 58,000 acres, but was reduced as a result of litigation brought by the Audubon Society, and the completion of an EIS in 1979. Fiscal Year 2008 expenditures for maintaining the cleared areas of salt cedar was $283,723, or $8.53 per acre. The NMISC funded $150,000.00 of these costs.

NMISC continues to fund Reclamation's involvement in obtaining annual cooperative agency agreements from private landowners for the Pecos River Basin Water Salvage Program.

Although the program did not achieve the original acreage intended, the Water Salvage Project is, to date, the largest and most successful effort to control the growth of salt cedar in the Pecos Valley.

Carlsbad Project Vegetation Management Program

The United States Department of the Interior, Bureau of Reclamation completed a five-year programmatic environmental assessment/biological assessment (EA/BA) for the purpose of performing research and demonstration using integrated methods (herbicides, biological and mechanical) on saltcedar to determine effective methods of control and rehabilitation while monitoring). Saltcedar is considered a noxious species whose impacts to water resources in New Mexico are detrimental. It spreads rapidly, grows in dense monotypic stands and out-competes native vegetation, potentially transpiring large amounts of water per acre in comparison to native vegetation. The proposed work would involve lands within the Carlsbad Project area which include Brantley and Avalon Reservoirs. Proposed work would be located on Reclamation lands within the Carlsbad Project area, called the Research Project area.

Reclamation has participated in the experimental release of beetles for saltcedar control in the Pecos Basin. Release of beetles (***Diorhabda elongate***) began in 2004. Mortality among the released beetles has been high, with only 5 beetles surviving from 2006 into 2007. In 2007, an additional 300 beetles were released at two sites (site A and site B) in the same area as the 2006

release. Two weeks after the release, no adult beetles or egg masses were found at either site, and little if any leaf defoliation was detectable. No beetles were released in 2008.

Reclamation, along with other state, federal, and county agencies, meet every six months to review and update on-going research and demonstration projects within the Carlsbad Project area. The Carlsbad Soil and Water District presented a map on the Avalon Watershed Project by BLM at the September 2008 meeting . Approximately 126 acres of saltcedar has been extracted and 490 acres treated. Next winter (2009) coordination with Bureau of Land Management will be needed to burn all the piles collected on the 126 acres. By 2010 the 126 acres should be ready to be revegetated. Reclamation currently posts the Microsoft PowerPoint® presentations and maps presented at the meetings on the Reclamation Web Site: http://www.usbr.gov/uc/albuq/library/eaba/saltcedar/saltcedar.html . Tentatively, a date in April 2009 (no specific day) has been set for the next meeting. Members will be contacted next year to determine the place and exact time.

Fort Sumner Project

Crop Production

Crop data for 2008 was not available for this report. As reported by Fort Sumner Irrigation District (FSID), crops grown in 2007 were alfalfa hay, other hay, irrigated pasture, melons, pecans, and nursery. A total of 6,901 irrigable acres were irrigated in 2007. Total gross crop related income of $6,768,748 was reported on FSID's crop and water data for an average crop value of $980.84 per irrigated acre. Of the total water diverted, 31,132 af were delivered to irrigated lands for a total of 4.5 af delivered per irrigated acre.

Operations

The irrigation season for Ft. Sumner District (FSID) typically begins March 1st and ends October 31st. The Ft. Sumner District is also allowed to divert for two, eight-day periods during the winter. This winter right is usually taken just prior to March 1st. During irrigation season, 80 to 100 cfs is usually bypassed through Sumner Reservoir depending on Ft. Sumner District's available water right. For 2008, Ft. Sumner District began calling for water on February 16 and discontinued irrigating on October 31. In 2008, Ft. Sumner District's allotment ranged from 70 to 100 cfs. A total of approximately 45,340 af were diverted into the Ft. Sumner District Main Canal as recorded at the USGS Fort Sumner Main Canal Near Fort Sumner, NM gage. This total includes Reclamation's ESA related bypasses and Supplemental Water Acquisition Pool (SWAP) releases which were diverted at Fort Sumner Diversion Dam and returned to the river at the Ft. Sumner District's Sandgate wasteway. A graph of Ft. Sumner District's diversions is shown in Figure 6 *2008 Fort Sumner Irrigation District Main Canal Diversions.*

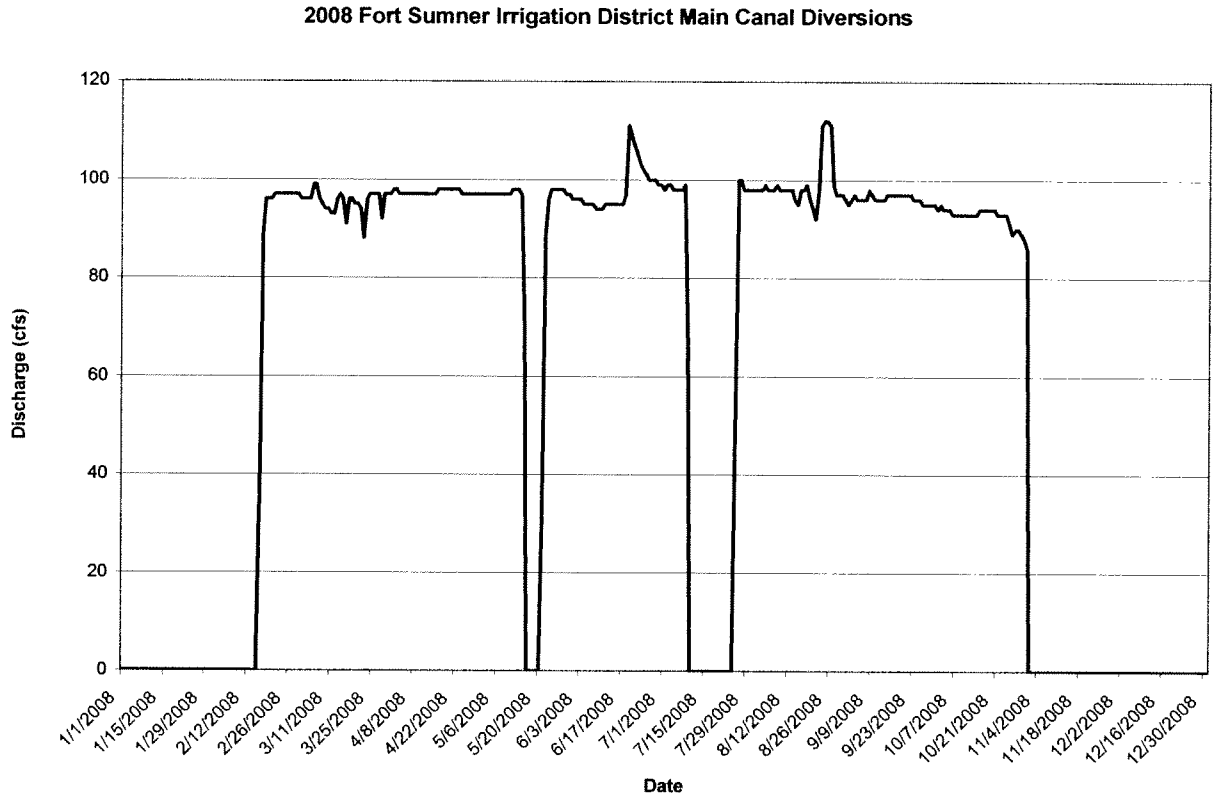

Figure 6. Fort Sumner Irrigation District 2008 diversions (discharge downloaded from USGS web site on 02/25/2008).

Fort Sumner Irrigation District Review of Operation and Maintenance Program

The Albuquerque Area Office of the Bureau of Reclamation decided to change the Review of Operation and Maintenance (RO&M) examination of the Fort Sumner Irrigation Project from every 3 years to every 6 years. The next RO&M examination is scheduled for October 2009.

Other Pecos River Activities and Operations

Reclamation's Water Offset Program

Reclamation leases water rights from willing owners within the Pecos River Basin to offset the additional depletions caused by Endangered Species Act related operations. Reclamation is entirely dependent on the availability of willing water rights holders and congressional budget decisions to meet the instream flow requirements of the 2006 PBNS BiOp.

From November 1, 2007, through October 31, 2008 (the 2008 water year), Reclamation had water lease agreements with seven Pecos River pumpers, one of whom is also a Hagerman Irrigation Company irrigator, to lease 2,614 acre-feet (consumptive use portion) of surface water rights and 509 acre-feet (consumptive use portion) of Hagerman Canal water rights. The land associated with the leased water was fallowed. The Hagerman Canal water was pumped directly into the Pecos River.

Reclamation also entered into a lease agreement with Interstate Stream Commission for 1,100 acre-feet (consumptive use) of shallow well water (Vaughan) to be pumped into the Pecos River annually. Delivery of this water to the river commenced in November of 2008 (water year 2009) and ceased in December due to damage to the outfall structure. Another lease for 900 acre-feet of shallow well water (Lynch) remains in place. This water was pumped into the Pecos River during water year 2008 and was used to maintain streamflows for the Pecos bluntnose shiner.

In addition to the lease agreements described above, Reclamation has established a 1,000 acre-foot fish conservation pool in Sumner Lake through an exchange of 750 acre-feet of water rights it owns at Seven Rivers. Water is pumped into Brantley Reservoir from wells at Seven Rivers in exchange for water being released from Sumner Lake to maintain streamflows for the Pecos bluntnose shiner.

Draft calculations produced using the new Pecos Annual Accounting Method, developed jointly by the NMISC and Reclamation, indicate that for the 2008 water year Reclamation's Carlsbad Project Water Acquisition (CPWA or offset) program put more water into the Pecos River than the additional depletions incurred by the modified operations of Sumner Dam. Reclamation bypassed 6,823 acre-feet of water through Sumner Dam creating 2,219 acre-feet of additional depletions for the 2008 water year. CPWA amounts of 2,452 acre-feet (adjusted for consumptive use, transmission loss, and Brantley evaporation) were provided at Brantley Reservoir for the water year to eliminate these additional depletions, resulting in an additional Reclamation credit of 233 acre-feet for the 2008 water year.

Reclamation and the NMISC are close to signing an agreement for offsetting depletions resulting from bypass operations for the bluntnose shiner.

Carlsbad Irrigation District Water Lease Program

Reclamation and the Carlsbad Irrigation District entered into a 40-year contract on November 21, 2006, which provides for the use of Carlsbad Project water for purposes other than irrigation. This contract provides for the Interstate Stream Commission and the Carlsbad Irrigation District to enter into third-party lease agreements for the purposes of leasing water from other district water users. It also provides for the Interstate Stream Commission to use water appurtenant to lands it owns within the district for purposes other than irrigation. Such leases must be approved by Reclamation. No third-party agreements have been executed and approved to date. No water was leased during 2008. Reclamation, CID and ISC are working together to develop a third-party agreement during 2009.

Water Release and Repayment Agreement for State Line Delivery

The release for the repayment agreement occurred from November 1 to November 11, and was 17,050 af for 2008.

Pecos River Basin General Stream Adjudication

[State of New Mexico, ex rel. the Office of the State Engineer and Pecos Valley Artesian Conservancy District v. L. T. Lewis, et al. and the United States of America, Case Nos. 20294 and 22600 (Consolidated)].

The Pecos River General Stream Adjudication (State Engineer v. L.T. Lewis) is ongoing in the 5th Judicial District Court in Chaves County, New Mexico. Reclamation and the U. S. Department of Justice are involved in this case by virtue of the U. S. interest in the water rights for the Carlsbad Project.

In authorizing funding to implement the ad hoc committee's consensus plan, the New Mexico legislature required that there be a settlement of the Carlsbad Project's surface water claims (H.B. 417, NMSA 72-1-2.4). The Carlsbad Irrigation District, Pecos Valley Artesian Conservancy District, the State of New Mexico, and the United States reached a settlement agreement in March, 2003. Key settlement terms are in accordance with the consensus plan and H.B. 417. They include NMISC purchase of land and water rights, augmentation of the flow of the Pecos River by pumping groundwater to the river, and provisions for management of supplemental well pumping within Carlsbad District. The settlement also includes operating rules governing the use of water allotted to Carlsbad District lands purchased by the NMISC. Depending on stateline delivery status and the water supply available to Carlsbad District, NMISC allotments may be delivered to the state line or re-allotted to Carlsbad District irrigators. Under the settlement the United States and Carlsbad District have agreed to refrain from making a priority call unless the supply available to Carlsbad District drops below 50,000 af. The settlement agreement addresses only the rights of the United States and Carlsbad District. Adjudication of individual Carlsbad District members' rights is continuing.

The settlement parties have agreed to an extension of the interim period to allow all conditions precedent necessary for fully implementing the settlement to be met. The conditions precedent in the settlement agreement include minimum levels of land and water right purchases by NMISC, a minimum capacity for augmentation well pumping to be in place, and completion of environmental compliance requirements.

Reclamation and the NMISC completed an Environmental Impact Statement in August, 2006 clearing the way for a long term "Miscellaneous Purposes Contract" which is required to allow Carlsbad Project Water to be released for delivery to the state line. This contract is currently in place.

Endangered Species Act Related Litigation

The Forest Guardians filed a Notice of Intent (NOI) to Sue on August 21, 2007 citing many numerous, alleged violations of the Endangered Species Act. On September 19, 2007, Reclamation responded to the Forest Guardians detailing it's compliance with the 10-year BiOp and its many additional efforts to keep the Pecos River whole. There has been no response from the Forest Guardians. In January 2008, the Forest Guardians announced it was merging with Sinapu, a Boulder nonprofit group that works to protect and restore large carnivores in the southern Rockies. The new group is now called WildEarth Guardians.

Water 2025

The Department of the Interior's Water 2025 initiative assists communities and irrigation districts in the western United States with funding to meet critical water related needs. The Department is seeking to collaborate with local interests on projects that will help reduce the potential for water related conflicts. Through the Water 2025 program Reclamation has awarded challenge grants for up to 50 percent of the cost of projects to improve conservation, efficiency, and opportunities for development of water markets.

The NMISC received Water 2025 grants for two projects on the Pecos River. One grant helped fund improvements to the Red Bluff Gage (completed in July, 2006), and a grant of $930,600 was awarded for pipelines in the Seven Rivers area that are being used to deliver augmentation water to Brantley Reservoir, as required under the Pecos River settlement agreement, which was completed in June of 2008.

New Water 2025 Challenge Grants for the Pecos River for 2009:

Funding Opportunity Announcement # 09-SF-811468 under the Challenge Grant Program: Water Marketing and Efficiency Grants for Fiscal Year 2009 were due by January 14, 2009.

Funding Opportunity Announcement # 09-SF-811471 under the Challenge Grant Program: System Optimization Reviews for Fiscal Year 2009 were due by January 28, 2009.

Emergency Drought Relief Program

Under the Emergency Drought Relief Program, Reclamation completed municipal water supply wells for Ruidoso Downs, NM, Ruidoso, NM, and Las Vegas NM. Additional well projects foe Eunice, NM, Carlsbad, NM, Hagerman, NM, Brazos, NM, Regina, NM, Cannon, NM, have been approved. Work is currently under way for Eunice, Carlsbad, and Hagerman. The solicitation for the Brazos well is out for bid – work is scheduled to begin in April/May of 2009.

United States Department of the Interior

U.S. GEOLOGICAL SURVEY
New Mexico Water Science Center
DUNS 02 528 7520
5338 Montgomery Blvd NE, Suite 400
Albuquerque, NM 87109-1311

April 1, 2009

Mr. James D. Renfrow
Pecos River Commission
Commissioner for New Mexico
PO Box 1359
Carlsbad, NM 88221

Mr. J.W. Thrasher, Jr.
Pecos River Commission
Commissioner for Texas
PO Box 340
Monahans, TX 79756

Dear Commissioners,

Enclosed are four copies of the Joint Funding Agreement (JFA), 09C4NM000000011, for the period July 1, 2009, to June 30, 2010, for Streamflow activities in New Mexico, Special Studies in New Mexico, and for Engineering Services for the Pecos River Commission. The agreement provides for a total expenditure of $247,190 of which $114,146 to be provided by the U.S. Geological Survey and $133,044 to be provided by the Pecos River Commission.

The total budget distribution is summarized in the following table:

Program Element	Pecos River Commission		U.S. Geological Survey	
	FY 2009	FY 2010	FY 2009	FY 2010
Streamflow Activities (New Mexico Water Science Center)	109,432	111,902	100,806	106,746
Water Quality Activities (New Mexico Water Science Center)	0	0	0	0
Special Studies* (New Mexico Water Science Center)	22,696	21,142**	7,400	7,400
Engineering Services	16,664	0	5,940	0
Total (New Mexico Water Science Center)	**$148,792**	**$133,044**	**$114,146**	**$114,146**

*Operation and maintence of streamgage (Pecos River at Pierce Canyon Crossing), baseflow analysis from Acme to Artesia, and floodflow analysis from Carlsbad to the State Line. Compile U. S. Geological Survey calendar year gaging station data from Texas and New Mexico. Provide compilation of calendar year records to the Pecos River Rivermaster and the New Mexico Interstate Stream Commission. **Cost for special studies includes a one time reduction of $2,758 due to reassignment of duties related to discontinuing engineering services.

If you concur, please sign and return a copy of the JFA to this office for processing. Work performed with funds from this agreement will be conducted on a fixed-price basis. The Pecos River Commission will be billed for work completed as part of the agreement via a DI-1040 on a quarterly basis.

On behalf of the USGS, I sincerely appreciate your participation in our Cooperative Program. If you have any questions concerning the work on this project, please call Marie Stewart at (505) 830-7903. Administrative questions should be addressed to Ms. Susan Kell at (505) 830-7904.

Sincerely,

Linda S. Weiss

Linda S. Weiss
Director

Enclosure

cc: BFS
Project File: 8637-9L720, 86379LC
Project Chief: Stewart, Matherne
District File: NM006
Mr. Greg Lewis
Ms. Tanya Trujillo
Mr. Herman Settemeyer
Mr. Tom Bohl
Mr. Mike Dorsey
Reading File

PECOS RIVER COMMISSION

60th Annual Meeting (86th Meeting)
April 21, 2009
9:00 AM (MDT)
Carlsbad, NM

1. Call to order by Chairman Calhoun

2. Introduction
   Commissioner Thrasher
   Commissioner Renfrow

3. Approval of minutes of meeting held April 8, 2008.

4. Appointment of new Secretary and selection of new principal office.

5. Report of Chairman

6. Report of Secretary

7. Report of the Treasurer

8. Report of Audit

9. Reports of Commission Committees
   (a) Budget
   (b) Legal
   (c) Engineering

10. Reports from Cooperating Agencies and others.
   (a) U.S. Fish and Wildlife Service
   (b) U.S. Bureau of Reclamation
   (c) U.S. Geological Survey
   (d) Army Corps of Engineers

11. Unfinished business
   (a) Pecos River Salinity Project

12. New business
   (a) Date of 2010 Annual Meeting

13. Adjournment

RESOLUTION
OF THE
PECOS RIVER COMMISSION

WHEREAS, *Charles A. Calhoun has completed his tenure as Commissioner for the United States of the Pecos River Commission, having faithfully served in that capacity since 2003;*

WHEREAS, *Charles A. Calhoun has provided the Pecos River Commission with years of valuable service;*

AND WHEREAS, *Charles A. Calhoun has done tireless and unselfish work for the Commission on behalf of the people of the of the United States.;*

NOW THEREFORE, BE IT RESOLVED *that the Pecos River Commission recognizes and appreciates the six years of outstanding service that Charley has given to this Commission.*

In witness whereof, we do herby cause our signatures as commissioners of the Pecos River Commission to be affixed hereon this 20th day of April 2010, A.D., at Monahans, Texas.

J.W. Thrasher, Jr.
Commissioner for Texas

James D. Renfrow
Commissioner for New Mexico