ORAL HISTORY INTERVIEW

Robert Brose

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STATUS OF INTERVIEWS:
OPEN FOR RESEARCH

♦ ♦ ♦ ♦ ♦ ♦

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Interviews conducted–1999
Interview edited and desktop published by
Brit Storey, Senior Historian–2010

Oral History Program
Bureau of Reclamation
Denver, Colorado

SUGGESTED CITATION:

Brose, Robert. ORAL HISTORY INTERVIEW.
Transcript of tape-recorded Bureau of Reclamation Oral History Interviews conducted by Wm. Joe Simonds, Historian, Bureau of Reclamation, September 30, 1999, in Boulder City, Nevada. Edited and desktop published 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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Robert Brose

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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
Robert Brose

Simonds: I'm in Boulder City, Nevada, interviewing Mr. Robert Brose. It's September 30, 1999. This is start of tape one.

Mr. Brose, just so that we've got a clear spelling on your name, how do you spell your last name?

Brose: B-R-O-S-E.

Simonds: Just to start out with, if you could tell me a little bit about where were you born, born and raised.

Born in Twin Falls, Idaho, in 1932

Brose: I was born in Idaho, Twin Falls, Idaho, in 1932. My mother, father, and I, we lived on a ranch until I was about nine years old, and my mother and father, unfortunately, both died that year, the same year.

Lived with Relatives in Southern California

I went to live with my relatives in southern California and lived there, oh, I guess until, well, of course, I got married, what have you.

Doesn't Have a Degree, but Studied and Passed the Professional Engineering Exam

Quite frankly, I don't have a degree, but I used to say I read for the law. Well, I didn't, but I studied engineering until I passed the Professional Engineering Exam.

"I became a registered engineer in about . . . 1958 . . ."

I became a registered engineer in about, I think it was 1958, somewhere around there.

Worked in Southern California for the Division of Highways

And then I was working in southern California for the Division of Highways.

Worked for Hawaiian Dredging and Then the U.S. Army Corps of Engineers Beginning about 1967

I left them and went to Hawaii. I worked for Hawaiian Dredging for a while in Hawaii, and then I joined the Corps of Engineers. Essentially, that's when I began my career with the federal government. I think that was about, let's see, '69.

Worked for the Federal Government until Retirement

And so then I worked for the federal government until I retired. No, it wasn't '69. It was '67. Anyway, so I worked for the federal government for 29 years and 11 months when I retired.

Simonds: When did you come to work for Reclamation?

Came to the Bureau of Reclamation in 1975

Brose: In 1975.

Simonds: Up until that point, you had been with the Corps of Engineers?

Brose: Yes.

Simonds: What did you do with the Corps?

At the Corps Worked in Construction Management

Brose: Well, I was in the Corps as an engineer. My primary concentration with the Corps of Engineers was in construction management.

At Reclamation Worked in Hydraulics and Hydrology

And then when I came to work here with the Bureau of Reclamation, I entered into the world of the Lower Colorado River, hydraulics and hydrology. I'd always had sort of a soft spot in my heart for hydraulics and hydrology, because when I passed the engineering exam, it was that aspect of the engineering exam that carried me through it, if you will. And that was one ~~I was very comfortable, an~~[1] aspect of engineering I was very comfortable with, so it was just kind of a natural when I hit here that I just kind of picked it up and enjoyed it and worked with it.

Simonds: You say you don't have an engineering degree proper, but did you study engineering at a university level or was this on your own?

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

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

". . . I could have gone ahead and gotten a degree at night school, but once I passed the professional registration, I guess I just said, 'Well, I'll get a degree one of these days, but let's get on with things.'"

Brose: I did. Night school, primarily, for most of it, and that was kind of too bad in a way, if I think back upon it. If I'd have pursued, I could have gone ahead and gotten a degree at night school, but once I passed the professional registration, I guess I just said, "Well, I'll get a degree one of these days, but let's get on with things."

Simonds: You said you joined Reclamation in '75?

Brose: Yeah.

Simonds: Was that here in the regional office?

Brose: Yeah, in Boulder City.

Simonds: Who was in charge of the region at that time?

Brose: Let's see. He was only there for two or three months after I came here. Darn, I'm sorry, I can't remember the name.

Simonds: That's okay. And you said you were involved in hydraulics and hydrology on the Lower Colorado.

Brose: That was my primary function all the time I was there.

Simonds: What is that exactly? What does that entail?

Brose: Well, two facets of it.

"The hydrology involves the calculation and the impact of the water supply, how much rain and water is going to be developed in the watershed upstream that is going to come down the river . . ."

The hydrology involves the calculation and the impact of the water supply, how much rain and water is going to be developed in the watershed upstream that is going to come down the river, and that's the hydrology aspect of it.

"The hydraulics aspect of it is, what do you do with the water after it gets here? How do you manage it? . . . compute the size of channel that you need? . . . address and compute the bank line protection or other functions which you need to be sure that you can take care of this water when it gets here. . . ."

The hydraulics aspect of it is, what do you do with the water after it gets here? How do you manage it? How do you compute the size of channel that you need? How do you address

and compute the bank line protection or other functions which you need to be sure that you can take care of this water when it gets here.

Simonds: Is that a flood-control aspect as part of it?

Brose: Yeah.

Work at the Corps of Engineers

Simonds: When you were with the Corps of Engineers, you were primarily in construction management.

Brose: Well, yes and no. I was far beyond that. I say construction management, but I was more diverse than that. I was actually at one point a technical manager of a rather comprehensive design program for ammunition plants back in the Midwest. It was technical oversight of a bunch of civil, electrical, and mechanical engineers who were involved in this total process.

Simonds: And so your work in hydrology and hydraulics really began when you came to Reclamation?

Working on Storm Drainage and Highway Drainage with Highways in California

Brose: Well, no, not really, because when I worked for the state of California in highways, I spent, oh, about a year, a couple years perhaps–no, a little over a year–dealing with the storm drainage and how you handle the storm drain when it passes under a freeway or what happens when the water falls on the freeway and how do you get rid of it and those kind of things.

Simonds: In the time you spent working with Reclamation, what were some of the major issues that you had to address?

Work on the Colorado River Front Work and Levee System Act

Brose: Let's see. My major issue, I think revolved around what was called the Colorado River Front Work and Levee System Act, and that act directed Reclamation to provide for flood control for navigation and for essentially the management of the Colorado River, the control of the Colorado River.

Well, in trying to implement that direction from Congress–that was the name of the game, I guess you might say, with the understanding, you know, that you had to achieve these purposes. So the activities, then, would be to–I won't say just to identify, because the identification of problem areas was

pretty obvious. But the design of corrective works and the implementation of those corrective works, my concentration or my effort was in that direction.

So the difficulties that occurred were primarily to gain the support for these projects from the different entities that also had an interest in the Colorado River–the Colorado River Indian tribes, the different state environmental agencies, the Bureau of Land Management. Well, that's a whole other subject.

". . . the agency involvement, interaction, and acceptance or endorsement of what we felt was the proper treatment to pursue, those were the challenges of the effort. The actual physical design was almost a walk in the park compared to these other issues that came up, the other coordination that came up. . . ."

These kind of things, the agency involvement, interaction, and acceptance or endorsement of what we felt was the proper treatment to pursue, those were the challenges of the effort. The actual physical design was almost a walk in the park compared to these other issues that came up, the other coordination that came up.

Simonds: The River Front and Levee work, I'm not real familiar with that project. Was that primarily a flood control type? What were the problems that they were trying to resolve?

Brose: Well, the Congress passed a bill, and I think it was 1944, about, and they called it the Colorado River Front Work and Levee System Act, and within that act, which was generated, with the direction to Reclamation, to go up to the Colorado River and resolve some of the flooding problems that were occurring, and that was probably the biggest issue.

Along about that time, there were some serious problems that occurred at Needles in flooding. There was significant potential flooding down at Yuma, Palo Verde Valley. I think the Needles issue was the most severe at that time. So anyway, I think that's what spurred Congress into passing the Front Work and Levee System Act. Unfortunately, it's a big long name, and there's no neat acronym that fits.

Simonds: It involved construction of levies along good portions of the Lower Colorado?

Brose: Straightening and channelization and those kinds of things and the construction of those, yeah.

Simonds: How did it work? Was it successful?

Brose: My perception of that is that it was very successful, yes.

Simonds: You say that's your perception. Are there others who have a different perspective?

Refuges Were Also Created along the Colorado River

Brose: Yes, of course. The idea being that when you confine a river, you stop it from flooding the overbanks, then there is a loss of, let's say a freshening effect to the natural environment in some people's view. Of course, at the same time, or very close to that time, Congress and the secretary created the refuges along the river, which were to mitigate or compensate for some of these losses that were identified or perceived as occurring. So that was another facet, almost concurrent, that was occurring at the time.

Simonds: This work starts essentially below Hoover Dam and continues down pretty much to the border with the United States and Mexico?

Colorado River Front Work and Levee System Act Project Starts below Davis Dam

Brose: More explicitly, it starts at Davis Dam. The area between Hoover Dam and Davis Dam is Lake Mohave, and it's just pure, almost exclusively pure lake. There's actually no vegetation or environmental attributes or aspects of that, other than the fisheries. There's no significant vegetation. But once you get below Davis Dam, that sort of is where the river takes on the characteristics of a river.

Simonds: I always talked about the Colorado River as carrying a very heavy silt load. Is that true below Davis Dam or is a lot of that taken up by Hoover and in Lake Mohave and now in Glen Canyon?

Silt Load in the Colorado River

Brose: Well, you know, you can go into that. To begin with, when Hoover was built, it was identified that it had a life expectancy of maybe 300 years because of the silt load. In other words, the idea being that within that time frame, because of the silt load that was coming down the river, that within that time frame Hoover would essentially be filled with dirt, and so now you've got a big–

Simonds: Waterfall.

". . . construction of Glen Canyon. . . . gave Hoover a super life. In other words, you'd have to fill Glen Canyon first before the problem ever gets down to Hoover. . . ."

Brose: Well, a big waterfall, exactly. And then other things happened, including the construction of Glen Canyon. Well, of course, Glen Canyon, that gave Hoover a super life. In other words, you'd have to fill Glen Canyon first before the problem ever gets down to Hoover.

"And then there's another thing . . . there have been a number of efforts made to control the silt and sediment at its source upstream, up in Colorado. . . ."

And then there's another thing that's happened, and I haven't really read or seen this, but there have been a number of efforts made to control the silt and sediment at its source upstream, up in Colorado. So I think the silt load that's coming into Glen Canyon now is tremendously reduced from what it was when Hoover was built in '35. So there's a bunch of things that are happening.

Silt Has Been Moved out and Downstream below Davis Dam

When you asked about the silt load, to go further with that, yeah, the waters coming out of Hoover are clean, clear, and the water coming out then later of Davis Dam and Parker Dam similarly were clean and clear. However, the river itself still had the residual from past years, for thousands of years in a way. So the clean and clear water from these various dams, then, because the river still had a silt-carrying capacity, it was sort of moving this material that was there out, with no replenishment occurring behind it, and that has happened all down the river system, essentially from Davis Dam almost–well, to Mexico, to Morales Dam. The river has over time, then, or this period of time since Hoover or Davis, Hoover Dam, has slowly been cleaning its bottom and sides and so forth. It's been incising into the alluvium.

". . . if you go down there, most of the river, it looks almost like a rocky mountain stream. In other words, the water's crystal clear in significant areas. You look down in the bottom, ten feet down, and you see the rocks on the bottom . . ."

At this point, quite frankly, if you go down there, most of the river, it looks almost like a rocky mountain stream. In other words, the water's crystal clear in significant areas. You look down in the bottom, ten feet down,

and you see the rocks on the bottom, just like a mountain stream.

Simonds: So it just moved everything downstream.

Brose: It's moved it out, yeah, pretty much. Now, that's not total, and there are still areas where that process is still occurring. The upper sections of the river, it has really done that. When you get farther down below, it's still doing it, it's still working. This is maybe another fifty-year process or something, but it's getting there. It's kind of a curious observation or perception, at least my perception of that's how that's happening.

Simonds: So then, because the upstream dams, the Glen Canyon and the Hoover, retain the bulk of the silt, or even further up now in some of the tributary and dams further upstream in Colorado, there hasn't been a problem with the siltation in along the levee system causing any problems there?

". . . the lack of sediment is in itself a problem in some areas. It depends on one's perspective . . ."

Brose: Well, see, the lack of sediment is in itself a problem in some areas. It depends on one's perspective, where one's coming from.

There are people who perceive a natural river as being one which carries a sediment load and has flooding every few years, and the mechanics of these things, with the sediment and the flooding and then the recession from the flood, those are the driving machines that cause the river to migrate, and there's that perception that this naturally migrating river is very beneficial to wildlife. And there are those who say, "Well, that's wild conjecture. Prove it." Well, of course, neither side can prove it, so they're at loggerheads.

Simonds: Recently, it's been maybe five or six years ago, they had the major floods on the Missouri River in that system, and a lot of fingers were pointed at the work that the Corps of Engineers had done along there in terms of channelization and levee systems as actually making the situation worse. Are you aware of any similar types of allegations being made with regard to the levee work and stuff on the Lower Colorado?

Brose: No. But, see, we have a different kind of system. I mean, it's significantly different.

"Almost every drop of Colorado River water is destined for somebody's water tap somewhere or agricultural land, so it's much more controlled. . . ."

The Colorado River is a water supply system. The Missouri and the Mississippi are more a drainage system. Almost every drop of Colorado River water is destined for somebody's water tap somewhere or agricultural land, so it's much more controlled.

". . . our levies are designed for what we call the Levee Design Flood. . . . It's, you know, a once-in-500-year event or in that kind of range. So our levee system along the Colorado River is not built to have water up against it and protect the outside lands. It's more a line of defense, a method to resist more a short-term, high-intensity flood. . . ."

We don't have this same depth of water against the levies. In fact, our levee system–let me back up. We built the levee system, and this was one of those design aspects of the Colorado River that I was almost responsible for. We spent, unfortunately, a lot of money, in a way, to enhance the Colorado River levee system so that it would not flood, and our levies are designed for what we call the Levee Design Flood. It's like a project flood. It's, you know, a once-in-500-year event or in that kind of range. So our levee system along the Colorado River is not built to have water up against it and protect the outside lands. It's more a line of defense, a method to resist more

a short-term, high-intensity flood. Quite frankly, and quite fortunately, it hasn't been tested, but it also is, as I say, a line of defense. It is the kind of thing that is there so that, given a severe catastrophic event, the maintenance crew, the National Guard or whomever else we can summon up, will be given enough time to get in there, and if it starts to show signs of weakening, to beef it up and protect.

"We did have the flood events of 1983 and 1984, and those events were in the range of the 250 or 300 years that the hydrologists, and our levee system was fine. . . ."

No, we have not been criticized for the quality of our levee, but it hasn't been tested. We did have the flood events of 1983 and 1984, and those events were in the range of the 250 or 300 years that the hydrologists, and our levee system was fine.

Simonds: No problems.

Brose: No problems. So, you know, in kind of a curious, in my view of it, I mean, this is very rewarding, you know. Well, at least that worked.

Effects of the Failure of Teton Dam on the Lower Colorado Region

Simonds: You joined Reclamation in 1975. This is a question that we ask pretty much everybody who was with Reclamation during that period. Now granted, you were down here in Boulder City in the Lower Colorado Region, most of the continent away from eastern Idaho, but you may have a perspective on this that others don't have in that you were born and raised, in at least a portion of your childhood, in Twin Falls. How did the failure of Teton Dam affect people down here in the region of the Lower Colorado?

Brose: I think we felt bad because it had reflected on Reclamation's engineering stature, status. We looked and listened to and understood the mechanics of the failure over time.

Nobody ever said anything to me, or that I ever heard from the outside from the public or other agencies, sort of equating Teton Dam to our dams down here. In other words, nobody ever sort of said, "That one blew. These are likely to blow, too," that kind of thing. Never heard anything like that. I think it was more just a sense of, "Gee, I wish that hadn't of happened, and I'm sorry it happened to Reclamation. And yet it does somewhat adversely reflect on our status and that kind of

thing." But I don't think it was much beyond that.

Simonds: Were there any changes that you felt as a result of the failure that occurred here in the region?

Brose: No, because our dams down here are primarily–that was an earth-filled dam. Ours aren't. The only earth-filled dams we have down here are so low. They're just 30, 40 feet high. They're just diversion dams that are earth filled. No, it was never–it never identified, in my mind, as an issue. I know that the E&R Center came down, you know, got all worried about it and did a bunch of investigations. You know, they were just pissing in the wind. It was something to do, I think.

Relationship of the Region to the Engineering and Research Center During Design of the Colorado River Front and Levee System

Simonds: Speaking of the Engineering and Research Center in Denver, did they do most of the design work on the levee system?

Brose: No, I did it.

Simonds: You did that here. It was always my understanding that at least for a lot of that

period of time the design and engineering that was done in Denver pretty much was passed on out to the fields and region to be taken care of.

Brose: I don't know how, but somehow or other the folks in Denver, who a lot of them are my good friends. We had a close rapport, close understanding, and they respected my judgment and my engineering capability. I would involve them in peer review, and they left me alone. I did go to peer review with them If I had something or issues or in fact the designs were–as I said, I sent them up to Ernie or Bob Shrant [phonetic] or whomever at the time. But there was never an issue, never an identified area of controversy. They just let us alone, but we involved them, and they were happy and we were happy.

Simonds: Did you work at all with the labs, the hydrology lab and the hydraulics people up there in testing the designs or things like that?

Did not have modeling done in Denver. "As a matter of fact, I looked to the lab results from the Corps of Engineers . . . on similar projects, etc. We never pushed to have explicit modeling done on the Colorado, primarily because we didn't see that–the modeling capability wasn't there, really. . . ."

Brose: No, because their capability wasn't attuned to the areas that we would have needed them to be involved. As a matter of fact, I looked to the lab results from the Corps of Engineers, published lab results on similar projects, etc. We never pushed to have explicit modeling done on the Colorado, primarily because we didn't see that–the modeling capability wasn't there, really. We were more in the position of build the prototype and observe it in the field, because the modeling was not going to tell us what we might have needed to know.

Simonds: I would suspect that, given the nature of the work, the Corps probably had significant experience, much more than Reclamation, in levee work.

Brose: Well, parallel or more similar to what we needed.

Simonds: Did you ever feel that maybe the Denver folks in the E&R, Engineering and Research Center, kind of stayed away or stayed out of it because maybe that wasn't glamorous to be working on a levee system, whereas building dams and power plants and stuff?

Brose: No.

Simonds: You never felt that?

Brose: No. As a matter of fact, as I said, the people in hydraulics and hydrology, the river folks up there in Denver, they're well known worldwide for their expertise. They're good friends of mine. We understand each other, still are close friends. But aside from that, no, I felt that that was–the glamour of it was not the issue.

Simonds: Another thing, you said you're not a graduate engineer. You did your studies and you took the certification tests or what have you. Did you ever feel any type of discrimination from the graduate engineers? Did you ever feel as though maybe they–

Brose: No, because most of them never tuned into even the concept that I might not have been a graduate engineer. And some of them, I told them about it, but it was never an issue, that I knew of.

Simonds: A levee system, how is a levee built? It's more than just a long pile of dirt along the river or someplace like that. Is it like an earth dam? Is it a zoned type?

"We recognized that the levee system, as it existed at that time, was essentially a place to deposit the material that was dredged up from the river–The levee was built really as an adjunct to the channelization, but essentially it was a

relatively weak structure. . . . [there was] no [construction] process anticipating that it would stand up against a prolonged wetting. . . ."

Brose: Not here. That was one of the features when, I think it was about 1978, '79, somewhere in there. We recognized that the levee system, as it existed at that time, was essentially a place to deposit the material that was dredged up from the river–

END SIDE 1, TAPE 1. September 30, 1999.
BEGIN SIDE 2, TAPE 1. September 30, 1999.

Brose: The levee was built really as an adjunct to the channelization, but essentially it was a relatively weak structure. A concentrated flow against the levee was probably going to melt it, almost, you know, considering that it was built from alluvial sands and there was no zoning, no process anticipating that it would stand up against a prolonged wetting.

". . . we went through a rather intensive effort to armor that levee system on the river side . . ."

So we went through a rather intensive effort to armor that levee system. We put a rock face on a levee system on the river side, and we did the calculations to identify the percolation through the river, through the

levee, etc., etc., to give us some comfort in its ability to withstand a flow, but primarily our effort was not to worry so much about the water traveling through the levee as much it was a direct assault against the levee from the lasting forces of the river system. So that's what I'm saying. That's kind of where the power of levee system is structured. In fact, it is, in my mind, a line of defense.

Simonds: So then they're primarily just armored with a rock face, riprap type of thing, and no zoning, no significant compaction or anything like that?

". . . the compaction [on the levees] . . . is right at 100 percent. It's primarily dredge material from the dredge discharge lines. . . . It is an hydraulic fill. It's self-draining, and it naturally compacts pretty close to 100 percent, and, in fact, so much so that it kills vegetation. . . ."

Brose: Well, the compaction [on the levees], quite frankly, interesting enough is right at 100 percent. It's primarily dredge material from the dredge discharge lines. Curiously enough, that, by the very nature of this what you might call hydraulic pumping or hydraulic fill. It is an hydraulic fill. It's self-draining, and it naturally compacts pretty close to 100 percent, and, in fact, so much so that it kills vegetation.

Dealings with the Colorado River Indian Tribes

Simonds: You mentioned a bit back that you had dealings with the Colorado River Indian Tribes. What were some of the issues involved with dealing with the tribes?

Brose: At different times over the years, the relationship with the tribes, you know, grew hot or grew cold. I don't mean hot. From hot, I don't mean it was an impressive controversial. It was just more contention at one time or another.

The Fort Mohave tribes, I had–I still do–have some really good friends among the Fort Mohaves, and also the CRIT, the Colorado River Indian Tribes. I had a very good personal relationship with the tribal members, the chairman, his daughter, I mean these kinds of things. We were on pretty good close, first-name basis. The structure of the tribal hierarchy, they had a lot of respect. I felt they felt good about me, that I was–well, they never trust anybody except another Indian, but they did pretty good with me. So that part of it was fine.

We had issues, of course, such as the nature of the treatment that we were proposing to build through the tribal lands. Were we

adequately addressing the needs of the tribes? Did we listen to the tribes and their representatives as they expressed what the needs of the tribes were?

"I think we did a pretty good job. We didn't do a perfect job. . . ."

I think we did a pretty good job. We didn't do a perfect job. There wasn't any way to achieve a perfect job.

". . . that wasn't only our fault . . . often the structure of the tribal council might change ever so often and a new group would come in with slightly different ideas . . . But it was always our hope and our effort to stay in fairly close contact with the tribes. Unfortunately, the Bureau of Indian Affairs was another entity in there that didn't do us much good. We learned, I think, that it was best to deal with the tribes directly. . . ."

And that wasn't only our fault, but on the other side, another facet of this, often the structure of the tribal council might change ever so often and a new group would come in with slightly different ideas, and these things would go on from time to time. But it was always our hope and our effort to stay in fairly close contact with the tribes. Unfortunately, the Bureau of Indian Affairs was another entity in there that

didn't do us much good. We learned, I think, that it was best to deal with the tribes directly.

"I still feel pretty good about my relationship with the tribes. And since I retired, actually the tribes have talked with me about working as a consultant with the tribes. . . ."

As I said, I felt pretty good. I still feel pretty good about my relationship with the tribes. And since I retired, actually the tribes have talked with me about working as a consultant with the tribes. So I think we did really well with the tribes, by and large. A few things went sour, don't let me tell you they didn't. But, by and large, things went pretty well.

Simonds: Did you ever have any opportunity to work with the Mexican government or their representatives?

Worked with the International Boundary and Water Commission

Brose: Yeah. I spent a lot of time at the International Boundary and Water, International Boundary–

Simonds: International Boundary Water Commission?

Brose: Water Commission, yeah. I spent a lot of time with them, attended a tremendous number of the meetings between the United States and Mexico.

Concerned about the International Boundary Section of the Colorado River

That's a whole other thing, in a way. I think we got along fairly well. Of course, our primary concern that I had was on that section of river from Morales Dam down to San Luis. In other words, that section of river where it forms the international boundary. I had a sense of–well, I developed a good sense of respect for the quality of the Mexican engineers and where they were coming from. I designed two or three projects, or two or three potential projects for the treatment of the river as it serves as the international boundary, and this is sort of like a planning effort that might get built thirty or forty years after you first approach it. It's not a big hurry. So I don't know. Quite frankly, it's still going on. Not much progress has been made in that aspect of it.

"The issues of the explicit location of the boundary and how it's going to be treated–it just seems like it's an endless area of discussion. . . ."

The issues of the explicit location of the boundary and how it's going to be treated, it just seems like it's an endless area of discussion.

The other features of this more clearly have to do with the water delivery to Mexico, the quality of the water delivery to Mexico, and I participated in those kinds of meetings between the IBWC and the United States.

Yeah, we did have fun with the Mexican issues. Al [Alton] Goff, who is the field representative for IBWC down in Yuma, he's a real close friend of mine. Yes, we had a lot of close dealings with them.

Simonds: Were you involved in any of the salinity control project work?

Brose: No.

Simonds: In the day-to-day operations of the river, were you involved in the day-to-day kind of stuff or was it more the overall administration? Did you pick up the phone and tell them to open the gates at Hoover or something like that?

At Reclamation Worked Mostly at Design of the River, Except for Two Years in River Scheduling

Brose: That wasn't my function. That was the function of water scheduling or river operations. My function had to do with the design of the actual physical river, except the last two years I worked for Reclamation, I went to work up at water scheduling, so then, at that time, I was right in there with the people who had their hands on the spigot, so to speak.

River Scheduling Operations Are Defined in the Annual Operating Plan

Simonds: In terms of the daily river operations like that, what was the forces behind that? Were the districts calling for more, less water? What drives the day-to-day operations? Certainly some of it is flood control, some of it is demand.

Brose: This is pretty explicitly defined in the annual operating plan that Reclamation creates for the system, and the five-year plan. But by and large, it sort of comes out this way. Reclamation will, early on in the year, look at the amount of water that's available in the system, and they will then make a declaration–or, in fact, by law the secretary of [the] interior makes a declaration–whether it's a normal year, a surplus year, a shortage year, or something like that.

Dealing with Normal, Surplus, and Shortage Water Years on the Colorado River

Fortunately, we have had essentially sort of surplusy normal years forever. All of the water, downstream water requests, will be honored, and so those essentially are the baseline that drives the system. Now, if it looks as if though the system is going to flood, potentially flood, there's going to be more water in the reservoir than can reasonably be handled, then the secretary will say, "Well, we're going to make excess releases or we're going to make space-building releases," or something like that. So there will be water released in the system, from the reservoirs, above the downstream demand. So to start with, you've got the downstream demands. Those are historically–we know what they were last year. The chances are real good we can forecast what they're going to be this year, and so we can sort of use that as a baseline. And if that is not enough water out of the system to give us comfort, assurance that we won't have to go into flood control or cause some kind of damage, fine. If it looks as if those aren't enough, then we'll make some kind of release above the downstream demand, and Reclamation has done that, oh, in the last few years. The regional director actually contacts all the states and says, "Don't you

think this is a good idea?" and they said, "Yeah, probably it's a good idea." So you then release excess water to these.

Simonds: How do some of the water districts view the release of excess water? Do they get a little upset by it or are they pretty much–

Brose: No, it's kind of this way. Over the years, they've been educated into the statistical water supply on the Colorado, and they've finally sort of come to believe it. So that when you say, "Look here, there's a 99.9 percent chance that we are not going into a drought by making this release. (They're worried about droughts, worried about water.) Almost no chance. And beyond that, there's a big chance that we're going to go into flood control. So let's make everybody comfortable and do everybody a favor, and instead of waiting and having to release a fairly large amount of water, which might do damage, let's kind of slowly run it out here in the few months that we have before the season peaks, and then we'll have plenty of space in the system. If we do get a bad high year, we won't have to go into a severe flood control situation." This is kind of a loosey-goosey way to run the system, but I think we've been doing that about the last three or four years.

Simonds: The idea being that when the runoffs come, that you replace that water without having to go into flood control operations.

Brose: Right. We have sufficient space in the reservoirs that we would not be forced to go into flood control.

Simonds: How were the water districts to work with? You talk about Metropolitan Water District and Imperial Valley being very powerful political entities. Is that true?

Brose: Oh, you betcha.

Simonds: Do you have sufficient power to dictate operations on the river?

Brose: No, because the operation of the river system on the Colorado is, first, established by the Supreme Court decree and the Boulder Canyon Project Act and some others. The Law of the River, just a list of the Law of the River is a whole two pages of just the acts and the different legal restraints and directions that occur that identify how the river will be operated.

Now, each one of these states essentially were parties to most of this, bought into it. They're very knowledgeable about it.

They will look over your shoulder and voice their opinion if they think you're deviating one way or another from, say, the Supreme Court decree on how you deal with the water or if somebody does not have a valid contract with the secretary [of the interior] for the delivery of water and on and on and on. They do quite a bit of, as I say, looking over the shoulder of their operation. But beyond that, they will voice an opinion, but I think that they have not found it necessary to become aggressive. I think that it has worked out so that everybody's come to a common meeting of the minds, and it hasn't become a controversial situation.

"In 1983, when we were forced to go into flood control, actually the secretary was enjoined in court not to make flood control releases, but that was resolved pretty quickly. And that was dumb. As I say, the states have been educated a lot since 1983. . . ."

In 1983, when we were forced to go into flood control, actually the secretary was enjoined in court not to make flood control releases, but that was resolved pretty quickly. And that was dumb. As I say, the states have been educated a lot since 1983.

Simonds: You can't tell the river not to rise. It's going to rise, and it could only rise so far up here before

it starts to spill. How can they possibly decree that–

Brose: They can't. One of the states, I don't know what their objective was, quite frankly. It was weird. But anyway, it was resolved within a few days, and we went on. We then had real significant flood control releases. So it's funny.

Simonds: Did you have any knowledge or work at all on issues surrounding the Salton Sea?

Brose: No.

California and its Allotment of 4.4 Million Acre Feet of Colorado River Water

Simonds: Recently the secretary of interior has stated that California is going to have to live within its 4.4 million acre-feet, their allotment has defined in the Colorado River Compact, and historically California has been using well in excess of that, using Arizona's water, with supposedly the understanding that as Arizona's needs grew, that Arizona would begin to take that water back. But now the secretary is saying that California has got to start to live within the 4.4. How do you envision that affecting operations on the river?

Brose: From the standpoint of the mechanical impact–in other words, from the standpoint of the water going down the river and to its various diversion points–it might have some minor effect on the water being taken off at, say, the MWD diversion and the CAP diversion. But my perception of that is, the impact to the system, the average guy standing on the bank wouldn't even know it happened. You know, that's just from the impact on the physical river itself.

The other features of it, such as water supply and how much it impacts the long-term water supply, the statistical analyses of these, and that's all you can go by, really, you have to look at it just in that arena. There's no other place to go. And that shows, quite frankly, that our most-recent studies, as I understand, are in the range that any of these things will not, there's not the vaguest we'd be looking at a drought until the year 2023 or year 2025 or something like that.

Simonds: In terms of available supply.

Brose: Yeah. So, you know, it sort of keeps putting it off over the horizon, maybe. But more to answer your first question–and I probably answered more than what your first question

was. It will not have any noticeable effect on the river system itself.

Simonds: Since you left Reclamation, you retired, when did you retire?

Brose: A year and a half ago.

Simonds: You've been doing some work, you mentioned when I talked to you previously, for the lower basin states and Reclamation with regards to the Endangered Species Act.

In Retirement Has Been Working on the Endangered Species Act and a Lawsuit Based on it

Brose: Significantly, yes.

Simonds: Tell me a bit about what's involved with that. I'd be interested in it.

Brose: I don't know that I'm the one that you should– I have an understanding of it.

Reclamation was essentially sued from the concern that our operations, Reclamation's operations, were contributing an adverse impact on endangered species and that we were not complying with the Endangered Species Act. So then we went into, according to the

requirements of the Endangered Species Act, a consultation with the Fish and Wildlife Service. This was an accepted process as opposed to saying, "Oh, yes, we are. You want to go to court now?" So that kind of put off the confrontation in court.

And so we did do a biological analysis of the impact of Reclamation's operations on the endangered species, particularly the four species that were targeted. I got involved in that. I worked with the people who wrote this biological assessment. I wrote a significant part of it. This was just before I retired. After I retired then, I just kind of piggy-backed on into this thing.

And so the next thing I know, the Fish and Wildlife Service comes back with a biological opinion based on Reclamation's biological assessment. Well, all they did was take the biological assessment and tear the front cover off of it, put the Fish and Wildlife Service cover on it, and said, "This is our opinion." But they added a bunch of stuff on the back end which said, "It is the Service's opinion that Reclamation is really doing a lot of stuff that adversely affects the endangered species." So to deal with those, the Service came up with a bunch of reasonable and

prudent actions which would mitigate or take Reclamation off the hook on these things.

I think it was a lot of smoke and mirrors, but nevertheless, Reclamation decided that they were going to try to keep peace in the family, they were going to go ahead and accommodate the Fish and Wildlife Service in their management practices and reasonable and prudent actions. And again I got involved in that, in the implementation of these reasonable and prudent actions, identifying areas and whether these things could actually be achieved, how can you actually achieve them based on the regimen of the river, the flows in the river, the physical topography of the river. So that's kind of how I got back involved in it.

Simonds: What were some of the things that they were proposing for mitigation?

". . . I got involved in . . . [identifying] the possibilities of searching out riparian lands which are suitable for environmental enhancement and developing plans to accommodate that environmental enhancement . . ."

Brose: The one thing that I got involved in, we chose to identify the possibilities of searching out riparian lands which are suitable for environmental enhancement and developing

plans to accommodate that environmental enhancement, within Reclamation's discretion to do so, and assisting the refuges in developing, let's say, they call them moist soil units, areas where the Southwestern willow flycatcher, which is one of the species that was endangered, will have a better habitat for breeding. This is just one thing.

Simonds: Habitat restoration, would that be a way of describing–

Brose: Well, I guess that's pretty much what the thought is. The assertion is that somehow or other this habitat was lost, and it needs to be replaced. One could argue very, very strongly, if one wanted to, that that's a bunch of crap. But nevertheless, to keep peace in the family and to avoid further lawsuits and all this sort of stuff, it seemed to be a pragmatic approach.

Simonds: Who brought suit against Reclamation?

Brose: Well, several entities. The Southwest Center for Biological Diversity was one. Well, let's see. What's the other one? Another one of those entities similar to that was a party to it. It wasn't Friends of the Earth. I can't remember.

Simonds: Environmental groups, primarily, were the ones involved.

Brose: Yes.

Simonds: With the regard to the environmental issues on the river, how do the Indian tribes figure into it? Or do they, even?

Brose: They are players in the process. Representatives from the tribes sits in on the meetings with the states, as the states are working towards a multi-species conservation program.

The tribal lands are among the lands that have been looked at for environmental enhancement or for enhancement to offset the losses that the endangered species perceived as having suffered. So, yes, they are involved, and it's more a case of being careful to keep them involved. You just can't ignore them. In reality, the tribal reservations along the Colorado River comprise a very significant percentage of the lands, the riparian lands along the Colorado, so there's just no way that they would not be involved.

Simonds: And what about Mexico?

Brose: That's a bummer. Mexico's a sovereign nation. In fact, we were just arguing about this today, about Mexico. Mexico is not going to stand there and let the United States wander in

there and tell them how to do stuff, you know, but some of these environmental groups are running around saying, "Well, this endangered species, part of the problem is occurring in Mexico, and you've got to do something." That's not something that is real easily resolved. It has to be resolved in some level of c____, I guess.

Simonds: You can't get the courts to force them to do anything.

Brose: No, that's about right.

Simonds: Has the Mexican government shown any interest in trying to address the environmental–

Brose: They at least pay it lip service. I don't know how sincere they are in that.

Simonds: Do you think that the wildlife and endangered species issues, are these going to be the big issues on the river in the near future, in the next, say, ten to twenty years?

END SIDE 2, TAPE 1. SEPTEMBER 30, 1999.
BEGIN SIDE 1, TAPE 2. SEPTEMBER 30, 1999.

Brose: Yeah, the three lower basin states have made a commitment to participate in this CRSM, Colorado River Species Management Plan,[2] which is directed towards the next fifty years of operation and to assure that all of the endangered or potentially endangered species– there's a list of about 120 of them–will be addressed in the operation of the system as far as to include the state's ability to do something about it.

The States Have to Agree to the Uses of Water in the Multi-Species Conservation Plan

The federal government and the secretary of the interior is limited in what he can do. His discretion only goes so far. And it comes down to another feature of this. The states are really the ones who–I won't say it's their water, but it sort of is. And so if it comes down to using water for a purpose aside from the purposes identified in the decree, the states have to essentially cough up that water. So that's the arena that the states are talking about, because that facet of the operation of the system is within their discretion.

2. In 2010 this program has evolved into the Lower Colorado River Multi-Species Conservation Program, or LCR MSCP

The secretary, the United States government doesn't own any of the Colorado River water. It's a shepherd of the resource, but it doesn't own any of it. The Supreme Court decree is supposed to oversee the division of the waters among the states who have entitlement to it, but the federal government of itself, just because of being able to do that, doesn't own any of that water. The federal government has acquired some water rights, of course, for refuges and stuff, but even that is subject to, it has to fall within the allocation to each one of the states. In other words, say the Havasu Wildlife Refuge, which is primarily in Arizona, comes out of Arizona's allotment. So, in a way, the federal government really doesn't own any water, per se. The states own the water, or at least it's sort of their water.

Simonds: This is a fifty-year plan that they're developing?

Brose: So now they're working up this fifty-year plan, which is going to look at the operation of the system for the next fifty years and identify how the operation of the system, what is the operation of the system going to entail in the next fifty years to accommodate these 120 species, to facilitate their happy lives, to assure

that they don't suffer, and among those that are endangered, to assist in the recovery of them.

Simonds: I would assume that there's probably going to have to be, somebody's going to have to give up some water in order to make this plan work.

Brose: Perhaps. That's another thing. That's the thing I was working on this week. We were looking at sites along the river, areas along the river which would be good sites that the states would be able to include in this plan, that they would endorse and commit to developing or to accomplishing whatever credence are necessary.

Simonds: A fifty-year plan seems like--that's a long ways out.

Brose: Not really.

Simonds: Not really?

Brose: Well, for instance, Davis Dam was built in about 1950. That's fifty years ago. It's not that long, in a way.

Simonds: Granted, it's not that long, fifty years. I just look at what's happened in the West in terms of growth and development in the last fifty years, and we're trying to project out another

fifty years. Nobody anticipated the kind of growth that's gone on in the last fifty years, and I can see where the possibility could exist that, how can we possibly anticipate where we're going to be fifty years from now.

Brose: Sure, you're right. The idea of this population growth or whatever it is and where it's going to lead to. We already look at the population growth as being [unclear] become weird. The population growth in the last two generations as been spectacular, almost inconceivable.

Simonds: Just look at Las Vegas in the last ten years.

Brose: Well, that part, too, you know. Vegas itself has had phenomenal growth. I think the driving force, quite frankly, is the population growth, but we'll see how that goes.

Simonds: Because there just isn't going to be any more water. We probably have as much water as we're going to get. The allocation of the water certainly may change. It could be very interesting to see what happens in the next fifty years.

Brose: Of course, as I said, the Supreme Court decree identified the allocation of water between the states, these lower states, so that feature is sort of tied down fairly well, and I think the states

so far have been willing to accept it. There's another feature of this, and that is, whoever's got the most money is going to be able to get the water.

Simonds: The old adage, water flows to money.

Brose: Yes. That'll work out.

Simonds: Were you involved at all with the Central Arizona Project?

Brose: No.

Simonds: So the work pretty much just was down on the river, from, say, Davis down or Hoover down.

Brose: Yes.

Simonds: In your career with Reclamation, were there any notable incidents that come to mind, things that, you know, good, bad, otherwise, funny? What would happen occasionally that would be unexpected from your normal day-to-day types?

Brose: I'll give you this kind of in a way. I developed what I consider a partnership with the river. The river's like baseball. It was very, very good to me. But I think that among the things to consider, in a way, the river has a mind of its

own, almost. You're very fortunate if you can sort of discover where the river wants to go and help it. If there's any equivocation on the part of the river, you try to help it make up its mind to go in the direction you want it to go in those circumstances. That's probably a good, clear method to approach river mechanics.

Yeah, I've had some really great times. There's been some really wonderful people that I've worked with. As far as incidents or activities like that that would come to mind, there has to be hundreds of them. A few bad times, but I don't think that the bad times were–they weren't awful.

Predicting the Level of Flooding in 1983-1984

We went through the 1983-84 flood. As far as a time of stress, that was probably one of the more severe times of stress on the Colorado, in my experience on the Colorado. The difficulties that our hydrologists had in zeroing in on how big the flood was going to be, the timing of it that spring of 1983, that was kind of a difficult time.

I was out on the river, going up and down talking to people in the local communities, and I had a sense of chagrin, because I'd go out and I'd talk to them and I'd

say, “Well, it looks as if, though, we’re going to have some high flows.”

“How high are the flows going to be?”

“Well, most likely they’re going to be around 20–“ (Well, at one point it was a number. I don’t remember the exact, but say 28,000 or something like that cfs. We were going to be delivering that.)

“How high is that going to get over here in my house?”

“Well, actually, you’re okay. It’s going to just get there. It’s not quite going to get your floor wet.” This might be some guy down on the Parker strip, saying, “Am I going to have to sandbag or what have you?”

Quite frankly, we had a very, I felt, good understanding of how high the water was going to get. “Well, you’re probably going to be okay. Your store here is going to be okay, but all the rest of it, you’re going to have problems. Don’t expect any customers.”

“Well, damn. Okay.”

Well, that was fine, but then two weeks to come out there and say, “Hey, guess what?

It's not going to be 28,000. It's going to be 35,000." Oh, boy, do you really get a warm welcome all of a sudden.

Simonds: Like you can do anything about it.

Brose: Well, no. But the point was, you know, that unfortunately as it evolved, each couple weeks went by and the forecast kept going up, you know. Oh, man. And this happened twice. We had to go out the third time and tell them it's going to be even higher yet. Well, you know, our credibility level was in big trouble, big, big trouble, and that hurt my sense of, you know, something, professionalism or whatever.

Simonds: That '83-84 period, that was the highest flows on the river during your time with Reclamation, is that right?

Brose: The highest since Hoover was built.

Simonds: Were there other years, intervening years where there would have been high flows on the lower part of the river had there not been–I guess what I'm looking at is, you talked about the folks down on the Parker strip, and essentially it sounds like they'd built into a flood plain.

Brose: They did, sadly.

Simonds: Do these flood control activities, operations and levee systems and stuff, do they give the people a false sense of security?

Brose: I don't think those do. The problem is one of encroachment on the river system. It's the same on many, many rivers around the country. The Snake River, for instance, does the same thing. The people who live along the Snake River, they will build right down there close to the river because they want to take advantage of the river flow. They want to walk out and fish right off their doorstep, whatever the hell it is. It's the same kind of thing.

Down here, they do that, too. Say in what we call the Parker strip, these are commercial enterprises that their customers are the people using the river, people boating up and down. They want curb service in their boat to buy a bottle of beer or something. Sad but true, that's the way it is. So that's the way these commercial enterprises develop along the river, is to accommodate that water level, and sadly, below Parker Dam, from Parker down to [unclear], the river is very uniform in its flow,

and people just flat get used to it. This is not new science. It's been thought of from fifty years ago. We ought to release 40,000 for three days every year just so the people will not expect that this wonderful, wonderful thing is going to continue to happen.

Actually, I and others have gone out over time and done public meetings, etc. I made the Needles newspaper one time in, I think it was, 1978, '79. Big headline, "Brose says the golf course is going to flood." Well, wow. Of course, it's a local paper, but there it is, it's a full headline. That was their front page. That was it, you know. And it was true. We did go out and tell them. In fact, in '83 that golf course did flood. I didn't miss it by two inches on my predictions.

Simonds: If you're going to build in a flood plain, a golf course is a good thing to put in there rather than homes and businesses.

Brose: Well, of course it is. We totally endorsed the idea of having that golf course out there. But we didn't endorse some of the other things. As I said, this drive-up bar. The floor of his store is right there and his nightclub or whatever it is. So those are the ones that got hurt badly. The golf course, as I said, it was kind of–I pointed that out because we were not remiss in

conducting public meetings and warning people about the potential for floods. We went to it pretty much tooth and nail, saying, "You see 19,000 as a maximum flow for the last three or four years or five years, but the probability is 99 percent that that's not going to be what you're going to see one of these days. We're going to see flows five feet, six feet, eight feet higher." Of course, then when it happens, then they come after FEMA and everybody.

Simonds: Aren't there laws, regulations or zoning to prevent that, or is it kind of a mishmash?

Controlling Construction in Flood Zones

Brose: There's no real way to stop it, as I know, as long as somebody wants to go do that. You have the county zoning laws, and what it amounts to is flood insurance, is the biggest club, and their flood insurance costs are many times higher if they're in a flood zone than if they're not.

Simonds: Do it anyway, though.

Brose: Do it anyway. And FEMA comes out and cries and screams they're not going to assist anybody to rebuild in a flood-prone area, and they've been pretty good about succeeding in

that. But the county zoning and all the rest of it, it almost becomes an advisory level thing. This is a dumb idea to build there, and the guy says, "Ah, I'm going to go build there, and I can do it because I can get financing or I can finance it myself." The lending institutions are another entity that gets in the way of unwise building, but, again, that's not the only way to– if somebody wants to do it, they'll do it anyway.

Simonds: I've just often wondered, though, if our success in managing floods and high flows hasn't created a false sense of security among people, who say, "The government will take care of it."

Brose: Of course, that's true, and the government has come in and bailed a lot of people out. But in '83 and '84, there were people who were essentially inside the levee who were damaged, and FEMA told them, "Sorry, buddy."

Simonds: You mean inside the levee, is it between the levee and the river?

Brose: Yeah.

Simonds: Oh, boy. That doesn't take much.

Brose: Yes. But those on the outside of the levee that were flooded through some obscure

circumstance, the river did an end run on the levee system or something, those that were damaged that were truly identified, in our view, as it was not readily foreseen that this was going to happen. There's one case down there below Needles where we discovered essentially that our levee system did have a hole, that the integrity wasn't complete, and those are people who did get flooded and they did get some compensation for damages.

That's one facet of this. The other facets of it are, a lot of the people who live along the river who have been very supportive of Reclamation and of our offices and recognize and have been very appreciative of the information on how to . . . I think the water districts, Palo Verde Irrigation District, for instance, we have, I'd say, a mutual respect and understanding, and I think beyond that is more–respect isn't quite strong enough, but a friendship in the operation.

Simonds: You spoke a few minutes ago about developing a relationship with the river.

Brose: Personalizing the river.

Simonds: Personalizing the river. I know, in looking back at the history, particularly of the construction of Hoover, they talked about it as

a battle, battling the river, conquer the river. How do you view it.

Brose: Well, not that way, obviously.

Simonds: Does the river still master?

Brose: Well, yeah. In my view, he can be a real good friend. As far as being a master, I think you better not plan on–as I said, in my mind you don't tame it. You encourage it to go the way you want it to go.

The river can be happy, you know. It can display a real tranquil and docile demeanor if you give it a chance. But to go up against it, that's dumb. That happened in places, and people learned that that isn't a good idea. I guess that's just, as I said, personalizing it. If you want to get it down to the nitty-gritty of engineering, yeah, you can take those same concepts and express them in terms of engineering.

Simonds: But if the river wants to, it can still–

Brose: Well, of course, that's right, and that has to do with the water supply, etc. If it decides to rise up and become belligerent, why, you better– things aren't going to be happy in that state. Now, that's kind of fun. Actually, there are a

lot of people that have learned. During my tenure when I was working on the river, they came to recognize my terminology for, when the river alignment is good, the river will be a happy river, and so they kind of equate that statement with my attitude towards it.

Simonds: On this subject, I'm curious, did you ever get any kind of feeling from the tribes as to how they viewed the river?

Indian Attitudes Toward the Colorado River

Brose: Well, just not on an individual basis. The Fort Mohaves have a couple of three different places along the river that they describe as sacred, and they talk about the river gods. These are written up or they're in bronze or carved in stone or what have you, this aspect of it. But, no, as far as on a personal level with the tribal members, I've never had a sense, if you will, of any kind of a religious type of attitude towards the river itself. As I said, somebody went to a lot of trouble there in two or three places to write these things up, as if they were part of the tribal religion, but I never got that from any of the individual members of the tribes.

Simonds: Pretty much business.

Brose: I think so. I don't know. It reads nice. It makes for good stuff. I liked it.

Simonds: You mentioned previously, too, that a lot of the tribes tend not to trust outsiders or non-Indians.

Brose: Maybe they just didn't want to share it.

Simonds: Right, entirely possible. Very interesting. Well, is there anything that you'd like to add?

Brose: I don't know. This is my life for twenty-five years, more or less. Of course, I could talk for a long, long time, you know, as I said, anecdotes, racy or otherwise. But, no, I kind of think that–as I said, the river has been very good to me. I have a lot of respect for it. I have a lot of good sense. I personalized it, even now in our discussion, and I continue to have a sense of partnership, I think, although a lot of the work I did on the river system or endorsed or tried to get achieved related to the quality of life of the population, the human population in the Southwest.

". . . before the Endangered Species [Act] or any of this other stuff ever occurred, we were doing a lot of things which related to preserving or at least addressing the needs of the ecosystem. . . ."

The other side of this is, I don't want to discount that we had a strong respect for the natural environment, and before the Endangered Species [Act] or any of this other stuff ever occurred, we were doing a lot of things which related to preserving or at least addressing the needs of the ecosystem.

I'll give you two or three examples. In 1978, we looked at the river system, and we had a sense that our bank line stabilization process, where'd we go in and we'd rip off the vegetation and shake the banks and then put rock on, we decided that that left an austere bank for many, many years. So we decided to develop a pilot project, a prototype project. We had this area that was failing somewhat, so for about a mile or so we went in and didn't strip off the vegetation. We put the rock on top of the vegetation and let the vegetation, such as it existed at the time, sort of still exist there between the rocks. We watched that and monitored it for a couple three years, and it worked fine. So it was an accommodation, if you will, of trying to avoid the loss of vegetation in a bank line project. And some of the folks in the environmental community said, "Well, that's great. This is a good thing that you did."

And then we went further over time. In the old days, when I first came here, came on the river, we used this pretty large rock, rocks about yea big, three foot in diameter, what have you. Well, that's because when they first started putting rock on the river, the only thing they had to go by was bank line protection or oceanfront protection, and if you go to oceanfront protection, you better put some big rocks out there. Well, the forces on the river system on the bank line is nowhere near that severe. So we studied it, analyzed it, and developed designs, and again, both theoretical and by observation, decided, "Man, we can get by with rocks that are only six inches across if we lay the bank back, and in laying the bank back, we can also encourage vegetation."

As it finally evolved, say, in the early nineties, we had laid our slopes back in a range of something like 4 to 1, in that range, using very small rock, rocks in the size range of four inches or so, four to six inches, and graded, and then we covered the whole shebang with dirt so that the vegetation would be encouraged to evolve and develop. So as I say, even before this pressure from the Endangered Species Act and these suits by all these people, we were going down some pretty strong lines on addressing the ecosystem. We did scalloped bank line protection. In other words, instead of

just having a solid bank line of rock protection, every thirty, forty feet we would have a little section where we'd have a whole bunch more rock right there in one place so the fish would have resting places.

We did a lot of vegetation effort. That's a whole other world. That wasn't specific areas that I was involved in, but there's a lot of things like that that went on and on and on. As I say, the concept or the idea that Reclamation is out there to rape and pillage on the Colorado River, that is another area that I--

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Simonds: The ~~Environmental~~ [Endangered] Species Act put a lot of pressure on Reclamation to try to enhance the environment along the river.

Brose: Well, yeah. I don't think that that's exactly the right wording. It's a case you have to address the endangered species in whatever you do. And I don't think it's been pressure. I think that Reclamation, in fact, was already there, but a lot of times people tended to ride that horse.

Simonds: Do you think Reclamation was a popular target?

Yuma Clapper Rail

Brose: Yes, among other things. Well, I can give you an example, the Yuma clapper rail. The Yuma clapper rail was identified as an endangered species, I don't know, twenty years ago, more or less when the act first came. So between the Fish and Wildlife Service and Reclamation and Arizona Game and Fish and California Fish and Game and all these guys, they all go out there two or three times a year and they do the little rail sounders and they listen for the rails and they look for the rails and they try to listen for their responses, and this goes on and on and on and on interminably. And quite honestly, Reclamation, although it was addressing and studying this thing, essentially I know of no real significant alteration in Reclamation's way of doing business, and it really boiled down to, the damn thing, I don't think, was ever endangered, but it was identified as being endangered. Eventually, after years and years and years of going out on the rail surveys and what have you, it's finally come to the conclusion–or a lot of people have–those things are all over the place.

You got into the situation where some of these folks get real excited about it. You know, it becomes a cause for them. They run around and just raise hell. But then here you've got pictures of this clapper rail sitting on the back of the dredge. That's a separate perception I have, by itself. I kind of think, quite frankly, that, yes, some of these species probably were impacted by the development along the river, whether it was the dams or whether it was the agricultural development or just all kinds of these things, the pressure of the human intrusion into the system. I think maybe, you know, different things have contributed to some of these species, but the other side of that is, people tend to look at, say, the Reclamation operation of the river, and almost by definition they're culprits, without really a true cause-and-effect relationship.

Simonds: Do you think Reclamation is unfairly singled out by many of these groups?

Brose: Well, they got deep pockets.

Simonds: They say just the general pressure of human development and human intrusion is significant impact.

". . . a bigger cause as far as the fish, and that's the intrusion of the exotic . . . game fish. We've

had that fight now for several years. Of course, since the Fish and Wildlife Service and the state Fish and Game people are the ones that introduced these exotic game fish into the system. When you grab them by the ears and say, 'Look, you're the guys that did this,' they just don't want to hear that. . . ."

Brose: Yeah, and depending on the species. We have a bunch of species. I'll tell you a bigger cause as far as the fish, and that's the intrusion of the exotic fish, the game fish. We've had that fight now for several years. Of course, since the Fish and Wildlife Service and the state Fish and Game people are the ones that introduced these exotic game fish into the system. When you grab them by the ears and say, "Look, you're the guys that did this," they just don't want to hear that.

Simonds: Are these introduced, these non-native species, are they forcing out the native species?

Brose: Oh, yeah. A couple of the native fish species extrapolated in the Lower Colorado River, they still exist. I mean, the species isn't gone, but they don't exist down the Colorado River. And some of the others, like the razorback sucker, the numbers are two or three orders of magnitude reduced from what they essentially were at one time, and, of course, there's been a

significant effort to recover them. So all this is going on, but still the culprit–and quite honestly, it's been over and over again–all of the smoking guns point to the Fish and Wildlife Service as being the culprit that actually caused the demise of these native fish.

Simonds: Their efforts to improve things.

Brose: Well, of course, it was fine. Everybody loves to fish for stripers, the striped bass. Fun fish to catch, fun fish to eat, etc., etc., etc. But they and the native fish don't survive very well together.

Simonds: It's an example of well-intentioned actions going astray, unfortunately. Is there anything else you'd like to add?

Brose: As far as that–let's see. I don't know. Every time you ask me a question, it opens up some areas of fun things to talk about, but just off the top, me personally, nothing comes explicitly to mind.

Simonds: Just a couple of other items real quick. You said that you had a good working relationship with the folks in Denver. How was it , though, generally, how was the relationship between Denver and the region, in general?

Brose: Okay. That's changed over time, of course. When I first came here to the region, CAP was very strong, going full force, and, in fact, the Colorado River itself had just sort of dissipated in importance because of the change in the regional directors, etc. I can't remember the guy's name who was director when I got here. I can picture him. But anyway, so CAP was coming on line, and the head of CAP, the primary engineer over there at CAP, he was actually politically more powerful than the regional director. And so the relationship with Denver and the regional director here and CAP was kind of like–our regional director had to jump in there and pretend he was part of the guys, because the game was really between CAP and Denver. You know, that was kind of happening.

Now, as CAP sort of, they got under way, they're functioning and they're under construction and things are going well, the power kind of shifted back over towards the regional director, and the regional director was once again sort of, he got back up at least on a par with the construction engineer over there at CAP. And then eventually it all leveled out, and the power came back to the regional director.

The Relationship of the Denver Office and the Region

I guess, you know, it's really easy to criticize Denver, because, in fact, they are very highly qualified and for years were internationally known as a bunch of really highly qualified engineers. But they carried a tremendous overhead, and so people really weren't thrilled about hiring them unless you just flat-out had to. So that kind of colored the relationship, in a way, between Denver and the region, but on the other side of that, as I said, my personal thing, there was no problem at all.

See, I never was at that level where I was really privy to a lot of the political relationship between the regional director and Denver. I kind of got wind of it, and sometimes I might have just been there. I was in pretty good confidence–the regional directors shared their confidences with me on certain things pretty well, but not too far. And I'm not too sure, and I'm not too sure even how to answer your question. I'm trying to remember, or thinking about the different people involved. Kind of tough. I'm not sure.

Simonds: I think you answered the question very well. Your insight as to the power shift during the height of the CAP, that's the kind of insight

that we might not otherwise–that's not written down anywhere, so that's an important observation.

How many different regional directors did you work under?

Brose: Let's see. Gene Hinds, there was [Manuel (Mannie)] Lopez, [Nelson Plummer, Edward Hallenback,] ~~Fine,~~ [Bob] Towles, [Larry Hancock, Bob] Johnson. I think ~~six~~ [seven].

Simonds: As one director came in and one left, were there any shakeups or was it just kind of–how did that usually go, or did it vary from time to time?

Brose: Actually, I don't know. Quite interestingly, there wasn't much in the way of shakeups. It took a while for the different management style to kind of filter down into the organization, but as far as a big rattling of the cage right off the bat, I don't ever remember that really happening. One guy, he did have a different management style. He was definitely in charge, which was kind of cute, and he might have run the bone across the bars a couple times. He didn't really rattle the cage.

I can give you an example. I happened to be at his first staff meeting. I was up there

sitting in for the division head. He walks in there and he sits down. No, he walked in there. He didn't even sit down. He said, "I want all you guys here to move over on that side of the table, and I want all you guys that are sitting over there to move around this side of the table."

I'm sitting there saying, "What in the hell was that all about?"

Everybody did. You know, they grumbled. They didn't grumble out loud. Their body language, though, grumbled. So they did it. It took me a few months to figure out what that was all about, and that was merely his method of saying, "I'm in charge." You're well aware of group dynamics. The way people sit in a group and they get accustomed and comfortable with it is governed or dictates their relationship within the group. Of course, he right off was going to bust that up real quick. But aside from that, he was going to tell them who was in charge.

Simonds: Just that simple, huh?

Brose: I think that was just that simple. You know, that was kind of fun, fun stuff.

Simonds: Have you lived in Boulder City the whole time you've been–

Brose: Yeah.

Simonds: How is life in Boulder City? It's a unique town in Nevada.

Living in Boulder City

Brose: Well, in Nevada and possibly beyond Nevada. It's a very nice town. We have minimum problems with crime, drugs, law enforcement. A little bit, but really small as far as that aspect. People are very, they're not real small-townish, but they're pretty much nice neighbors. It's a great little town to live in. I guess my problem with Boulder City is it's too close to Vegas.

Simonds: How important today is Reclamation to Boulder City? And granted, Boulder City came into being because of Reclamation and Hoover Dam. Today in 1999, over fifty years later, how big a role does Reclamation play?

Brose: I think if Reclamation packed up and left, they wouldn't live a very big hole.

Simonds: Certainly the dam is still of major importance to the city.

Brose: Only because it's there. I'm thinking in terms of, in a lot of towns the federal employees comprise a significant part of the community, but I think that maybe half–a large percentage of Reclamation employees now live in Henderson, so they don't just live here in Boulder City. So it's a mixed bag in that respect. I think, yes, of course, the dam. A lot of the merchants in Boulder City like to take advantage of the fact that the city that built Hoover Dam and all that stuff, you know, is good. But it's become more of just a–the interface with Reclamation and with the dam just, I don't think, is there anymore with the general population.

Simonds: So it's just there. The presence of the regional office up the top of the hill is just–

Reclamation Recently Considered Giving the Regional Office to the National Park Service

Brose: Well, you know, that was no big deal, almost. There was even thoughts to give the regional office to the Park Service. That was actually strongly considered about a year ago or two years ago.

Simonds: Really?

Brose: So if you get what I'm saying in that respect. I couldn't believe, quite honestly. I don't like it, I don't like the idea of them even thinking about it. Reclamation, that's one of their historic landmarks, if you will, and then to contemplate giving it to the Park Service for their administrative building. Don't we have a heritage here somewhere?

Simonds: It's interesting to go around town and just across the street here is Frank Crowe Memorial Park, and you go up to the park across from the administration building, they have the turbine runner in there. So the dam is very prominent here, certainly.

Brose: Well, it shows up in that respect as far as the historical background, and I'll bet you that there is a large percentage of people here in Boulder City don't know who Reclamation is.

Simonds: Really? That's what I was wondering. So now over fifty years later it's become Boulder City exists to be Boulder City now.

Brose: Yeah.

Simonds: That's interesting. Well, unless there's anything else you can think of. I'm sure that you always think of things later.

Brose: Of course. In a way, perhaps we only scratched the surface, but the other idea is, everything's been said that needs to be said. I don't know. It's kind of fun. I feel really bad that I messed you up and made you stay an extra day.

Simonds: Oh, no problem. Just one last administrative thing. Do you have any objections to the transcripts of this interview being made available for researchers in the future?

Brose: Of course not, no. I had full expectation that that kind of thing would be there. I don't know if you have any limitations, perhaps, on the interview in that respect. I guess if I had a reservation it would relate to people who are suing Reclamation from outside, say, for instance, like I said, the Southwest Center for Diversity or something like that. You know, I've been very candid in my discussions here, but I don't think that I–I didn't say anything. What I said was candid. It might be quoted out of context poorly. But on the other side of that, I don't have any reservations, really.

Simonds: If that is a concern of yours, and, as you said, these lawsuits are very current, mechanisms exist that we could close the interview for a period of years. Who knows how many years it would take for these things to pan out?

Brose: I don't think it's–my perception of that is, I don't think that Reclamation is going to stand in jeopardy. If somebody were to get a hold of this and question me about in court or something, I think I can handle it.

Simonds: Okay, great. Well, thank you very much, then.

Brose: Did I ever send you one of my cards?

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END OF INTERVIEW