

ORAL HISTORY INTERVIEW

Anonymous Subject

Peach Springs, AZ

14 August 2018

Interview conducted by:

Dr. Paul Hirt, Arizona State University

and

Jennifer Sweeney, Four East Historical Research, LLC

Glen Canyon Dam Adaptive Management Program Administrative History Project

Administered by Arizona State University

Supported by a grant from the US Bureau of Reclamation

Suggested bibliographic citation:

Anonymous Subject. ORAL HISTORY INTERVIEW. Transcript of recorded Interview conducted by Paul Hirt, Arizona State University, and Jennifer Sweeney, Four East Historical Research, LLC, on 14 Aug 2018, at Peach Springs, Arizona. Edited by Paul Hirt and Jennifer Sweeney.

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Subject ANONYMOUS SUBJECT--the person interviewed has requested anonymity
Date 8/14/18
Location Peach Springs, Arizona
Interviewer Paul Hirt
Annotator Jennifer Sweeney
Project Glen Canyon Dam Adaptive Management Program Administrative History
Notes The anonymous interviewee is referred to as "subject" throughout the annotation.
Bio None provided beyond what the subject offers in the interview.
Minutes Summaries of interview content during each minute of the interview

- 0 Introductions. The subject relates involvement with Glen Canyon Dam Adaptive Management Program (GCDAMP). Subject was Principal Investigator monitoring vegetation and wildlife in lower Grand Canyon from 1994 to 2007 [working with the Hualapai Tribe--see Minute 2]. From 1997 to present has been a representative on the Technical Work Group (TWG), and from 1997 to 2017 was an Adaptive Management Work Group (AMWG) alternate.
- 1 **Q:** How has your participation in GCDAMP changed over time as far as the kinds of work you did and the programs you were involved in? **A:** When subject first started in 1994, the program was "receiving substantial funding to monitor a whole host of resources," including fish, wildlife, and recreation. When GCDAMP and Grand Canyon Monitoring and Research Center (GCMRC) were established in 1997, the funding was shifted to GCMRC. At around the same time, tribes with cultural connections to Grand Canyon were given \$95,000.00 each to participate in GCDAMP, and \$35,000.00 for monitoring of resources.
- 2 The subject was able to stretch the funding for the monitoring program to last until 2007. The program had dedicated boats and boat operators, and employed four biologists and three fisheries biologists. In 1997, the money was diverted to the Hualapai cultural center to fund its annual monitoring river trips. **Q:** For what percentage of the time that you've been involved in GCDAMP have you been serving as either a formal or informal representative of the interests of the Hualapai Tribe?
- 3 **A:** For almost 100% of it. (Interviewer reminds listeners that the subject of the interview has requested anonymity.) **Q:** What significant events occurred during your time in the program that impacted the program or your/the Hualapai Tribe's participation in it? **A:** The biggest was the establishment of GCMRC, as noted earlier. Representation has been "pretty consistent."
- 4 Loretta Jackson-Kelly was AMWG representative for many years, Dawn Hubbs has represented the Hualapai on AMWG for the last couple of years, and the interview subject has been the TWG representative for the duration of the program. The Hualapai Cultural Department does an annual monitoring river trip. Around thirty-five sites are monitored in a two- or three-year rotation. Data is recorded and observations are made about what factors are causing any changes.

- 5 **Q:** What are the key interests and concerns that motivate the Hualapai to be so consistently involved in GCDAMP? **A:** All of the tribes are concerned about the condition of riparian resources. The status of fish is perhaps not as important to the Hualapai as it is to other tribes involved in GCDAMP. The northern boundary of the Hualapai reservation stretches over 108 miles of riverfront along the Colorado, so its status is always of concern.
- 6 The subject believes the Hualapai Tribe's research has been valuable to the adaptive management program. **Q:** Do you know whether resource professionals working for the tribe, or elders of the tribe, noticed changes in the river due to Glen Canyon Dam prior to the establishment of GCDAMP? **A:** I don't know that. However, there is thirty years' worth of interview data from tribal elders regarding certain places on the river.
- 7 A Hualapai tribal oral interview archive has been digitized and is being entered into a database. The interview subject and AMWG representative Dawn Hubbs are no longer involved in the interview project. The earliest data in the archive is from around 1989. **Q:** When GCDAMP started and stakeholders were being identified, do you remember how the Hualapai Tribe felt about working with a federal advisory committee?
- 8 **A:** Hualapai participation was initiated in 1989, before the subject's involvement and prior to the formal start of GCDAMP. The subject's predecessors "had to be very forceful" and "outspoken" in order to secure a seat on AMWG. **Q:** Has that need to be forceful or persistent carried through to the present, or was that needed only at the beginning?
- 9 **A:** The need for it has continued to the present. The subject was surprised by "how poorly tribes were treated and looked upon, like we were minorities and did not have an equal stake in the program." **Q:** You felt that from the beginning of your involvement? **A:** Yes. "It's gotten better over the last few years because all the tribes are standing together now." They are forceful about the need to integrate tribal knowledge of river resources into the "activities of all the investigators."
- 10 **Q:** Can you be more specific about experiences you had that gave you the sense that your perspectives were not being fully respected or integrated? **A:** One was five or six years ago at a TWG meeting. An issue was being discussed, and the subject had a hand up to ask a question "for hours" and was never called on. The discussion ended without the representative being given the opportunity to speak. "I've felt discriminated against ever since I've been on the program." It's getting better, but is still not equal treatment.
- 11 **Q:** Do you think there is a hierarchy among the stakeholder groups? **A:** There seem to be cliques in the program. "The states kind of hang together, and other groups hang together." **Q:** You mentioned that tribes formed a sort of clique of their own to gain power and influence. Can you talk about why that happened and what the benefits have been? **A:** "Certain issues have pushed tribal perspectives to the forefront."

- 12 Mechanical extermination of trout is one such issue, especially for the Zuni and Hopi. It affects the health of their communities. "People like [Zuni tribal representative] Kurt Dongoske have been very vocal in saying, 'No, it's not okay, you can't do this.'" Tribes have rallied together to say, "we need to be heard and we're not going away." **Q:** Have there been people in AMWG and TWG who were more willing to facilitate tribal involvement, or people who were less so?
- 13 **A:** Subject does not recall specific names, but there are people more willing to include tribes in discussions. There are certain people who do not think tribes should be GCDAMP stakeholders. The tribes lived in and near Grand Canyon for thousands of years before Grand Canyon National Park (GCNP) was established. Tribal members are the first people who should be heard: "They have a closer association to the river resources than western scientists do."
- 14 **Q:** The entities represented on AMWG are often referred to as stakeholders. Do you think tribes are a stakeholder group with a coherent set of interests and issues? Are they different from other stakeholder groups? **A:** The tribes have similar interests to other groups regarding resources, but "they have a way more fundamental relationship with the Canyon. I have only recently appreciated the extent to which that is true," through exposure to Hualapai, Hopi and Zuni creation stories.
- 15 The Hualapai creation story is similar, but is anchored in the Little Colorado River, not in Grand Canyon. For the Hopi and Zuni, fish in the Colorado River are relatives, not resources; this is different from any other stakeholder group. **Q:** What would it look like if the tribes had an appropriate amount of respect and influence in the evolution and decision-making process of GCDAMP; if instead of being marginalized, they were central to the process? **A:** There would be a lot more participation in the overall resource monitoring program.
- 16 There would be more elder involvement in ascertaining what work should and shouldn't be done in Grand Canyon. **Q:** How would elder involvement be facilitated? **A:** Through a funding mechanism that would enable them to attend meetings, and through program participants meeting elders on tribal land. **Q:** Is there anything else that would change if there was what you consider to be full participation? How might that be facilitated?
- 17 **A:** Funding is needed to do anything. When the tribe conducts its annual river trip, elders are paid to participate; the trip costs around \$30,000. Government leaders are not involved with the "ongoing aspects" of GCDAMP. The subject thinks the Hualapai Tribal Council would be able to provide much good decision-making input. **Q:** Do you think their modest level of involvement is because of funding shortages, or different priorities?

- 18 **A:** The tribe has entrusted the tribal representatives to represent the Hualapai on AMWG and TWG, while they deal with numerous other important issues. **Q:** Can you think of a few instances in which Hualapai tribal input or representation yielded a beneficial outcome? **A:** (Subject pauses to think.)
- 19 Subject is not sure this answers the question, but one area in which tribal input is not solicited is on the effects of High Flow Experiments (HFEs) [controlled floods released through the dam]. A great deal of sediment is carried in the HFEs and deposited along the stretch of the Colorado River that borders Hualapai land. Little research is done below Diamond Creek, so the effects on resources along the Hualapai border are seldom discussed in GCDAMP. [The subject's tone makes clear that this situation is a problem for the tribal representatives.] This may change with the discovery of endangered humpback chub below Diamond Creek.
- 20 Interviewer says that the objective of HFEs is to build beaches upstream, but he hears nothing about their effects further downstream. Subject says that "90 percent of the sand ends up down here." It has a direct impact on the Hualapai recreational river running operation.
- 21 Sandbars build up in the river and damage boating equipment, and the high flows have damaged docks along the river. **Q:** Have you been able to bring those issues up? **A:** The subject has brought them up repeatedly, to little or no response. The Grand Canyon Resort Corporation is the Hualapai entity that operates the tribe's tourist concerns and is separate from the tribal government. Because the corporation does not want to divulge financial information, the cost of the losses incurred as a result of HFEs is not revealed.
- 22 The tribal corporation would rather maintain the privacy of its financial records than be compensated for any losses. **Q:** That reminds me, there isn't always a win-win outcome in natural resources decisions. Can you talk more about this?
- 23 **A:** The HFEs have the potential to erode archaeological sites lower down on the river. The subject remembers the first HFE in 1996. "Everybody thinks, in the back of their mind, that the river stops at Separation Canyon." The Hualapai documented effects on resources, especially scouring of vegetation, all the way down to Mile 254.
- 24 **Q:** What Glen Canyon Dam adaptive management actions would be helpful to the goals of the Hualapai tribe? **A:** Things that reduce damage to resources in the lower Grand Canyon. The Long-Term Experimental Management Plan (LTEMP) Record of Decision (ROD) allows for many more HFEs in the future, and the impact on resources of Hualapai concern was not adequately considered.
- 25 **Q:** Even without HFEs, sediment constantly comes down the river and builds up behind Hoover Dam. What is the tribe's long-term plan for dealing with sedimentation along the river? **A:** Dredging is an option, one the subject has suggested in the past to little enthusiasm. **Q:** Is anyone opposed to it, or do they just not want to consider it? **A:** They don't want to talk about it.

- 26 People seem willing to talk about impractical or expensive options like pumping sediment back upstream or using temperature control devices. No ideas have been pursued seriously. **Q:** Are there reports or documents that you think were important to GCDAMP? **A:** The subject was part of various committees working on Desired Future Conditions (DFCs) for different resources. [For an overview and pertinent links, see the GCDAMP Wiki page "Portal: Desired Future Conditions--DFCs," [http://gcdamp.com/index.php?title=Portal:Desired_Future_Conditions_-DFCs.](http://gcdamp.com/index.php?title=Portal:Desired_Future_Conditions_-DFCs)] This was an important effort. The DFCs and the Strategic Plan with which they are associated are currently a neglected component of the program.
- 27 **Q:** When were those produced? **A:** Late 1990s or early 2000s. The programmatic agreement and historic preservation plan for cultural resources that are being developed now are important. They were supposed to be developed in 1996 or 1997, when GCDAMP started. [For an overview and links to documents, see the GCDAMP Wiki page "Tribal Resources," [http://gcdamp.com/index.php?title=Tribal_Resources.](http://gcdamp.com/index.php?title=Tribal_Resources)] This is one of many items that were supposed to be completed under the GCDAMP programmatic agreement. ["Programmatic Agreement on Cultural Resources." In Operation of Glen Canyon Dam, Colorado River Storage Project, Arizona: Final Environmental Impact Statement. US Bureau of Reclamation, March 1995. (Begins on p. 12.) [https://www.usbr.gov/uc/envdocs/eis/gc/pdfs/Attach/attach2.pdf.](https://www.usbr.gov/uc/envdocs/eis/gc/pdfs/Attach/attach2.pdf)] Annual reports from GCMRC and USBR are also useful documents.
- 28 The RODs for the Environmental Impact Statements (EIS) are important as well. The DFCs were only completed for a few resources, such as humpback chub. There were goals for population and fish size. **Q:** That's kind of narrow. I thought this would be an integrated view of all the resources, but you're saying they're for specific, targeted resources. **A:** Yes, subject has no specific recollection of the targeted resources, but the DFC effort did not cover all resources. The DFC process was stopped for reasons the subject does not know.
- 29 The subject thought the exercise worthwhile, while acknowledging that a good outcome for one resource can mean a bad outcome for another. Subject relates that reintroduction of river otters, extirpated from Grand Canyon, could harm native fish; interviewer agrees, saying that attempted removal of non-native tamarisk may harm the endangered southwestern willow flycatcher. **Q:** Are there other examples of resource conflict that you have worked on, or that the Hualapai are interested in?

- 30 **A:** Subject wants to mention something that is not necessarily tied to resource conflict. There have been significant vegetation changes in lower Grand Canyon while the subject has been working with the Hualapai. There used to be a tamarisk monoculture. When Lake Mead filled and dam operations changed, tamarisk were reduced and "willows and cottonwoods went crazy." **Q:** Without any human intervention? **A:** Without intervention. Now it is back to a mix of willows and tamarisk. "Nobody knows what that meant to the wildlife communities." Until 2007 the Hualapai monitored wildlife populations in the lower canyon.
- 31 GCNP does some wildlife monitoring, but no entity is doing so on a large scale, even though it is a resource of concern to all of the tribes involved in GCDAMP. **Q:** Monitoring is essential to adaptive management, too. **A:** Vegetation is being monitored under GCDAMP, but changes are not being linked to what is happening in wildlife populations. The Hualapai would like to start monitoring wildlife communities again. **Q:** How would you do that? What needs to happen when someone recognizes that research needs to be done--how do you get that research funded? **A:** We have had the most success working directly with USBR in Salt Lake City [Upper Colorado Region].
- 32 The Hualapai "give them proposals, and they've been able to find money here and there." The tribe also has some base funding, and can receive matching funds for certain projects, from the Bureau of Indian Affairs (BIA). The Hualapai recently received USBR funding for the project to create a digital archive of interviews with tribal elders (see Minutes 6 and 7). **Q:** You mentioned that the DFC effort focused on certain resources, and you also mentioned they were doing a cultural resources inventory. Was that focused on the different tribes, or was it a comprehensive cultural resources inventory? Was it finished?
- 33 **A:** A comprehensive cultural resources inventory was done, primarily by GCNP, early in GCDAMP's existence. The subject was not involved in that inventory. **Q:** You don't know how well they integrated information from tribes--tribal elders, oral traditions? **A:** No. I was a biologist at that time. Dawn Hubbs, Loretta Jackson-Kelly, and Peter Bungart would be knowledgeable on this topic and should be interviewed.
- 34 **Q:** What do you think you accomplished, personally and as a representative of the Hualapai tribe? **A:** We collected baseline wildlife population data over a span of fourteen years (see Minute 1).
- 35 That data is still available for comparison with future conditions. Climate, changing dam operations, and more frequent HFEs may have caused changes, so the baseline information is potentially important to GCDAMP. **Q:** Do you feel confident about the value of collecting baseline scientific information/data? **A:** Absolutely.

- 36 In 2007, the subject and the monitoring team did a synthesis of the survey information, which should be available at GCMRC [annotator unable to find an online source for this document]. **Q:** That's for the lower river? **A:** Yes, below Diamond Creek. Subject has tried to get GCDAMP participants to listen to tribal perspectives and integrate tribal knowledge into the program, and tried to make sure the program includes a focus on the Colorado River and Grand Canyon below Diamond Creek. The subject cannot claim success, but the effort has been important. **Q:** To some extent do you feel like you've made headway? **A:** Yes, just not enough.
- 37 Keeping the tribe informed in regard to GCDAMP is another accomplishment, enabling the Hualapai to make decisions on their positions. **Q:** So despite some lack of progress and frustrations, do you feel like the overall effort to create a collaborative group of diverse stakeholders to manage Glen Canyon Dam and protect downstream resources has been a worthy endeavor? **A:** Yes. It's a very complex ecosystem, and it's hard to predict the impact of management actions and dam operations on the various resources.
- 38 There are complex linkages between resources that are going to take a lot more work to understand. Overall, GCDAMP is doing good things for the resources. The tribes can be of great help in understanding linkages between resources. "I think it's important to get more tribal memories involved, not just representatives of the tribes, the tribal members whose families have lived on the river." **Q:** Can you give examples of ways in which you would like to see more tribal members actually involved in GCDAMP, aside from river trips and resource monitoring?
- 39 **A:** It would be nice to sit down with tribal members and hear what their thoughts are on different issues. Perhaps there are such observations in the archive of interviews with tribal elders. Many of the interviews are in Hualapai and the subject has not listened to them.
- 40 **Q:** You are a professional biologist. What do you think about citizen science? **A:** I think it's great. "The work that they've done with the bugs in the upper river has been really helpful. It's an easy way to collect a lot of data, and it would be really expensive to have professional biologists out there doing it." It should be used whenever possible, and non-scientists love to do such projects on the river.
- 41 **Q:** People can be trained in proper ways of collecting and recording data? **A:** "Yeah, it's not rocket science." **Q:** Earlier, you mentioned you were surprised at how tribes were not treated as full or equal members of the stakeholder group. Did you encounter any other unexpected things? **A:** It was very surprising how large a change in the vegetation community happened over several decades.

- 42 **Q:** What was the beginning of that time frame when tamarisk declined and cottonwood and willow thrived--1983, when Lake Powell, and, I'm assuming, Lake Mead were full from multiple rain events? As drought reduced the reservoirs, did tamarisk come back in? **A:** Lake Mead was full in the year 2000, so the years leading up to that. **Q:** So it's only since 2000 that Lake Mead has lost all that water?
- 43 **A:** Yes. Except for a wet 2005, every year since 2000 has been drought. We lost the willows in the drought conditions, at the same time the lake went down. **Q:** Tamarisk, unlike willows and cottonwoods, can survive without their root systems being in water? **A:** Yes, they're better at that. **Q:** A climate change question for you: it seems that the warm and dry conditions in which tamarisk thrive cause the loss of native plant species?
- 44 **A:** "Well, the only saving grace is the tamarisk leaf beetle." It is not causing widespread mortality along the river, but there is some loss of tamarisk. **Q:** Do cottonwoods and willows come back in when the tamarisks are suppressed like that? **A:** There hasn't been enough time to determine that yet. USBR is supporting a pilot project to plant willows and cottonwoods along the river. This year, 60-70 plants were installed at two sites. They need supplemental water in current conditions.
- 45 The subject believes it is worth the effort to restore native species. **Q:** Do you have the money to continue that program and monitor its effects? **A:** Subject thinks the monitoring funding ends this year. **Q:** Are you thinking, both as a biologist and as a representative of the Hualapai Tribe, about adaptive management as a way to deal with the likely outcomes of climate change?
- 46 **A:** That's one reason we are doing the cottonwood and willow restoration project. In the future we may have to adapt in that manner, physically removing tamarisk as planting and caring for native species. **Q:** How about wildlife? **A:** It's going to get hotter and drier, and having the baseline data from the 1990s and 2000s can help scientists determine how conditions are changing, if funding can be secured for such monitoring.
- 47 **Q:** Has the Hualapai Tribe created its own statement of DFCs? **A:** I do not believe so. **Q:** Would that be useful? **A:** Yes. That would be a good way to get the Hualapai Tribal Council, and elders, involved. "This is your land. What is your vision for the land?" It could be beneficial for all of the tribes. **Q:** You said already that GCDAMP is a worthy program. Should it be continued? What improvements would you make to it?
- 48 **A:** I do feel it should be continued. Integration of tribal perspectives and knowledge would be helpful. Less divisiveness among stakeholders would be good--currently, people are more concerned about pursuing their individual agendas than about working with others in the group.

- 49 **Q:** What are some specific ways to promote that? **A:** Recreate committees along the lines of those that created the DFCs. The subject does not know why the committees were disbanded in the first place. "It was beneficial for me to sit down with other stakeholders and get their perspectives on things, and work toward a common goal."
Q: How is that different from all of the stakeholders sitting in one room at an AMWG or TWG meeting?
- 50 **A:** It is more informal and a smaller group. It's easier to discuss issues in that setting. **Q:** You can learn more about each other and negotiate more face-to-face than in a big room? **A:** Yes. **Q:** GCDAMP is funded with hydropower revenues generated by Glen Canyon Dam, which could be compromised if the level of Lake Powell falls too low. Do you think the program should continue?
- 51 **A:** Yes, but with the current President and administration, I'm fearful that the program might not get the support it needs. The subject hopes there are enough laws in place--the 1992 Grand Canyon Protection Act (GCPA), the 1973 Endangered Species Act (ESA), the 1966 National Historic Preservation Act (NHPA)--that funding for GCDAMP will not be summarily cut off. Hearing recently about funds usually earmarked for the program being ordered back into the general fund has exacerbated defunding fears.
- 52 Subject mentions that this issue is the top agenda topic for the next AMWG meeting. **Q:** Right after the current administration came in, it put a hold on funding for federal advisory committees. You're hearing that hostility toward GCDAMP and similar programs is continuing?
- 53 **A:** Yes. The Hualapai just received their funding for 2018 GCDAMP participation last week, and the 2019 fiscal year starts in September. The Trump administration required that any expenditure over \$100,000 had to be reviewed and evaluated, delaying funding. It will be interesting to hear what the AMWG has to say about the issue--"the federal government so far has been dancing around it."
- 54 Research programs are funded in three-year blocks and reviewed annually. Funding issues can endanger research projects already well underway. 2019 is the last year of the three-year funding cycle.
- 55 **Q:** What advice would you give to new TWG or AMWG members? **A:** It is important to get to know all the stakeholders. Learn what their perspectives are. Get to know the river: where there are issues, where things are happening.
- 56 Be open to working with a diverse group of people who might not have the same viewpoints you do. To me, it's all about preserving the resources. **Q:** When you say, "preserving resources," what are the key resources that you are most concerned about preserving? **A:** Riparian vegetation and riparian species. The subject was trained as a riparian ecologist. It is important to ask tribes and other stakeholders what is important to them.

- 57 GCDAMP is driven by laws that protect species, recreation and cultural resources. Q: Is there anything else you would like to add? A: There are some other people who should be interviewed: Clay Bravo (on Hualapai Tribal Council), Steve Carothers, Larry Stevens, Cliff Barrett, Don Ostler (Colorado representative), Leslie James (CREDA representative).
- 58 Continued from above.
- 59 BIA employee Amy Heuselin (no longer in GCDAMP), biologist and administrator Steve Spangle (retired from U.S. Fish and Wildlife Service).
- 60 Suggestions for additional interviewees and concluding comments.

END OF INTERVIEW

Paul Hirt: 00:00:01 This is Paul Hirt and Jen Sweeney of Arizona State University, interviewing a long-time member of the Technical Working [sic] Group and Adaptive Management Working [sic] Group of the Glen Canyon Dam Adaptive Management Program, in Peach Springs, Arizona, on August 14, 2018. First, can you start by telling us the positions that you've held in the adaptive management program in the years in which you participated?

Anonymous: 00:00:28 Sure. From 1994 to 2007 I was a principal investigator, leading wildlife and vegetation monitoring in the lower Grand Canyon. From 1997 to present, I represented, been a representative on the Technical Work Group, and (pause) from 1997 to 2017, I was an AMWG [Adaptive Management Work Group] alternate.

Paul Hirt: 00:01:00 And can you tell me how your participation in the program changed over time? The kinds of work that you did, the kinds of programs you were involved in?

Anonymous: 00:01:14 When I first started here, we were receiving substantial funding to monitor a whole host of resources: fish, wildlife, vegetation, recreation. Um, and so that was in 1994. When they established the Grand Canyon Monitoring and Research Center [GCMRC] and the GCDAMP [Glen Canyon Dam Adaptive Management Program] in 1997, all that funding got shifted to GCMRC, and our funding went down the toilet. Um, so that was a big, one of the biggest changes that has occurred since the time I've been here. And then, so after '97, the tribes were then given, I don't know exactly what year it started, but in, somewhere around then, they decided to give each tribe ninety-five thousand dollars to participate in the program, and then thirty-five thousand dollars for monitoring. So, we were getting a little bit of money. So I was able to continue my wildlife and vegetation monitoring program until about 2007, um, just on thirty-five thousand dollars, and that was doing five trips on the lower river. We had our own boats, our own boatmen. We had four biologists and three fisheries biologists. And so we were able to keep that going. Then around 2007, the cultural program here, um, decided they needed that money to do their annual monitoring and river trips. And so that money went away from me and I quit doing that work.

Paul Hirt: 00:02:54 So for, for what percentage of the time that you've been involved in the program have you been serving as a kind of either formal or informal representative of the interests of the Hualapai Tribe?

Anonymous: 00:03:10 For almost one hundred percent of it.

Paul Hirt: 00:03:11 Okay. All right. By the way, I should mention that this particular interviewee has requested to remain anonymous for this interview, and that's why we're not mentioning his name in the introduction. Um, okay. So, um, significant events that have occurred during your time involved in the program that, you know, had an impact both on the program itself and on your participation and the Hualapai Tribe's participation.

Anonymous: 00:03:43 Well, as I mentioned previously, just the establishment of the Grand Canyon Monitoring and Research Center was probably the biggest event that affected our activities here. Um, other than that, we've had pretty consistent representation. Loretta Jackson-Kelly was the AMWG representative for many, many years until recently. Um, Dawn Hubbs has been the AMWG representative the last couple of years, and I've been the Technical Work Group representative throughout that whole time. So, we've had pretty consistent representation.

Anonymous: 00:04:20 Um, we have good support from administration, and we do an annual monitoring river trip that the cultural department does, and uh, and they, I think they have about thirty-five sites that they monitor every couple of, two or three years, and they have data sheets where they record what the condition of the site is and what's affecting it: is it human visitation, is it erosion or whatever, that kind of stuff. So ,there's been a lot of consistency, and again, the biggest thing was when they established the Grand Canyon Monitoring and Research Center. As far as our pr--activities.

Paul Hirt: 00:05:04 So what are the key interests and concerns of the Hualapai Tribe that motivates their, you know, desire to be, uh, so consistently involved in the program over time.

Anonymous: 00:05:16 One thing that's important to, I think, all of the tribes are the condition of the riparian resources, the vegetation, the wildlife, the birds, the small mammals, the reptiles. And, and for some tribes, even the fish. I don't think the fish are that important to the Hualapai Tribe that, as much, but other tribes, they are. Um, so we just want to know the health of our land because being on 108 miles of the Colorado River is the northern boundary of the reservation, so they kind of feel like that's their resources down there, and they want to know how things are going. And that's why the one, the, they were very supportive of our wildlife and vegetation monitoring activities, because we were giving them a report on how are things doing. And I think that was great that we were able to do that for whatever, fourteen years, because we established a (pause) a database, a baseline database that, in the future, if something changes-- operations of the dam, climate change, or who knows what--and we get some more funding and they're able to repeat that work, we can

compare what was going on back then to what potentially is going on in the future.

- Paul Hirt: 00:06:35 Do you know whether, um, resource professionals working for the tribe, or even elders of the tribe, had noticed changes in the river because of Glen Canyon Dam prior to the creation of this adaptive management program?
- Anonymous: 00:06:50 I don't know that, but we have thirty years of interview data with tribal elders on the river about certain places that will, uh-- I think I talked to you about this archive program. Um, so that's all been digitized and it's being entered into a database, but my involvement in that project and Dawn Hubbs' involvement in that project is no longer (pause) needed, apparently. And so it's been taken over by other (pause) interests here in the department. But hopefully that's the kind of information that is in those interviews about places, you know, not, I don't, I don't think there's data from before the dam's presence, but I think there's data starting around 1989, and going through 'til the present day.
- Paul Hirt: 00:07:47 So, um, do you remember back when the program was just being created and stakeholders were being identified for participation in the AMWG and TWG [Technical Work Group], do you remember anything about how the Hualapai Tribe, um, got involved, to, to sort of what extent, um, were they enthusiastic about joining one of these federal advisory committees? You know, those can be kind of boring and difficult and complex and technical and sometimes getting tribal representation can be complex and difficult. [Anonymous: yeah.] What do you remember about those early days?
- Anonymous: 00:08:28 That, actually, our participation was initiated prior to my starting here. I think that was initiated in 1989, and my predecessors and the people that I came to work for, my bosses, they were actively involved in getting a seat at the table, and they had to be very forceful and very outspoken to get representation on the, on the AMWG.
- Paul Hirt: 00:08:55 Do you think that, um, that need to be forceful and persistent, um, has carried through to the present, or was that just at the beginning, to get a seat at the table, um, it required that extra effort, but after that it was smooth sailing?
- Anonymous: 00:09:11 No, I think it's continued to, to this day. Yeah, we've--and it, it-- one of the questions [on the list of interview questions sent ahead of time] was "what surprised you when you got into this program," what surprised me was how poorly tribes were treated, and looked upon, like we were minorities in this, and that, didn't have an equal, um, an equal (pause) stake in the program.

Paul Hirt: 00:09:39 Wow. And you felt that from the beginning of your involvement?

Anonymous: 00:09:43 Yeah.

Paul Hirt: 00:09:43 Continuing.

Anonymous: 00:09:44 Continuing. It's gotten better over the last few years, because all the tribes are standing together now and saying, you know, "This is what, how we want to be treated in the program," our informa--our knowledge that these tribal members have about the resources on the river, we need to integrate that knowledge into the activities of all the investigators.

Paul Hirt: 00:10:08 Can you be a little more specific about some experiences that you had that gave you the sense that your perspectives were not being fully respected or integrated?

Anonymous: 00:10:21 Well, I can remember specifically, this was five or six years ago, and it was a [unintelligible] a TWG meeting, I believe. And we were disc--discussing an issue and I had my hand up almost, for hours, and I was never called upon, and they ended the discussion without ever me getting to saying what I wanted to say. And I was just like, "Really?" So it's like discrimination, I felt discriminated against for ever since I've been in the program. And it is getting better, but (pause) it's like, like we're not an equal level or something.

Paul Hirt: 00:11:03 Um, do you think that there is a hierarchy among the stakeholder groups? Uh, or is it just, you know--

Anonymous: 00:11:13 I, you know, most of the groups were established when I first came in, so I'm not, I don't know exactly the relationships between them all, but there does seem to be kind of, like, cliques in the program, like the states kind of hang together and other, other groups hang together, but um (pause) and, you know, it's not necessarily bad, it's just, that's just kind of the way it is, and the way it evolved.

Paul Hirt: 00:11:40 So you mentioned, um, that the tribes more recently have created a little bit of their own clique to, to gain some power and influence. Can you talk a little bit more about how and why that happened and what, what the benefits of that have been?

Anonymous: 00:11:57 Well, I think certain issues have pushed the tribal perspectives to the forefront, like killing of--mechanical removal of fish, for some tribes, especially the Zuni and the Hopi, I mean, it (pause) it affects the health of their communities. And so I think, you know, people like Kurt Dongoske have been very vocal in saying, "No, it's not okay, you can't do this." And so, that's kind of brought the tribes to a rallying

point, that we need to be heard and we're not going away. But I think we've felt that way for a long time, and I don't think that we've been as vocal until recently.

- Paul Hirt: 00:12:40 Have there been different periods in which there are different, um, leaders in the AMWG and TWG program that have been, some more, um, willing to facilitate tribal involvement, and others less so? Or is it kind of always the same?
- Anonymous: 00:13:03 I think, um, there's been certain people that have supported tribal participation more than others, and I can't think of specific names right now. But--and then I think there's certain people that still don't think that we should be in the program. At least, I've been told that by others. And, and it's for whatever--the tribes have lived on this land for thousands of years, you know. It was their land before the park [Grand Canyon National Park] took it, you know, before that was established. And so it was like, they are the most, of anybody, that should be, um (pause) working with the resources and being heard, it should be the tribes, because this, they have a way closer association to the river and the resources than western scientists do.
- Paul Hirt: 00:13:58 So, I'm thinking about, um, tribal perspectives and tribal issues. Some people--so the folks that are represented on AMWG are often referred to as stakeholders, and you know, and the states are one stakeholder and the recreational community has their representatives as stakeholders and fisheries biologists have their--do you think that tribes are, in that sense, a kind of a stakeholder group with a, with a coherent set of interests and issues? Or are they different than these other stakeholder groups?
- Anonymous: 00:14:32 (Pause.) I think the tribes have a lot of similar interests and concerns about resources as other groups, but I think they have a way more fundamental relationship with the canyon, way more funda--and I have only recently really appreciated the extent to which that is true. Hearing about the creation stories of the Hopis and the Zunis, where individuals actually turned into the fish and individuals turned into the other organisms, the Hualapai creation stories, that down by Spirit Mountain in the lower Colorado River area, and it's a similar story, but it's, it's not in the canyon. But um, yeah, so fundamentally, those are their relatives down there and that's different than any other stakeholder group.
- Paul Hirt: 00:15:31 Well, this might seem speculative then, but could you (pause) paint a picture for us of what it would look like if the tribes had an appropriate amount of respect and influence in, you know, the evolution of the adaptive management program and the decision making process--if instead of being marginalized, they were central to the process, what do you think it would look like?

Anonymous: 00:15:58 Well, I think there would be a lot more participation in all of the resource monitoring that goes on, from the physical resources, sediment and everything, to the biological. I think there would be a lot more elder involvement in the decision-making process, with what type of work should go on down there and what type shouldn't go on down there.

Paul Hirt: 00:16:23 How would that be facilitated? The elder involvement?

Anonymous: 00:16:27 Just through a funding mechanism. Being able to get those people to meetings, getting people to come out here and go down to Diamond Creek and talk about issues and stuff like that.

Paul Hirt: 00:16:40 Anything else that would change if there was, what you would consider to be full participation?

Anonymous: 00:16:51 (Pause) At this point, I can't really say, but, it would just--

Paul Hirt: 00:16:58 How might that be facilitated? Any ideas along those lines besides an additional funding mechanism, and explain what you mean by that a little bit more.

Anonymous: 00:17:06 Well, you have to have money to do anything, pretty much [unintelligible]. We pay our elders when we take them on the river trip. We pay them so much a day and, actually, for two-week river trip that ends up being about thirty thousand dollars. And so just to get the people involved, they have to be compensated. And we have-- and, of course, the logistics are expensive and all that kind of stuff, but--and our government [Hualapai tribal government] doesn't really get, our government leaders, doesn't really get involved with the ongoing aspects of the Glen Canyon program, and I think that that would be, the tribal council could have a lot of good input into decisions and the decision-making process and, uh, we should, and-- let people know what their views on the issues are.

Paul Hirt: 00:17:59 Do you think, um, their modest level of involvement is because of funding shortages, or are different priorities--?

Anonymous: 00:18:10 I think, well, to me, it seems like they've entrusted us with representing the tribe and so, I feel like they're in good hands and they have to deal with a million other issues all the time. And so I think that's the way I look at it, that they're--but I think it would be valuable if that they could have more input.

Paul Hirt: 00:18:35 Can you think of a few instances in which Hualapai tribal input and representation yielded some, you know, significant beneficial outcome? [A] few examples of that?

Anonymous: 00:18:49 (Pause.) I'm sure there's plenty. Like, um (pause). Well, I don't know that it's really affected it, but we've always talked about things like High Flow Experiments [HFEs] and what, how they impact the resources of the tribe. And there really hasn't been a response by the government or anyone to actually listen to our voice and say, "Oh, you're right. We've just caused you a half-a-million-dollars' damage by running that flood." And uh, that's a place where we could have a beneficial [unintelligible] outcome, not only for the tribe, but for the resources, because when--every time you do a flood, all that sand ends up down Hualapai land. And so, and I don't know what that does is, to the fisheries or to a lot of the other resources, but--and nobody, that's another big point, is nobody look--does much work below Diamond Creek. They're just starting to do a little bit, but--now that they found a bunch of humpback chub down there--

Paul Hirt: 00:20:01 Oh, really? [Anonymous: Yeah.] Well now they're paying attention.

Anonymous: 00:20:04 Now they're paying a little bit more attention.

Paul Hirt: 00:20:05 On endangered species then.

Anonymous: 00:20:07 Yeah. But--so there's, there's a lot of opportunities for the tribe to get beneficial outcomes. It's just a lot of times it hasn't happened yet.

Paul Hirt: 00:20:18 Well, it's interesting that you mentioned high flow events [High Flow Experiments] as a potential negative impact on tribal resources, because the program's general orientation towards HFEs, as they call them acronymically [Anonymous: Yeah], um, is that this--we have to do this to try to recover some of the lost beaches and sandbars upstream. I've never heard anybody mention anything about the impacts of the high flow events downstream.

Anonymous: 00:20:43 Right. And you know, yeah, they're trying to build beaches up in Marble Canyon and up there, and 90 percent of the sand ends up down here instead of all up, up on the beaches, and instead it causes problems, you know. We have a river, a river running operation that we have to replace lower units on boat motors because they're hitting sandbars all the time, and other equipment damages, and then, I don't know if you're familiar, but we have tourist destinations on the river, where people get flown in in a helicopter, and we have docks down there and stuff, and those docs get tore up all the time during the high flow events. And those kind of things.

Paul Hirt: 00:21:26 Have you been able to bring those issues up, uh--?

Anonymous: 00:21:28 We've brought those issues up repeatedly, and we don't get--

Paul Hirt: 00:21:32 What's the response?.

Anonymous: 00:21:32 Well, usually little or no response. And then, we kind of have a problem internally. It's because (pause) the--I don't know if you're familiar with the Hualapai Tribe. We have the tribal government, and then we have the corporation, the Grand Canyon Resort Corporation. And so they run all the tourism activities.

Paul Hirt: 00:21:51 Do they run West Rim, too?

Anonymous: 00:21:54 Yeah. And so they don't want to divulge any financial information. So they don't want to tell what the financial cost of a flood is to them.

Paul Hirt: 00:22:03 Even if they could get compensated?

Anonymous: 00:22:03 Even if they could get compensated. Which, to me, is interesting, yes. So there's different hurdles to be overcome, but, um--

Paul Hirt: 00:22:18 Well, you know, that reminds me that there isn't always a win-win outcome in every natural resource decision that comes up. I wonder if you can talk a little bit more about instances—'cause this is the first time I've heard this in one of our interviews, so far, that a really sort of central goal of the adaptive management program may be good for one set of stakeholders and not good for another set of stakeholders. Have you run into any situations like that with other decisions or other resource management issues that people are talking about, where it's not easy to determine what the right path is because it has different impacts on different stakeholders?

Anonymous: 00:23:01 Well, I think, and I haven't documented this or don't know for sure, but there's a lot of potential to erode archeological sites down on the lower river every time you run a flood. And the very--I was here for the very first flood in 1996 and, and everybody thinks in the back of their mind to the river stops at Separation Canyon, um--

Paul Hirt: 00:23:27 Where, where John Wesley Powell pulled out, you mean?
[Anonymous: Yeah.] Oh no! He pulled out after that. But that's where the two [three] people left--

Anonymous: 00:23:33 Yeah.

Paul Hirt: 00:23:34 Okay.

Anonymous: 00:23:34 Because that's where the influence of Lake Mead comes in. But we, when they ran that first flood, we documented, so that's river mile 240, and then we documented that the flood actually affected resources all the way down to mile 254.

Paul Hirt: 00:23:51 Wow.

Anonymous: 00:23:51 And so, we would get burying in the vegetation or we'd get scouring in the vegetation all the way down there. And there's, you know, these are some, there's TCPs [Traditional Cultural Properties] down there, and there's archaeological sites, and I don't know if, if they have been damaged but, um, there's potential for that.

Paul Hirt: 00:24:10 What kind of management of the dam, management actions, adaptive management actions of Glen Canyon Dam, would be helpful to the goals of the Hualapai Tribe?

Anonymous: 00:24:23 Wow, that's a hard one. (Pause.) Well, things that reduce the, the damage to resources in the lower canyon, the op--tourism operations. Um, and you know, we're, you know, the LTEMP [Long-Term Experimental and Management Plan], with the LTEMP ROD [Record of Decision], we have a greater potential for many more HFEs in the future, and but that was never evaluated what impact this might have on the Hualapai resources.

Paul Hirt: 00:24:56 LTEMP being Long-Term--

Anonymous: 00:24:57 Long-Term Experimental and Management Plan.

Paul Hirt: 00:25:01 And that's when they make decisions about high flow events and, okay--

Anonymous: 00:25:05 When, the timing of them, what they actually look like, how high the flood is, and all that good stuff.

Paul Hirt: 00:25:13 So, um, even without high flow events, there's going to constantly be sediment coming down the river and depositing at the upper end of slack water behind Hoover Dam. Um, is this a, what's the long-term perspective of the tribe on dealing with the increasing sedimentation along the river, creeping up the river?

Anonymous: 00:25:37 Well, there's potential for dredging. [P.H.: Uh-huh.] And I've already, I've suggested that in the past, you know, maybe we need to look at some dredging going on. And that doesn't get much mileage with the government or anybody, really.

Paul Hirt: 00:25:53 Is anybody opposed to it, or people just don't want to talk about that option?

Anonymous: 00:25:57 They don't really want to talk about that. Um, there's been all kinds of crazy things, you know. Pump the sediment back upstream, you know.

Paul Hirt: 00:26:08 That would be expensive, wouldn't it (laughs)?

Anonymous: 00:26:09 That would be expensive, but you know, they're talking about temperature control devices and stuff like that, that are very expensive. Or load it into trucks and drive it back up there or something. You know, there's been a lot of speculation or talk about what kind of things can be done, but none of it has been addressed really seriously.

Paul Hirt: 00:26:31 Let me go back to the standard list of questions. There's one in here about key reports and documents that you think were really important to the program and its evolution.

Anonymous: 00:26:42 Yeah, I can, can address that. Um, I work on several committees that put together, I don't know if you've heard of them, Desired Future Conditions [DFCs] for different resources. I thought that was a very important effort. A strategic plan was written. That doesn't get any mileage anymore. Nobody brings these out of the closet and looks at them anymore.

Paul Hirt: 00:27:04 When were those two produced?

Anonymous: 00:27:07 Late nineties, early two thousands.

Paul Hirt: 00:27:09 Okay. We'll pull them up for our administrative history again, make them available.

Anonymous: 00:27:15 And then um, you know, the documents that deal with cultural resources: the programmatic agreement, the historic preservation plan which are underway, developing right now. Well, that were supposed to be developed back in '96, '97 when the program started, and they never were. All of these things that were supposed to have been done. If you go back to the original programmatic agreement, there's a bunch of things that were supposed to be done, and almost none of them were ever done. Which was really amazing. And then, um, just the annual reports from the Grand Canyon Monitoring and Research Center and [US Bureau of] Reclamation. So, um, of course, the Record of Decisions for the EISs [Environmental Impact Statement].

Paul Hirt: 00:28:04 So the first one you mentioned, the Desired Future Conditions, um, that was late 1990s, you're saying?

Anonymous: 00:28:11 Oh, I can't say exactly when, I'm thinking late nineties or early two-thousands, but they were only com--

Paul Hirt: 00:28:17 [Unintelligible] those reports?

Anonymous: 00:28:19 They were only completed for a few resources. I think one was completed for humpback chub. Like a certain, we want a certain number of chubs and of certain size and--

Paul Hirt: 00:28:30 That's kind of narrow.

Anonymous: 00:28:31 Yeah.

Paul Hirt: 00:28:32 I thought this would be an integrated view of all the resources, but you're saying that, for very specific targeted resources that they're trying to manage, like beaches and endangered species--

Anonymous: 00:28:41 And so yeah, there was, I don't remember exactly how many resources were addressed, but not all of them. That effort was terminated and I don't know why or how, but the powers-that-be somewhere said, "We shouldn't be doing this anymore." Or something, I don't know. But, I thought it was a very worthwhile exercise and that, you know, there's a lot of conflicting, you can do good for one resource, and it might do bad for another. You know, like, there was an effort to return, um, extirpated species, species that no longer can be found at the canyon, back, like river otters, and--but you can't have river otters and native fish coexisting very well. I actually studied river otters for my Masters work, in the Verde River system, and that was their favorite food, was native fish (laughter). So I don't think it's a good idea to put river otters back in there [unintelligible].

Paul Hirt: 00:29:41 There was that conflict, too, about um, uh, you know, the invasive species tamarisk, um, is taking over a lot of the lower canyons in the Southwest, and a lot of people were concerned about trying to get it out. And then it turned out the endangered southwestern willow flycatcher likes tamarisk, and, uh--are there any other examples like that that you've worked on or that the Hualapai are interested in where, you know, there's some resource conflict?

Anonymous: 00:30:12 One thing I want to mention, and it's not necessarily tied to resource conflict, but we've had huge changes in the vegetation community in the lower canyon.

Paul Hirt: 00:30:22 Yeah, since [unintelligible].

Anonymous: 00:30:23 Since I've been involved. There used to be a tamarisk monoculture. And then for some reason that, when Lake Mead rose and the [unintelligible]--the dam was operating, and how it was operating, the tamarisk got reduced and the willows and cottonwoods went crazy. And then--

Paul Hirt: 00:30:41 Without any human intervention?

Anonymous: 00:30:43 Without any human intervention, really. And then, now, it's back to a mixture of willows and tamarisk. But nobody knows what that meant to the wildlife communities. Nobody--besides, when we got, when we finished monitoring wildlife in '07, uh, the park does a little bit of wildlife monitoring, not much, but um, nobody really is looking at that, and that's one of the resources that's very important to all the tribes. The critters--the creatures.

Paul Hirt: 00:31:15 Well, and that monitoring is essential to adaptive management, too. You can't adapt if you're not monitoring to see what the effects are of, you know--

Anonymous: 00:31:22 They're mon—(speaking simultaneously)

Paul Hirt: 00:31:22 --the changing environmental conditions or your decision making.

Anonymous: 00:31:26 Right, and then they're monitoring vegetation, they're still doing that, but they're not linking that to what's happening with the wildlife populations. And we, we would like to start that program up again and it's just, um--

Paul Hirt: 00:31:40 How would you do that? What would--like, walk us through the steps of when somebody recognizes a research program that needs to be done, how do you try to get that research funded?

Anonymous: 00:31:53 We've been most successful by working directly with Reclamation. Salt Lake City. [P.H.: Okay.] Give them proposals, and they've been able to find money here and there. Then, in addition, we have some base funding in our natural resource department from the BIA [Bureau of Indian Affairs]. We have a wildlife, fishes, and parks program that is funded directly by BIA, and there's, you know, there's a little money in there that we can use as matching funds to, if we can leverage other funds from, like, Reclamation and, uh, and do the project. But that's how we've been so, most successful, recently. Like, I just funded the archive project for the next two years. And--

Paul Hirt: 00:32:38 Good.

Anonymous: 00:32:40 Yeah. So, I just hope it's-- (both talking at once)

Paul Hirt: 00:32:42 That's archiving all those digitized, uh--

Anonymous: 00:32:44 Interviews.

Paul Hirt: 00:32:45 Interviews with elders about conditions on the river.

Anonymous: 00:32:48 Yeah.

Paul Hirt: 00:32:48 Great. Nice.

Anonymous: 00:32:50 And we'll see how that works out.

Paul Hirt: 00:32:52 Um, so, when you mentioned the, the Desired Future Conditions reports that were done a few decades ago, you said that they were focused fairly tightly on certain resources. You also mentioned that they were doing a cultural resources kind of inventory. Was that focused on different, uh, tribes, or were they trying to do a comprehensive cultural resource inventory at that--that they--and did they finish it?

Anonymous: 00:33:23 Well, there has been a comprehensive cultural inventory done paid primarily by the park, way back when, [P.H.: Okay], in the early beginnings of the program. And I wasn't involved with that at all. I can't really speak to that, but um--

Paul Hirt: 00:33:40 What did they--okay. You don't know how well they integrated tribal elders and oral tradition and stuff?

Anonymous: 00:33:48 No.

Paul Hirt: 00:33:48 Okay.

Anonymous: 00:33:50 I was a biologist back then. But it would be great if you could interview people like Dawn Hubbs, Loretta Jackson-Kelly, Peter Bungart, and get their perspectives on what was happening. I mean, Loretta was there back in the beginning, and that's some of the people that--

Paul Hirt: 00:34:09 I just made a note to add Loretta to my interview list. I think she'd be, (speaking simultaneously) she'd be an excellent interview.

Anonymous: 00:34:13 She'd be great. Yeah.

Paul Hirt: 00:34:15 That's one of the later questions I was going to ask is who to, who else do you think we should, we should talk to. So thank you for bringing these names up.

Anonymous: 00:34:21 Sure. Yeah. And Loretta works for the corporation now, so I think, I'm pretty sure she'd be available.

Paul Hirt: 00:34:30 Great.

Anonymous: 00:34:32 Yeah. And it will be great to talk to Kurt and Mike. I'm sure you have those on your list.

Paul Hirt: 00:34:38 Yeah, we're looking forward--we're talking to Kurt tomorrow morning (speaking simultaneously).

Anonymous: 00:34:40 Kurt, tomorrow. Good.

Paul Hirt: 00:34:42 Yeah, looking forward to that.

Anonymous: 00:34:44 Yeah, it should, he should have good input for you.

Paul Hirt: 00:34:48 Um, one of the questions on my list is, what do you think you accomplished, personally and as a representative for the Hualapai Tribe? Anything in particular that you--?

Anonymous: 00:34:58 Well, as I mentioned before, those fourteen years that we collected baseline wildlife population data. That was, that data is still available, and can be used to compare the future surveys or whatever. So we might get a better handle on (pause) on how things are changing under different, under different climate, under different dam operations, under more oft--more frequent high flow events, under different vegetation cha--regimes. And I think, you know, that database is, it was one of those things that I accomplished that I, that I think is important to the program, and it--well, no, not doing anything with it now, but someday in the future maybe that will be worth looking at again.

Paul Hirt: 00:35:52 You feel confident that, um, about the value of, of collecting baseline data, baseline scientific--

Anonymous: 00:36:00 Absolutely--

Paul Hirt: 00:36:01 Information. Yeah.

Anonymous: 00:36:02 And we, so we did a synthesis in 2007 of all of our years of surveying, and the GCMRC should have that report. I--it's at my old office, and I don't think I could find it anymore, but--

Paul Hirt: 00:36:16 And that's for the lower river?

Anonymous: 00:36:17 Yeah. That's for below Diamond Creek.

Paul Hirt: 00:36:19 Okay. Yeah, we'll look for that. Awesome.

Anonymous: 00:36:25 So, and then I've tried to, you know (pause) get the, the people to listen to the tribal perspectives, trying to integrate tribal knowledge,

tribal perspectives into the program, and I've tried to get people to focus more on below Diamond Creek, too. I don't know that I was successful in some of those things, but I've been trying to, to--

- Paul Hirt: 00:36:52 To some extent you feel like you've made some headway (speaking simultaneously), just not enough?
- Anonymous: 00:36:57 Just not enough (laughter). But, um, and just keeping the tribe informed about what the issues are, and what's important, and what things are coming up that they need to know about, that kind of thing, so that they can make their decisions on what their positions are.
- Paul Hirt: 00:37:18 So despite some of the lack of progress, some of the frustrations, um, do you feel like, um, this overall effort to create a collaborative group of diverse stakeholders to, you know, come together to try to determine how to manage Glen Canyon Dam to protect and recover downstream resources, do you feel like that's been a worthy endeavor?
- Anonymous: 00:37:45 I do. Yeah. Because I think what they've realized is, it's a very complex ecosystem, and it's very difficult to predict what the outcomes of management actions or dam operations are on all the various different resources, and that there's very complex linkages between resources that, you know, are going to take a lot more work to understand. (Pause) And I've--but I think overall the program has been moving forward and doing good things for the resources and, it's just [a] very complex ecosystem. And, um (pause) and I think the tribes can be of great help to understanding some of those linkages, and I think it's important to get more tribal members involved, not just representatives of the tribe, but tribal members, whose families have lived on the river for example. I think that would be a positive thing, but, I don't--
- Paul Hirt: 00:38:56 You mentioned that a little earlier. Can you give a few more examples of ways in which you would like to see more tribal members actually involved in the program itself? Besides taking, you mentioned taking elders down the river in rafts [Anonymous: um-hmm] and getting more people involved in monitoring resources. Any other ways that you can see that would be beneficial to get tribal members involved?
- Anonymous: 00:39:20 Well, personally, I think it would be nice to hear, to be able to sit down with tribal members and hear what their thoughts are on different issues. What do you think about these floods that they're doing down the river? How do you think about the, what do you think? And maybe that'll come out of the archive project. Maybe those questions have been asked in the interviews. I personally haven't listened to any of those interviews. A lot of them are in Hualapai, and they need to be translated as well, but, um--so maybe

there's some valuable information that can be used. But, just me personally, I would just like to hear what they have to say about how the river is and how operations of the dam does or doesn't affect the resources. And I'm guessing that--well, I don't know. I'd be guessing.

- Paul Hirt: 00:40:13 Um, uh, you're a professional biologist with training, what do you think about citizen science?
- Anonymous: 00:40:20 I think it's great. [P.H.: Yeah.] The work that they've done with the bugs and stuff, in the upper river, I think, it's been really helpful. I mean, that's an easy way to collect a lot of data and, um (pause) and it would be really expensive to get, have a professional biologist out there doing it, you know. So I think it's really good. Um, and then I would like to see it used wherever possible, you know, bat monitors or something like that, I don't know. And people love to go on the river and do stuff like that, you know? [P.H.: Yeah, yeah.] So I think wherever it can be promoted, it should be.
- Paul Hirt: 00:41:01 And people can be trained in proper ways of recording and collecting data.
- Anonymous: 00:41:07 Yeah. It's not rocket science, for sure.
- Paul Hirt: 00:41:12 (Laughing) Crowdsourcing, we call it nowadays.
- Anonymous: 00:41:13 [Unintelligible].
- Paul Hirt: 00:41:15 So, um, you mentioned, earlier, a surprise. One of the questions is what did, did you encounter any environmental or social, political or scientific surprises during your tenure, and you did mention that you were most surprised at the way that tribes were, maybe, not, uh, treated as, you know, full-fledged, equal members of the stakeholder groups. Any other things that you didn't ex--you found that, that were unexpected?
- Anonymous: 00:41:47 (Pause.) I'm trying to think of something biological that I found--well, I was uh, it had--was surprising that, how large a change in the vegetation community had happened over the, you know, several decades. That was very surprising.
- Paul Hirt: 00:42:09 Can I ask you about that? You said when the water was higher, um, you, you had a suppression of tamarisk and a recovery of, uh, cottonwood and willow. I'm assuming you mean, you know, from, like, 1983, when there was that huge flood and uh, and the reservoirs were almost full again, at least, you know, Glen Canyon Dam and Lake Powell behind it were full in '83, '84 from those huge rain events. I assume Hoover was, too. Was it that decade from '83 to '93 or

whatever, where that happened? And then as drought reduced the reservoirs the tamarisk came back in again?

Anonymous: 00:42:47 I think it was, and, uh--I know the lake was full, Lake Mead was full in the year 2000. So, it was the years leading up to that.

Paul Hirt: 00:42:55 Wow.

Anonymous: 00:42:56 And then--

Paul Hirt: 00:42:57 So it's only been since 2000 that Lake Mead has lost all that water? Because it's, I think it's at 37 percent capacity right now, and it's been sitting there for four or five years, at least.

Anonymous: 00:43:09 Yeah.

Paul Hirt: 00:43:09 Wow, that's a rapid draw down.

Anonymous: 00:43:11 Yeah. In 2000 is when the drought hit. And, uh, we had a wet year in 2005, but other than that, it's been drought every year. So it's been drought for the past sixteen, seventeen years.

Paul Hirt: 00:43:25 So that's the period in which you had the tamarisk again reasserting itself, and along, uh, the river?

Anonymous: 00:43:33 I believe so, yeah. Well, for sure we would have lost the willows, when the lake went down.

Paul Hirt: 00:43:40 Was that because of, um, the de-watering there-- (Both talking at same time).

Anonymous: 00:43:41 It was the drought, yeah, the drought.

Paul Hirt: 00:43:46 Uh, tamarisk are not phreatophytes like cottonwoods and willows? They can survive without their root systems being in water all the time?

Anonymous: 00:43:54 They're better at that, yeah.

Paul Hirt: 00:43:55 Okay. So that's why. So, um, this, kind of, a climate change question for you. As a biologist, it sounds to me like one of the implications of, um, of a warming and drying climate, uh, is the spread of more tamarisk and the loss of some of our native, uh, cottonwood and willow [both talking at once]--

Anonymous: 00:44:15 Well, the only saving grace is the tamarisk leaf beetle [imported as a natural control mechanism to help reduce tamarisk survival], that's

affecting the tamarisk along the river now. Where, I--I'm not sure we've seen widespread mortality, but we are losing tamarisk along the river due to the leaf beetle.

- Paul Hirt: 00:44:31 And do cottonwoods and willows come back in when the tamarisk is suppressed like that?
- Anonymous: 00:44:36 I don't think we've had enough time to see that yet. But, um (pause) I don't know if you know, Reclamation has supported a pilot project from this department to plant willows and cottonwoods down on the river. Only the--at two sites, this summer, we've planted, I don't know how many trees. Sixty, seventy trees, and we were watering them and, um, so hopefully, you know, even if we have to do it that way we can get the native species back.
- Paul Hirt: 00:45:10 Do you have the money to both continue that program and monitor its effects?
- Anonymous: 00:45:17 We can monitor, um (pause) I'm not, hmm (pause) not sure what year that, that funding runs out. I think this is the last year for that funding. So we've got them planted, at least, and they're doing good, um, we'll just see if we can keep that going.
- Paul Hirt: 00:45:36 Are you thinking in any other ways about how, um, the (pause) climate change, it's, the likely directions that we're going. I mean, nobody knows what the climate's exactly going to be like [Anonymous: Right] in ten, fifteen, twenty, thirty years, but we have a pretty strong idea of the trends. We know we're warming and drying almost certainly [Anonymous: Right], and precipitation patterns are shifting, and we're likely to have more periods of drought, but potentially heavier rains when they do come. Are you thinking, both as a biologist and a representative of the Hualapai Tribe, about, you know, uh, adaptive management in the future, to sort of adapt to these potential changes based on climate change?
- Anonymous: 00:46:23 Well, that's one, one reason that we're doing this restoration project, is maybe in the future we will have to go down and physically plant, remove--well, we removed tamarisk and we're physically planting native species, so in the future we might have to adapt in that manner. Um, but--
- Paul Hirt: 00:46:44 How about wildlife, or--?
- Anonymous: 00:46:45 Me personally, I, I'm thinking, well, like you said, it's going to get hotter and drier and I haven't really looked to the, that far down the road, thinking what, what's going to happen. But again, having a database, baseline data, from back in the '90s and 2000s, we can, if

we get funding in the future, we can see if it's, if, if, what it's doing to the wildlife populations.

- Paul Hirt: 00:47:14 Do you know if the Hualapai Tribe has created a kind of their own Desired Future Conditions statement or document?
- Anonymous: 00:47:22 I do--I do not believe so.
- Paul Hirt: 00:47:25 Would that be something that you think would be useful?
- Anonymous: 00:47:29 I do think it would be useful. And that would be a good way to get the tribal council involved, and elders. What, you know, because this is your land, what is your vision for the land? And we've never had that kind of input. (Pause.) And I would think all the tribes want to go through a process like that.
- Paul Hirt: 00:47:55 So you acknowledge that you think the program, um, with all its flaws, the program has been valuable, it's worthy. Do you think it should be continued? And if so, what improvements might you make to be even more satisfied with its results?
- Anonymous: 00:48:14 I do feel it should be continued. (Pause.) Well, I think if, if there could be more integration of tribal perspectives and tribal knowledge in the program, that would be helpful. Um, I would hope that there would be less (pause) divisiveness among stakeholders, like there would be, that's a better, a better way to work together, instead of thinking that everybody has their own agenda and, which kind of is the way it seems that it is now, everybody has their own agenda, [sound of train in background] and if we can all look at other people's perspectives and try to understand where they're coming from, and if we could all work together better, I think that would be beneficial.
- Paul Hirt: 00:49:07 Can you think of any specific ways that that could be promoted? Like how might the, the sort of, the human dimensions of the adaptive management program be tweaked in order to encourage more of this sharing of goals and perspectives, rather than competition?
- Anonymous: 00:49:26 I think, um, recreate some of these committees that we had in the past, where people were working together to get Desired Future Conditions, stuff like that. And I don't know why those committees were disbanded when they were, but, um, I thought it was beneficial for me to sit down with other stakeholders, get their perspectives on things, and work toward a common goal of improving humpback chub habitat, or improving sediment resources, or whatever they need.
- Paul Hirt: 00:49:57 So let me ask you to clarify how that would be different than, um, all the stakeholders sitting around in one room at the AMWG meetings,

and a smaller number of technical people sitting together in the TWG meetings.

- Anonymous: 00:50:11 I think it just gets less, it's more informal, and smaller groups, and they can be more effective at hashing out the issues and, and then, and then they ultimately bring it back to the TWG, and the TWG discuss it. And so I think it's just a smaller-scale process.
- Paul Hirt: 00:50:32 So sort of like committees and subcommittees that hash things out and then bring them back--you can get more, you learn more about each other, you can negotiate more face-to-face than in the great big rooms. [[Anonymous: Yeah]. Or it's like you said, in some instances you raise your hand for an hour and a half and nobody calls on you. That doesn't happen in a small group and that's--
- Paul Hirt: 00:50:51 Right.
- Anonymous: 00:50:51 Okay. I get it. So are you hopeful that--you know, that, the program is funded by the federal government through hydropower revenues from Glen Canyon Dam.
- Anonymous: 00:51:01 Right.
- Paul Hirt: 00:51:02 There's a, I don't know, there's a significant chance that, you know, ten or fifteen years down the road, Glen Canyon Dam might not even have enough--or Lake Powell might not have enough water to even be generating hydropower if this drought continues. Are you hopeful that the program will continue--
- Anonymous: 00:51:22 Very much so, but one of your questions, um, with the current administration, current president [Donald Trump] and administration, I'm very fearful that the program might not get the support that it needs. And I'm hoping that there's enough laws on the books, the Grand Canyon Protection Act and the Endangered Species Act and the National Historic Preservation Act, that they can't just cut--cut off the funding for the program. I'm hopeful. But what we, we heard recently was that there would be a, whatever that is, um (pause) directed WAPA [Western Area Power Administration] to send money back to the general fund, US general fund, instead of--that's usually earmarked for the Glen Canyon program and other environmental programs. And that's going to be an issue that's discussed at the next AMWG meeting, next week. [P.H.: Really?] That's going to be, like, the first topic addressed. Because yeah, they were pulling the plug on the program.
- Paul Hirt: 00:52:28 I remember right after the Trump administration came in, they also put a hold on all expenditures by federal advisory committees and this

is under FACA [Anonymous: Yeah], F-A-C-A [Federal Advisory Committee Act]. And, uh, there was a, a period of time, several months long in which the folks, the AMWG people, didn't even know whether they would be allowed to meet, and they had this meeting scheduled and they had to postpone it. So, um, so you're hearing this is continuing under the Trump administration, kind of hostility to implementing--

Anonymous: 00:52:59 Environmental programs, yeah. And so, we just received, last week, our funding for 2018 participation in the Glen Canyon Program. From Reclamation.

Paul Hirt: 00:53:12 And we're in the 2019 fiscal year right now, right?

Anonymous: 00:53:14 Now it's into 2019 (laughing). Yeah. So, and a lot of that was because of, the Trump administration said that anything over 100,000 dollars, we need to review and evaluate it. And so that was a very long process. And so, I don't know what it's going to look like in the future. (Pause.) But it's kind of scary. It will be interesting. I'm not going to be at the AMWG meeting, but it will be interesting to hear what the results of the discussion are--and then, the federal government, so far, has been kind of dancing around it. Not really [unintelligible] they're all saying, "Well we really don't know what's going to happen, we don't really don't know what's going to happen." And somebody's got to know. Because we're--it's right around the corner, you know, the end of September is the new fiscal year.

Paul Hirt: 00:54:02 And all the, um, all the (pause). So as I understand it from a previous interview with Dave Garrett, that research programs are funded for, in five-year chunks.

Anonymous: 00:54:14 It's three-year chunks now.

Paul Hirt: 00:54:16 Three-year chunks? Okay.

Anonymous: 00:54:18 Reviewed every year, though.

Paul Hirt: 00:54:19 They're reviewed every year. And so people are waiting for ongoing research programs, um, to get the next chunk of funding for the next year of work [Anonymous: Yeah], and nobody knows whether that money is going to be held up or--

Anonymous: 00:54:34 Yeah. And this is 2019 we're, funding we're talking about. Which is the last year of the three-year funding cycle, and then we'd be going through another planning process for the next group of three-year projects. So (pause) that's kind of a little scary, but I'm hoping that

those laws that are in place, that they can't just say, "No, we're not going to monitor the Grand Canyon resources anymore."

- Paul Hirt: 00:55:02 There would certainly be several lawsuits (laughter) by several interest groups [Anonymous: Yeah] if they tried to do that, I'm sure. Well, I guess we'll have to wait and see.
- Anonymous: 00:55:12 Yeah.
- Paul Hirt: 00:55:13 Um, one of the, uh, last important questions is asking you for advice on what you, what advice would you give to, uh, new members of the Technical Work Group or the AMWG. New people coming on to represent—let's say for example, you step down as the Hualapai representative on the TWG in the next few years, what would you say to your replacement about how to be an effective member, how to understand the process?
- Anonymous: 00:55:46 I would say that it's important to get to know all the stakeholders, get to learn what their perspectives are, learn where they're coming from. Get to know the river, where there's issues, where things are happening and what's going on and, and be open to working with a diverse group of stakeholders and, um, be open to working with people that don't have the same viewpoints as you might have. That would be my main message, I mean. And, you know, it's all about the resources to me, and us, and it's not--yeah, it's about the resources--preserving resources. That's, to just keep that in perspective as well.
- Paul Hirt: 00:56:31 When you say preserving the resources, can you sort of identify the key resources that you're most concerned about preserving?
- Anonymous: 00:56:43 First thing, I'm most concerned about the riparian vegetation, the riparian species. Because, you know, I was trained as a riparian ecologist in the past. That--I think it's important to ask that the tribes and ask the other stakeholders, "What's important to you?" And you know, this, this program is driven a lot by laws, the Endangered Species Act, we do a lot of stuff for humpback chub. We did all that stuff for beaches because of recreational rafting interests, and we do a lot of stuff for culturally important resources because there's a law that protects them as well. So, but I think to the Hualapai Tribe, all the resources are important.
- Paul Hirt: 00:57:28 Is there anything else you'd like to add as we get close to wrapping this up? (Speaking simultaneously) Any other people that we should interview?

Anonymous: 00:57:37 Other people, yeah. Clay Bravo, I don't know if you're familiar with him. He's on the tribal council. He was one of the first ones that got the tribe a spot at the table.

Paul Hirt: 00:57:50 Ah, Clay Bravo. [Anonymous: uh-huh.] B-R-A-V-O. [Anonymous: mm-hmm.] And he, is he still on the tribal council?

Anonymous: 00:57:56 He's on the tribal council. Um, and like I mentioned, Dawn Hubbs, whose office is right over there, Loretta [Jackson-Kelly], Peter Bungart. He's the new director here.

Paul Hirt: 00:58:10 H-U-B-B-S?

Anonymous: 00:58:12 Yeah.

Paul Hirt: 00:58:13 And, uh, I met her at an AMWG meeting that you were at when we talked that one-- okay.

Anonymous: 00:58:18 And she's, she's currently the representative, but she's been replaced by Peter Bungart, and I'm being replaced by a council member as the alternate. I'm still on the TWG as far as I know. (Pause.) As far as I know. (Pause.) Um, I don't know if you've heard the name Steve Carothers?

Paul Hirt: 00:58:42 Yes. He was recommended by a couple other people and he's on my list as a possibility.

Anonymous: 00:58:49 Yeah, he's worked the canyon. And then some of the people that I think are important, people like Larry Stevens, Cliff Barrett, Don Ostler, Leslie James.

Paul Hirt: 00:59:06 Who's Don Ostler and who's Leslie James?

Anonymous: 00:59:07 He represents, Don Ostler represents Colorado, Leslie James represents CREDA [Colorado River Energy Distributors Association]. Um, they've been very outspoken and they're very level-headed, and they, and they kind of look at the big picture. And then there's people that are no longer in the program that would be good. Amy Heuselin was really good. She was a BIA employee.

Paul Hirt: 00:59:33 How do you spell her last name?

Anonymous: 00:59:35 H-E-U-S-E-L-I-N.

Paul Hirt: 00:59:40 L-A-N, or I-N?.

Anonymous: 00:59:42 I-N.

Paul Hirt: 00:59:43 And she was with the BLM [Bureau of Land Management]?

Anonymous: 00:59:44 BIA.

Paul Hirt: 00:59:45 BIA. Okay.

Anonymous: 00:59:49 You probably already know Steve Spangle, who just retired from the Fish and Wildlife Service.

Paul Hirt: 00:59:53 Steve Spangle? [Speaking to Jen Sweeney:] Is he on our list? I don't think so. Cool. You're giving us all kinds of good interviewees. Uh, S-P-E-N-G-L-E?

Anonymous: 01:00:05 S-P-A-N-G-L-E. And he's in the Phoenix area. Amy's in the Phoenix area.

Paul Hirt: 01:00:12 And, uh, Spangle is, uh, US Fish and Wildlife Service?

Anonymous: 01:00:15 Yeah.

Paul Hirt: 01:00:16 So he'd be involved in the endangered species, uh, [Anonymous: yeah] fish work. Okay.

Anonymous: 01:00:25 And I don't think there's anything that you've written that I haven't talked about. (Pause.) And I appreciate you coming here.

Paul Hirt: 01:00:40 Yes. Thank you very much for the interview.

Anonymous: 01:00:42 Thank you.

Paul Hirt: 10:00:42 It's a pleasure getting to know you better and--

Jennifer Sweeney: 01:00:44 Thank you.

Anonymous: 01:00:45 I hope it helped.

Paul Hirt: 01:00:46 Good luck with your hopes and dreams for the program.

Anonymous: 01:00:48 Yeah. I hope it helps.

Jennifer Sweeney: 01:00:50 Are we done?

END OF INTERVIEW