

HABITAT CONSERVATION PLAN
Technical Advisory Committee
Tuesday, October 11, 2005 1:00 – 4:00pm
Arizona Game and Fish Department Meeting Room
555 North Greasewood Road
Tucson, Arizona 87545-3612

MEETING SUMMARY

Attendees: Ann Phillips, Dana Labor, Ries Lindley, Bruce Prior and Harold Maxwell (City of Tucson – Tucson Water), Guy McPherson, Dennis Abbate, Trevor Hare, Rich Glinski, Michael Wyneken (City of Tucson – Planning), Leslie Liberti (City of Tucson – City Manager’s Office), Kathryn Schonhorst (SWCA), Julio Davenport and Travis Bean (University of Arizona – Desert Lab)

1) Update on Recent SAC Meetings/Upcoming Meetings

a. Scheduled SAC Meetings:

- **October 19**, 3-5 pm, @ AGFD. Tentative Topics: Preliminary Avra Valley strategies.
- **November 2**, 3-5 pm, @ AGFD. Tentative Topics: Continued discussion of Avra Valley strategies and initial recommendations for Santa Cruz River.
- **November 16**, 3-5 pm, @ AGFD. Tentative Topics: Monitoring and Adaptive Management Program and implementation/funding options; Next steps – beginning Phase 2 of the HCP process.

b. Scheduled TAC Meetings:

- **October 25**, 1-4 pm, @ AGFD. Tentative Topics: Monitoring and Adaptive Management Program; feedback from SAC on conservation program, especially funding and implementation issues.
- **November 15**, 1-4 pm, @ AGFD. Tentative Topics: Monitoring and Adaptive Management Program; feedback from SAC on conservation program, especially funding and implementation issues.
- **November 29**, 1-4 pm, @ AGFD. Tentative Topics: Next steps – beginning Phase 2 of the HCP process.

Leslie gave an update on the SAC. She said that the SAC committee reviewed the ideas of the TAC committee regarding the Southlands at their last meeting. She said that they looked at the conservation summary matrix and discussed how the TAC ideas could link to other plans. Leslie said that the SAC also discussed the funding for the second year of the HCP. She encouraged everyone to look at the SAC meeting notes.

2) Old Business

a. Meeting Minutes – August 9, 2005 Minutes

Leslie said that the August 9 meeting notes were sent out by email. She gave everyone a chance to ask questions. A couple committee members said they had trouble opening the attachment. Leslie said that the notes will be sent again and the committee can review them at the next meeting.

b. Status of Southlands Conservation Strategies – Updated Conservation Measures Matrix

Leslie passed out the conservation summary matrix for the Southlands that included suggestions and edits from the last TAC meeting. Leslie said that these recommendations are very briefly summarized. She said that her own thoughts are also included in the summaries. She stressed that this matrix is not finalized, but includes the most complete information they have thus far. She reminded the committee that each person has a species to focus on, and that they can build off the matrix to understand what can be done for each of these species, and what gaps still exist. Leslie said that eventually all the information should be written up from the matrix.

3) New business

a. Bufflegrass Presentation by Travis Bean, University of Arizona Desert Lab

Leslie introduced Travis Bean with the University of Arizona Desert Lab. She said that Ann organized a meeting this morning with Travis about a proposal that Harold is leading. Leslie said that Tucson Water has an obligation to manage the Avra Valley properties and bufflegrass is a large concern in Avra Valley because it will have impacts on the quality of habitat and will increase the fire hazard. She said that the meeting with Travis was to discuss what can be done about bufflegrass, and how can it be incorporated into the HCP. Leslie said that because Travis and Harold were both available for the TAC meeting that it was a good time to discuss bufflegrass and get the committee's feedback on how it can best be incorporated into the HCP.

Ann said that it is okay to proceed with the bufflegrass discussion with some sense of urgency, but without contradicting the HCP. Harold said that he has mapped a large area from the east and west sides of Reservation Road south of Manville Road. He noted cattle are in the area. He said that after they surveyed it, fenced it, and removed the cattle, the bufflegrass invaded. Trevor asked how the bufflegrass arrived in the area. Harold said he does not know. He said it is rumored that it was planted in the past. It's his guess that it has always been there and the cattle have always kept it down. Leslie said that she is glad that Harold could attend the meeting because he is a wealth of knowledge for the Avra Valley area.

Travis Bean began the PowerPoint presentation about bufflegrass by discussing an April 1996 article in the Tucson Weekly, "The grass that ate Sonora." Travis explained that the article included an interview with Tony Burgess and David Yetmann and discussed the ecosystem transformation and other negative repercussions in Sonora, Mexico, due to the spread of bufflegrass. Travis said that the bufflegrass problem is now inflicting Southern Arizona and Tucson. He says that the bufflegrass is out of hand.

Travis explained the work on Tumamoc Hill (University of Arizona Desert Lab). He discussed the study conducted by Jan Bowers, Ray Turner, and Tony Burgess who mapped all the exotic species on Tumamoc Hill in 1983. He said they found sixty species by walking along a grid and placing transects. Travis explained that though all of these species are problematic, that it is time to prioritize and deal with bufflegrass.

He continued the presentation by discussing two maps that show buffleggrass on Tumamoc Hill and the surrounding area in 1983 and 2005. He said the contrast between the two maps demonstrate the increase and spread of buffleggrass. Travis explains that in 1983 the buffleggrass was along roadsides around A Mountain, but now it has spread everywhere around A Mountain, Tumamoc Hill, and the surrounding neighborhoods. He said that if a fire were to break out, there is the risk of losing the 100-year research plots on Tumamoc Hill, century year old saguaro groves, and residential homes around the A Mountain. Travis noted the question of legal responsibility if a fire should spread to homes and other properties.

Travis continued with a slide titled, "What is Buffleggrass or *Pennisetum ciliare*?" Travis defined buffleggrass as a warm-season perennial bunch grass that is native in southern Africa into southern Asia. He explained that it is a close relative of fountain grass (*Pennisetum setasium*), which is a popular ornamental grass in Tucson. Travis said that everything he discussed about buffleggrass holds true for fountain grass, except that fountain grass has not yet reached the same widespread distribution as buffleggrass. Travis said that buffleggrass is widely planted and invasive in arid tropical and subtropical regions around the world. For example, South America plants buffleggrass as a foraging grass. It is used as a pasture grass because it produces a lot of biomass in dry conditions.

Travis explained that it is dangerous to plant buffleggrass near ecosystems not adapted to fire such as the Palo Verde/Saguaro Ecosystems. He commented that 2.5 million acres have been planted in Sonora, and an additional 12.5 million acres (approximately 1/3 of the state of Sonora) has been approved for planting buffleggrass pastures.

Travis continued by explaining a diagram that illustrated the different phases (Quarantine Priority Stage, Eradication Priority Stage, Control Priority Stage) of invasions of exotic species, which has been modified for buffleggrass. Travis explained that as the buffleggrass population continues to increase, so does the fire danger, and eradication costs.

Travis said that buffleggrass was introduced into Tucson in the late 1930s when the Soil Conservation Service planted it experimentally at the Planeterial Center at Prince and I-10. He said that Hermosillo, Sonora, already has frequent widespread wildfires, and he believes this may foreshadow the future for Tucson because they are similar climate and native vegetation. He said that Tucson is at the brink of fire danger, and he said that Phoenix is approximately three to five years behind, because buffleggrass is already found in all their natural parks and preserves.

He continued the discussion with a photograph showing a buffleggrass infested roadside in Sonora. Travis said that according to Todd Esque (USGS), who recently did a buffleggrass fuel-load study in Saguaro National Park, there are ten times the minimum fuel load necessary to start a fire. The next photograph showed a burned area in Cave Creek complex. Travis said that more than 700,000 acres of land burned in Arizona this year. He said that this was the worst wildfire season yet. Travis explained that fires are fueled in the valleys by invasive annuals such as red brome, Sierra mustard, and wild oats. He said that according to Todd Esque's study, buffleggrass burns ten times hotter than red brome, hot enough to produce white ash. Travis said that there is a 60 percent mortality rate of saguaros from red brome, and he suggests that a fire fueled by buffleggrass would be more devastating. He showed a photograph of scorched saguaros.

Travis continued the discussion on fire by showing a graphic that mapped the ignition points or human caused fires between 1980 and 2001, which resembled a road map. Travis said that Tom Vandavener and Mark Demmit received a grant from the National Fish and Wildlife Foundation to map buffleggrass all along surface streets and highways in southern Arizona and northern Sonora. He said that they found buffleggrass all along the roadsides in dense burnable stands.

Travis explained that roadsides are the major vectors that spread buffleggrass. He said that buffleggrass populations are established along roadsides, and that the combined factors of the heat from the asphalt, water from runoff, and the artificial wind source from passing traffic create a perfect opportunity for growth and spreading. He said that, on wetter or hotter than normal years, buffleggrass would escape from the roadsides.

He continued by showing a photograph of buffleggrass and fountain grass in front of the Casas Adobes Fire Station. Travis commented that currently the fire department responds as paramedics, but that if wildfires continue to increase, the fire department will no longer be as available to be paramedics.

He showed a photograph of buffleggrass near Grant Road and Wilmot Road in Tucson. Travis questioned the liability when fire spreads due to buffleggrass infestation. He commented that there has already been a precedent set with suing municipalities over the issue of invasive species. Travis showed a photograph of the entrance to the Tucson International Airport. He noted that if the area around the airport should burn, nearby roads would have to be shut down resulting in possible economic consequences to the City. He followed up with a photograph of the May 5 wildfire at Interstate 10 and Houghton Road that caused the freeway to be shut down.

Travis said that buffleggrass is a perennial. It blooms with the summer rains unlike most other annuals that grow in the spring. He mentioned that buffleggrass could rely solely on the summer rain patterns alone; where as the red brome and other annuals take advantage of heavy rain seasons like this year's El Niño. He noted that this means that there is a fire hazard every year, all year long.

Travis continued the presentation with KGUN 9 news footage from the Duval Mine burning in February 2004. Travis said that buffleggrass was planted in the area to stabilize the mine tailings. The reporter in the news clip said that there were 20-30 foot high flames. Travis mentioned that Ron Summers said that buffleggrass has extremely extended flame lengths. Travis believes that now is the time to take action against the buffleggrass before it spreads more.

He showed a photograph of the west slope of Tumamoc Hill behind buildings on the National Register of Historic Places. Travis pointed out how much buffleggrass is growing on the hillside. He reminded the committee that in a healthy Palo Verde/Saguaro plant community, there is usually bare ground between all of the individual plants so that if one plant is on fire, it will not carry from one plant to the next. He said that the buffleggrass provides fuel loads between all of the natural vegetation and helps spread the fire across the plant community. He showed a photograph of the first hairpin turn up Mt Lemmon Highway. Travis said that on a windy day, fire could burn 1,000 saguaros or more in twenty minutes. He referred to many of these areas as "African grasslands" because they now carry such a small percentage of native vegetation cover.

Travis noted that a \$174 million bond was approved for the Sonoran Desert Conservation Plan (SDCP) in May 2004. Travis noted that this money is for open space and preservation of habitat. He commented that portions of the land that will be bought for the SDCP is already infested, or is close to becoming infested, with buffleggrass. He posed the question of responsible conservation. Travis noted that Pima County is aware of the situation, however.

Travis reminded the committee that the cactus ferruginous pygmy owl (CPFO) could become delisted. He said that this is due to habitat loss from invasive plants, and he foresees other species being added to the USFWS Threatened and Endangered List resulting from habitat loss due to buffleggrass invasion.

Travis noted that a lot of Arizona revenue is generated from tourism. He said that tourists come to see the winter annuals bloom. He mentioned the draw towards Picacho Peak during the poppy displays, and reminded the committee that there is already buffleggrass along the highway near Picacho Peak. He said that their studies on Tumamoc Hill, Panther Peak, and Saguaro West have found that the invasion of buffleggrass causes the density of winter annuals to decrease. He said that half of the plant species in the Sonoran Desert are annuals, and that 60-80 percent of those annuals are winter annuals. He said that the desert is decreasing in biodiversity.

He continued by showing a photograph of fire retardant being dropped on million dollar homes in Cave Creek. Travis noted that this is also a threat to homeowners in the Catalina Foothills due to the increasingly flammable ecosystem.

Travis discussed a March 2004 article in The Scientist, "Cooperation Urged on Invasives". Travis stressed that governmental entities should cooperate. He said for example, the U.S. Department of Agriculture (USDA) is currently spending money for developing cold tolerant grasses (such as "Frio" which is being planted in Cananea, Sonora, and Penesetum velosum in Durango, Mexico) while \$100,000's are being spent trying to eradicate buffleggrass.

Travis said that the Noxious Weed List was passed in March/April of 2005, which prohibits the transfer of specific plants into the state. Travis said that the USDA is still permitting the purchase of Frio in Texas, which is passed across the border in Nogales, and planted in Sonora. Travis said that Frio was developed in Vernon Texas with climates similar to the Rim Country, and that it is now growing in Cananea, Sonora. Travis stressed that buffleggrass populations need to be mapped along the roadsides even more thoroughly than Tom Endevedor's map. Travis said that the eradication of buffleggrass should begin at the roadsides. He said that this would be more cost effective than hiking in along the slopes.

Travis said that private companies and corporations should get involved because government budgets do not allocate for buffleggrass eradication. Travis suggested that this is a good opportunity for landscape companies to get involved. Travis said that currently the UA Desert Lab is working with Pima County and Starr Pass Marriott. The Starr Pass Marriott is issuing a room tax that creates \$25,000 per month. This money is to enhance trails in Tucson Mountain Park, and to protect the wildlife corridors between the Santa Cruz River and the Tucson Mountains. Travis said that buffleggrass is in these corridors.

Travis reminded the committee again that there are legal issues concerning the threat of wildfires being spread by buffleggrass. He said that farmers in Avra Valley sued the City because of seed contamination in crops. Travis said that the word about the threat of buffleggrass needs to be spread, the community should volunteer, and neighborhood associations should get involved. He said that scientists need to stop studying the affect of the invasion and rather begin to study the effectiveness of the eradication. He said the communities should know what the cost is to do nothing about buffleggrass, such as a decrease in tourism, more highway closures, and risks to homeowners. He said we should weigh the cost of controlling the grass verses doing nothing.

Travis continued the presentation with a discussion of the costs of treatment. He said that buffleggrass is no longer mowed because it spreads the seed. He said that all combinations (manual and chemical) are effective and have been found to remove the mass at least temporarily. He said that it costs 25 percent more to pull the grass than it does to spray.

Travis mentioned that Sonoran Weedwackers meet every third Saturday of the month.

Travis concluded the presentation by providing a list of organization that supports the UA Desert Lab's efforts to control buffleggrass. Travis's contact information is 629-9455 ext. 104.

Ann asked if the UA Desert Lab has talked to ADOT. Travis said that he has contacted Chuck Barkley who has already begun spraying along Ajo Highway, I-10 east of Tucson, and I-19. He said that there are obvious lines where dead buffleggrass lies and live buffleggrass grow. He said that this is an example of mixed efforts within different jurisdictions. Ann suggested that prisoners could be used to work along the roadways. Travis agreed that this is a good and possible idea. He mentioned that there are specific rules about using convict labor, such as they cannot go to the same worksite two days in a row. Travis said they are looking into this.

Dennis referred to developers making huge purchases of land to build inventory, and wonders if this could be an opportunity for the developers to control the situation. Travis said that he has a meeting with SAHBA next week, and that he is convinced that developers will be the ones to make the change and take on the cost burdens of eradication, like Starr Pass Marriott. He agreed that developers are a good audience to inform.

Rich asked about the effectiveness of pulling buffleggrass and asked if it is necessary to remove all the roots. Travis said that the Sonoran Weedwackers have a grass class. He said that if there is dry ground, the roots would be left behind, but that it is still an effective tactic. He mentioned the concerns regarding buffleggrass removal such as the erosion on steep slopes, sensitive archaeology areas being disturbed, and possible injuries to volunteers.

Trevor suggested that they quantify the benefits of controlling the buffleggrass. Travis said that they are currently meeting with agricultural economists. Julio said that the amount of money that would be spent on buffleggrass is miniscule compared to other projects now underway (example: elephant enclosure). Julio believes the public needs to be better informed. He mentioned a news headline about a 1,500-acre fire north of Phoenix caused by a car going off the side of the road and the buffleggrass igniting. He

said the man burned to death. He impressed the point that these current fires have not been occurring during normal fire season. The 1,500-acre fire was in October. The Duval Mine fire was in February. Julio remembers commenting with Travis about the fuel load in May and June. He said that 700,000 acres burned this year compared to 20,000 acres in New Mexico. He said that many of his peers are becoming discouraged, and maybe its time to write editorials. He said the desert is dry and ready to burn 10 months of the year.

Ann commented that Sahuarita is expanding, and she wonders if documenting the situation in Mexico and comparing it to the situation in Arizona would rationalize the sprawl (example: telephone pole cladding). Ann said that it could induce fear and awareness so that action occurs.

Ann asked about the other invasive that should be taken care of along with buffleggrass so that they do not also reach this point. Julio responded that annuals are difficult to control. He said that the seed banks could sit for many years. He said that Sahara mustard dominates the creosote flats in the Barry M. Goldwater Range. He said that a 55,000-acre fire just burned in the area, and Julio believes that this has probably not occurred for more than 10,000 years.

Julio said that he and Tom Swetnam produced a paper called "Fire in El Niño and La Niña Years". He said that normally there is not much fire in these years, but that 700,000 acres burned in Arizona this year. He said that these heavily fueled ignition fronts cause big fires to sweep up the mountains.

Julio said that they have talked to several government groups and public groups to create awareness, and to find creative solutions. He said that in the eastern United States, the states spend tax money landscaping roadsides. He said that because Arizona is a desert, this cost has not burdened the state, but that perhaps it is time to issue such a cost.

Dennis asked whether it is an issue of lack of funds or is it the lack of attention by the community. Julio said that he was involved in the planning of the Starr Pass Marriott, and the negotiations regarding the biological corridors between Tumamoc Hill and the Tucson Mountains. He spoke to Chris Ansley (developer of Starr Pass) about an environmental enhancement fee, which involved Pima County. He said that there would be a room tax imposed, in which the County would collect. He said that the first ten years, 25 percent of the revenue would go to the County for enhancement of corridors, while 75 percent would go to the developer for the land involved in the biological corridors. Julio said that in the second ten years, 75 percent of the revenue would go to the County, and 25 percent would go to the developer. He said that since Starr Pass Marriott opened in January of 2005, \$25,000 per month has been collected. Julio said that he believes that most resorts would impose the same tax if they know the value of controlling buffleggrass.

Ann asks if an ad hoc committee has been formed to deal with the buffleggrass problem. Julio said that he would like an adequate support model to compare the costs and effectiveness.

Leslie said that this is a good time to incorporate this discussion into Avra Valley. She said there are immediate needs in Avra Valley, such as the Reservation Road area,

where structures are immediately threatened. She said she envisions this being an Avra Valley wide plan in which buffleggrass could be mapped in the City and plans to manage and eradicate the grass could be discussed. Leslie said that this topic was brought to the TAC committee because the City is looking into spraying the grass. She wants to know what the potential side effects could be, for example to invertebrates. She asked the group for feedback and concerns. She said she would like suggestions from experts so there can be a coordinated buffleggrass management effort in Avra Valley that will not result in negative consequences.

Trevor said he would like to see the material data and application techniques of the herbicide. Travis said that Glyphocide (Roundup) is the only herbicide that works. Travis said that the ingredients could be found on www.CDMS.net. Trevor said he is aware that the affects of Roundup on amphibians have been studied, but was not sure on the effect on invertebrates. Travis said that Jennifer Becker (Pima County) and Phil Rosen (U of A) have done the most research in this area, but that it is focused on amphibians because of the research in the West Branch of the Santa Cruz River. Travis said that he personally has not seen anything about effects on invertebrates. Trevor said that there are not frogs in the Avra Valley area, but that there are toads. Travis said that according to Phil Rosen, it is safe to spray at certain times of the year.

Leslie said that Reservation Road could be a test area since no washes cross it, and there are few mesquites so that habitat value is low compared to other properties. Trevor asked what the land was like in the past. Harold said that it was an open range. He said that currently it is fenced and cattle are excluded. Trevor said he believes that if the area was previously tilled that the invertebrate community has probably been wiped out, but he would like to hear Phil's opinion on spraying. Trevor said that an Environmental Impact Statement (EIS) or an Environmental Assessment (EA) should be done in order to spray on any federal lands. Julio said that Danielle Foster is spraying in Saguaro National Park East. Trevor said that at one time the Forest Service and BLM did a vegetation control EIS nationwide, so this may be why Saguaro Park is able to spray. Leslie agreed that the issue of spraying should be discussed in the EIS.

Rich acknowledged that there are several tiers of concern. He said that one of these concerns is the risk of legal issues. He said that once there is a suit, that ADOT would get very active. Rich asked if there are any priority areas that should be dealt with like Picacho Peak, Ironwood National Monument, or Saguaro National Park that will not be covered by ADOT.

Julio mentioned that there is not yet a good model for determining how much rain is needed for buffleggrass to grow. He said that the window of opportunity for spraying is brief and unpredictable, and if that window for spraying is missed the buffleggrass population could double. He said that a large swat crew needs to be mobilized, like the invasive species management swat team for the National Park Service for. Leslie said that this is what Avra Valley will essentially have. She said that Harold will have trucks, and that Tucson Audubon Society will be on the property to identify any high risk areas so that there can be quick response. Julio said that this is the first city experiment with dealing with buffleggrass. He said that it would be good to evaluate the costs and effects, and transfer the methods across the City.

Harold said they have just bought two Tandum Trailers with 1,000-gallon tanks, 18-foot spray bars, and a wand. He said that as soon as they coordinate with the Tucson

Audubon Society and Travis, that they would be ready to spray in March/April. Trevor said that Avra Valley would need to have a dozen certified applicators in six trucks in the near future. Julio said that he is on the committee at Starr Pass, which makes decisions on the revenue coming from the environmental fee.

Ann asked if this Avra Valley effort could be a nexus. She said it could be an experimental ground for the County or State to eventually use. She said that it could be well documented, and then the press could be informed. Harold said that he would like to get the plan implemented before anything is done. Leslie said that soon there would be baseline information to use since Phil is currently looking at the plant composition, invertebrates and mammals in Avra Valley. She said that this could be a test site that can be sprayed, post-application survey work could be done, and then the impacts assessed.

Julio said that the Spatial Domain for Decision Support System Models is Avra Valley to the Santa Cruz River so he encourages this opportunity for testing, and he said it could be a good opportunity to sell this method for larger efforts across the City. Trevor suggested that Bruce Eiverts (Chuck Barkley's boss) be involved to spread influence across the state. Ann asked that Julio, Travis, and Leslie be part of an ad hoc committee. They accepted.

Leslie said that the City is in the process of developing an Urban Landscape Management Plan in which they are looking at landscaping amenities. She said that they could ask Irene Ogata (City of Tucson – Planning) about how they are dealing with invasive species. Travis said that the City's contractors are already spraying; however, they are spraying at the wrong time and their efforts are ineffective and wasteful.

Ann said that all volunteer groups should be organized to create a comprehensive effort. Travis noted that buffleggrass could be pulled at anytime of year. Julio said that Marilyn Hanson (Arizona Native Plant Society) is very effective at reaching volunteers. Harold said that the next window for spraying is in February/March. Leslie said that they needed to figure out the logistics of test spraying before February. She said that Rodeo could be used in the sensitive areas. She said that the wash she mentioned leads to a drainage ditch with permanent water and asks how much buffer should there be around the wash. Leslie pointed out that the test property would be sprayed with 4.5 sections as the minimum. Harold said that the water drains from the south and is probably runoff from agricultural fields. Leslie said that they should not assume that there are already pesticides running through the wash. Harold said that the testing would be done south of Manville Road and both east and west of Reservation Road, which is all heavily infested with buffleggrass. He said he would like to look at the areas north of Manville Road again before there is spraying in that area. Harold commented that they have not yet laid down native seed. Trevor reminded the committee that there should be three years of repeated spraying to get rid of the seed bank.

Guy said that there would be undesirable consequences. He said that spraying would kill native species of invertebrates that we don't even know exist. He said that entomologists are still challenged by species that are not yet classified. Guy realizes that there could be more severe consequences if buffleggrass is not sprayed, but that these issues will surface and appropriate responses should be developed. He mentioned Carl Olson as an expert entomologist. Ries said that at the minimum, specific information about the herbicides, including information on the label and

information about the contractors doing the applications should be provided. Julio said that Bill Lacosky (Agriculture Extension at the U of A) is a local expert on herbicides. He said that he would contact Bill and then connect him with the City HCP. Paul Baker (Pesticide Coordinator Office) is another good contact.

Leslie presented a map, "Avra Valley Land Conservation Priorities Map 1 – Northern Avra Valley" and pointed out where the test spraying would be. Trevor said that it would be good to bring the County into this discussion because of their interest in Brawley Wash, and that it would also be a good idea to include the BLM as well. Harold said that the private properties do not have a lot of buffleggrass. He said that there is a lot of bare ground with creosote.

Trevor asked how well the Arizona native vegetation competes with the buffleggrass. Travis said that tanglehead and sideoats grama compete well. Perhaps tabosa and bush muhly would be good competitors as well; however, Travis impressed the point that it would not be good to let those grasses become too thick either. Trevor said that Gary Maskarinec (with the seed company, Wildlands Restoration) might be a good contact for understanding seed germination techniques and timing. Trevor said that it could be a good time to study the effectiveness of seeding. Harold said that there is a seed mix already available. Travis warned that it is important to get rid of the buffleggrass seed bank before seeding because most plants will be killed by the herbicide.

Trevor asked about the liability for dust control and erosion problems if areas are sprayed for three years. Travis said that the mounds of grass would remain and keep the soil in place even when dead. He said that the grass would still be flammable at this stage, so it may be a good idea to mow it after it is dead, and then the stems could be mulch as well. Ann suggested that several different trial areas be experimented on.

Harold pointed out a long narrow property privately owned by Greg Breton is surrounded by buffleggrass. He asked that there be a firebreak around existing structures on the property. Trevor asked if the City ever might ever buy out those private lands. Harold said he is not aware of any effort on the City's part to purchase private lands for this reason. Leslie said that because the potential testing area is full of buffleggrass, and the area is already degraded, it is perfect for doing tests. She thinks that maybe the County would help support the surveying and monitoring of the area before and after treatments.

Michael asked Travis if he has contacted Tucson Electric Power (TEP). Travis said that TEP already distributes their buffleggrass brochures. He said that TEP is already involved with the Urban Landscape Committee, but feels that until power poles burn they won't be very involved.

b. Avra Valley Conservation Strategies

Leslie passed out copies of the yellow-billed cuckoo species account. She said that it is organized similar to all the previous species accounts. Leslie noted that originally the habitat model for the YBC was solely along the floodway of the Santa Cruz River, but since then, the committee has discussed areas along Brawley Wash being included as an important corridor. She said that this has not yet been mapped.

Leslie said that Brawley Wash is very constrained and restricted to narrow areas, so she wonders if the floodplain will well represent habitat in Avra Valley. Ann said that

floodplains would be more representative of the mesquite bosques that YBC require than the narrow corridor. Leslie noted that much of the agricultural fields in Marana are included in the mapped floodplain. Trevor said that mesquite bosque grow in floodplains, not floodways. Leslie said that the maps are not revised to reflect drainage patterns. Leslie said that Brian Wooldridge (USFWS) and Troy Cromon (USFWS) could be contacted to see if they would be comfortable using the boundaries of the floodplains as potential habitat. Trevor said that Pima County has also mapped vegetation, which could be reviewed to better understand the flood areas. Trevor asked about all the vegetation that he could see on the aerials around the SAVSARP properties. Leslie said that it is grass. Harold agreed that it is grass. Harold said that in the past it was agriculture, which could affect the drainage.

Leslie said that the matrices have been reworked for Avra Valley, which will be helpful to work off of while each of the six species for Avra Valley are discussed. Leslie said that this would be the first time that the committee has talked about the yellow-billed cuckoo, the Tucson shovel-nosed snake, and the ground snake. She said that the habitats for the two snakes are described as "general" in the matrix because different types of habitat were not distinguished for these species.

Leslie said she received very preliminary notes from Phil and would email the notes out to the TAC. She said Phil doesn't discuss specific properties, but he does take an expansive view on socio-cultural issues and landscape ecology issues. She said that no small mammal or arthropod survey results are complete, but general conclusions have been made about the diversity of burrowing mammals and invertebrates. She said that no snake sampling has been done. Leslie said that Phil's concerns have been about the wildcat developments in Avra Valley. Leslie said that Phil is also concerned with the modifications that have occurred to the Brawley Wash drainage where some of the floodplain is now only a narrow channel, which has a huge impact on how much the land has regenerated over time and how it will regenerate in the future. Ann asked if the wildcat developments are causing the modifications. Leslie said that it was mostly agricultural impacts from the past. She commented that there has been so much development across the entire area that it would be difficult to reestablish the natural flow of the wash.

Ann said that State Trust lands are a key element for the HCP. She suggested that a contiguous management across Avra Valley including State, County, City, and other jurisdictions be done. Ann said that maybe land swaps could occur between the City and the State to protect the area around Brawley Wash. Trevor asked if there was a map showing where Brawley Wash is constrained, and also where the wildcat sites are. Leslie said there are 2002 orthos that show these areas. Leslie said she has a 2-part set of maps of Avra Valley and shows land ownership and Pima County acquisition priorities. She also has a six part ortho map series that shows the City properties and somewhat of the surrounding area, along Pima County priority acquisition areas. Leslie said that USFWS would like to have a hard-line approach to conservation in these areas; she said she thinks this would help Tucson Water too, so that they know where there are sensitive areas, and which areas have more flexibility for development.

Leslie said she would like to look at the areas that need to be included as a conservation reserve system. Trevor asked if the U.S. Bureau of Reclamation (BOR) would ever sell or develop their Avra Valley lands, and discussed if the protected area around CAP could be considered part of the reserve areas. Leslie pointed out the mitigation site,

which is a linkage between Tucson Mountain Park and the Tohono O'Odham Nation. Ann pointed out State Trust land with riparian areas in it, which lies next to Ironwood National Monument. She suggested trading with State Trust land for this area. Leslie said that the City could not trade directly with ASLD. She said that there has to be a third party that would buy the State Trust land, and then trade it with the City. Leslie said that the City would not sell land unless they can extinguish the water rights to them. The committee discussed annexation possibilities. Leslie said that Marana has an ultimate growth boundary, but the Town of Marana has a limited ability to annex additional land because they cannot provide assured water supply for much more area.

Leslie pointed to an area in Marana that will soon be on the ASLD disposition list and has a Conceptual Land Use plan in development. Trevor discussed Habitat Priority Areas for Pima County and the City. Leslie said that she does not think that the Avra Valley area will be a priority for conceptual land use for many decades. Leslie said she would like to consider the installation of another ecoduct over the CAP canal. She pointed to the area that the ecoduct would be important to create an east-west corridor from Ironwood National Monument across Pima County land, BOR lands to Saguaro National Park, and would include a portion of Brawley Wash. She said that this corridor would also avoid the existing recharge basins.

Trevor asked for a map that would show where the CAP goes underground. Harold said that there is an existing map. Trevor said he would also like to see the culverts on existing roads in the area. Harold said that Sandario Road is the only paved road. Mile Wide Road is paved just south of the City-owned properties. Harold mentioned that State Trust land would not be an issue right now. He said it would be 50-60 years before they do any dispositions.

Rich asked if a map showing the wildcat development in the east-west connection area could be created. Trevor said that the lands could be acquired by Pima County if they are in the floodplain. Leslie said she could talk to Julia about the connections in this area and possible acquisition opportunities. She said that the Tribe owns some of the properties, with no way to acquire them. Leslie said that Julia has the ownerships mapped.

Trevor pointed to some old agricultural lands (Garcia strip) and drainages. He commented that these areas would be more permeable than subdivisions. Leslie said the goal is to hard-line areas that identify habitat priorities such as critical linkages. She said that, for example, the washes could be delineated for CFPO. Rich commented that in the last meeting it was determined that the pygmy owls were jumping from wash to wash, so it is important to establish movement corridors especially between recovery areas and population centers like Ironwood National Monument and northwest Tucson, which may not be aligned with the washes. Leslie said that the pale Townsend's big-eared bat uses the edge washes to forage and the yellow-billed cuckoo uses riparian habitat. She said that the ground snakes and shovel-nosed snakes might be problematic. She noted that Phil has said that there is one area of land with habitat along Avra Valley for the Tucson shovel-nosed snake. Leslie explained that the only thing that has been suggested so far is to delineate the washes as conservation priorities. She said that if they delineate the washes, look at the east-west connections between Ironwood National Monument and Saguaro National Park, take a closer look at the Blanco Wash for the ground snake, and look at the area in Avra Valley which Phil said is suitable for Tucson shovel-nosed snake, then it will be easier to look at the larger

picture. She asked the committee if this was a good next step. Leslie said that the snakes would probably have to be dealt with through the coordinated efforts of the City, County, and Marana. Trevor asked if agricultural lands could be considered habitat for the snakes. Leslie said that Phil is looking at all of the Avra Valley properties to determine suitability for the snakes.

Ann asked if there should be buffer around the washes. Leslie said that buffers would require interpretation, so it would be better to wait until they are delineated. Leslie was specifically asking for conservation suggestions that a GIS person could digitize without having to interpret or guess what needed to be captured. The committee discussed sheet flow in the area. Trevor said that it could be where historical channels were, but that the area probably shifts every decade. Trevor said he would like to see more than one east-west connection to consider. Leslie said that it would be good to see where potential corridors could cross the CAP before discussing other connections. Trevor said that the CAP would not affect birds and bats.

Leslie noted that SAVSARP is in Section 7 consultation, so it is not part of the HCP. Harold said that areas are reserved for potential desalination or recharge areas. These reserve areas will not be determined until the City sees which way development will go as far as water quality is concerned.

Leslie said that 10,000 acres or more might be required to meet all goals outlined in Tucson Water's long-range plan. She said that Sherry Barrett wants sensitive areas identified, especially washes and other areas necessary to maintain connectivity. Leslie said that Tucson Water wants to avoid putting basins in washes. Leslie feels that there is a lot of opportunity in the Avra Valley. She said many degraded areas could be restored. Trevor said he would like to see more acquisitions to protect surrounding areas. Trevor said that it would do no good to protect the washes and corridors if there are little developments that pop up in-between. Leslie said that Pima County has more leverage on this because most of their land is mapped as riparian area, which will allow no more than 20 percent of the land developed, and in many cases no more than 5 percent.

4) Call to the public

No members of the public were present.

5) Next steps/Future Meetings

Leslie said that the TAC would continue discussing Avra Valley at the next meeting. The TAC requested the City provide maps that show a close up of the east-west corridor with an ortho layer showing areas that have already been developed. The committee also requested the map showing the first iteration of the reserve design that shows riparian habitat.