

Southeast Arizona Citizens' Forum Board Meeting
Aug. 30, 2005
Bisbee City Hall
Bisbee, AZ
Tentative Meeting Notes*

Board Members in Attendance:

Russ McConnell
Ben LaForge
John Ladd
Alejandro Barcenas
Brian Prescott
Terry Sprouse
Ben Lomeli
John Hays

Members of the Public:

Bisbee Mayor Ron Oertle gave opening remarks.
Margaret Franzen
Dutch Nagle, Friends of the San Pedro River
U of A student
Ann Phillips, Friends of the Santa Cruz River
U of A student
Anne Browning-Aiken, University of Arizona
Linda Stitzer, ADWR
Cado Daily, University of Arizona/Waterwise
Bob Strain, City of Sierra Vista, Upper San Pedro Partnership
Jim Leenhouts, USGS
Barbara Gerhart, Moyes Story Law Offices
Gus Nelson
Edna St. Clair
Dan Moore, BLM
Bob Sejkora, AZ State Parks
Peter Young, Bisbee resident
Bill Hess, Sierra Vista Herald

USIBWC Staff:

John Light
Sally Spener

MxIBWC Staff:

Ing. Jesus Quintanar, MxIBWC

Recent Stress and Die-Off of Riparian Trees

Ann Phillips, Friends of the SC River, gave a presentation on this topic.

An ad hoc committee has been formed to look at the die-off issue. Barron Orr and Stuart Marsh of the University of Arizona do remote sensing and are interested in partnering to research the situation.

She showed slides of the riparian corridor, which is effluent dominated. The slides showed that there are stressed and dead trees which she identified as cottonwood, willow, ash, seep willow, and mesquite. Some of the stress is right on the river and some is off the river. Friends of the Santa Cruz did an overflight in June to take photos and the tree stress/die-off was very apparent then. In the area near Rio Rico Drive and the river, the University of Arizona has done remote sensing every two weeks over the last five years to look at patterns of green vegetation versus areas without green vegetation. They compared a specific date to the average greenness for that month over five years.

For the period of March 2005 through July 2005, there was progressive pattern of reduction in green vegetation, which appears to be an extreme pattern compared to the last five years. This finding corroborates what's been seen on the ground.

The stress/die-off is occurring near Hwy 82 and on some of the tributaries coming into the Santa Cruz River. The ad hoc group came up with a list of potential causes, including: plant pathology (insect) but subsequent inspection did not find an insect infestation; Texas root rot, which was present during the cotton farming period in Santa Cruz County. Cottonwood, ash, and sycamore are very susceptible to Texas root rot but some of the other affected species are tolerant; trees could be old and, as a result, dying. Other possible reasons for this were declines in shallow ground water which raises the question of whether there is well pumping underway that could affect it.

Board Member Alejandro Barcenas of ADWR commented that the Department took some measurements on some wells and we could not find any big change other than the natural fluctuation of the water table during the dry season. In the areas where the trees were dying, the water was 30 feet deep. So we could not find a close association between the water tables going down. Except for one well where there was a decline going on over five years.

Ann Phillips continued, noting that an algal mat tends to form in river beds downstream of wastewater treatment plants. That algal mat is supported by nutrients released from the plant. The more it grows, it plugs the sand so less effluent seeps and more of it goes farther downstream. Usually large floods break up the biomass/algal mat. The last flood was October 2000 and it didn't break up much.

Board Member John Hays observed that on Aug. 13, about 4,000 cfs came from Sonoita Creek into the Santa Cruz River and the following Tuesday morning, they got calls about why the river was all of a sudden dry. The river flow was then sinking straight into the sand.

Ann Phillips continued. Another question is why one tree is green but the next one may be dead. Another possibility is water quality impacts such as contaminants getting into the river from Nogales Wash, or a sulfuric acid spill or other contaminant making it through the wastewater treatment plant and into the river.

Board Member Ben Lomeli commented that he has been noticing die-offs for 3-5 years but had never had a grasp of the extent until doing the aerial survey. There are trees right next to

each other with one in perfect health and another dead for some time. With water level declines, usually the higher stuff dies first before things closer to the river/water table but that wasn't the case. We have die-off areas in some areas in the tributaries, upstream of the treatment plant. From the patterns I saw, there were hot spots. Perhaps contamination in the groundwater itself or the surface flow affecting the trees. Some of the die-off areas exhibited a plume type pattern. Some trees were starting to come back and get leaves in late June. But we don't have an answer at this point and we want to see regionally if this is going on in other riparian corridors.

Ann Phillips explained that our next steps are to get permission from major landowners, to get into the sites, GPS the perimeter of the die-off areas to look for signs of insect damage or Texas root rot. For Texas root rot, you need a professional to sample for that. There could be different reasons in different parts of the river. Many interested parties are involved in this. We are photographing the same area this Saturday to see if the monsoon made a difference. We also want to see if it is going on in other areas.

Ben Lomeli commented that the Friends of the Santa Cruz may seek grant funds for the effort.

Ann Phillips noted that there has been some history of this in Santa Cruz County and perhaps in the Gila River they have seen some tree die-off this year.

There followed some discussion. Possible other causes that were suggested were industrial contamination, agricultural spraying, salts released into the root zones of the plants, illegal dumping, and insects. Multiple risk factors combined could also be the cause.

First Observed Zero Flow in the San Pedro River at the Charleston Gage

Jim Leenhouts USGS, gave this presentation. The Charleston Gaging Station is a USGS stream flow gage with a record going back to 1904 and a continuous record from 1935 to the present. It's one of the better records in the country. It's at a site that had been considered perennial in that it never dries up. On July 6, we recorded first ever zero flow at the gaging station, which lasted about ten days. They also walked the channel to make observations. They are monitoring nearby springs and inspecting streamflow records. Where Charleston Road crosses the San Pedro River is where the station is. Mean June flow at Charleston is 12 cfs.

Variety of possible contributing factors to the zero flow include historic and current groundwater pumping, changes in climate such as short-term drought and longer term trends toward reduced stream flow, changes in the riparian system, hydrogeologic system around the gage has changed.

A big question is the impact on the river of the beavers. We know that while a beaver pond is filling up, there is a reduction of flow downstream. But after it fills, it can have a buffer effect.

There was some ponding in the areas where flow had stopped. The river continued to flow upstream of the Charleston Gage. The summer baseline value has been dropping fairly steadily over the period of record. Winter flow is trending downward to a much lesser extent. Groundwater pumping may also be a factor. The Palominas gaging station has had numerous times of zero flow since the 1950s due to adjacent pumping as a clear cause. Declines at Palominas are related to low flow upstream at Charleston.

In 2005, the monsoon came late – not until July 17 at Charleston. Trees also affect flow. Flow goes down when the trees are not dormant (spring/summer) so there's more flow in winter.

In the winter, it is considered a gaining stream but in the summer, flow declines downstream of Charleston.

Monitoring wells at Ft. Huachuca show declines over the ten-year period of record which is likely due to pumping. About 5% of the water that the aquifer contributes to flow at the gage has been reduced, declines of about three feet over ten years.

At Lewis Springs near Hwy 90, water levels were coming up over ten years for unknown reasons, perhaps slow moving recharge from previous flows. Groundwater levels vary considerably at the intermittent gaging station sites along the San Pedro.

An analysis of isotopes, which indicates where the water comes from, shows that there is no trend of significance so you cannot tell what the water source is that's being lost.

Long-term data at Palominas shows significant declines since 1950 and a possible decline of flow from the regional system of 5% based on data from Ft. Huachuca wells. They are also re-evaluating the hydrogeology. In summary, the riparian system has changed in terms of vegetation/evapotranspiration. Pumping has changed in location and amount. Flood flows and total flows have declined over the period of record. Recent years have generally been drought years. Monsoon of 2005 was the second latest on record. The zero flow is likely due to a variety of factors.

Following the formal presentation, there was quite a bit of discussion and questions. Water flows from Mexico have an effect on the river but it is unknown if anything is going on in Mexico that could have impacted flow at Charleston gage. Someone suggested that copper production in Cananea could have an impact. It was commented that some nearby wells in Cochise County have gone dry, which could also be related to the cone of depression around Sierra Vista.

Ben Lomeli commented that when he worked for BLM, they conducted research ten years ago and predicted that the river would go dry in ten years; he also noted that the aerial extent of the cone of depression over time could have an effect. Other considerations included climate change/change in storm patterns, increased vegetation/evapotranspiration. There was also discussion of a containment area to hold flood flows to bolster the aquifer but others noted that there were legal and environmental reasons for not doing so.

Sulfuric Acid Spill in the Santa Cruz River

Board Member John Hays gave a briefing about a sulfuric acid spill in the Santa Cruz River in Mexico. It occurred Aug. 11, 2005, 3:00 p.m. local time. 11 rail cars derailed, all 11 with sulfuric acid; 2 of them spilled. It occurred 23 miles upstream of the border, about 50 feet from the Santa Cruz River. The average capacity of each tank is about 14,000 gallons. Over 20,000 gallons spilled. Mexico used soda ash to neutralize it. Approx 6,000 gallons reached the Santa Cruz River. The spill occurred during a monsoon flow. He showed photos of the spill. We were contacted by Mexico and the binational plan was activated which allows us to send personnel across the border to assist. County and city crews started constructing three dikes at the river and they had soda ash ready to use when the acid arrived in Arizona. By 1:30 a.m. they started detecting acid in the river. They put lime in to neutralize the acid, which was effective. Participating agencies included City of Nogales, Santa Cruz County, Mexican agencies, state agencies, fire districts, federal agencies. and private agencies such as the US railroad. In summary, there was pretty good cooperation and coordination. They learned lessons for the

binational plan.

Board Member Alejandro Barcenas was also on the response team. He observed that one problem was that initially there was lack of information about the precise location of the incident. One of the things we learned is that we didn't have all of the tools needed like maps. There were also problems with radio communication. The other concern related to notifying people who use well water. The ADWR records show the owner of the property and well but many times the owner is not the same as the user and contact information was not available for the user. So we gave the records to the Sheriff's Dept and advised them to go door to door to advise the water users due to concern about shallow wells near the river being contaminated.

Board Member LaForge observed that IBWC can foster binational cooperation to address such issues. He suggested that it might have been helpful for US helicopters to be available for aerial reconnaissance.

John Light commented that initially the emergency responders did not notify IBWC or John Hays of Santa Cruz County. We've had some discussions with emergency responders informing them of what assistance IBWC can bring to bear such as facilitating crossing of US emergency responders into Mexico. We have informed them that we are there as a resource for them and it's within our jurisdiction.

There was additional discussion that with the local soil composition, acids are neutralized pretty quickly. There was no information about possible resulting fish kill. Significant water flow was reported at the border the following day which further neutralized the impact. The county and city picked up the initial cost of responding and declared an emergency to get help from the federal government to pay for the work that was done.

Public Comment

Margaret Franzen advised that Cochise County Supervisor and Citizens' Forum Board Member Paul Newman had recently undergone surgery in Tucson and would be released from the hospital soon. She has been following development of the Bisbee wastewater project and is concerned that there was not as much public input as she had hoped on the decision to use the effluent to help the San Pedro River. Based on today's discussion, there is a definite impact upon the river when the wastewater effluent goes down Greenbush Draw and into the river, she stated. Effluent has both positive and negative impacts. She would like any information about the impact of wastewater effluent to be shared with City of Bisbee representatives.

Board Discussion

Board Member LaForge suggested that the Corps of Engineers and the IBWC be engaged to look into issues in the US and Mexico that could help to identify a problem impacting the San Pedro River.

Board Member John Ladd expressed concern about the impact of new housing developments on water resources, such as wells and the river.

Suggested Future Agenda Items

Next meeting to be held Nov. 29 in Santa Cruz County.

Ms. Franzen suggested a presentation about cooperation between Nogales, Arizona and

Nogales, Sonora regarding wastewater treatment plants noting that this approach has not been touched on in Cochise County especially in Naco.

Ben Lomeli suggested the upgrade in the Nogales International Wastewater Treatment Plant.

John Hays suggested upgrade of the sewer lines.

Russ McConnell - Last time we were in Santa Cruz County, I thought you suggested that someone from the USIBWC leadership come to the next meeting

John Light - We are looking to have a Principal Engineer or the Acting Commissioner come to the next meeting.

*Meeting notes are tentative and summarize in draft the contents and discussion of Citizen's Forum Meetings. While these notes are intended to provide a general overview of Citizen's Forum Meetings, they may not necessarily be accurate or complete, and may not be representative of USIBWC policy or positions.