Date: Thurs Time: 1:30-3:30pm Session: Riparian Area Management
Moderator: John Clement Note-taker: Liz Johnston
Notes From Discussion:

1. Susan Chadwick: Is the traditional vision of local and urban flood control agencies in conflict with federal and state agencies charged with protection of riparian zones?
    - Buffalo Bayou has "room to move", space exists for riparian dynamics.
    - Golf Course improvements do not use BMPs for riparian zones.
    - Regrading/removal of vegetation have caused erosion problems.
    - Flood control means conveying stormwater as quickly as possible.
    - Widening/deepening channels, removal woody vegetation, concrete channels. Typical Flood control methods.
    - The above is in conflict with riparian protection requirements.
    - Suggests that riparian corridors should fit the definition of wetland.
    - What is resolution to mission conflict between flood control and riparian buffer protection.
    - Question: What were you doing before this? Answer: Living in France working as journalist.
    - Q: Wholistic versus linear thinking conflicts. Are there other examples of this conflict elsewhere that we can look at for possible answers? A:Not have the chance to hear everything out there yet.
    - Q: What was going on w/ the golf course? A: Improving it, etc.
    - Q: Is flood control project yet permitted by USACE? A: Not permitted yet. Under public comment now.
    - Q: Are alternatives available to fix it? A: River can just be river.
    - Q: Who is the presumed beneficiary of the flood control improvements? A: Don't know who the presumed beneficiary will be, but there is a park downstream. Also: Country Club is paying 1/3 of project.
2. Megan Bean: Riparian Restoration Projects on Public and Private Lands in the Llano River Watershed.
    - Collaboration between divisions at TPWD is starting to occur, rather than being two separate groups with different goals.
    - Need to wholistically solve problems with interdivision collaboration – Guadalupe Bass Restoration Initiative
    - Pipeline burn during extreme drought provided opportunity give landowners BMPs for restoration.
    - Workshop for landowners including a field demonstration site (wind breaks, mulching, other examples).
    - General outreach/education about riparian zones functions, species functions, etc.
    - South Llano Paddling Trail.
    - With private partnerships, be respectful of landowners. Not usually good opportunities for public outreach on private lands. Other areas should be used for that.

- S Llano River State Park. Need bridges and culverts that are aquatic friendly for mussels, etc.
- Restoration objectives: water quality, upland areas, watershed connectivity, sediment balance, habitat, invasive species mgmt..
- Grass restoration: brush mgmt., reseeding, grazing mgmt. Lots of discussion w/ landowners. Goats outnumber people some areas.
- Can't completely change mentality, but change perspective to be more wholistically manage property.
- Riparian restoration: Plantings for diversity for recruitment. Alternative water.
- Restoration: Can't get rid of sediment without working on uplands first. Erosion from fire was extensive. Outreach w/ landowners – a lot of misinformation/poor understanding of effective restoration techniques evident. (rip rap, trash bags with leaves, etc.)
- Fencing off spring was effective.
- Q: What was the problem with bridge at park? A: Culverts formed pinch points where sediment drops out. Make bridge invisible to river. Use span bridge, etc.
- Q: How to make connections with landowners? A: Collaboration w/ wildlife division has been invaluable.

3. Stan Wilson: Implementing adaptive management and Maintenance within restrictive commodity based budges.
    - Municipalities often do not have adaptive specifications. Tend to be more boiler plate. Nature isn't boiler plate.
    - Disc golf: Often in flood plains.
    - Traditional approaches: Low bid contracts. Boilerplate specs, deliverable to municipal accounting depts. Performed under site work contractors. Maintenance guidelines narrowed and fixed. Reduce irrigation.
    - Need to adjust: Vegetative response may not happen as planned. Reduce irrigation. Forestry approach. Utilize passive restoration.
    - Changing conditions: Floods, invasives dominate different years, neighbor input (some people want to keep bamboo, for ex).
    - How to get to adaptive management contracts? Stakeholder input from restoration professionals and other potential bidders. Pilot project (Oak Springs). Blanket bid solicitation.
    - Benefits: Rapid response, faster project tracks, reduce water needs, WPD control through process, open dialog to communicate, can use knowledgeable professionals not low-bid.
    - Ex: Oak Springs. Wetland restoration. Identification of wrong species installed.
    - Ex: Shoal Creek Peninsula. Responded very quickly to flood. Shut down irrigation system. Put in riprap, soil, turf reinforcement matting.
    - Maplewood: Bamboo removal/management. Taking forestry approach and planting seedlings/saplings. Hope to not need chemicals but may need later.

- Auditorium Shores Restoration: Very compacted, former dog park, very public.
- Zilker disc golf in flood plain. Need to catch water from street and disc fairways. Seeding fairways w/ xeric turf mix. To be determined.
- Dottie Jordan Park: rain garden installed off of existing parking.
- Maintenance: Start early and often. Monitor irrigation if used. IPM, by hand/mechanical whenever possible, Seedling cares – don't waste time with fussy ones. Use vigorous seedlings. Photo points. Monitoring. Etc.
- Q: How long are maintenance contracts beginning to end? A: usually 1 year, but sometimes 2-3 years. Also can have contract for maintaining projects for 3-6 years.

4. Mark Simmons: Riparian Restoration of the Mission Reach, San Antonio, Challenges of Ecological Design and Installation.
    - Showed video of recent restoration of river w/ riffles, herbaceous, woody, etc.
    - Fire controlled
    - Projects are somewhere before Restoring to a target and generating an ecological system.
    - Other examples: Mueller blackland prairie, G W Bush presidential library prairie.
    - The previous USACE channelization turned sinuous river into straightened trapezoidal ditch with Bermuda and johnsongrass.
    - Goal was to bring back habitat along w/ floodcontrol needs.
    - Constraints: ROW, Wildlife value, hydraulic density
    - Woody species: Looked at wildlife values for possible woodies.
    - Looked at target sites with different plant communities to mimic.
    - Had to justify everything based on literature to Corps.
    - Can dictate type of species based on where they will be located on the bend of the river. (example: deposition areas have opportunistic woodies)
    - All trees mapped in GIS – woody species further out, pilot channel more herbaceous. Drip irrigation was used.
    - Two years after herbaceous, adding trees to the communities.
    - Riparian systems must be relied upon in the very populated, dense future.
    - Trinity River in Dallas area: Goal is to add prairie, trees, habitat. Will help revitalize economically the areas. Makes financial sense for developers.
    - Q: Specific performance metrics? Biodiversity is a weak metric. Pollinator habitat, carbon sequestration, ozone absorption, clean air, clean water, human health & well-being.
    - Q: Were there cliffs/bluffs on san Antonio river? A: Yes. River was moving, cutting, depositing, etc.
    - Q: Selection to native species in light of potential climate change? A: Even native species are resilient to drought. Establishes and can go without water. Can use hill country species in other areas if appropriate, for example. Can trust flora quite well. Climate is already harsh. Probably pre-adapted already.

- Q: Why not trees on the channel? A: Can do it, but must account for it for flood control. Definitely can do it.
- Q: Irrigation? Success without establishment? A: Always use irrigation for establishment. 96% chance of failure without irrigation (he wants temporary irrigation).

5. General Discussion
    - Q to Mark Simmons: Were you involved in stakeholder process? A: Yes, loves the stakeholder process. Explain from the get-go what riparian restorations are and what they can do.
    - A: Stan Wilson: Neighbors are concerned and ask questions. Take the long view. Reach out and communicate/educate when can. Interpretive signage important.
    - Q: Philosophically/practical views about how the landscapes will change over time given invasive species?
    - A: M Simmons: Do things right up front w/ soil/maintenance, you are less likely to open up ecological niche. Can be realistic and anticipate events now and budget them, plan for them, etc.
    - A: S Wilson: From contractors perspective, they don't take lead on design, but can give opinions and communicate what they've seen based on field conditions.
    - A: M Bean: With private lands it's harder to anticipate because it can be on a case by case basis. Learn from mistakes, but can be hard to anticipate armadillos eating seedlings, for example.
    - Q: What is the overall stream function goal of San Antonio mission project? A: Habitat restoration. Would not restore to historic condition. Wanted fish, invertebrates, birds, etc. but not historic condition.
    - Q: What is reasonable to expect in urban restoration? A: M Simmons – Wants to see some former species represented and rebounding. A: S Wilson – leans on client to provide hard data. Stabilization, erosion control, biodiversity, vitality throughout year, eliminate invasives if possible. Goals of contractor soft and anecdotal. A: M Bean – depends on the scope and scale of the project. A: M Simmons – baseline survey helps showing what animals exist before and after.
    - Q: If not possible to restore back to original condition, isn't it more important to preserve undisturbed areas before they are disturbed? A: M Simmons – May need to use some developments to make them better than they would have. A: S Wilson – if the project is a done deal, try to make better than it would have been.
    - Philosophically: Humans are part of the system ourselves.
    - Q: Are there formal assessments of projects based on criteria? A: M Simmons – Much rather try and see what happens than doing nothing. WPD does good job monitoring. Monitoring has to be built in to the project. A: S Wilson – Over time during maintenance the monitoring can happen. Nothing happening in the 1-2 year time frame, but hopefully up to 3-6 years we can monitor if contacted. Photo points, time lapse. Punts to WPD to get into meat. A: M Bean – TPWD has monitoring assessments built in. The

landowner will be held to the 1 year contract, but they are not legally required to do more monitoring after the contract ends. A: J Clement – WPD has EII sampling, functional assessment to measure riparian health, stream functional assessment when floodplain modifications are proposed.

- Q: Why not a meta-analysis on the projects? A J Clement – opportunities for restoration projects not always in same place as the monitoring locations.
- Q: How does groundwater respond to riparian restoration projects? Does baseflow come back, etc? Any time infiltration can occur, groundwater should be positively impacted. A: Might be reduced evapotranspiration than infiltration in hill country.