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**(k) The initial recommendations of the Edwards Aquifer area expert science subcommittee must be completed and submitted to the steering committee and other stakeholders not later than December 31, 2008, and should include an evaluation:**

**(1) of the option of designating a separate San Marcos pool, of how such a designation would affect existing pools, and of the need for an additional well to measure the San Marcos pool, if designated;**

- **(REPORT)** Get the report and presentation from EAA on their study of the San Marcos Pool.
- **(SPEAKER)** Have Kreitler discuss what his Refugia study suggested about the San Marcos Pool.
- **(REPORTS)** Get a review of what past Edwards conceptualizations suggest about the hydrogeology of San Marcos Springs.
- **(SPEAKER)** Get Rick Lindgren to discuss how the MODFLOW model incorporates San Marcos Springs.
- **(REPORTS)** See how precipitation and water levels in various wells relate to flow in San Marcos Springs.
- **(SPEAKER)** Get Sue Horvorka with BEG to discuss the work she has done on the structure of the aquifer to help determine if there is a structural reason for the pool to be separated.
- **(SPEAKER)** Get Eddie Collins with BEG to discuss the recent mapping in the New Braunfels and San Marcos/Wimberley areas to determine if there is a lithologic (i.e. hydrologic) barrier that would support the separate pool concept.
- **(REPORT)** If possible, get a copy of Albert Ogden's report on dye tracing in San Marcos springs to determine if there is support for separate sources of flow for various springs in the San Marcos spring run. Charlie Kreitler could also provide information on this.
- **(REPORT)** Review Guyton & Associates' (June 1979) report entitled: Geohydrology of Comal, San Marcos, and Hueco Springs. It is downloadable at:  
<http://www.twdb.state.tx.us/publications/reports/GroundWaterReports/GWReports/Individual%20Report%20htm%20files/Report%20234.htm>
- **(SPEAKER)** Ask Larry Land (USGS, HDR) to present comparisons of various historical Edwards recharge estimates for the Blanco/Upper San Marcos, Guadalupe, Dry Comal, and Cibolo recharge basins. Such estimates include: a) original USGS work; b) extensions & alternatives by HDR; c) updates by USGS for MODFLOW development & calibration; d) pilot HSPF recharge models by HDR; e) HSPF recharge models by LBG-G; and f) USGS & HDR reviews of HSPF recharge models for USACE. Report references for these estimates can be provided upon request. Significant differences exist among these recharge estimates, especially in the Blanco/Upper San Marcos and Guadalupe recharge basins perceived to contribute most directly to San Marcos Springs.
- **(SPEAKER)** Ask Charlie Kreitler (LBG-G) or Bill Klemm (TWDB, LBG-G, retired) to present information from a ~1995 LBG-G study of the hydrologic

- "divide" between the Balcones Fault Zone and Barton Springs Edwards typically assumed to coincide with the river basin boundary near Kyle.
- **(SPEAKER)** Ask George Ozuna (USGS) to present methods used for historical measurement of San Marcos Springs discharge including downstream gage locations, hydrograph separations, surrogate well(s), etc.
  - **(SPEAKER)** Ask UGS to discuss recent Comal Flowpath report
  - **(SPEAKER)** Ask USGS to discuss Cibolo Creek- HSPF, Edwards MODFLOW model linkage and relationship to San Marcos Springs
  - Darwin Ockerman (USGS) is an excellent resource on USGS HSPF model

**(2) of the necessity to maintain minimum springflows, including a specific review of the necessity to maintain a flow to protect the federally threatened and endangered species;**

- **(INVESTIGATE)** Determine if refugia or some other method other than springflow would allow for the survival of the species.
- **(SPEAKER)** Invite George Ozuna and his coterie of pals to describe USGS's current monitoring activities and hear their suggestions on what would be required to improve them.
- **(SPEAKER)** Have Todd Votteler discuss his analysis of how well J-17 does in predicting springflow.
- **(SPEAKER)** Have Geary Schindel come in to discuss EAA's view on spring measurements.
- **(SPEAKER)** Tom Brandt and his staff could talk about refugia. I could also address this topic for wild-rice (both refugia and seed banks). Also be aware that refugia would only be a temporary solution. The ESA specifies that the species be maintained within its habitat.
- **(SPEAKER)** We should also have Robert Doyle of Baylor University talk about aquatic plant restoration. Robert and his graduate students have worked with transplanting various San Marcos River species, including Texas wild-rice.
- **(SPEAKER)** Also, between me and USFWS we could review the past reintroductions of Texas wild-rice to the river.
- **(SPEAKER/REPORT)** Water depth and velocity are extremely important to Texas wild-rice. Two groups (to my knowledge) have done modeling of how various springflows translate to depth and perhaps velocity in the river. Kenny Saunders and other staff from TPWD did one study and a group from Utah State University was contracted by USFWS (contact Pat Conner at USFWS for details).
- **(SPEAKER)** Habitat improvements would also help Texas wild-rice, especially at lower flows and may be also considered for mitigation. Thus we may need to have staff from the city and Texas State University discuss controlling erosion, potential removal of the gravel bar below the Sessoms Creek outfall, cleaning floating vegetation mats off wild-rice, controlling river access points, etc.

**(3) as to whether adjustments in the trigger levels for the San Marcos Springs flow for the San Antonio pool should be made.**

- **(SPEAKER)** If the EAA study addresses this, hear from EAA.
- **(OBTAIN INFO)** We would need to see hydrographs/crossplots of J-17 and San Marcos Springflow.
- **(OBTAIN INFO)** Consider time-series comparisons and multi-variable correlation analyses of San Marcos springflow, concurrent/antecedent recharge events, and monitoring well levels (local & more distant).
- **(SPEAKER)** Presentation of quantified effects of example changes in trigger levels on surface water availability for existing water rights, instream flows, and freshwater inflows to the Guadalupe Estuary.
- **(SPEAKER)** Ask USGS to discuss their statistical analyses using transfer-function models to predict water-level and could it be used to predict springflow.