

Science Review Panel and LSWP Technical Studies

Water for People and the Environment Conference
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Overview

➤ Science Review Panel

- role
- composition

➤ Technical Studies

- topics and issues

➤ Summary

Technical Studies

Designed to investigate the environmental, engineering, and human implications of the project.



Science Review Panel

- Group of specialists reviews studies from independent, technical perspective
- Led by Andrew Sansom of the River Systems Institute at Texas State University
- Oversight of technical studies divided according to SRP members' backgrounds and expertise

Composition and Expertise of SRP

➤ **Bays and Estuaries**

- Dr. Terry Whitley, Professor of Marine Science, University of Alaska
- Dr. Warren Pulich, Coastal Wetlands Ecologist, River Systems Institute, Texas State University
- Dr. Greg Stunz, Assistant Professor, Marine Biology, Texas A&M Corpus Christi

➤ **Riverine Environment / Hydrology**

- Dr. Larry Hauck, Professor/PE, Hydrology, Tarleton State University
- Dr. Tom Arsuffi, Professor, Aquatic Biology, Texas Tech University
- Dr. Thom Hardy, Professor/PE, Hydrology, Utah State University

Composition and Expertise of SRP

➤ **Agricultural Water Conservation**

- Dr. Khaled Bali, Cooperative Extension Advisor – Irrigation/Water Management PE, University of California, Division of Agriculture and Natural Resources

➤ **Groundwater Management**

- Dr. Ken Rainwater, Professor/PE, Groundwater Hydrology, Texas Tech University

➤ **Wildlife Ecology**

- Dr. Doug Slack, Professor, Department of Wildlife and Fisheries Sciences, Texas A&M University, College Station

➤ **Resource Economics**

- Dr. John Loomis, Professor, Resource and Environmental Economics, Colorado State University

Technical Studies Cover a Broad Range of Topics and are Interdependent

Environmental

- Colorado River Aquatic Habitat and the Blue Sucker
- Colorado River Water Quality
- Matagorda Bay Health Evaluation

Engineering

- Surface Water Availability
- Groundwater for Agriculture
- Facility Siting and Design

Human

- Agricultural Conservation
- Social and Economic Benefits and Costs
- Permitting

Colorado River Water Quality Studies

- River studies and sampling
- Development of river QualTX model for dissolved oxygen
- Watershed models to estimate pollutant loads to bay
- Off-channel reservoir quality model
- Issues/Challenges
 - Future water quality issues may exist on the river regardless of project



Colorado River Aquatic Habitat and Blue Sucker Studies

- **Blue sucker life history tagging, tracking**
- **Field sampling to update fish guild information**
- **Hydraulic modeling linked to river habitat and fish needs**
- **Issues/Challenges**
 - **Flow regimes could be difficult to meet for controlled, multi-use system**



Matagorda Bay Health Evaluation Studies

- Develop hydrodynamic and salinity model of bay (RMA model series), including marsh areas
- Map and characterize habitats in, and surrounding, bay
- Develop various statistical models to relate freshwater inflows, habitat suitability, and bay organism abundance
- Develop models to relate inflows to nutrient loading and primary production of the Bay System



Surface Water Availability Attempts to Solve the Puzzle



Surface Water Availability Studies

- **Based on TCEQ's WAM model**
 - incorporate TCEQ's new hydrology
 - incorporate 2060 and 2080 projections of demands on the LCRA system
 - model the system both with and without the proposed project
- **Evaluate a range of operating requirements**
 - bay freshwater inflows
 - river habitat flows and minimum water quality flows
 - Highland lakes required lake levels
 - water rights and contracts
 - LCRA system operations
 - size and operation of new facilities (off-channel storage facilities, intakes, etc.)
- **Issues/Challenges**
 - LCRA system demands could be higher than projected
 - all others are modeled on full water rights basis...
 - Environmental flow needs could change based on long-term monitoring
 - Hydrology could change over project period

Groundwater for Agriculture Studies

- **Development of detailed groundwater model**
 - 4 vertical cells (rather than 1 in GAM model)
 - Almost 675,000 horizontal cells in grid
 - 622 geophysical logs supplemented aquifer property data
- **Evaluate potential**
 - changes in aquifer water quality
 - subsidence
 - mitigation options
- **Optimally place wells**
- **Issues/Challenges**
 - Future non-project groundwater use



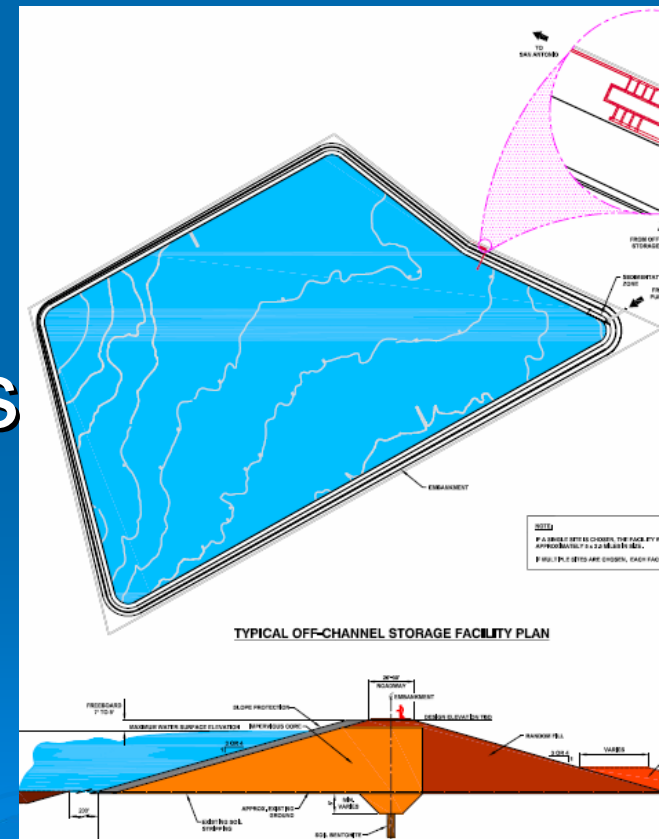
Agricultural Conservation Studies

- **RiceWCA estimates of potential conservation savings**
- **Development of high-yield rice variety by TAES**
 - higher yield, desirable traits, longer growing season
 - incentive for farmers to grow one crop per year (not two)
 - would save water typically used for 2nd crop
- **ModSim estimate of canal/delivery system savings**
- **Field spill surveys, field surveys, farmer surveys**
- **Issues/Challenges**
 - Conservation measures adoption
 - High-yield rice variety acceptance



Facility Siting and Design Studies

- Conceptual facility design
- Siting
 - constraints mapping
 - siting evaluations
 - recommendations
- Mitigation options and plans
- Issues/Challenges
 - Balancing various environmental, cultural and economic constraints in the siting process



Social and Economic Benefits and Costs Studies

- Model project effect on regional economies
- Model effect on key sectors of the economy
- Model market/non-market costs and benefits
- Quantify ecological benefits of resource improvements
- Quantify scale of mitigation
- Issues/Challenges
 - Striking reasonable balance in level of detail of analyses



Permitting Activities

- Develop Section 404/10 permit application and supporting information for the USACE
- Support the federal NEPA process
- Prepare the water rights permit applications and amendments for submittal to TCEQ
- Prepare well information and applications for the Groundwater Conservation Districts
 - Coastal Bend
 - Coastal Plains



Summary

- Technical studies are complex and ongoing, with most key analyses scheduled for completion in late 2007
- Other unknowns:
 - Integration of component study results?
 - Consideration of global climate change?
 - Impacts to wildlife?
- SRP has met many times over last 2 years as a group and with individual study teams in workshops or conference calls to refine the studies. Next meeting at major Oct. 2006 workshop with all technical consultants and LSWP managers.

For Additional Information

www.lcra.org/lswp

<http://rivers.txstate.edu/staff.htm>

Questions?