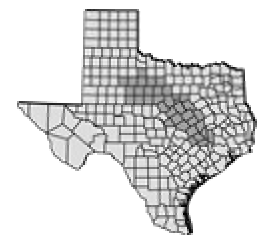

Agenda Item 7.7
Presentation of Brush Control Case Study

September 15, 2004



Brush Control in 2001 plan

- **Recommended in 2001 plan for irrigation in 7 counties**
 - **Callahan, Eastland, Knox, Shackelford, Stephens, Taylor, Young**
 - **All irrigation supplies – aquifers and/or Brazos River**
 - **Limited data on brush infestation**
- **No quantities or costs listed**
- **Was not considered as a strategy to supplement reservoir yield for other uses**

Updated 2006 plan

- **Scope of Work - evaluate a potential brush control project**
 - **Assess quantities and costs**
 - **Apply data to other potential projects**
- **Two feasibility studies completed in Brazos G by TSSWCB**
 - **Lake Fort Phantom Hill**
 - **Lake Palo Pinto**

Lake Fort Phantom Hill

- **Lake Fort Phantom Hill watershed selected for analysis**
 - **High ranking by TSSWCB**
 - **Landowner interest**
 - **Need for additional water**
 - **Availability of data**
- **Study focused on increased reservoir yield**

Potential Project

- **Used SWAT model stream flow output**
 - **Brush and non-brush conditions**
- **Assumed landowner participation at 50%**
 - **75% removal on participating lands**
- **Selected the watersheds with the highest water production per acre**
- **Adjusted outflows from SWAT model w/o brush based on assumed participation**
- **Reservoir operation analyses**

Lake Fort Phantom Hill Yield

- **Firm yield increase of 2,640 af/y**
 - **Approximately 20% increase**
- **Cost of raw water in reservoir is \$0.79 per 1,000 gallons**
 - **Based on initial clearing and maintenance**
 - **10-year period**
 - **Costs would be less for subsequent decades (only maintenance)**
 - **Could vary with different assumptions**

Concerns with results

- **Historical record does not include drought of 1950's or recent drought**
- **SWAT model output with brush underestimates inflows as compared to WAM over same period**
- **Less increased flow available during drought – lower yield increase if drought of record considered**
- **Reservoirs above PK evaluated on safe yield basis – result in smaller yield increase (1,391 af/y, <15% increase), \$1.50/1,000 gal.**

Other Issues

- **Land owner participation**
 - **Economic benefits**
- **State funding**
- **Maintenance required for continued benefits**

Regional Water Planning

- **Land management benefits**
 - **Ranchers (livestock)**
- **Crop Land (irrigated agricultural)**
 - **Not infested with brush (minimal direct benefits)**
 - **Potential for increased stream flow and aquifer recharge for crop lands in watershed with infested ranch lands**
 - **Improved stream flows of streams infested with salt cedar**
 - **Quantities – unknown, drought may be zero**

Evaluated on a case-by-case basis

Regional Water Planning (cont'd)

- **Multi-use surface water sources**
 - **Potential for increased supplies**
 - **Reliability is still unknown (likely low during drought)**

Conclusions

- **Findings are site-specific**
- **High level of uncertainty – water production**
- **Need more data from on-going programs**

Recommendations

- **Recommend using total water production increase of 10% in watersheds that brush control is recommended as initial guideline**
 - **Will need to be evaluated on a case-by-case basis**
 - **Supply expressed in reservoir yield or stream flow increase**
 - **Aquifer availability – site specific**

Recommendations (cont'd)

- **Use costs developed for potential project with 10% yield increase**
 - **\$1.70 per 1,000 gallons of raw water – first decade**
 - **Assuming maintenance costs of \$40/acre over the 10-year period, maintenance cost - \$0.66 per 1,000 gallons**