



Appendix 6.2

Streamflow Assessments

TWDB and technical representatives from several planning groups developed a methodology to estimate the effects that surface water management strategies recommended in the 2006 Regional Water Plans might have on future streamflow. Each planning group selected points on the rivers within their region for this analysis to be conducted. In total, 156 points were chosen. TWDB, with input from the planning groups' consultants, then developed models indicative of both current streamflow conditions and projected future conditions based on implementing water management strategies within the entire basin. For a variety of reasons, detailed verification by planning group consultants was limited, and the results presented should be treated with this qualifier.

Background and Methodology

After the 2002 State Water Plan was published, some stakeholders requested that analyses be conducted to determine the impact that recommended water management strategies would have on streamflow. In response, TWDB agreed to use the Texas Commission on Environmental Quality's water availability models to quantitatively determine the likely streamflow alteration resulting from new water management strategies presented in the 2006 Regional Water Plans. A methodology was developed, revised based on suggestions and comments from planning groups, and finalized in May 2004. The model chosen was the Texas Commission on Environmental Quality water availability model run 8. Run 8 uses modified diversion amounts (maximum use for last 10 years), year 2000 area-capacity parameters for major reservoirs, and assumed return flows. It also includes term water rights and provides the most realistic assessment of current streamflow

conditions. Run 8 was then modified to include projected increased demand from existing water rights, expected change to return flows, projected new strategies to come online before 2060, and estimated year 2060 storage capacities for major reservoirs. The combination of these two models gives a realistic assessment of current and future streamflow resulting from implementation of the 2006 Regional Water Plans and this state water plan.

Results

With input from planning groups, three to five water availability model control points were chosen within each river basin of each planning area. Control points are geographic points within the model of the basin where calculations are performed. Typically, any reservoir, water right diversion point, river confluence, or streamgage station is a model control point. Flow statistics can be derived from any control points. A total of 156 control points were chosen across the entire state for the assessments.

The following pages present maps and statistics from selected control points across the state. The median flow and 10th percentile flow are shown for both the current and future monthly streamflow. For some control points, the flow appears to increase slightly as a result of more water being imported to the basin and eventually being treated and returned to the river. The increased flow may also result from releases from new reservoirs to diversion points downstream during periods of dry weather. For other control points, the effect of proposed reservoirs clearly reduces streamflow. No generalized statement can be made on the impact water management strategies have had on streamflow for the entire state.

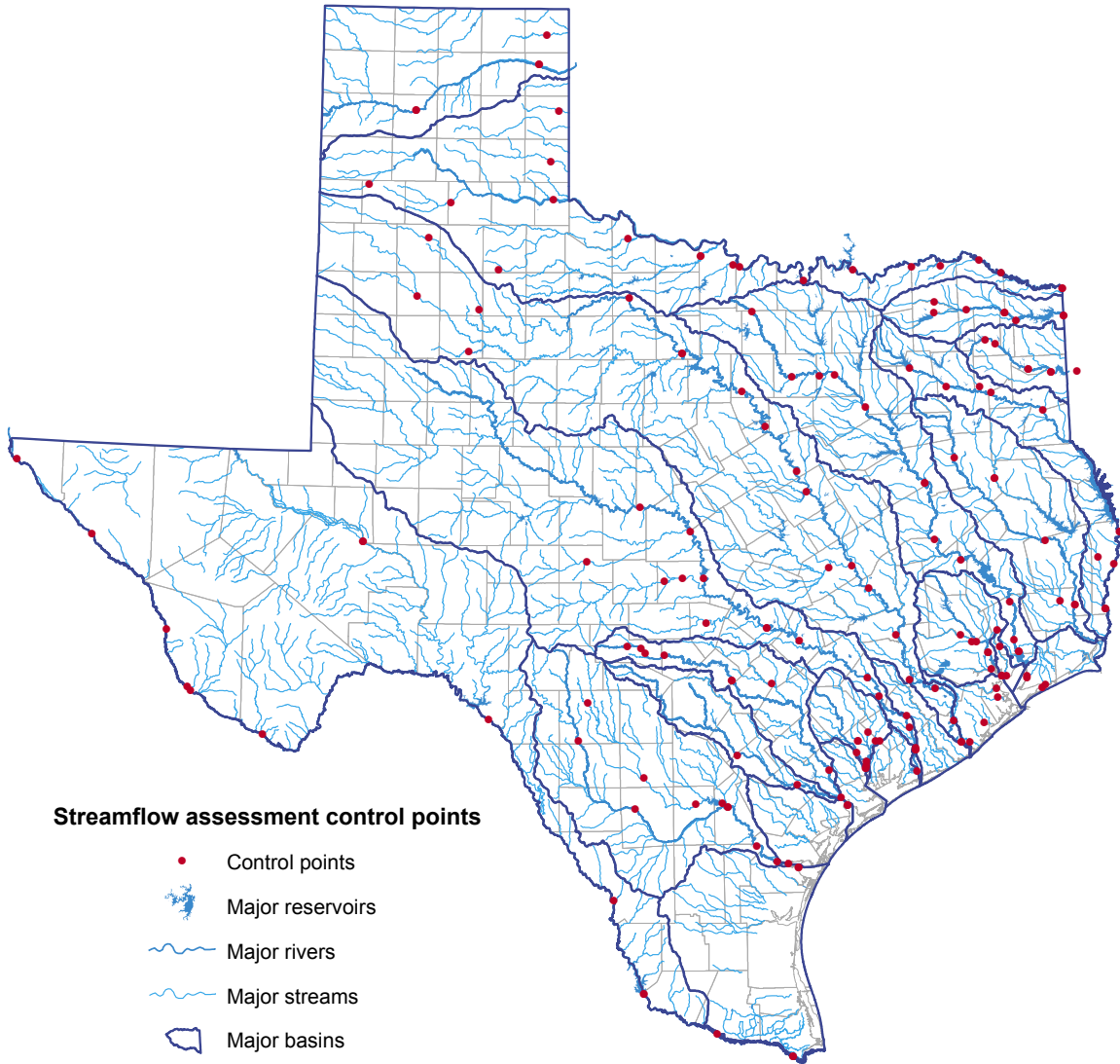
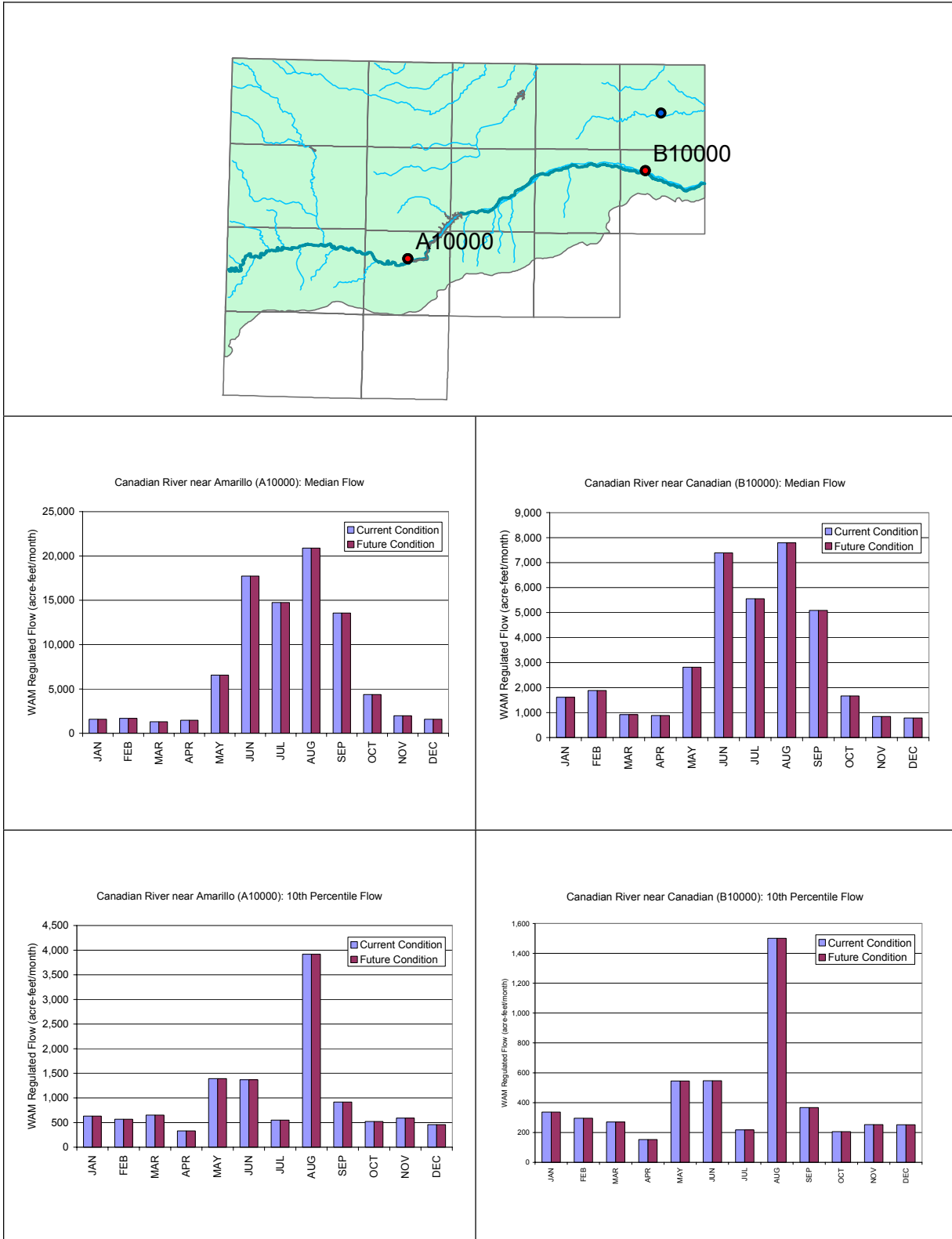
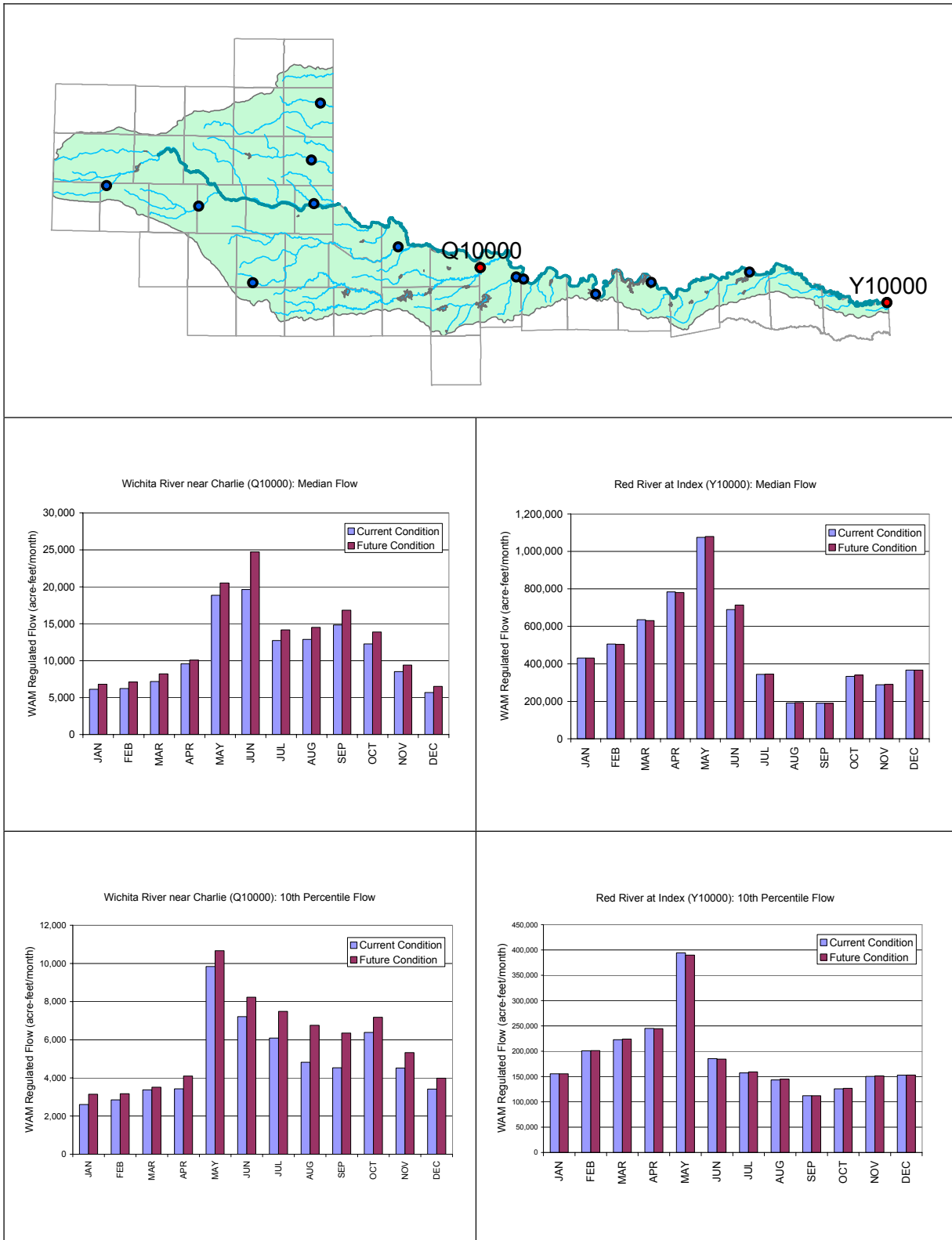


Figure A.6.2. Water Availability model control points for streamflow assessments.

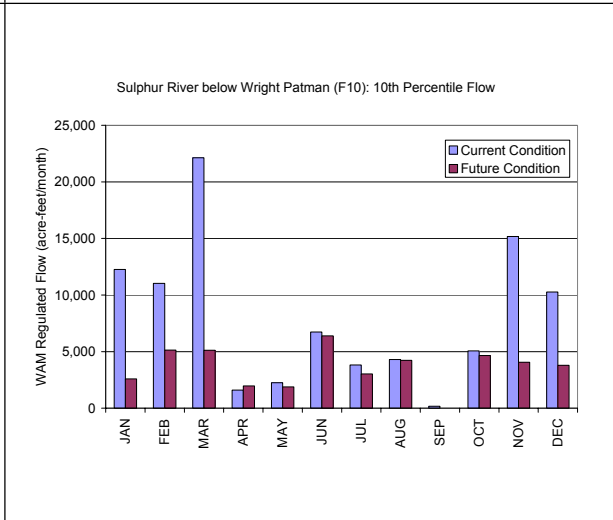
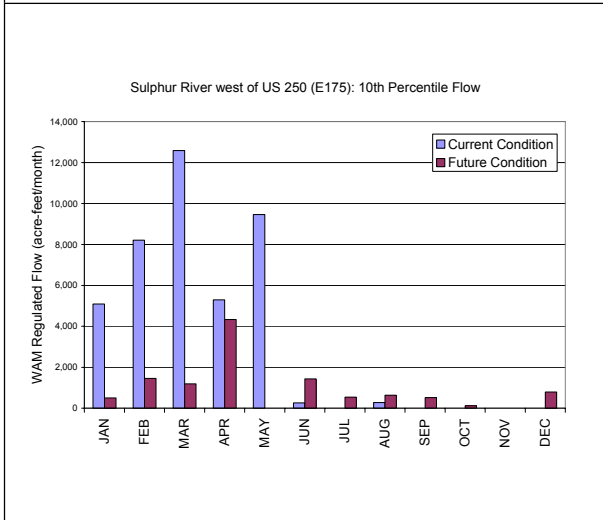
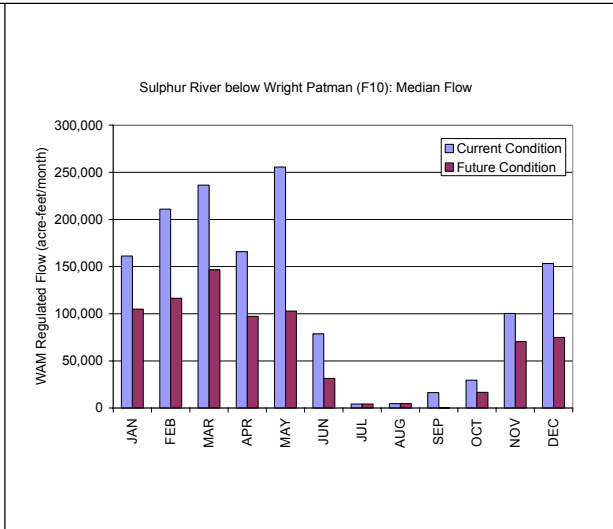
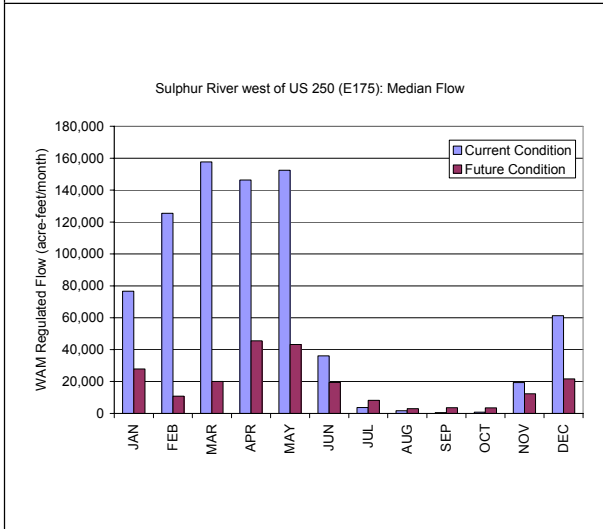
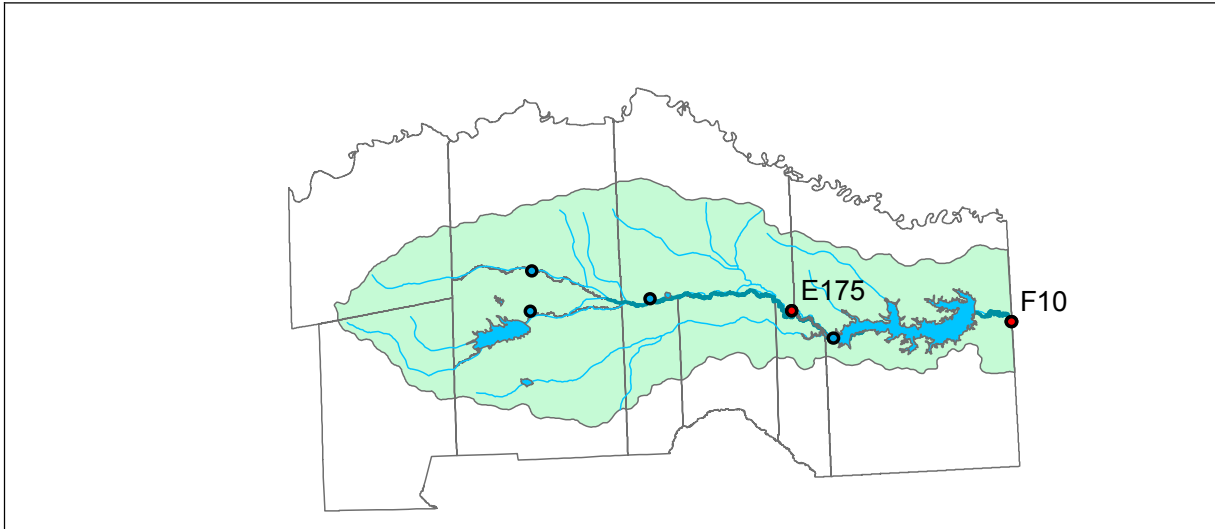
Canadian River Basin Streamflow Assessment for Selected Control Points



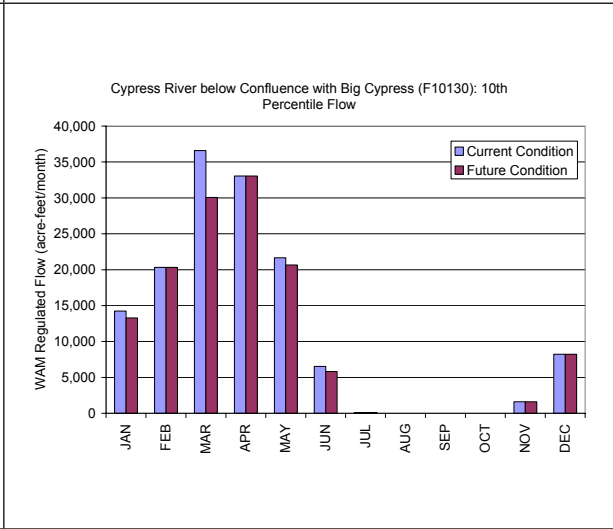
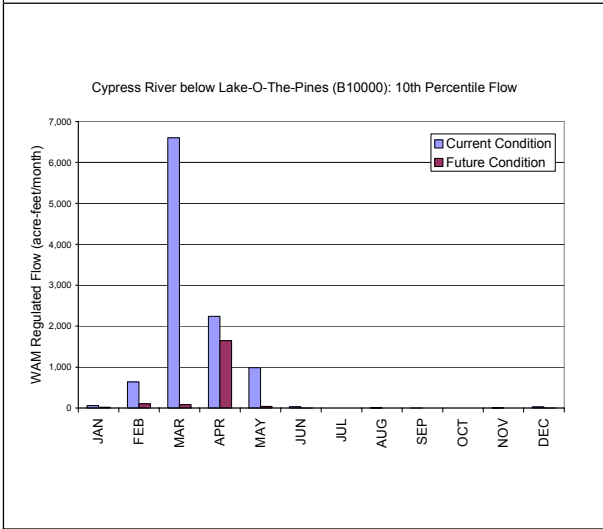
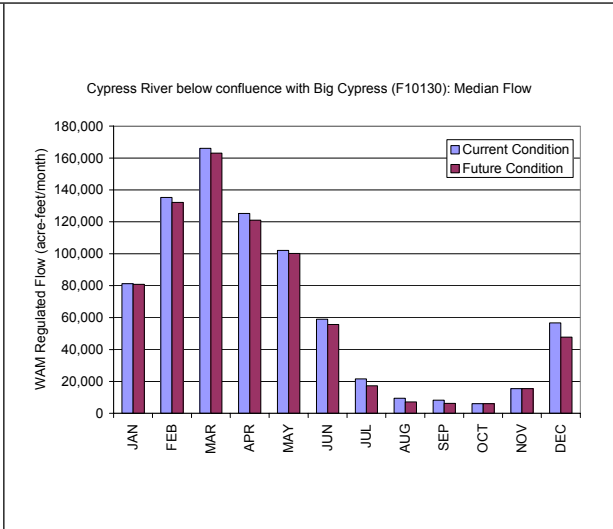
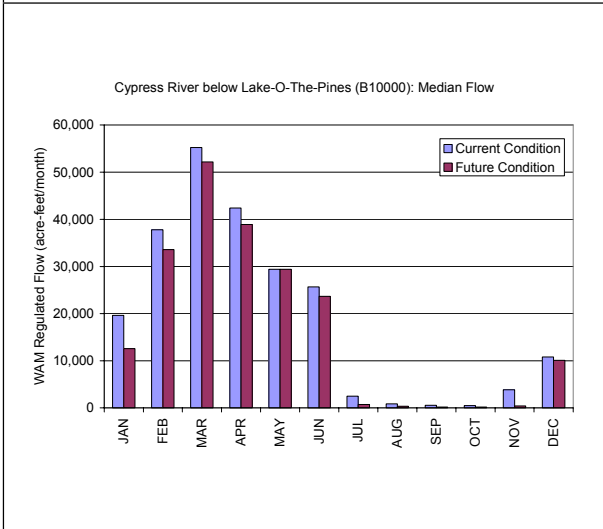
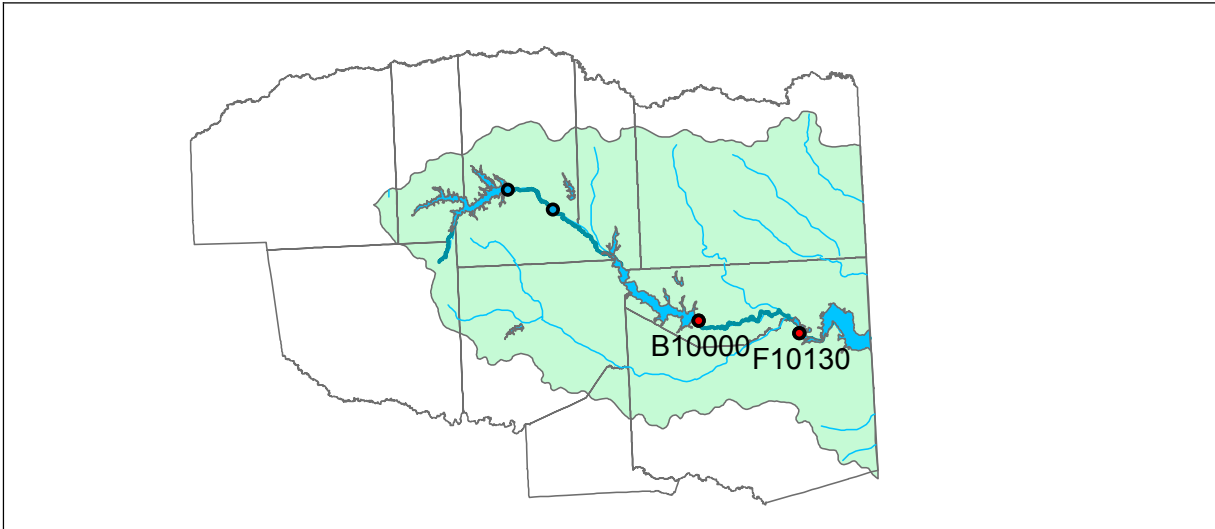
Red River Basin Streamflow Assessment for Selected Control Points



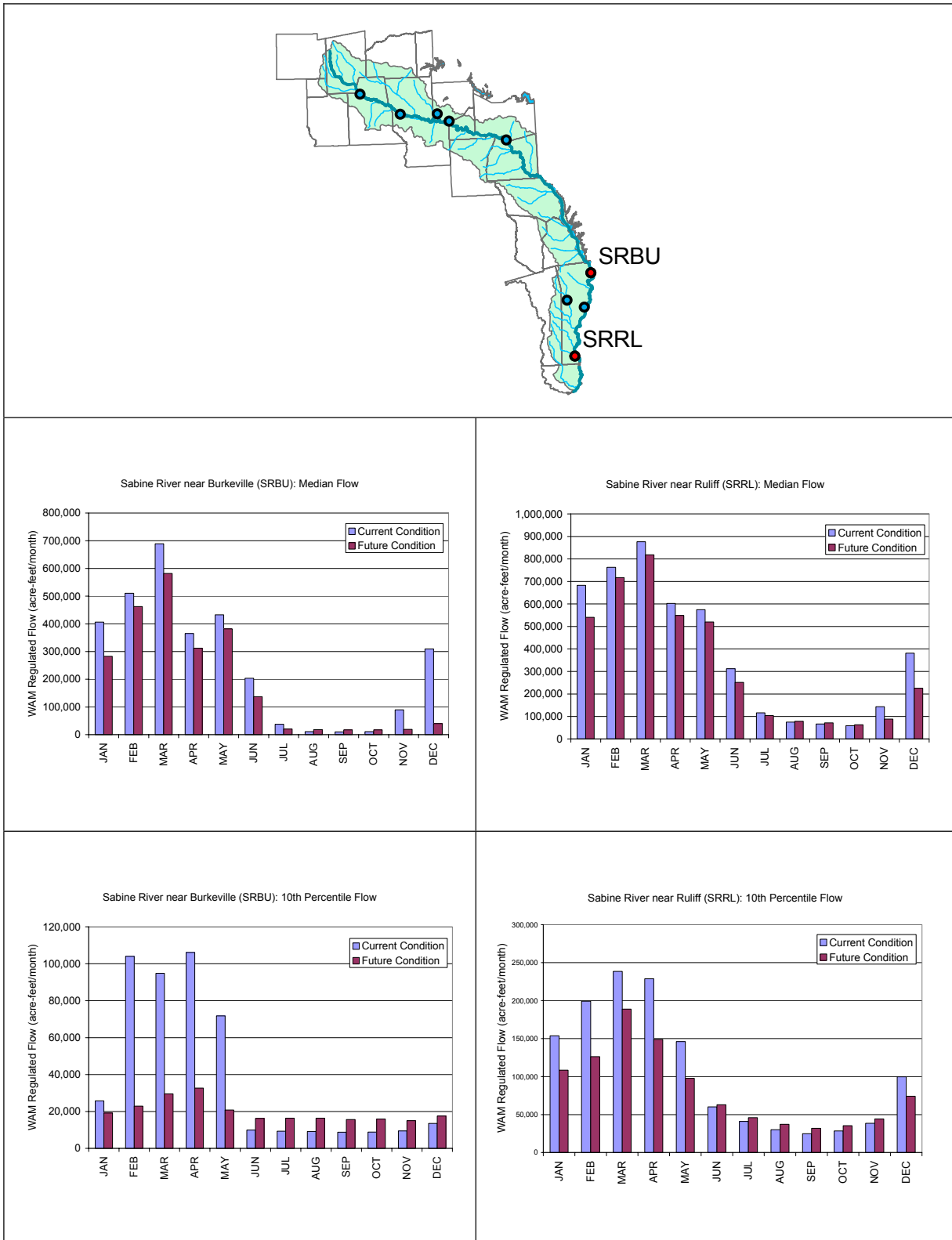
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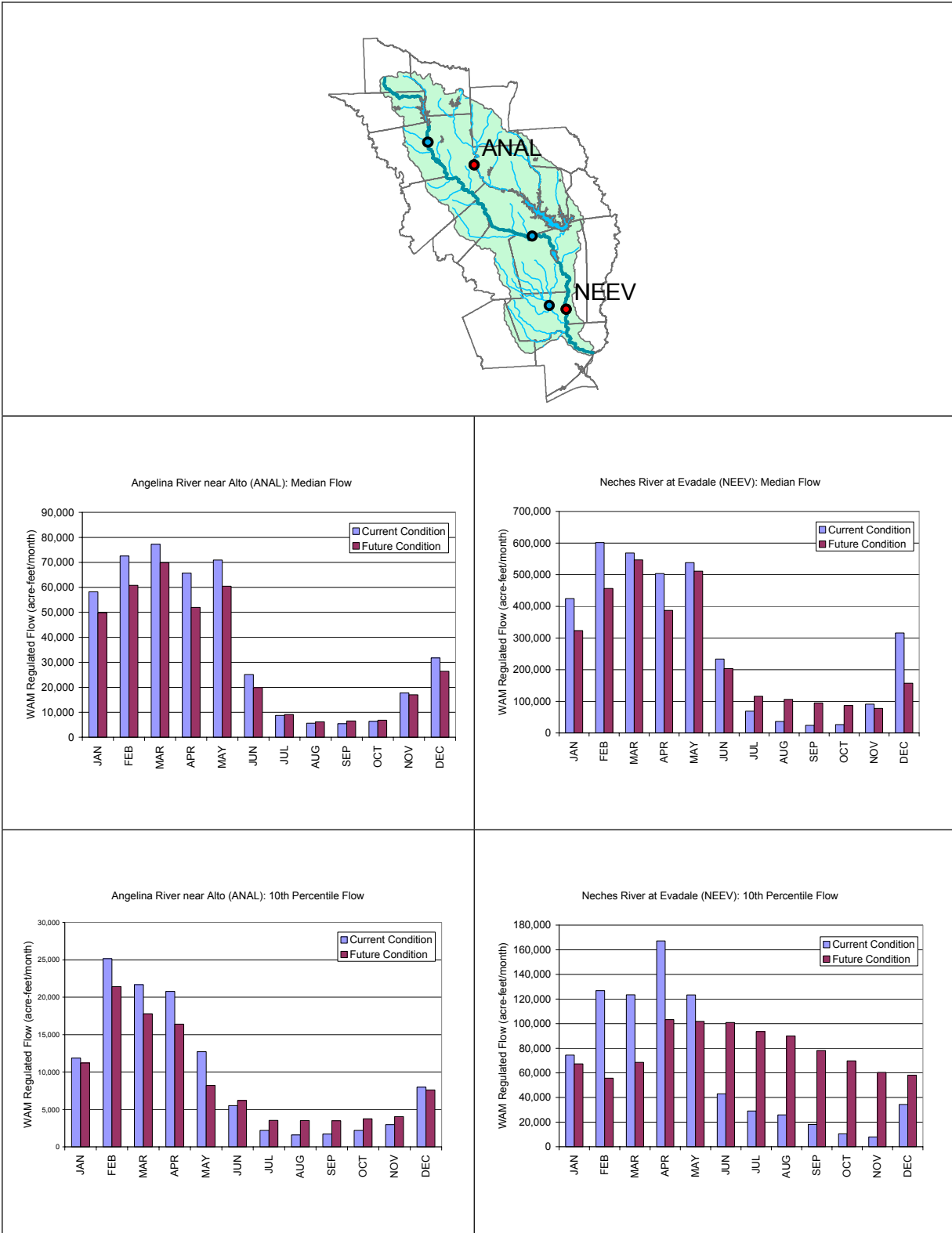
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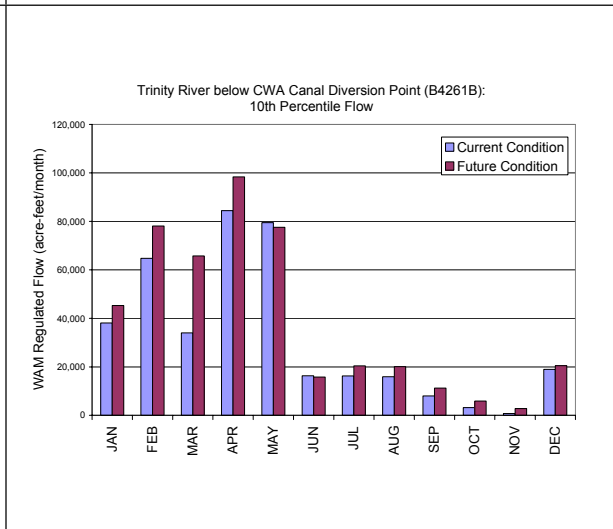
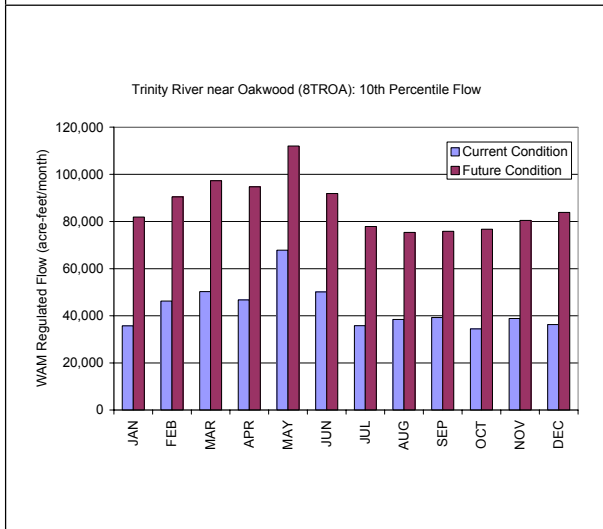
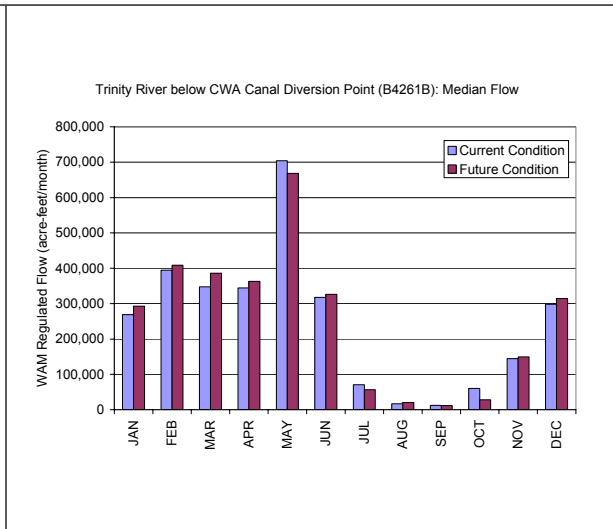
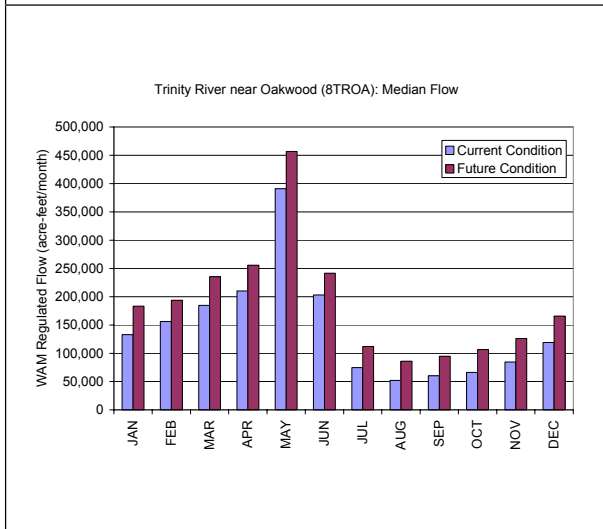
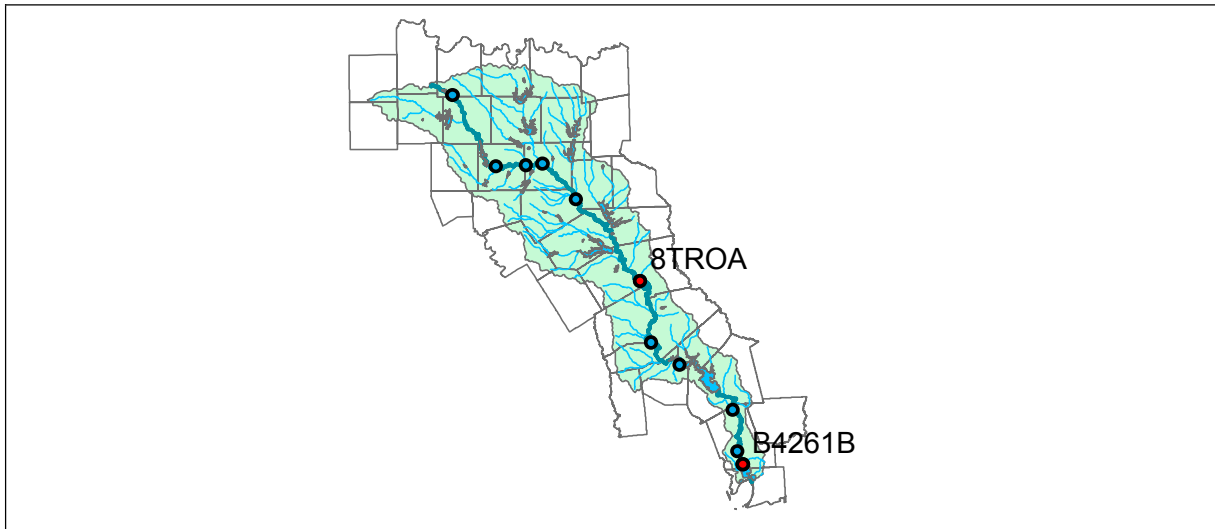
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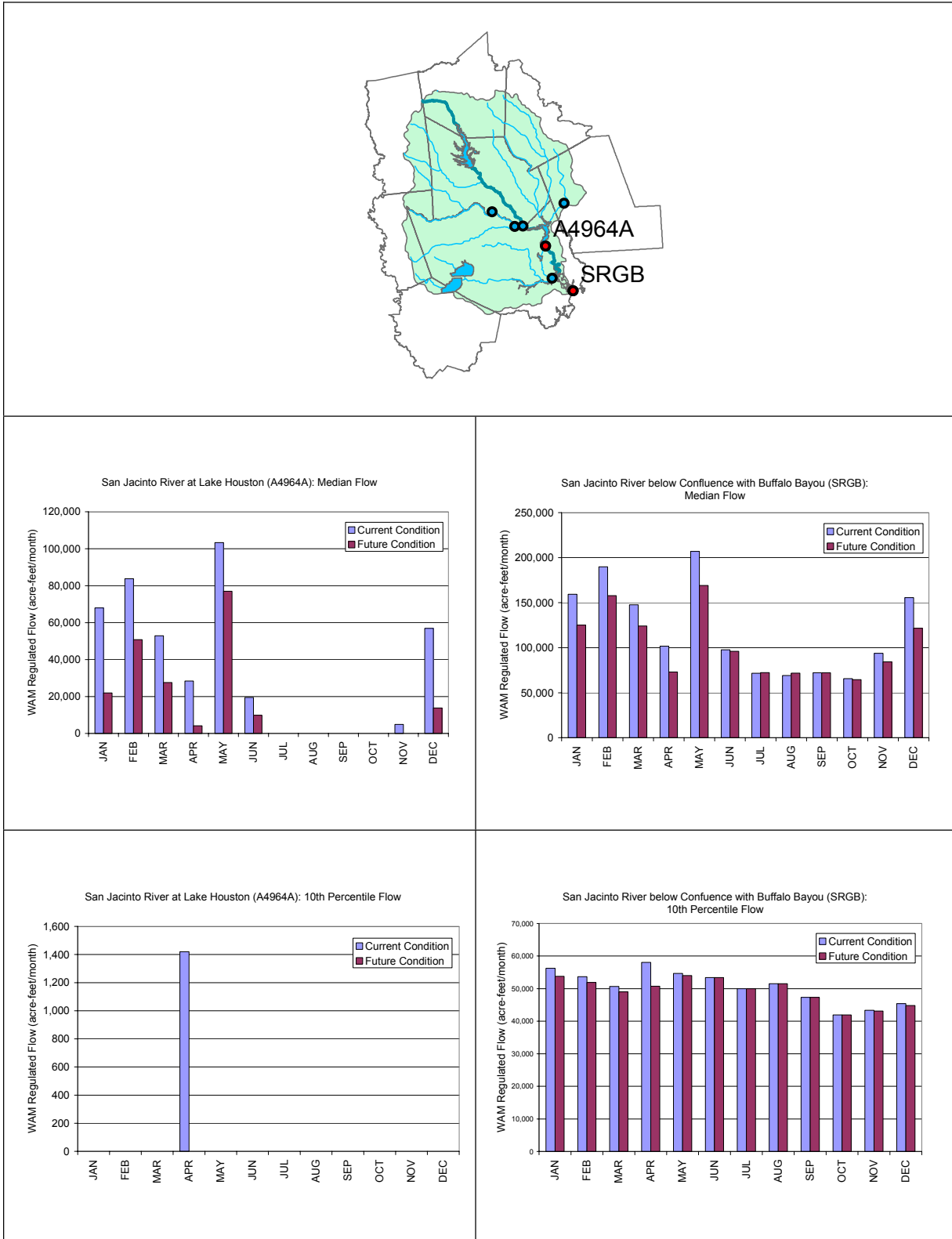
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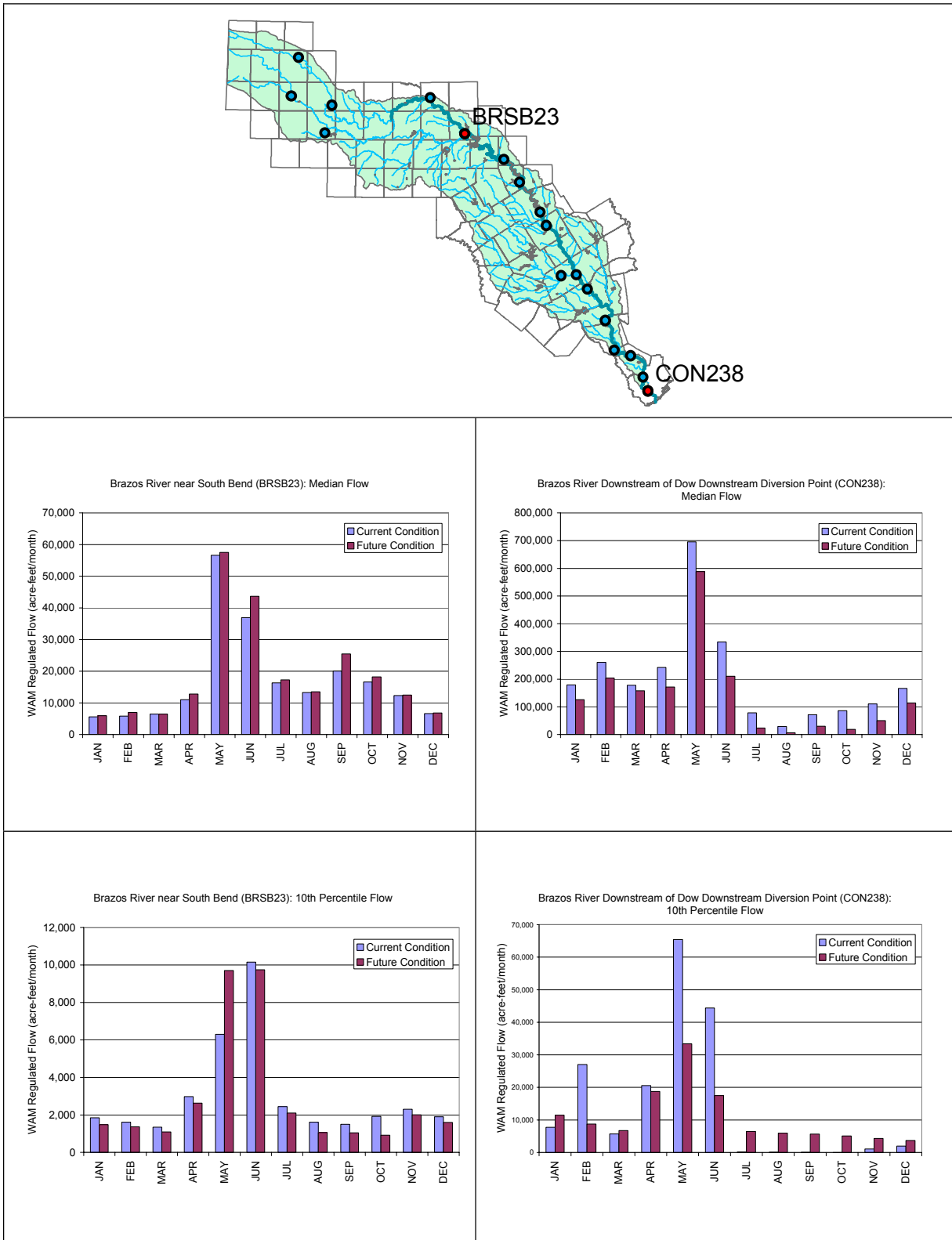
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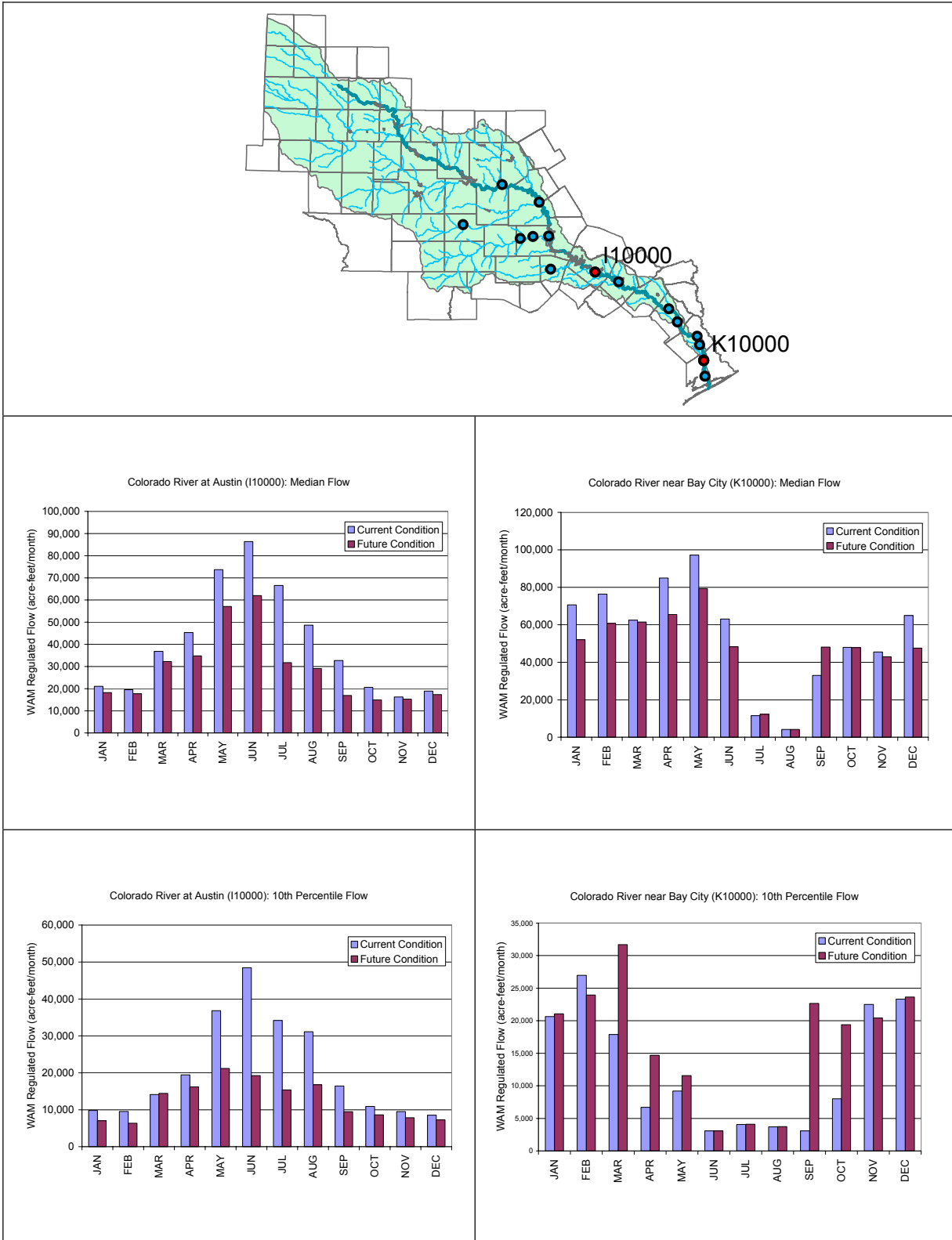
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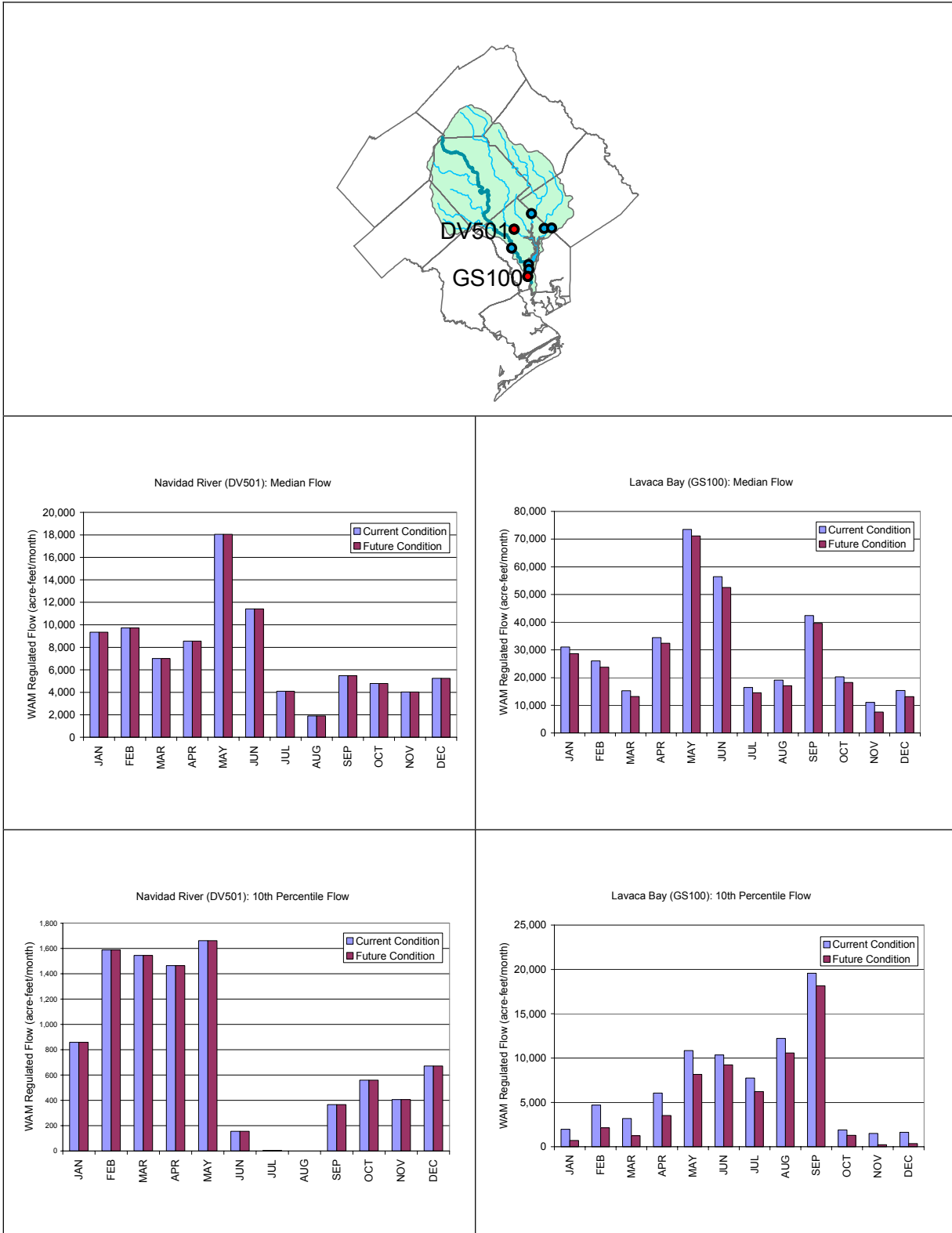
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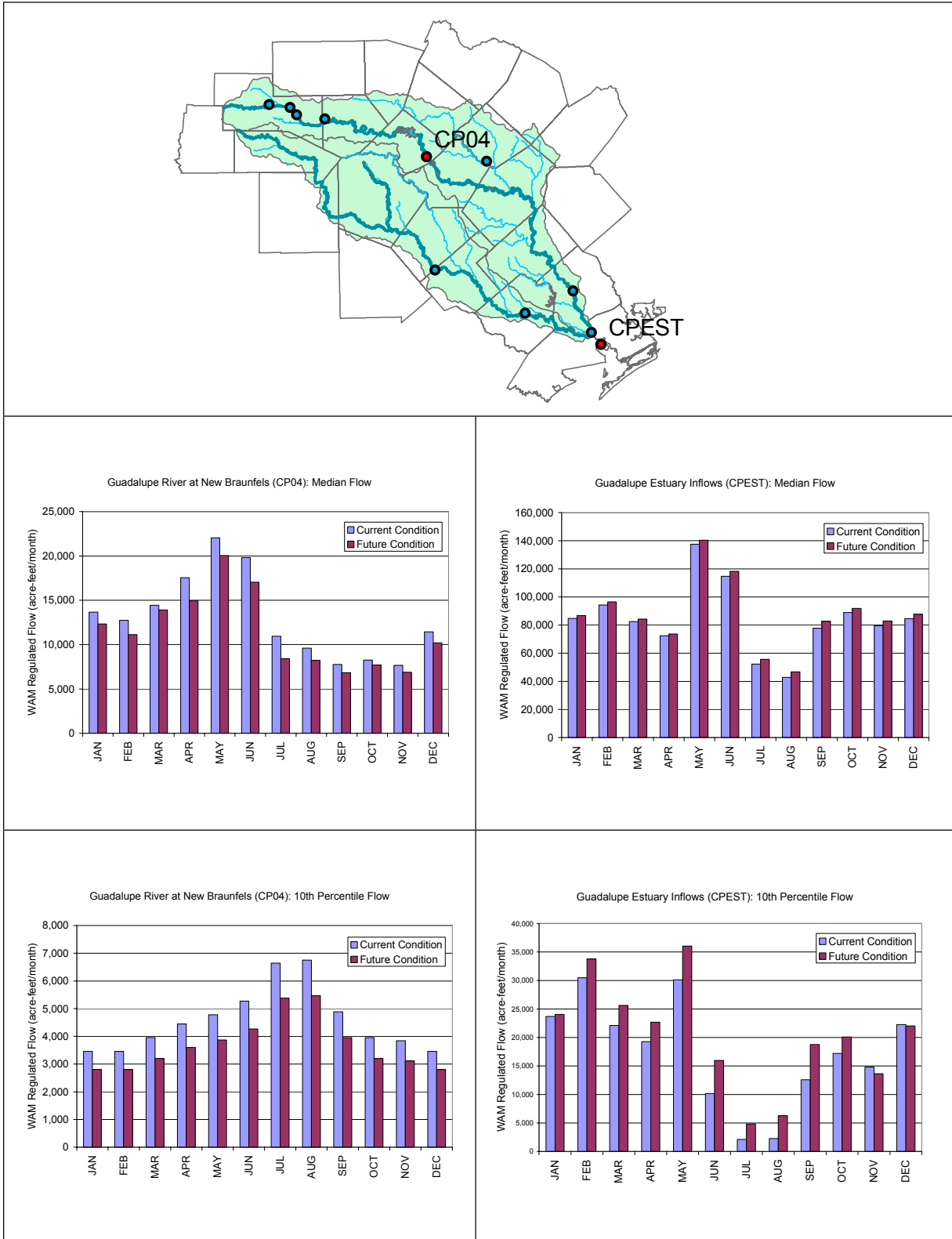
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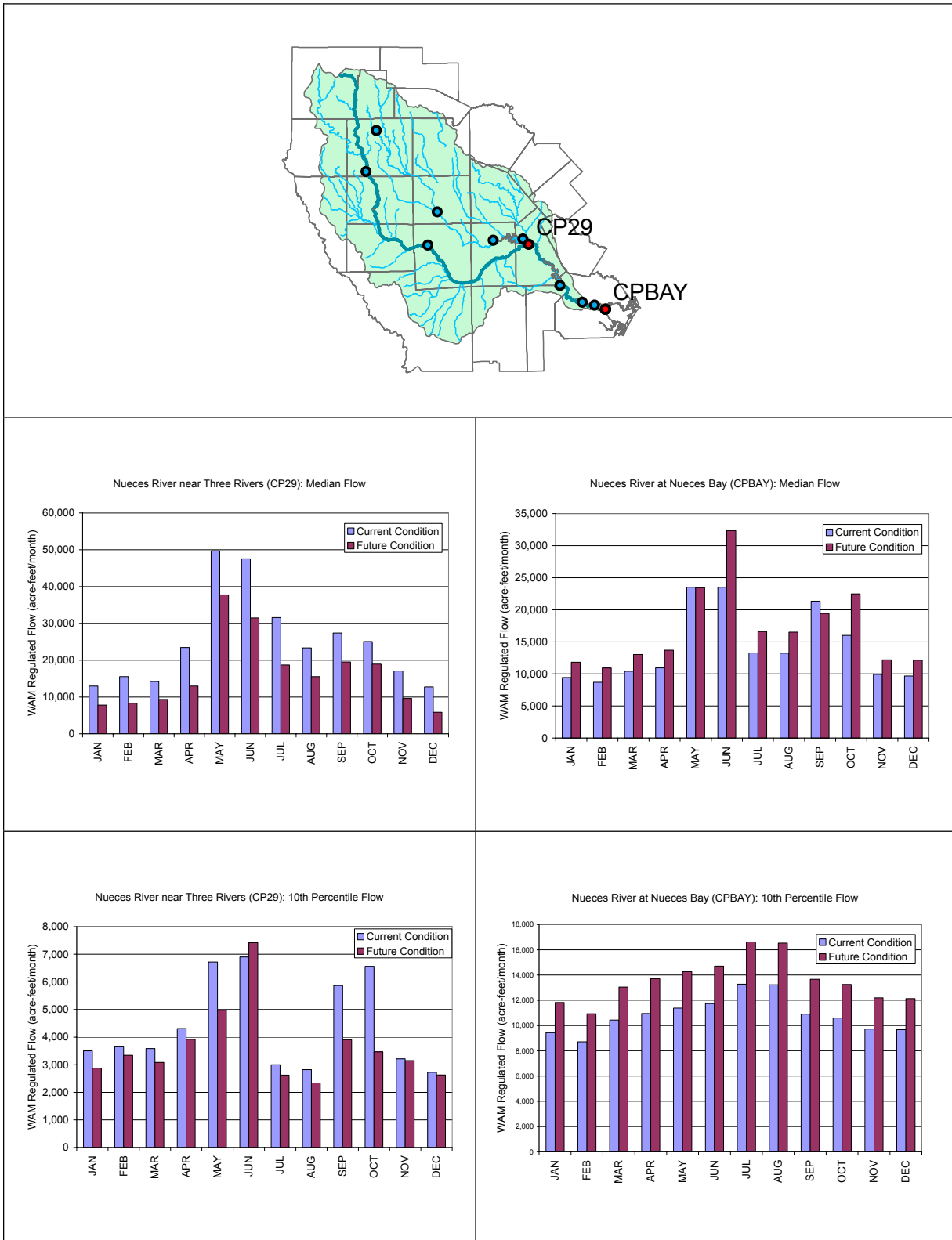
Lavaca River Basin Streamflow Assessment for Selected Control Points



Guadalupe River Basin Streamflow Assessment for Selected Control Points



Nueces River Basin Streamflow Assessment for Selected Control Points



Rio Grande River Basin Streamflow Assessment for Selected Control Points

