

**Exhibit C**  
**Scope of Work**  
**RIO GRANDE REGION M SCOPE OF WORK**

**Study 1 - Evaluation of Alternative Water Supply Management Strategies Regarding the Use and Classification of Existing Water Rights on the Lower and Middle Rio Grande**

- A. Acquire and Review Latest Version of Rio Grande WAM (Run 3)
- B. Identify Potential Changes to Rio Grande Operating Rules Regarding Amistad-Falcon Water Rights for Possible Inclusion as Potentially Feasible Water Management Strategies including:
  - a. Alternatives to existing conversion rates for converting existing irrigation/mining water rights to municipal use;
  - b. Changes to the operating reserve with respect to its amount and how it is established;
  - c. Changes to the domestic-municipal-industrial reserve with respect to its amount and how it is established;
  - d. Changes to current procedures for allocating storage in Amistad and Falcon Reservoirs to irrigation/mining accounts;
  - e. Changes to current procedures for accounting for reservoir and river delivery system losses; and
  - f. Other Changes as approved by the Planning Group and the TWDB.
- C. Modify Existing WAM to Incorporate Simplified Water Rights Representations and Other Procedures to Facilitate More Efficient Modeling and Evaluation of Potentially Feasible Water Management Strategies, including:
  - a. Combining all Lower Rio Grande domestic-municipal-industrial water rights into a single right;
  - b. Combining all Middle Rio Grande domestic-municipal-industrial water rights into a single right;
  - c. Combining all Lower Rio Grande Class A irrigation/mining water rights into a single right;
  - d. Combining all Middle Rio Grande Class A irrigation/mining water rights into a single right;
  - e. Combining all Lower Rio Grande Class B irrigation/mining water rights into a single right;
  - f. Combining all Middle Rio Grande Class B irrigation/mining water rights into a single right; and
  - g. Other WAM modeling procedures as may be appropriate and necessary to facilitate evaluation of potentially feasible water management strategies.
- D. Modify WAM developed in Task C to Incorporate Up to Four Potentially Feasible Water Supply Management Strategies Identified in Task B.
- E. Evaluate Potentially Feasible Water Supply Management Strategies Identified Task B using Modified WAM from Task D to Simulate Water Supply Reliabilities, River Flows, and Reservoir Storage

- F. Review Results of Task E with Planning Group and other Water Users and Identify Any Desired Modifications to the Potentially Feasible Water Management Strategies Considered in the Evaluation Performed in Task E.
- G. Evaluate Up to Two Additional Potentially Feasible Water Management Strategies Identified in Task F and Rerun WAM Simulations Using the Modified WAM from Task C
- H. Discuss Results With Region M Representatives and Water Users
- I. Summarize Results and Prepare Draft Final and Final Report, including:
  - a. Delivery of 20 copies of Draft Final Report, and;
  - b. Delivery of 30 copies of Final Report

### **Deliverables**

Draft and final reports will be prepared including the following sections: executive summary, purpose of study including how the study supports regional water planning, methodology, results, and recommendations. Draft report will be submitted to the planning group and the TWDB for review and comment. All comments will be addressed in the final report.

The report will show the results of the studies, including information on how water right conversions from irrigation to municipal uses might be undertaken, and what overall water supply management strategies might be considered by the Planning Group for implementation in order to more effectively use and enhance the available future supply of water from Amistad and Falcon Reservoirs.

The report will be submitted per TWDB requirements and results from this study will be included in the 2011 Rio Grande Regional Water Plan. The development, analysis, and reporting of results will follow methodologies and guidance according to Exhibit B, and agency rules.

**Budget** – The budget for this study is \$41,838.00.

## **Study 2 - Classify Individual Irrigation Districts as Water User Groups**

- A. Development of maps showing service areas of Irrigation Districts. Acquire existing maps that show irrigation district boundaries, existing canals, and pipelines maps, and overlay them with existing aerial maps to create a “master map” of all irrigation districts in the region. Overlay the boundaries of cities. Pinpoint major delivery points for each irrigation district, including municipal and steam electric users. The resulting master map showing irrigation district boundaries, conveyance systems, and major delivery points will allow for a region wide understanding of irrigation, livestock, municipal, and steam electric water deliveries and how these deliveries intertwine between irrigation districts.
  
- B. Quantify and qualify urbanization and its effects through the use of census data and maps.
  - 1. Analyze the existing conveyance system to determine delivery mechanisms of each Irrigation District. Acquire and analyze census data. Analyze population increases of cities whose boundaries overlap with irrigation district boundaries to determine historic and projected growth. Acquire historical aerial maps to visually determining the location of urban growth. Obtain historical information pertaining to irrigation district land exclusions and inclusions from each individual irrigation district. The result of this task will be a quantitative understanding of urbanization affects on individual irrigation districts in the region. This will be used as a tool to plan for the change in water demands from conversion from irrigation to municipal use.
  
  - 2. Revise and update water demands based on the changed condition of classifying individual Irrigation Districts as Water User Groups as opposed to the method of classifying irrigation demands on a county-wide basis as was done in the previous plan.
  
- C. Analyze the existing conveyance system to determine delivery mechanisms of each Irrigation District. Acquire information pertaining to district-wide conveyance system efficiencies from individual irrigation districts, along with identification of problem areas (both historical and potential) throughout the district. This will help the region establish cost data for improvement with greater accuracy and identify needs by district.
  
- D. Revise and update water demands based on the changed condition of classifying individual Irrigation Districts as Water User Groups or Wholesale Water Providers as opposed to the method of classifying irrigation demands on a county-wide basis as was done in the previous plan. Acquire information pertaining to individual irrigation district water rights, historical allocations, and historical raw water deliveries. Acquire historical rainfall data and Amistad/Falcon levels. Determine individual irrigation district supplies and demands. Develop projections of irrigation water usage using information obtained from the urbanization analysis. To avoid “double counting” the water, this task will only entail irrigation supply and demand, but will identify customers for information purposes.

### **Deliverables**

Draft and final reports will be prepared including the following sections: executive summary, purpose of study including how the study supports regional water planning, methodology,

results, and recommendations. Draft report will be submitted to the planning group and the TWDB for review and comment. All comments will be addressed in the final report. The report will include maps and analyses and findings from the four tasks.

The report will be submitted per TWDB requirements and results from this study will be included in the 2011 Rio Grande Regional Water Plan. The development, analysis, and reporting of results will follow methodologies and guidance according to Exhibit B, and agency rules.

**Budget** – The budget for this study is \$45,150.00.

### **Study 3 - Analyze Results of Demonstration Projects**

- A. Analyze results from the Harlingen Irrigation District on-farm conservation demonstration project. Based on the information obtained from the Harlingen Irrigation District on-farm conservation demonstration project, a thorough analysis will be performed with the goal of developing an on-farm incentive for implementation of such strategies.
- B. Analyze results from the Public Utility Board of the City of Brownsville Seawater Reverse Osmosis Pilot Study. Results of the seawater desalination pilot study will be analyzed and incorporated into the regional water plan to gain a better understanding as to the applicability of seawater desalination as a regional water management strategy.

### **Deliverables**

Draft and final reports will be prepared including the following sections: executive summary, purpose of study including how the study supports regional water planning, methodology, results, and recommendations. Draft report will be submitted to the planning group and the TWDB for review and comment. All comments will be addressed in the final report.

The report will summarize the results of each study in the context of the Regional Water Plan. In addition, recommendations will be developed by the Regional Water Planning Group regarding: 1) the development of an on-farm incentive program to increase implementation of such strategies throughout the region; and 2) the feasibility of Seawater Desalination as a Region-wide Water Management Strategy.

The report will be submitted per TWDB requirements and results from this study will be included in the 2011 Rio Grande Regional Water Plan. The development, analysis, and reporting of results will follow methodologies and guidance according to Exhibit B, and agency rules.

**Budget** – The budget for this study is \$28,040.00.