I. General Information

1. **Legal Name of Applicant:**
   Panhandle Regional Planning Commission

2. **Regional Water Planning Group**
   Region A Panhandle Water Planning Group

3. **Authority of law under which the applicant was created.**
   Chapter 391 Local Government Code

4. **Applicant, official representative, name, title, mailing address, phone number, fax number, email address and Vendor ID. Number**

   Panhandle Regional Planning Commission
   Gary Pitner, Executive Director
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   Amarillo, Texas 79105
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   75-1317291

5. **Is this application in response to a Request for Proposals published in the Texas Register?**
   Yes

6. **Document number and date of publication of the Texas Register:**
   31 TexReg 5210 June 23, 2006 TRD-200603279

7. **Type of Proposed Planning**
   a. Initial Scope of Work - yes
   b. Development of a regional water plan - yes
   c. Revision of a regional water plan – no
   d. Special Studies approved by the TWDB – yes

This proposal compared to the characteristics of activities which will be eligible of funding as listed in the Request for Proposals.

No.	Characteristics Needed for Scoring Criteria	Meets Characteristics
1	Evaluation of new water management strategies in response to changed conditions.	**Yes**
2	Studies that will further implementation of recommended water management strategies.	**Yes**
3	Refinement of water supply information or water management strategies.	**Yes**
4	Activities that will help overcome problems from the last round of planning.	**Yes**
5	Further evaluation of water management strategies, especially regional solutions, to meet the needs of small communities or rural areas.	**Yes**
6	Reevaluation of population and demand projections only under the presence of changed conditions.	**Yes**
7	Interregional coordination.	**Yes**
8	Administrative and public participation activities.	**Yes**

8. **Total proposed planning cost - $709,087**

9. **Cash contributions to the study - $110,000**

10. **List source of cash contributions and explanations of source of local cash contributions.**

Local Funding Provided by Local Stakeholders	
Local Funds from PWPG/PRPC account	$ 25,000
Canadian River Municipal Water Authority	$ 50,000
Panhandle Groundwater Conservation District	$ 25,000
North Plains Groundwater Conservation District	$ 5,000
Hemphill County Underground Water Conservation District	$ 5,000
Total Local Contributions	**$110,000**

11. **Total grant funds requested from the Texas Water Development Board.**

Total Funds Requested for the Project	$599,087.00
Total Funds Available from TWDB non-competitive	$ 43,875.00
Total Funds Needed from TWDB on the competitive basis	**$555,212.00**

The Panhandle Water Planning Group has committed to supplement the amount requested with $110,000 or a maximum of 20% of the total project. In the event that the TWDB partially funds the project, the local match will be 20% of the total amount of funding awarded for the study. The local match will be used to fund the drilling and core sampling of approximately $58,000 and other administrative

expenses of $13,518 necessary to complete this project that may not qualify for funding from the TWDB. The remaining local funds of $38,482 will be allocated as supplemental funds toward the approved project. Please note the non-competitive funds of $43,875 for administration are included in the PRPC budget and are requested as part of this application.

12. Detailed statement of the purpose for which the money will be used.
The funds will be used to develop information needed to refine the water supplies critical to water management strategies selected by the water user groups located in Region A and Region O for future supplies. Both of these water-planning regions are dependent on the Canadian River Municipal Water Authority (CRMWA) system for the supply of water for the cities served by CRMWA. The 11 cities are Pampa, Borger, Amarillo, Plainview, Lubbock, Slaton, Tahoka, O'Donnell, Lamesa, Brownfield, and Levelland with a 2000 census population of 470,052.

Both Region A and Region O have conducted a joint Water Planning Meeting, and the following are recommendations from the two regions as priorities of future studies that would benefit both regions.

Priority 1: Conduct a study of the recharge rate of the Ogallala Aquifer in the Eastern Panhandle of Texas. Due to the current drought of record the two regions have been experiencing, Lake Meredith, the main source of surface water for the CRMWA water supplies has shown a substantial depletion in available surface water. This decline in supplies has required CRMWA to increase production of ground water from the Ogallala in Roberts County. The requested funds will be used to accurately determine the recharge rates of the Ogallala in the Eastern Panhandle of Texas. Knowing the recharge rates will provide both regions with a better ability to make sound decisions on water conservation and groundwater availability for the next fifty years. This study is also designed to evaluate existing ponds to show the possible affects of building enhanced recharge structures. Quantification of the recharge in the Eastern Panhandle is needed and is supported by Region A and Region O as their number one priority. Region A has agreed to submit an application for this priority.

Priority 2: Conduct an evaluation of changed conditions in Castro, Deaf Smith, Parmer, Bailey, Lamb and Hale counties all located within Region O. The changed conditions are the addition of ethanol plants and a number of large dairies than were anticipated in the development of the 2006 Regional Water Plan. Funding will be used to estimate increased water demand due to increased population, the new industries, and irrigated agriculture, and to evaluate the Dockum Aquifer, including an estimation of cost of desalinating water from the Dockum to meet these new demands. Region O has agreed to submit an application for this priority.

Priority 3: The requested funding would be used to identify and describe interactive video conferencing services needed by the Regions for coordination of regional water planning, and to present estimates of cost for the interactive video conferencing for these purposes. Region O has agreed to submit an application for this priority.

13. Detailed description of why state-funding assistance is needed.

Pursuant to Senate Bill 1 (1997) Texas was divided into 16 regional water-planning regions by the TWDB. Each region is required to develop and adopt a regional water plan in 2001, and every five years thereafter. In response to SB1, as amended, the Panhandle Water Planning Group (Region A) has developed regional water plans for 2001, 2006 and is beginning the process to develop a plan that will be submitted for 2011.

SB 1 required the local planning groups to solicit voluntary funding from local governments, counties, water districts, surface water authorities and other stakeholders within the region. Region A has been successful in receiving these contributions and has utilized these funds in the development of the previous plans. However, the amount of funding required to develop a regional water plan is so costly that additional funds are needed. The only possible source of additional funding at this time is from the TWDB. It is for this reason that Region A respectively requests additional funding to further provide the interim study and diligence needed to begin the development of the five year water plan that is required to be produced.

Regions A and O understand the limited funding that is available from the TWDB. Because of these limited competitive funds, the two regions have coordinated the requested funds for study and have prioritized the needs of both regions with mutual support for the listed priorities in this application and attached resolution. This application for funding assistance focuses on the recharge of the Ogallala Aquifer in the Eastern Panhandle and has committed matching funds toward this project. This research will not be possible to complete without the additional requested funding assistance from the TWDB.

14. Identify potential sources and amounts of funding available for implementation of viable solutions resulting from the proposed planning.

Wholesale water providers in the Panhandle Water Planning Area will benefit from the implementation of solutions based on the proposed planning work by determining desired future conditions of the Ogallala aquifer and developing a sustainable yield framework. Major permit applications for future projects that are dependent on groundwater resources in the study area will benefit from the results of this study and may be identified as potential sources of funding for further implementation. If the study shows appreciable increase in recharge due to existing impoundment structures, a cooperative project between local groundwater districts and groundwater suppliers to build enhanced recharge structures is a possibility.

II. Planning Information

15. A detailed scope of work for the proposed planning. (not to exceed 6 pages)

Quantification of Recharge to the Ogallala Aquifer in the Eastern Panhandle, Texas

Background

A major water management strategy selected during the second round of planning was to develop additional groundwater in Roberts and portions of the surrounding Counties. This study will investigate the potential for recharge in the area, the development of a sustainable yield determination for major producers for use in the regional planning effort, and improved estimates for use in revising GAM inputs and results. The study will help in the evaluation and implementation of the recommended water management strategy to develop additional groundwater from the Eastern Panhandle.

Proposed Scope of Work

Task 1.1 Quantify Recharge Rates Using the Chloride Mass Balance Approach

The spatial variability in natural groundwater recharge will be estimated using the chloride mass balance approach.

A. Data Collection: Existing data will be examined to determine optimal sites for field evaluation of recharge rates. Soil texture data will be obtained from STATSGO and SSURGO (USDA, 1994, 1995). Land use information will be obtained from National Land Cover Data (NLCD; 1992) (Vogelmann, 2001). Groundwater level data will be obtained from the Texas Water Development Board to determine thickness of the unsaturated zone. County soil survey reports will be reviewed for Roberts and neighboring counties. Soil and geologic records will be reviewed to determine the distribution of shallow caliche zones. Generally areas with strongly developed, shallow caliche have little or no recharge. Evapotranspiration data from the Bushland Agricultural Research Service from lysimeter records will be examined to determine variations in ET in rangeland and crops.

B. Field Investigation: Boreholes will be drilled in the field and soil samples collected for laboratory analysis of chloride concentrations in pore water to estimate recharge rates.

B1. Borehole Siting: Representative borehole locations will be chosen on the basis of GIS information on various parameters, including topography (DEM), soil texture from SSURGO and STATSGO (USDA 1984, 1985), land cover (Vogelmann, 2001), and water table depth and aquifer saturated thickness (Texas Water Development Board). Preliminary reconnaissance will be conducted using surface geophysics to evaluate variability in apparent conductivity of potential drilling sites.

B2. Geoprobe Sampling: Drilling in year one of the project will be conducted with a Geoprobe drilling rig. Approximately eight boreholes will be drilled. Maximum depths that can be attained with the Geoprobe drill rig are generally 30 to 50 ft. Boreholes will be spatially distributed throughout the study area to represent different topographic settings, geomorphic settings (distance from the river), and land use regions (rangeland, dryland).

B3. Deep Borehole Drilling: On the basis of the results of this drilling, two additional boreholes will be drilled to a maximum depth of 300 to 400 ft in representative areas in year two using a more powerful drill rig (e.g., Central Mine Equipment rig or similar caliber rig).
B4. Soil Sampling: Soil samples will be collected at varying depth intervals in each borehole (6 inches – 20 feet), and these samples will be analyzed for soil texture, water content, and anions including chloride, cations, and pressure head. Soil texture analyses will include evaluation of carbonate content to determine whether caliche zones are present.

C. Calculation of Recharge Rates: Recharge rates will be estimated using the chloride mass balance equation (Scanlon et al., 2002).
C1. Determine Chloride Concentrations: Chloride concentrations in soil pore water will be analyzed using ion chromatography. Pressure head data will provide information on the direction of water movement (upward or downward) at the time of sampling. The magnitude of the pressure heads will indicate soil wetness.
C2. Calculate Recharge Rates and Evaluate Soil Data Relative to Recharge Process: In addition to the chloride profiles and associated recharge rates, distribution of calcic soils, water content, pressure head, and other anion and cation data will be integrated to provide a comprehensive understanding of recharge processes in this setting.
C3. Extrapolate Results to Study Area: Regionalization of the point borehole recharge estimates will be conducted by comparing recharge estimates from different settings with topography, soil texture data from SSURGO (USDA, 2005), and land cover information (Vogelmann, 2001). These comparisons will help determine the dominant controls on spatial variability in groundwater recharge in this region.
C4. Technical Memorandum: A technical memorandum will be prepared documenting the field studies, calculation of recharge rates, and the spatial variability or recharge across the study area.

D. Evaluate Existing Ponds as Analogs for Enhanced Recharge Structures: Representative man-made ponds that have been operational for different time periods will be examined to determine the depth of penetration of water and the potential for enhanced recharge using similar structures.
D1. Field Study: Depending on availability of such structures, ponds will be chosen in different soils to assess the effect of soil texture on downward water movement. Surface geophysics will be used to estimate depth variations in conductivity as an indicator of subsurface water movement. Shallow boreholes will be drilled where feasible and soil samples analyzed for water content and anions and cations to determine the penetration depth of water movement beneath these features.
D2. Technical Memorandum: A technical memorandum will be prepared documenting the field studies, results, and the potential to utilize similar structures to enhance recharge within the study area.

Task 1.2 Numerical Modeling of Groundwater Recharge

Unsaturated zone modeling will be conducted to estimate recharge in this region and to evaluate controls on groundwater recharge that would allow regionalization of point recharge estimates from borehole data. In previous studies we have applied this approach to estimate an average recharge rate for Carson County (0.02 inch/yr) and for other counties in Texas (Keese et al., 2005). Modeling analyses will use either the UNSATH or HYDRUS codes.

A. Data Collection: Input data requirements for the model include meteorological forcing, vegetation parameters, hydraulic parameters for different soil types, and initial conditions. Precipitation data will be obtained from the National Climatic Data Center. Potential evapotranspiration will be calculated using the Penman Monteith equation. Vegetation parameters will be obtained from the literature and from discussions with local ecologists and agronomists. Time series of leaf area indices and rooting depths will be input to the model. Initial conditions will be estimated from previous field studies conducted for the Panhandle Groundwater Conservation District (Tachovsky et al., 2006). Soil textural information for the upper 2 m will be obtained from SSURGO version 2 data [U.S. Department of Agriculture (USDA), 1994]. Pedotransfer functions will be used to determine soil hydraulic properties. Rosetta software uses neural network programming and a database of measured texture, water retention, and saturated hydraulic conductivity to provide estimates of van Genuchten water retention parameters and saturated hydraulic conductivity for input to unsaturated flow models [Schaap et al., 2001].

B. Unsaturated Flow Modeling: Unsaturated flow modeling will be used to simulate drainage below the root zone, which is equated to groundwater recharge and assumes that climate and land use/land cover remain constant over timescales required for water to move from the root zone to the water table. Long-term (30 yr) precipitation will be used as the upper boundary condition for the simulations. The simulations focus on the water balance:

$$D = P - ET - R_o - DS \qquad (2)$$

Where D is deep drainage below the root zone, P is precipitation, ET is evapotranspiration, R_o is surface runoff, and DS is change in water storage.

C. Calculation of Recharge Value: A representative recharge value (30 yr average) will be calculated for Roberts County using 1-d simulations for each different combination of vegetation and soil texture within the county and spatially weighting each of these simulations on the basis of the area covered. Sensitivity analyses will be used to assess different controls on groundwater recharge. Variations in climate, vegetation, and soil texture will be examined using sensitivity analyses.

D. Technical Memorandum: A technical memorandum will be prepared documenting the methodology, data collection, and results of the groundwater recharge modeling.

E. Deliverables for Tasks 1.2 and 1.3:

1. Comprehensive printed final report will be developed and submitted to the planning group
2. GIS layers used in study
3. Electronic versions of the text (in Microsoft Word format) and graphics (in encapsulated PostScript format) used in the final report, and
4. Presentation of project methods and results to the Regional Water Planning Groups, Groundwater Conservation Districts, and TWDB staff

Task 1.3 Geochemical Studies

Background: Chemical, isotopic, and age-date data will be used to understand how water quality is likely to change as the aquifer is dewatered. The vertical gradient study provides information on differences in groundwater quality and groundwater age relative to depth within the aquifer and the underlying bedrock. The water quality information assesses potential for changes in the quality of produced water as the aquifer declines and the

influence of the underlying bedrock becomes more important. Groundwater age data help to define the stratification and residence time of water within the aquifer. The residence time is directly related to the amount of recharge and groundwater flow rate through the aquifer. The age data can be used as an independent calibration for predictive groundwater flow models. For example, if groundwater ages are significantly older than predicted by the numerical model, this implies that model parameters like recharge rate or hydraulic conductivity must be reduced to match these age data. The vertical gradient study independently constrains model parameters and adds validity to model predictions.

A. Field Investigation: The investigation will use existing or new wells in three locations to measure vertical gradients in water chemistry and age. The three well locations will be tested for chemical, isotopic, and age-date (tritium and carbon 14) compounds at specific depths to make the gradient determinations. It is assumed that three well locations will be available due to new construction or planned maintenance during the first year of the project. (Drilling is not expected or included in this proposal.)

B. Deliverables:

1. Any GIS layers used in the study.
2. Printed and digital copies of the final report.
3. Chemical, isotopic, and age-date data.

Task 1.4 Unsaturated Zone Geologic Framework

In this task, geologic logs for as many locations as possible will be collected that provide description of the lithologic materials from the base of the Ogallala to the surface. The dataset will include all logs available from the three groundwater conservation districts and the State of Texas.

The information collected will be used to construct a detailed representation of the unsaturated zone subsurface conditions in the study area. This task will emphasize the texture and permeability of the materials in the unsaturated zone, as well as the distribution of depth to water. The results will be presented as cross-sections and maps of the study area. Over most of the study area, the Ogallala Formation is exposed at the land surface. It has been well established elsewhere on the High Plains that there are vertical gradients in sediment texture and composition within the Ogallala that result in varied permeability, in some cases striking enough to produce local aquitards and perching layers within the aquifer (e.g. Carson County beneath the Pantex Plant). Where such layers intersect the land surface they may result in spring discharge sites. In most areas there are at least two "fining-upward" grain-size trends within the formation. It will be useful to document vertical textural variation within the aquifer because successively lower stratigraphic intervals in the Ogallala are exposed as one descends toward the Canadian River. Which part of the Ogallala is exposed at the land surface in a given area may strongly influence local recharge potential. If significant gaps are evident, collection of new soil and sediment samples will be done using some of the matching funds for drilling.

Deliverables.

1. Any GIS layers created of the geologic maps, texture, or permeability of the soils in the study area will be prepared and submitted to the planning group.
2. Paper and digital cross-section maps of the geology of the unsaturated zone of the study area will be prepared and submitted to the planning group.

3. Dataset used to construct the geologic models will be described and submitted in digital format to the planning group.

Task 1.5 Plan Consistency and Interregional Coordination

The PWPG is proposing to conduct interregional coordination efforts between Region A and Region O. The following tasks are proposed to be conducted under this request:

1. Coordinate results from Ogallala recharge study, and related water management strategy coordination.
2. Evaluate timing, quantity, location, and impact of water management strategies selected in other regions utilizing source water from within the Panhandle WPA.

The PWPG is requesting funds from the TWDB to conduct interregional coordination activities regarding changed conditions (actual and pending) for the third round of planning that affect both the PWPG-Region A and the Llano Estacado Region Water Planning Group (LERWPG) – Region O. The link between the two regions through the CRMWA system and the potential additional dependence between the two regions are the two main categories or topics of the request.

Specifically, the PWPG is proposing to conduct interregional coordination activities with Region O regarding the findings of the Ogallala recharge study. The changed conditions for this area are the reduced availability from the Canadian River Municipal Water Authority regarding the total available yield from the CRMWA system (surface and ground) and refined groundwater availabilities from the Ogallala aquifer. The CRMWA system utilizes conjunctive supply from Region A to meet demands in both A and O. The yields from this system are an important element to both A and O as reduced yields will impact water user groups in both regions. As the drought in Region A has continued beyond the development of the initial scope of work, the resulting effect on the CRMWA system is a changed condition affecting both regions A and O.

The second topic for interregional coordination will be potentially feasible water management strategies from Region O that use supply from Region A. This topic is directly related to the topic above as reduced yields from the CRMWA system may force entities in Region O to develop new water management strategies to meet their needs. It is possible that these strategies may focus on supplies in Region A. Should this occur, there will be a direct need for Interregional Coordination as both Regions stand to be directly affected by the proposed strategies. The PWPG believes that it is most appropriate to handle any efforts related to this issue under Interregional Coordination rather than to require the respective regions to dilute their allocated planning funds to address strategies from outside the region.

Task 1.6 Public Relations and Public Meetings

a. Prepare, manage, and attend public meetings for Panhandle Regional Water Planning Group and joint meetings with the Llano Estacado Planning Group throughout the third round of planning.

b. Attend public meetings and/or workshops, including public hearings required by legislation, state requirements, and as requested by the PRPC.

c. Develop description of public participation activities.

Task 1.7 Plan Adoption

a. Continue posting data on the Panhandle Region website. Update website as needed.

b. Attend public meetings and/or workshops, including public hearings required by state statutes and regulations, and as requested by the PRPC.

c. Develop description of public participation activities.

Task 1 Deliverables

The consultant shall provide fifty (50) hard copies of the draft Task 1 report and one hundred (100) hard copies of the final report to the PRPC. In addition, the consultant shall provide three electronic copies of all data collected and used in this study to the PRPC.

Task 2.1 Plan Administration

The PRPC will provide administrative functions in support of all activities in Task 1 including contract administration, subconsultant contract management and oversight, meeting preparation and management, posting of meeting notices, meeting attendance, and public participation activities.

Schedule

The tasks and subtasks will be undertaken according to the following timetable.

	Year 1				Year 2			
	0 to 3	3 to 6	6 to 9	9 to 12	0 to 3	3 to 6	6 to 9	9 to 12
Task 1.1								
Task 1.2								
Task 1.3								
Task 1.4								
Task 1.5								
Task 1.6								
Task 1.7								
Task 2								

Deliverables

Each task in this proposal is a stand-alone task. The deliverables of each task are listed with the task description.

Budget

Task	Task Description	Total Budget	FNI Budget	PRPC Budget	GW Consultant
Task 1	**Recharge Study**				
Task 1.1	Quantify Recharge Rates-Chloride Mass Balance	$ 239,395.00			$ 239,395.00
Task 1.2	Numerical Modeling of Recharge Rates	$ 87,299.00			$ 87,299.00
Task 1.3	Geochemical Studies	$ 200,000.00			$ 200,000.00
Task 1.4	Geologic Framework	$ 100,000.00			$ 100,000.00
Task 1.5	Plan consistency and Interregional Coordination	$ 15,000.00	$ 15,000.00		
Task 1.6	Public Participation and Public Meetings	$ 5,000.00	$ 5,000.00		
Task 1.7	Plan adoption	$ 5,000.00	$ 5,000.00		
Task 2	**Administration**				
Task 2.1	Scope of Work Development	$ 10,000.00		$ 10,000.00	
Task 2.2	Public Participation and Public Meetings	$ 30,000.00		$ 30,000.00	
Task 2.3	*Administrative and oversight	$ 17,393.00		$ 17,393.00	
	Total	**$ 709,087.00**	**$ 25,000.00**	**$ 57,393.00**	**$ 626,694.00**
	Local Match	**$ 110,000.00**			
		$ 599,087.00			

Category	Total Budget	FNI Budget	PRPC Budget	GW Consultant
Salaries & Wages	$ 204,411.00	$ 6,164.00	$ 15,958.00	$ 182,289.00
Fringe	$ 117,542.00	$ 3,606.00	$ 5,727.00	$ 108,209.00
Travel	$ 36,100.00	$ 4,000.00	$ 2,500.00	$ 29,600.00
Other Expenses	$ 111,976.00	$ 1,000.00	$ 5,845.00	$ 105,131.00
Subcontract Services			$ 651,694.00	
Overhead	$ 235,726.00	$ 6,898.00	$ 27,363.00	$ 201,465.00
Profit	$ 3,332.00	$ 3,332.00		
Total	**$ 709,087.00**	**$ 25,000.00**	**$ 709,087.00**	**$ 626,694.00**

* Administrative funds of $43,875 are non-competitive and are combined with the PRPC budget above. The costs will be distributed appropriately among all tasks upon award of funding.

16. Prioritization of scope of work tasks by the regional planning group.

Priority Number 1: Quantification of Recharge to the Ogallala Aquifer in the Eastern Panhandle of Texas. (In support of and in cooperation with Region O as a result of multiple joint sub-committee meetings that included members from both regions and final approval from both Regional Planning Group's Board of Directors.)

Priority Number 2: Estimation of Population and Water Demand increases, and Evaluations of Desalination of Water from the Dockum Aquifer in response to changed conditions in Castro, Deaf Smith, Parmer, Bailey, Lamb and Hale Counties. (In support of and in cooperation with Region O as a result of multiple joint sub-committee meetings that included members from both regions as included in the Region O scope of work and planning grant application)

Priority Number 3: Regional Coordination of Regions A and O – Investigate the use of interactive video conferencing to facilitate joint meetings.

17. **A task budget for the detailed scope of work by task –**
    Included in the Scope of Work.
18. **An expense budget for the detailed scope of work by expense category –**
    Included in the Scope of Work.
19. **A time schedule for completing the detailed scope of work by task –**
    Included in the Scope of Work
20. **Specific deliverables for each task in the scope of work –**
    Included in the Scope of Work
21. **Method of monitoring study progress –**
    Progress reports will be submitted to the TWDB as request for advance of funding are submitted. Additionally, the Region A Recharge Committee will conduct regular meetings to provide monitoring of the project and ensure that the scope of work is being performed in a timely manner that coincides with the timeline provided in the scope of work.
22. **Qualifications and direct experience of proposed project staff –**
    Included in the appendices of this application.

III. Written Assurances

- ✓ Proposed planning does not duplicate existing projects: there are no known studies pr previous studies conducted in the past pertaining to this area for this type if research.
- ✓ Implementation of viable solutions identified through the proposed planning will be diligently pursued and identification of potential sources of funding for implementation of viable solutions will be diligently pursued. The PWPG will provide leadership to encourage the implementation of the viable solutions that are discovered or developed from this study. An example of this would be to inform and educate the local land owners, water producers, water rights owners

and farmers of the sensitive recharge areas and what can be done to improve the recharge rates by implementing the results of this study.

- ✓ If grant is awarded, written evidence that local matching funds are available for the proposed planning will be provided when the contract is executed. If an amount is awarded less than the amount requested, the matching funds will be reduced to provide for a maximum match of 20% of the total funds awarded for the project.

IV. Proof of Notification

Notice was provided, not less than 30 days before the TWDB considered this application, that an application for planning assistance is being filed with the executive administrator of the TWDB in the following manner:

Published notice on July 16, 2006 once in a newspaper of general circulation in each county located in whole or in part in the regional water planning area; and
Mailed notice on July 13, 2006 to each mayor in each municipality that is located in any part of Region A, mailed notice on July 13, 2006 to each of the 21 county judges located in Region A, mailed notice on July 13, 2006 to all districts and authorities created under the Texas Constitution, Article III, subchapter 52, or Article XVI, subchapter 59 located in whole or in part in the regional water planning area based upon lists of such water districts and river authorities obtained from the Texas Commission on Environmental Quality, and mailed notice on July 13, 2006 all regional Water Planning groups in the state. The notice included the following:

- ✓ Name and address of applicant and applicant's official representative
- ✓ Brief description of the proposed planning area;
- ✓ Purpose of the proposed planning
- ✓ Texas Water Development Board Executive Administrator's name and address; and
- ✓ Statement that any comments on the proposed planning must be filed with the applicant and the TWDB Executive Administrator within 30 days of the date on which the notice was mailed.

Appendix C has a copy of the affidavit and the notice that was posted.

Appendix A

The purpose of this study is to estimate groundwater recharge in the eastern Panhandle region of the High Plains and to assess the potential for enhanced recharge through impoundments (Figure 1). Some background on the rational for the approaches proposed in this study is described, followed by a description of the approaches by tasks.

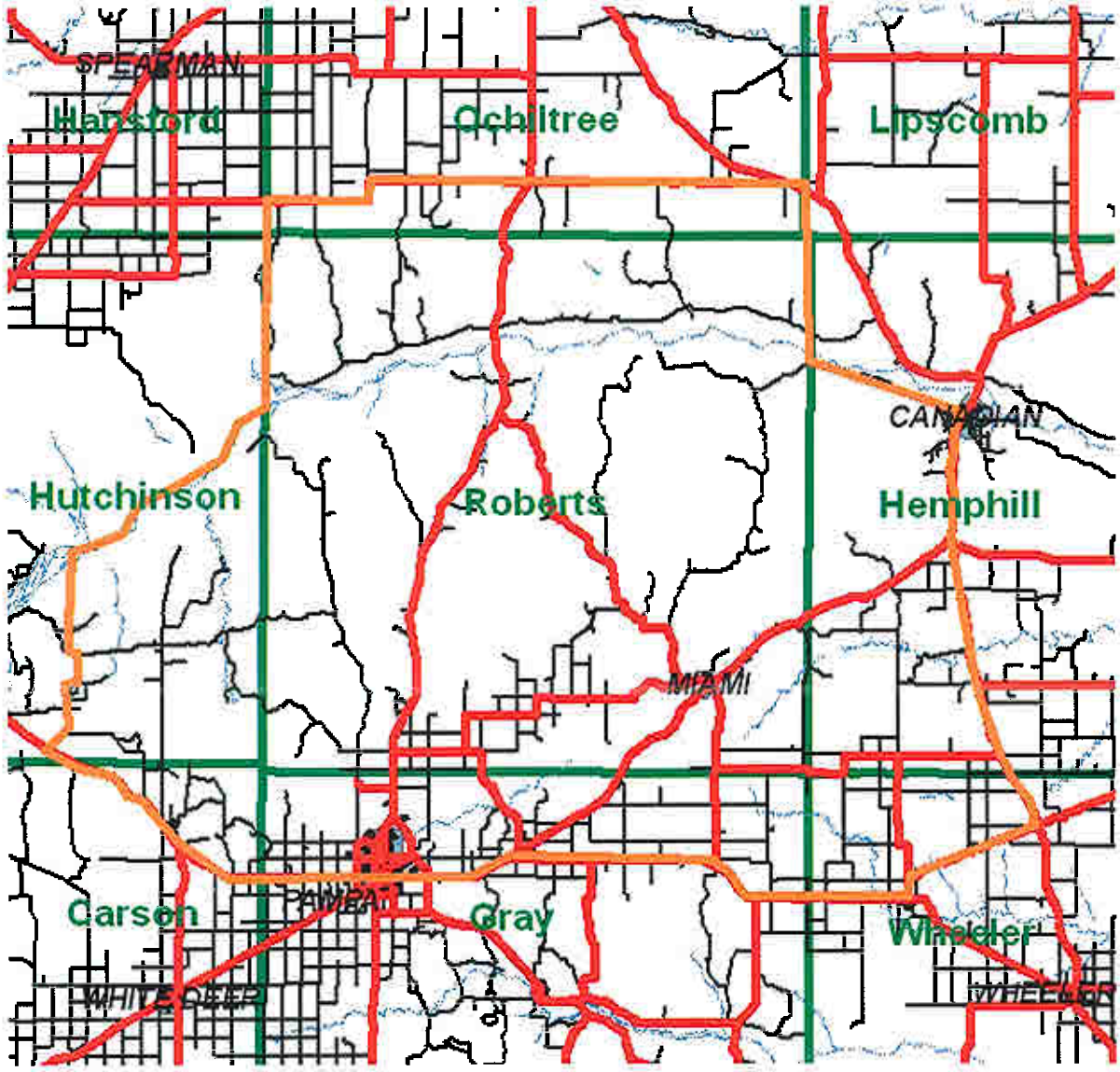

Figure 1. Location of the proposed study area in the eastern Panhandle Ogallala Recharge study area within the yellow boundary. The study area includes Roberts County and parts of neighboring counties (Hutchinson, Ochiltree, Hemphill, Wheeler, Gray, and Carson).

Background on Recharge Techniques and Rationale for Approach

Groundwater recharge is a critical parameter for water managers to evaluate how much water is replenishing an aquifer. Groundwater recharge is defined as addition of water to an aquifer, generally from above. The **water balance** of a system can be represented by the following:

$$P - ET - R_o - DS = R_{gw} \qquad (1)$$

where P is precipitation, ET is evapotranspiration, R_o is runoff, DS is change in groundwater storage, and R_{gw} is groundwater recharge. In semiarid regions, as in the eastern Panhandle Ogallala recharge (EPOR) region, recharge is generally the smallest component of the water balance equation and is therefore difficult to quantify. Any approach for estimating groundwater recharge that is based on a water balance will generally be highly uncertain because uncertainties in each of the water balance parameters will accumulate in the recharge term. For example if we simplify the above equation by assuming no runoff and no change in groundwater storage (valid for periods longer than a few years), then the water balance equation only has two inputs, precipitation and ET. If we assume 20 inches precipitation with 10% uncertainty and 19 inches in ET with 10% uncertainty, the resultant uncertainty in recharge is as follows:

$$20 \pm 2 - 19 \pm 2 = 1 \pm 4 \qquad (2)$$

Therefore, the maximum uncertainty in recharge is 400%. Most modeling approaches, including those based on surface water, unsaturated zone, or groundwater, are based on the water balance equation; therefore, recharge estimates can be highly uncertain

Various approaches can be used to estimate groundwater recharge (Scanlon et al., 2002). The most direct approach is the **water table fluctuation method,** which is based on the premise that rises in groundwater levels in unconfined aquifers are due to recharge water arriving at the water table. This approach was used successfully to estimate recharge in the vicinity of Dawson County, where long-term increases in groundwater levels over several decades resulted in an average recharge rate of 1 inch/year over a 1,300-mi^2 area (Scanlon et al., 2005). Areas underlain by rangeland in the southern High Plains did not show any systematic variation in groundwater levels over time, indicating no recharge. However, the water table fluctuation approach is often complicated by the effects of pumping, particularly in areas where large-scale irrigation pumping is occurring. **Groundwater dating** can also be used to estimate recharge rates; however, groundwater needs to be relatively young (< 50 yr) to use techniques such as tritium/helium dating, and age dates from unconfined aquifers, such as the Ogallala, are more difficult to interpret.

Unsaturated-zone techniques for estimating recharge are applied mostly in semiarid regions, where the unsaturated zone is generally thick, as in EPOR region. Unsaturated-zone techniques provide estimates of potential recharge, assuming that drainage below the root zone will ultimately reach the underlying aquifer. Many of these techniques provide **long-term** average recharge rates over decades to millennia. Many unsaturated techniques can also be used to estimate recharge beneath features used to enhance recharge, such as ponds, etc.

Unsaturated zone tracers are often used to estimate recharge. The subsurface distribution of bomb pulse tritium is used to estimate the depth of water movement during the past 50 yr. Recent studies by McMahon et al. (2006) indicate that bomb pulse tritium was restricted to the near surface zone beneath rangeland areas; therefore, this technique may not be appropriate for much of the proposed study area, which is predominantly rangeland. The most widely used unsaturated zone technique is the **chloride mass balance** (CMB) approach. The mass of chloride moving into the soil profile from

precipitation (Precipitation, P, × Cl concentration in precipitation PClp) is balanced with the mass of chloride moving out of the system in drainage or recharge (Recharge, R, Cluz or Clgw, Cl concentration in unsaturated zone pore water or groundwater). Uncertainties in recharge estimates based on this technique decrease as the recharge rate decreases. This approach has been used to estimate a really averaged recharge rate of 0.4 inches/year in the central High Plains (Wood and Sanford, 1995). The CMB approach has been use to shown that there is no recharge in interplaya rangeland settings in Carson County or in rangeland sites recently evaluated in Gray and Armstrong Counties, where soil clay contents are high (Scanlon and Goldsmith, 1997; Tachovsky et al., 2006). Recharge rates beneath rangeland settings in sandier sites ranged from 0.1 to 0.3 inch/yr (Donley, Roberts, and Wheeler Counties) (Tachovsky et al., 2006). The CMB approach showed recharge rates beneath dryland agriculture were about 1 inch/yr (median 4 sites) in the central and southern High Plains (Scanlon et al., 2005; Tachovsky et al., 2006)

Numerical modeling can also be used to estimate recharge. Previous unsaturated zone modeling analyses based on 30 yr climate records using the UNSATH computer code resulted in recharge rates of 0.02 inch/yr in the Amarillo region (Keese et al., 2005). Modeling analysis is probably best for sensitivity testing to evaluate controls on groundwater recharge, which helps regionalize point recharge estimates.

REFERENCES

Keese, K. E., B. R. Scanlon, and R. C. Reedy. 2005. Assessing controls on diffuse groundwater recharge using unsaturated flow modeling. Water Resources Research **41**:W06010, doi:06010.01029/02004WR003841.

McMahon, P. B., K. F. Dennehy, B. W. Bruce, J. K. Bohlke, R. L. Michel, J. J. Gurdak, and D. B. Hurlbut. 2006. Storage and transit time of chemicals in thick unsaturated zones under rangeland and irrigated cropland, High Plains, United States. Water Resources Research **42**:doi:10.1029/2005WR004417.

Scanlon, B. R., and R. S. Goldsmith. 1997. Field study of spatial variability in unsaturated flow beneath and adjacent to playas. Water Resources Research **33**:2239-2252.

Scanlon, B. R., R. W. Healy, and P. G. Cook. 2002. Choosing appropriate techniques for quantifying groundwater recharge. Hydrogeology Journal **10**:18-39.

Scanlon, B. R., R. C. Reedy, D. A. Stonestrom, D. E. Prudic, and K. F. Dennehy. 2005. Impact of land use and land cover change on groundwater recharge and quality in the southwestern USA. Global Change Biology **11**:1577-1593.

Schaap, M. G., F. J. Leij, and M. T. van Genuchten. 2001. ROSETTA: a computer program for estimating soil hydraulic parameters with hierarchical pedotransfer functions. Journal of Hydrology **251**:163-176.

Tachovsky, J. A., R. C. Reedy, D. Kurtzman, and B. R. Scanlon. 2006. Reconnaissance study of groundwater recharge in the central High Plains of Texas. Report for Panhandle Groundwater Conservation District.

USDA. 1994. State soil geographic (STATSGO) Data Base. National Resour. Cons. Svc., Misc. Pub. No. 1492, variably paginated.

USDA. 1995. Soil Survey Geographic Data Base, SSURGO. Natural Resour. Cons. Svc., USDA, Misc. Pub. 1527, variably paginated.

Vogelmann, J. E., S. M. Howard, L. Yang, C. R. Larson, B. K. Wylie, and N. van Driel. 2001. Completion of the 1990s National Land Cover Data set for the conterminous United States from

Landsat Thematic Mapper data and ancillary data sources. Photogrammetric Engin. and Remote Sensing **67**:650-662.

Wood, W. W., and W. E. Sanford. 1995. Chemical and isotopic methods for quantifying ground-water recharge in a regional, semiarid environment. Ground Water **33**:458-468.

Appendix B

QUALIFICATIONS OF CONTRACTORS

Bureau of Economic Geology (BEG): Qualifications and Experience of Project Staff that are Directly Related to this Project

The research team is uniquely qualified to conduct this study and consists of hydrologists, GIS specialists, and modelers. Dr. Bridget R. Scanlon, Senior Research Scientist, will serve as principal investigator and will be responsible for the overall management of this project. She has about 20 years' experience in recharge estimation using physical, chemical, isotopic, and modeling approaches. Her recent research included evaluation of recharge in the southern High Plains and relationships to land use. She conducted recharge studies for over a decade for the Department of Energy in the nearby Pantex Plant. She has taught Vadose Zone Hydrology courses at The University of Texas at Austin (Dept. of Civil Engineering and Dept. of Geological Sciences) that include evaluation of recharge. She has also taught national short courses on groundwater recharge estimation.

Mr. Robert Reedy has extensive experience in measurement and monitoring of vadose zone parameters related to evaluation of groundwater recharge. Mr. Reedy has conducted several field studies to quantify recharge in west Texas and in the southern High Plains. He has set up monitoring stations in the High Plains and Chihuahuan Desert to monitor temporal variations in infiltration in the shallow subsurface. He is an expert in remote monitoring of soil physical parameters. He has experience in laboratory measurements of pressure head on soil samples collected in the field and laboratory calibration of field instrumentation. He has also conducted research on the use of EM induction in the field and published a refereed journal on this topic. He has an in-depth knowledge of recharge processes in the High Plains as a result of his long record of conducting studies in this environment.

Mr. Andrew Tachovsky has experience in conducting field recharge studies and laboratory chemical analyses to support recharge studies. He recently completed the reconnaissance recharge study in several counties in the central High Plains, including Roberts County for the Panhandle Groundwater Conservation District.

Dr. Gil Strassberg is a GIS specialist. He completed his Ph.D. in December 2005 with Dr. David Maidment, an international expert in GIS. He is proficient at manipulating datasets very efficiently. He has also conducted modeling studies to estimate recharge rates using HYDRUS-1D code.

TTU Team

Dr. Richard Zartman is the Leidigh Professor in the Plant and Soil Science Department at Texas Tech University. He has been a Professor of Soil Physics in that department since 1974. He is a Certified Professional Agronomist, Certified Professional Soil Scientist, and Licensed Professional Geoscientist. He has twice received the College of Agricultural Science and Natural Resources Outstanding Researcher Award (2003 and 2006). He has four books and book chapters, 46 refereed publications, and 42 technical publications/popular articles. His research experience includes previous studies of soils, vegetation, and infiltration in Carson County at the Pantex Plant, and ongoing field

investigation of land use impacts on playa recharge as part of the Ogallala Aquifer Initiative.

David B. Thompson, Ph.D., P.E., is an Associate Professor in the Civil Engineering Department, the College of Engineering, Texas Tech University. Dr. Thompson has 30 years experience in engineering practice and research, has been principal investigator for numerous research projects, and has more than 70 technical publications. His primary research interest includes the hydrologic and hydraulic aspects of rainfall-runoff processes, especially quantifying the watershed characteristics that control abstractions of precipitation to infiltration. Dr. Thompson is a member of the Technical Advisory Panel (TAP) of TxDOT Research Management Committee No. 3 (RMC-3) on Hydraulics, Environment, and Right-of-Way. He is also a past member of the Transportation Research Board Technical Committee A2A03)now AFB60) on Hydrology, Hydraulics, Hydrology, and Water Quality. His past research experience includes detailed studies of the surface water balances, and related recharge, in playa basins in Carson County at the Pantex Plant. He also led a hydraulic study of energy losses in the CRMWA's Central System Pipeline that supported a rehabilitation program to regain flow capacity.

Dr. Tom Lehman is a Professor of Geosciences with research and teaching interests in sedimentology, stratigraphy, and paleontology. He has been at Texas Tech University since 1985. He has made major contributions to the understanding of the Triassic sediments in the high Plains of Texas and New Mexico. He has led studies of caliche in buried Quaternary and Tertiary soils. He has worked in numerous research and consulting projects on characterization of groundwater conditions in the Texas High Plains. He has also partnered with the USGS in assembly of geologic logs for wells and test holes drilled as part of the USGS' High Plains NAWQA program.

Lucia Barbato is a Senior Research Associate and Associate Director of the Center for Geospatial Technology at Texas Tech University. Ms. Barbato is a successful industry professional with over 20 years of experience in geographic information systems (GIS). She has broad experience in GIS project management, the development of enterprise systems, database design and geoprocessing. Over the past several years she has served as a principal investigator on projects involving surface and groundwater mapping, agricultural research, land management, and rural health care. Her recent experiences include mapping Ogallala Aquifer base elevation, water levels, and storage volumes for the High Plains Underground Water Conservation District, and for the Ogallala extent in Texas, New Mexico, and Oklahoma as apart of the Ogallala Aquifer Initiative. She also just completed a study of the variations in transmissivity of the Ogallala across five High Plains counties.

Dr. Kevin Mulligan is an Associate Professor of Geography and Director of the Center for Geospatial Technology at Texas Tech University. He has extensive experience in the field of geographic information systems (GIS) and remote sensing. Dr. Mulligan's research has focused on the integration of GIS and remote sensing applications in water resources, agriculture, and rural health. He brings to this project

considerable experience in land use/land cover mapping. His recent experiences include mapping Ogallala Aquifer base elevation, water levels, and storage volumes for the high Plains Underground Water Conservation District, and for the Ogallala extent in Texas, New Mexico, and Oklahoma as part of the Ogallala Aquifer Initiative.

Ken Rainwater, Ph.D., P.E., DEE, is a professor of Civil Engineering and Director of the Water Resources Center at Texas Tech University. He has over 20 years of experience in groundwater hydrology, groundwater management, numerical modeling, and aquifer and soil remediation. He has over 100 technical publications and has participated in over 65 research projects while at TTU. His research experience includes several regional groundwater modeling project in the Southern and Northern High Plains of Texas, including the most closely calibrated and detailed study of recharge and return flow in the Southern High Plains. He has led the TTUWRC's research efforts at the Pantex Plant in Carson City, dealing with characterization of soil and groundwater contamination, as well as strategies for remediation. He worked with Dr. Thompson and Dr. Warren Wood of the USGS on observation and modeling of recharge from playa basins at the Plant. He is also part of the TTUWRC team that has been studying the presence of perchlorate in the hydrologic cycle. This study has included sampling and analyses of hundreds of groundwater and soil samples, and has led to new understand of the role of the region's unsaturated zone for transport and storage of water and solutes. He has worked in several research and consulting projects for characterization of groundwater conditions in the High Plains. He also participates in the Ogallala Aquifer Initiative program, including both the aquifer mapping project with Dr. Mulligan and Ms. Barbato, and the regional playa recharge study with Dr. Zartman and other colleagues.

USGS Project Team

MaryLynn Musgrove is a geochemist with the US geological Survey in Austin, Texas. Here research interests and expertise include geochemical and isotopic applications to hydrogeology, groundwater and aquifer response to climate change, and water resource issues. She has extensive experience applying a range of geochemical and isotopic tracers to groundwater systems. She also has interest and experience in terrestrial paleoclimate, the interface between environmental science and science policy, and environmental contaminants. MaryLynn holds a Bachelor's degree in Geology from the University of Florida, and a Master's and PhD in Geological Sciences from the University of Texas at Austin. She was a postdoctoral fellow at Harvard University in both the Earth and Planetary Sciences Department and the Kennedy School of Government, and a research fellow in the Jackson School of Geosciences at the university of Texas at Austin prior to joining the USGS.

Lynne Fahlquist is a hydrologist with the US Geological Survey in Austin, Texas. Lynne has a Masters degree in Geology from Texas A&M University and has extensive experience working on the High Plains aquifer system in Texas. She contributed directly to the High Plains NAWQA study that has co-authored several publications on High Plains groundwater.

Peter McMahon is a Research Hydrologist with the US geological Survey. He has 22 years of experience in the areas of groundwater geochemistry and age dating. Most recently, he has been involved in a study of groundwater recharge, chemistry, and age dating for the entire High Plains aquifer system. His work has resulted in several recent USGS publications. He has a Ph.D. in Geology from the University of South Carolina at Columbia and a Masters degree in Geology from the University of Texas in Austin.

Bret Bruce is Supervisory Hydrologist with the US Geological Survey. He has more than 15 years of experience in the areas of groundwater geochemistry and age dating. Currently, he is program manager for the High Plains Regional Ground-Water Study, which includes the High Plains NAWQA program. He has a Masters degree in Geology from the University of Wyoming.

Appendix B

Copy of Affidavit and public notice of the newspaper posting.

Amarillo Globe-News
P.O. Box 2091 Amarillo, Texas 806-376-4488
Legal Notice

Amarillo Daily News

P R P C
PO BOX 9257
AMARILLO TX 79105

REFERENCE: 0041390 JANITORIAL
6071521186 LEGAL NOTICE

THE STATE OF TEXAS
BEFORE ME, a Notary Public in and for the State of Texas, personally appeared

Diane Maynard

LEGAL CLERK of the Amarillo Globe-News Publishing Company, after being by me duly sworn did dispose and state that the above statement is true and correct and the attached was published on the dates set forth therein.

PUBLISHED ON: 07/16

FILED ON: 07/16/06

Sworn and subscribed to before me the 18th day of July 2006

Alissa Von Theumer

Notary Public State of Texas

ALISSA VON THEUMER
Notary Public
State of Texas
My Comm. Exp. 12-02-09

PUBLIC NOTICE OF PUBLIC MEETING AND PUBLIC HEARING Region A Panhandle Water Planning Group will hold a public meeting and a public hearing starting at 1:30 pm on August 16, 2006 at the offices of the Panhandle Regional Planning Commission located at 415 W. 8th Ave Amarillo, Potter County, Texas.

1. Notice is hereby given that the Region A Panhandle Water Planning Group is seeking public input on the scope of work for the third round of regional water planning. Written and oral comments regarding the scope of work will be accepted at the public meeting. Written comments may also be received by mail by 5:00 pm on August 17, 2006.

2. Notice is also given that the Panhandle Regional Planning Commission (PRPC) will submit, on or before September 14, 2006, a grant application for financial assistance to the Texas Water Development Board (TWDB) to carry out the scope of work. Copies of the grant application may be obtained from the PRPC when it becomes available. Written and oral comments regarding the grant application will be accepted at the public hearing. Written comments regarding the grant application may be submitted by mail to the PRPC by 5:00 pm August 17, 2006 and to the TWDB, Attn: Kevin Ward, Executive Administrator, P.O. Box 13231 Austin, TX 78711-3231

3. Notice is also given to the public that the PWPG is seeking nominations for board members to serve on the PWPG. Nominations for representatives are being solicited to serve as a board member representing the following interest groups: Agriculture (1 seat), Environmental (1 seat), County (1 seat), Small Business (1 seat), Industry (1 seat), Water Utilities (1 seat), and Water Districts 9 (2 seats) for a total of eight positions. Nominees must be a person that has knowledge or specific interest as defined by Senate Bill 1 and TAC 357, be willing to participate in the regional water planning process and abide by the by-laws of the PWPG. Nominations will be accepted by phone, facsimile or by mail received on or before 5:00 pm on August 16, 2006. Nominations must include: Nominee's name, address, telephone number and which interest group and /or entity the nominee represents.

The Region A Panhandle Water Planning Group (PWPG) includes all of the following counties: Dallam, Sherman, Hansford, Ochiltree, Lipscomb, Hartley, Moore, Hutchinson, Roberts, Hemphill, Oldham, Potter, Carson, Gray, Wheeler, Randall, Armstrong, Donley, Collingsworth, Hall and Childress Counties.

For additional information, submission of written comments, requests and nominations, please contact the PRPC, Chris Coffman, Local Government Services Director, P.O. Box 9257 Amarillo, TX 79105 or call 806-372-3381.

Appendix C

Resolutions from Region A and Region O Water Planning Groups illustrating support of the proposed study activities.

Resolution 2006-1

A RESOLUTION ILLUSTRATING THE INTER-REGIONAL COORDINATION BETWEEN REGION A AND REGION O AND THE INTENT TO JOIN IN AGREEMENT IN THE DEVELOPMENT AND PRIORITIZATION OF THE SCOPE OF WORK FOR THE 2006 APPLICATION FOR PLANNING FUNDS AVAILABLE FOR TWO YEAR STUDY PROJECTS FROM THE TEXAS WATER DEVELOPMENT BOARD.

Whereas, Regions A & O have formed a Joint Inter-Regional Coordination Committee and a Joint Sub-Committee on the recharge of the Ogallala, and;

Whereas, these two committees have met on numerous occasions and discussed the needs of both regions in regard to the needs and special considerations of both regions, and;

Whereas, the Region A Panhandle Water Planning Group and the Regional O Llano Estacado Regional Water Planning Group have determined and prioritized the needed areas of study and inter-regional coordination that is important to both regions, and would demonstrate the advantages of cooperative efforts of each Region and;

Now, therefore, be it resolved,

The number one priority for Region A and Region O during the next two years of planning is the Ogallala Recharge Study in the eastern panhandle of Texas counties, furthermore, Region A will be the lead agency by submitting an application for funding for this project to the Texas Water Development Board.

The number two priority for Region A and Region O during the next two years of planning is the Desalination in Bailey, Castro, Deaf Smith, Hale, Lamb, and Parmer, Counties Study, furthermore, Region O will be the lead agency by submitting an application for funding for this project to the Texas Water Development Board.

The number three priority for Region A and Region O during the next two years of planning is the interactive video conferencing project that enhances inter-regional coordination, furthermore, Region O will be the lead agency by submitting an application for funding for this project to the Texas Water Development Board.

Considered and approved this 18th day of August, 2006 by the Board of the Region A Panhandle Water Planning Group.

C.E. Williams, Region A Chairman
Panhandle Water Planning Group

A RESOLUTION ILLUSTRATING THE INTERREGIONAL COORDINATION BETWEEN REGIONS A & O AND THE INTENT TO JOIN IN AGREEMENT IN THE DEVELOPMENT AND PRIORITIZATION OF THE SCOPE OF WORK FOR THE 2006 APPLICATION FOR PLANNING FUNDS AVAILABLE FOR TWO-YEAR STUDY PROJECTS FROM THE TEXAS WATER DEVELOPMENT BOARD

WHEREAS, Regions A & O have formed a joint Interregional Coordination Committee and a Joint Subcommittee on the recharge of the Ogallala aquifer, and;

WHEREAS, these two committees have met on numerous occasions and discussed the needs of both regions in regard to the needs and special considerations of both regions, and:

WHEREAS, the Panhandle Water Planning Group ("Region A") and the Llano Estacado Regional Water Planning Group ("Region O") have determined and prioritized the needed areas of study and interregional cooperation that is important to both regions, and would demonstrate the advantages of cooperative efforts of each Region, and:

NOW THEREFORE BE IT RESOLVED that:

The number one priority for Region A and Region O during the next two years of planning is the Ogallala Recharge Study in the eastern Panhandle of Texas, furthermore, Region A will be the lead agency by submitting an application for funding for this project to the Texas Water Development Board.

The number two priority for Region A and Region O during the next two years of planning is the desalination study of water from the Dockum aquifer in response to changed conditions in Deaf Smith, Castro, Parmer, Bailey, Lamb, and Hale Counties, furthermore, Region O will be the lead agency for funding for the project to the Texas Water Development Board.

The number three priority for Region A and Region O during the next two years of planning is the interactive video conferencing project that enhances interregional coordination, furthermore, Region O will be the lead agency for funding for the project to the Texas Water Development Board.

Considered and approved this 31st day of August by the Llano Estacado Regional Water Planning Group membership.

H. P. (Bo) Brown Jr., Chairman
Llano Estacado Regional Water
Planning Group

Application Checklist

I. GENERAL INFORMATION

- ☑ 1. Legal name of applicant(s).
- ☑ 2. Regional Water Planning Group:
- ☑ 3. Authority of law under which the applicant was created.
- ☑ 4. Applicant's official representative, Name, Title, Mailing address, Phone number, Fax number, if available, E-mail Address, and Vendor ID Number.
- ☑ 5. Is this application in response to a Request for Proposals published in the Texas Register?
  Yes ☑ No ☐
- ☑ 6. If yes to No. 6 above, list document number and date of publication of the Texas Register.
- ☑ 7. Type of proposed planning (Check all that apply)
  Initial scope of work ☐
  Development of a regional water plan ☑
  Revision of a regional water plan ☑
  Special studies approved by TWDB ☑
- ☑ 8. Total proposed planning cost
- ☑ 9. Cash Contribution to the study.
- ☑ 10. List source of cash contribution, explanation of source of local cash contribution.
- ☑ 11. Total grant funds requested from the Texas Water Development Board.
- ☑ 12. Detailed statement of the purpose for which the money will be used. . (Not to exceed 1 page.)
- ☑ 13. Detailed description of why state funding assistance is needed. (Not to exceed 1 page.)
- ☑ 14. Identify potential sources and amounts of funding available for implementation of viable solutions resulting from proposed planning.

II. PLANNING INFORMATION

- ☑ 15. A detailed scope of work for proposed planning. (Not to exceed 6 pages.)
- ☑ 16. Prioritization of scope of work tasks by the regional planning group.
- ☑ 17. A task budget for detailed scope of work by task. *Example is attached.*
- ☑ 18. An expense budget for detailed scope of work by expense category. *Example is attached.*
- ☑ 19. A time schedule for completing detailed Scope of Work by task.
- ☑ 20. Specific deliverables for each task in Scope of Work.
- ☑ 21. Method of monitoring study progress.
- ☑ 22. Qualifications and direct experience of proposed project staff.

III. WRITTEN ASSURANCES

Written assurance of the following items:

☑ Proposed planning does not duplicate existing projects;

☑ Implementation of viable solutions identified through the proposed planning will be diligently pursued and identification of potential sources of funding for implementation of viable solutions;

☑ If a grant is awarded, written evidence that local matching funds are available for the proposed planning must be provided when the contract is executed.

IV. PROOF OF NOTIFICATION

☑ Proof of notification

Develop or revise regional water plans. Eligible applicants requesting funds to develop or revise regional water plans must, not less than 30 days before board consideration of the application, provide notice that an application for planning assistance is being filed with the executive administrator by:

(1) publishing notice once in a newspaper of general circulation in each county located in whole or in part in the regional water planning area; and

(2) mailing notice to each mayor of a municipality with a population of 1,000 or more or which is a county seat and that is located in whole or in part in the regional water planning area, to each county judge of a county located in whole or in part in the regional water planning area, to all districts and authorities created under Texas Constitution, Article III, §52, or Article XVI, §59, located in whole or in part in the regional water planning area based upon lists of such water districts and river authorities obtained from Texas Commission on Environmental Quality, and all regional water planning groups in the state.

The notice must include the following:

☑ Name and address of applicant and applicant's official representative;

☑ Brief description of proposed planning area;

☑ Purpose of the proposed planning;

☑ Texas Water Development Board Executive Administrator's name and address; and

☑ Statement that any comments on the proposed planning must be filed with the applicant and the Texas Water Development Board Executive Administrator within 30 days of the date on which the notice was mailed.