Region D – North East Texas Regional Water Planning Group

Application for Funding

to:
Texas Water Development Board
Research and Planning Fund
Senate Bill One
Regional Water Planning

September 14, 2006

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September 14, 2006

Texas Water Development Board
Contracts Administration Division
Stephen F. Austin Bldg.
P.O. Box 13231
Austin, Texas 78711-3231

Ref: North East Texas Region (NETRWPG)
Round 3 Application & Scope of Services

Contracts Administration Division:

This Application for Round 3 Planning Funds and the accompanying Scope of Services are being submitted on behalf of the North East Texas Regional Water Planning Group (Region D). The Planning group has reviewed the information and their comments have been included in the final document. The required 5 copies and an electronic copy have been included.

The proposed project team has been included in the application. It will consist of Hayes Engineering, Hayter Engineering Inc., Bucher Willis & Ratliff Corporation, Bob Bowman & Associates and LBG/ Guyton. Brief resumes for key personnel have been included in the application.

The NETRWPG hereby provides 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;
- Local matching funds are not available for the proposed planning.

Should there be any questions or comments concerning this application please do not hesitate to connect this office or the executive administrator, the General Manager, Northeast Texas Municipal Water District.

Sincerely,
Bucher, Willis & Ratliff Corporation

James R. Flemons, PE
Project Manager

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Section I - General Information

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Application Checklist

I. GENERAL INFORMATION

☑ 1. Legal name of applicant(s).

Northeast Texas Municipal Water District

☑ 2. Regional Water Planning Group:

North East Texas Regional Water Planning Group (Region D)

☑ 3. Authority of law under which the applicant was created.

Texas Water Code §16.053

☑ 4. Applicant's official representative, Name, Title, Mailing address, Phone number, Fax number, if available, E-mail Address, and Vendor ID Number

Mr. Walt Sears
District Administrator
Hwy 250 South
PO Box 955
Hughes Springs, TX 75656
Phone No.: (903) 639-7538
Fax No.: (903) 639-2208
e-mail : NETMWD@aol.com
75-6004825

☑ 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

$1,039,370

☑ 9. Cash Contribution to the study.

N/A

☑ 10. List source of cash contribution, explanation of source of local cash contribution.

N/A

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

$1,039,370

☑ 12. Detailed statement of the purpose for which the money will be used. . (Not to exceed 1 page.)

See Attached

☑ 13. Detailed description of why state funding assistance is needed. (Not to exceed 1 page.)

See Attached

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

See Attached

II. PLANNING INFORMATION (See Attached)

☑ 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

(see cover letter)

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

(see attached)

☑ 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.

Statement of Purpose for which the Money Will Be Used:

If funded by the Texas Water Development Board, the Regional Water Planning Group will use the money to study specific topics which the RWPG felt were of necessary and timely study. These studies will evaluate new water management strategies, help to further implement existing water management strategies, refine water supply information and water management strategy information, overcome problems from the last round of planning, enable interregional coordination and help to fund administrative and public participation activities.

The specific studies for which money is being requested are described in the attached Scope of Work with a regional prioritization assigned. Region D has made careful consideration of the many topics in need of further study and has prioritized the topics based on the urgency of the need and the potential for positive impact of the resulting study on the Region's and State's water planning efforts. Many of the studies build on past efforts in regional water planning, others are new studies that will augment past studies and build a foundation for future planning in Region D.

The specific studies, in prioritized order are listed below for reference, and fully described in the attached Scope of Work.

1. Alternative Solutions to Meet Water Demands
2. Groundwater Management
3. Further Evaluation of Sub-Regional Water Supply Master Plans
4. Minimum Per Capita Water Usage
5. Brackish Groundwater
6. Drought of Record Consumption
7. Major Springs
8. Update Status of MTBE & E85 Regulation
9. Water Availability Models
10. High Per Capita Consumption

Detailed Description of Why State Funding is Needed:

Administrative and public participation expenses are required by TAC 356, 357 and 358 and are requested.

The North East Regional Water Planning Group (Region D) has identified 10 specific tasks for input in the 2011 Region D Water Plan. By priority number these task will:

1. Identify and provide education to the planning group for alternative solutions to meet internal and external water demands on the Region.
2. Investigate and educate Region D members as to the effects of the establishment of GMA 8 and 11 in Region D as well as preparing groundwater management recommendations for the plan.

3. Further develop the Sub-Regional water supply master plans begun in the 2006 round of planning.
4. Continue the research and evaluation of the minimum per capita water use estimates touched on during the previous regional planning period.
5. Brackish groundwater will be reviewed to meet the potential needs in the municipal and industrial needs, along with comparing costs to other alternatives.
6. Research and compare the Drought of Record Consumption to the most sever historical events in the region so adjustments may be made to the most extreme drought conditions.
7. Research TWDB, TPWD, USGS and others for Major Spring locations to determine ground water use, investigate management tactics, and prepare recommendations.
8. Update the status of MTBE and E85 regulations including the possible use of the Biomass that exist in Region D.
9. Water availability model will be run for only Region D recommended water management strategies to determine the effect of alternative potential strategies on the selected control points.
10. Interview approximately 28 selected water user groups individually for records on actual use in quantifying commercial, multifamily, residential and manufacturing. Compilation of median household income date for preparing to report to NETRWPG.

More detailed information on each project may be found in the Proposed Scope of Services.

Potential Sources and Amounts of Funding Available for Implementation of Viable Solutions Resulting from Proposed Planning;

The Regional Water Planning Group will not be implementing specific solutions or water management strategies for the region. Implementation of viable solutions will be the responsibility of individual water user groups, river authorities or other entities. The RWPG will coordinate with the water user groups to develop the various studies proposed, and will encourage the specific entities to implement the resulting solutions. The RWPG and other entities in Region D view the regional water plan as an active planning document, thus any planning that is undertaken has been with the input of municipalities, industry, water supply corporations, and other water user groups with the sole intention of realizing a plan that can be implemented. Funding sources will vary considerably depending on the specific project and the economic resources of the entity undertaking the project. Potential sources of funding include but are not limited to income from water sales, municipal taxes, bond sales, federal and state loan programs, state participation funds, and grants from federal programs.

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Section II - Planning Information

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Scope of Work with Prioritized Tasks

Summary of Tasks

Priority	Task Description	Proposed Budget	Task Duration
1	Alternative Solutions to Meet Water Demands	$290,900	20 mo.
2	Groundwater Management	$65,560	23 mo.
3	Further Evaluation of Sub-Regional Water Supply Master Plans	$132,440	18 mo.
4	Minimum Per Capita Water Usage	$53,575	9 mo.
5	Brackish Groundwater	$73,810	10 mo.
6	Drought of Record Consumption	$62,420	8 mo.
7	Major Springs	$85,510	9 mo.
8	Update Status of MTBE & E85 Regulation	$86,095	8 mo.
9	Water Availability Models	$80,210	14 mo.
10	High Per Capita Consumption	$63,800	10 mo.
	Administrative & Public Involvement	$45,050	24 mo.
	Total Proposed Budget For Region D	**$1,039,370**	**24 mo.**

Priority #1 - Alternative solutions to meet water demands
(including external demands in Region D from Regions C & I)

TWDB Categories:
Category 3. Refinement of water supply information or water management strategies;
Category 4. Activities that will help overcome problems from the last round of planning;
Category 8. Administrative and public participation activities.

Proposed Budget: $290,900

Estimated Time to Completion: 18 months

Background & Need for Project:

In an effort to overcome the outstanding issues remaining from the 2006 Regional water plan, particularly the inter-regional discrepancies in recommended/preferred water management strategies, the Regional Water Planning Group (RWPG) proposes to develop a proactive plan for Region D to prioritize, manage and allocate the region's water resources to result in the greatest benefit to the region, with consideration of the supply needs of other regions. The first phase of this plan will require further refinement of water supply and demand information, evaluation of alternative water management strategies and prioritization of the region's values regarding water and other natural resources.

The RWPG and large number of public comments from the previous round of planning expressed a need to better understand the region's existing water resources and future availability in order to allocate their resources within the region and to other regions seeking water in East Texas. The perceived discrepancy between Region D and Region C's desires for future water management strategies was a topic of much discussion, comment and debate. A concern that was continually expressed by the water planning group and the public was the desire to have greater information from an unbiased source about the potential effects, particularly the amount of mitigation land that would be required, if a new reservoir such as Marvin Nichols were to be constructed. The RWPG in Region D desires to be able to provide water within their region and to surrounding region's but feels there is an information gap regarding the real water needs and existing water availability.

Description of Study:

In order to better understand the range of issues affecting Region D and the nearby regions with shared resources in Region D (Regions C & I), we propose to conduct research, further educate the planning group and region's citizens, itemize and better understand external demands, prioritize the region's desired outcomes and propose alternative solutions to the long range water demands on the water resources within Region D. These alternative solutions (water management strategies) will be a tool for the RWPG to create and recommend a prioritized action plan to meet the water needs of Region D as well as other regions seeking supply from the Region D planning area.

This task is proposed to be conducted at the regional level with an emphasis on large scale water resource needs and is immediately important because the detailed planning efforts for

implementation of specific water management strategies is beginning or has already begun in other regions or by the river authorities in East Texas.

To more clearly define the scope of study, we have divided the topics to be researched into *Regulatory* and *Factual*. Both regulatory and factual areas of study involve research into topics that the Region feels are specifically relevant to their recommended water management strategies and that there is currently an information gap. These include subjects relevant to Region D in which the current regulation is not well understood or may need further clarification, and topics that are currently developing and were not included in the most recent round of planning. The Factual study will involve research and review of existing and available reports from government agencies, industry groups and other water planning groups. The purpose of this study is to continue where the 2006 Regional Water Plan left off; further defining the complex water management issues Region D is currently facing and enabling the planning group to make better, more long term water management decisions particularly with respect to Region C and Region I supply needs.

In addition to conducting research, Region D is proposing to prepare a curriculum of water planning related issues to further educate and inform the regional planning group. This will directly affect their ability to make informed and thoroughly considered decisions regarding the future water needs within the region. Finally, based on the research presented and the curriculum of information the regional water planning group will prioritize their values regarding future water allocation within the region.

Scope of Work:

A. Research - Regulatory Issues
    1. Review Army Corps of Engineers definition of reservoir yield versus reservoir storage capacity as it relates to water availability.
    2. Review the Corps of Engineers rules and past rulings regarding mitigation requirements when constructing a new reservoir. Specific issues of concern are the potential amount of mitigation required if Marvin Nichols Reservoir were constructed and whether the location of mitigation area could be in the Region where the water would be used.
    3. Review future national/international transportation facilities that are being planned in the Region (Trans Texas Corridor, Freight Rail) and the potential effects on water demand projections. Research the current regulatory climate and coordinate with the North East Texas Regional Mobility Authority (NET RMA) for potential use of highway right of way for future water transmission facilities. Water transmission lines may be considered part of an RMA's area of authority to finance, if the lines are build within the highway right of way.
    4. Prepare draft report and present findings to Region D and TWDB. Collect comments and revise draft report. Prepare and submit final report to Region D and TWDB.

B. Research – Factual Issues
    1. Review existing sources for updated supply information for the potential unallocated water sources in Region D. This would include researching any available studies for all of the lakes in Region D. Lakes of particular interest will include Wright Patman

Reservoir, Prairie Creek Reservoir, Toledo Bend Reservoir and Lake Texoma. Potential sources of information may include Texas Water Development Board (TWDB), US Army Corps of Engineers (USACE), Texas Commission on Environmental Quality (TCEQ), Texas Parks and Wildlife Department, River Authorities, Industry groups, etc. Specific information sought will include potential yields and potential advantages and disadvantages (economic, environmental, socioeconomic) of further developing specific water resources. The determination of these assets could provide a sizable amount of water availability to meet the identified shortages in adjacent regions.

2. Review and collect any new reports prepared on Marvin Nichols Reservoir.
3. Compare information from Region D to Region C and Region I - 2006 Regional Water Plans to identify areas of agreement and areas of potential conflict.
4. Compile synopsis of all information collected and note areas of general consensus and issues with disagreeing 'facts' where further evaluation / discussion may be required between the Region D planning group and Region C or Region I planning groups. Meet with Region's C and I to compare results of above study and to discuss potential resolution of future water needs that is satisfactory to both regions.
5. Prepare draft report and present findings to Region D and TWDB. Collect comments and revise draft report. Prepare and submit final report to Region D and TWDB.

C. Education and Regional Prioritization

1. Prepare a curriculum of pertinent water planning related issues for the Region D planning group. This may include ecological issues, environmental issues, property rights issues, water quality, physical process stream geomorphology and connectivity, etc. Facilitate introduction of technical experts and outside speakers when possible.
2. Facilitate the regional water planning group in identifying their regional priorities as they relate to water allocation. This will likely include a great deal of discussion among the group as well as public comment periods.
3. Prepare draft report and present findings to Region D and TWDB. Collect comments and revise draft report. Prepare and submit final report to Region D and TWDB.

Deliverables:

- Preliminary and final written report with a synopsis of the findings of the various regulatory and factual issues researched.
- A matrix with comparison of the factual agreements and discrepancies between regions. This will include coordination with Region C and I, to better understand and/or resolve the differing water management strategies.
- An educational curriculum for the regional planning group that will include presentations at the regular monthly meetings.
- Prioritization of Region D's values regarding future water allocation within the Region and to neighboring Regions.

Priority #2 - Groundwater Management

Category 2. "Studies that will further implementation of recommended water management strategies"
Category 3. "Refinement of water supply information or water management strategies"
Category 8. "Administrative and Public participation activities"

Proposed Budget: $65,560

Estimated Time to Completion: 23 months

Background and Need:

Historically, groundwater in Texas has been governed by the "Rule of Capture." With some significant exceptions the rule of capture served the State well during periods of rural, sparse development. With increasing urbanization and a consequent demand upon groundwater resources it has become increasingly apparent that a more structured approach must be considered. While the rule of capture is still the law in Texas, the legislature has expressed that "Groundwater Conservation Districts are the state's preferred method of groundwater management." To date there are approximately 89 groundwater conservation districts, either confirmed or in the development process, in Texas. None of these are located in Region D. A total of 144 counties are either fully or partially within a groundwater conservation district. In the remaining 110 counties or portions of counties in Texas groundwater remains subject to the rule of capture. Senate Bill 2 enacted in 2001 included provisions for the Texas Water Development Board to designate groundwater management areas covering all major and minor aquifers in the state. Groundwater management areas are not regulatory authorities, but to the extent feasible the groundwater management areas are to coincide with the boundaries of a groundwater aquifer and are a vehicle for joint planning among groundwater control districts.

In the first and second rounds of regional planning, estimates of groundwater availability were provided by the regional water planning groups. Groundwater Availability Models were available for some aquifers. The various planning groups relied on different strategies ranging from sustainability to actual mining of the aquifer supplies. The 2005 legislature adopted HB 1763 which essentially removes the groundwater availability estimates from the hands of the regional water planning groups. The availability estimates will be regionalized among 16 groundwater management areas (GMA) spread throughout the State. The regional water planning group will then be required to use the groundwater availability numbers developed by these GMA's.

Region D is divided between GMA 8 and GMA 11. GMA 8 includes all or part of Region D counties Bowie, Hunt, Lamar, Delta, Hopkins, Rains, Red River, and Franklin. GMA 11 contains all or part of Region D counties Bowie, Cass, Morris, Titus, Camp, Franklin, Hopkins, Wood, Rains, Upshur, Marion, Harrison, Smith, Gregg, and Van Zandt. The major aquifer in GMA 11 is the Carrizo-Wilcox and the major aquifer in Region 8 is the Trinity. Minor aquifers in Region 11

include the Queen City-Sparta and Nacatoch, and in Region 8 the Nacatoch, Woodbine and Blossom Sands.

HB 1763 requires joint planning among groundwater conservation districts within a given groundwater management area. A major problem exists in Region D since there are no groundwater conservation districts available to provide input into the regional process. Essentially, failure of the Region D planning group to participate in the groundwater management authority process will negate the "bottoms up" approach which has been the basis for regional planning in Texas since Senate Bill 1. Without participation the regional planners could be required to adopt management conditions and available groundwater estimates for which they have provided no input or consensus.

Scope of Work:

A. Educate planning group members as to the role and responsibilities of the newly created groundwater management areas and specifically GMA 8 and GMA 11.
B. Review and summarize past meeting minutes of the GMA's and update the planning group on the current status of activities.
C. Attend meetings of groundwater management authority during the planning period and liaison to ensure that Region D's water projections and groundwater management strategies are considered within the GMA's planning activities.
D. Provide input and support to Region D regarding the impact of GMA 8 and 11 proposals on Region D entities.
E. Prepare groundwater management recommendations for inclusion in the regional plan.

Deliverables:

Preliminary and final report of groundwater management recommendations to present to GMA 8 and GMA 11 and for inclusion in the Region D – Regional Water Plan.

Priority #3 - Further evaluation of Sub-Regional Water Supply Master Plans

Category 5. Further evaluation of water management strategies, especially regional solutions, to meet needs in small communities or rural areas.

Proposed Budget: $132,440

Estimated Time to Completion: 18 months

Background and Need:

A supplemental task to the 2006 Regional Water Plan began studies of the effect of combining clusters of smaller, geographically proximate Water User Groups (WUG's) into a single large entity to improve financial, managerial and technical (FMT) abilities. There were 51 WUG's identified and grouped into 10 clusters. Physical data on the systems were tabulated, discussions of FMT and political / legal details were prepared, and rough cost estimates for consolidation were presented.

As a continuation of this effort, the North East Texas Regional Water Planning Group would like to pursue further discussions with the entities identified in the cluster groups to facilitate communication and encourage regionalization. The NETRWPG would also like to expand the scope to include an evaluation of individual small systems being merged with existing larger entities. There are currently approximately 93 of the 255 public water systems in the region that have less than 300 connections and are legitimate candidates for mergers and consolidation.

Description of Study*:*

A primary concern in the Northeast Texas region is the large number of very small rural water systems, which typically have one or two part time to full time employees that operate the system. These smaller systems are not capable of remaining current on new regulations and often find themselves in non-compliance with regulatory requirements. These smaller systems would be devastated during drought conditions with no long term plan for water supply development. System reliability is mostly non-existent. This study has a two phased approach. The first phase is a continuation of the work performed in round two of the state water plan and includes education and coordination with identified clusters of systems targeted for regionalization. The second phase involves identifying smaller individual systems, which should consider consolidation or mergers with existing larger neighboring systems. This phase would also include education of small systems of the benefits of consolidating with larger systems to improve customer service and long term water supply reliability. This phase assumes that approximately 50% would be willing to listen to a presentation of the benefits of consolidation and that approximately 25% would be willing to come to the table with a neighboring larger system for discussions of a consolidation or merger.

Scope of Work:

A. Phase I
    1. Refinement of the original 10 plans including investigation of additional cluster potentials based on size and proximity. Meet with the 51 WUG's and discuss the findings from the study and educate individual board directors on the benefits of regional type systems.
    2. Develop informational presentation on regionalization and schedule regional meetings with the 10 clusters. Attend the regional meetings, present the advantages of regionalization, and evaluate the level of interest within each entity.
    3. Make recommendations and provide guidance to interested clusters on additional steps necessary to complete the regionalization process.

B. Phase II
    1. Evaluate the approximately 93 smaller systems which are considered candidates for consolidation with neighboring systems. Contact each of the smaller systems, attend two meetings with each entity (46 assuming 50% participation) to educate board members on the benefits of consolidation, determine what current FMT problems they are currently experiencing, and determine what their level of interest would be towards consolidation. Evaluate each systems current situation and make a determination of who would be the most likely candidate entity to complete a consolidation or merger.
    2. Schedule and attend two meetings with candidate merger entities (23 assuming 25% participation) involved and facilitate communication regarding consolidation.
    3. Prepare a draft written report summarizing the findings of the additional study, submit the draft to the TWDB and NETRWPG, make any revisions, and make a presentation to the NETRWPG.
    4. Finalize final written report and submit to TWDB and NETRWPG. Additional copies will be provided to the entities participating in the study.

Deliverables:

- Preliminary and final regionalization plan refined to include additional entities for potential regionalization
- Presentation about regionalization and the advantages of regionalization given to the cluster entities.
- Preliminary and final written report summarizing the findings the regionalization efforts of both the 10 original entities and the additional smaller systems.

Priority #4 - Minimum Per Capita Water Use Estimates

Category 4: "Activities that will help overcome problems from the last round of planning"
Category 6: "Reevaluation of population and demand projections for changed conditions"

Proposed Budget: $53,575

Estimated Time to Completion: 9 months

Background and Need:

Per capita water use estimates in Round 2 were generally based upon data provided by the Texas Water Development Board. Region D consultants reviewed this data, and conducted a survey of all WUG's to confirm the data. Generally the survey analysis focused on the year 2000, which was considered a dry year. Where the survey results varied significantly from the initially provided data, the actual survey results were used.

Early in the process, the NETRWPG determined that a minimum floor for municipal use would be established at 115 gpcpd. For the 107 municipal supplies in the region, actual survey results ranged from a high of 285 gpcpd to a low of 71 gpcpd. 34 entities reported a usage of less that the 115 gpcpd floor.

The planning group also established an upper goal of reasonable use at 140 gpcpd. This upper goal was established based upon the work of a statewide water conservation task force. 39 entities reported usage in excess of this goal. In a Round 2 supplemental work task, the Region D consultants conducted in depth research on the water consumption patterns of some of these high-use entities, and determined that, to a great extent, the largest consumptions were attributable to reporting anomalies.

However, no similar studies were conducted for the entities with unusually low reported consumption. Questions that arise include 1) "Why is the per capita usage so low in these WUG's?" and 2) "What will happen in the future as demographics in the region shift?" Various explanations have been postulated for low consumption- lower economic status, older housing stock, lack of adequate water supplies, higher cost of water supplies, population age, community standards, and others. It is possible that the consumption is not lower - perhaps there are anomalies in the data or inaccurate metering.

Description of Study:

This proposed task encompasses four areas. The first portion addresses the question "Is the minimum floor for municipal demand as adopted in Round 2 realistic?" The task will then address the issue "Will changing demographics affect per capita consumption?" Thirdly, the task will address floors for usage other than municipal, and, finally, "Are population growth figures realistic for the three counties in region D – Hunt, Van Zandt, and Rains - that border on Region C?"

The first portion of this task would work on analyzing the reasons for the apparent low consumption. In a manner similar to the supplemental task for the 2006 Regional Plan, the consultants would audit a number of lower usage entities. Information sought would include an accurate picture of water losses and metering procedures, a review of the reported usage data, and an understanding of water use demographics in the community. Deliverables would include a report comparing the audited data to the data from Round 2, and suggesting a minimum floor or a methodology for determining one.

With a better understanding of the reasons behind the modest consumption figures in some communities, the task would then proceed to investigate projections for future usage. A presumption in most studies to date has been that conservation plans and plumbing code revisions would result in a lowering of per capita usage. On a macro scale this conclusion appears intuitive. However, individual communities at the lower end of the usage spectrum may experience demographic or economic changes that result in considerable increases in per capita usage. For example, many of the land developments in Region D are marketed to people from the metroplex, where water consumption is typically higher than in rural areas. Per capita usage in Highland Park has been reported at 27,000 gallons per meter per month (Dallas Morning News) - roughly 360 gpcpd. In the three more urbanized counties of Region C (Kaufman, Collin, Rockwall) which border Region D (Hunt, Rains, Van Zandt) per capita municipal projections range from 143 to 232 ac-ft per year, while, in the adjacent Region D counties the estimates are only 125 to 143. Another trend involves changes in water consumption patterns as the East Texas population ages. The highly conservative usage patterns that evolved because of the need to rely on hauled supplies or shallow wells give way to usage patterns based upon more ample public water supplies. Deliverables would include a report summarizing a mutually agreeable methodology and projections for regional border entities. The normal planning task includes coordination between the regions for entities which lie in <u>both</u> regions - this task goes beyond that level by providing continuity between the regions for entities which are in only one region, but may have spillover effects on the adjacent region.

In addition to municipal supplies, the question exists as to reasonable floors for other usage categories. How should the region handle future demands for water for steam electric generation? Generating facilities contribute jobs and a significant tax base, and are thus attractive to many communities. Location selection is a competitive process. Should the planning process allocate generating supplies to particular WUG's, and what level of sponsor interest should be demonstrated before a particular project is included in the plan? Livestock and irrigation demands are projected to remain relatively flat over the planning period. Current drought conditions, however are reportedly "beyond critical" and "devastating" to livestock and grain producers in Hunt County (Greenville Herald -Banner). Are the established allocations for livestock and irrigation adequate?

A final portion of this task would include a limited review of population projections in 3 counties that border Region C where large population growth is projected. An in-depth review of all WUG populations would be deferred until data from the 2010 census is available. The line between Region C and Region D is bordered in Region C by Collin, Kaufman and Rockwall Counties and in Region D by Hunt, Rains, and Van Zandt. To 2030, the three Region C counties have projected growth rates ranging from 250 to 340%. The Region D counties are projected to

grow only 140 to 160%. The task would include coordination with Region C to determine that these differences accurately reflect growth and water usage trends, rather than an anomaly due to the projection methodologies of the two regions. Further, development on the eastern edge of the metroplex often involves subdivisions including 1000 or more lots - these are not necessarily developed along County lines, and recent observations indicate that some of these are extending into Hunt County in Region D.

The deliverable for this portion of the task would be a report analyzing population demands and water consumption in the bordering counties, with recommendations for smoothing, if appropriate, the discontinuities between regions.

Scope of Work:

A. Analysis of potential reasoning for the apparent low consumption. Audit lower usage entities. Information sought would include an accurate picture of water losses and metering procedures, a review of the reported usage data, and an understanding of water use demographics in the community.

B. Investigate projections for future usage accounting for specific conditions and potential future economic conditions.

C. Investigate reasonable water use floors for other usage categories. Categories to be considered include water for steam electric generation based on future expectations of growth, and livestock and irrigation demands.

D. A final portion of this task would include a limited review of population projections in 3 counties that border Region C where large population growth is projected. An in-depth review of all WUG populations would be deferred until data from the 2010 census is available. The line between Region C and Region D is bordered in Region C by Collin, Kaufman and Rockwall Counties and in Region D by Hunt, Rains, and Van Zandt. To 2030, the three Region C counties have projected growth rates ranging from 250 to 340%. The Region D counties are projected to grow only 140 to 160%. The task would include coordination with Region C to determine that these differences accurately reflect growth and water usage trends, rather than an anomaly due to the projection methodologies of the two regions. Further, development on the eastern edge of the metroplex often involves subdivisions including 1000 or more lots - these are not necessarily developed along County lines, and recent observations indicate that some of these are extending into Hunt County in Region D.

E. Prepare preliminary report and present to RWPG and TWDB for comment. Collect, review comments and revise accordingly. Submit final report to RWPG and TWDB.

Deliverables:

- A report comparing the audited data to the data from Round 2, and suggesting a minimum floor or a methodology for determining one.

- A report summarizing a mutually agreeable methodology and projections for regional border entities. The normal planning task includes coordination between the regions for entities which lie in both regions - this task goes beyond that level by providing continuity between the regions for entities which are in only one region, but may have spillover effects on the adjacent region.
- A report summarizing the findings for the electric generation, livestock and irrigation water demand portion of this study.
- A report analyzing population demands and water consumption in the bordering counties, with recommendations for smoothing, if appropriate, the discontinuities between regions.

Priority Task 5 - Brackish Groundwater

Category 2. "Studies that will further implementation of recommended water management strategies."
Category 3. " Refinement of water supply information or water management strategies."
Category 8. "Administrative and public participation activities."

Proposed Budget: $73,810

Estimated Time to Completion: 10 months

Background and Need:

Region D anticipates a 72% increase in population during the 50 year planning period (2010 to 2060). During the planning period, water demand is estimated to increase by 50%, requiring an additional 277,900 acre-feet of water. In addition, the drought cycle for North East Texas imposes peak demands which could be mitigated by developing additional water supplies. Although it is expected that some of this increased demand can be met through more aggressive water conservation and increased use of existing supplies, utilization of brackish groundwater could be an important supplemental source for the region. There were no strategies proposed in the 2006 Regional Plan involving the treatment and use of brackish groundwater.

The term "brackish" refers to the level of total dissolved solids in a water supply. Generally, supplies with a TDS level up to 1,000 mg/l are considered "fresh," and are suitable for most purposes (including municipal) without further treatment to remove TDS. Supplies with TDS levels above 1000 mg/l, up to 3,000 mg/l are considered mildly saline, and from 3,000 to 10,000 mg/l are moderately saline. These mild and moderate level waters are considered "brackish."

According to a 2003 report by LBG-Guyton Associates for the Texas Water Development Board, there exists around 56 million acre-feet of brackish groundwater beneath Region D. To place this number in perspective, the largest surface water source in the region is Lake Tawakoni, which holds less than 1 million acre-feet at normal level.

Desalination of brackish groundwater involves additional operation and maintenance costs, and is a significant effort. For example, a brine disposal injection well can cost substantially more than the production well. Nevertheless, brackish groundwater may represent an important additional supply for Region D, particularly for municipalities and perhaps livestock and agriculture. Municipal needs are projected to increase by 49% between 2010 and 2060, requiring an additional 58,000 acre-feet of water. Smaller municipalities have traditionally relied upon well water where it was available, because of its lower production cost and ease of maintenance when compared to treating surface water. Many small communities in Region D lack access to fresh groundwater supplies, but do have access to brackish groundwater.

The actual process of desalination used for brackish water most frequently is reverse osmosis, although electro dialysis is also used. Both are membrane processes. In reverse osmosis, water from a pressurized saline solution is separated from the dissolved salts by flowing through a

water permeable membrane. The permeable membrane allows water to pass through, but not the dissolved salts. After reverse osmosis, the processed water requires degasification and ph adjustment to be potable. This type plant is an established technology with known installation costs. Operational costs are decreasing as technology improves.
As noted above, there are potential problems with using brackish water. Brackish water removal from the water sands may impact fresh water resources. After treatment, the waste water from the desalination process contains high concentrations of dissolved solids. Discharge through land application or underground injection may eventually damage existing fresh groundwater supplies. The discharged brine waste infiltrates through the soil, eventually entering fresh water sands, thereby contaminating these. Obviously, discharge near surface streams and reservoirs could create a similar problem. Careful planning and research are required to mitigate this problem. Obtaining appropriate discharge permits is also a time consuming and expensive process.

Cost is a separate issue. Although desalination plant costs are declining, recent studies suggest capital costs of $.90/gpd to $1.30/gpd for the desalination plant, typical capital costs for the well, higher energy costs, and significant costs of brine disposal. While significantly higher than a freshwater well, these costs may still compare favorably to costs for surface water treatment.

Recently, TWDB has published Please Pass The Salt: Using Oil Fields For the Disposal OF Concentrate From Desalination Plants. The study demonstrates that oil fields can accommodate brine waste water, and recommends regulatory changes to improve the permitting process. Use of oil wells would be more beneficial than current methods because it is less expensive, more environmentally friendly, and because the technology for oil well injection already exists. As noted in that report, East Texas is a region which has a great many oil wells, a need for additional water supplies, and brackish water resources. In short, in Region D, brackish groundwater supplies may be a significant future supply, and the need for further study is apparent.

Information recently compiled by TWDB, "Brackish Groundwater Manual for Texas Water Planning Groups," suggests that Region D has 55,712,000 acre feet of brackish groundwater. Given the planning period additional water requirement of 277,900 acre-feet, brackish groundwater represents an important potential source. It was not a recommended strategy in the last planning cycle, primarily because of brine disposal, and study is now needed to determine where and how it can best be used in the Region.

Scope of Work:

A. Identification of existing water users who have needs that could be augmented by brackish groundwater
    1. Review water system surveys from previous planning cycle;
    2. Focus on potential use of brackish groundwater to meet municipal and industrial needs

B. A detailed analysis of which water users might potentially use brackish groundwater, by integrating brackish water field availability, water demand, lack of alternates and ease of brine waste disposal
    1. Locate potential brackish groundwater well fields using TWDB maps and related data, including geophysical logs and well driller reports;
    2. Estimate the production capacity of wells in the brackish groundwater zone and the number of wells required to meet demands;
    3. Correlate the well field data with water users;
    4. Identify concentrate disposal options based on TWDB "Please Pass the Salt" Report, and include more detailed data on oil wells using Railroad Commission data;
    5. Identify other water supply options for the selected water user;

C. Comparison of brackish water costs to other alternatives
    1. Develop capital cost estimate for membrane processes for desalination, pretreatment, storage, wells, and related capital;
    2. Develop operational costs estimates for plant operation and brine disposal;
    3. Compare to cost of other available supply alternatives;
    4. Compare environmental consequences of available supply alternatives, and brackish groundwater use;

D. Prepare recommendations for incorporation into the Regional Plan.
    1. Identify potential projects;
    2. Rank water supply alternatives;
    3. Recommend specific brackish water projects as preferred supply sources if appropriate.

Deliverables:

Preliminary and final written report of methodology, findings, cost comparisons and recommendations for use of brackish groundwater.

Priority # 6 - Drought of Record Consumption

Includes effort in:
Category 3. " Refinement of water supply information or water management strategies."
Category 6: "Reevaluation of population and demand projections for changed conditions"

Proposed Budget: $62,420

Estimated Time to Completion: 8 months

Background and Need:

The year 2000 was chosen by the Texas Water Development Board (TWDB) as the base year to estimate projected water demand for the second cycle of regional water planning. This was due to two primary reasons. The first reason is that it was believed the year 2000 census data would provide a more accurate estimate of population than an off-census year. The second reason is that the year 2000 was the driest year of the previous decade for a majority of the regions and for the State of Texas as a whole, and it was presumed water demands in 2000 would represent demands during a drought of record.

The following years, however, revealed that the drought in 2000 was relatively moderate when compared to historically significant droughts of the 1950's and the 1960's. Furthermore, Region D is currently in an "Extreme Drought Condition" as defined by the Palmer Drought Severity Index (PDSI). The PDSI uses temperature and rainfall information in a formula to determine dryness, is standardized to local climates, and is most effective in determining long-term droughts. It has become the "semi-official" drought index of the National Oceanic and Atmospheric Administration (NOAA). "Extreme" is the highest possible category for the index.

Regional Water Plan Findings:

It is widely believed Region D is poorly prepared for a drought of major historical proportions. A recent study prepared by Stuart Norvell and Kevin Kluge of the TWDB's Office of Water Resources Planning, *Socioeconomic Impacts of Unmet Water Needs in the North East Texas Regional Water Planning Area* found water shortages due to severe drought, combined with infrastructure limitations, would likely curtail or eliminate economic activity in business and industries heavily reliant on water. Shortages would disrupt homes, schools, and government activities and could adversely affect public health and safety. Furthermore, if drought of record conditions return and water supplies are not developed, Region D could suffer significant losses approaching, at a high estimate, as much as $525 million dollars, if drought conditions remained for three years.

The year 2000 water demand projections should be compared with current demands in order to determine the difference in daily average per capita demands during severe drought conditions. An evaluation of current per capita usage compared to 2000 projected water usage may be beneficial to long-range strategic planning.

Description of Study:

Meet with up to twelve (12) different entities representing a sample of the Water User Groups (WUG's). Interview each entity and determine the average daily consumption over the most recent twelve (12) months. Compare the current average daily per capita consumption with the 2000 projected per capita consumption.

Perform research and find the weekly PDSI value for Region D during the year 2000. Calculate the average PDSI value.

Perform research and find the weekly PDSI value for Region D during the year 2006. Calculate the average PDSI value.

Perform research of weekly temperature and rainfall patterns during the 1950's and 1960's in Region D. Locate and find the most severe one- to three-year drought. Calculate the average PDSI value for this event.

Compare the current "Extreme Drought" conditions with the 2000 event and the most severe event of 1950 to 1969.

Establish a recurrence interval for the most extreme condition.

Determine a weighted factor to be multiplied to the 2000 water demand to convert the projected water usage to the most extreme drought condition.

Summarize the findings in a report form.

Scope of Work:

A. Meet with up to twelve (12) water users; 4 manufacturing, 2 municipalities, 1 power, 1 livestock, 1 rural residential provider with over 2,000 connections, 1 rural residential provider with less than 2,000 connections, and 2 other residential providers selected at random. Obtain records of water usage over most recent twelve (12) months.

B. Determine average daily water demand per use category per entity.

C. Research history of droughts in Texas and prepare short summary of drought severities per occurrence.

D. Perform research and determine historic PDSI values for the year 2000 and 2006. Calculate the average PDSI for each year.

E. Perform research of weekly temperature and rainfall patterns between 1950 and 1970 and locate the most severe one- to three-year drought. Calculate the average PDSI value for these event(s). Determine the highest annual PDSI value.

F. Compare the 2000 drought to the most severe event of 1950-1970, and to the 2006 "Extreme Drought".

G. Establish a recurrence interval for the most extreme drought condition or record. Calculate a weighted multiplication factor to adjust 2000 water demands to the most extreme drought conditions.

H. Prepare draft report summarizing the study and recommendations.

I. Submit draft report to RWPG and the TWDB for review and comment. Collect comments and revise report.

J. Submit final report to RWPG and TWDB.

Deliverables:

- Draft report and final report of methodology, findings and recommendations.
- Presentation of results to Region D – Regional Water Planning Group.

Priority Task 7 - Major Springs

Category 3. "Refinement of water supply information or water management strategies."
Category 4. " Activities that will help overcome problems from the last round of planning."
Category 8. "Administrative and public participation activities."

Proposed Budget: $85,510

Estimated Time to Completion: 9 months

Background and Need:

The National Wildlife Federation, Environmental Defense, and the Sierra Club have requested more detailed information on major springs in Region D than was contained in the 2006 plan. One of their concerns is excessive use of groundwater, and increased use of groundwater is the regional strategy for many smaller entities. In a letter dated September 29, 2005 to Mr. Jim Thompson, Region D Chairman, the entities noted *"We urge the planning group to identify springs that are 'major springs' for purposes of natural resource protection, whether as discrete habitats or as sources of baseflows for surface streams, or to include information demonstrating that no springs meet that criterion."* Groundwater withdrawals had resulted in the loss of 61 of the 281 major potable springs in Texas by 1975, according to the TWDB report Major and Historical Springs in Texas. According to the National Wildlife Federation, another 20 have been lost since. It is important to determine the status of springs in Region D, particularly since many of the strategies proposed in the plan recommend increasing groundwater supplies.

Technically speaking, a spring is a discharge of hot or cold, pure or mineralized water to the surface. Springs occur where the water table intersects the ground surface. The source of the water for springs can be shallow or deep. Shallow springs are generally dependent on localized and frequent rainfall while deeper springs are less dependent on frequent precipitation. Springs can emanate from one location, such as the springs of the Edwards aquifer located in New Braunfels and San Marcos Texas, or they can emanate over long distances along river bottoms as is common in East Texas. The existence and character of the springs is determined by many factors including geology, geologic structural features such as faults, topography, soils, precipitation patterns and vegetation. The flow from a particular spring or set of springs can vary widely depending on temporal variables such as frequency and duration of rainfall, evapotranspiration from vegetation, and stream-aquifer interaction.

Springs are classified as either fresh water, slightly saline or saline. Freshwater springs have less than 1,000mg/l of dissolved solids, while the slightly saline springs have between 1,000 mg/l and 3,000 mg/l of total dissolved solids. Saline springs have more than 3,000 mg/l. Although Texas springs once flowed large volumes of water under artesian pressure, flows from current day springs are much reduced.

Springs have been an important water source for man for thousands of years. The site of the spring is sometimes a significant archaeological resource, because Indians used the springs as

long as 30,000 years ago. They also provide important habitat for local fauna and flora. Before Texas was settled by farmers, the recharge surface above the aquifers was much more porous, allowing for greater recharge. The artesian pressure was such that fountains of spring water could be found in many parts of the State. Cities grew up around the springs, and trails were laid out from spring to spring. Farming rendered the surface more dense, thus allowing less recharge. Wells began to be drilled in the mid 1800's, and were heavily used. This further diminished the aquifer storage. Modern paving and greater populations have further reduced recharge in some areas.

In Region D, springs of various sizes exist in Bowie, Cass, Hopkins, Lamar, Marion, Red River, Smith and Van Zandt County. Delta County has seep areas, similar geologically to springs. More than 150 springs of various sizes are known to exist in Region D. In general, springs in the northern third of the region have the lowest volumes, while those with the largest volumes can be found in the southern third of the region.

With respect to springs and seeps in Delta, Lamar and Red River Counties, TPWD studies note that a decline in the groundwater table has occurred in some areas which may be due to excessive groundwater pumping and sediment fill. TPWD indicates that many springs in the area are currently inactive. In Smith County, TPWD notes that the groundwater table has not yet been severely affected except around cities. It should also be noted that groundwater pumping in Smith County is usually from deeper aquifers that are not the source of springs in the area. Better knowledge of these springs can contribute to better groundwater management. In addition to the needs of the regional planning group, knowledge gained through this study would be beneficial to the Region 8 and Region 11 Groundwater Management Area efforts.

Given the historical, archaeological and environmental importance of springs to Region D, and its reliance on groundwater as a significant water supply, additional study of springs is necessary. Only a general review of springs was included in the round 2 regional plan, and a detailed study of springs, including a field verification of some major springs (when possible) is needed to balance environmental needs against the requirements of water supply.

Scope of Work:

A. Research TWDB, TPWD, USGS and other published sources for locations of springs by county, aquifer or geologic unit, and for current flow rates and quality data.

B. Solicit public input as to the existence, location, use and historical flows of streams that may not be in the current public record.

C. Field evaluation, documentation, and flow measurement from accessible springs that are critical to water supply and environmental flows.

D. Determine groundwater use by aquifer, including a historical drawdown to estimate safe groundwater yield.

    1. Using data available from TWDB and other sources, determine what the historical drawdown from the respective aquifers has been.
    2. Research the spring flow rates over a similar historical period.

3. Identify critical areas;
4. Using (a) and (b) above, estimate the effect of various withdrawal rates on the discharge from the various streams.
5. Discuss potential water quality impacts of increased groundwater pumping or reduced spring discharge.

E. Investigate management tactics to balance groundwater withdrawal and environmental needs.
   1. Identify alternate management tactics, including a groundwater conservation district or other mechanism;
   2. Present advantages and disadvantages to each management strategy;

F. Prepare recommendations for incorporation in the Regional Plan.

   1. Prioritize critically affected areas;
   2. Discuss groundwater management recommendations;
   3. Presentations to the planning group and public.

Deliverables:

- Draft and final written report.
- Presentation of results to Region D – Regional Water Planning Group.

Priority Task #8 - Update the status of MTBE and E85 regulation

Category 3. "Refinement of Water Supply Information ".

Proposed Budget: $86,095

Estimated Time to Completion: 8 months

Background and Need:

The North East Texas Regional Water Planning Group (NETRWPG) is proposing that the current status of the MTBE (methyl tertiary butyl ether) regulations be studied and reported on for this round of planning. The NETRWPG has made recommendations on this issue in both previous rounds of planning.

This concern was generated by the fact that MTBE was introduced into the East Texas water supply at Lake Tawakoni. It had long been thought that MTBE and other contaminants pose a significant threat to water supply sources in the North East Texas Region. The Sabine River Authority reported that on March 9th, 2000 there was a pipeline rupture and a spill of reformulated gasoline, containing MTBE, estimated at 600,000 gallons into a pasture 28 miles from Lake Tawakoni on a tributary of East Caddo Creek. Subsequently, rainfall the next day flushed a significant amount of the spilled gasoline into Lake Tawakoni. This event illustrated all too well how vulnerable the water supply is. Numerous municipal and private water customers on Lake Tawakoni were affected by the spill and subsequent reservoir contamination. The city of Dallas, which has rights to eighty percent of the available water in Lake Tawakoni, did not draw water from its intake from March 10, 2000 until August 16, 2000 as a result of the spill. The City normally obtains thirty percent of its drinking water supply from the reservoir.

The raw water intakes for the cities of West Tawakoni, Greenville, and Commerce, as well as Cash Water Supply Corporation, had detectable levels of MTBE's from the gasoline spill at some point during this event. The city of Greenville intake was shut down for maintenance at the time of the spill and remained shut down for several weeks afterward as a precautionary measure. Other water suppliers using the reservoir, including the cities of Emory, Point, Wills Point, Terrell, East Tawakoni, and Edgewood, and the water supply corporations Combined Consumers, South Tawakoni, and MacBee, did not have MTBE detected at their intakes, but were still affected by the event. Local residents receiving water from each of these suppliers voiced their concerns about the quality of their drinking water based on information gathered from media reports.

In a 2003 article on MTBE Groundwater Contamination it was reported that Texas ranks fifth among the 25 states where more than 10,000 consumers are served by public water systems reporting MTBE contamination. The served populations did not include systems with abandoned water wells or consumers getting water from private wells. The same article stated that there are 23 production units in Texas that have the capacity to produce 220,450 barrels per

calendar day (bpd) of methyl tert-butyl ether (MTBE). The article further stated that the amount of production is projected to decrease slightly (less than 10%) over the next several years.

TCEQ regularly updates its list of streams, lakes and other water bodies that fail to meet the water quality standards established for specific water uses. Many of these water bodies are drinking water sources. This issue differs from the MTBE contamination episode at Lake Tawakoni, which was an accidental spill of contaminates that were removed from the system in a matter of weeks. That temporary circumstance did not have a long term effect on overall water quality of the lake; however it did cause several water suppliers to be unable to meet demand over the course of the cleanup. The planning process needs to take account, however, of continuing threats to drinking water sources that may lead to placement on the state's list of impaired lakes.

There are two dimensions to this issue. First, the NETRWPG has urged TCEQ in both of the water plans they have produced to require the phase out of the use of MTBE specifically. State and federal regulators across the country are looking for substitute components for reformulated gasoline. Second, since this is only one of many potential contaminants that can find their way into drinking water sources, there is the additional lesson from the Lake Tawakoni experience that those providers with more than one water source were best able to deal with that crisis. It is desirable for water user groups with vulnerable sources to plan on emergency access to backup supplies.

The NETRWPG has further proposed that there be a review and analysis of methods for using available biomass from timber, aquatic vegetation, and other sources in our region to be the primary source for ethanol as a substitute for MTBE or for use in the fuel known as E85 to further reduce the pressure to provide petroleum based fuels. The review and analysis would evaluate the environmental consequences and water quality effects from using biomass in the process to generate ethanol as a fuel additive or fuel substitute.

Vegetation in the North East Texas Region is varied but contains a large amount of timber. The vast majority of its timber is pine and is defined as a pine-hardwood forest whose principal trees include shortleaf pine, loblolly pine, sweet gum and red oak. Uplands contain tall bunchgrasses and stands of post oak and blackjack oak. The bottomlands, wooded and brushy, contain chiefly hardwoods, with an occasional pecan.

Overall in Texas, nearly 3.5 million tons of woody biomass – scrap left over from forest harvests – could be had for essentially the cost of bundling and hauling, states Dr. Eric Taylor, Extension forestry specialist, Texas A & M University, in a June 8, 2006 article. Technology is available that could be used to convert the woody biomass into automotive fuel, 'green-diesel' or a substitute for the other use of petroleum that is rarely talked about: the manufacture of films, adhesives and plastics. Of the 3.5 millions tons of wood residue burned or left to rot at harvest sites, about 65 percent could be easily harvested for biomass. While approximately 30% of these Texas forest are in the NETRWPG area, currently there are no operational bio-energy plants in East Texas. The state forest residue is created in East Texas and it seems appropriate that a method to utilize the biomass and reduce the MTBE be investigated.

The NETRWPG would propose the investigation into the reduction of MTBE in the fuel through the use of the non-utilized biomass in Texas, attraction of a biorefinery and the potential of establishing one in East Texas.

Scope of Work:

A. MTBE
    1. Study and report on current efforts to reduce or eliminate the use of MTBE in reformulated gasoline by State, Federal and Private Entities.
    2. Report on the chronology of the MTBE testing in the State's water supplies.
    3. Report on the ability of water user groups in the NETRWP Area to provide an alternative water supply source to guard against catastrophic events such as the Lake Tawakoni event that introduced contaminates into the main water supply directly.

B. Biomass
    1. Research and Report in summary the present efforts that will affect NETRWPG, i.e., Texas Department of Agriculture, TCEQ, Texas State Soil & Water Conservation Board, Texas Railroad Commission and pertinent Federal Agencies.
    2. Review, evaluate and report in summary the environmental benefits and water quality effects from using biomass in the process to generate ethanol as a fuel additive or fuel substitute.

C. E85
    1. Research and Report in summary the present efforts to introduce the wide spread use of E85 into the fuel supply most particularly as these efforts would affect and benefit the water supply.

Deliverables:

- MTBE Preliminary and Final Reports
- Report on chronology of MTBE Testing
- Alternative Water Supply Preliminary & Final Reports
- Preliminary & Final Biomass Reports
- Preliminary & Final E85 Reports

Priority # 9 - Water Availability Model (WAM)

:

Category 3.Refinement of water supply information or water management strategies;

Proposed Budget: $80,210

Estimated Time to Completion: 14 months

Background & Need:

The regional water planning group and large number of public comments from the previous round of planning expressed a need to better understand the region's existing water resources and future availability in order to allocate their resources within the region and to other regions seeking water in East Texas. The perceived discrepancy between Region D and Region C's desires for future water management strategies was a topic of much discussion, comment and debate. The Regional Water Planning Group in Region D desires to be able to provide water within their region and to surrounding region's but feels there is an information gap regarding the real water needs and existing water availability.

The Regional Water Planning Group received the results of the Water Availability Model (WAM) that incorporated the effects of the proposed water management strategies dated October 2005. These results are for the 20 Control Points selected by the planning group for the streams in the North East Texas Region based on the TWDB's Run 8 Model. The Region D planning group would like to further evaluate the long term effects on the streams at the identified Control Points and ultimately the region as a whole. The results provided from the previous round of planning included evaluation of all recommended water management strategies from all regions, not just Region D. For comparison purposes, the Regional Water Planning group would like to run the WAM to provide similar results for the selected Control Points with only the Region D recommended water management strategies shown.

Description of Study:

The Region D - Regional Water Planning group would like to run the WAM to provide results for the previously selected Control Points with only the Region D recommended water management strategies shown. This will help the region to better understand the water availability remaining after all Region D water management strategies are met and better enable the Planning Group to define their regional priorities regarding future development of the region's water resources.

Scope of Work:

A. Coordinate with TWDB to run Water Availability Model with only the Region D recommended water management strategies shown.

B. Review results and compare to previous WAM that has cumulative water management strategies for all regions.

C. Research and determine feasible alternative potential water management strategies to be evaluate.

D. Evaluate effect of alternative potential water management strategies on the control points selected by running WAM for alternative strategies selected. (Assume major alternatives are considered)

E. Prepare Preliminary and Final written report of findings.

Deliverables:

- Water Availability Model results for the 20 control points, with the effects of Region D's proposed water management strategies applied.
- Written report of study including potential alternative water management strategies

Priority 10 – High Per Capita Consumption

Category 6. "Reevaluation of population and demand projections for changed conditions"

Proposed Budget: $63,800

Estimated Time to Completion: 10 months

Background and Need for Study:

Per capita water use estimates in Round 2 were generally based upon data provided by the Texas Water Development Board. Region D consultants reviewed this data and conducted a survey of all WUG's to confirm the data. Generally the survey analysis focused on the year 2000, which was considered a dry year. Where the survey results varied significantly from the initially provided data, the actual survey results were used.

Early in the process, the NETRWPG determined that a minimum floor for municipal use would be established at 115 gpcpd. For the 107 municipal supplies in the region, actual survey results ranged from a high of 285 gpcpd to a low of 71 pgcpd. 34 entities reported a usage of less than the 115 gpcpd floor.

The planning group also established an upper goal of reasonable use at 140 gpcpd. This upper goal was established based upon the work of a statewide water conservation task force. 39 entities reported usage in excess of this goal. In a Round 2 supplemental work task, the Region D consultants conducted in depth research on the water consumption patterns of eleven of these high-use entities, and determined that, to a great extent, the largest consumptions were attributable to reporting anomalies.

The NETRWPG would like to expand this study to include the remaining 28 entities with higher per capita usage. This task would allow the planning consultants to meet individually with the remaining high per capita usage systems, to audit their customer lists and more accurately categorize usage into residential, commercial, and manufacturing components. Unaccounted for water would also be analyzed in an effort to insure that it is reported in a common manner. Census data would be provided to reflect median household income. Through interviews with appropriate system staff, consultants would attempt to identify any anomalies in community makeup that would affect per capita usage calculations.

Scope of Work:

A. Develop interview materials to insure consistency.
B. Select water user groups to be surveyed- approximately 28
C. In person interviews with each selected entity
D. Review of customer account records for the purpose of quantifying commercial, multifamily, residential and manufacturing uses.
E. Compilation of median household income data.
F. Prepare and present draft and final report to Regional Planning Group.

Deliverables:

- Preliminary and final report submitted to Region D and TWDB.

Task		Description	Proposed Fee	
Priority #1 - Alternatives to Meet Future Water Demands			**$**	**290,900**
1a	Research Regulatory Issues			
	1a.1	Reservoir Yield vs. Storage Capacity	$	34,400
	1a.2	Corps of Engineers - Mitigation Requirements & Other Reservoir Information	$	36,000
	1a.3	Transportation Facilities / Potential Water Transmission Alternatives	$	16,600
	1a.4	Prepare Draft Report, Final Report and Present to Region D & TWDB	$	23,650
1b	Research Factual Issues			
	1b.1	Updated Supply Information for Potential Unallocated Sources in Region D	$	36,500
	1b.2	Review New Reports re. Marvin Nichols Reservoir	$	8,175
	1b.3	Compare Information for Region D to Region C & I	$	16,525
	1b.4	Coordinate/meet with Region's C and I consultants and planning groups	$	42,540
	1b.5	Prepare Draft Report, Final Report and Present to Region D & TWDB	$	26,020
1c	Education & Regional Prioritization			
	1c.1	Curriculum of Water Planning Topics for Region D Planning Group & Public	$	33,140
	1c.2	Facilitate RWPG to identify Regional Priorities	$	9,150
	1c.3	Prepare Draft Report, Final Report and Present to Region D & TWDB	$	8,200
Priority #2 - Groundwater Management			**$**	**65,560**
2a	Research & Educate RWPG on Groundwater Management Areas		$	10,150
2b	Review / Summarize GMA Meeting Minutes Area #8 & #1		$	11,600
2c	Meet with GMA #8 & #11 to convey NETRWPG Interest and Liason		$	20,200
2d	Analysis of GMA recommendations on Region D entities		$	15,900
2e	Prepare Groundwater Management Recommendations for Region D Water Plan		$	7,710
Priority #3 - Further Evaluation of Sub-Regional Water Supply Master Plans			**$**	**132,440**
3a	Phase I			
	3a.1	Refine original 10 plans & Meet with 51 water user groups	$	15,975
	3a.2	Develop presentation and meet with clusters to promote regionalization	$	16,640
	3a.3	Provide guidance to clusters on next steps to implement regionalization	$	9,270
3b	Phase II			
	3b.1	Evaluate & contact smaller water systems (93) consolidation candidates	$	69,420
	3b.2	Attend meetings with candidate entities and faciliate communication	$	5,590
	3b.3	Prepare draft & final report summarizing findings	$	15,545
Priority #4 - Minimum Per Capita Water Use Estimates			**$**	**53,575**
4a	Analyze potential reasoning for apparent low consumption		$	7,890
4b	Project future water usage accounting for specific future changed conditions		$	7,450
4c	Investigate water use floors for other usage types		$	16,985
4d	Analyze population growth and water use for 3 counties bordering Region C		$	12,875
4e	Prepare preliminary and final written report		$	8,375

Priority #5- Brackish Groundwater			**$**	**73,810**
5a	Identify WUG's with brackish possibilities (Industrial, agricultural, municipal)		$	23,140
5b	Locate potential disposal fields and analyze users that may benefit		$	27,970
5c	Compare brackish costs to other alternatives		$	15,690
5d	Prepare report and recommendations to incorporate into plan		$	7,010
Priority #6 - Drought of Record Consumption			**$**	**62,420**
6a	Meet with 12 entities & obtain records of water usage		$	10,300
6b	Determine average daily water demand per use category		$	2,900
6c	Research history of droughts and prepare summary		$	7,725
6d	Research and calculate PDSI for 2000 & 2006		$	5,300
6e	Determine most severe 3 year drought in past through PDSI calculations		$	7,600
6f	Compare historic droughts to 2006 "Extreme Drought"		$	2,875
6g	Establish recurrence interval, calculate weighted multiplier		$	4,845
6h	Prepare draft report summarizing results		$	10,875
6i	Submit draft report to Region D and TWDB, collect comments and revise		$	4,450
6j	Submit final report to Region D and TWDB		$	5,550
Priority #7 - Major Springs			**$**	**85,510**
7a	Research published sources		$	19,745
7b	Solicit public input regarding unpublished springs		$	14,665
7c	Field evaluation and documentation		$	25,440
7d	Groundwater use by aquifer		$	5,270
7e	Investigate various management tactics		$	4,715
7f	Prepare report and recommendations to incorporate into plan		$	15,675
Priority #8 - Update Status of MTBE and E85 Regulation			**$**	**86,095**
8a	MTBE			
	8a.1	Research published sources for current efforts to reduce or eliminate MTBE	$	15,800
	8a.2	Chronology of MTBE testing in State water supplies	$	11,060
	8a.3	Research Region D WUG alternate water supply	$	24,280
	8a.4	Prepare report of findings and present to Region D	$	3,325
8b	Biomass			
	8b.1	Research & prepare report on biomass efforts in the State	$	13,190
	8b.2	Evaluate & report on Biomass & Water Quality Effects to Region D	$	7,340
8c	E85 Regulation			
	8c.1	Research & Report on E85 potential effect on water quality in Region D	$	11,100
Priority #9 - Water Availability Models			**$**	**80,210**
9a	Coordinate with TWDB to obtain and run WAM with Region D WMS		$	23,525
9b	Review results and compare to combined WMS		$	5,805
9c	Determine reasonable alternative WMS		$	10,575
9d	Evaluate effect of alternative potential WMS		$	33,175
9e	Prepare preliminary and final written report		$	7,130

Priority #10 - High Per Capita Consumption		**$**	**63,800**
10a	Develop Interview Materials	$	7,150
10b	Select WUG's to be surveyed (approx. 28)	$	4,100
10c	Conduct interviews with WUG's	$	16,650
10d	Review account records	$	16,700
10e	Compile income and other data	$	3,675
10f	Prepare draft report and recommendations, submit draft to Region D & TWDB	$	11,875
10g	Revise report and submit final document to Region D & TWDB	$	3,650
11 - Administrative and Public Participation Activities		**$**	**45,050**
11a	Administrative	$	3,500
11b	Scope of Work	$	15,000
11c	Public Participation	$	26,550
	TOTAL PROPOSED TASK BUDGET FOR REGION D	**$**	**1,039,370**

Expense Budgets by Task

Priority Task #1		
Alternative Solutions to Meet Demands	**$**	**290,900.00**
Salaries & Wages	$	90,932.73
Fringe	$	47,285.02
Travel	$	8,685.00
Other Expense	$	4,365.00
Subcontract Services	$	-
Voting Planning Member Travel	$	-
Overhead	$	111,847.25
Profit	$	27,785.00
	$	290,900.00

Priority Task #2		
Groundwater Management	**$**	**65,560.00**
Salaries & Wages	$	20,276.18
Fringe	$	10,543.61
Travel	$	2,620.00
Other Expense	$	985.00
Subcontract Services	$	-
Voting Planning Member Travel	$	-
Overhead	$	24,939.70
Profit	$	6,195.50
	$	65,560.00

Priority Task #3		
Sub-Regional Water Supply Master Plans	**$**	**132,440.00**
Salaries & Wages	$	40,959.82
Fringe	$	21,299.11
Travel	$	5,300.00
Other Expense	$	1,985.00
Subcontract Services	$	-
Voting Planning Member Travel	$	-
Overhead	$	50,380.58
Profit	$	12,515.50
	$	132,440.00

Priority Task #4		
Minimum Per Capita Water Usage	**$**	**53,575.00**
Salaries & Wages	$	16,584.55
Fringe	$	8,623.96
Travel	$	2,100.00
Other Expense	$	800.00
Subcontract Services	$	-
Voting Planning Member Travel	$	-
Overhead	$	20,398.99
Profit	$	5,067.50
	$	53,575.00

Priority Task #5		
Brackish Groundwater	**$**	**73,810.00**
Salaries & Wages	$	22,846.91
Fringe	$	11,880.39
Travel	$	2,950.00
Other Expense	$	1,050.00
Subcontract Services	$	-
Voting Planning Member Travel	$	-
Overhead	$	28,101.70
Profit	$	6,981.00
	$	73,810.00

Priority Task #6		
Drought of Record Consumption	**$**	**62,420.00**
Salaries & Wages	$	19,307.45
Fringe	$	10,039.88
Travel	$	2,500.00
Other Expense	$	925.00
Subcontract Services	$	-
Voting Planning Member Travel	$	-
Overhead	$	23,748.17
Profit	$	5,899.50
	$	62,420.00

Priority Task #7		
Major Springs	**$**	**85,510.00**
Salaries & Wages	$	26,456.73
Fringe	$	13,757.50
Travel	$	3,420.00
Other Expense	$	1,250.00
Subcontract Services	$	-
Voting Planning Member Travel	$	-
Overhead	$	32,541.77
Profit	$	8,084.00
	$	85,510.00

Priority Task #8		
Update Status of MTBE & E85 Regs	**$**	**86,095.00**
Salaries & Wages	$	26,900.18
Fringe	$	13,988.09
Travel	$	2,600.00
Other Expense	$	1,300.00
Subcontract Services	$	-
Voting Planning Member Travel	$	-
Overhead	$	33,087.22
Profit	$	8,219.50
	$	86,095.00

Priority Task #9		
Water Availability Models	**$**	**80,210.00**
Salaries & Wages	$	24,810.55
Fringe	$	12,901.48
Travel	$	3,200.00
Other Expense	$	1,200.00
Subcontract Services	$	-
Voting Planning Member Travel	$	-
Overhead	$	30,516.97
Profit	$	7,581.00
	$	80,210.00

Priority Task #10		
High Per Capita Consumption	**$**	**63,800.00**
Salaries & Wages	$	19,734.55
Fringe	$	10,261.96
Travel	$	2,550.00
Other Expense	$	950.00
Subcontract Services	$	-
Voting Planning Member Travel	$	-
Overhead	$	24,273.49
Profit	$	6,030.00
	$	63,800.00

Task 11		
Administration & Public Involvement	**$**	**45,050.00**
Salaries & Wages	$	11,536.36
Fringe	$	5,998.91
Travel	$	1,800.00
Other Expense	$	8,000.00
Subcontract Services	$	-
Voting Planning Member Travel	$	-
Overhead	$	14,189.73
Profit	$	3,525.00
	$	45,050.00

Proposed Schedule

Region D – North East Texas Regional Water Planning Group

Task	Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	Alternative Solutions to Meet Water Demands																								
2	Groundwater Management																								
3	Sub-Regional Water Supply Master Plans																								
4	Minimum Per Capita Water Usage																								
5	Brackish Groundwater																								
6	Drought of Record Consumption																								
7	Major Springs																								
8	Update Status of MTBE & E85 Regulation																								
9	Water Availability Models																								
10	High Per Capita Consumption																								
11	Administrative and Public Involvement																								

Method of Monitoring Progress

Monthly progress reports are submitted to the Texas Water Development Board with the corresponding invoice. Additionally, progress for this project will be monitored by the Region D Administrator, the North East Texas Municipal Water District. Monthly reports are presented to the Regional Water Planning Group detailing specific tasks under progress and completed. Many of the tasks will require interim updates of specific findings in order to obtain further specific direction and decision from the Regional Water Planning Group (RWPG). Finally, for all of the proposed work tasks a preliminary and final report will be submitted for review by the RWPG and Texas Water Development Board.

Qualifications and Experience of Staff

The Region D Regional Water Planning Group has retained Bucher, Willis & Ratliff Corporation (BWR) in conjunction with Hayter Engineering, Inc. (HEI), Hayes Engineering (HE), LBG-Guyton Associates (LBG), and Bob Bowman Associates (BBA)to perform the proposed scope of work. Each of these firms provided consulting services on the 2006 Regional Water Plan, and most provided services for the 2001 Regional Water Plan as well. The firms' past experience and history with the RWPG has been positive. Following is a brief discussion of the anticipated staff who will work directly on the scope of work tasks proposed.

James R. Flemons, P.E., Project Manager (BWR) is a proposed as Project Manager for the project. He has 39 years experience as a 1967 graduate of Oklahoma State University and is recognized as a Professional Engineer in 14 states, including Texas. All 39 years of his experience are with Bucher Willis & Ratliff where he is a Senior Vice President. He has served the North East Texas Regional Water Planning Group (Region D) and the TWDB as Project Manager for the two previous NETRWPG water plans which were submitted in January 2001 and January 2006 respectively.

Reeves Hayter, P.E. (HEI) has over 30 years experience in consulting, planning, design, construction review, surveying and environmental reviews for a broad cross-section of civil projects, including participation in development of the 2001 and 2006 regional water plan for the 19 county North East Texas Regional Water Planning Area. His participation included data collection and analysis, population and water demand projections, supply strategies, and public meeting presentations.Throughout his career Mr. Hayter has managed a number of water master plans and infrastructure improvement projects.

Stanley R. Hayes, P.E. (HE) has provided professional engineering services to the North East Texas (Region D) Regional Water Planning Group since it's formation in 1998. He was a team member in the first and second planning cycle. He has assisted several water supply corporations and special utility districts with establishing goals and meeting needs over the next 50 years. He has served two years on the USDA Rural Development Engineering Advisory Committee for Texas.

James Beach, P.G. (LBG) is a Registered Professional Geoscientist in the State of Texas and has over 15 years experience in ground-water and surface water hydrology, water resources,

environmental assessments, numerical flow and transport modeling analysis, quantitative contamination evaluations, and litigation support. He specializes in application of numerical models to evaluate water resources as well as contaminant flow and transport in the subsurface. Mr. Beach has extensive experience characterizing, evaluating, and modeling flow and contaminant transport in unsaturated and saturated subsurface environments. He has served as the NETRWPG as well as other regions as a geoscientist for the first 2 rounds of regional water planning. Mr. Beach is proposed as the geoscientist for this round of regional water planning.

Bob Bowman (BBA) is proposed as the project Public Relations Officer. Mr. Bowman has practiced as a marketing consultant, public relations consultant and advertising agent for over 30 years in East Texas. He lives in Lufkin and is a noted East Texas author. Mr. Bowman has served Region I as well as Region D as the Public Relations Officer in the past. Most recently he served as the Region D officer publishing a newsletter, public notices and the meeting notes.

Mark E. Owen, P.E. (HE) was involved in the first planning cycle of the Region D Water Planning Group between 1998 and 2001, meeting with over forty municipalities and water supply corporations from Texarkana to Longview to establish their demands and production capacities. He has recently returned to work at Hayes Engineering after serving two years as City Engineer at the City of Longview, Texas.

Emily Crom (BWR) has nine years experience with civil engineering and planning projects. She provided project coordination and planning for the 2006 regional water plan. Ms. Crom was also involved with determination of population, non-municipal water demands and legislative recommendations for the plan.

Moses Ogolla (HEI) has four years experience on water facilities planning and design. He has worked on several water systems improvement studies, emergency water supply and drought response analysis. Mr. Ogolla was involved with the 2006 Regional Water Plan and helped to develop municipal water supply and demand projections and water management strategies for entities showing potential water shortages over the next 50 years.

Section IV - Proof of Notification

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NORTHEAST TEXAS MUNICIPAL WATER DISTRICT

TO: Mayors, County Judges, Water Districts, Water Suppliers and Water Rights Holders
FROM: North East Texas Regional Water Planning Group Region D
DATE: July 10, 2006
SUBJECT: Notice of Public Meeting to Receive Input on Scope of Work for the Third Cycle of Regional Water Planning; and, Application for Water Planning Grant

NOTICE OF PUBLIC MEETING
REGIONAL WATER PLANNING

The **North East Texas Regional Water Planning Group (Region D)** will receive suggestions and recommendations from the public on the issues that should be addressed or provisions that should be included in the scope of work for the amended regional water plan during the third cycle of regional water planning at a public meeting. Notice is also given that the North East Texas Regional Water Planning Group will submit a grant application for financial assistance to the Texas Water Development Board (TWDB) to carry out the scope of work to be submitted on or before September 14, 2006. Region D consists of a 19-County planning area that includes all or part of the following counties: Bowie, Camp, Cass, Delta, Franklin, Gregg, Harrison, Hopkins, Hunt, Lamar, Marion, Morris, Rains, Red River, Smith, Titus, Upshur, Van Zandt, and Wood.

The public meeting will be held in conjunction with the next meeting of the North East Texas Regional Water Planning Group at the Mount Pleasant Civic Center, 1800 North Jefferson Ave., Mount Pleasant, Texas, on Wednesday, August 16, 2006 at 1:00 p.m. Written and oral comments will be accepted at this meeting.

Copies of the grant application may be obtained from the Northeast Texas Municipal Water District when it becomes available. Written comments on the grant application must be submitted to the North East Texas Regional Water Planning Group by August 16, 2006, at 1:00 p.m. and to J. Kevin Ward, Executive Administrator, TWDB by November Board meeting as follows:

Walt Sears, Jr.
Administrative Agent for Region D
Northeast Texas Municipal Water District
P.O. Box 955
Hughes Springs, Texas, 75656

J. Kevin Ward
Executive Administrator
Texas Water Development Board
P.O. Box 13231
Austin, Texas 78711-3231

For additional information, please contact Walt Sears, Jr., Administrative Agent for Region D; Telephone: (903) 639-7538, E-mail: netmwd@aol.com or submit questions to the NETMWD, PO Box 955, Hughes Springs, Texas 75656.