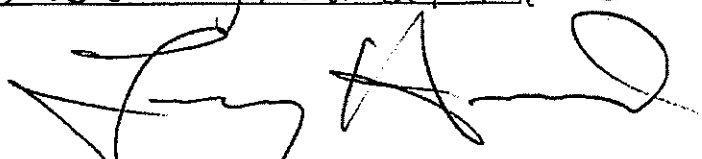


## SUBMISSION OF WRITTEN COMMENTS

Panhandle Water Planning Group  
Panhandle Water Planning Area - Region A

Written Comments for Suggestions and Recommendations as to Issues to be Addressed or Provisions to be Included in the Regional Water Plan will be accepted through Monday, June 28, 2010 at 5:00 p.m. Comments may be mailed, delivered, or faxed to:

Kyle Ingham, Local Government Services Director  
Panhandle Regional Planning Commission  
415 West Eighth Avenue  
Amarillo, TX 79101  
Fax Number: (806) 373-3268  
E-Mail: [kingham@theprpc.org](mailto:kingham@theprpc.org)

COMMENTS (Name and Address Must be Completed - Please See Reverse Side)
I need to know who would rule on the following: I have a surface water right No: 5236 & NO 5235 (Type 6). The water District that I am a member of, issued a permit to a land owner adjacent to me. When we leased this section, we stopped the spring from running. Now this old well has not produced for over 10 yrs. Now they are re-drilling it. I just wonder who would have precedence. My surface water rights were granted in the 1950's. - Thank you 

COMMENTS (CONTINUED)


All comments will be considered by the PWPG. To ensure your comments are appropriately addressed, please complete the information below:

Name: Larry Henard

Address: 16300 FM 3446

City/State/Zip: Wellington Tx. 79095

Telephone (optional): 817/890/4116 E-Mail Address (optional): \_\_\_\_\_

*Salt fork hunts@wildblue.net*

## Kyle Ingham

---

**From:** John Williams [jwilliams@crmwa.com]  
**Sent:** Thursday, March 25, 2010 3:22 PM  
**To:** simone.kiel@freese.com  
**Cc:** Kyle Ingham; Chad Pernell; Kent Satterwhite  
**Subject:** IPP Strategies for Borger and Amarillo

In looking at the IPP which was submitted 3/1, I notice some circumstances regarding the supply from CRMWA to Borger and the strategies shown for them to meet their needs. I'm not sure if the information for Borger was supplied by the city in response to PWPG questionnaires, but the strategies shown appear to need some tweaking.

Table 4-17 shows that the municipal demand for Borger will decrease somewhat over the planning period, but demand for their industrial customers will increase, resulting in an overall demand increase for them as a WWP. Table 4-2 shows that they will meet this increased demand first by installing new wells (presumably in their existing wellfield west of Stinnett) and later (2050-2060) by purchasing additional water from CRMWA.

There are two factors which will affect these strategies:

First, Borger is not shown to use all of the water they have the right to take from CRMWA. Based on the available supply which CRMWA is shown to have in Table 4-15 (30 KAF lake and 60KAF groundwater in 2010, increasing to 50KAF lake and 69 KAF ground in 2020 thru 2060), with Borger contractually entitled to 5.549% of each, Borger would have available supply from CRMWA of 2,774 AF lakewater and 3,849 AF wellwater (total 6,603 AF/Y) for the decades 2020 through the end of the planning period. Table 4-17 only shows that they will be using 1,681 AF from Lake Meredith and 2,319 AF from our Roberts County supply (total 4000 AF/Yr). So they could draw up to 2,603 AF/yr additional from CRMWA.

Second, however, their usage will probably be affected by the needs of their industrial customers. With one exception, I think the industrial users currently will not accept lake water. Since the demand growth is all on the industrial side, they may not be able to meet it with the surface supply. They could take an additional 1,530 AF/yr of Roberts County water from CRMWA, which is more than the 1000 AF/yr additional supply they are shown to purchase in Table 4-2. Their ability to supply our Roberts County water to industries will depend on installation of a new supply line from our Roberts County transmission line, or some modification of their own distribution system.

At any rate, the need for Borger to "purchase" additional water from CRMWA does not seem an appropriate strategy. They already have the right to use more than the additional purchase which is proposed. These comments ignore any possible need for contractual modifications.

A somewhat similar but less critical situation exists with the strategies shown for Amarillo. Like Borger, Amarillo could use slightly more water from CRMWA under the existing contracts than is shown in Table 4-16 late in the planning period. They are entitled to 37.058% of our lake water and 40.621% of our Roberts County supply. They could use about 3,000 AF/yr more groundwater from our Roberts County supply than is shown in Table 4-16, but that might not be enough to avoid the need to develop their own Roberts County supply. Furthermore, there could be some delivery problems related to getting that water into Amarillo, so I would not advocate modifying the strategies shown for Amarillo.

John Williams,  
Special Adviser, CRMWA  
POB 9, Sanford, TX 79078  
806/865-3325

## Kyle Ingham

---

**From:** John Williams [jwilliams@crmwa.com]  
**Sent:** Thursday, March 25, 2010 4:19 PM  
**To:** Grubb, Herb; simone.kiel@freese.com  
**Cc:** Kent Satterwhite; Chad Pernel; Kyle Ingham  
**Subject:** Region A vs. Region O

I have been trying to compare the information shown for CRMWA member cities in Region O in the two respective IPP's which were submitted to TWDB on March 1. As you will recall, there was an exchange of e-mails back in November 2009 about the quantities which CRMWA could supply. There was also an exchange on Dec. 4, 2009 between Herb and Simone on the demands which would need to be included in both reports.

As far as I can determine, the available supplies shown in the Region O IPP, tables 4-12 thru 4-20, for CRMWA member cities did take account of the quantities we gave Herb in December, except for the city of Levelland. I am also unable to completely verify the supplies which will be available for Lubbock, due to the multiplicity of sources and supplies to their local suburbs. For most of the cities, Herb just reversed (and in some cases adjusted) the quantities shown in the 2006 Plan to be furnished from the two CRMWA sources, to fall within the available supplies we had given him. This was not done for Levelland, however, with the result that CRMWA cannot supply the amount of lakewater which is shown to be available to them in the IPP for Region O. For Lubbock, the amounts seem to be within reason, but the sources of supply for the suburban cities are not broken down between surface water and groundwater sources, so I can't completely verify them. Supplies to Lubbock do appear to be "in the ballpark", however.

As to demands, which was the subject of the Dec. 4 exchange between Herb and Simone, I note that only Plainview and Brownfield exactly match between the Tables 4-12 thru -20 from Region O and Table 4-15 for Region A. I have no idea which are the numbers ordained by TWDB for the Region O member cities of CRMWA.

Thanks for your work, on both sides. Please let me know if I can help to reconcile any discrepancies.

John Williams,  
Special Adviser, CRMWA  
POB 9, Sanford, TX 79078  
806/865-3325

# Comments on the Initially Prepared Regional Water Plan For the Panhandle Water Planning Area

As submitted March 1, 2010

Prepared by John C. Williams

Primary Comments: Water supply availability

- A. **For Surface Water, notably from Lake Meredith:** In Section 3.1.3, at pp 3-18 and 3-19, the document discusses the yield studies for Lake Meredith and correctly states that CRMWA believes the long-term reliable yield of Lake Meredith may be only approximately 50,000 AF/yr, and that for purposes of this Plan, the yield is estimated at 30,000 AF for 2010 and 50,000 AF/yr for the following decades (based on the assumption that the Lake will at least partially recover soon). These numbers are used in Table 3-10 and to calculate the supplies to WUG's as shown in Table 3-22. However, Table 3-18 on page 3-31, and the text of the Executive Summary on pages ES-4 and ES-5, as well as Table ES-1, still refer to the Firm Yield as determined previously from the WAM and need revision.

Also, the information in Table 1-8 on page 1-25 should be footnoted to show that the firm yield as given is questionable and subject to re-evaluation at the end of the current drought.

**For Groundwater, notably from the Ogallala Aquifer:** The Plan documentation is inconsistent and confusing about what version of the GAM was used to develop and illustrate water availability and shortages. Section 3.1.2, beginning on page 3-12, describes the refinement of the Northern Ogallala GAM as described more fully in Appendix F. In this section, on page 3-14, in the third paragraph, the Plan states that "The updated model was also used to assess groundwater availability based upon the criteria defined by the planning group." However, the updated model was *not* used to calculate the Total Water in Storage shown in Table 3-1 on page 3-6 nor the Available Water Supplies shown in Tables 3-2 on page 3-7. As indicated somewhat obliquely by the footnote at Table 3-1, these data were derived with the 2004 version of the GAM, as run by Intera in October 2009, presumably with the demands derived for the 2011 Plan. The Plan text is also confusing because the last paragraph on page 3-3 says the "current TWDB Northern Ogallala GAM" in Appendix D was used to determine the availability of water from the Ogallala/Rita Blanca aquifer. It is unclear which version is the "current" version. Appendix D contains output from one run of the 2004 GAM by Interra, but only the county availability data are shown, not the totals for the entire region nor the demands which were input. The data from that run is used in Table 3-2, but Table 3-1 cannot be easily correlated to the GAM run in Appendix D. If I understand correctly, the only data reflected in the Plan (other than Appendix F) which is based on the fully revised "new" GAM is the illustration shown in Figures 3-9 and 3-10, reflecting the effect of unrestricted pumpage at

current demand levels. The Plan text is not at all clear which version of the GAM has been used in most cases. The source of the data in Tables 3-24, 3-25, 3-26, 3-27, and in the DB-12 tables is not noted so far as I can see. The information in Table 1-6 on page 1-21 for 2010 is likewise not well identified, but is probably from the same source as Table 3-1. It does not appear that use of data from the updated GAM would substantially revise any county or user shortage (in fact the shortages would probably be less), but the document should make clear what source was used for each step in the process.

**Other General comments, mostly editorial:** Other comments are as follows:

1. On page ES-8, under "Long-term Protection...." The draft states that the plan recommends using not more than 1.25% of annual saturated thickness. This appears to be a carryover from the 2006 Plan and needs to be updated to comply with the management goals actually adopted for the 2011 Plan.
2. In the County Summaries which are in the ES, the legends are not clear. Meaning of the cross-hatching is not noted. Stippled areas presumably show various aquifers, but the small size of the legends make it difficult to discern which one is stippled. The graphical display of Supplies and Demands or Shortages is not the same for all counties. For Dallam, Hall, Hansford, Hartley, Hutchinson, Moore, Potter, Randall, and Sherman the bar graphs just show percentages of supply and shortages, while the quantities of each are tabulated below the graph. All of the other counties graph the quantities of Supplies and Demands for each WUG in the bar graphs as well as the pie charts. On the map for Roberts County, the Basin Boundary between the Canadian and Red crosses several drainages.
3. In Chapter 1, page 1-2, the Plan states there are 11 interest groups, where it should say 12 as reflected in Table 1-1.
4. On Page 1-11, Par. 1.3.2, and in Table 1-3, the data seems far outdated.
5. In Par.1.5.1. page 1-15, the Plan should mention the requirements of HB 1763, passed by the 79<sup>th</sup> Tx Legislature in 2005, requiring the GMA's to establish a Desired Future Condition and that each GWD in the GMA adopt goals and objectives consistent with achieving the DFC. Also, the last sentence of this section should state that the GWD's can regulate production as well as the other criteria enumerated.
6. In the second paragraph on Page 1-20, increased cost of power should be included in the list of factors reducing the rate of water level declination.
7. On page 1-39, par. 1.7.2, the document should note that CRMWA, partnered with the Texas State Soil and Water Conservation Board and NRCS (now Agri-Life) have conducted a salt-cedar control program in the Canadian Basin above Lake Meredith which has effectively treated over 10,000 acres of the infestation, at a cost of over \$3 million.
8. Table 4-16 shows the Demands, Supplies, and Strategies for Amarillo. The current supplies from CRMWA Lake Meredith shown do not quite conform to the contractual allocations from CRMWA. Amarillo is entitled to receive 37.058% of CRMWA's Lake Meredith supply and 40.621% of the groundwater supply from CRMWA. If CRMWA's available supplies are

as shown in Table 4-15, Amarillo would have about 4000 AF more groundwater available from CRMWA in the 2020-2060 period. Other variations are smaller.

9. On page 5-12 and the top of page 5-13, the draft discusses a study done by BEG for the 2006 Water Plan. Apparently this section was not revised from the 2006 language. It should be made clear that this is not a new study done for the 2011 Plan. In addition, questions recently raised about this study may make it advisable to simply state that the study supports the probability of decreases in water quality with increased pumping, but that projections of the study are not entirely borne out by actual observations. References to Appendix X (of the 2006 Plan?) should be so noted, or deleted.
10. Section 6.4, page 6-9 does not mention the requirement for setting a Desired Future Condition or that the GCD's will have to regulate or manage groundwater so as to achieve the DFC, or to keep pumpage within the MAG.
11. Section 7.4.2, page 7-4 does not mention either the Lake Meredith National Recreation Area (it is not clear whether the 103,000 acres mentioned include the 45,000 acres in LMNRA) or the Alibates Flint Quarries National Monument (the only National Monument in Texas).
12. Paragraph 7-5 on page 7-4 contains a quotation concerning the Arkansas River shiner and the designation of critical habitat for the species, but no source is given for the statement quoted.
13. The City of Fritch has recently been approved for some financing from the TWDB to support purchase of water rights held by Hi Texas Water Supply Corp. Although this loan (\$1,160,000) has already been approved and therefore may not need to be supported in the Plan, it may be judicious to include some mention of this as a strategy for the City of Fritch. Their plan includes acquisition of the High Texas Water System, including the water rights, rehab of those wells and drilling at least one new well, and installation of a connecting line. Other financing will also be needed (source presently unknown). The present draft of the Plan does not show any shortage or strategy for Hi Texas or Fritch.  
The information prepared by the staff for the TWDB's consideration stated that "the project is consistent with the 2007 State Water Plan and the 2006 Region A Water Plan, since it is using the water supply source identified in the Regional and State Water Plans." I presume the TCEQ will agree when Fritch seeks a CCN for the new service area, but it could be wise to have some provision in the new Plan.



April 28, 2010

Dear Kyle,

The Amarillo League of Women Voters has finished its Water Study report. We want to thank you for your presentations, your time, information and support. This Water Study was only possible because you spent time with us and answered all of our questions. We sincerely hope that this study will continue to grow in purpose and intent, serving as an additional avenue for conservation education.

Sincerely,

A handwritten signature in cursive script that reads "Tonya".

Tonya Kleuskens

Amarillo League of Women Voters, Environment Committee

Gary Patner

13 May 2010

LONGRANGE PLAN STEERING COM. FOR WHOM THIS COVER

Dear Steering Committee Member:

LETTER WAS WRITTEN. BUT WE  
WANTED YOU TO HAVE A COPY.

The enclosed document is a compilation of what the League of Women Voters of Amarillo learned during our two-year water study which commenced in May 2008 and ended in April of 2010. Because of your interest in the welfare of our area, we are sharing it with you.

Alan

Our study consisted of a series of book discussions, film viewings, public forums, small group meetings, and field trips. Managers of the groundwater districts, Bridget Scanlon and other experts met with the Environment Committee. Early on we established a partnership with the Amarillo Public Library. Our forums and book discussions provided an opportunity for city dwellers and farmers to share their concerns, creating a deeper understanding of each other's points of view.

Speakers at our public forums included:

State Senator Kel Seliger, "Whose Water Is It?"

Jarrett Atkinson, Assistant Amarillo City Manager, "Every Drop Counts"

Laura Marbry, Texas Living Waters Project, "Environmental Flow"

Darryl Birkenfeld, Ogallala Commons, "The Ethics of Water Use"

Janet Guthrie, Manager Hemphill Underground Water Conservation District, "HUWCD  
Groundwater Model"

James Herring, Chair Texas Water Development Board, "The Influence of Groundwater on Texas  
Water Planning and Policy"

Book Discussions on Saturday afternoons at the library covered the following:

*The Worst Hard Times*, by Tim Egan

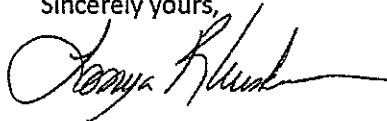
*Ogallala Blue*, by William Ashworth

*Blue Gold*, by Maude Barlow & Tony Clarke

*Pillar of Sand: Can the Irrigation Miracle Last?* By Sandra Postel

There is no question that some day the Panhandle will run out of water. The good news is that a lot of people have started talking about the problem, and many of them are trying to do something to slow down the process. We think you, too, will be encouraged by the final section of the report.

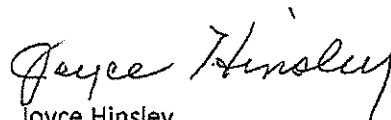
Sincerely yours,



Tonya Kleuskens

Chair, Environment Committee

LWV



Joyce Hinsley

President, Amarillo LWV

## **Water in the Texas Panhandle Facts and Issues**

The League of Women Voters of Amarillo  
April 2010

*Whiskey is for drinking; water is for fighting over.*

~ attributed to Mark Twain

The Ogallala Aquifer, the underground reservoir of fresh water on which the High Plains of Texas depends, is running out. Cut off from the Rocky Mountain flows which originally formed it, the Ogallala has no major water supply to replenish it.

The greatest source of re-charge for the Ogallala is playas – those humble, fascinating, ephemeral wetlands, the shallow ponds that alternately appear and disappear, depending on the rains. On average, playas provide a modest re-charge of only inches per year. Yet every year, on average, the water levels in the Ogallala drop by varying numbers of feet, depending on the locale.

Other groundwater aquifers exist, but they pale in comparison to the Ogallala. Deeper, smaller, less frequent, sometimes of good quality and sometimes not, they are valued but cannot begin to replace the Ogallala.

In Groundwater Management Area 1, the four northwestern counties and Hutchinson County already show water deficits ranging from up to 50,000 acre-feet per year to as much as 100,000 – 200,000 acre-feet per year. ("Deficit" means not having enough water to meet the demand; an acre-foot is the amount of water required to cover an acre of land to a depth of one foot, or 325,851 gallons.) Current projections indicate that by 2030, Potter, Randall, Hansford and Hall Counties will also be showing water deficits of up to 50,000 acre-feet per year.<sup>1</sup>

Among surface water supplies, the Canadian River is already taxed beyond its ability to resupply the Lake Meredith reservoir, especially during periods of drought. Since the Red River starts in this region, its flow is most often a small stream of water in a wide sandy bed. Greenbelt Reservoir is similarly reduced from earlier years because of water impoundments above the watershed and improved farming techniques that help to prevent runoff.

When the Ogallala is gone, life in the Texas Panhandle will change. Despite this, the primary question future planners seem to ask is: "How long can we sustain the existing economy?" rather than "How long can we make the Ogallala last?" In some areas the easily extractable water is already gone; in other areas it will continue to be available for varying periods of time, depending upon the locale, the population density, the number of high-water-use entities, and other factors, such as whether or not stringent conservation measures are adopted.

## **Farming and Ranching**

What will the economy of the area look like without irrigated agriculture? A Texas Tech study released in December 2009 claims that "... about 16,000 jobs and more than \$1.6 billion of economic impact [are] directly attributable to the production of crops from irrigation...As money moves through the local economy, it generates an additional \$2.5 billion per year of indirect economic activity."<sup>2</sup>

Irrigated agriculture, which accounts for approximately 90% of water use in the Texas Panhandle, grows crops not only for humans, but for livestock as well. The cattle-feeding industry developed here precisely because cattle food can be grown locally. Dairies have moved to the Panhandle for the same reason, among others. So many large, high-value industries are connected to irrigated agriculture that it is hard to imagine a path toward substantially more effective conservation measures that wouldn't involve severe disruption of the area's economy.

The two obvious stand-bys are dry-land farming and ranching. Dry-land farming cannot replace the value of irrigated farming to the economy or to the farmers themselves, but it is one significant form of agriculture which can continue without making such heavy demands on the aquifer. Ranching operations also use far less water. An innovative method of rangeland management shows great promise for grazing cattle in a manner that helps restore grasslands, benefits wildlife, and improves water infiltration and soil life.

Regardless of the measures taken, chances are that eventually the area will look much as it did in the 1940's. There will, however, be one big difference. Much of the water which once awaited us beneath the surface will have been used up.

## **Other Water Users**

In the Panhandle Water Planning Area, there are three principal categories of water users. In addition to irrigated agriculture and livestock production, the other two major categories are industrial users (mining—including drilling activities, manufacturing, and power generation) and municipal users (among which Amarillo is the largest consumer, with Potter and Randall Counties accounting for some 67% of the water used by municipalities in 2006).<sup>3</sup>

Other municipal consumers include the residents of the other cities served by the Canadian River Municipal Water Authority's 322-mile aqueduct. In 2006, 43% of that water was pumped from the Ogallala Aquifer.<sup>4</sup> The smaller cities of Childress, Clarendon, Hedley, and Memphis and domestic rural users are provided surface water from Greenbelt Reservoir through the Greenbelt Water Authority.<sup>5</sup>

Waiting in the wings is a group of powerful entrepreneurs who wish to sell their aggregated water rights to cities downstate because water supplies statewide are under stress from increased demand and erratic weather. Being prepared to face the ethical challenges water marketing presents requires facing the difficult decisions surrounding near-term vs. long-term need when the resource to be sold is limited.

## To Whom Does Water Belong?

That is the question with which the Amarillo League of Women Voters began its water study. Is water private property, or should it be held in common by all citizens?

In New Mexico a water-sharing system which has its roots in Spain has been used over the centuries. Under the Law of the *Acequias*, each land owner along an irrigation ditch gets one vote in the annual election of three commissioners and a *mayordomo*, or "ditch boss." They are the ones who make decisions regarding water distribution and usage.<sup>6</sup>

Under the *acequia* concept, water cannot be separated from the land. Its purpose is to provide drinking water for humans and animals living there and to grow food for them to eat; therefore, water rights should not be transferred. When that happens, it leaves agricultural communities high and dry.<sup>7</sup>

In six of the eight High Plains states, water is considered a public resource. In Oklahoma it belongs to the owner of the overlying earth. Because of a court ruling in 1904, Texas abides by the "Right of Capture," which originally gave each landowner the right to pump an unlimited amount of groundwater from the underlying aquifer. The landowner has traditionally not been held liable for injury to an adjacent landowner caused by excessive pumping. This practice prompted one author to observe that no one actually owns the water in Texas until it reaches the surface.<sup>8</sup>

Water rights can be bought and sold in Texas even before water is actually pumped to the surface. This practice became important as early as 1930 as water authorities saw the need to supply water to growing municipalities.<sup>9</sup> In the past several years, it has become even more important as individuals have become interested in the potential wealth to be gained from water marketing.

In Texas, groundwater conservation districts were originally mandated to record groundwater depletion for income tax deductions; in the 1950's they began to implement water conservation measures.<sup>10</sup> Legislative action has subsequently given groundwater conservation districts more regulatory power, substantially modifying the Right of Capture. In 2009, Texas Senate Bill 2 further enhanced the power of groundwater conservation districts by giving them clear authority to regulate how much a well can pump, to control the spacing between wells, and to deny a permit to withdraw groundwater based on the effect it may have on aquifer conditions

[See the Appendix for the history of state-mandated water planning through the establishment of regional water planning groups.]

## Playa Lakes

Playa lakes are more than just part of the landscape. Without playa lakes, the complex biodiversity which keeps ecosystems resilient and enriches the quality of life for humans would be much reduced. Yet, the importance of playas is so poorly understood by the public that they are rapidly being destroyed by activities such as excavation, constant

grazing, urban development, mining for caliche, or use as holding ponds for waste water.

In order to obtain additional information regarding playa lakes, their characteristics, and their importance to the ecosystem, the Amarillo League of Women Voters contacted David Haukos, Regional Migratory Bird Management Specialist of the Region 2 Migratory Bird Office, who is also affiliated with the Department of Range Wildlife and Fisheries, the U. S. Fish and Wildlife Service, and Texas Tech University. He has done extensive studies of playa lakes, their characteristics, the role they play in aquifer recharge, and their importance for the preservation of wildlife, particularly for migratory birds. He responded as follows:

"Playas are the shallow lake basins dotting the plains; they are isolated, dynamic wetlands represented by a unique soil at the bottom of depressions. Sedimentation, [the] accumulation of eroded soil from the surrounding watershed, is the greatest threat to the integrity of playa wetlands.

"The greatest concentration of playa lakes (about twenty thousand) is in the Southern High Plains of Texas. This area, it is estimated, contains 80% of the world's playa lakes.

"The 25-30,000 playas of the Southern Great Plains connect the region to the rest of the Western Hemisphere through migratory birds and other ecological attributes.

"There are more than 200 bird species documented using playa wetlands for migration, wintering, and breeding. The diversity of birds using playas is due to the diversity of plant communities (habitats) among playas throughout the Southern Great Plains.

"There are 350 species of plants that can potentially be found in playas of the Southern Great Plains. However, each species appears only under rather specific environmental conditions and some species may be present for only a very short period of time.

"As islands of wetlands in a semiarid region, playas serve the wetland role of cleansing a reasonable range of pollutants from the watershed.

"Playas are dynamic, responding to the unpredictable environment of the Great Plains." <sup>11</sup>

Because playa lakes are not specifically mentioned in the League of Women Voters of Texas (LWV-Texas) environmental position statements dealing with water—and are therefore not being brought to the attention of the state's legislators—the Environment Committee of the Amarillo LWV believes it is imperative to lobby locally for meaningful legislation to protect the playas.

## **Fostering Water Conservation**

*You never change things by fighting the existing reality. To change something, build a new model which makes the existing model obsolete.*

~ Buckminster Fuller

As the public has become more aware of the rapidly-depleting levels of the Ogallala Aquifer, individuals and groups have begun to speak out, advocating for various types of measures in an attempt to preserve this irreplaceable resource as long as possible. They are urging that municipalities, industries, and agricultural users start immediately to conserve and protect all water resources, both underground and on the surface. Such an approach would preserve resources for future generations and allow time for new discoveries that may solve some of the problems.

Concerned citizens are requesting expanded educational programs and new models that will better inform the public about the importance of water conservation. Recognizing that there is strength in numbers, environmental advocates are beginning to create coalitions and partnerships to call for and implement change.

Some specific changes that people are beginning to request include the following:

That low water use be a required criterion for any new business or industry recruited to move to Amarillo or the Panhandle;

That gray water (relatively clean waste water from the kitchen, shower, and laundry cycles) be sanctioned for use for landscaping and gardens;

That tax credits be given for implementing xeriscaping, drip irrigation, water catchment, and other water-saving strategies;

That new developments be required to manage storm-water runoff in a way that is not damaging to playa lakes;

That areas of sprinkled lawn be reduced in new developments, and rainwater catchment be required;

That areas of non-permeable surfaces in developments be greatly reduced;

That all commercial buildings be required to use rainwater catchment systems.

The examples given in the following paragraphs show how groundwater conservation districts, schools, organizations, and concerned citizens of area communities are leading the way.

**Groundwater conservation district management plans.** Requirements for groundwater management are set forth in Chapter 36 of the Texas Water Code and in the administrative rules of the Texas Water Development Board. Districts are required to monitor changes in the aquifer, communicate their findings to the public, and ensure that the adopted plan is adapted over a period of time to meet the needs of the citizens. Management plans of the regional groundwater conservation districts (GCDs) fulfill all those requirements. Districts review their management plans and rules on a regular basis and revise as needed.

**Education programs created and sponsored by groundwater conservation districts.** Some of the area groundwater conservation districts' efforts to educate the public are detailed below:

**Panhandle Groundwater Conservation District:** The PGCD has two programs for schools, one for 5<sup>th</sup>-graders and one for 4<sup>th</sup>-graders, in addition to brochures, TV spots, and other informational methods aimed at adults.

"Stop Wasting Water" was established in 1999 to teach district fifth-graders the importance of water conservation and preservation. Topics include the water cycle, information about aquifers, playa lakes, and where our water comes from. An underground flow model shows students visually how wells work, what the aquifer looks like, and how water flows beneath the earth. Students receive a water-saving kit and a water wheel that teaches ways to conserve water.

The PGCD also distributes the "Major Rivers" program to fourth-graders in schools throughout the district. It is a TAKS-affiliated, seven-lesson course that includes student workbooks, teacher lesson plans, fun and educational experiments, and take-home pamphlets. In this course "Major Rivers" and his horse "Aquifer" take students through the lessons, which range from explaining the water cycle to the importance of conserving our precious resource.<sup>12</sup>

**North Plains Groundwater Conservation District (NPGCD):** Kirk Welch, the Public Information/Conservation Education Manager of the NPGCD, sent a three-page e-mail to Tonya Kleuskens, Program VP of the Amarillo LWV, in which he listed in detail the various programs, presentations, conferences/ classes, fairs/festivals, contests, and other methods used by the district to educate the public and encourage water conservation.

A demonstration project is ongoing in cooperation with Texas AgriLife Research to grow corn with much less water, a practice which will save 250,000 acre feet of water per year if adopted by the area's corn producers.

Books are donated each year to all 27 school and public libraries in the district, sponsored by a corporate entity. Water education software and videos are donated to schools, and tools and supplies used for water education are available on loan to teachers.

NPGCD was the first groundwater conservation district in the state to join the Groundwater Guardian Program, which encourages communities to commit to conducting water education activities throughout the year.<sup>13</sup>



**High Plains Underground Water District:** In addition to cooperative education programs similar to those mentioned above, the district promotes conservation in agriculture by encouraging conservation practices, such as use of drip irrigation systems, conservation tillage, soil moisture monitoring, furrow dikes, low-output sprinkler irrigation systems, and education about other efficiencies.<sup>14</sup>

**Hemphill County Underground Water Conservation District** has established a Desired Future Condition that envisions preserving 80% of its existing available groundwater over 50 years. In the face of a court challenge by water marketers, HCUWCD holds firm in its decision to protect the wildlife and springs unique to the local ecosystem.

**Playa Festival program and Conservation Education Days, conducted by Ogallala Commons,** a nonprofit community-development network: In 2009 there were 12 Playa Festivals educating more than 1,500 students and teachers from 18 schools in the Texas Panhandle-South Plains. In 2010 the Playa Festivals were accepted as a partner for the Windows on a Wider World program at the Globe-News Center for the Performing Arts. Efforts are underway to try to have Amarillo's first Playa Festival in Amarillo at Greenways Elementary School. Water conservation districts have been supportive of Playa Festivals in past years, contributing both funding and personnel to make presentations. In June, 2010 Ogallala Commons opens the nation's first Playa Outdoor Classroom with interpretive information about playas. One-half mile south of Nazareth on FM 168, it will be open to both school children and the general public.

Recently, three Conservation Education Days were held that reached more than 75 teachers and landowners in Swisher, Parmer, and Cochran counties. As Ogallala Commons endeavors to bring Playa Festivals and Conservation Education Days to more of the 26 counties in the Panhandle, they will be approaching the Panhandle and North Plains GCDs to collaborate.<sup>15</sup>

**Mariposa ecoVillage and rainwater harvesting:** Designed to be a sustainable community, the Mariposa ecoVillage is being built on the northwestern edge of Amarillo, near Wildcat Bluff, by Natural Systems Developers, LLC, a for-profit business created within the frame-work of standard contemporary business practices. Their team includes many of the world's leading practitioners of sustainable technologies, such as water harvesting, renewable energy systems, permaculture, sewage bioremediation, and the teaching of applied ecology. The first private home is currently under construction and will rely 100% on rainwater harvesting for water.

**Community Gardens:** Established in 2009 at the High Plains Food Bank, the High Plains Institute for Applied Ecology (HPI) and the United Way of Amarillo and Canyon partnered to create a model of high-intensity food production that demonstrates rainwater harvesting and permaculture. 2010 production projections for the plot, which measures slightly over one acre, are 64,000 pounds. When the water-catchment system is in full operation, it should provide a large percentage--if not all--of the water necessary for abundant food production.

In 2010 the High Plains Institute for Applied Ecology will partner with several organizations across the city to create more gardens. Margaret Wills Elementary School will build a garden during their summer program. It will demonstrate rain water harvesting, permaculture and vermiculture on a small scale. A garden will be built at Mariposa ecoVillage that will be a learning center for rainwater harvesting, permaculture and composting. Conversations are underway with the Black Cultural Center, the Lao Wat Buddharan, West Hills Neighborhood/ St. Peter's Episcopal Church, and the Maverick Club to create gardens at those sites also.

### **Other Considerations**

The Amarillo League of Women Voters began this study with the idea of attempting to do an in-depth study of water-related issues of prime importance to the Texas Panhandle. We soon discovered that the depth and range of the issues were much more extensive than we had anticipated. Moreover, in our first public forum, at which David Haukos spoke on playa lakes, he impressed upon us their importance to the ecosystem and to the survival of the migrating birds and other wildlife dependent upon the habitats provided by the playas.

Additionally, we learned that playa lakes serve as the principal source of recharge to the Ogallala, though in minute amounts compared to the rate of depletion. We know that playa lakes are being destroyed at a rapid pace because citizens, municipalities, developers, industries and some farmers and ranchers simply do not recognize their importance. Many people also do not understand that when the unique soil of those lakes is disturbed, the ability of the playas to function as they should is severely impaired, if not completely destroyed.

For all of these reasons, and the additional reason that there is no mention of playa lakes in the LWW-Texas environmental position statements (the basis for any lobbying of state legislators with regard to water and other environmental issues), our local League must be able to advocate for their protection. Accordingly, we seek the consensus of our members to enable us to do so. We shall also wish to address the need to slow the rate of depletion of the Ogallala and other aquifers in every way possible.

There are numerous issues that we did not have time to address in our study. Among them are the following:

The potential contamination of our aquifers and other water sources by fertilizers, pesticides and other chemicals used by farmers and especially by homeowners, who usually are not well trained in the proper ways to use them and dispose of them;

The possibility of contamination through improper handling/disposal of industrial chemicals and wastes;

Undesirable consequences of medications flushed down the toilet;

Potential contamination from common household items disposed of improperly (fluorescent light bulbs, certain types of batteries, paint, petroleum products). Citizens are urged to check <http://recycle.amarillo.gov> for recycling information and tips on the proper handling of potentially hazardous materials.

Education of all residents of the Panhandle with regard to all these issues must become a priority of the municipalities, Economic Development Corporations, educational institutions, and the groundwater conservation districts to ensure the long-term purity and quality of our water resources.

## Notes

- <sup>1</sup> Figure ES-5: "Shortages for Region A for Planning Period Year 2010--Year 2060,"pdf. Panhandle Water Planning Group. 2011 Draft Water Plan, *Executive Summary*, 6 (2010). <http://www.panhandlewater.org/>. Web. 11 Apr. 2010.
- <sup>2</sup> Welch, Kevin. "Irrigation's Economic Impact." *Amarillo Globe-News* 3 Dec. 2009: A1. Print.
- <sup>3</sup> Panhandle Water Planning Group. 1, p. 31. Web. 12 Apr 2010.
- <sup>4</sup> Panhandle Water Planning Group. 1, p..30. Web. 12 Apr 2010.
- <sup>5</sup> Panhandle Water Planning Group, 1, p. 31. Web. 12 Apr 2010.
- <sup>6</sup> <http://www.irank.org/cultures/pages/3561/Acequias.html#ixzzOkN9FMo9E>. Web. 12 Apr 2010.
- <sup>7</sup> [www.lasacequias.org](http://www.lasacequias.org). Web. 12 April 2010.
- <sup>8</sup> Ashworth, William. *Ogallala Blue: Water and Life on the High Plains*. New York: W. W. Norton, 2006. Print. 64.
- <sup>9</sup> Smith, Philip. A director of the Panhandle Groundwater Conservation District. E-mail to Tonya Kleuskens of the Amarillo League of Women Voters, 19 April, 2010.
- <sup>10</sup> Smith, Philip.
- <sup>11</sup> Haukos, David. Texas Tech University. [david.haukos@ttu.edu](mailto:david.haukos@ttu.edu). E-mail to Judith Jones of the Amarillo League of Women Voters, 25 Feb 2010.
- <sup>12</sup> Panhandle Groundwater Conservation District. Home Page and associated links. [http://www.pgcd.us/programs/education\\_programs.php](http://www.pgcd.us/programs/education_programs.php). Web. 13 Apr 2010.
- <sup>13</sup> Welch, Kirk. North Plains Groundwater Conservation District. [welchk@npwd.org](mailto:welchk@npwd.org). E-mail to Tonya Kleuskens of the Amarillo League of Women Voters, 22 Mar 2010.
- <sup>14</sup> High Plains Groundwater Conservation District. Home Page and associated links. <http://www.hpwd.com/conservation/agriculture.asp> . Web. 12 Apr 2010.
- <sup>15</sup> Ogallala Commons. Home page. <http://www.ogallalacommons.org>. Web. 19 Apr. 2010.

Prepared by the Environment Committee of the Amarillo League of Women Voters.

Tonya Kleuskens, Chair

Pam Allison  
Mary Lou Bell  
Beverly Gattis  
Joyce Hinsley  
Mina Fields Johnson

Judith Jones  
Arzella Kay  
BJ Oppermann  
Pauline Robertson  
Susan Smith

Proofreader: Lou Ann Garrett

## Appendix

### Groundwater Conservation Districts (GCD)

**History:** In 1949, the Texas State Legislature authorized the creation of Groundwater Conservation Districts (GCD) "to provide for the conservation, preservation, protection, recharging, and prevention of waste of groundwater.... Groundwater conservation districts...are the state's preferred method of groundwater management." (<http://law.onecle.com/texas/water/36.0015.00.html>). A GCD provides the most local decision making and hands-on management for groundwater.

**Composition:** High Plains Underground Water District, established in 1951, consists of all of Bailey, Cochran, Hale, Lubbock, Lynn, and Parmer Counties, as well as part of Armstrong, Castro, Crosby, Deaf Smith, Floyd, Hockley, Lamb, Potter, and Randall Counties. Only Potter, Randall, and Armstrong are in GMA #1.

North Plains, established in 1955, consists of Moore, Hutchinson, Sherman, Hartley, Dallam, Hansford, Ochiltrie, and Lipscomb counties.

Panhandle Groundwater Conservation District, established in 1955, serves Carson, Roberts, Gray, Donley, Armstrong, Potter, Hutchinson, and Wheeler Counties.

Hemphill County Underground Water Conservation District, established in 1997, consists of only one county.

**Functions:** To regulate well spacing, well size, well construction, and well closure. To monitor and protect groundwater quality; provide hydrologic information and tax depletion information; set desired future conditions and, in some cases, protect wildlife.

**Funding:** Local boards of directors set the tax rate for landowners.

**Meetings:** Elected boards meet monthly, with called meetings as needed.

### Groundwater Management Area (GMA)

**History:** Legislation passed in 2005 (House Bill 1763) established the GMA framework for regional collaboration among local groundwater managers on shared aquifers. Groundwater conservation districts must now coordinate with neighboring districts within their GMA on issues such as management goals and groundwater availability determinations.

Most of the upper Texas Panhandle is in GMA#1

**Composition:** Chairmen of the boards of the four groundwater conservation districts in this region. The district managers are ex-officio members of the committee.

**Function:** The Groundwater Conservation Districts within a GMA are required to define the **Desired Future Conditions (DFC's)** for the groundwater resources within the GMA. A DFC is a quantifiable future groundwater condition. This information is incorporated into the Regional Water Plan.

Based on the DFC's, the Texas Water Development Board determines how much groundwater is available for withdrawal. These volumes in turn become the permitting targets for the groundwater districts and are to be used in the regional water planning process.

**Funding:** This is an unfunded mandate.

**Meetings:** Required to meet at least once each year. DFC's may be revised at any time.

### **Panhandle Water Planning Group (PWPG)**

**History:** Regional Water Planning Groups were established by Senate Bill 1 in 1997. The PWPG covers one of 16 areas defined by the Texas Water Development Board. Each planning group is charged with drafting and adopting a plan to meet the water needs of the region for the next 50 years. All 16 plans will then become the 2012 State Water Plan.

**Composition:** PWPG is composed of 22 voting members, each representing a different interest or kind of water user: Public, Industry, Agriculture, Environment, River Authorities, Counties, Municipalities, Water Districts, Higher Education, and Water Utilities. When vacancies occur, names of interested parties are solicited. A nominating committee reviews the names and makes recommendations to the full board, which votes on them.

**Funding:** The \$510,000 budget is supplied by the TWDB. Most of the money is used to pay for outside contractors who provide the technical studies and who prepare the regional water plan. The Panhandle Regional Planning Commission (PRPC) manages the PWPG, providing logistical support for a nominal fee.

**Function:** To develop the regional water plan, which will be submitted to TWDB by January 5, 2011. ([http://www.panhandlewater.org/2011\\_draft\\_plan.html](http://www.panhandlewater.org/2011_draft_plan.html) )

**Meetings:** Approximately four times per year.

## **The Texas Water Development Board**

**History:** In 1957, the Texas Water Development Board was created by legislative act and constitutional amendment. The constitutional amendment, approved by Texas voters, authorized the TWDB to issue \$200 million in State of Texas General Obligation Water Development Bonds for the conservation and development of Texas' water resources through loans to political subdivisions. In 1985 The TWDB was made responsible for long-range planning and financing of water projects.

(<http://www.twdb.state.tx.us/ABOUT/history.asp>)

**Function:** The Texas Water Development Board is charged with planning for the state's future water resources and for providing affordable water and wastewater services. It provides water planning information, data collection and dissemination, financial assistance and technical assistance to the citizens of Texas. The Board supervises 350 employees, considers loan applications, awards grants for water-related research and planning, and conducts other TWDB business, which now includes approving the State Water Plan.

**Funding:** State legislature and long-term bonds.

**Meetings:** The six-person board of directors appointed to six-year staggered terms by the governor meets monthly. James Herring of Amarillo is the current chairman.

## **Texas Commission on Environmental Quality**

TCEQ is the agency charged with the management of surface water quality and quantity. For more information go to <http://www.tceq.state.tx.us/>

## Suggested Reading

### Articles

- Carpenter, Susan. "Gray Water: From the Washer to the Garden." Los Angeles Times 27 Sept. 2008.  
<http://www.latimes.com/features/la-hm-graywater27-2008sep27,0,6396110.story>
- Carpenter, Susan. "Los Angeles Might Require Rainwater Capture." Los Angeles Times 1 Feb. 2010.  
<http://www.latimes.com/news/local/la-me-rain-barrels1-2010feb01,0,1154413.story>
- Green, Emily. "The Dry Garden. Diverting Winter Rains from the Streets to our Flower Beds." Los Angeles Times 11 Nov. 2009.  
[http://latimesblogs.latimes.com/home\\_blog/2009/11/the-dry-garden-diverting-winter-rains-from-the-streets-to-our-flower-beds.html](http://latimesblogs.latimes.com/home_blog/2009/11/the-dry-garden-diverting-winter-rains-from-the-streets-to-our-flower-beds.html)
- Little, Jane Braxton. "The Ogallala Aquifer: Saving a Vital U.S. Water Source" Scientific American. 30 March 2009.  
<http://www.sciam.com/article.cfm?id=the-ogallala-aquifer&page=4>
- Meadows, Donella. "Envisioning a Sustainable World." International Society for Ecological Economics. 1994.  
<http://www.sustainabilityinstitute.org/pubs/Envisioning.DMeadows.pdf>
- Tortorello, Michael. "The Spotless Garden." New York Times 17 Feb. 2010.  
<http://www.nytimes.com/2010/02/18/garden/18aqua.html>

### Books

- Ashworth, William. Ogallala Blue: Water and Life on the High Plains. New York: W. W. Norton & Company, 2006.
- Brune, Gunar. Springs of Texas. Texas A&M University Press, 2002.
- Haukos, David A. and Loren M. Smith. Common Flora of the Playa Lakes. Lubbock: Texas Tech University Press, 1997.
- Postel, Sandra. Pillar of Sand: Can the Irrigation Miracle Last? New York: W. W. Norton, 1999.
- Shiva, Vandana. Water Wars, Privatization, Pollution, and Profit. Cambridge, MA: South End Press, 2002.



Smith, Loren. Playas of the Great Plains. Austin: University of Texas Press, 2003.

Steiert, Jim. Playas: Jewels of the Plains. Lubbock: Texas Tech University Press, 2005.

#### Other Publications

Gurdak, J.J., and Roe, C.D., 2009, Recharge rates and chemistry beneath playas of the High Plains aquifer—A literature review and synthesis: U.S. Geological Survey Circular 1333.

[pubs.usgs.gov/circ/1333/](http://pubs.usgs.gov/circ/1333/)

Panhandle Water Planning Group, 2011 Draft Plan  
[http://www.panhandlewater.org/2011\\_draft\\_plan.html](http://www.panhandlewater.org/2011_draft_plan.html)

US Geological Survey Map of Ogallala Depletion:  
<http://pubs.usgs.gov/fs/2007/3029/>