TCEQ Carrizo-Wilcox Study

Project 582-8-75374-119

Final Summary Report for Task 1b

Final Summary Report to review Carrizo-Wilcox Groundwater Conservation District (GCD) management plans, rules, and procedures adopted by GCDs to determine if they are based on sound scientific principles

1.0 Introduction

This summary report prepared by the Bureau of Economic Geology (BEG) is submitted to fulfill remaining requirements of Task 1b of the TCEQ Carrizo-Wilcox Study (the Study), Project 582-8-75374-119. Task 1b directs the BEG to, *"Examine rules, plans and procedures adopted by each groundwater conservation district (GCD) to determine if they are based on sound scientific principles. This information will be obtained from the GCDs using an online survey. Link individual GCD rules to (1) statutory authority and (2) to any science that was considered during development of the rules. Link individual GCD plan goals, objectives, and performance standards to any science that was considered in their development. Link individual GCD permitting procedures and decisions since September 1, 2007 to any science used in their development."* In order to accomplish this subtask, the BEG requested specific information from the GCDs in an online survey developed for the Study. The requests were as follows (a subset of total online survey):

- *Number 16 - Provide electronic copies of any scientific data, reports, or presentations presented to and considered by the district during development of the current management plan. Include board of directors meeting minutes for any meeting in which the science in question was discussed.*
- *Number17 - Provide electronic copies of any scientific reports presented to and considered by the district during the development of the current district rules. Include in this information request electronic copies of district board of directors meeting minutes for any meeting during which the science identified was discussed.*
- *Number 18 - Provide electronic copies of any scientific reports presented to and considered by the district during the development of any procedures that have been adopted by the district. Include in this information request electronic copies of district board of directors meeting minutes for any meeting during which the science identified was discussed.*

This summary report is our evaluation of GCD management plans, rules, and procedures in order to determine if they are based on sound scientific principles. The complete responses provided by the 16 GCDs that submitted requested information to the Study's survey questionnaire are now available for review at the Carrizo-Wilcox Aquifer Study webpage at http://www.beg.utexas.edu/cswr/aquiferstudy/ .

We reviewed 20 complete sets of management plans and rules in order to evaluate and link specific rules to both broad or GCD-specific statutory authority and any supporting science that

was considered during the development of the management plans and rules. One additional management plan for Anderson County Groundwater Conservation District was obtained from the TWDB, but no rules have been located.

2.0 GCD Rules and Statutory Authority

Our review of the rules promulgated by the GCDs indicates that the statutory basis of rule making by the Carrizo-Wilcox GCDs originates from Chapter 36 of the Texas Water Code, specifically, §36.101 which authorizes GCDs to create and enforce rules. Specific activities for which GCDs may develop and adopt rules are described throughout Chapter 36 of the Texas Water Code. In addition, Texas Water Code §36.1071 specifically provides that a GCD shall adopt rules to implement the management plans. No GCDs identified any unique rule-making authority in their responses to the Study survey questionnaire beyond those contained in Chapter 36 of the Texas Water Code. Since not all of the management plans and rules were submitted through the online survey, and in order to facilitate a more complete analysis, we obtained missing management plans and rules with the assistance of staff at the Texas Water Development Board and by accessing the non-respondent GCD websites for publically available copies. A complete set of management plans and rules are available for review online at the Carrizo-Wilcox Aquifer Study website at http://www.beg.utexas.edu/cswr/aquiferstudy/gcd_rules.php/.

3.0 Groundwater Science and Texas Water Law

Eleven of sixteen GCDs provided supporting information to the Study's request for *"electronic copies of any scientific data, reports, or presentations presented to and considered by the district during development of the current management plan."* All 16 GCDs articulated, to varying degrees, their reliance on groundwater science, including information from groundwater availability models that are produced and provided by the Texas Water Development Board. Nine of the 16 GCD's cited the 2007 State Water Plan and applicable regional water plans as a source for science used in developing their management plans.

The history of groundwater science in Texas is long and rich, with substantial contributions made by state agencies such as the Texas Water Development Board (and the predecessor agency, the Texas Board of Water Engineers), the Texas Commission on Environmental Quality (and predecessor agencies), groundwater conservation districts, and federal agencies such as the United States Geological Survey. After the passage of Senate Bill 1 in 1997 by the 75th Texas Legislature, the need for improved, more site-specific groundwater science was realized. This need for improved groundwater science was at least initially the result of (1) the new requirement that GCDs develop and adopt management plans (Texas Water Code, §36.1071), and (2) the regional water planning process requiring water plans be developed for the next 50 years (Texas Water Code, §16.053). As a result of this realization, the 77th Texas Legislature passed Senate Bill 2 in 2001. This legislation, in part, requires that, "*the executive administrator* (of the Texas Water Development Board) *shall obtain or develop groundwater availability models for major and minor aquifers in coordination with groundwater conservation districts and regional water planning groups created under Section 16.053 that overlie the aquifers.*

Modeling of major aquifers shall be completed not later than October 1, 2004. On completing a groundwater availability model for an aquifer, the executive administrator shall provide the model to each groundwater conservation district and each regional water planning group created under Section 16.053 overlying that aquifer" (Texas Water Code, §16.012(l)). In recognition of the improved groundwater science that would ultimately result from this directive, Texas Water Code, Chapter 36 was also amended to provide guidance to GCDs with regards to one of the primary sources of groundwater science to be considered in developing management plans and rules necessary to achieve the goals adopted in the management plans. Texas Water Code §36.1071(h) states, "*In developing its management plan, the district shall use the groundwater availability modeling information provided by the executive administrator together with any available site-specific information that has been provided by the district to the executive administrator for review and comment before being used in the plan."* Specifically, Texas Water Code §36.1071(e)(3)(E) requires that a GCD management plan contain estimates of "*the annual volume of flow into and out of the district within each aquifer and between aquifers in the district, if a groundwater availability model is available.*" During the joint planning process required by Texas Water Code §36.108(d), the following requirement directing GCDs to consider the TWDB groundwater availability modeling results is included: "*Not later than September 1, 2010, and every five years thereafter, the districts shall consider groundwater availability models and other data or information for the management area and shall establish desired future conditions for the relevant aquifers within the management area…*"

Therefore, it is clear in statute that it is the intent of the Texas Legislature that one of the primary sources of groundwater science to be utilized by GCDs during their development of management plans and their adoption of desired future conditions is to be the groundwater availability models and groundwater science developed and made publically available by the executive administrator of the Texas Water Development Board. If it is the intent of a GCD to utilize local, site-specific information in the development of a management plan, or in the adoption of desired future conditions, in addition to or in lieu of the groundwater science and groundwater availability models developed and provided by the executive administrator, the GCD must submit and obtain the prior approval of the executive administrator to use this alternative source of information (Texas Water Code §36.1071(h) and §36.108(d).

Our review of the submitted survey questionnaire responses and/or management plans submitted confirms the linkage between sound groundwater science provided by the Texas Water Development Board to the GCDs for their use in the development of their management plans, as required by Texas Water Code §36.1071. In addition, 5 of 16 responding GCDs cited scientific literature published by the BEG describing the hydrogeology of the Carrizo-Wilcox Aquifer. Six GCDs referenced material utilized in joint planning sessions within their Groundwater Management Areas. Ten GCDs worked with technical consultants to develop their individual GCD management plans and rules.

The Survey also asked GCDs to submit "*electronic copies of any scientific reports presented to and considered by the district during the development of the current district rule*s." A review of current statute documents that the current sequence of management activities and decision points is (1) adoption of desired future conditions, (2) adoption of a management plan designed to achieve desired future conditions, and (3) adoption of rules designed to achieve the goals of the management plan. Therefore, it is not surprising that for most GCDs, the majority, if not all

science developed to address an affected provision included in GCD rules was originally developed during deliberations leading up to the adoption of desired future conditions and management plans. This reality was evidenced by the limited nature of the response by GCDs to the request for information considered during development of rules.

4.0 Linkage between Sound Scientifc Groundwater Principles and GCD Management Plans and Rules

All 16 GCDs that responded to the online survey, either in their direct response or in the text included in their management plan, stated that they utilized sound scientific principles in their adopted management plans. As discussed earlier, this use of sound scientific principles is in large part a result of the direct linkage in statute between the groundwater science produced by the TWDB and requirements for certain elements to be included in GCD management plans. However, the linkage between sound scientific principles and rules adopted by Carrizo-Wilcox GCDs is, for the most part, dependent upon the assumption that necessary science considered during the development of a management plan was adequate for the subsequent development and adoption of rules. To review, one of the objectives of the Study was to, "*Examine rules, plans and procedures adopted by each groundwater conservation district (GCD) to determine if they are based on sound scientific principles. This information will be obtained from the GCDs using an online survey. Link individual GCD rules to …any science that was considered during development of the rules…Link individual GCD permitting procedures and decisions since September 1, 2007 to any science used in their development."* After an examination of the rules and scientific information provided by the GCDs, the following observations are noted. First, 6 of the 16 GCDs that responded to the Study survey questionnaire provided information regarding the request for scientific information utilized during rule making. Next, of those six GCDs, one GCD clearly articulated the direct linkage between the scientific information that was utilized with the corresponding rule(s) that was subsequently adopted. This district was the Pineywoods GCD. However, it is noted that in the process of adopting rules, decisions made by GCD boards of directors may be based on the cumulative consideration of a number of information sources, such as local studies, regional studies such as regional water plans, and groundwater availability modeling studies, and not just one specific study. Perhaps more importantly, it is also noted that the main focus of scientific efforts from a process perspective is during the adoption of desired future conditions and management plans. The development and adoption of rules is a process designed to achieve the adopted desired future conditions and management plan, and therefore the consideration of science has already occurred earlier in the decision process.

The following summaries are provided to better articulate this point.

Bluebonnet GCD submitted a list of approximately 16 scientific publications, not all of which were related to the Carrizo-Wilcox Aquifer. There was no supporting information or meeting minutes submitted that articulated how any of this information was considered, if at all, by the board of directors during rule-making activities.

Pineywoods GCD submitted copies of board meeting minutes and two presentations that were considered during the rule making process. One of these presentations provided a link between the scientific reasoning and adoption of District *Rule 14* that enables the Pineywoods GCD to

regulate the transfer of groundwater outside of the district. The Pineywoods GCD adopted *Rule 14* based upon regional water planning demand projections, groundwater availability modeling estimates, and population projections for the region. In the materials provided, the Pineywoods GCD ultimately decided to establish a transfer rule that safe guards the region's water supply future and potential socioeconomic development. The rule's purpose states:

"In recognition of the fact that the transfer of groundwater resources from the District for use outside of the District impacts residents and property owners of the District differently than use within the District, and in order to manage and conserve groundwater resources within the District, and provide reasonable protection of the public health and welfare of residents and property owners of the District, a ground water transfer permit is required to produce groundwater from within the District's boundaries and to transfer such groundwater for use outside the District."

Gonzales County Underground Water Conservation District (UWCD) submitted six reports in response to the Study's request for scientific information that was utilized during their rule making procedures. The reports submitted are as follows:

- *South Central Carrizo System Groundwater Model*, presented by the San Antonio Water System and HDR Inc.
- *Technical Comparison of Southern and Central Carrizo-Wilcox Groundwater Availability Models (GAMs) in Overlap Area*, presented by the San Antonio Water System and HDR Inc.
- *Ground Water Velocity*, presented by the Center for Water Supply Studies Texas A&M University-Corpus Christi
- *Comparison between the South Central Carrizo System Groundwater (SCCS) Model and the Southern Queen City and Sparta Aquifer (QSCW) GAM*, presented by URS
- *Status of Joint Planning in Groundwater Management Areas*, presented by the Texas Water Development Board
- *Groundwater Availability Model for the Southern Carrizo-Wilcox Aquifer*, presented by Intera and Parsons

Though the studies provided by the Gonzales County UWCD are relevant and supported by sound scientific principles, we were unable to discern where the science submitted was specifically linked to the rules of the Gonzales County UWCD. Further, based upon review of meeting minutes submitted, it was documented that these presentations were made to the board of directors.

Rusk County GCD provided a variety of information and datasets that have been assembled relevant to the groundwater resources of Rusk County. However, this information was not cited by the board of directors in any meeting minutes during development of rules. It is noted that the district's well monitoring activities were utilized in implementing the District's Drought Contingency Plan.

Fayette County GCD submitted several scientific reports and exhibits produced by Daniel B. Stephens & Associates, Inc., including a hydrogeologic study of the various aquifers within the region and various district maps produced by the Thornhill Group, Inc. Further, after review of the Fayette County GCD's board meeting minutes provided in response to the Study survey questionnaire, rule-making and amending of the rules were often discussed. A review of meeting minutes documented several instances where development of the rules was addressed.

Plum Creek Conservation District provided seven DVDs with numerous articles of information that supported the board of director's decision making process during the development of management plan and rules. It is clear from information contained on the DVDs provided that the PCCD did go through a deliberate process to ensure that sound scientific principles were considered during their decision making process.