Pineywoods Groundwater Conservation District

Management Plan

Approved February 25, 2004
Amended December 11, 2008
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SECTION I
INTRODUCTION

A. DEFINITIONS

- **"Abandoned or deteriorated well"** shall mean a well, as defined by these rules, which allows surface inflow or infiltration and/or that is causing or is likely to cause, pollution of groundwater in the District and includes a well which is not in use and/or a well that is not properly equipped to pump groundwater. A well that is not in compliance with applicable laws regarding proper installation, including Rules and Regulations of this District, Rules and Regulations of the Texas Department of Licensing and Regulation, Rules and Regulations of the Texas Commission on Environmental Quality, Rules and Regulations of any state of federal agency of competent jurisdiction and laws of the state of Texas is presumed to be abandoned or deteriorated.

- **"Acceptable decline rate"** is a percentage of the saturated thickness which may be removed from the groundwater reservoir annually and will encourage conservation and extend its longevity.

- **"Allowable decline"** is an amount of water, expressed in acre feet. It is calculated by multiplying the net saturated thickness of the previous year by the acceptable decline rate set by the Board. It is assigned at the center of each section of land.

- **"Annual"** shall mean recurring or done every year. The use within this document, unless otherwise stated, is based on the fiscal year of the District which is a twelve (12) month period from January 1 of the calendar year through December 31 of the same calendar year.

- **"Aquifer" shall** mean a formation or group of saturated geologic formations capable of storing and yielding fresh water in usable quantities.

- **"Beneficial use"** shall be any use which is advantageous and does not constitute waste.

- **"Board"** shall mean the governing body of the District, which shall consist of seven (7) Directors serving three-year terms.

- **"Chapter 35"** refers to Sections 35.001 through 35.020 of the Texas Water Code, which authorize the Texas Commission on Environmental Quality (TCEQ) to designate groundwater management areas and create groundwater conservation districts. This Chapter also outlines the Priority Groundwater Management Area (PGMA) process. A reference to a specific section or subsection may be identified using the symbol "§" or using the abbreviation of "Sec."

- **"Chapter 36"** refers to Sections 36.001 through 36.419 of the Texas Water Code, which authorizes creation of groundwater conservation districts and outlines the powers and duties of a groundwater conservation district. A reference to a specific section or subsection may be identified using the symbol "§" or using the abbreviation of "Sec."

- **"Coliform bacteria"** is bacteria that are used to indicate the presence of pathogens. Coliform bacteria may not be pathogens but usually are present when pathogens are present and are more resistant to environmental stresses than pathogens.

- **"Desired Future Conditions" (DFC),** is the desired, quantified condition of groundwater resources (such as water levels, water quality, spring flows, or volumes) for a specified aquifer within a management area at a specified time or times in the future.

- **"Discharge"** means the amount of water that leaves an aquifer by natural or artificial means.

- **"District"** shall mean Pineywoods Groundwater Conservation District, maintaining its principal office in Nacogdoches County, Nacogdoches, Texas. Where applications, reports and other papers are required to be filed with or sent to "the District", this means where the District's headquarters are at. The District shall also be known as "Pineywoods GCD", and the acronym "PGCD" shall also refer to the Pineywoods Groundwater Conservation District.

- **"Each year"** shall mean recurring or done every calendar year.

- **"Evidence of historic or existing use"** means evidence that is material and relevant to a determination of the amount of groundwater beneficially used without waste by a permit applicant during the relevant time periods set by district rule that regulates groundwater based on historic use. Evidence in the form of oral or written testimony shall be subject to cross-examination. The Texas Rules of Evidence govern the admissibility and introduction of evidence of historic or existing use, except that evidence not admissible under the Texas Rules of Evidence may be admitted if it is of the type commonly relied upon by reasonably prudent persons in the conduct of their affairs.

- **"Executive Administrator"** is the executive administrator of the Texas Water Development Board.

- **"Groundwater"** shall mean water percolating below the surface of the earth.

- **"Groundwater reservoir"** shall mean a specific subsurface water-bearing reservoir having ascertainable boundaries containing groundwater.

- **"Hydraulic conductivity"** is a measurement of the capacity of a porous medium to transmit water. It is expressed as the volume of water at the kinematic viscosity that will move in a unit time under a unit hydraulic gradient through a unit area measured at right angles to the direction of flow.

- **"Inflows"** means the amount of water that flows into an aquifer from another formation.

- **"Irrigation distribution system or irrigation system"** shall mean a device or combination of devices having a hose, pipe or other conduit which connects directly to any water well through which water or a mixture of water and chemicals is drawn and applied to land. The term does not include any hand held-hose sprayer or other similar device which is constructed so that an interruption in water flow automatically prevents any backflow to the water source.

- **"Modeled available groundwater" (MAG)** means the amount of water that the executive administrator determines may be produced on an average annual basis to achieve a desired future condition established under Section 36.108 of the Texas Water Code.
- **"Management plan"** is the groundwater management plan required pursuant to Texas Water Code §36.1071.

- **"Monitoring well or observation well"** shall mean an artificial excavation constructed to measure or monitor the quality or quantity or movement of substances, elements, chemicals, or fluids beneath the surface of the ground. The term shall not include any monitoring well which is used in conjunction with the production of oil, gas, or any other minerals.

- **"Natural resource"** is a material source of wealth, such as timber, water or a mineral deposit that occurs in a natural state.

- **"Owner"** shall mean and include any person or other entity, public or private, that has the right to produce water from the land either by ownership, contract, lease, easement or any other estate in the land or water.

- **"Person"** shall mean any individual, partnership, firm or corporation.

- **"Pollution"** shall mean the alteration of the physical, thermal, chemical, or biological quality of, or the contamination of, water in the District that renders the water harmful, detrimental, or injurious to humans, animal life, vegetation, or property or to public health, safety, or welfare, or which impairs the usefulness or the public enjoyment of the water for any lawful or reasonable purpose.

- **"Porosity"** is a measurement of the voids or openings in a medium. It may be expressed quantitatively as the ratio of the volume of openings to the total volume.

- **"Recharge"** means the amount of water that infiltrates to the water table of an aquifer.

- **"Saturated thickness"** is the vertical distance between the water table and the base of the groundwater reservoir, and the pores between the solid particles are filled with water.

- **"Specific yield"** is the ratio of the volume of water that will drain under the influence of gravity to the total volume.

- **"Texas Water Code (TWC)"** shall refer to the laws which govern the use and disposition of water in the state of Texas.

- **"Texas Water Development Board (TWDB)"** shall refer to the Texas Water Development Board of the State of Texas in Austin, Texas.

- **"Total aquifer storage"** means the total calculated volume of groundwater that an aquifer is capable of producing.

- **"Underground water"** is used synonymous with groundwater.

- **"Waste"** as used herein shall have the same meaning as defined by Chapter 36 of the Texas Water Code as now or hereafter amended.

  "Waste means any one or more of the following:

  1. Withdrawal of groundwater from a groundwater reservoir at a rate and in an amount that causes or threatens to cause intrusion into the reservoir of water unsuitable for agricultural, gardening, domestic,

or stock-raising purposes;

2. The flowing or producing of wells from a groundwater reservoir if the water produced is not used for a beneficial purpose;

3. Escape of groundwater from a groundwater reservoir to any other reservoir or a geologic stratum that does not contain groundwater;

4. Pollution or harmful alteration of groundwater in a groundwater reservoir by saltwater or by other deleterious matter admitted from another stratum or from the surface of the ground;

5. Willfully or negligently causing, suffering, or allowing groundwater to escape into any river, creek, natural watercourse, depression, lake, reservoir, drain, sewer, street, highway, road, or road ditch, or onto any land other than that of the owner of the well unless such discharge is authorized by permit, rule, or order;

6. Groundwater pumped for irrigation that escapes as irrigation tailwater onto land other than that of the owner of the well unless permission has been granted by the occupant of the land receiving the discharge; or

7. For water produced from an artesian well, "waste" has the meaning.

- **"Water"** is used synonymous with groundwater and underground water.

- **"Water rights"** shall mean a defined number of surface acres, within each section of land which a person has acquired the right to capture the groundwater from beneath, subject to the Rules of this District.

- **"Water well"** shall mean any artificial excavation constructed for the purpose of exploring for or producing groundwater. The term, however, shall not include any test or blast holes in quarries or mines, or any well or excavation for the purpose of exploring for, or producing oil, gas, or any other minerals unless the holes are used to produce groundwater. The term shall not include any injection water source well regulated by the Railroad Commission of Texas.

- **"Well"** shall mean water well, injection well, recharge well, dewatering well, test well, or monitoring well and is in compliance with the District Rules.

B. PURPOSE OF THE DISTRICT

The purpose of the District is to provide for the conservation, preservation, protection, recharging, and prevention of waste of the groundwater, and of groundwater reservoirs or their subdivisions, and to control subsidence within the defined boundary of the District. The purpose of the District is achieved through rules, education programs, District-provided services, and through mutual cooperation of local, state, and federal agencies. The District issues water well permits, collects groundwater information and other services. Extensive databases are used to store, retrieve, and analyze the groundwater information for the District. It is the belief of the District's residents and the Board of Directors that groundwater is best managed locally through a groundwater conservation district. This belief is realized by the adoption and implementation of a management plan outlining the goals, methods, and procedures to be utilized in the management of the groundwater resources of the District. This management plan will provide a better understanding of the goals and objectives of the District by the residents and promote cooperation in its implementation.

This document has been developed in accordance with the requirements of Chapter 36 of the Texas Water Code, and the provisions of Texas Administrative Code Title 31, Chapter 356 Groundwater Management Plan

Certification.

C. HISTORY AND STATUTES

The Texas State Legislature in 1949 authorized the creation of Underground Water Conservation Districts to perform certain prescribed duties, functions, and hold specific powers as set forth in Article 7880-3c, Texas Civil Statutes, changed to Chapter 52 of the Texas Water Code, currently Chapter 36 of the Texas Water Code. The District was created pursuant to Article 16, Section 59 of the Constitution of Texas by House Bill 2572 of the 77th Texas Legislature which became effective May 31, 2001, and as amended by House Bill 1981 of the 79th Texas Legislature. A confirmation election was held November 6, 2001 and was passed by the voters of the District.

D. THE GOVERNING BODY

The District is currently governed by a seven-member appointed Board of Directors, each serving overlapping three year terms. The members are appointed by the county commissioners of Angelina and Nacogdoches counties and by the city commissioners of the City of Lufkin and the City of Nacogdoches.

E. ADMINISTRATIVE

It is the goal of the District that its activities be consistent with sound business practices; that the interest of the public shall always be considered in conducting District business; that impropriety or the appearance of impropriety shall be avoided to ensure and maintain public confidence in the District; and that the Board shall control and manage the affairs of the District lawfully, fairly, impartially, and in accordance with the stated purposes of the District. Documents have been developed and approved by the Board to assist the staff in performing their duties and meeting their responsibilities.

The District employs a General Manager to manage the administrative affairs of the District and provides for additional staff, as needed, to assist in these duties. The General Manager is responsible for ensuring that the rules, regulations, policies, and procedures adopted by the Board are followed. The General Manager is held responsible by the Board and is required to provide timely reports about the administrative affairs of the District. These reports include but are not limited to:

- Financial- Provide current year budget updates at least quarterly; monthly financial reports of all accounts; provide any information needed for the annual financial audit of the District and identify future needs for budget planning.
- Rules- Manage the implementation of the rules of the District in accordance with procedures set forth in the District Rules and/or Policies. Schedule requests for exceptions to the Rules for a hearing before the Board in accordance with proper procedure. Bring before the Board any problem with any of the activities of the District.
- Information- At each regular board meeting the Manager will report on the activities of the Manager and/or staff in carrying out their duties. These activities may include meetings and/or seminars attended upcoming meetings and seminars, legislative activities, new program development, and updates on programs being developed.

Management Goal: It is the goal of the District that its activities be consistent with sound business practices; that the interest of the public shall always be considered in conducting District business; that impropriety or the appearance of impropriety shall be avoided to ensure and maintain public confidence in the District; and that the Board shall control and manage the affairs of the District lawfully, fairly,

impartially, and in accordance with the stated purposes of the District.

Management Objective: Adopt rules, regulations, policies, and procedures as needed and insure that the Management and staff have a clear understanding of their duties in accordance with the administrative goals of the District.

Performance Standard: Annually review and include a summary in the annual report to the Board of Directors that the Administrative duties as set forth are carried out as stated.

(A list of the current Directors, Officers, and Staff is included in Appendix A)

F. METHODOLOGY FOR TRACKING PROGRESS

Methodology for Tracking District Progress in Achieving Management Goals

The District manager will prepare and present an annual report to the Board of Directors on District performance in regards to achieving management goals and objectives. The presentation of the report will occur at a regularly scheduled meeting during the first quarter of each fiscal year. The report will include the activity, goal, objective, performance standard and comments on details. The comments of each activity will be referenced to the appropriate performance standard for each management objective describing the activity, so that the effectiveness and efficiency of the Districts operations may be evaluated. The District will maintain the report on file, for public inspection at the Districts offices upon adoption. This methodology will apply to all management goals contained within this plan."

SECTION II
PLANNING PERIOD

The Board may review the management plan annually and must review and readopt the plan, with or without revisions, at least once every five years. For the purpose of 31 TAC §356.5(a) this management plan uses a planning period of at least ten (10) years from the date of acceptance by the TWDB.

A. Supply and Demand

Amount of water being used within the district annually. Presented in Appendix C are projections of the annual water usage within the district from 1974 to 2010. These charts include ground and surface waters, and account for municipal, manufacturing, agriculture, mining and power supply usage. They show an annual usage of 16,467 ac/ft/yr and 16,632 ac/ft/yr for Nacogdoches and Angelina Counties respectively for the year 2010.

B. Projected Surface Water Supplies

Appendix D shows the surface water supplies for Angelina and Nacogdoches Counties for 2010 and the projected surface water supplies through the year 2060.

C. Projected Total Water Demands

Appendix E shows the total projected water demand for Angelina and Nacogdoches Counties through the year

2060. This is the combined surface water and groundwater use for the District. The projections are from the 2012 State Water Plan.

D. Projected Water Needs

Appendix F shows the projected water needs for Angelina and Nacogdoches Counties through the year 2060. Negative numbers indicate an additional amount of water that will be needed to supply the needs of the District.

E. Projected Water Management Strategies

Appendix G illustrates the projected strategies for water management to supply the needs of the District through the year 2060.

SECTION III
GROUNDWATER SUPPLY

A. GENERAL GEOLOGY, STRATIGRAPHY, AND HYDROLOGY

Carrizo-Wilcox Aquifer

The Wilcox Group and the overlying Carrizo Formation of the Claiborne Group form a hydrologically connected system known as the Carrizo-Wilcox aquifer. This aquifer extends from the Rio Grande in South Texas northeastward into Arkansas and Louisiana, providing water to all or parts of 60 counties. The Carrizo Sand and Wilcox Group crop out along a narrow band that parallels the Gulf Coast and dips beneath the land surface toward the coast, except in the East Texas structural basin adjacent to the Sabine Uplift, where the formations form a trough.

Municipal and irrigation pumpage account for about 35 percent and 51 percent, respectively, of total pumpage. The largest metropolitan areas dependent on ground water from the Carrizo-Wilcox aquifer are Bryan-College Station, Lufkin-Nacogdoches, and Tyler. Irrigation is the predominant use in the Winter Garden region of South Texas.

The Carrizo-Wilcox aquifer is predominantly composed of sand locally interbedded with gravel, silt, clay, and lignite deposited during the Tertiary Period. South of the Trinity River and north of the Colorado River, the Wilcox Group is divided into three distinct formations: the Hooper, Simsboro, and Calvert Bluff. Of the three, the Simsboro typically contains the most massive water-bearing sands. This division cannot be made south of the Colorado River or north of the Trinity River due to the absence of the Simsboro as a distinct unit. Aquifer thickness in the down dip artesian portion ranges from less than 200 feet to more than 3,000 feet. Well yields are commonly 500 gal/min, and some may reach 3,000 gal/min in the down dip where the aquifer is under artesian conditions. Some of the greatest yields (more than 1,000 gal/min) are produced from the Carrizo Sand in the southern, or Winter Garden, area of the aquifer. Yields of greater than 500 gal/min are also obtained from the Carrizo and Simsboro formations in the central region.

Regionally, water from the Carrizo-Wilcox aquifer is fresh to slightly saline. In the outcrop, the water is hard, yet usually low in dissolved solids. Down dip, the water is softer, has a higher temperature, and contains more dissolved solids. Hydrogen sulfide and methane may occur locally. Excessively corrosive water with high iron content is common throughout much of the northeastern part of the aquifer. Localized contamination of the

aquifer in the Winter Garden area is attributed to direct infiltration of oil field brines on the surface and to downward leakage of saline water to the overlying Bigford Formation. Significant water-level declines have developed in the semiarid Winter Garden portion of the Carrizo aquifer, as the region is heavily dependent on ground water for irrigation. Since 1920, water levels have declined as much as 100 feet in much of the area and more than 250 feet in the Crystal City area of Zavala County. Significant water-level declines resulting from extensive municipal and industrial pumpage also have occurred in Northeast Texas. Tyler and the Lufkin-Nacogdoches area have experienced declines in excess of 400 feet, and in a few wells, as much as 500 feet since the 1940s. In this area, conversion to surface-water use is slowing the rate of water-level decline. The northeast outcrop area has been dewatered in the vicinity of lignite surface-mining operations, and the Simsboro Sand Formation of the Wilcox Group has been affected by water-level declines in parts of Robertson and Milam counties.

Queen City Aquifer

The Queen City aquifer extends across Texas from the Frio River in South Texas northeastward into Louisiana. The aquifer provides water for domestic and livestock purposes throughout most of its extent, significant amounts of water for municipal and industrial supplies in Northeast Texas, and water for irrigation in Wilson County. Yields of individual wells are commonly low, but a few exceed 400 gal/min. Sand, loosely cemented sandstone, and interbedded clay units of the Queen City Formation of the Tertiary Claiborne Group make up the aquifer. These beds fill the East Texas structural basin adjacent to the Sabine Uplift and then dip gently to the south and southeast toward the Gulf Coast. Although total aquifer thickness is usually less than 500 feet, it can approach 700 feet in some areas of Northeast Texas. Water of excellent quality is generally found within the outcrop and for a few miles down dip, but water quality deteriorates with depth in the down dip direction. In some areas, water of acceptable quality may occur at depths of approximately 2,000 feet. The water may be acidic in much of Northeast Texas and relatively high in iron concentrations in some locations.

Sparta Aquifer

The Sparta aquifer extends in a narrow band from the Frio River in South Texas northeastward to the Louisiana border in Sabine County. The Sparta provides water for domestic and livestock supplies throughout its extent, and water for municipal, industrial, and irrigation purposes in much of the region. Yields of individual wells are generally less than 100 gal/min, although most high-capacity wells average 400 gal/min to 500 gal/min. A few wells produce as much as 1,200 gal/min. The Sparta Formation, part of the Claiborne Group deposited during the Tertiary, consists of sand and interbedded clay with massive sand beds in the basal section. These beds dip gently to the south and southeast toward the Gulf Coast and reach a total thickness of up to 300 feet. Water of excellent quality is commonly found within the outcrop and for a few miles down dip, but it deteriorates with depth in the down dip direction. Locally, water within the aquifer may contain iron concentrations in excess of drinking water standards.

Yegua-Jackson Aquifer

The Yegua-Jackson aquifer extends in a narrow band from the Rio Grande and Mexico across the State to the Sabine River and Louisiana. Although the occurrence, quality, and quantity of water from this aquifer are erratic, domestic and livestock supplies are available from shallow wells over most of its extent. Locally water for municipal, industrial, and irrigation purposes is available. Yields of most wells are small, less than 50 gallons per minute, but in some areas, yields of adequately constructed wells may range to more than 500 gallons per minute. The Yegua-Jackson aquifer consists of complex associations of sand, silt, and clay

deposited during the Tertiary Period. Net freshwater sands are generally less than 200 feet deep at any location within the aquifer. Water quality varies greatly within the aquifer, and shallow occurrences of poor-quality water are not uncommon. In general, however, small to moderate amounts of usable quality water can be found within shallow sands (less than 300 feet deep) over much of the Yegua-Jackson aquifer.

B. MODELED AVAILABLE GROUNDWATER

Scope: The modeled available groundwater is the amount of groundwater available for permitting purposes in each of the major and minor aquifers within Angelina and Nacogdoches Counties.

Methodology: The Modeled Available Groundwater (MAG) was determined by the TWDB after the Desired Future Conditions (DFC) were approved for the Groundwater Management Area 11 (GMA-11) by the Texas Water Development Board.

Table 1. Estimates of total annual pumping for the Carrizo-Wilcox, Queen City, Sparta, and Yegua-Jackson aquifers by county for each decade between 2010 and 2060. Results are in acre-feet per year.

County	Year					
	2010	2020	2030	2040	2050	2060
Anderson	29,494	29,494	29,494	29,494	29,494	29,494
Angelina	45,086	45,086	45,086	45,086	45,086	44,703
Bowie	11,126	8,216	7,976	7,533	7,533	7,083
Camp	7,746	7,583	7,583	7,583	7,583	7,583
Cass	42,726	42,726	42,726	42,726	42,726	42,726
Cherokee	33,977	33,977	33,977	33,977	33,977	33,977
Franklin	9,746	9,484	9,484	9,484	9,484	9,484
Gregg	15,222	15,222	15,222	15,222	15,222	15,222
Harrison	19,284	19,210	19,159	19,071	19,056	19,012
Henderson	25,102	25,035	25,035	25,035	25,035	25,035
Hopkins	3,433	3,391	3,391	3,391	3,391	3,391
Houston	12,047	12,047	12,047	12,047	12,047	12,047
Marion	17,626	17,626	17,626	17,626	17,626	17,626
Morris	12,268	12,268	12,210	12,210	12,095	12,095
Nacogdoches	27,031	27,031	27,031	27,031	27,031	27,031
Panola	9,097	8,227	8,227	8,069	8,069	8,069
Rains	1,703	1,703	1,620	1,620	1,620	1,583
Red River	0	0	0	0	0	0
Rusk	25,263	20,901	20,891	20,891	20,891	20,872
Sabine	11,461	11,453	11,453	11,453	11,453	11,453
San Augustine	4,104	4,104	4,104	4,104	4,104	4,104
Shelby	12,044	11,217	10,901	10,447	10,311	9,729
Smith	87,502	87,502	87,502	87,492	87,478	87,478
Titus	10,994	10,459	10,157	10,006	9,776	9,776
Trinity	5,721	5,721	5,721	5,721	5,721	5,721
Upshur	32,685	32,685	32,685	32,685	32,504	32,504
Van Zandt	14,428	14,097	14,097	14,097	14,097	13,865
Wood	31,828	31,651	31,563	31,520	31,445	31,423
Total	**558,744**	**548,116**	**546,968**	**545,621**	**544,855**	**543,086**

Table 1

C. ANNUAL VOLUME OF WATER DISCHARGING TO SURFACE WATER

Scope: This includes groundwater discharging from each aquifer within the District to springs and surface water bodies including lakes, streams and rivers.

Methodology: Using the data from GAM run 13-003, tables 1-5 summarize the flow from each aquifer to surface water springs, lakes, streams and rivers. See Appendix H.

D. ANNUAL RECHARGE FROM PRECIPITATION

Scope: This is the distributed recharge sourced from precipitation falling on the outcrop areas of the aquifers (where the aquifer is exposed at land surface) within the district.

Methodology: Using data from the TWDB GAM run 13-003, the annual precipitation is shown in acre feet per year (ac/ft/yr) and rounded to the nearest 1 acre foot.

Results: **Tables 1-5** show a breakdown of the recharge from precipitation for each aquifer within the district in acre feet per year. See Appendix H.

E. ANNUAL FLOW INTO/OUT AND BETWEEN AQUIFERS

Scope: Flow into and out is the flow into and out of the district described in lateral flow within the aquifer between the district and adjacent counties. Flow between aquifers describes the vertical flow, or leakage, between aquifers or confining units. Flow out of the district from each aquifer is considered to be the same as flow into the district.

Methodology: Summaries of water budgets derived from the Groundwater Availability Model Run 13-003.

Results: **Tables 1-5** show the flows into and out of the district and the flows between aquifers within the district. See Appendix H.

SECTION IV
COLLECTION OF DATA

GOAL A. WATER QUANTITY

Water Well Registration:
The Rules require an exempt well that produces less than 25,000 gallons per day and meets other criteria as an exempt well, to be registered with the District prior to drilling. The registration is reviewed by the staff to determine it to be in compliance with the District's Rules and spacing waivers are assessed if requested and approved. Upon completion of the well and submittal of the well log by the driller, the well is recorded by the District. Water wells for oil and gas wells permitted by the Texas Railroad Commission must be registered with the District prior to drilling and a well log is to be submitted upon completion of the well.

Water Well Permit Application:
The Rules require an application be made to the District for a water well permit prior to drilling a well capable of producing groundwater in excess of 25,000 gallons per day. The first step in this process is to provide certain base information to the District. The application requires the owner's name, address, legal description of the land, location of the well on the property, estimated amount of production, proposed use, and distance from other wells on the property as well as adjoining property, the name of the driller, and the date drilling is planned. The staff will assist in determining some of this information as well as determining if the proposed location will meet the Rules of the District. After an application is completed and the fee has been paid, the staff will then verify the information and schedule it for review by the appropriate individual or Board and consider it in accordance with District Rules. If at anytime during this process a discrepancy is found which would invalidate the application, the applicant is notified and a correction may be made. After approval by the Board or General Manager, the permit is then placed in a pending file until the well log and registration form is received from the applicant or driller. Well drilling may be started as soon as the application is completed by the applicant; however, until it has been reviewed by the staff and approved by the Board, drilling is at the risk of the applicant. A water well permit is in effect for 120 days from the time the application is made. An applicant may apply for two extensions for an additional 120 days each. After the expiration date of the original application or extensions, the permit expires. After that time another application must be submitted with the appropriate fee.

Management Goal: Provide prompt and timely processing of all applications for water well permits.

Management Objective: Complete administrative review process, including staff review and schedule for Board or General Manager consideration within 30 to 60 days of application date.

Performance Standard: Annually review all water well permit applications to determine if they were considered by the Board or General Manager within 60 days of application date, provided they were administratively complete and had been recommended for approval. This review will be included in the annual report to the Board of Directors.

Well Log and Registration:
The Rules require that the District be provided a well drilling log and completion report within 30 days after completion of the well and before production begins. In some cases a well may be completed but not equipped. In this case, the available well completion information is submitted to the District and will remain incomplete until the pump has been installed and that information provided to the District. The deposit is not returned until required information has been received by the District in accordance with District policy.

The information required on the well log and registration form adds needed data about the well and includes: a location of the well using longitude and latitude measurements, a descriptive log of the formation from the surface to the bottom of the well, the total depth of the well and casing, zone or zones of perforation, and size and depth of the pump. After this information is received by the District it is reviewed for accuracy in relation to the well permit application and field-verified. Information is then entered into the well log database. Additional requested information includes discharge in gallons per minute, and any other production tests that may have been made (such as pumping level and production under pressure).

Management Goal: Maintain a well completion/equipment information database to include each permitted well completed.

Management Objective: Review Well Log and Registration information for accuracy and enter information into databases within 30 working days of receipt.

Water Level Observation Wells:
A water level observation program will be initiated within the District. This program will consist of annual static water levels measurements in representative wells across the District. These measurements will be corrected to land surface elevation and tabulated to reflect the change in water level elevations between the current year and the previous year. Observations will be made about the condition of the well, the accuracy of the data obtained from the well and whether the well is still a satisfactory representative of the wells within the area. The staff will tabulate the data and check for discrepancies. After completion, the information is entered into the District's water level database. Data will also be received from industries and municipalities within the District and added to the database.

Management Goal: Maintain the most accurate and representative database of water level elevation information possible within the equipment, staff and financial capabilities of the District.

Management Objective: Annually obtain a static water level measurement from at least 30 wells, review static water level tabulations for accuracy (visit observation wells if necessary to resolve any inaccuracy) and enter observation well tabulations in the water level database.

Performance Standard: Annually compare the number of water level observation well measurements obtained, tabulated, and entered into the database with the total number of water level observation wells. This review will be included in the annual report to the Board of Directors.

GOAL B. WATER QUALITY

The quality of the groundwater within the District is considered very good. With a few exceptions, the total dissolved solids (TDS) average less than 500 mg/L. The areas of higher TDS are generally considered naturally occurring and include higher concentrations of sodium, chloride and/or sulfate. The range is from a high of 14,356 mg/L TDS (Sparta, Angelina Co., unusually high) to 10 mg/L TDS (Carrizo, Nacogdoches Co.) The water quality information collected from the Texas Water Development Board Ground Water Data System December 13, 2001.

Water Quality Protection: It is the District's belief that the primary source for contaminates to enter our groundwater is through a well or well bore. This includes active as well as abandoned wells. To help prevent contamination the District requires wells to be completed in accordance with the Texas Water Well Drillers Act. Abandoned wells are required to be capped or plugged. If the District is informed of an abandoned well which is not capped or plugged, the District will require the landowner to cap or plug the well. In the event this well is located where contaminates could enter the well, the District will require the well to be properly plugged.

SECTION V
MANAGEMENT AND PROTECTION OF THE GROUNDWATER SUPPLY

GOAL A. RULES

The Powers and Duties of Chapter 36 (Subchapter D) and the Rules of the District provide an outline for many of the items contained within this Management Plan. In addition to the Rules; the Board, County Committees,

landowners, residents, and the staff of the District have developed programs, policies and services which are put into practice and in accordance with other provisions of Chapter 36 of the Water Code. As changes are made in the Water Code and other state or federal laws that relate to a district as defined in §35.002 and in respect to the Texas Water Code, §36.052, the District will update its rules, policies, procedures and management plan accordingly.

The Board adopted Rules for the District on February 7, 2002. The Rules of the District are in compliance with Chapter 36, Texas Water Code.
(A copy of the District Rules is included in Appendix B)

The Rules of the District are considered to be the most important tool available to the District to manage the groundwater supply.

Management Goal: Enforce the Rules of the District to conserve and protect the quantity and quality of the resource to the best of the District's ability through the powers and duties provided in Chapter 36 of the Texas Water Code.

Management Objective: Ensure that all rules of the District are enforced fairly and equitably within the District, through the use of hearings before the Board of Directors and/or any other measures available to the District in rendering a decision if a dispute arises in regard to rules, procedures, policies, services, and any other activity of carrying out the purpose of the District.

Performance Standard: Annually review the Minutes of Board Meetings to determine if decisions in regard to the enforcement of, or exceptions to, the Rules of the District were rendered in accordance with the provisions of the Rules of the District and Chapter 36 of the Texas Water Code. This review will be included in the annual report to the Board of Directors.

GOAL B. GROUNDWATER QUALITY PROTECTION MEASURES

The District will take appropriate actions when it becomes aware of any contaminate threatening the water quality of the aquifers of the District. Whether it is point source or non-point source, the District will use any controls at its disposal to maintain high quality water. This can be in the form of education or enforcement actions.

Management Goal: Take appropriate action within the powers of the District to protect the quality of the groundwater, and keep the public educated to help prevent contamination.

Management Objective: Maintain a constant awareness of activities which may be or become a threat to the quality of groundwater and be prepared to adopt rules, resolutions, orders and/or directives to address the issue.

Performance Standard: Annually review the Minutes of Board Meetings to determine if all water quality issues considered by the Board were addressed. This review will be included in the annual report to the Board of Directors.

GOAL C. WASTE

It is the intent of the District to prevent the waste of groundwater. When possible sources of waste become known to the District, the District will take whatever actions are determined to be correct.

Management Goal: To prevent the waste of groundwater in the District and promote its efficient use in order to maintain ample water supplies for the future.

Management Objective: Determine waste as defined in the Rules of the District and the Water Code

and respond to reports of waste within 4 days.

Performance Standard: Annually review all reported sources of waste, and if corrective actions were taken when warranted. A summary that includes the number of reports of waste and the number of days the District took to respond to each report of waste will be included in the annual report to the District Board of Directors.

GOAL D. PROVIDING FOR THE MOST EFFICIENT USE OF GROUNDWATER

It is the intent of the District to provide for the most efficient use of groundwater by regulating the drilling of wells within the District and by enforcement of the District Rules.

Management Goal: To provide for the most efficient use of groundwater within the District.

Management Objective: Each year, beginning in FY2002, the District will require the registration of all new wells drilled within the District's jurisdiction and the District will require a permit for all non-exempt wells, new and existing.

Performance Standard: Each month at regularly scheduled meetings the General Manager reports to the District Board of Directors the number of new and existing wells registered with the District and the number of applications received for new wells within the District.

GOAL E. DROUGHT CONDITIONS

During drought conditions within the District, all efforts will be made to see that all municipalities and public water supply companies follow their Drought Contingency Plans as they have been presented to the District. During severe drought conditions, the District staff will closely monitor the aquifer levels to ensure that adequate quantities of water are available to the District, and coordinate with the Region I Water Planning Area.

Management Goal: The District will prevent any waste of groundwater by any public or private source by promoting the most efficient use of groundwater during drought conditions whether the conditions are mild, moderate or severe.

Management Objective: The District shall call for the most efficient use of groundwater by all users in the District to maintain sufficient groundwater aquifer resources during periods of drought and for future resources by preventing waste and by regulation of users, if necessary, to prevent depletion of the aquifers. To work closely with groundwater users and provide assistance where it is possible to control customer usage as it is outlined in their Drought Contingency Plans.

Performance Standard: Periodically review the Texas Palmer Drought Index and the Texas Drought Preparedness Report, and monitor production figures quarterly. A summary of any drought conditions will be given to the Board of Directors in the annual report along with any recommendations and make necessary changes, as needed.

GOAL F. DESIRED FUTURE CONDITIONS

The Desired Future Conditions of the groundwater within the District have been established in accordance with Chapter 36.108 of the Texas Water Code at a meeting of the GMA-11 representatives on April 13, 2010. The Desired Future Conditions are established at a 17 foot overall average drawdown based on 178 individual drawdowns by aquifer and county as represented in table 4:

Management Goal: To conserve and manage groundwater resources in order to provide sufficient water resources for domestic, industrial and public water supply use to meet the needs of the future.

Management Objective: The District will issue permits with annual pumping limits and will maintain a database to limit the total annual withdrawal by permit to be representative of the Modeled Available Groundwater volume without restricting industrial or domestic growth.

Performance Standard: The District will frequently monitor the total permitted allowances to determine if the permitted volume is within or representative of the Modeled Available Groundwater allowable.

Drawdown Details for Adopted Desired Future Conditions in 2060
Groundwater Management Area 11

County	Model Layer Defining Aquifer or Confining Unit (CU)									Overall (except Yegua-Jackson)
	Yegua-Jackson	Sparta	Weches (CU)	Queen City	Reklaw (CU)	Carrizo	Upper Wilcox	Middle Wilcox	Lower Wilcox	
ANDERSON (ACUWCD)				1	12	35	26	12	5	15
ANDERSON (NTVGCD)		-2	1	7	15	36	26	11	4	16
ANGELINA	32	10	11	16	22	42	5	-18	-3	11
BOWIE							21			1
CAMP				12		18	17	39		19
CASS				8	6	10	7	7		8
CHEROKEE		7	14	11	11	32	32	15	10	18
FRANKLIN					-16	-3	7	19		11
GREGG				7	11	42	49	56	79	35
HARRISON					2	24	13	5	4	9
HENDERSON				4	15	41	32	27	15	23
HOPKINS					-22	-12	-15	-28		-26
HOUSTON	3	2	1	2	15	35	12	2	-2	8
MARION				17	11	21	15	15		16
MORRIS				13	10	29	25	23		21
NACOGDOCHES	8	3	3	11	10	14	11	-10	-6	4
PANOLA				-11	-19	11	2	1	4	2
RAINS							7	-10	-5	-8
RUSK			-46	-15	-2	6	6	23	21	12
SABINE	15	5	5	7	15	24	13	6	5	10
SAN AUGUSTINE	13	-4	-4	-3	11	20	9	-3	-2	3
SHELBY				-18	-19	23	-3	3	1	1
SMITH		-5	-5	11	34	103	118	92	76	68
TITUS				-1	-3	31	14	5		9
TRINITY	11	5	4	4	12	33	-3	-7	-1	6
UPSHUR		-5	-5	5	17	56	66	66	97	44
VAN ZANDT				7	11	31	13	17	11	14
WOOD		-5	-7	-2	36	110	83	55	114	59
Overall	17	3	4	7	15	38	26	15	11	17

Note: negative drawdown means groundwater level increase, blank spaces means absence of aquifer in that county

Table 4

SECTION VI
WATER CONSERVATION PROGRAMS

Water conservation is an important part of protection of the aquifers in the District. In order for the groundwater to provide for the future needs of the District, conservation of the resource must be constantly addressed. Conservation includes, but is not limited to, preventing waste and making use of the groundwater in a beneficial way. Education is a large part of conservation. The District will encourage conservation by using the newsletter and other public educational material it determines to be beneficial to the conservation of water in the District.

Management Goal: Prevent unnecessary waste of the groundwater and encourage conservation.

Management Objective: Maintain a constant review of all projects to ensure that they are using the best available technology. Publish a newsletter at least quarterly and include some educational information to promote conservation. Provide public education at any opportunity to promote conservation.

Performance Standard: Annually review all projects to determine if they are using best available technology and if educational materials are benefiting the conservation program. This review will be included in the annual report to the Board of Directors.

SECTION VII
PUBLIC RELATIONS & EDUCATION

One of our goals is that the activities of the District be consistent with sound business practices, insure that the public interest is always considered and make every effort possible to maintain public confidence. It is the District's opinion that public relations and education is a necessity to achieve this goal. The District will provide information and education opportunities to the public upon request and will seek any opportunity within its ability to promote public trust and protection of the groundwater.

A. INFORMATION

Quarterly Newsletter:
A newsletter is published quarterly, or as information is needed to the principles of the District. This newsletter will include current information that will be useful to the District to promote conservation and prevent waste and contamination.

News Articles and News Releases:
News articles will be issued as needed to promote beneficial use of groundwater, encourage conservation and correct information made public that is incorrect by other sources.

Management Goal: Provide current information to the residents of the District about water conservation and waste prevention.

Management Objective: Publish current information and or reports in the newsletter and other local news media as they become available.

Performance Standard: Annually verify that each edition of the newsletter contains current information and or reports about water conservation and waste prevention. This review will be included in the annual report to the Board of Directors.

B. EDUCATION

Public Education Programs:

The District will provide educational programs and materials upon request when feasible to do so. The limited staff of the District will prevent an aggressive program of public education, but every effort will be made to supply every demand of the public for education.

Management Goal: Inform people within the District and outside the District about the benefits, goals, programs, duties and responsibilities of the District.

Management Objective: Inform people about the benefits, goals, programs, duties and responsibilities of the District.

Performance Standard: Annually review programs the District has provided or helped to provide which inform people about the goals, programs, duties and responsibilities of the District, and determine if more is needed and can be done to promote the District and its benefits. This review will be included in the annual report to the Board of Directors.

Public School Education Programs:

The District encourages the cities and other entities within the District to promote public education through school programs. Several of the cities in the District have such programs now. The District staff will strive to help school programs in the District to educate students about the necessity and benefits of conservation.

Management Goal: Encourage the cities and rural areas to help provide public school education material to the schools of the District and to provide assistance from the District when available.

Management Objective: Inform the cities and rural areas of the District about the benefits of providing conservation education to the schools through the newsletters and other correspondence.

Performance Standard: Periodically review school education programs that cities and rural areas have begun. This review will be included in the annual report to the Board of Directors.

SECTION VIII
GOALS DETERMINED TO BE NOT APPLICABLE

A. SURFACE WATER

One city in the District currently uses surface water. The City of Nacogdoches treats surface water from Lake Nacogdoches in their 25 MGD plant. The City of Nacogdoches provides surface water to groundwater at a ratio of 65:35.

The City of Lufkin is in the planning stages of expanding its groundwater capacity with the purchase of 13

additional water wells. The City's long term plan is to construct a water treatment plant near Kurth Lake which will allow the City to utilize its water rights from the Angelina River and Sam Rayburn Reservoir. This will reduce the demand on the Carrizo-Wilcox and Yegua-Jackson aquifers in the District.

It is the opinion of the District that the Conjunctive Surface Water goal is not an issue in the District. Therefore, this goal is not applicable at this time.

B. SUBSIDENCE

It is the opinion of the District that subsidence is not an issue within the District. Therefore, this goal is not applicable to the District at this time.

C. RECHARGE

A small part of the northeast portion of Nacogdoches County is the outcrop of the Carrizo-Wilcox aquifer. This area of the county is rural and is the only recharge site for the Carrizo-Wilcox in the District. The main recharge areas lay in counties in the north and east of the Pineywoods GCD.
From the information contained in the above report, the District has determined that for the reasons listed, recharge, natural or artificial, including precipitation enhancement, rainwater harvesting or brush control is not an appropriate management goal of the District at this time.

D. REGIONAL PLAN

The East Texas Regional Water Planning Group (ETRWPG) area covers all of and portions of 20 counties. Counties whose boundaries fall entirely in the region include Anderson, **Angelina**, Cherokee, Hardin, Houston, Jasper, Jefferson, **Nacogdoches**, Newton, Orange, Panola, Rusk, Sabine, San Augustine, Shelby, Tyler. Counties located within the ETRWPG and Region H includes Polk and Trinity counties. Henderson County is located within the ETRWPG and Region C. Smith County is located within the ETRWPG and Region D.

The major water resources include groundwater from the Carrizo-Wilcox and Gulf Coast Aquifers and surface water from reservoirs and run-of-river located within the Neches and Sabine River Basins. The planning area also encompassed portions of the Trinity Basin, Neches-Trinity Coastal Basin and approximately one square mile in Cypress Creek Basin. The District participates in the efforts of the ETRWPG in the development of a regional plan for the area.

E. NATURAL RESOURCE ISSUES

There are no known Natural Resource Issues in the District that have an impact on the groundwater quantity or quality at this time. Therefore, this goal is not applicable to the District at this time.

F. RECHARGE ENHANCEMENT

East Texas has one of the highest annual rainfalls in Texas. Therefore, this goal is not applicable at this time.

G. RAINWATER HARVESTING

At the present time, there is not a shortage of water in the District. Therefore, this goal is not applicable at this time.

H. PRECIPITATION ENHANCEMENT

With the high amount of rainfall in the District, precipitation enhancement is not needed. Therefore, this goal is not applicable at this time.

I. BRUSH CONTROL

A great amount of the area in the District is heavily forested. There is an ample amount of water for growth. Therefore, this goal is not applicable at this time.

SECTION IX
FUTURE ACTIVITIES, PLANS AND PROGRAMS

The District is always open for suggestions which will help in the conservation and protection of water. This section of the Management Plan is provided to identify plans, programs, services, and activities the District may develop in the future. Some items may be in some stage of development only through the association it may have with current activities of the District. Other items may only be suggestions and never be developed. All activities, plans and programs of the District have been developed after consideration and approval of the Board based on the benefit to the residents and the financial and staff capabilities of the District.

SECTION X
DOCUMENTATION

A. CERTIFICATION OF ISSUES NOT APPLICABLE

Conjunctive Surface Water Management Issues:
I do hereby affirm and attest that the Conjunctive Surface Water Management is not an issue in the Pineywoods Groundwater Conservation District.

Keith Wright, President — Date 10/14/13

Gloria Montes, Secretary — Date 10/14/13

Subsidence:
I do hereby affirm and attest that subsidence as specified in the Texas Water Code §36.1071(a)(3), is not specifically applicable to the operation of the Pineywoods Groundwater Conservation District at this time.

Keith Wright, President — Date 10/14/13

Gloria Montes, Secretary — Date 10/14/13

Brush control:
I do hereby affirm and attest that Recharge enhancement, Rainwater harvesting, Precipitation enhancement and Brush control are not specifically applicable to the operations of the Pineywoods Groundwater Conservation District at this time.

Keith Wright, President — Date 10/14/13

Gloria Montes, Secretary — Date 10/14/13

Recharge enhancement:
I do hereby affirm and attest that Recharge enhancement, Rainwater harvesting, Precipitation enhancement and Brush control are not specifically applicable to the operations of the Pineywoods Groundwater Conservation District at this time.

Keith Wright, President — Date 10/14/13

Gloria Montes, Secretary — Date 10/14/13

Rainwater harvesting:
I do hereby affirm and attest that Recharge enhancement, Rainwater harvesting, Precipitation enhancement and Brush control are not specifically applicable to the operations of the Pineywoods Groundwater Conservation District at this time.

Keith Wright, President — Date 10/14/13

Gloria Montes, Secretary — Date 10/14/13

Precipitation enhancement:
I do hereby affirm and attest that Recharge enhancement, Rainwater harvesting, Precipitation enhancement and Brush control are not specifically applicable to the operations of the Pineywoods Groundwater Conservation District at this time.

10/14/13

Keith Wright, President **Date**

10/14/13

Gloria Montes, Secretary **Date**

Natural Resources Issues:

I do hereby affirm and attest that there are no known natural resources issues within the Pineywoods Groundwater Conservation District at this time.

10/14/13

Keith Wright, President **Date**

10/14/13

Gloria Montes, Secretary **Date**

Regional Water Plan:

I do hereby affirm and attest that the water supply needs addressed for the Pineywoods Groundwater Conservation District in this Management Plan are not in conflict with Region I Water Planning Group.

10/14/13

Keith Wright, President **Date**

10/14/13

Gloria Montes, Secretary **Date**

Public Hearing

The Board of Directors for the Pineywoods Groundwater Conservation District will consider adopting their Management Plan at their regularly scheduled meeting on October 10, 2013 at Kurth Lake Lodge at 2:00 pm. The purpose of the hearing is to receive comments and/or discuss the 2014 District Management Plan prior to Board adoption and submittal to the Texas Water Development Board for approval.

Copies of the proposed Management Plan will be available on October 1, 2013 at the District Office Room 132 at Nacogdoches City Hall, 202 E. Pilar Street, Nacogdoches, Texas. (936)568-9292. The Management Plan will also be available for reviewing or downloading at their website at www.pgcd.org.

*Published in the Nacogdoches Daily Sentinel and the Lufkin News on Sunday September 29, 2013.

The Daily Sentinel

4920 COLONIAL DRIVE- PO BOX 630068- NACOGDOCHES, TEXAS 75963-0068- (936) 564-8361
Robin land Editor & Publisher

THE STATE OF TEXAS
COUNTY OF Nacogdoches

BEFORE ME, the undersigned, a Notary Public, this day personally came **Jennifer Sowell**, who after being sworn according to law that she is the ADVERTISING MANAGER FOR ***THE DAILY SENTINEL.***

THE PUBLISHERS, of **The DAILY SENTINEL**, a daily newspaper of general circulation published in Nacogdoches, Texas, in Nacogdoches County and said State, attest that the attached printed material was published in said newspaper September 29th, 2013.

J Sowell
Advertising Manager

SUBSCRIBED AND SWORN TO BEFORE ME THIS THE 29th day of September, 2013

NOTARY PUBLIC STATE OF TEXAS
JENNIFER R BESS
My Commission Expires
July 16, 2015

Jennifer R Bess
Notary Public, State of Texas

Jennifer R. Bess
Notary's Printed Name

THE LUFKIN NEWS
(936) 632-6631 LUFKINDAILYNEWS.COM

P.O. Box 1089
Lufkin, Texas 75902-1089

936-632-6631
Fax 936-632-6655

THE STATE OF TEXAS
COUNTY OF Angelina

BEFORE ME, the undersigned, a Notary Public, this day personally came __**Tammy Kedrowicz**__, who after being sworn according to law that she is the ADVERTISING MANAGER FOR ***THE LUFKIN DAILY NEWS.***

THE PUBLISHERS, of ***The LUFKIN DAILY NEWS***, a daily newspaper published in Lufkin, Texas, in said County and State, attest that the attached printed material was published in said newspaper September 29th, 2013.

Tammy Kedrowicz
Advertising Manager

SUBSCRIBED AND SWORN TO BEFORE ME THIS THE 14 DAY

OF October 2013

JAMIE LEE ROBINSON
Notary Public, State of Texas
My Commission Expires
September 16, 2014

Jamie Lee Robinson
Notary Public, State of Texas

Jamie Lee Robinson
Notary's Printed Name

Account Name & Number: 2514385 Pineywoods Ground Water

Public Hearing

The Board of Directors for the Pineywoods Groundwater Conservation District will consider adopting their Management Plan at their regularly scheduled meeting on October 10, 2013 at Kurth Lake Lodge at 2:00 pm. The purpose of the hearing is to receive comments and/or discuss the 2014 District Management Plan prior to Board adoption and submittal to the Texas Water Development Board for approval.

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*Published in the Nacogdoches Daily Sentinel and the Lufkin News on Sunday September 29, 2013.

Pineywoods Groundwater Conservation District

Serving Angelina and Nacogdoches Counties

www.pgcd.org

October 16, 2013

Mr. Jim Jeffers
Nacogdoches City Manager
P.O. Box 635030
Nacogdoches, Texas 75963

Dear Mr. Jeffers,

Enclosed is a copy of the newly adopted Pineywoods Groundwater Conservation District 2014-2018 Management Plan, as required by Chapter 36 of the Texas Water Code.

I would ask that you review the plan and share it with your board or commissioners. Let me know if you have any comments in regard to the plan.

The PGCD Board adopted the plan, after submittal and approval by the Texas Water Development Board, on October 10, 2013 at it's regularly scheduled board meeting after conducting a public hearing.

Please feel free to contact me if you have any questions or comments.

Sincerely,

Jackie Risner
General Manager
Pineywoods Groundwater Conservation District

Room 132 - 202 East Pilar – Nacogdoches, Texas 75961
P.O. Box 635187 Nacogdoches, TX 75963-5187 (936) 568-9292 (936) 568-9296 fax

Pineywoods Groundwater Conservation District
Serving Angelina and Nacogdoches Counties
www.pgcd.org

October 16, 2013

Mr. Paul Parker
Lufkin City Manager
300 East Shepherd
Lufkin, Texas 75902

Dear Mr. Parker,

Enclosed is a copy of the newly adopted Pineywoods Groundwater Conservation District 2014-2018 Management Plan, as required by Chapter 36 of the Texas Water Code.

I would ask that you review the plan and share it with your board or commissioners. Let me know if you have any comments in regard to the plan.

The PGCD Board adopted the plan, after submittal and approval by the Texas Water Development Board, on October 10, 2013 at it's regularly scheduled board meeting after conducting a public hearing.

Please feel free to contact me if you have any questions or comments.

Sincerely,

Jackie Risner
General Manager
Pineywoods Groundwater Conservation District

Room 132 - 202 East Pilar – Nacogdoches, Texas 75961
P.O. Box 635187 Nacogdoches, TX 75963-5187 (936) 568-9292 (936) 568-9296 fax

Pineywoods Groundwater Conservation District

Serving Angelina and Nacogdoches Counties

www.pgcd.org

October 16, 2013

Angelina-Neches River Authority
c/o Mr. Kelley Holcomb
P.O. Box 387
Lufkin, Texas 75902-0387

Dear Mr. Holcomb,

Enclosed is a copy of the newly adopted Pineywoods Groundwater Conservation District 2014-2018 Management Plan, as required by Chapter 36 of the Texas Water Code.

I would ask that you review the plan and share it with your board or commissioners. Let me know if you have any comments in regard to the plan.

The PGCD Board adopted the plan, after submittal and approval by the Texas Water Development Board, on October 10, 2013 at it's regularly scheduled board meeting after conducting a public hearing.

Please feel free to contact me if you have any questions or comments.

Sincerely,

Jackie Risner
General Manager
Pineywoods Groundwater Conservation District

Room 132 - 202 East Pilar – Nacogdoches, Texas 75961
P.O. Box 635187 Nacogdoches, TX 75963-5187 (936) 568-9292 (936) 568-9296 fax

Pineywoods Groundwater Conservation District

Serving Angelina and Nacogdoches Counties
www.pgcd.org

October 16, 2013

Region I, RWPG
c/o Mr. Kelley Holcomb
P.O. Box 387
Lufkin, Texas 75902-0387

Dear Mr. Holcomb,

Enclosed is a copy of the newly adopted Pineywoods Groundwater Conservation District 2014-2018 Management Plan, as required by Chapter 36 of the Texas Water Code.

I would ask that you review the plan and share it with your board or commissioners. Let me know if you have any comments in regard to the plan.

The PGCD Board adopted the plan, after submittal and approval by the Texas Water Development Board, on October 10, 2013 at it's regularly scheduled board meeting after conducting a public hearing.

Please feel free to contact me if you have any questions or comments.

Sincerely,

Jackie Risner
General Manager
Pineywoods Groundwater Conservation District

Room 132 - 202 East Pilar – Nacogdoches, Texas 75961
P.O. Box 635187 Nacogdoches, TX 75963-5187 (936) 568-9292 (936) 568-9296 fax

Pineywoods Groundwater Conservation District

Serving Angelina and Nacogdoches Counties

www.pgcd.org

October 16, 2013

The Honorable Joe English
Nacogdoches County Judge
101 West Main
Nacogdoches, Texas 75961

Dear Judge English,

Enclosed is a copy of the newly adopted Pineywoods Groundwater Conservation District 2014-2018 Management Plan, as required by Chapter 36 of the Texas Water Code.

I would ask that you review the plan and share it with your board or commissioners. Let me know if you have any comments in regard to the plan.

The PGCD Board adopted the plan, after submittal and approval by the Texas Water Development Board, on October 10, 2013 at it's regularly scheduled board meeting after conducting a public hearing.

Please feel free to contact me if you have any questions or comments.

Sincerely,

Jackie Risner
General Manager
Pineywoods Groundwater Conservation District

Room 132 - 202 East Pilar – Nacogdoches, Texas 75961
P.O. Box 635187 Nacogdoches, TX 75963-5187 (936) 568-9292 (936) 568-9296 fax

MINUTES OF A REGULAR MEETING OF THE PINEYWOODS GROUNDWATER CONSERVATION DISTRICT HELD ON THE 10th DAY OF OCTOBER, 2013

On the 10th day of October 2013 at 2:55 p.m. at Kurth Lodge in Angelina County, Texas, the Board of Directors of the Pineywoods Groundwater Conservation District convened in a regular meeting at which time the following items were discussed and action possibly taken with the following members thereof, to wit:

David Alders	Vice-President
Jimmy Mize	Treasurer
Kelley Holcomb	Member
Ty Thornton	Member

being present, and

Keith Wright	President
Gloria Montes	Secretary
Keith Weathers	Finance Officer

being absent, and

Jackie Risner	General Manager
Cheryl Benke	Administrative Assistant

also present.

1. **Call to Order:**

   With a quorum of board members present, the meeting was called to order at 2:55 p.m. by Vice-President David Alders and the invocation was given by Vice-President David Alders.

2. **Approval of the minutes of the meeting of August 8, 2013:**

   The Minutes were reviewed by Board members, a motion was made to approve by Jimmy Mize which was seconded by Ty Thornton.

   The motion passed unanimously.

3. Receive a report from the General Manager concerning the financial position of the District:

Current balance through October 8, 2013 is $38,854.59. A quarterly report to date was presented along with a ledger printout, copies of bills, budget report, and A/R report. It was suggested that the new owner of Aspen be contacted regarding past due balance.

4. General Manager's District Report:

1. **Pending Completion:** We have 14 exempt wells in progress, 5 non-exempt wells in progress, 1 new O&G rig supply well, and 0 new O&G frac wells registered. We have received 9 new exempt wells and 3 new non-exempt wells, 0 new O & G rig supply and 0 frac wells since the last meeting.

Completed Wells:

- **Total Exempt wells in database: 769 [374- Nac. Co., 389- Ang. Co.]**
- **Total Non-Exempt Ag wells in database: 271 [199 Nac. Co., 72Ang. Co.]**
- **Total Oil & Gas rig supply wells in database: 723 [670 Nac. Co., 53 Ang.Co.]**
- **Total Oil & Gas frac wells in database: 36 [all in Nac. Co.]**
- **Total Production fee based wells in database: 195 [98 -Nac. Co., 96 –Ang. Co.]**
- **Total District wells recorded in databases: 2260** [this includes 286 plugged wells]

Activities

- Report on new employee
- $661.09 credit to Melrose Water for overpayment of water and 1 well registration
- Report on GMA-11 meeting October 2, 2013
- Report on Water Summit August 27-29
- News releases-monthly
- Presented program to Nacogdoches County Board of Realtors
- Abandoned well on Michael Fleetwood property
- Will shop for 1 new computer for 2014 budget

5. Unfinished Business

a. Discuss and take action if necessary on Board investment officer.

To comply with the Investment Policy, the Board discussed the need to appoint a Board member designee to replace Keith Weathers as one of

the two District investment officers, the other investment officer being the General Manager. Kelley Holcomb moved and Jimmy Mize seconded the motion to designate Keith Wright.

The motion passed unanimously.

6. New Business

a. Open public hearing for 2014-2018 District Management Plan.

David Alders opened the public hearing at 3:35. No one attended the hearing and no comments were made or changes suggested to the Plan. David Alders closed the public hearing.

b. Discuss and adopt the 2014-2018 District Management Plan.

Jimmy Mize made a motion to approve and adopt the Plan. The motion was seconded by Ty Thornton.

The motion passed unanimously.

c. Review and take action on 3rd quarter investment report.

The Board reviewed the investment report, and a motion was made by Kelley Holcomb and seconded by Jimmy Mize to approve the report, subject to a notation on the report that no accounts had been opened or closed during the quarter.

The motion passed unanimously.

d. Accept results of TWDB state audit of district.

Jimmy Mize made a motion and Ty Thornton seconded the motion to accept the results of the TWDB audit.

The motion passed unanimously.

e. Appoint Budget committee.

David Alders appointed the following to serve on the Budget committee:

Jimmy Mize, Chair
Gloria Montes
Keith Weathers

f. Conduct six month evaluation of General Manager.

Jackie Risner and Cheryl Benke were dismissed while a closed executive session was held to discuss the evaluation. The closed session was from 3:45 to 4:22.

g. Review board member terms expiring 12/31/13.

The Board was reminded that the terms for Jimmy Mize and Keith Wright will expire on 12/31/13.

h. Accept retirement of Administrative Assistant.

Ty Thornton made a motion that Jackie Risner accept the resignation. Kelley Holcomb seconded the motion.

The motion passed unanimously.

i. Discuss plan for web site maintenance.

The Board discussed options and recommended that Lynn Thomas assist with the web site maintenance until we can obtain someone else to assume those duties. Jackie Risner will research and also make a recommendation to the budget committee regarding the cost of this service for the 2014 budget.

j. Discuss and act on training for new Administrative Assistant.

Jackie Risner advised the board that Lynn Thomas had already done some training and would provide some additional training, but the training would not need to be as extensive as originally anticipated.

k. Designation of PGCD Chairman's representative to GMA-11.

A motion was made by Ty Thorton and seconded by Kelley Holcomb to designate Jackie Risner as the representative to GMA-11.

The motion passed unanimously.

7. Announcement of the date and location of the next meeting of the District Board of Directors:

David Alders announced the next meeting will be held on December 12, 2013, 2:00 pm, at Kurth Lodge, Angelina County, Texas.

8. Adjourn:

The meeting was adjourned by President Wright at 4:46 pm.

_____

Keith Wright, President

_____

Gloria Montes, Secretary

R-081214

RESOLUTION

PINEYWOODS GROUNDWATER CONSERVATION DISTRICT 2014 MANAGEMENT PLAN

WHEREAS, Texas Water Code, Chapter 36, §36.1071 required the District to develop a comprehensive management plan to address the following management goals as applicable: (1) providing the most efficient use of groundwater; (2) Controlling and preventing waste of groundwater; (3) controlling and preventing subsidence; (4) addressing conjunctive surface water management issues; (5) addressing natural resource issues; (6) addressing drought conditions; and (7) addressing conservation, recharge enhancement, rainwater harvesting, precipitation enhancement, or brush control, where appropriate and cost-effective; and (8) addressing in a quantitative manner the desired future conditions of the groundwater resources. and

WHEREAS, The Texas Water Development Board has adopted rules under Title 31. Natural Resource and Conservation Part X. Texas Water Development Board, Chapter 356. Groundwater Management Plan Certification. and

WHEREAS, The Pineywoods Groundwater Conservation District was created in 2001 and has operated under the requirements of Chapter 36 of the Texas Water Code or other chapters of the Texas Water Code or sections of the Texas Administrative Code since creation. and

WHEREAS, The Pineywoods Groundwater Conservation District intends to continue to carry out the purpose for which the people created the District. and

WHEREAS, The Texas Water Code, §36.1071 requires the District to identify the performance standards and management objectives under which the District will operate to achieve the management goals. and

WHEREAS, The Board of Directors of the Pineywoods Groundwater Conservation District believes that the 2014 Management Plan of the District reflects the best management of the groundwater for the District and meets the requirements of §36.1071 as applicable. and

WHEREAS, The Board further believes that the description of activities, programs, procedures and rules of the District included in the plan provide performance standards and management objectives necessary to effect the Plan in accordance with §36.1071. and

WHEREAS, The Plan addresses managed available groundwater, the amount of groundwater being used, desired future conditions for the District as well as addresses recharge. and

WHEREAS, The District has adopted rules, resolutions, and directives to implement this plan. and

WHEREAS, The District is fully prepared to amend and or adopt additional rules or adopt resolutions or issue directives in the future as determined by the Board of Directors to address issues identified in the future. and

WHEREAS, The District is fully prepared to amend this Plan as determined by the Board of Directors as necessary and in accordance with applicable laws of this state.

NOW THEREFORE BE IT RESOLVED:
The Board of Directors of the Pineywoods Groundwater Conservation District does hereby adopt the 2014 Pineywoods Groundwater Conservation District Management Plan.

This, the 10th day of October 2013.

Keith Wright – President

David Alders – Vice President

Gloria Montes – Secretary

Keith Weathers – Financial Officer

Jimmy Mize- Treasurer

Ty Thornton

Kelley Holcomb

Appendix A

Pineywoods Groundwater Conservation District Board

Pineywoods Groundwater Conservation District Board
Room 213
202 E. Pilar
Nacogdoches, TX 75961

Keith Wright
President
City of Lufkin
P.O. Box 190
Lufkin, TX 75902
936-633-0203 936-633-0416 (FAX)
kwright@cityoflufkin.com
City of Lufkin Appointment

David Alders
Vice-President
8740 FM 226
Nacogdoches, TX 75961
936-569-1284 936-569-1284 (FAX)
dalders@txucom.net
Nacogdoches County Appointment

Gloria Montes
Secretary
P.O. Box 13072, SFA Station
Nacogdoches, Texas 75962
(936) 468-2188 (936) 468-7037 fax
gmontes@sfasu.edu
Nacogdoches County Appointment

Keith Weathers
Finance Officer
5646 FM 843
Pollock, TX 75969
(936) 824-2865 (936) 824-2965 fax
angwatsu@consolidated.net
Angelina County Appointment

Jimmy Mize
Treasurer
1009 N. University
Nacogdoches, TX 75961
(936) 559-5100
jmize@fbtet.com
City of Nacogdoches Appointment

Ty Thornton
Director
(936) 633-3961
P.O. Box 849
Lufkin, Texas 75902
tthornton@lufkin.com
Angelina County Appointment

Kelley Holcomb
Director
ANRA
P.O. Box 387
Lufkin, TX 75902
(936) 632-7795
kholcomb@anra.org
Angelina and Nacogdoches Counties Appointment

STAFF

Jackie Risner
General Manager
jrisner@pgcd.org

Lynn Thomas
Administrative Assistant
lynn@pgcd.org

PINEYWOODS GROUNDWATER CONSERVATION DISTRICT

DISTRICT RULES

Revised January 13, 2011

Board Members:
Keith Wright – President
David Alders - Vice President
Gloria Montes - Secretary
Keith Weathers –Finance Officer
Jimmy Mize– Treasurer
Kelley Holcomb - Member
Ty Thornton - Member

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PINEYWOODS GROUNDWATER CONSERVATION DISTRICT

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RULES OF THE PINEYWOODS

GROUNDWATER CONSERVATION DISTRICT

Effective as of Feb. 7, 2002

In accordance with Section 59 of Article 16 of the Texas Constitution and with the Acts of the 77th Legislature (2001), Ch. 313, H.B. 2572 and Chapters 35 and 36 of the Texas Water Code, Pineywoods Groundwater Conservation District adopts the following Rules as the Rules of the District. Each rule as worded below herein has been in effect since date of passage and as may be amended.

The Rules, regulations, and modes of procedure contained below are and have been adopted for the purposes of achieving the goals of the District Act and the Management Plan, prevent waste, and protect rights of owners of interest in groundwater while simplifying procedure, avoiding delays, saving expense, and facilitating the administration of the groundwater laws of the State and the Rules of this District. To the end that these objectives be attained, these Rules shall be so construed.

These Rules may be used as guides in the exercise of discretion, where discretion is vested. However, under no circumstances and in no particular case shall they, or any of them, be construed as a limitation or restriction upon the exercise of any discretion of the Board, where such exist; nor shall they in any event be construed to deprive the Board of an exercise of powers, duties and jurisdiction conferred by law, nor to limit or restrict the amount and character of data or information which may be required for the proper administration of the law. Any reference to the Texas Water Code includes the section referenced and any subsequent amendments.

RULE 1 – DEFINITIONS AND CONCEPTS

1.1 Unless the context indicates a contrary meaning, the words hereinafter defined shall have the following meaning in these Rules:

(a) "Beneficial use" means:

(1) agricultural, gardening, domestic, stock raising, municipal, mining, manufacturing, industrial, commercial, recreational, or pleasure purposes;

(2) exploring for, producing, handling, or treating oil, gas, sulfur, or other minerals; or

(3) any other purposes that is useful and beneficial to the user and approved by the Board.

(b) The "Board" shall mean the Board of Directors of the Pineywoods Groundwater Conservation District, consisting of seven (7) Board members.

(c) "District Act" means acts of the 77th Legislature (2001), Chapter 313, H.B. 2572 and the nonconflict of provisions of Chapter 36, Texas Water Code, as same

may be amended.

(d) "District Office or Offices" shall mean the location or locations as may be established by resolution of the Board.

(e) "District" shall mean Pineywoods Groundwater Conservation District.

(f) "Domestic Use" means the use of water at a single-family household to support domestic activities including drinking, washing, and sanitation. Domestic use does not include use for any commercial purpose or at any commercial establishment. Domestic use does not include a use at any commercial establishment with a single-family household.

(g) "Drilling" includes drilling, equipping, or completing wells or modifying the size of wells or well pumps to change pumpage volume.

(h) "Drilling Permit" means a permit issued by the District allowing a water well to be drilled.

(i) "Fee or Fees" means the amount required to be paid as established by the Board of Directors.

(j) "Groundwater" means water percolating below the surface of the earth.

(k) "Hearing Body" means the Board, any committee of the Board, or a hearing examiner at any hearing held under the authority of the District Act.

(l) "Hearing Examiner" means a person appointed by the Board to conduct a hearing or other proceeding.

(m)"Hearing Rules and Procedures" means the rules and procedures for hearings adopted by the Board for hearings and other proceedings of the District, as they may be supplemented or amended from time to time.

(n) "Operator" shall mean the person who operates a well.

(o) "Operating Permit" means a permit issued by the District for a water well, allowing groundwater to be withdrawn from a water well for a designated period.

(p) "Owner" shall mean and include any person that has the right to produce water from the land either by ownership, contract, lease or easement

(q) "Person" shall mean any individual, partnership, firm, or corporation, limited liability company, or other legal entity.

(r) "Rules" shall mean these Rules of the District and the Hearing Rules and

Procedures as they may be supplemented or amended from time to time.

(s) "Waste" means any one or more of the following:

(1) withdrawal of groundwater from a groundwater reservoir at a rate and in an amount that causes or threatens to cause intrusion into the reservoir of water unsuitable for agricultural, gardening, domestic, or stock raising purposes;

(2) the flowing or producing of wells from a groundwater reservoir if the water produced is not used for a beneficial purpose;

(3) escape of groundwater from a groundwater reservoir to any other reservoir or geologic strata not containing groundwater;

(4) pollution or harmful alteration of groundwater in a groundwater reservoir by saltwater or by other deleterious matter from another stratum or from the surface of the ground;

(5) willfully or negligently causing, suffering, or allowing groundwater to escape into any river, creek, natural watercourse, depression, lake reservoir, drain, sewer, street, highway, road, or road ditch, or onto any land other than that of the owner of the well unless such discharge is authorized by permit, rule, or order issued by the commission under Chapter 26, Texas Water Code; groundwater released on well startup or well development in order to improve water quality shall not constitute waste as defined above.

(6) groundwater pumped for irrigation that escapes as irrigation tailwater onto land other than that of the owner of the well unless permission has been granted by the occupant of the land receiving the discharge; or

(7) for water produced from an artesian well, "waste" has the meaning assigned by Section 11.205, Texas Water Code.

(t) "Well" or "Water Well" shall mean and include any artificial excavation constructed for the purpose of producing groundwater including a test well constructed for the purpose of determining the location, quality or quantity of groundwater.

(1) "Abandoned or deteriorated well" shall mean a well, as defined by these rules, or any other well which allows surface inflow or infiltration and/or that is causing, or is likely to cause, pollution of groundwater in the District and includes a well which is not in use and/or compliance with applicable laws regarding proper installation, including Rules and Licensing and Regulation, Rules and Regulations of the Texas Commission on Environmental Quality,

Rules and Regulations of any state of federal agency of competent jurisdiction and laws of the state of Texas is presumed to be abandoned or deteriorated.

(u) "Exempt Well" shall mean any well for which the District is prohibited to require a permit under the District Act, Texas Water Code §36.117 or the District Rules. Exempt wells include wells used solely for domestic or agriculture use or for providing water for livestock or poultry that is either drilled, completed, or equipped so that it is incapable of producing more than 25,000 gallons per day and certain wells for hydrocarbon production. Wells to supply water for a subdivision of land for which plat approval is required by law or regulation are not exempt. For all purposes herein, an Exempt Well shall be exempt from permitting requirements and production fees but shall not be exempt from pre-registration or registration requirements.

(v) "Monitor Well," means any well used for the sampling or measurement of any chemical or physical property of subsurface strata or their contained fluids.

(w) "Remediation Well" means any well used to produce contaminated water from a subsurface strata pursuant to a plan approved by the Texas Commission on Environmental Quality or other agency with applicable jurisdiction.

(x) "Accurately metered" shall mean use of a properly calibrated and functioning water meter, meeting the American Water Works Association (AWWA) standards for the line size, pressures, and flow, installed according to the manufacturer's specifications, or other metering or measuring device approved by the District.

(y) "Open Loop Geothermal Well" – Groundwater drawn from an aquifer through one well, passed through the heat pump's heat exchanger, and discharged to the same aquifer through a second well at a distance from the first.

(z) "Closed Loop Geothermal Well"- TDLR Chapter 76.10 (10), "A vertical closed system well used to circulate water, and other fluids or gases through the earth as a heat source or heat sink".

(aa) "Brackish, Salt or Brine water" – water with a chloride concentration greater than 300 ppm (30 TAC §290.105(b).

1.2 The definitions contained in Texas Water Code Section 36.001 shall also be included to the extent that they are used in these Rules.

1.3 Purpose of Rules. The Rules are the foundation for achieving the goals of the District Act and Management Plan.

1.4 Use and Effect of Rules. The District uses these Rules as guides in the exercise of the powers conferred by law and in the accomplishment of the purposes of the District Act and Management Plan.

1.5 Amendment of Rules. The Board may, following notice and hearing, amend these Rules or adopt new Rules from time to time.

1.6 Headings and Caption. The section and other headings and captions contained in these Rules are for reference purposes only. They do not affect the meaning or interpretation of these Rules in any way.

1.7 Construction. A reference to a title, chapter or section without further identification is a reference to a title, chapter or section of the Water Code, Construction of words and phrases are governed by the Code Construction Act, Subchapter B, Chapter 311, Government Code.

1.8 Method of Service under these Rules. Except as otherwise expressly provided in these Rules, any notice or documents required by these Rules to be served or delivered may be delivered to the recipient, or the recipient's authorized representative, in person, by agent, by courier receipted delivery, by certified mail sent to the recipient's last known address, or by telephonic document transfer to the recipient's current telecopier number. Service by mail is complete upon deposit in a post office or other official depository of the United States Postal Service. Service by telephonic document transfer is complete upon transfer, except that any transfer occurring after 5:00 p.m. will be deemed complete on the following business day. If service or delivery is by mail, and the recipient has the right, or is required, to do some act within a prescribed time after service, three days will be added to the prescribed period. Where service by one of more methods has been attempted and failed, the service is complete upon notice publication in a general circulated newspaper in Angelina or Nacogdoches County.

1.9 Severability. If any one or more of the provisions contained in these Rules are for any reason held to be invalid, illegal, or unenforceable in any respect, the invalidity, illegality, or unenforceability may not affect any other Rules or provisions of these Rules, and these Rules must be construed as if such invalid, illegal or unenforceable Rules or provision had never been contained in these Rules.

1.10 Burden of Proof: In all matters regarding applications for permits, exceptions, and other matters for which District approval is required, the burden shall be upon the applicant or other persons seeking a permit, exception, or other authority to establish that all conditions, criteria, standards, or prerequisites have been met.

RULE 2 – WASTE

(a) Groundwater shall not be produced within, or used within or without the District, in such a manner or under such conditions as to constitute waste as defined in Rule 1 hereof.

(b) Any person producing or using groundwater shall use every possible precaution, in accordance with the most approved methods, to stop and prevent waste of such water.

(c) No person shall pollute or harmfully alter the character of a groundwater reservoir of the District by means of salt water or other deleterious matter admitted from other stratum or strata or from the surface of the ground.

(d) No person shall commit waste as that term is defined by Rule 1.1 (s).

RULE 3 – PERMIT AND REGISTRATION REQUIRED

3.1 No person shall drill, modify, complete, change type of use, plug, abandon, or alter the size of a well within the District without first registering the well with the District, or making application for a new well even though the well may be exempt from the requirement of a permit under Texas Water Code Section 36.117 or Rule 1.1 (u).

3.2 The District staff will review the application for registration and make a preliminary determination on whether the well meets the requirements, exclusions, or exemptions.

3.3 No permit shall be required for the drilling of wells exempt by Texas Water Code §36.117 or Rule 1.1 (u). Regardless of whether a permit is required, all wells must be installed consistent with 16 Texas Administrative Code §76.1000 (Technical Requirements – Locations and Standards of Completion for Wells).

3.4 Exempted Wells shall be registered with the District before drilling. All exempt wells shall be equipped and maintained so as to conform to the District's Rules requiring installation of casing, pipe and fittings to prevent the escape of groundwater from a groundwater reservoir to any reservoir not containing groundwater and to prevent the pollution or harmful alteration of the character of the water in any groundwater reservoir. Forms for registrations and applications for permits shall be provided by the District.

3.5 Any existing operational well not exempt under Rule 1.1 (u), in existence prior to effective date of these Rules is considered grandfathered and will automatically be granted an operating permit upon completion of the well validation procedure as provided in Rule 13. These grandfathered wells will not be assessed a registration or permit fee if the procedure is completed by January 1, 2003 and the owner or operator

provides all the information requested by the District. Said grandfathering is only for the initial term of the permit. The volume allowed by the permit will be determined by past or planned production of the well.

3.6 A water well used solely to supply water for a rig that is actively engaged in drilling or exploration operations for an oil or gas well permitted by the Texas Railroad Commission is exempt from District Fees provided the person holding the permit is responsible for drilling and operating the water well and it is located on the same lease or field associated with the drilling rig.

3.7 A well-exempted under provision Rule 1.1 (u) above must be permitted and comply with all District Rules if:

(1) the purpose of the well is no longer solely to supply water for a rig that is actively engaged in drilling or exploration operations for an oil or gas well permitted by the Railroad Commission of Texas; or

(2) the withdrawals are no longer necessary for mining activities or are greater than the amount necessary for mining activities specified in the permit issued by the Railroad Commission of Texas under Chapter 134, Natural Resources Code.

3.8 All permits are granted subject to these rules, orders of the Board, and the laws of the State of Texas. In addition to any special provisions or other requirements incorporated into the permit, each permit issued must contain the following standard permit provisions:

(a) This permit is granted in accordance with the provisions of the Rules of the District, and acceptance of this permit constitutes an acknowledgment and agreement that the permittee will comply with the Rules of the District.

(b) This permit confers only the right to operate and its terms may be modified or amended. To protect the permit holder from the illegal use by a new landowner, within 10 days after the date of sale, the operating permit holder must notify the District in writing the name of the new owner of a permitted well. Any person who becomes the owner of a currently permitted well must, within 20 calendar days from the date of the change in ownership, file an application for a permit amendment to affect a transfer of the permit.

(c) The operation of the well for the authorized withdrawal must be conducted in a non-wasteful manner.

(d) Withdrawals from all non-exempt wells and wells exempt pursuant to Rule 1.1 (u) shall be accurately metered and the quantity of

groundwater produced shall be reported to the District quarterly. Wells used for Domestic or agricultural purposes capable of providing more than 25,000 gallons per day but less than 100,000 gallons per day are not required to be metered or report production.

(e) The well site must be accessible to District representatives for inspection, and the permittee agrees to cooperate fully in any reasonable inspection of the well and well site by the District representatives.

(f) The application pursuant to which this permit has been issued is incorporated in the permit, and the permit is granted on the basis of, and contingent upon, the accuracy of the information supplied in that application. A finding that false information has been supplied is grounds for immediate revocation of the permit.

(g) Violation of a permit's terms, conditions, requirements, or special provisions is punishable by civil penalties as provided by the District Rules and by law.

(h) The permit may also contain provisions relating to the means and methods of transportation of water produced within the District.

3.9 Except as provided below, a permit is not required for a Monitor Well or a Remediation Well. A copy of the Driller's Report must be filed with the District within (60) sixty days. If the use of Monitor Well or Remediation Well is changed to produce non-contaminated water, it then becomes subject to the permitting or registration requirements of these Rules depending upon use and volume.

3.10 GEOTHERMAL LOOPS

(a) Application and fee must be submitted to the Pineywoods Groundwater Conservation District (PGCD) office for approval. The District will charge a one-time administrative fee of *$50* for the drilling application for the borehole and /or a series of boreholes. A drilling log shall be filed with the State of Texas and PGCD. A file will be maintained in the PGCD district offices of the drilling and equipping.

(b) The closed loop geothermal system shall be designed and installed by a licensed installer. The design shall be submitted to PGCD prior to inspection. The installer shall notify the district prior to installation.

(c) A licensed water well driller shall drill the boreholes. The driller shall notify the district prior to drilling.

(d) A district representative shall be allowed on the property to inspect the drilling of the borehole, installation and sealing of the closed loop piping, if the district determines it is necessary.

(e) Construction of the borehole will follow TDLR regulation described in Technical Standards Chapter 76.1000 (b) (5) of the TDLR rules: "The annular space of a closed loop geothermal well used to circulate water or other fluids shall be backfilled to the total depth with impervious bentonite or similar material, closed loop injection well where there is no water or only one zone of water is encountered you may use sand, gravel or drill cuttings to back fill up to ten (10) feet from the surface. The top ten (10) feet shall be filled with impervious bentonite or similar materials and meets the standards pursuant to Texas Commission on Environmental Quality 30 TAC, Chapter 331."

(f) Spacing: Any borehole shall be located a minimum horizontal distance of fifty (50) feet from any watertight sewage and liquid-waste collection facility, and a minimum horizontal distance of fifty (50) feet from the nearest property line.

3.11 An open loop geothermal well system is prohibited within the Pineywoods Groundwater Conservation District. (addition)

RULE 4 – FEES AND REPORTS

In accordance with HB 2572 and Section 36.205 of the Texas Water Code, the Board adopts a production fee of $0.02 per 1000 gallons for all nonexempt wells except wells used for Domestic use or providing water to livestock or poultry which are not capable of producing more than 100,000 gallons per day. The fee is payable on water produced on or after April 1, 2002. Operators of nonexempt wells shall provide payment to the District each quarter. Payment shall be due within thirty (30) days of the last day of March, June, September, and December with their quarterly reports. Operators shall provide monthly or quarterly production records to document payment amount. The payment shall be accompanied by the report form specified by the Board or made when an invoice is received from the District.

4.1 In accordance with Section 36.122 of the Texas Water Code the District adopts a transfer fee of 50% of and in addition to the production fee for water transported out of the District.

4.2 Each application for a permit to drill a well shall be accompanied by the fee or fees as established herein or by resolution of the Board.

4.3 Each day that a payment remains unpaid after it is due shall constitute a

separate violation of these Rules. A late payment charge equal to one percent per month following the due date shall be assessed on past due production fees.

4.4 An entity holding a permit issued by the Railroad Commission of Texas under Chapter 134, Natural Resources Code, that authorized the drilling of a water well shall accurately meter each water well and report monthly to the District:

(a) the total amount of water withdrawn during the month;
(b) the quantity of water necessary for mining activities;
(c) the quantity of water withdrawn for other purposes;

Multiple wells in the same well field may provide the information described in a-c above in aggregate for all water wells within the well field or separately for each well.

4.5 Owners of wells subject to the production fees described above are excepted from paying production fees if the annual production from the well is less than 1,250,000 gallons per year. Owners of wells excepted from paying production fee under this provision must still report production from the well quarterly; such reports must include all production for the previous 3 calendar months and be received by the District within 30 days of the last day of the end of each quarter of the calendar year.

RULE 5 – ISSUANCE OF PERMITS

5.1 Every person who drills a water well after the effective date of these Rules, other than an Exempt Well, must file an Application for Permit on a form approved by the Board. Each permit application must be accompanied by the fee.

5.2 Drilling Permit Requirement: The well owner, well operator, or any other person acting on behalf of the well owner must obtain a drilling permit from the District prior to drilling a new water well other than an exempt well, developing a well field or perforating an existing well.

5.3 Operating Permit Requirement: Within 14 days after the completion of a new water well, reworking, or re-equipping of an existing water well as provided in Rule 5.10 below, the well owner or well operator must file a completed operating permit application.

5.4 Permit Applications: Each original application for a water well drilling

permit, operating permit, transport permit, and permit amendment requires a separate application and payment of the associated fee. Application forms will be provided by the District and furnished to the applicant upon request.

The application for a permit shall be in writing and sworn to, and shall include the following:

a) the name and mailing address of the applicant and the owner of the land on which the well will be located;
b) if the applicant is other than the owner of the property, documentation establishing the applicable authority to construct and operate a well for the proposed use;
c) a location map of all existing wells within a quarter (1/4) mile radius of the proposed well or the existing well to be modified;
d) a map from the county appraisal District indicating the location of the proposed well or the existing well to be modified, the subject property, and adjacent owners' physical addresses and mailing addresses;
e) notice of any application to the responsible State Agency to obtain or modify a Certificate of Convenience and Necessity to provide water or wastewater service with water obtained pursuant to the requested permit;
f) a statement of the nature and purpose of the proposed use and the amount of water to be used for each purpose.
g) a declaration that the applicant will comply with the District's Rules and all groundwater use permits and plans promulgated pursuant to the District's Rules.
h) a water conservation plan or a declaration that the applicant will comply with the Management Plan.
i) the location of each well and the estimated rate at which water will be withdrawn;
j) a water well closure plan or a declaration that the applicant will comply with all District well plugging and capping guidelines and report closure to the Commission.
k) a hydrogeological report addressing the area of influence, draw down, recovery time, and other pertinent information required by the District shall be required for the following:

    (1) Requests to drill a well with a daily maximum capacity of more than 2 million gallons;
    (2) Requests to modify to increase production or production capacity of a Public Water Supply, Municipal, Commercial, Industrial, Agricultural or Irrigation well with an outside casing diameter greater than 6 5/8 inches.

The well must be equipped (or tested at a rate equal to or greater than the rate necessary) for its ultimate planned use and the hydrogeologic report must address the impacts of that use. The report must include hydrogeologic information addressing and specifically related to the proposed water pumpage levels at the proposed pumpage site intended for the proposed well or for the proposed transporting of water outside the District. Applicants may not rely solely on reports previously filed with or prepared by the District.

5.5 Transfer Permit Requirement: The well owner, well operator, or any other person acting on behalf of the well owner must obtain a transfer permit to transfer groundwater produced from within the District outside the District's boundaries.

A groundwater transfer permit is not required for transferring groundwater that is part of a product manufactured in the District, or if the groundwater is to be used on property that straddles the District boundary line. Water that is bottled is not considered to be a product manufactured for this exclusion.

5.6 Notice of Permit Hearing: Once the District has received a completed original application for a water well drilling permit, operating permit, a transport permit, or a permit amendment and associated fees the General Manager will issue written notice indicating a date and time for a hearing on the application in accordance with these Rules. The District may schedule as many applications at one hearing as deemed necessary.

5.7 Drilling Permits: Unless specified otherwise by the Board or these Rules, drilling permits are effective for a term ending 120 calendar days after the date the permit application was received.

5.8 Transfer Permits: Unless specified otherwise by the Board or these Rules, transport permits are effective for five (5) years. Notwithstanding the period specified above, the District may periodically review the amount of water that may be transferred under the permit and may limit the amount.

5.9 Effect of Acceptance of Permit: Acceptance of the permit by the person to whom it is issued constitutes acknowledgment of and agreement to comply with all of the terms, provisions, conditions, limitations, and restrictions.

5.10 Reworking and Replacing a Well:

a) An existing well may be reworked or re-equipped in a manner that will not change the permitted well status. A change in the permitted well status will require an operating permit amendment.

b) A permit must be applied for if a party wishes to replace an existing well with a replacement well.

c) A replacement well, in order to be considered such, must be drilled within fifteen feet of the existing well.

d) The location of the old well (the well being replaced) shall be protected in accordance with the spacing Rules of the District until the replacement well is drilled and tested. The landowner or his/her agent must within 120 days of the issuance of the permit declare in writing to the District which one of these two wells he desires to produce. If the landowner does not notify the District of his/her choice within this 120 days, then it will be conclusively presumed that the new well is the well he/her desires to retain. Immediately after determining which well is retained for production, the other well shall be:

(1) Properly equipped in such a manner that it cannot produce more than 25,000 gallons of water a day; or

(2) Closed in accordance with applicable state law and regulation Section 756.002, Texas Health and Safety Code

(3) Violation of such Article is made punishable by a fine as provided by law.

A permit to rework, re-equip, re-drill or replace an existing well may be granted by the Board without notice or hearing so long as the production capacity of the new well does not exceed the capacity of the existing well.

5.11 Emergency Authorization:

Any person, who has a Permit or Certificate of Registration from the District to Operate a well, may apply to the District for emergency authorization to drill and operate a replacement well as set forth below. The emergency must meet all of the following conditions:

(a) The "emergency" must present an imminent threat to the public health and safety or to an agricultural activity, must be explained to the satisfaction of the District and include any documentation requested by the District.

(b) Neither the emergency authorization nor an applicant for a permit to drill the well has been denied.

(c) A completed application as required by these Rules must be sent by telecopy or hand delivery within three (3) business days after notifications of the emergency conditions is given.

(d) All application fees must be paid within 7 days of the emergency notifications.

(e) Such other information as requested has been received by the District.

(f) The well must comply with all the other provisions for a replacement well as specified in Rule 5.10

RULE 6 – REQUIREMENT OF DRILLERS LOG, CASING AND PUMP DATA

(a) Complete records shall be kept and reports thereof made to the District concerning the drilling, maximum production potential, equipping and completion of all wells drilled. Such records shall include an accurate driller's log, any electric log which shall have been made, and such additional data concerning the description of the well, its potential, hereinafter referred to as "maximum rate of production" and its actual equipment and rate of discharge permitted by said equipment as may be required by the Board. Such records shall be filed with the District Board within 60 days after completion of the well.

(b) The well driller shall deliver either in person, by fax, email, or send by first-class mail, a photocopy of the State Well Report to the District within 60 days from the completion or cessation of drilling, deepening, or otherwise altering a well.

(c) No person shall produce water from any well hereafter drilled and equipped within the District, except that necessary to the drilling and testing of such well and equipment, unless or until the District has been furnished an accurate driller's log, any electric log which shall have been made, and a registration of the well correctly furnishing all available information required on the forms furnished by the District.

(d) All completed well reports shall include the gallons per minute (gpm) from a pump test completed on the well, as equipped, before an operating permit will be issued. If a pump is not installed and the well is capped, no permit shall be issued until the pumping capacity can be determined when a pump is installed.

RULE 7 – MINIMUM SPACING OF WELLS

(a) Distance Requirements:

(1) **Non-Exempt Wells**
Non-exempt wells shall not be drilled nearer than one hundred fifty (150) feet from the nearest property line and shall be located at the minimum distance from sources of potential contamination as described in 16 TAC 76.1000 (a) (3) (4) (5) and shall meet all other

standards as described in 16 TAC Chapter 76. The Board may grant exceptions from this requirement.

(2) **Exempt Wells**
An exempt well shall not be drilled nearer than fifty (50) feet from any property line provided the well is located at the minimum distance from sources of potential contamination as described in 16 TAC 76.1000 (a) (3) (4) (5) and meets all other standards as described in 16 TAC Chapter 76. The Board may grant exceptions from this requirement.

(3) In the interest of protecting life and for the purpose of preventing waste, preventing overlapping cones of depression resulting from production rates and preventing confiscation of property, the Board reserves the right to limit the number of wells on a tract of land or require a minimum distance between wells.

(4) Subdivision of property:

(i) In applying this rule and applying every special rule with relation to spacing in all of the subterranean water zones and/or reservoirs underlying the confines of this District, no subdivision of property made subsequent to the adoption of the original spacing rule will be considered in determining whether or not any property is being confiscated within the terms of such spacing rule, and no subdivision of property will be regarded in applying such spacing rule or in determining the matter of confiscation if such subdivision took place subsequent to the promulgation and adoption of the original spacing rule.

(ii) Any subdivision of property creating a tract of such size and shape that it is necessary to obtain an exception to the spacing rule before a well can be drilled thereon is a voluntary subdivision and not entitled to a permit to prevent confiscation of property if it were either, (a) segregated from a larger tract in contemplation of water resource development, or (b) segregated by fee title conveyance from a larger tract after the spacing rule became effective and the voluntary subdivision rule attached.

(b) Change in Use of Well:

Any well existing at the date of enactment of this Rule must comply with the provisions of this rule if after the date of enactment of this rule the ultimate use of the water produced from the well is changed in whole or in part such that the water produced from the

well annually is increased. Ultimate use of the water shall be defined as domestic, municipal, industrial, agricultural, or irrigation use.

RULE 8 – EXCEPTION TO SPACING RULE

(a) In order to protect vested property rights, to prevent waste, to prevent confiscation of property, or to protect correlative rights, the Board may grant exception to the above spacing regulations. This rule shall not be construed so as to limit the power of the Board, and the powers stated are cumulative only of all other powers possessed by the Board.

(b) If an exception to such spacing regulations for a **non-exempt well** is desired, application therefore shall be submitted by the applicant in writing to the Board at its District office on forms furnished by the District. The application shall be accompanied by a plat or sketch, drawn to scale of one (1) inch equaling one thousand (1000) feet. The plat or sketch shall show thereon the property lines in the immediate area and shall show accurately to scale all wells within a quarter mile of the proposed well site. The application shall also contain the names of all property owners adjoining the tract on which the well is to be located and the ownership of the wells within a quarter mile of the proposed location. Such application and plat shall be certified by some person actually acquainted with the facts who shall state that all the facts therein are true and correct. All Public Water Supply Wells shall be completed by a registered professional engineer licensed in the State of Texas.

(c) If an exception to such spacing regulations for an **exempt well** is requested, application therefore shall be submitted by the applicant or driller in writing to the District on forms furnished by the District. The application shall be accompanied by a plat or sketch showing the property lines of the tract where the proposed well is to be located as well as all adjacent property and all other wells within 100 feet of the proposed well. The application shall also contain the names and addresses of all adjacent property owners and owners of wells within 100 feet of the proposed well. The plat or sketch shall be verified as being true and correct by someone familiar with the factual assertions contained therein.

(d) Such exception may be granted ten (10) days after written notice has been given to the applicant and all adjoining owners and all well owners within a quarter mile of the proposed location, and after a public hearing at which all interested parties may appear and be heard, and after the Board has decided that an exception should be granted. Provided, however, that if all such owners execute a waiver in writing stating that they do not object to the

granting of such exception, the Board may thereupon proceed to decide upon the granting or refusing of such application without notice of hearing except to the applicant. The applicant may also waive notice or hearing or both.

RULE 9 – PLACE OF DRILLING WELL

After an application for a well permit has been granted, the well, if drilled, must be drilled within fifty feet of the location specified in the permit so long as that location does not violate any spacing requirements in these rules. If the well should be commenced or drilled at a different location, the drilling or operation of such well may be enjoined by the Board pursuant to Chapter 36, Texas Water Code, as amended. The District shall have the right to confirm reported distances and inspect the wells or well locations.

RULE 10 – RIGHT TO INSPECT AND TEST WELLS

Any authorized officer, employee, agent, or representative of the District shall have the right at all reasonable times to enter upon lands upon which a well or wells may be located within the boundaries of the District, to inspect such well or wells and to read, or interpret any meter, weir box or other instrument for the purpose of measuring production of water from said well or wells; and any authorized officer, employee, agent, or representative of the District shall have the right at all reasonable times to enter upon any lands upon which a well or wells may be located within the boundaries of the District for the purposes of testing the pump and the power unit of the well or wells and of making any other reasonable and necessary inspections and tests that may be required or necessary for the information or the enforcement of the Rules and regulations of the District. The operation of any well may be enjoined by the Board immediately upon the refusal to permit the gathering of information as above provided from such well.

The District shall have the right to install or to require the installation of necessary metering equipment in order to determine well production capacity and monthly production rates.

RULE 11 – OPEN WELLS TO BE CAPPED

(a) At a minimum, open or uncovered wells must be capped in accordance with the requirements of the TCEQ, the Texas Department of Licensing and Regulation's Water Well Drillers and Pump Installers Program, and the District Rules and Well Construction Standards. The owner or lessee shall keep the well permanently closed or capped with a watertight covering capable of sustaining weight of at least 400 pounds,

except when the well is in actual use. The covering for a capped well must be constructed with a watertight seal to prevent entrance of surface pollutants into the well itself, either through the well bore or well casing.

(b) Unless granted an exception by the General Manager or Board, all abandoned wells that are not capped in accordance with Rule 11(a) must be closed or capped in accordance with the requirements of the TCEQ, the Texas Department of Licensing and Regulation's Water Well Drillers and Pump Installers Program, District Rule 11, and other applicable Rules and Well Construction Standards adopted by the Board of Directors. Prior to closing or capping a well, the District Well Construction Standards require as a minimum, registration of the well with the District, a site inspection by District staff, submission to the District for review and approval a Close and Abandonment Plan by the owner or the well driller, and payment of the Well Abandonment Fee. The General Manager may require the well owner to take a water sample and have a water quality analysis conducted as part of or prior to the closing or capping operation at the well owner's expense.

(c) In accordance with 16 TAC Section 76.700, Texas Water Well Drillers Rules, within 60 days of completing the plugging of a well located within the District, the well driller shall provide the District a copy of the Plugging Report.

(d) If the owner or lessee fails or refuses to close or cap the well in compliance with this Rule and District standards within ten (10) days after being requested to do so in writing by an officer, agent, or employee of the District, then, upon Board approval, any person, firm. or corporation employed by the District may go on the land (pursuant to Texas Water Code Chapter 36.118) and close or cap the well safely and securely.

(e) Reasonable expenses incurred by the District in closing or capping a well constitute a lien on the land on which the well is located. The District shall perfect the lien by filing in the deed records of the county where the well is located an affidavit, executed by any person conversant with the facts, stating the following:

(1) The existence of the well;

(2) The legal description of the property on which the well is located;

(3) The approximate location of the well on the property;

(4) The failure or refusal of the owner or lessee, after notification, to close the well within ten (10) days after the notification;

(5) The closing of the well by the District, or by an authorized agent, representative, or employee of the District; and

(6) The expense incurred by the District in closing the well.

(f) Wells closed or capped pursuant to this section may be physically sealed and red tagged to indicate that the District has sealed the well. The District may take other action as necessary to preclude operation of the well or to identify unauthorized operation of the well.

RULE 12 – GENERAL RULES OF PROCEDURE FOR HEARING

All hearings whether conducted by the Board or before a Hearings Examiner shall be conducted in accordance with the Hearing Rules and Procedures as adopted by the Board and as they may be amended from time to time.

RULE 13 – WELL VALIDATION

In order to provide for the "grandfathering" of existing non exempt water wells, a certification of validation for a well can be issued only after the location of the well and the wellhead equipment of the well has been determined by field survey by District personnel, and/or designated agents acting for the District. A well owner or agent may apply to the District for validation. The costs to the well owner or the well owner's agent shall be set by the Board. The Board on its own initiative may cause to be issued a validation certificate for wells drilled and equipped within the District for which the landowner or his agent has not applied for a Permit or for wells not otherwise properly permitted, provided that such wells were not drilled, equipped and operated (pumped) in such a manner as to violate any other Rules and regulations of the District. To the extent available, the well owner shall provide all of the information required in Rules 6 and 5.4 and as may otherwise be requested by the District. It is the intent of the District to utilize the information collected hereunder to establish a historic use for each well validated.

RULE 14 – TRANSFER OF GROUNDWATER OUT OF THE DISTRICT

(a) Purpose. 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.

(b) Scope. A groundwater transfer permit is required for production of any water from a well within the District, all or part of which is regularly transported for use outside the District. A groundwater transfer permit shall be obtained prior to commencing construction of wells or other facilities utilized to transfer groundwater from the District. Water wells to be used for the transfer of water outside of the District shall be subject to all other requirements of the District.

(c) Exceptions. A groundwater transfer permit is not required for transfers of groundwater from the District in the following cases:

(1) Transfers of groundwater from the District that were occurring on or before March 14, 2002 to the extent the production or transportation capacity of facilities used to produce or transfer groundwater from the District are not increased over the capacity of such facilities that were existing or permitted by the District on or before March 14, 2002.

(2) Transfers of groundwater from the District which are incidental to beneficial use within the District.

(d) Application. An application for groundwater transfer permit shall be filed in the District office by the owner of the groundwater rights or owner or operator of the production facilities. The following information shall be provided:

(1) The name and mailing address of the applicant and the owner of the land on which the well is or will be located;

(2) If the applicant is other than the owner of the property, documentation establishing the applicable authority to construct and operate a well for the proposed use;

(3) A statement of the nature and purpose of the proposed use and the amount of water to be used for each purpose;

(4) A water conservation plan;

(5) A declaration that the applicant will comply with the District's management plan;

(6) The location of each well and the estimated rate at which water will be withdrawn;

(7) A water well closure plan or a declaration that the applicant will comply with well plugging guidelines and report closure to the Board.

(8) A drought contingency plan;

(9) Data showing the availability of water in the District and in the proposed receiving area during the period for which water supply is requested;

(10) Alternate sources of supply that might be utilized by the applicant, and the feasibility and the practicability of utilizing such supplies;

(11) The amount and purposes of use in the proposed receiving area for which water is intended;

(12) The projected effect of the proposed transfer on aquifer conditions, depletion, subsidence, or existing permit holders or other groundwater users within the District;

(13) The indirect costs and economic and social impacts associated with the proposed transfer of water from the District.

(14) Proposed plan of the applicant to mitigate adverse hydrogeologic, social or economic impacts of the proposed transfer of water from the District;

(15) How the proposed transfer is addressed in the approved regional water plan and certified District management plan;

(16) The names and addresses of the property owners within one-half (1/2) mile of the location of the well(s) from which water to be transported is to be produced, and the location of any wells on those properties.

(17) The time schedule for construction and/or operation of the well.

(18) Construction and operation plans for the proposed facility, including, but not limited to:

I. A technical description of the proposed well(s) and production facility, including depth of the well, the casing diameter, type and setting, the perforated interval, and the size of pump.

II. A technical description of the facilities to be used for transportation of water.

(19) If the water is to be used by someone other than the applicant, a signed contract between the applicant and the user or users.

(20) Additional information that may be required by the District.

(e) Application Processing Fee. An application processing fee, sufficient to cover all reasonable and necessary costs to the District of processing the application, will be charged. The application must be accompanied by the Fee. If the fee is determined by the General Manager or the Board to be insufficient to cover anticipated costs of processing the application, the applicant may be required to post a deposit in an amount determined by the General Manager or the Boards representative to be sufficient to cover anticipated processing cost. As costs are incurred by the District in processing the application, those costs may be reimbursed from funds deposited by the applicant. The applicant shall be provided a monthly accounting of billings against the application processing deposit. Any funds remaining on deposit after the conclusion of application processing shall be returned to the applicant. If initially deposited funds are determined by the General Manager to be insufficient to cover costs incurred by the District in processing the application, an additional deposit may be required. If the applicant fails to deposit funds as required by the District, the application may be dismissed.

(f) Notice. Within 30 days following a determination by the District that the application is complete, notice of the application shall be mailed by the applicant to all property owners within one-half mile of the property upon which the well(s) is to be located and published in a newspaper of general circulation within the District. The District will provide the notice to the applicant for mailing and publication. Notice shall include at least the following information:

(1) the name and address of the applicant;

(2) the date the application was filed;

(3) the time and place of the hearing;

(4) the location of the proposed well(s) from which water to be transported is to be produced;

(5) A description of the production facility; and

(6) A brief summary of the information in the application.

(g) Hearing. If requested by the applicant, any affected person opposed to the application having a justifiable interest, or the General Manager, a contested case public hearing shall be conducted in accordance with provisions of the Texas Administrative Procedure Act, Gov't Code- 2000.01, et seq. If not requested by any party, the public hearing on the application may be

conducted by the Board at a regular or special meeting.

(h) Permit

(1) The permit to transfer groundwater out of the District may be issued as a consolidated permit authorizing drilling, production, and transfer of water from the District. Whether issued as a consolidated permit or separately, the requirements for a permit to transfer groundwater out of the District are cumulative with all other permits or other requirements of the District.

(2) In determining whether to issue a permit to transfer groundwater out of the District, Board shall consider, in addition to all other factors applicable to issuance of a permit from the District:

I. The availability of water in the District and in the proposed receiving area during the period for which the water supply is requested;

II. The availability of feasible and practicable alternative supplies to the applicant;

III. The amount and purposes of use for which water is needed in the proposed receiving area;

IV. The projected effect of the proposed transfer on aquifer conditions, depletion, subsidence, or effects on existing permit holders or other groundwater users within the District;

V. The indirect cost and economic and social impacts associated with the proposed receiving area;

VI. The approved regional water plan and certified District management plan; and,

VII. Other facts and considerations necessary by the Board for protection of the public health and welfare and conservation and management of natural resources in the District.

(3) If it determines to issue a permit to transfer groundwater out of the District, the Board may limit the permit as warranted by consideration of those factors identified above. In addition to conditions identified by Texas Water Code – 36.1131, the permit to transfer water out of the District shall specify:

I. The amount of water that may be transferred out of the District;

II. The period for which the water may be transferred

III. Any monitoring or reporting requirements determined to be appropriate; and,

IV. Such other terms and provisions with reference to the drilling, equipping, completion, or alterations of wells or pumps that may be necessary to conserve the groundwater, prevent waste, minimize as far as practicable the drawdown of the water table or the reduction of artesian pressure, lessen interference between wells, or control and prevent subsidence.

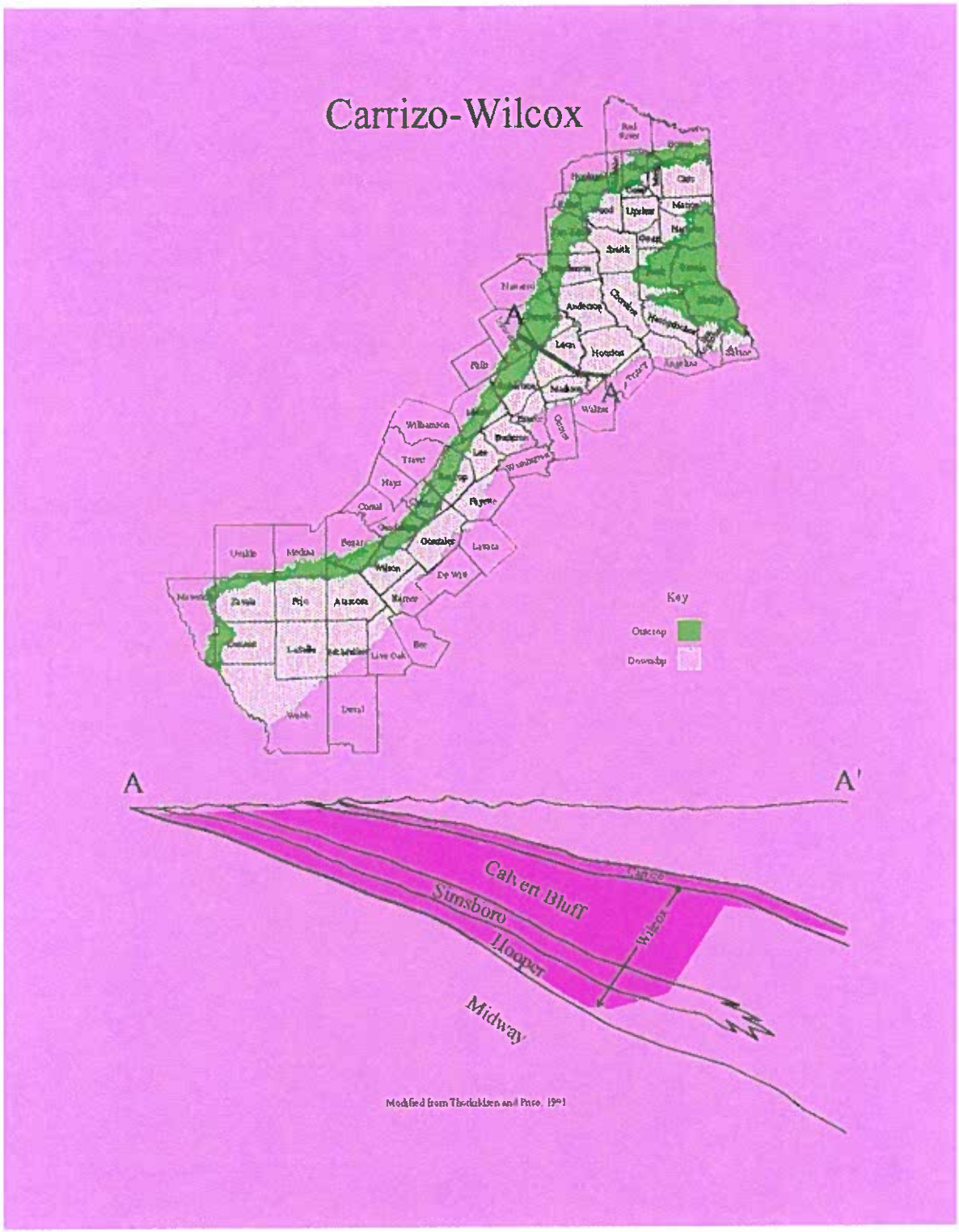
V. That it may be cancelled if the required production and transfer fees are not paid when due.

RULE 15 – ENFORCEMENT

In accordance with the Texas Water Code, 36.102, the District may enforce Chapter 36 of the Texas Water Code and its Rules by injunction, mandatory injunction or other appropriate remedy in a court of competent jurisdiction. The Board adopts civil penalties for breach of Chapter 36 of the Texas Water Code and any rule of the District. Civil penalties shall not exceed $10,000 per day per violation, and each day of a continuing violation shall constitute a separate violation of the Rules.

End of District Rules

Map 1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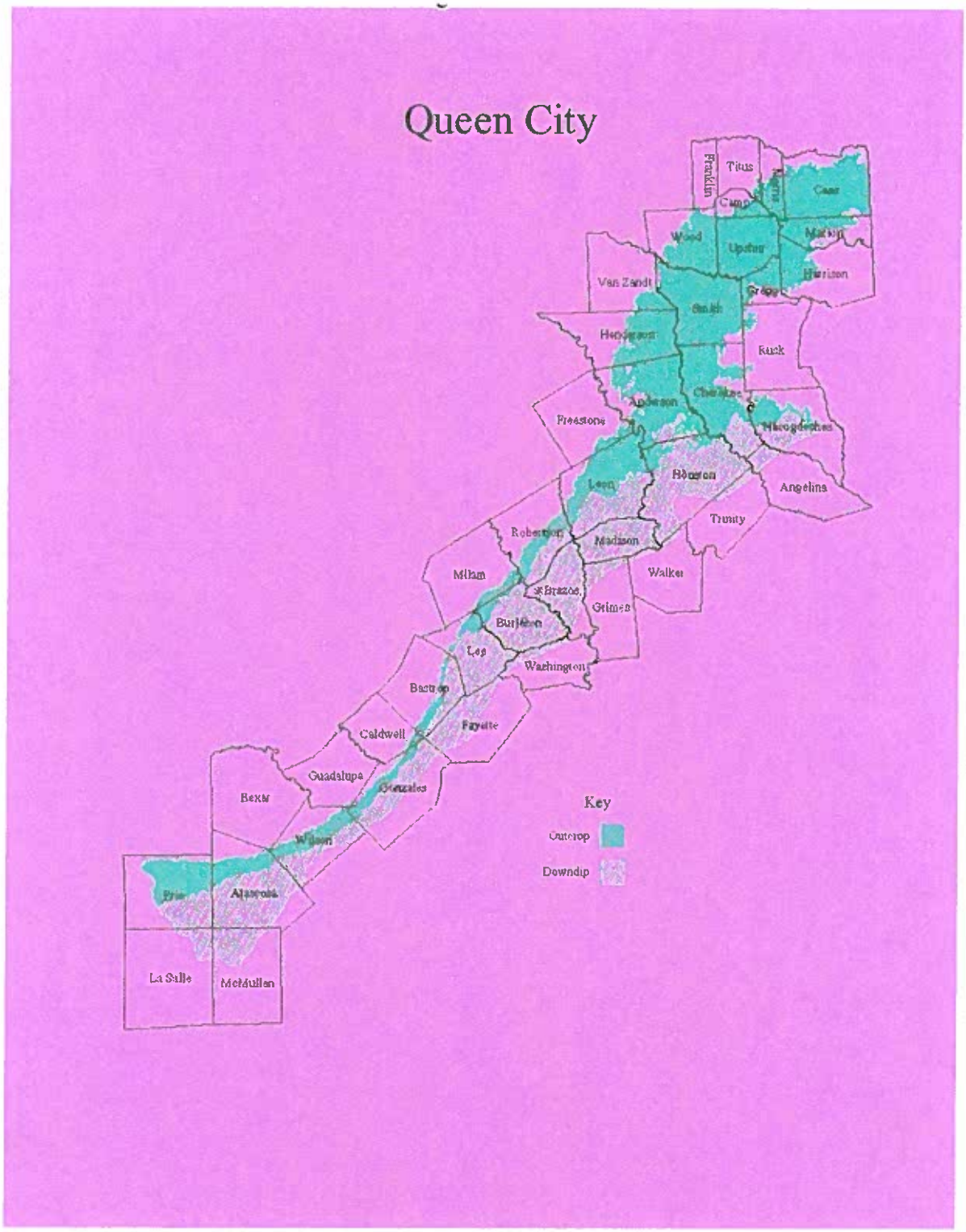
Map 2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Leon
Houston
Angelina
Trinity
Robertson
Madison
Milam
Walker
Brazos
Grimes
Burleson
Lee
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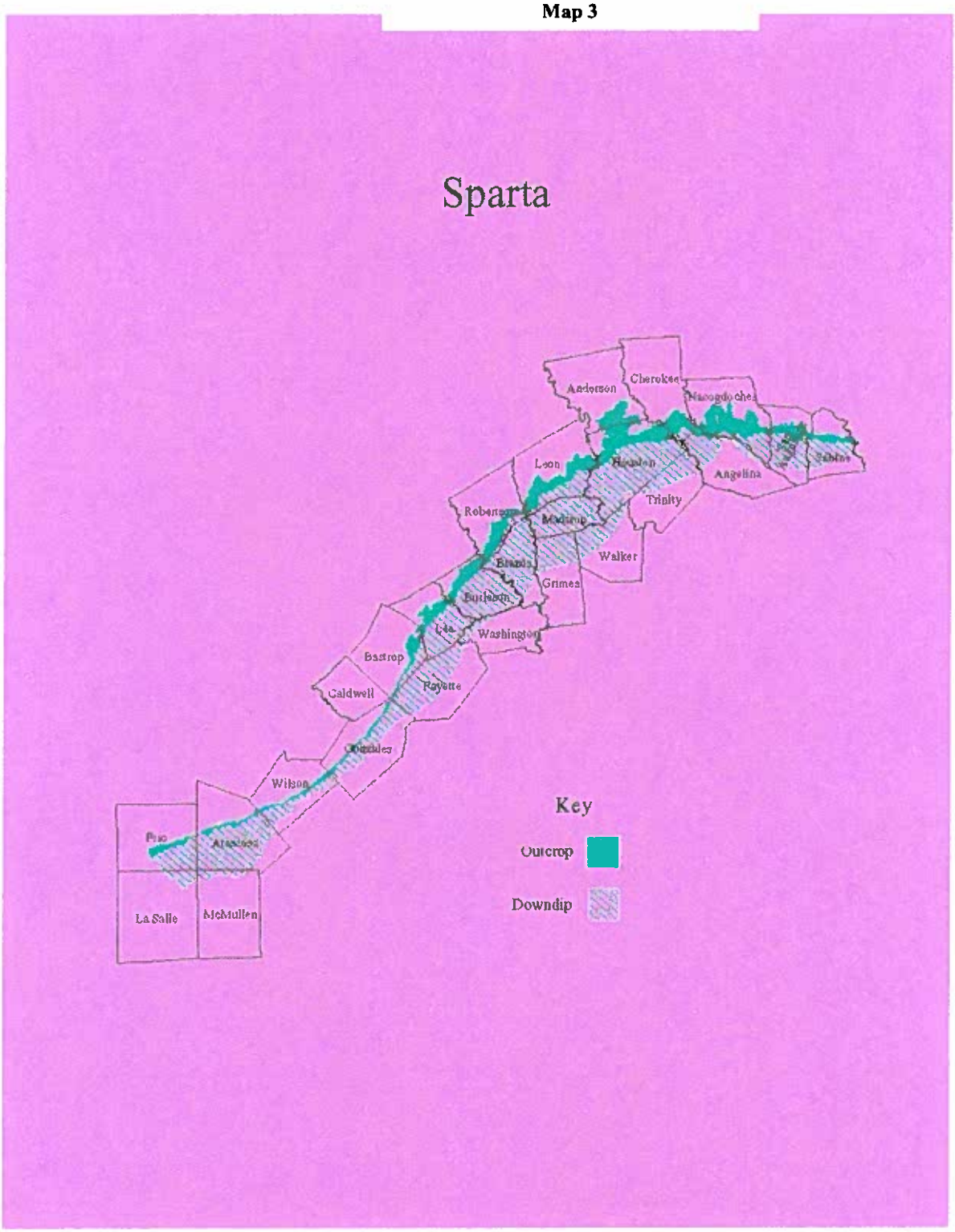
Map 3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Map 4

Explanation

County boundary

Yegua - Jackson

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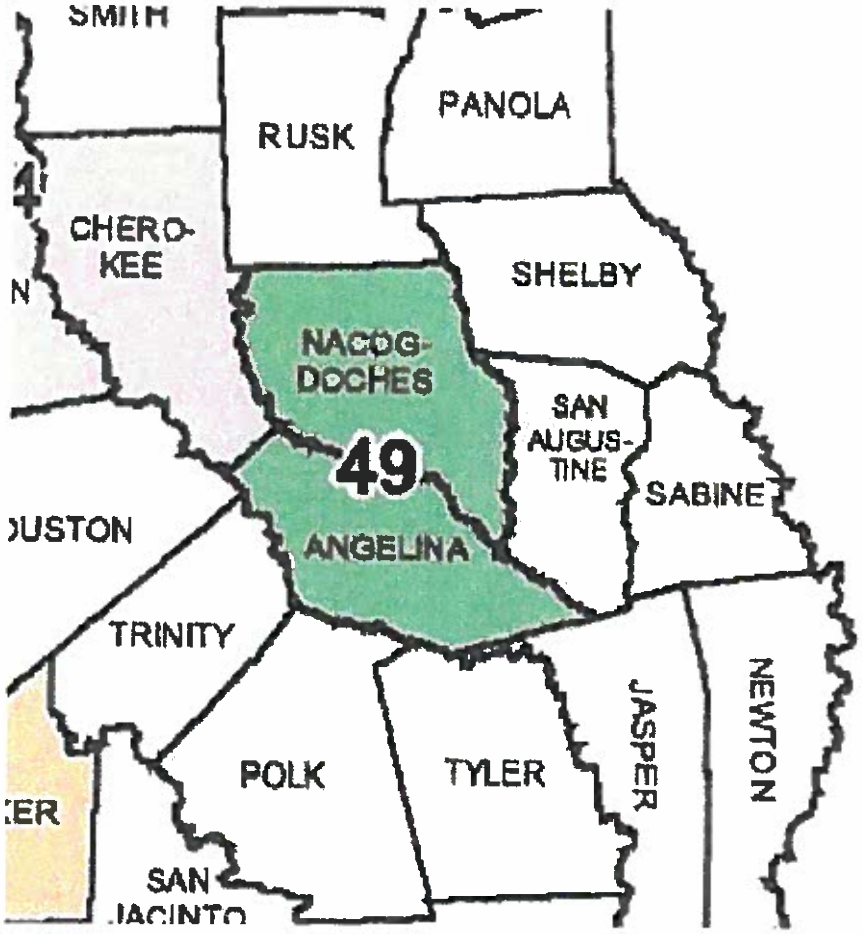
Map 5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ANGELINA
TRINITY
POLK
TYLER
JASPER
NEWTON
SAN

End

Estimated Historical Water Use And 2012 State Water Plan Datasets:

Pineywoods Groundwater Conservation District

by Stephen Allen
Texas Water Development Board
Groundwater Resources Division
Groundwater Technical Assistance Section
stephen.allen@twdb.texas.gov
(512) 463-7317
February 13, 2013

GROUNDWATER MANAGEMENT PLAN DATA:

This package of water data reports (part 1 of a 2-part package of information) is being provided to groundwater conservation districts to help them meet the requirements for approval of their five-year groundwater management plan. Each report in the package addresses a specific numbered requirement in the Texas Water Development Board's groundwater management plan checklist. The checklist can be viewed and downloaded from this web address:

http://www.twdb.texas.gov/groundwater/docs/GCD/GMPchecklist0911.pdf

The five reports included in part 1 are:

1. Estimated Historical Water Use (checklist Item 2)
   from the TWDB Historical Water Use Survey (WUS)
2. Projected Surface Water Supplies (checklist Item 6)
3. Projected Water Demands (checklist Item 7)
4. Projected Water Supply Needs (checklist Item 8)
5. Projected Water Management Strategies (checklist Item 9)
   reports 2-5 are from the 2012 State Water Plan (SWP)

Part 2 of the 2-part package is the groundwater availability model (GAM) report. The District should have received, or will receive, this report from the Groundwater Availability Modeling Section. Questions about the GAM can be directed to Dr. Shirley Wade, shirley.wade@twdb.texas.gov, (512) 936-0883.

DISCLAIMER:

The data presented in this report represents the most updated Historical Water Use and 2012 State Water Planning data available as of 2/13/2013. Although it does not happen frequently, neither of these datasets are static and are subject to change pending the availability of more accurate data (Historical Water Use data) or an amendment to the 2012 State Water Plan (2012 State Water Planning data). District personnel must review these datasets and correct any discrepancies in order to ensure approval of their groundwater management plan.

The Historical Water Use dataset can be verified at this web address:

http://www.twdb.texas.gov/waterplanning/waterusesurvey/estimates/

The 2012 State Water Planning dataset can be verified by contacting Wendy Barron (wendy.barron@twdb.texas.gov or 512-936-0886).

For additional questions regarding this data, please contact Stephen Allen (stephen.allen@twdb.texas.gov or 512-463-7317) or Rima Petrossian (rima.petrossian@twdb.texas.gov or 512-936-2420).

Estimated Historical Water Use
TWDB Historical Water Use Survey (WUS) Data

Groundwater and surface water historical use estimates are currently unavailable for calendar years 2005, 2011 and 2012. TWDB staff anticipates the calculation and posting of these estimates at a later date.

Appendix C

ANGELINA COUNTY

All values are in acre-feet/year

Year	Source	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
1974	GW	6,698	27,131	0	462	15	79	34,385
	SW	0	4,175	0	0	0	404	4,579
1980	GW	9,308	23,164	0	563	0	117	33,152
	SW	4	5,217	0	0	9	158	5,388
1984	GW	9,127	21,840	0	563	0	243	31,773
	SW	3	5,876	0	0	0	364	6,243
1985	GW	9,026	21,842	0	450	0	189	31,507
	SW	4	7,652	0	0	0	284	7,940
1986	GW	8,765	21,202	0	400	0	169	30,536
	SW	4	7,604	0	0	0	253	7,861
1987	GW	8,545	20,972	0	400	0	176	30,093
	SW	5	7,130	0	0	0	264	7,399
1988	GW	8,160	18,717	0	400	0	199	27,476
	SW	4	11,526	0	0	0	298	11,828
1989	GW	8,981	26,070	0	0	0	176	35,227
	SW	3	9,153	0	0	0	265	9,421
1990	GW	9,104	17,608	0	0	0	174	26,886
	SW	4	10,315	0	0	0	262	10,581
1991	GW	8,920	16,460	0	0	22	178	25,580
	SW	3	7,094	0	0	0	267	7,364
1992	GW	9,615	15,375	0	0	22	251	25,263
	SW	0	11,418	0	0	0	377	11,795
1993	GW	9,773	14,433	0	30	22	245	24,503
	SW	0	17,352	0	0	0	367	17,719
1994	GW	9,367	14,927	0	30	22	202	24,548
	SW	0	19,412	0	0	0	304	19,716
1995	GW	9,726	15,352	0	30	22	202	25,332
	SW	0	9,176	0	0	0	302	9,478
1996	GW	10,329	14,875	0	30	22	183	25,439
	SW	0	12,036	0	0	0	274	12,310
1997	GW	10,523	14,433	0	30	22	178	25,186

Estimated Historical Water Use
TWDB Historical Water Use Survey (WUS) Data

Groundwater and surface water historical use estimates are currently unavailable for calendar years 2005, 2011 and 2012. TWDB staff anticipates the calculation and posting of these estimates at a later date.

Year	Source	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
1997	SW	0	8,977	0	0	0	267	9,244
1998	GW	11,991	15,029	0	30	22	201	27,273
	SW	0	9,538	0	0	0	302	9,840
1999	GW	12,057	14,261	0	30	22	233	26,603
	SW	0	2,907	0	0	0	350	3,257
2000	GW	12,493	13,681	0	30	22	231	26,457
	SW	0	11,557	0	0	0	347	11,904
2001	GW	11,143	11,656	0	9	22	226	23,056
	SW	0	7,250	0	0	0	339	7,589
2002	GW	10,331	11,830	0	9	22	213	22,405
	SW	0	7,358	0	0	0	320	7,678
2003	GW	12,859	12,006	0	25	22	201	25,113
	SW	0	7,468	0	130	0	301	7,899
2004	GW	11,034	7,496	0	109	22	199	18,860
	SW	0	4,662	0	125	0	298	5,085
2006	GW	11,794	4,423	0	186	0	40	16,443
	SW	0	2,859	0	48	0	358	3,265
2007	GW	11,034	3,723	0	0	0	42	14,799
	SW	15	2,880	0	482	0	381	3,758
2008	GW	11,981	3,358	0	0	0	49	15,388
	SW	41	1,385	0	95	0	443	1,964
2009	GW	12,220	2,934	0	214	43	47	15,458
	SW	0	17	0	136	23	425	601
2010	GW	11,367	3,486	0	238	15	60	15,166
	SW	0	21	0	902	8	535	1,466

All values are in acre-feet/year

NACOGDOCHES COUNTY

Year	Source	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
1974	GW	5,050	1,779	0	0	58	637	7,524
	SW	0	49	0	21	0	1,056	1,126
1980	GW	5,440	1,182	0	0	0	789	7,411
	SW	2,510	882	0	0	200	564	4,156

Estimated Historical Water Use

TWDB Historical Water Use Survey (WUS) Data

Groundwater and surface water historical use estimates are currently unavailable for calendar years 2005, 2011 and 2012. TWDB staff anticipates the calculation and posting of these estimates at a later date.

Year	Source	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
1984	GW	6,197	589	0	19	0	695	7,500
	SW	2,826	401	0	5	12	1,042	4,286
1985	GW	6,239	503	0	39	0	507	7,288
	SW	2,668	325	0	10	12	761	3,776
1986	GW	6,726	566	0	40	0	533	7,865
	SW	2,429	330	0	11	13	800	3,583
1987	GW	6,900	541	0	40	0	511	7,992
	SW	2,908	339	0	11	14	767	4,039
1988	GW	7,444	513	0	40	0	512	8,509
	SW	3,618	386	0	10	14	768	4,796
1989	GW	7,529	558	0	138	0	534	8,759
	SW	2,776	307	0	138	12	802	4,035
1990	GW	7,026	567	0	140	0	637	8,370
	SW	3,092	403	0	140	12	956	4,603
1991	GW	6,660	683	0	140	0	637	8,120
	SW	2,556	443	0	140	220	956	4,315
1992	GW	7,150	695	0	140	0	638	8,623
	SW	2,802	467	0	140	220	957	4,586
1993	GW	7,474	874	0	980	0	656	9,984
	SW	2,446	474	0	245	220	984	4,369
1994	GW	7,083	840	0	1,117	0	712	9,752
	SW	2,558	497	0	143	220	1,068	4,486
1995	GW	7,966	723	0	1,016	0	642	10,347
	SW	2,490	372	0	254	220	962	4,298
1996	GW	6,738	637	0	1,016	0	860	9,251
	SW	2,836	492	0	254	220	1,290	5,092
1997	GW	6,664	1,110	0	1,016	0	599	9,389
	SW	1,516	115	0	254	220	899	3,004
1998	GW	6,484	742	0	1,016	0	538	8,780
	SW	3,452	204	0	254	220	807	4,937
1999	GW	6,448	915	0	1,016	0	582	8,961
	SW	149	47	0	254	220	873	1,543
2000	GW	6,209	767	0	186	0	607	7,769

Estimated Historical Water Use
TWDB Historical Water Use Survey (WUS) Data

Groundwater and surface water historical use estimates are currently unavailable for calendar years 2005, 2011 and 2012. TWDB staff anticipates the calculation and posting of these estimates at a later date.

Year	Source	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
2000	SW	4,542	1,131	0	116	220	910	6,919
2001	GW	6,197	1,700	0	419	0	583	8,899
	SW	987	176	0	257	220	875	2,515
2002	GW	5,841	1,597	0	187	0	584	8,209
	SW	1,066	166	0	114	220	876	2,442
2003	GW	5,268	2,389	0	395	0	507	8,559
	SW	1,789	247	0	148	220	761	3,165
2004	GW	5,691	2,061	0	281	0	495	8,528
	SW	1,958	213	0	123	220	743	3,257
2006	GW	6,589	2,110	0	248	0	134	9,081
	SW	4,470	311	0	152	0	1,205	6,138
2007	GW	6,323	2,028	0	143	0	112	8,606
	SW	4,569	253	0	4	0	1,007	5,833
2008	GW	6,439	140	0	145	0	119	6,843
	SW	4,475	1,996	0	193	0	1,072	7,736
2009	GW	6,099	156	0	226	352	122	6,955
	SW	4,614	1,985	0	149	169	1,099	8,016
2010	GW	6,264	186	0	141	359	268	7,218
	SW	4,214	2,285	0	163	172	2,415	9,249

Projected Surface Water Supplies
TWDB 2012 State Water Plan Data

Appendix D

ANGELINA COUNTY

All values are in acre-feet/year

RWPG	WUG	WUG Basin	Source Name	2010	2020	2030	2040	2050	2060
I	LIVESTOCK	NECHES	LIVESTOCK LOCAL SUPPLY	347	347	347	347	347	347
I	MANUFACTURING	NECHES	KURTH LAKE/RESERVOIR	0	0	0	0	0	0
I	MANUFACTURING	NECHES	STRIKER LAKE/RESERVOIR	0	0	0	0	0	0
	Sum of Projected Surface Water Supplies (acre-feet/year)			**347**	**347**	**347**	**347**	**347**	**347**

NACOGDOCHES COUNTY

All values are in acre-feet/year

RWPG	WUG	WUG Basin	Source Name	2010	2020	2030	2040	2050	2060
I	APPLEBY WSC	NECHES	NACOGDOCHES LAKE/RESERVOIR	21	122	266	428	732	1,058
I	COUNTY-OTHER	NECHES	NACOGDOCHES LAKE/RESERVOIR	0	0	0	0	0	0
I	D&M WSC	NECHES	NACOGDOCHES LAKE/RESERVOIR	344	381	413	453	470	470
I	IRRIGATION	NECHES	NECHES RIVER COMBINED RUN-OF-RIVER IRRIGATION	136	136	136	136	136	136
I	LIVESTOCK	NECHES	LIVESTOCK LOCAL SUPPLY	910	910	910	910	910	910
I	MANUFACTURING	NECHES	NACOGDOCHES LAKE/RESERVOIR	1,936	2,153	2,341	2,524	2,679	2,879
I	MINING	NECHES	OTHER LOCAL SUPPLY	220	220	220	220	220	220
I	NACOGDOCHES	NECHES	NACOGDOCHES LAKE/RESERVOIR	14,766	14,027	13,280	12,512	11,578	10,566
I	STEAM ELECTRIC POWER	NECHES	STRIKER LAKE/RESERVOIR	2,240	6,721	6,721	6,721	0	0
	Sum of Projected Surface Water Supplies (acre-feet/year)			**20,573**	**24,670**	**24,287**	**23,904**	**16,725**	**16,239**

Projected Water Demands
TWDB 2012 State Water Plan Data

Please note that the demand numbers presented here include the plumbing code savings found in the Regional and State Water Plans.

Appendix E

All values are in acre-feet/year

ANGELINA COUNTY

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
I	HUDSON	NECHES	579	732	931	1,168	1,518	1,982
I	LUFKIN	NECHES	7,546	8,444	9,446	10,565	11,951	13,599
I	ZAVALLA	NECHES	86	84	82	80	78	78
I	COUNTY-OTHER	NECHES	1,819	1,886	1,975	2,089	2,303	2,616
I	MANUFACTURING	NECHES	14,750	23,500	25,980	28,490	30,720	33,100
I	MINING	NECHES	2,018	4,017	17	17	17	17
I	CENTRAL WCID OF ANGELINA COUNTY	NECHES	676	686	702	724	778	862
I	FOUR WAY WSC	NECHES	368	501	673	886	1,192	1,597
I	HUDSON WSC	NECHES	654	768	902	1,095	1,358	1,726
I	IRRIGATION	NECHES	30	30	30	30	30	30
I	STEAM ELECTRIC POWER	NECHES	1,000	1,000	1,000	1,000	1,000	1,000
I	REDLAND WSC	NECHES	287	298	311	329	363	412
I	LIVESTOCK	NECHES	598	620	647	677	712	749
I	DIBOLL	NECHES	968	1,123	1,310	1,554	1,901	2,377
I	HUNTINGTON	NECHES	243	262	288	325	380	457
I	ANGELINA WSC	NECHES	424	440	460	487	537	609
	Sum of Projected Water Demands (acre-feet/year)		**32,046**	**44,391**	**44,754**	**49,516**	**54,838**	**61,211**

All values are in acre-feet/year

NACOGDOCHES COUNTY

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
I	CUSHING	NECHES	129	135	140	147	162	179
I	GARRISON	NECHES	149	147	144	141	139	139
I	LIVESTOCK	NECHES	1,719	1,954	2,227	2,544	2,911	3,332
I	APPLEBY WSC	NECHES	763	945	1,117	1,311	1,678	2,074
I	D&M WSC	NECHES	656	702	741	790	902	1,030
I	MELROSE WSC	NECHES	386	414	436	465	531	606
I	WODEN WSC	NECHES	290	310	328	349	399	455
I	LILLY GROVE SUD	NECHES	423	533	641	752	982	1,224
I	SWIFT WSC	NECHES	483	567	640	730	903	1,093

Projected Water Demands
TWDB 2012 State Water Plan Data

Please note that the demand numbers presented here include the plumbing code savings found in the Regional and State Water Plans.

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
I	MINING	NECHES	2,715	7,213	212	211	210	209
I	IRRIGATION	NECHES	302	302	302	302	302	302
I	MANUFACTURING	NECHES	2,288	2,553	2,786	3,016	3,214	3,468
I	STEAM ELECTRIC POWER	NECHES	4,828	6,911	8,079	9,504	11,241	13,358
I	COUNTY-OTHER	NECHES	1,120	1,199	1,265	1,350	1,541	1,758
I	NACOGDOCHES	NECHES	7,625	8,423	9,218	9,939	11,352	12,540
	Sum of Projected Water Demands (acre-feet/year)		**23,876**	**32,308**	**28,276**	**31,551**	**36,467**	**41,767**

Projected Water Supply Needs
TWDB 2012 State Water Plan Data

Negative values (in red) reflect a projected water supply need, positive values a surplus.

Appendix F

ANGELINA COUNTY

All values are in acre-feet/year

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
I	ANGELINA WSC	NECHES	250	234	214	187	137	65
I	CENTRAL WCID OF ANGELINA COUNTY	NECHES	198	188	172	150	96	12
I	COUNTY-OTHER	NECHES	153	71	-20	-135	-349	-661
I	DIBOLL	NECHES	-32	-187	-374	-618	-965	-1,441
I	FOUR WAY WSC	NECHES	1,004	871	699	486	180	-225
I	HUDSON	NECHES	229	76	-123	-360	-710	-1,174
I	HUDSON WSC	NECHES	337	223	89	-104	-367	-735
I	HUNTINGTON	NECHES	393	374	349	312	257	180
I	IRRIGATION	NECHES	8	8	8	8	8	8
I	LIVESTOCK	NECHES	62	40	13	-17	-52	-89
I	LUFKIN	NECHES	-3,244	-5,117	-6,057	-7,116	-8,416	-9,965
I	MANUFACTURING	NECHES	-3,117	-10,513	-12,983	-15,486	-17,739	-20,161
I	MINING	NECHES	-1,990	-3,989	11	11	11	11
I	REDLAND WSC	NECHES	553	542	529	511	477	428
I	STEAM ELECTRIC POWER	NECHES	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000
I	ZAVALLA	NECHES	107	109	111	113	115	115
	Sum of Projected Water Supply Needs (acre-feet/year)		**-9,383**	**-20,806**	**-20,557**	**-24,836**	**-29,598**	**-35,451**

NACOGDOCHES COUNTY

All values are in acre-feet/year

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
I	APPLEBY WSC	NECHES	109	47	47	47	47	47
I	COUNTY-OTHER	NECHES	1,361	1,282	1,216	1,131	940	723
I	CUSHING	NECHES	108	102	97	90	75	58
I	D&M WSC	NECHES	0	0	-21	-70	-182	-310
I	GARRISON	NECHES	416	418	421	424	426	426
I	IRRIGATION	NECHES	1,230	1,230	1,230	1,230	1,230	1,230
I	LILLY GROVE SUD	NECHES	338	228	120	9	-221	-463
I	LIVESTOCK	NECHES	266	31	-242	-559	-926	-1,347
I	MANUFACTURING	NECHES	0	0	0	0	0	0
I	MELROSE WSC	NECHES	441	413	391	362	296	221

Projected Water Supply Needs
TWDB 2012 State Water Plan Data

Negative values (in red) reflect a projected water supply need, positive values a surplus.

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
I	MINING	NECHES	-2,495	-6,993	8	9	10	11
I	NACOGDOCHES	NECHES	9,823	8,210	6,588	5,010	2,537	188
I	STEAM ELECTRIC POWER	NECHES	-2,588	-190	-1,358	-2,783	-11,241	-13,358
I	SWIFT WSC	NECHES	183	99	26	-64	-237	-427
I	WODEN WSC	NECHES	528	508	490	469	419	363
	Sum of Projected Water Supply Needs (acre-feet/year)		**-5,083**	**-7,183**	**-1,621**	**-3,476**	**-12,807**	**-15,905**

Projected Water Management Strategies
TWDB 2012 State Water Plan Data

Appendix G

ANGELINA COUNTY

All values are in acre-feet/year

WUG, Basin (RWPG) / Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
COUNTY-OTHER, NECHES (I)							
NEW WELLS - YEGUA JACKSON AQUIFER	YEGUA-JACKSON AQUIFER [ANGELINA]	0	0	150	150	300	300
PURCHASE WATER FROM PROVIDER (2)	CARRIZO-WILCOX AQUIFER [ANGELINA]	0	0	1,100	1,100	600	600
PURCHASE WATER FROM PROVIDER (2)	SAM RAYBURN-STEINHAGEN LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	500	500
DIBOLL, NECHES (I)							
MUNICIPAL CONSERVATION	CONSERVATION [ANGELINA]	11	20	26	34	53	72
NEW WELLS - YEGUA JACKSON AQUIFER	YEGUA-JACKSON AQUIFER [ANGELINA]	600	600	600	600	600	600
PURCHASE WATER FROM PROVIDER (2)	CARRIZO-WILCOX AQUIFER [ANGELINA]	800	800	800	800	1,600	1,600
FOUR WAY WSC, NECHES (I)							
PURCHASE WATER FROM PROVIDER (2)	SAM RAYBURN-STEINHAGEN LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	0	225
HUDSON, NECHES (I)							
PURCHASE WATER FROM PROVIDER (1)	CARRIZO-WILCOX AQUIFER [ANGELINA]	0	0	125	400	800	1,200
HUDSON WSC, NECHES (I)							
NEW WELLS - CARRIZO WILCOX AQUIFER	CARRIZO-WILCOX AQUIFER [ANGELINA]	0	0	600	600	2,000	2,000
LIVESTOCK, NECHES (I)							
EXPAND LOCAL SURFACE WATER SUPPLIES	LIVESTOCK LOCAL SUPPLY [ANGELINA]	0	0	0	90	90	90
LUFKIN, NECHES (I)							
LAKE KURTH REGIONAL SYSTEM	KURTH LAKE/RESERVOIR [RESERVOIR]	0	5,600	5,600	4,300	5,600	5,600
MUNICIPAL CONSERVATION	CONSERVATION [ANGELINA]	50	117	189	249	319	408
NEW WELLS - CARRIZO WILCOX AQUIFER	CARRIZO-WILCOX AQUIFER [ANGELINA]	2,955	2,555	2,465	2,384	2,301	2,215

Projected Water Management Strategies
TWDB 2012 State Water Plan Data

WUG, Basin (RWPG) / Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
		All values are in acre-feet/year					
NEW WELLS - CARRIZO WILCOX AQUIFER	CARRIZO-WILCOX AQUIFER [NACOGDOCHES]	750	750	750	750	750	750
PURCHASE WATER FROM PROVIDER (3)	SAM RAYBURN-STEINHAGEN LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	7,200	5,200
MANUFACTURING, NECHES (I)							
PURCHASE WATER FROM PROVIDER (2)	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	8,551	8,551	8,551	8,551	8,551
PURCHASE WATER FROM PROVIDER (2)	KURTH LAKE/RESERVOIR [RESERVOIR]	6,800	12,800	12,800	14,100	12,800	12,800
PURCHASE WATER FROM PROVIDER (2)	SAM RAYBURN-STEINHAGEN LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	4,000	6,000
MINING, NECHES (I)							
PURCHASE WATER FROM PROVIDER (2)	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	2,000	4,000	0	0	0	0
STEAM ELECTRIC POWER, NECHES (I)							
NEW WELLS - CARRIZO WILCOX AQUIFER	CARRIZO-WILCOX AQUIFER [ANGELINA]	1,000	1,000	1,000	1,000	1,000	1,000
Sum of Projected Water Management Strategies (acre-feet/year)		**14,966**	**36,793**	**34,756**	**35,108**	**49,064**	**49,711**

NACOGDOCHES COUNTY

WUG, Basin (RWPG) / Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
		All values are in acre-feet/year					
APPLEBY WSC, NECHES (I)							
LAKE NACONICHE REGIONAL WATER SUPPLY SYSTEM	LAKE NACONICHE LAKE/RESERVOIR [RESERVOIR]	0	300	300	300	300	300
MUNICIPAL CONSERVATION	CONSERVATION [NACOGDOCHES]	0	0	0	22	39	62
COUNTY-OTHER, NECHES (I)							
LAKE NACONICHE REGIONAL WATER SUPPLY SYSTEM	LAKE NACONICHE LAKE/RESERVOIR [RESERVOIR]	0	500	500	500	500	500

Projected Water Management Strategies
TWDB 2012 State Water Plan Data

All values are in acre-feet/year

WUG, Basin (RWPG) / Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
PURCHASE WATER FROM PROVIDER (1)	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	428	428	428	428	428
D&M WSC, NECHES (I)							
NEW WELLS - CARRIZO WILCOX AQUIFER	CARRIZO-WILCOX AQUIFER [NACOGDOCHES]	0	0	310	310	310	310
LILLY GROVE SUD, NECHES (I)							
LAKE NACONICHE REGIONAL WATER SUPPLY SYSTEM	LAKE NACONICHE LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	500	500
NEW WELLS - CARRIZO WILCOX AQUIFER	CARRIZO-WILCOX AQUIFER [NACOGDOCHES]	0	0	0	0	500	500
LIVESTOCK, NECHES (I)							
NEW WELLS - CARRIZO WILCOX AQUIFER	CARRIZO-WILCOX AQUIFER [NACOGDOCHES]	0	0	322	644	966	1,350
MINING, NECHES (I)							
PURCHASE WATER FROM PROVIDER (2)	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	2,500	7,000	0	0	0	0
NACOGDOCHES, NECHES (I)							
MUNICIPAL CONSERVATION	CONSERVATION [NACOGDOCHES]	0	229	425	514	654	787
NEW WELLS - CARRIZO WILCOX AQUIFER	CARRIZO-WILCOX AQUIFER [NACOGDOCHES]	2,800	2,800	2,800	2,800	2,800	2,800
PURCHASE WATER FROM PROVIDER (3)	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	8,551	8,551	8,551	8,551	8,551
PURCHASE WATER FROM PROVIDER (3)	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	5,175	5,175
STEAM ELECTRIC POWER, NECHES (I)							
PURCHASE WATER FROM PROVIDER (2)	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	5,000	5,000	5,000	13,400	13,400
PURCHASE WATER FROM PROVIDER (2)	HOUSTON COUNTY LAKE/RESERVOIR [RESERVOIR]	0	340	340	340	340	340

Projected Water Management Strategies
TWDB 2012 State Water Plan Data

WUG, Basin (RWPG) All values are in acre-feet/year

Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
SWIFT WSC, NECHES (I)							
LAKE NACONICHE REGIONAL WATER SUPPLY SYSTEM	LAKE NACONICHE LAKE/RESERVOIR [RESERVOIR]	0	0	400	400	400	400
NEW WELLS - CARRIZO WILCOX AQUIFER	CARRIZO-WILCOX AQUIFER [NACOGDOCHES]	350	350	350	350	350	350
Sum of Projected Water Management Strategies (acre-feet/year)		**5,650**	**25,498**	**19,726**	**20,159**	**35,213**	**35,753**

GAM Run 13-003: Pineywoods Groundwater Conservation District Management Plan

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(512) 463-6115
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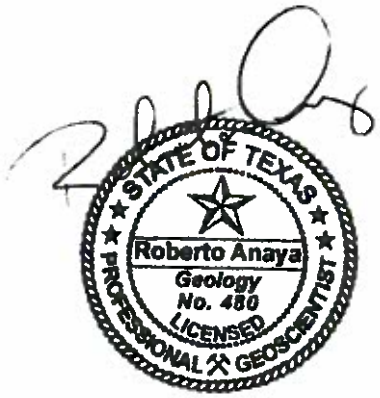

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GAM RUN 13-003: PINEYWOODS GROUNDWATER CONSERVATION DISTRICT MANAGEMENT PLAN

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Groundwater Resources Division
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July 26, 2013

EXECUTIVE SUMMARY:

Texas State Water Code, Section 36.1071, Subsection (h), states that, in developing its groundwater management plan, a groundwater conservation district shall use groundwater availability modeling information provided by the executive administrator of the Texas Water Development Board (TWDB) in conjunction with any available site-specific information provided by the district for review and comment to the executive administrator. Information derived from groundwater availability models that shall be included in the groundwater management plan includes:

- the annual amount of recharge from precipitation to the groundwater resources within the district, if any;
- for each aquifer within the district, the annual volume of water that discharges from the aquifer to springs and any surface water bodies, including lakes, streams, and rivers; and
- the annual volume of flow into and out of the district within each aquifer and between aquifers in the district.

This report (Part 2 of a two-part package of information from the TWDB to Pineywoods Groundwater Conservation District) fulfills the requirements noted above. Part 1 of the 2-part package is the Historical Water Use/State Water Plan data report. The District will receive this data report from the TWDB Groundwater Technical Assistance Section. Questions about the data report can be directed to Mr. Stephen Allen, Stephen.Allen@twdb.texas.gov, (512) 463-7317.

The groundwater management plan for the Pineywoods Groundwater Conservation District should be adopted by the district on or before November 08, 2013 and submitted to the executive administrator of the TWDB on or before December 08, 2013. The current management plan for Pineywoods Groundwater Conservation District expires on February 06, 2014. This report discusses the methods, assumptions, and results from model runs using the groundwater availability models for the northern part of the Carrizo-Wilcox, Queen City, and Sparta aquifers, the Yegua-Jackson Aquifer, and the northern part of the Gulf Coast Aquifer. Tables 1 through 5 summarize the groundwater availability model data required by the statute, and Figures 1 through 5 show the area of the model from which the values in the table was extracted. This model run replaces the results of GAM Run 08-49 (Oliver, 2008). GAM Run 13-003 meets current standards set after the release of GAM Run 08-49 (Oliver, 2008) including a refinement of using the extent of the official aquifers boundaries within the district. The water budget values listed in the two model runs may differ because of this change in methodology. If after review of the figures, Pineywoods Groundwater Conservation District determines that the district boundaries used in the assessment do not reflect current conditions, please notify the Texas Water Development Board immediately. Per statute TWDB is required to provide the districts with data from the official groundwater availability models.

METHODS:

In accordance with the provisions of the Texas State Water Code, Section 36.1071, Subsection (h), the groundwater availability models for the northern part of the Carrizo -Wilcox, Queen City, and Sparta aquifers, the Yegua-Jackson Aquifer, and the northern part of the Gulf Coast Aquifer were run for this analysis. Pineywoods Groundwater Conservation District Water groundwater budgets for the historical 1980 to 1999 model period were extracted using ZONEBUDGET Version 3.01 (Harbaugh, 2009) The average annual water budget values for recharge, surface water outflow, inflow to the district, outflow from the district, net inter-aquifer flow (upper), and net inter-aquifer flow (lower) for the portions of the aquifers located within the district are summarized in this report.

PARAMETERS AND ASSUMPTIONS:

Carrizo-Wilcox, Queen City, and Sparta Aquifers

- We used version 2.01 of the groundwater availability model for the northern part of the Carrizo-Wilcox, Queen City, and Sparta aquifers. See Fryar and others (2003) and Kelley and others (2004) for assumptions and limitations of the groundwater availability model for the northern part of the Carrizo-Wilcox, Queen City, and Sparta aquifers.
- This groundwater availability model includes eight layers which generally represent the Sparta Aquifer (Layer 1), the Weches Confining Unit (Layer 2), the Queen City Aquifer (Layer 3), the Reklaw Confining Unit (Layer 4), the Carrizo Aquifer (Layer 5), the Upper Wilcox (Layer 6), the Middle Wilcox (Layer 7), and the Lower Wilcox (Layer 8). The Carrizo and Wilcox aquifer units (Layers 5 through 8) were combined collectively to calculate water budgets for the Carrizo-Wilcox Aquifer.
- The Queen City Aquifer (Layer 3) was used to calculate water budgets for the Queen City Aquifer.
- The Sparta Aquifer (Layer 1) was used to calculate water budgets for the Sparta Aquifer.
- The model was run with MODFLOW-96 (Harbaugh and McDonald, 1996).

Yegua-Jackson Aquifer

- We used version 1.01 of the groundwater availability model for the Yegua-Jackson Aquifer. See Deeds and others (2010) for assumptions and limitations of the groundwater availability model.
- This groundwater availability model includes five layers which represent the outcrop section for the Yegua-Jackson Aquifer and younger overlying units (Layer 1), the upper portion of the Jackson Group (Layer 2), the lower portion of the Jackson Group (Layer 3), the upper portion of the Yegua Group (Layer 4), and the lower portion of the Yegua Group (Layer 5).
- An overall water budget for the District was determined for the Yegua-Jackson Aquifer (Layer 1 through Layer 5 collectively for the portions of the model that represent the Yegua Jackson Aquifer).
- The model was run with MODFLOW-2000 (Harbaugh and others, 2000).

Gulf Coast Aquifer (northern portion)

- We used version 2.01 of the groundwater availability model for the northern portion of the Gulf Coast Aquifer for this analysis. See Kasmarek and Robinson (2004) for assumptions and limitations of the model.
- The model has four layers which represent the Chicot Aquifer (Layer 1, the Evangeline Aquifer (Layer 2), the Burkeville confining unit (Layer 3), and the Jasper Aquifer and parts of the Catahoula Formation in direct hydrologic communication with the Jasper Aquifer (Layer 4).
- Water budgets for the district were determined collectively for the Gulf Coast Aquifer (Layers 1 through 4).
- The model was run with MODFLOW-96 (Harbaugh and MacDonald, 1996).
- We also used version 1.01 of the groundwater availability model for the Yegua-Jackson Aquifer, run with MODFLOW-2000 (Harbaugh and others, 2000), to investigate groundwater flows from the Catahoula Formation portion of the Gulf Coast Aquifer into underlying formations. See Deeds and others (2010) for assumptions and limitations of the groundwater availability model.

RESULTS:

A groundwater budget summarizes the amount of water entering and leaving the aquifer according to the groundwater availability model. Selected groundwater budget components listed below were extracted from the model results for the aquifers located within the district and averaged over the duration of the calibration and verification portion of the model runs in the district, as shown in Table 1.

- Precipitation recharge—The areally distributed recharge sourced from precipitation falling on the outcrop areas of the aquifers (where the aquifer is exposed at land surface) within the district.
- Surface water outflow—The total water discharging from the aquifer (outflow) to surface water features such as streams, reservoirs, and drains (springs).
- Flow into and out of district—The lateral flow within the aquifer between the district and adjacent counties.
- Flow between aquifers—The net vertical flow between aquifers or confining units. This flow is controlled by the relative water levels in each aquifer or

confining unit and aquifer properties of each aquifer or confining unit that define the amount of leakage that occurs. "Inflow" to an aquifer from an overlying or underlying aquifer will always equal the "Outflow" from the other aquifer. In some cases this flow term includes lateral flow between the official aquifer and adjacent portions of the same hydrogeologic units which are not part of the official aquifer and may contain brackish water.

The information needed for the District's management plan is summarized in Tables 1 through 5. It is important to note that sub-regional water budgets are not exact. This is due to the size of the model cells and the approach used to extract data from the model. To avoid double accounting, a model cell that straddles a political boundary, such as a district or county boundary, is assigned to one side of the boundary based on the location of the centroid of the model cell. For example, if a cell contains two counties, the cell is assigned to the county where the centroid of the cell is located (Figures 1 through 5).

TABLE 1: SUMMARIZED INFORMATION FOR THE SPARTA AQUIFER THAT IS NEEDED FOR THE PINNEYWOODS GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	*Aquifer or confining unit*	*Results*
Estimated annual amount of recharge from precipitation to the district	Sparta Aquifer	16,013
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Sparta Aquifer	7,473
Estimated annual volume of flow into the district within each aquifer in the district	Sparta Aquifer	743
Estimated annual volume of flow out of the district within each aquifer in the district	Sparta Aquifer	28
Estimated net annual volume of flow between each aquifer in the district	From overlying Cook Mountain Formation into Sparta Aquifer	1,184
	From Sparta Aquifer into underlying Weches Formation	7,170
	From Sparta Aquifer to the brackish Sparta	47

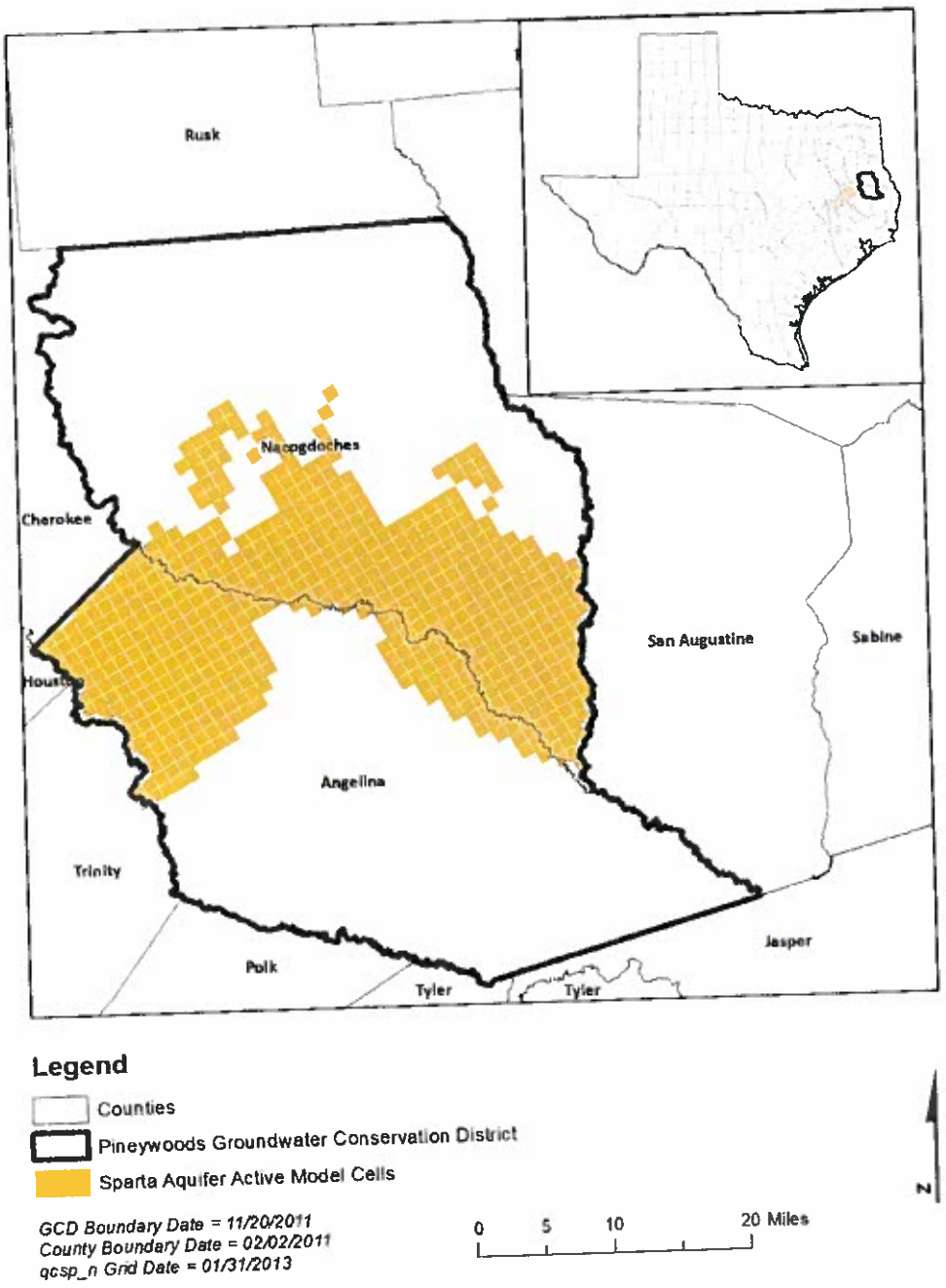

FIGURE 1: AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE CARRIZO-WILCOX, QUEEN CITY, AND SPARTA AQUIFERS FROM WHICH THE INFORMATION IN TABLE 1 WAS EXTRACTED (THE SPARTA AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).

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TABLE 2: SUMMARIZED INFORMATION FOR THE QUEEN CITY AQUIFER THAT IS NEEDED FOR THE PINNEYWOODS GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	*Aquifer or confining unit*	*Results*
Estimated annual amount of recharge from precipitation to the district	Queen City Aquifer	7,244
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Queen City Aquifer	796
Estimated annual volume of flow into the district within each aquifer in the district	Queen City Aquifer	443
Estimated annual volume of flow out of the district within each aquifer in the district	Queen City Aquifer	206
Estimated net annual volume of flow between each aquifer in the district	From overlying Weches Formation into Queen City Aquifer	4,709
	From Queen City Aquifer into underlying Reklaw Formation	6,719
	From Queen City Aquifer to the brackish Queen City	36

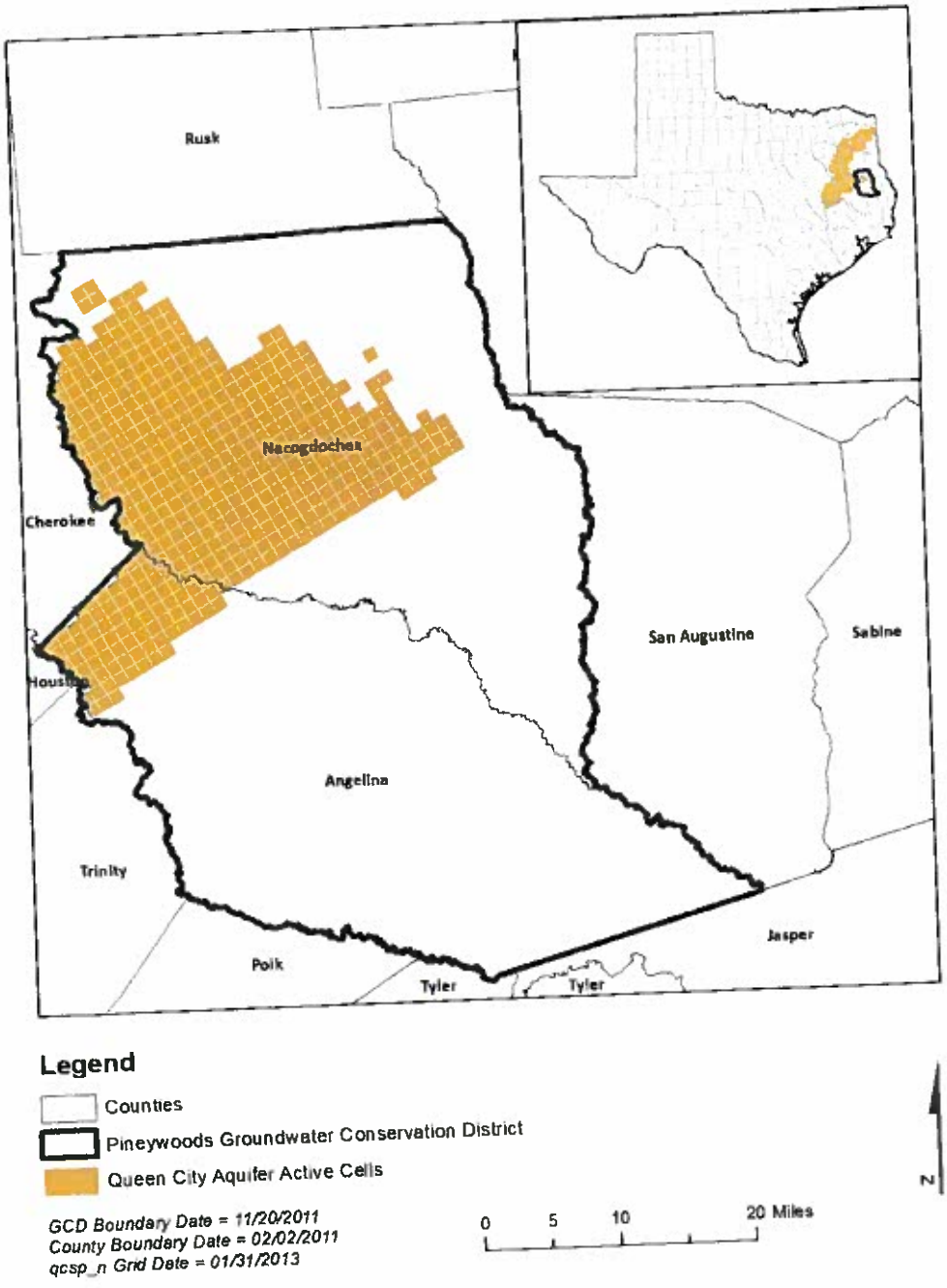

FIGURE 2: AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE CARRIZO-WILCOX, QUEEN CITY, AND SPARTA AQUIFERS FROM WHICH THE INFORMATION IN TABLE 2 WAS EXTRACTED (THE QUEEN CITY AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).

TABLE 3: SUMMARIZED INFORMATION FOR THE CARRIZO-WILCOX AQUIFER THAT IS NEEDED FOR THE PINNEYWOODS GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	*Aquifer or confining unit*	*Results*
Estimated annual amount of recharge from precipitation to the district	Carrizo-Wilcox Aquifer	21,337
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Carrizo-Wilcox Aquifer	6,799
Estimated annual volume of flow into the district within each aquifer in the district	Carrizo-Wilcox Aquifer	10,768
Estimated annual volume of flow out of the district within each aquifer in the district	Carrizo-Wilcox Aquifer	3,520
Estimated net annual volume of flow between each aquifer in the district	From overlying Reklaw Formation into Carrizo-Wilcox Aquifer	15,938
	From Carrizo-Wilcox Aquifer into underlying Midway Formation	NA
	From Carrizo-Wilcox Aquifer to the brackish Carrizo-Wilcox	19,870

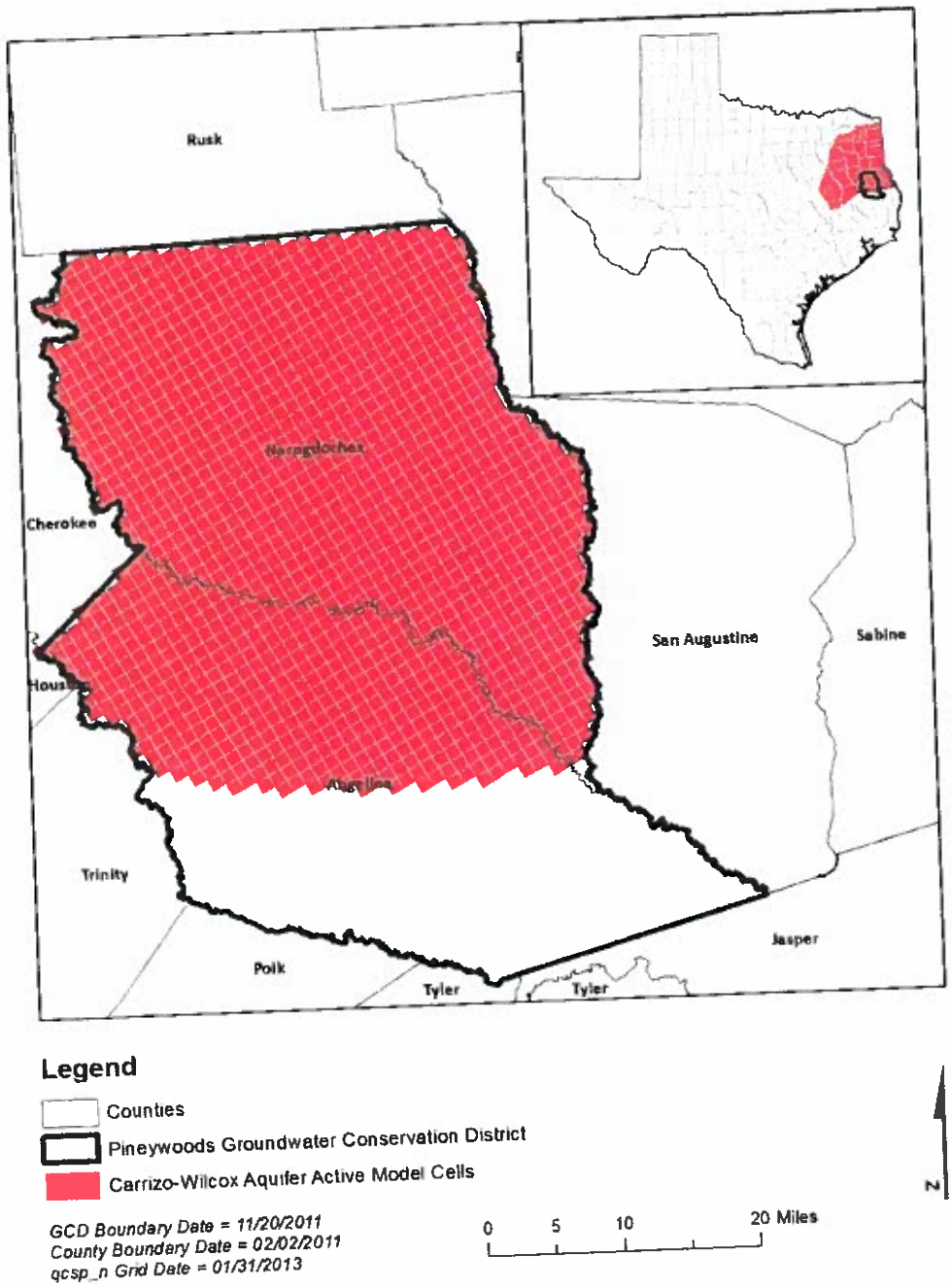

FIGURE 3: AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE CARRIZO-WILCOX, QUEEN CITY, AND SPARTA AQUIFERS FROM WHICH THE INFORMATION IN TABLE 3 WAS EXTRACTED (THE CARRIZO-WILCOX AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).

TABLE 4: SUMMARIZED INFORMATION FOR THE YEGUA-JACKSON AQUIFER THAT IS NEEDED FOR THE PINNEYWOODS GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	*Aquifer or confining unit*	*Results*
Estimated annual amount of recharge from precipitation to the district	Yegua-Jackson Aquifer	52,550
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Yegua-Jackson Aquifer	37,559
Estimated annual volume of flow into the district within each aquifer in the district	Yegua-Jackson Aquifer	2,624
Estimated annual volume of flow out of the district within each aquifer in the district	Yegua-Jackson Aquifer	921
Estimated net annual volume of flow between each aquifer in the district	From overlying Catahoula Formation into Yegua-Jackson Aquifer	65
	From Yegua-Jackson Aquifer into underlying Cook Mountain Formation	NA
	From Yegua-Jackson Aquifer to unofficial Yegua-Jackson Aquifer	15

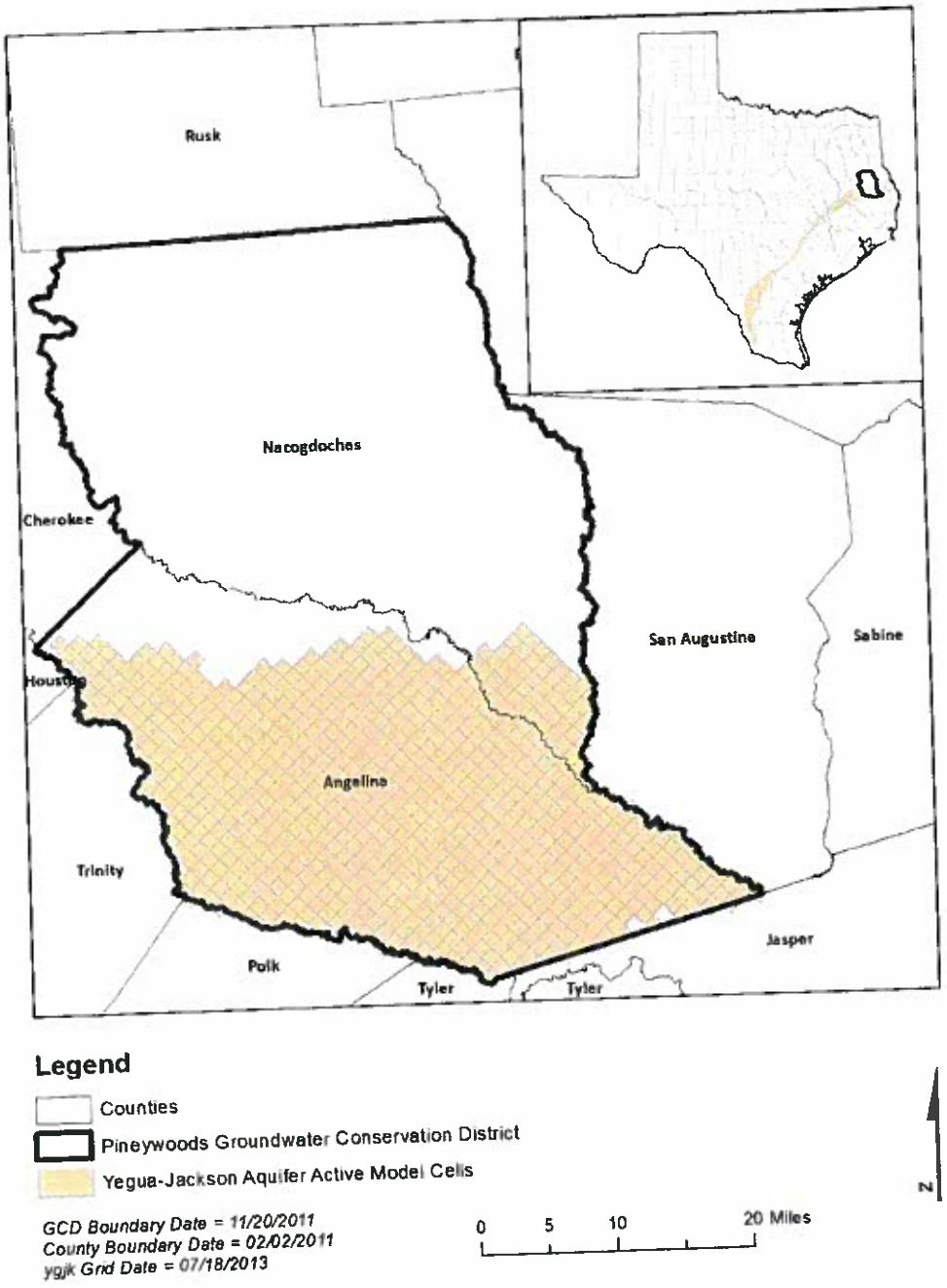

FIGURE 4: AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE YEGUA-JACKSON AQUIFER FROM WHICH THE INFORMATION IN TABLE 4 WAS EXTRACTED (THE YEGUA-JACKSON AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).

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TABLE 5: SUMMARIZED INFORMATION FOR THE GULF COAST AQUIFER THAT IS NEEDED FOR THE PINNEYWOODS GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	*Aquifer or confining unit*	*Results*
Estimated annual amount of recharge from precipitation to the district	Gulf Coast Aquifer	16
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Gulf Coast Aquifer	0
Estimated annual volume of flow into the district within each aquifer in the district	Gulf Coast Aquifer	0
Estimated annual volume of flow out of the district within each aquifer in the district	Gulf Coast Aquifer	16
Estimated net annual volume of flow between each aquifer in the district	From Catahoula Formation portion of the Gulf Coast Aquifer into Yegua-Jackson Aquifer	3[1]

[1] Calculated using the groundwater availability model for the Yegua-Jackson Aquifer.

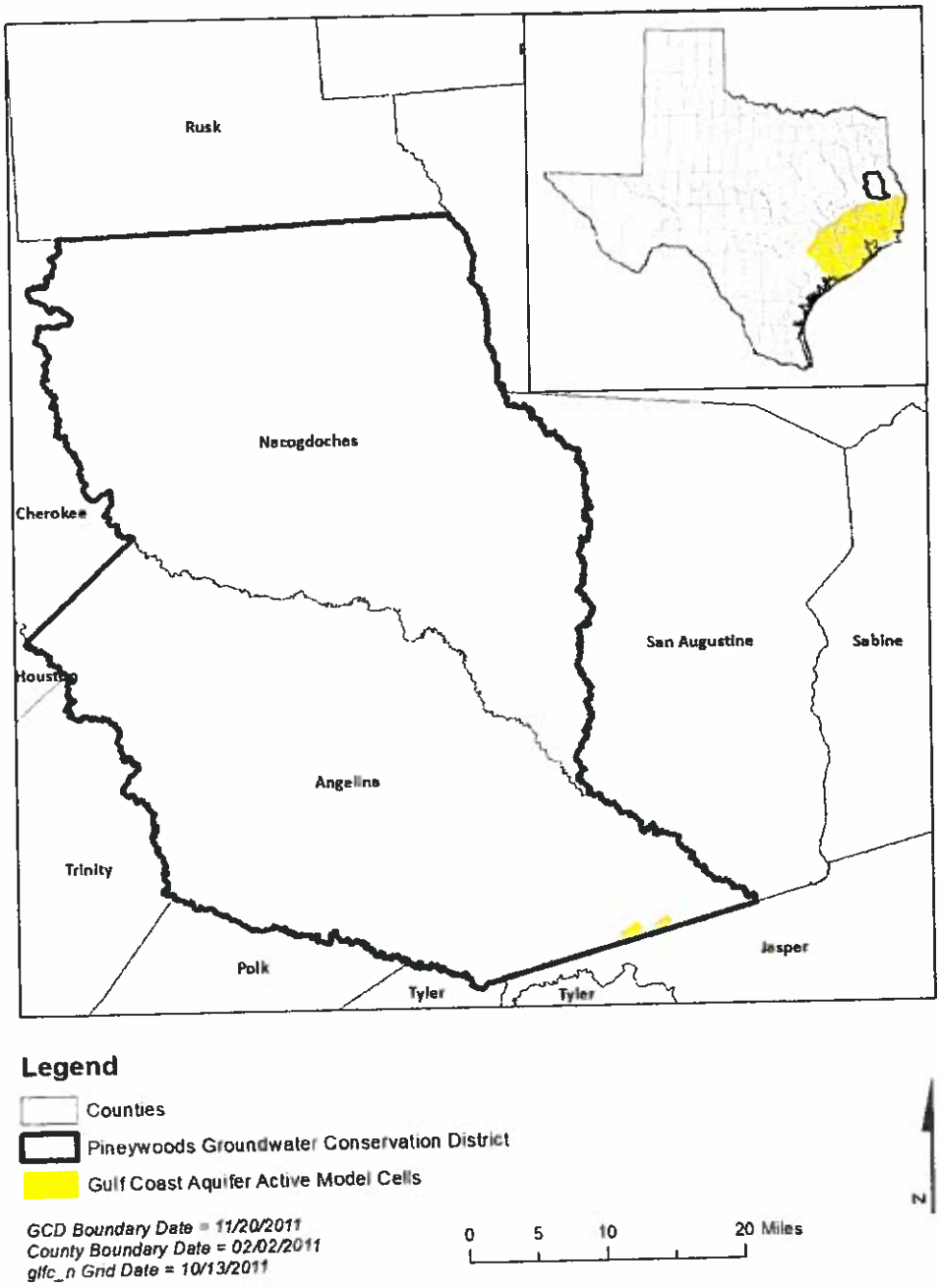

FIGURE 5: AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE GULF COAST AQUIFER FROM WHICH THE INFORMATION IN TABLE 5 WAS EXTRACTED (THE GULF COAST AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).

LIMITATIONS

The groundwater model(s) used in completing this analysis is the best available scientific tool that can be used to meet the stated objective(s). To the extent that this analysis will be used for planning purposes and/or regulatory purposes related to pumping in the past and into the future, it is important to recognize the assumptions and limitations associated with the use of the results. In reviewing the use of models in environmental regulatory decision making, the National Research Council (2007) noted:

> *"Models will always be constrained by computational limitations, assumptions, and knowledge gaps. They can best be viewed as tools to help inform decisions rather than as machines to generate truth or make decisions. Scientific advances will never make it possible to build a perfect model that accounts for every aspect of reality or to prove that a given model is correct in all respects for a particular regulatory application. These characteristics make evaluation of a regulatory model more complex than solely a comparison of measurement data with model results."*

A key aspect of using the groundwater model to evaluate historic groundwater flow conditions includes the assumptions about the location in the aquifer where historic pumping was placed. Understanding the amount and location of historic pumping is as important as evaluating the volume of groundwater flow into and out of the district, between aquifers within the district (as applicable), interactions with surface water (as applicable), recharge to the aquifer system (as applicable), and other metrics that describe the impacts of that pumping. In addition, assumptions regarding precipitation, recharge, and interaction with streams are specific to particular historic time periods.

Because the application of the groundwater models was designed to address regional scale questions, the results are most effective on a regional scale. The TWDB makes no warranties or representations related to the actual conditions of any aquifer at a particular location or at a particular time.

It is important for groundwater conservation districts to monitor groundwater pumping and overall conditions of the aquifer. Because of the limitations of the groundwater model and the assumptions in this analysis, it is important that the groundwater conservation districts work with the TWDB to refine this analysis in the future given the reality of how the aquifer responds to the actual amount and location of pumping now and in the future. Historic precipitation patterns also need to be placed in context as future climatic conditions, such as dry and wet year precipitation patterns, may differ and affect groundwater flow conditions.

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