PLUM CREEK CONSERVATION DISTRICT

Groundwater Management Plan

Adopted as amended, 2007

PLUM CREEK CONSERVATION DISTRICT

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GROUNDWATER MANAGEMENT PLAN

1. DISTRICT MISSION

The Plum Creek Conservation District (PCCD) mission is to conserve and preserve groundwater availability and protect permitted and exempt groundwater users, by gathering information about groundwater conditions and uses within the District; obtaining information from surrounding Groundwater Districts to assist in understanding groundwater availability within Plum Creek's area; by using that information to adopt Rules consistent with state law in order to maximize the beneficial development and use of the groundwater resources on a sustainable basis in keeping with the desired future conditions of aquifers within Plum Creek Conservation District's jurisdictional area after those conditions are determined and established; and by then enforcing these adopted Rules. The District will accomplish this mission by identifying aquifers within the District; and then by (1) determining zones of the various aquifers within the District, (2) imposing spacing requirements, (3) limiting production, (4) requiring permits for non-exempt wells and groundwater production, (5) noting information on exempt wells, (6) establishing water drawdown levels, (7) monitoring aquifer levels and production, (8) making appropriate adjustments to allowable and permitted production as more data become available, and (9) encouraging conservation to limit pumping. These actions are designed to extend the quantity and preserve the quality of the water available in the aquifers in Caldwell and Hays counties regulated by the District. PCCD is committed to protecting, conserving, and preventing waste of the groundwater resources in its District for the benefit of the citizens, economy and environment.

2. TIME PERIOD OF THIS PLAN

This plan will become effective upon adoption by the PCCD Board of Directors and approval as administratively complete by the Texas Water Development Board. The plan will remain in effect for five (5) years after the date of approval or until a revised plan is adopted and approved, or as otherwise directed by the Texas Legislature.

3. BACKGROUND

The PCCD is situated in parts of Caldwell and Hays Counties. The District was created by the Legislature with the enactment in 1957 of the District's enabling legislation, Tex. Rev. Cit. Stat. Ann. Art. 82-80-194, as amended (the "Act") under the provisions of Section 59, Article XVI of the Texas Constitution. The enabling statute provided the District with the power to control, conserve, protect, distribute and utilize the storm and floodwaters and unappropriated flow of Plum Creek and its tributaries as a Water Control and Improvement District. In 1989 the Act was amended to authorize the District, upon approval of the qualified voters of the District, to exercise the powers and duties imposed under what is now Chapter 36 of the Texas Water Code, for the preservation, conservation, protection, recharge, and prevention of waste and pollution of the underground water of the District except in those areas of the District that were part of the Barton Springs-Edwards Aquifer Conservation District or the Edwards Underground Water District on January 1, 1989. The voters in the District approved the implementation of the powers granted by the Legislature after the 1989 amendment was passed in the Legislature.

1. Introduction: The District recognizes that the groundwater resources of the region are of vital importance not only within the District but to areas outside the District. The District was created, in part, to conserve, preserve, protect, and prevent waste of all of the water resources within its jurisdiction. The District believes that the groundwater resources in the District can be managed in a prudent and cost effective manner through education and conservation, coupled with reasonable regulation, including permitting and registration of new and existing non-exempt wells. The greatest threats to prevent the District from achieving the stated mission are inadequate information about groundwater occurrence, groundwater production volumes, groundwater production rates, groundwater movement and groundwater uses within and from aquifers regulated by the District and inappropriate groundwater resource management, based in part on the lack of understanding of local conditions and a lack of knowledge about groundwater production from exempt wells both within the District and in areas without groundwater districts adjacent to or in close proximity with the area of Plum Creek Conservation District. Additionally, the District has concerns about the potential for groundwater quality degradation in some

areas of the District related to existing groundwater pumping and to old oil and gas activities. The District needs to determine how groundwater production, recharge, and flow into and out of the District are interrelated with production, recharge and flow in areas surrounding the District. A basic understanding of the aquifers and their hydrogeologic properties, a quantification of resources, and development of data on groundwater quality are the foundation from which to build prudent planning measures. This Management Plan is intended as a tool to focus the thoughts and actions of those given the responsibility for the execution of the District activities in developing information and in driving activities implementing the District's goals.

2. Policy: It shall be the policy of the Board of Directors that the most beneficial use of groundwater in the District is to maintain present non-wasteful groundwater uses of those in the District and then to provide for future groundwater needs of citizens. Groundwater shall be beneficially used, conserved, preserved, protected, and waste prevented within the District to maintain the viability of those resources for current users and for users in the future who are in the District's area, followed at least a temporary basis by other potential users in areas outside the District. The Board of Directors, with the cooperation of the citizens of the District and of surrounding political subdivisions, shall implement this management plan and any necessary modifications thereof to achieve this goal.

3. Governing Board: The District is governed by an appointed six member Board of Directors.

4. Daily Operations: The day-to-day management of District activities is carried out currently by a three member staff led by Johnie Halliburton, Executive Manager and Josh Grimes, Assistant Executive Manager and Groundwater Manager.

5. Topography: The land surface of Caldwell County ranges from nearly flat to hilly. The minimum elevation, about 295 feet, is at the southern tip of the County where Plum Creek joins the San Marcos River. The maximum elevation in Caldwell County, about 725 feet, is in the area of the so-called

"Iron Mountains" peaks southeast and south of McMahan, a small community southeast of Lockhart. Regionally, the surface rises from southeast to northwest.

The portion of District located in Hays County generally exhibits the same type of terrain, although the elevation differences are more pronounced. Some of the surface of the District's area extends into Hays County, which overlies the Balcones Escarpment, and provides drainage to a portion of Plum Creek.

Plum Creek drains about 310 square miles, or about 60% of Caldwell County. In addition, a portion of Hays County that is drained by Plum Creek is also in the boundaries of the District. There is a small area of Travis County that drains into Plum Creek but that area is not within the District's boundaries.

6. Location and Extent: The District is situated within parts of Caldwell and Hays Counties, but the District's boundaries are not conterminous with those of either Caldwell or Hays Counties. The specific boundaries of the District are more fully described in Section 3 of the enabling statute that first created the District. The most downstream point of the boundaries of the District is in the most southerly southeast corner of Caldwell County near the confluence of Plum Creek and the San Marcos River. The calls in the description of the boundaries of Plum Creek are, generally, along tract or survey lines. In 1999 after the 1989 expansion of Plum Creek Conservation District's authority to include groundwater regulation of some aquifers within its area that were not otherwise regulated, the Legislature enacted S.B. 1911 which created, inter alia, the "Hays Trinity Groundwater Conservation District" (Acts 1999, 76th Tex. Leg. Ch. 1331, 1999 Tex. Gen. Laws 4536). As originally created, the "Hays Trinity Groundwater Conservation District" overlapped a portion of the Plum Creek Conservation District. Additionally, as noted in the 1989 amendment to Plum Creek Conservation District's enabling statute, although the surface of the District extends over the Edwards Aquifer, the District exercises no regulatory powers over

groundwater "... in those areas of the District that were part of the Barton Springs-Edwards Aquifer Conservation District or the Edwards Underground Water District on January 1, 1989."

7. Water Resources: The District does not hold, own or otherwise control any groundwater or surface water rights. The District is located within the territory of the Guadalupe-Blanco River Authority ("GBRA"), which controls substantial surface water rights associated with GBRA owned or operated facilities and reservoirs, including Canyon Lake. Some water supply corporations providing retail water service within the District have access to surface water supplies either through direct ownership, through lease, or through long term supply contracts. For example, in 1998, GBRA entered into an agreement for construction of a regional water treatment plant capable of providing wholesale water to public drinking water suppliers in areas within the District from primarily surface sources of supply. No estimate of projected surface water supply available within Plum Creek Conservation District's area is currently available. There are few surface water rights permits for diversions from Plum Creek and none known for diversion from Plum Creek for any purpose other than agricultural use.

As a part of this Plan, each year the District will confer at least once with GBRA on cooperative opportunities for conjunctive resource management between ground and surface water suppliers to retail providers and other users.

4. GROUNDWATER RESOURCES

The PCCD has within its surface area boundaries the Quaternary Alluvium, Leona Gravel, Austin-Pecan Gap, Navarro, Midway, Wilcox Group and the Carrizo Sands. A geologic map of the area of the District is appended as Attachment A. The Texas Water Development Board recently ran a groundwater availability model for the Southern part of the Queen City, Sparta, and Carrizo-Wilcox aquifers within the District after receiving a request for the modeling from Josh Grimes of PCCD. The full modeling report is appended to this Plan as Attachment B. Following is a reproduction of Table 1 of that GAM run:

Table 1: Groundwater flow budget for each aquifer layer, into and out of the Plum Creek Conservation District, averaged for the years 1980 to1999 from the GAM of the southern part of the Queen City and Sparta aquifers. Flows are in acre-feet per year. Note: a negative sign refers to flow out of the aquifer in the district. A positive sign refers to flow into the aquifer in the district. All numbers are rounded to the nearest 1 acre-foot and are probably only accurate to two significant figures.

Aquifer / layer	Precipitation recharge	Average. surface water inflow	Average. surface water outflow	Average. inflow into district	Average. outflow from district	Average. net inter-aquifer flow (upper)	Average. net inter-aquifer flow (lower)
Sparta aquifer / layer 1	0	0	0	0	0	0	0
Weches confining unit / layer 2	0	0	0	0	0	0	0
Queen City aquifer / layer 3	0	0	0	0	0	0	0
Reklaw confining unit / layer 4	0	0	0	0	0	0	0
Carrizo aquifer / layer 5	121	0	0	0	-128	0	-5
Wilcox(upper) / layer 6 (Calvert Bluff Formation)	0	0	0	0	-3	5	-2
Wilcox(middle) / layer 7 (Simsboro Formation)	3,062	574	-5,743	1,398	-1,037	2	625
Wilcox(lower) / layer 8 (Hooper Formation)	2,867	634	-1,164	845	-444	-625	0

The Texas Water Development Board did not model the Edwards (Balcones Fault Zone) aquifer since that aquifer is not regulated by Plum Creek Conservation District but by either the Edwards Aquifer Authority or the Barton Springs Edwards Aquifer Conservation District. No information on discharges from, exchanges among aquifers, or flow into or out of the Wilcox Group or the Leona Gravel, or from recent alluvium deposits in the District is currently available from the Texas Water Development Board.

5. MANAGEMENT ZONES

No management zones have been determined for the aquifers within the District's jurisdiction at this time.

6. PRODUCTION AND SPACING OF WELLS

Production and spacing of all wells within the District is regulated by the District according to the Rules of the District. As noted, the Rules may be changed from time to time. The District is beginning the process of revising its Rules to take into account knowledge gained through it geologic studies than have been ongoing and to address anticipated increases in demands on the aquifers in and regulated by the District.

7. MANAGEMENT OF GROUNDWATER SUPPLIES

The District evaluates and monitors groundwater availability, and regulates production consistent with the District Rules and the available supply of groundwater. In consideration of the importance of

groundwater availability to the economy and welfare of those in the District, the District anticipates that in the future, groundwater production will be regulated as needed to conserve groundwater, preserve groundwater availability, and protect permitted and exempt groundwater users, in a manner not to unnecessarily and adversely limit production or impact the economic viability of public and private groundwater users. The District will identify and engage in such activities and practices that will permit groundwater production and, as appropriate, will protect the aquifer and groundwater availability by restricting future requested pumping quantities, if necessary, according to the best information then available to the District.

A "well observation network" has been established in order to monitor aquifer conditions within the District. PCCD intends to modify that network in accord with advice from its technical consultant. The District will make a regular assessment of water supply and groundwater storage conditions as observed in data from its network and will report those conditions to the Board and to the public. The District will undertake investigations, and co-operate with third-party investigations including neighboring districts, of the groundwater resources within the District, and the results of the investigations will be made available to the public upon being presented at a meeting of the Board. The District will manage the available groundwater based on the *"Desired Future Conditions"* of the aquifers as those conditions become established.

The District has adopted Rules to regulate groundwater withdrawals by means of well spacing and production limits or, alternatively, in accord with a study of the effects of the proposed well on the targeted aquifer. The District may deny a well construction permit or limit groundwater withdrawals in accordance with the Rules of the District. In making a determination to deny a permit or limit groundwater withdrawals, the District will consider the available data and evidence and then weigh the public benefit against the individual needs and hardship in accord with State law.

The relevant factors to be considered in a determination to grant or deny a well or a production permit or

limit groundwater withdrawals include:

1. Whether the application contains all the information required to be submitted to the District pursuant to these Rules;
2. Whether the application is in conformance with any applicable spacing requirements established by the District;
3. Whether the proposed use of groundwater unreasonably affects existing groundwater or surface water resources;
4. Whether the proposed use of groundwater is a beneficial use consistent with District's Certified Groundwater Management Plan;
5. Whether the applicant has agreed to avoid waste and achieve water conservation;
6. Whether the proposed use of the groundwater will result in subsidence;
7. Whether the applicant has agreed that reasonable diligence will be used to protect groundwater quality, and that the applicant will follow well plugging guidelines at the time of well closure;
8. The equitable distribution of the resource; and
9. The potential effect the permit may have on the aquifer, sustainability of the recharge on the aquifer as a whole, and potential impacts to prior existing permitted groundwater users and exempt groundwater users.

The transport of groundwater out of the District is regulated by the District according to the Rules of the District.

In pursuit of the District's mission of protecting the resource to facilitate its maximum beneficial use, the District may require reduction of permitted groundwater withdrawals to amounts that, based on then available current information, will not knowingly cause permanent harm to an aquifer. To achieve this

purpose, the District may, at the Board's discretion and after notice and hearing, amend or revoke any permit for non-compliance, or reduce the production authorized by permit based upon reliable scientific data for the purpose of protecting the aquifer and groundwater availability. The determination to seek the amendment of a permit will be based on aquifer conditions observed by the District confirmed by reliable scientific analysis. The determination to seek revocation of a permit will be based on compliance and non-compliance with the District's Rules and regulations, and reliable scientific evidence. The District will enforce the terms and conditions of permits and the Rules of the District, as necessary, by fine and/or enjoining the permit holder, or non-permit holder, in a court of competent jurisdiction as provided for in Chapter 36, Texas Water Code.

A contingency plan to cope with the effects of water supply deficits due to climatic or other conditions will be developed by the District and will be adopted by the Board after notice and hearing. In developing the contingency plan, the District will consider the economic effect of conservation measures upon all water resource user groups, the local implications of the degree and effect of changes in water storage conditions, the unique hydrogeologic conditions of the aquifers within the District and the appropriate conditions under which to implement the contingency plan.

The District will employ reasonable and necessary technical resources at its disposal to evaluate the groundwater resources available within the District and to determine the effectiveness of regulatory or conservation measures. The District anticipates that its contingency plan will provide that a public or private user may appeal to the Board for discretion in enforcement of the provisions of the water supply deficit contingency plan on grounds of adverse economic hardship or unique local conditions. The exercise of discretion by the Board, shall not be construed as limiting the power of the Board.

8. ACTIONS, PROCEDURES, PERFORMANCE AND PLAN IMPLEMENTATION

The District will implement the provisions of this Plan and will utilize the provisions of this Plan as a guidepost for on-going evaluation determining the direction or priority for all District activities. All

operations of the District, all agreements entered into by the District and any additional planning efforts in which the District may participate will be consistent with the provisions of this Plan.

The District has adopted Rules relating to the permitting of wells, production and transport of groundwater. The Rules adopted by the District will be modified to take into account this Plan once it has been approved and shall be amended as necessary, pursuant to Chapter 36 of the TEXAS WATER CODE consistent with the provisions of this Plan based upon reliable scientific evidence. All Rules will be enforced. The promulgation and enforcement of the Rules will be based on the best technical data reasonably available.

The District shall treat all citizens equally. Citizens may apply to the District for a variance in enforcement of the Rules on grounds of adverse economic effect or unique local conditions. In granting a variance to any rule, the Board shall consider the potential for adverse effect on adjacent landowners and the rights of other groundwater owners and users within the District. The exercise of said discretion by the Board, shall not be construed as limiting the power of the Board.

The District will seek cooperation with other agencies in the implementation of this Plan and the management of groundwater supplies within the District.

The District believes that there is a significant issue that affects groundwater within its boundaries and affects the District's ability to effectively manage the groundwater resources within the District. That issue is that there are very productive regions of aquifers that are in Caldwell County but not within Plum Creek Conservation District's regulatory authority and, in fact, are not within any existing groundwater district. Should there be large volume water production from aquifers in Caldwell County outside the boundaries of the District in areas not in the boundaries of any groundwater district there is significant potential that such production will impact water quantity and water quality of users in the District. Areas in Caldwell County that have the potential for large scale production are currently being evaluated by

several groups for feasibility for groundwater development.

In addition, the fact that Plum Creek Conservation District extends into Hays County but has no regulatory authority over the Edwards Aquifer in Hays County – although the District does have authority over any aquifers in Hays County within its boundary that are not regulated by either the Edwards Aquifer Authority or the Barton Springs-Edwards Aquifer Conservation District - indicates that Plum Creek should cooperate with and provide some assistance to the EAA and the Barton Springs-Edwards District while developing plans for understanding and use of water resources to the fast growing area along Interstate 35 between San Antonio and Austin particularly in the area that lies between Interstate 35 and SH 130 The need for such studies is becoming increasingly acute as SH 130 construction is underway and retail water suppliers are searching for additional water supplies to meet growing demand.

Finally, there are significant long-existing oil and gas operations in the southern part of the District. Should those activities continue to increase as the price for oil and gas resources stays high, there may be significant consumption of water, or other groundwater impacts such as the potential for pollution, related to such activities that is outside the scope of regulatory power of any groundwater district.

For these reasons, all activities of the District will be undertaken in co-operation and coordinated with the appropriate state, regional or local water management entities where they are present. However, simply stated, in Hays County there are many such agencies looking at management of groundwater; in Caldwell County the absence of a groundwater agency in the eastern part of the county makes management of the groundwater resources in the District more challenging.

9. Methodology for Tracking District Progress in Achieving Management Goals

The Groundwater Manager of the District will prepare and present an annual report to the Board of Directors on the performance of the District with respect to achieving its management goals and objectives. The presentation of the report will occur during the last monthly Board meeting each fiscal year, beginning after the adoption and approval of this Plan. The report will include an enumeration and

listing of activities furthering the District's management objectives during the fiscal year. Each activity will be referenced to the estimated expenditure of staff time and District resources used in accomplishment of the activity. The notations of activity frequency, staff time and resources used will be referenced to the appropriate performance standard for each management objective describing the activity, so that the effectiveness and efficiency of the District's operations may be evaluated. The Board will maintain the adopted report on file, for public inspection, at the District's offices. This methodology will apply to all management goals contained within this plan.

10. MANAGEMENT GOALS, OBJECTIVES, & PERFORMANCE STANDARDS

10.1 Efficient Use of Groundwater

Management Objectives:

1. The District will establish the PCCD Aquifer Water Level Observation Well Program with at least 6 observation wells located according to management zones within the District, and measure those wells at least once quarterly.

2. The District will provide educational leadership to citizens within the District concerning this subject. The activity will be accomplished annually through at least one printed publication, such as a brochure, and public speaking at service organizations and public schools as provided for in the District's Public Education Program.

3. The District will use its best efforts to obtain information on water being produced from areas in Caldwell County that are outside the boundaries of the District.

4. The District will use its best efforts to obtain information on groundwater being produced from groundwater aquifers in counties surrounding the District as well as in areas close to the District that are not in groundwater districts to develop information about impacts of such production on groundwater in the District.

Performance Standards:

1. Establish the PCCD Aquifer Water Level Observation Well Program and its criteria, and begin quarterly measurements of at least 6 of the observation wells within one year following the adoption and certification of this plan.

2. Water levels at these observation wells will be measured a minimum of once quarterly.

3. PCCD representatives will circulate at least one publication and notice speaking appearances each year.

4. PCCD representatives will attend and participate in GMA meetings appropriate to the District's regulatory authority.

5. PCCD will periodically seek information from nearby groundwater districts not in the same GMA but drawing from the same aquifers regulated by the District.

10.2 Controlling and Preventing Waste of Groundwater.

Management Objective:

The District will provide educational leadership to citizens within the District concerning this subject. The activity will be accomplished annually through at least one printed publication, such as a brochure.

Performance Standard:

1. Each calendar year Representatives of Plum Creek will prepare at least two informational articles listing current data related to groundwater production and well levels. The goal of the articles is to make those who use and depend on the groundwater aware of their use, aware of the impacts of their use, and the need to be responsible in that use.

2. At its offices Plum Creek will maintain an inventory of publications of others, such as those prepared by the Guadalupe Blanco River Authority about the necessity for conservation, and serve as a local source for distribution of those publications.

10.3 Control and Prevent Subsidence

Subsidence from production of groundwater is unlikely to occur in the Plum Creek Conservation District. The District historically has not experienced any subsidence from any cause. Accordingly, the District's Plan does not contain any "Management Objective" or related "Performance Standards" to address the issue of non-existent subsidence. Alluvium is poorly consolidated, but generally too thin to experience measurable (if any) subsidence due to groundwater withdrawals.

10.4 Conjunctive Use of Surface and Groundwater

Management Objective:

Each year the District will confer at least once with the Guadalupe-Blanco River Authority (GBRA) and other local political subdivisions and water and wastewater utilities on cooperative opportunities for conjunctive resource management.

Performance Standard:

1. Each year the District will confer with the GBRA, other political subdivisions and water and wastewater utilities providing retail water service within Plum Creek's boundaries, to gain information about conjunctive resource management.

2. The District will continue to participate in the monthly meetings of the Plum Creek Watershed Project through the time of completion of the water quality management plan being developed in that effort

10.5 Develop a Management Strategy to Address Drought Conditions

Management Objective:

The District will develop and adopt a Drought Management Strategy Plan for groundwater under the authority of the District within five years of the adoption and approval of this Groundwater Management Plan, and thereafter review the Drought Management Strategy Plan annually, and revise it if necessary based upon the availability of additional scientific data collected by or presented to the Board. The Drought Management Strategy Plan will be implemented when specified conditions require.

Performance Standards:

1. Development and adoption of a Drought Management Strategy Plan within five years of the adoption and approval of this plan.

2. Review on an annual basis all of the conditions and requirements specified in the Drought Management Strategy Plan that would trigger its implementation.

3. Use data that are becoming available from the District's weather stations monitoring rainfall and the surface elevations of its flood water retarding structures looking at the correlation between rainfall, the water elevations in the flood water structures and groundwater recharge and availability.

10.6 Address Natural Resource Issues That Impact the Use and Availability of Groundwater and Which are Impacted By the Use of Groundwater

Management Objectives:

1. Each year the District will confer at least once with a representative of the Texas Railroad Commission (RRC) on the impact of oil and gas production or waste and disposal operations associated with oil and gas production on groundwater availability and quality, as well as the impact of groundwater production on the production of oil and gas in the District.

2. Also, during each year the District will evaluate all permit applications for new production

injection or disposal wells permitted by the Railroad Commission, if any are filed, and the information submitted by the applicants on those wells prior to drilling, in order to assess the impact of these wells on the groundwater resources in the District.

Performance Standards:

1. At least one annual conference with a representative of the Texas RRC ;

2. The addition of available RRC well data to the District's database;

3. Monthly reports to the PCCD Board of Directors on the number of new groundwater well permit applications filed, and the possible impacts of those new wells on the groundwater resources in the District; and

4. Annual reports to the Board about consumption and use of groundwater for commercial purposes, including irrigation uses and enhanced oil and gas production when information is available.

10.7 Conservation of Groundwater including Recharge Enhancement, Rainwater Harvesting, Brush Control, and/or Precipitation Enhancement of Groundwater Resources in the District

Management Objectives:

1. The District will provide educational leadership and encouragement to citizens within the District on the need for water conservation and publicize the benefits of rainwater harvesting and brush control. The educational efforts and publicity will be through distribution of brochures produced either by the District or by others and made available by the District and through the presentation semi-annually of informational articles that tabulate data developed by the District on the groundwater resources being monitored. Each of the following topics will be addressed in the publications:

   A. Conservation

B. Rainwater Harvesting

C. Brush Control

2. With respect to recharge enhancement, the District will continue to develop geologic data to map and gain understanding of the relationship between recharge to and discharge from various formations to each other and to Plum Creek as it flows through the District. At this time, the relationships among the aquifers and the Creek are not well documented or understood. It is known that recharge of much of the groundwater that can be found in the District, and in areas next to the District that are not in any groundwater district, originate outside the boundaries of the District. There is some natural recharge to aquifers in the District from both streams and from areas where those aquifers are at the surface. However, the formations found in the District are not readily susceptible to recharge enhancement.

3. The District has an active brush control program for the flood water retention structures that it maintains. The District also cooperates with the US Department of Agriculture in agricultural conservation efforts and actively supports the local Soil and Water Conservation District.

4. The District has participated in the funding of a rainwater harvesting demonstration project at the Luling Foundation and will continue to monitor the results of that project and report those results in its articles.

5. The District does not believe that precipitation enhancement is appropriate and cost effective in its area. At the same time, PCCD is aware of efforts being implemented by other districts and will continue to monitor the information gathered from those and determine whether such efforts might be attempted by the District. The District will continue to assess the need and opportunity for precipitation enhancement in the District at least once every five years, with

the first study to be completed within five years of the adoption and certification of this plan.

Performance Standards:

1. Preparation and distribution of at least two publications each year containing information about conservation, rainwater harvesting and brush control efforts.

2. The District staff will continue to cooperate with the Natural Resource Conservation Service to control brush on the 28 flood water retention structures maintained by the District. In addition, the District will participate in at least one meeting each year with the local soil and water conservation district to discuss brush control efforts, and will continue to support the local soil and water conservation districts efforts through and annual financial contribution.

3. The District will obtain at least two reports in each year about the relationship between recharge of aquifers in the District and rainfall on the surface to determine whether it would be appropriate and cost effective to develop a trial plan for recharge enhancement.

4. The staff will consider recommendations from and report to the Board on any action items adopted by the Plum Creek Watershed Project relating to Brush control for both water quality and water quantity purposes upon completion of the Project.

5. At least once each year the staff will report to the Board on the results of nearby precipitation enhancement activities so the Board can consider the feasibility of participating in any efforts in the area of lands that are serving as sources of recharge for groundwater found in the District. If the Board determines that precipitation enhancement might be appropriate and cost effective, within two years the Board will develop and adopt a program allowing participation in precipitation efforts ongoing in the region.

10.8. Mitigation & Desired Future Conditions of Groundwater Resources

Once the Desired Future Conditions of Groundwater Resources in the District have been established, the staff will then assess the need and benefit of adopting a mitigation plan for the District on an annual basis, with the first study to be completed within one year of the adoption and certification of this plan. Upon determining the need for a mitigation plan, the District will prepare a draft plan, seek public comment, hold appropriate hearings and adopt a plan for mitigation within one year of the assessment that finds a need for a mitigation plan. The plan will be reviewed on an annual basis thereafter. Possible practices for mitigation within the District would include producers funding projects that are included in a natural or artificial recharge plan adopted under the following paragraph 11, establishing fees to fund infrastructure in areas of the District in which groundwater was but is no longer readily available, and producers contracting to provide water to such areas at or near their cost.

Review of groundwater resources in the District in comparison with the Desired Future Conditions of those resources once they are established and preparation of a recommendation for any mitigation actions within six (6) months following establishment of desired future conditions.

11. PROJECTED WATER DEMANDS WITHIN THE DISTRICT

Based upon the only data available from the Texas Water Development Board, the District estimates the projected water supply available for use within the District through the year 2060 as follows:

2010 – 12,500 ac-ft	2040 – 12,500 ac-ft
2020 – 12,500 ac-ft	2050 – 12,500 ac-ft
2030 – 12,500 ac-ft	2060 – 12,500 ac-ft

The projected water demands derived from the 2007 State Water Plan are listed in Tables 2 and 3.

Table 2. Projected water demands in the Plum Creek Conservation District in Caldwell County through 2060. All data are from the 2007 State Water Plan.

Water User Group	County	River Basin	2000	2010	2020	2030	2040	2050	2060
Lockhart	Caldwell	Guadalupe	1,795	2,524	3,259	3,882	4,507	5,135	5,742
Luling	Caldwell	Guadalupe	888	1,102	1,276	1,398	1,520	1,644	1,764
Niederwald	Caldwell	Guadalupe	11	26	45	64	82	100	117
County Line WSC	Caldwell	Guadalupe	114	211	324	428	533	638	740
Creedmoor-Maha WSC	Caldwell	Colorado	94	141	192	237	282	327	371
Creedmoor-Maha WSC	Caldwell	Guadalupe	68	102	139	171	204	236	268
Goforth WSC	Caldwell	Guadalupe	112	196	292	380	469	557	643
Maxwell WSC	Caldwell	Guadalupe	334	527	740	930	1,120	1,312	1,497
Polonia WSC	Caldwell	Colorado	140	214	295	367	439	511	581
Polonia WSC	Caldwell	Guadalupe	322	494	681	846	1,012	1,179	1,340
Gonzales County WSC	Caldwell	Guadalupe	46	64	82	97	113	128	143
County Other*	Caldwell	Colorado	11	11	11	11	11	11	11
County Other*	Caldwell	Guadalupe	100	104	99	89	80	71	64
Manufacturing*	Caldwell	Guadalupe	5	7	9	10	12	13	14
Mining*	Caldwell	Colorado	3	4	4	4	5	5	5
Mining*	Caldwell	Guadalupe	2	3	3	3	3	4	4
Irrigation*	Caldwell	Colorado	7	8	7	6	5	5	4
Irrigation*	Caldwell	Guadalupe	470	497	441	392	349	310	275
Livestock*	Caldwell	Colorado	75	75	75	75	75	75	75
Livestock*	Caldwell	Guadalupe	368	368	368	368	368	368	368
Total Projected Water Demands (acre-feet per year) =			4,967	6,678	8,342	9,759	11,189	12,629	14,026

* Countywide values have been proportionally adjusted based on an area percentage of 48.3 or (0.4830).

Table 3. Projected water demands in the Plum Creek Conservation District in Hays County through 2060. All data are from the 2007 State Water Plan.

Water User Group	County	River Basin	2000	2010	2020	2030	2040	2050	2060
Kyle	Hays	Guadalupe	702	2,836	4,114	4,443	4,653	5,181	5,532
Niederwald	Hays	Guadalupe	65	106	153	202	251	310	357
County Line WSC	Hays	Guadalupe	252	980	2,098	2,451	2,547	2,780	3,173
Creedmoor-Maha WSC	Hays	Guadalupe	8	10	13	16	19	23	26
Goforth WSC	Hays	Guadalupe	666	1,035	1,458	1,895	2,335	2,863	3,279
County Other*	Hays	Colorado	220	334	468	606	746	913	1,045
County-Other*	Hays	Guadalupe	116	136	158	181	204	232	254
Manufacturing*	Hays	Colorado	46	63	74	85	96	105	114
Manufacturing*	Hays	Guadalupe	14	19	23	26	29	32	35
Steam Electric Power*	Hays	Guadalupe	0	486	696	814	957	1,132	1,345
Mining*	Hays	Colorado	2	1	1	0	0	0	0
Mining*	Hays	Guadalupe	12	13	14	14	15	15	15
Irrigation*	Hays	Colorado	1	1	1	1	1	1	1
Irrigation*	Hays	Guadalupe	15	32	32	32	31	31	31
Livestock*	Hays	Colorado	20	20	20	20	20	20	20
Livestock*	Hays	Guadalupe	26	26	26	26	26	26	26
Total Projected Water Demands (acre-feet per year) =			2,164	6,098	9,347	10,812	11,930	13,665	15,253

- Countywide values have been proportionally adjusted based on an area percentage of 9.12 or (0.0912).

Water demands in the Caldwell County portion of the District include the projected demands of a number of water utilities located in the Caldwell County portion of the District that have historically relied upon the Edwards Aquifer. However, the projected water demands for these utilities were included in the District's projections because of the overlap of boundaries and the uncertainty of the available volume of Edwards Aquifer supplies in a particular year. Some of the utilities may purchase surface water from the City of San Marcos, from the Guadalupe Blanco River Authority (GBRA), Canyon Regional Water Authority (CRWA), or from other wholesale water providers. Others may choose to develop supplies from aquifers managed by the District. Also included in the District's projections is the projected demand

for the Cities of Luling and Lockhart. The Cities have converted a portion of their demand to surface water. Presently the City of Luling has contracts with GBRA for 2,800 acre-feet per year, and the City of Lockhart has surface water supply contracts for a volume of water sufficient to supply approximately 87% of current water supplies for Lockhart are from surface water sources. Neither City has abandoned its wells, but will continue to rely upon the wells for back-up supplies although they currently rely primarily on surface water. It is anticipated that there will be additional pressure placed on aquifers in Caldwell County as demand increases in connection with the construction of SH 130 and for developments for lands in the vicinity of the SH 130 improvements that are in the planning stages. The most likely source of water for increasing supplies in the short term is the Carrizo-Wilcox formation in Caldwell County both inside and outside the boundaries of the District.

12. PROJECTED SURFACE WATER SUPPLIES WITHIN THE DISTRICT

The projected surface water supplies derived from the 2007 State Water Plan are listed in Tables 4 and 5.

Table 4. Projected surface water supplies in Caldwell County through 2060. All data are from the 2007 State Water Plan.

Water User Group	River Basin	Source Name	2000	2010	2020	2030	2040	2050	2060
Luling	Guadalupe	Guadalupe River Run-of-River	99	193	193	193	193	193	193
Martindale	Guadalupe	Guadalupe River Run-of-River	198	158	158	158	158	158	158
County Line WSC	Guadalupe	Guadalupe River Run-of-River	0	8	8	8	8	8	8
County Line WSC	Guadalupe	Guadalupe River Run-of-River	0	59	59	59	59	59	59
County Line WSC	Guadalupe	Canyon Lake/Reservoir	0	328	328	328	328	328	328
Gonzales County WSC	Guadalupe	Canyon Lake/Reservoir	0	21	21	21	21	21	21
Maxwell WSC	Guadalupe	Guadalupe River Run-of-River	0	6	6	6	6	6	6
Maxwell WSC	Guadalupe	Guadalupe River Run-of-River	0	20	20	20	20	20	20
Maxwell WSC	Guadalupe	Guadalupe River Run-of-River	0	139	139	139	139	139	139

Maxwell WSC	Guadalupe	Canyon Lake/Reservoir	0	477	477	477	477	477	477
Martindale WSC	Guadalupe	Guadalupe River Run-of-River	0	140	140	140	140	140	140
Martindale WSC	Guadalupe	Canyon Lake/Reservoir	0	39	39	39	39	39	39
County Other	Guadalupe	Guadalupe River Run-of-River	0	500	500	500	500	500	500
Irrigation	Guadalupe	Guadalupe River Combined Run-of-River Irrigation	0	331	331	331	331	331	331
Livestock	Colorado	Livestock Local Supply	139	78	78	78	78	78	78
Livestock	Guadalupe	Livestock Local Supply	696	381	381	381	381	381	381
Total Projected Surface Water Supplies (acre-feet per year) =			**1,132**	**2,878**	**2,878**	**2,878**	**2,878**	**2,878**	**2,878**

Source: Volume 3, 2007 State Water Planning Database

Table 5. Projected surface water supplies in Hays County through 2060. All data are from the 2007 State Water Plan.

Water User Group	River Basin	Source Name	2000	2010	2020	2030	2040	2050	2060
Dripping Springs	Colorado	Highland Lakes System	0	560	560	560	560	0	0
Kyle	Guadalupe	Canyon Lake/Reservoir	589	589	589	589	589	589	589
San Marcos	Guadalupe	Guadalupe River Run-of-River	0	513	513	513	513	513	513
San Marcos	Guadalupe	Canyon Lake/Reservoir	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Hill Country WSC	Colorado	Highland Lakes System	0	440	702	980	1,249	1,582	1,844
Hill Country WSC	Colorado	Colorado River Run-of-River	0	0	0	0	0	0	0
County Line WSC	Guadalupe	Guadalupe River Run-of-River	0	19	19	19	19	19	19
County Line WSC	Guadalupe	Guadalupe River Run-of-River	0	129	129	129	129	129	129
County Line WSC	Guadalupe	Canyon Lake/Reservoir	0	724	724	724	724	724	724
Crystal Clear WSC	Guadalupe	Guadalupe River Run-of-River	0	20	20	20	20	20	20
Crystal Clear WSC	Guadalupe	Canyon Lake/Reservoir	0	509	509	509	509	509	509
Maxwell WSC	Guadalupe	Guadalupe River Run-of-River	0	2	2	2	2	2	2

Maxwell WSC	Guadalupe	Guadalupe River Run-of-River	0	7	7	7	7	7	7
Maxwell WSC	Guadalupe	Guadalupe River Run-of-River	0	49	49	49	49	49	49
Maxwell WSC	Guadalupe	Canyon Lake/Reservoir	0	167	167	167	167	167	167
County Other	Colorado	Highland Lakes System	0	1,915	1,915	1,915	1,915	0	0
Irrigation	Colorado	Colorado River Combined Run-of-River Irrigation	41	41	41	41	41	41	41
Irrigation	Guadalupe	Guadalupe River Combined Run-of-River Irrigation	0	344	344	344	344	344	344
Livestock	Colorado	Livestock Local Supply	0	192	192	192	192	192	192
Livestock	Guadalupe	Livestock Local Supply	271	140	140	140	140	140	140
Manufacturing	Guadalupe	Guadalupe River Combined Run-of-River Manufacturing	0	571	571	571	571	571	571
Steam Electric Power	Guadalupe	Canyon Lake/Reservoir	2,500	2,464	2,464	2,464	2,464	2,464	2,464
	Total Projected Surface Water Supplies (acre-feet per year) =		**8,401**	**14,395**	**14,657**	**14,935**	**15,204**	**13,062**	**13,324**

Source: Volume 3, 2007 State Water Planning Database

13. WATER NEEDS WITHIN THE DISTRICT

The District will participate in regional water planning, and consider the water supply needs (Tables 6 and 7) and water management strategies (Tables 6 and 7) included in the adopted State Water Plan.

Table 6. Projected water needs in Caldwell County through 2060. All data are from the 2007 State Water Plan.

Water User Group	County	River Basin	2010	2020	2030	2040	2050	2060
Lockhart	Caldwell	Guadalupe	-341	-984	-1,519	-2,070	-2,615	-3,175
Luling	Caldwell	Guadalupe	-168	-311	-400	-485	-587	-695
Martindale	Caldwell	Guadalupe	0	0	0	0	0	0
County Other	Caldwell	Colorado	0	0	0	0	0	0

County Other	Caldwell	Guadalupe	0	0	0	0	0	0
Manufacturing	Caldwell	Guadalupe	0	0	0	0	0	0
Mining	Caldwell	Colorado	0	0	0	0	0	0
Mining	Caldwell	Guadalupe	0	0	0	0	0	0
Irrigation	Caldwell	Colorado	0	0	0	0	0	0
Irrigation	Caldwell	Guadalupe	0	0	0	0	0	0
Livestock	Caldwell	Colorado	0	0	0	0	0	0
Livestock	Caldwell	Guadalupe	0	0	0	0	0	0
Mustang Ridge	Caldwell	Colorado	-17	-55	-89	-123	-157	-191
Mustang Ridge	Caldwell	Guadalupe	-2	-7	-10	-14	-18	-22
Niederwald	Caldwell	Guadalupe	-12	-29	-47	-64	-81	-97
Aqua WSC	Caldwell	Guadalupe	-49	-121	-178	-240	-300	-362
County Line WSC	Caldwell	Guadalupe	0	0	0	-92	-191	-286
Creedmoor-Maha WSC	Caldwell	Colorado	0	0	0	0	0	0
Creedmoor-Maha WSC	Caldwell	Guadalupe	0	0	0	0	0	0
Goforth WSC	Caldwell	Guadalupe	-29	-114	-187	-262	-340	-416
Gonzales County WSC	Caldwell	Guadalupe	0	-14	-29	-43	-57	-71
Maxwell	Caldwell	Guadalupe	0	0	-73	-225	-395	-560
Polonia WSC	Caldwell	Colorado	0	0	-41	-100	-157	-217
Polonia WSC	Caldwell	Guadalupe	0	0	-96	-231	-363	-502
Martindale WSC	Caldwell	Guadalupe	0	0	0	0	0	0
Total Projected Water Needs (acre-feet per year) =			**-618**	**-1,635**	**-2,669**	**-3,949**	**-5,261**	**-6,594**

Table 7. Projected water needs in Hays County through 2060. All data are from the 2007 State Water Plan.

Water User Group	County	River Basin	2010	2020	2030	2040	2050	2060
Buda	Hays	Colorado	-638	-1,514	-1,989	-2,474	-3,052	-3,526
Dripping Springs	Hays	Colorado	-520	-1,296	-1,737	-2,185	-3,300	-3,736
County Other	Hays	Colorado	-759	-2,072	-3,416	-4,784	-8,400	-9,738
Manufacturing	Hays	Colorado	0	0	-6	-126	-234	-333
Mining	Hays	Colorado	0	0	0	0	0	0
Irrigation	Hays	Colorado	0	0	0	0	0	0
Livestock	Hays	Colorado	0	0	0	0	0	0
Kyle	Hays	Guadalupe	-1,388	-2,588	-2,865	-3,025	-3,522	-3,851
San Marcos	Hays	Guadalupe	0	-2,634	-5,807	-9,260	-12,995	-15,875
Wimberley WSC	Hays	Guadalupe	-177	-400	-628	-847	-1,248	-1,479
Woodcreek	Hays	Guadalupe	-118	-187	-257	-325	-436	-506
County Other	Hays	Guadalupe	-1,033	-1,233	-1,444	-1,667	-1,978	-2,201
Manufacturing	Hays	Guadalupe	0	0	0	0	0	0
Steam Electric Power	Hays	Guadalupe	1,069	-1,231	-2,522	-4,095	-6,013	-8,351
Mining	Hays	Guadalupe	-82	-88	-92	-94	-106	-107
Irrigation	Hays	Guadalupe	0	0	0	0	0	0
Livestock	Hays	Guadalupe	-82	-82	-82	-82	-82	-82
Mountain City	Hays	Colorado	0	0	0	0	0	0
Cimarron Park Water Company	Hays	Colorado	-41	-127	-220	-314	-427	-520
Dripping Springs WSC	Hays	Colorado	-108	-261	-420	-577	-773	-926
Hill Country WSC	Hays	Colorado	0	0	0	0	0	0
Mountain City	Hays	Guadalupe	0	0	0	0	-24	-50
Niederwald	Hays	Guadalupe	-23	-66	-113	-157	-213	-257
County Line WSC	Hays	Guadalupe	-44	-1,096	-1,416	-1,490	-1,709	-2,079
Creedmoor-Maha WSC	Hays	Guadalupe	0	0	0	0	0	0
Crystal Clear WSC	Hays	Guadalupe	0	0	-160	-313	-519	-681
Goforth WSC	Hays	Guadalupe	-50	-418	-782	-1,153	-1,623	-1,992
Maxwell WSC	Hays	Guadalupe	0	0	0	-24	-84	-132

Plum Creek Water Company	Hays	Guadalupe	0	-73	-274	-479	-738	-941
Wood Utilities Inc.	Hays	Guadalupe	-475	-872	-1,292	-1,702	-2,255	-2,651
Total Projected Water Needs (acre-feet per year) =			**-4,469**	**-16,238**	**-25,522**	**-35,173**	**-49,731**	**-60,014**

14. Water Management Strategies Within the District

The District will participate in regional water planning, and consider the water supply needs (Tables 6 and 7) and water management strategies (Tables 8 and 9) included in the adopted State Water Plan.

Table 8. Projected water management strategies in Caldwell County through 2060. All data are from the 2007 State Water Plan

Water User Group	River Basin	Water Management Strategy	Source Name	2010	2020	2030	2040	2050	2060
Luling	Guadalupe	Municipal Water Conservation	Conservation	70	90	108	117	148	192
Luling	Guadalupe	Local Groundwater (Carrizo-Wilcox Aquifer) - Temporary Overdraft	Carrizo-Wilcox Aquifer	403	403	403	807	807	807
Niederwald	Guadalupe	Canyon Reservoir - Downstream Diversions	Canyon Lake/ Reservoir	12	29	0	0	0	0
Niederwald	Guadalupe	LGWSP for GBRA Needs	Guadalupe River Run-of River LGWSP	0	0	47	64	81	97
Mustang Ridge	Colorado	LGWSP for GBRA Needs	Guadalupe River Run-of River	17	55	89	123	157	191
Mustang Ridge	Colorado	Municipal Water Conservation	Conservation	10	26	48	74	98	116
Mustang Ridge	Guadalupe	LGWSP for GBRA Needs	Guadalupe River Run-of River	2	7	10	14	18	22
Lockhart	Guadalupe	Hays/Caldwell Carrizo Project - Temporary Overdraft	Carrizo-Wilcox Aquifer	0	0	0	1,000	1,500	2,000
Lockhart	Guadalupe	Municipal Water Conservation	Conservation	0	0	28	103	195	333
Lockhart	Guadalupe	Local Groundwater (Carrizo-Wilcox Aquifer) - Temporary Overdraft	Carrizo-Wilcox Aquifer	403	1,209	1,612	1,612	1,612	1,612
Aqua WSC	Guadalupe	Municipal Water Conservation	Conservation	0	0	0	0	6	19

Aqua WSC	Guadalupe	Local Groundwater (Carrizo-Wilcox Aquifer) - Temporary Overdraft	Carrizo-Wilcox Aquifer	536	536	536	536	536	536
Polonia WSC	Colorado	Local Groundwater (Carrizo-Wilcox Aquifer) - Temporary Overdraft	Carrizo-Wilcox Aquifer	0	0	72	144	216	217
Polonia WSC	Guadalupe	Local Groundwater (Carrizo-Wilcox Aquifer) - Temporary Overdraft	Carrizo-Wilcox Aquifer	0	0	168	336	504	503
Gonzales County WSC	Guadalupe	Municipal Water Conservation	Conservation	40	87	141	194	240	281
Gonzales County WSC	Guadalupe	Local Groundwater (Carrizo-Wilcox Aquifer) - Temporary Overdraft	Carrizo-Wilcox Aquifer	0	181	181	181	181	181
Creedmoor-Maha WSC	Guadalupe	Municipal Water Conservation	Conservation	0	0	0	0	0	11
Maxwell WSC	Guadalupe	Municipal Water Conservation	Conservation	0	0	0	0	11	55
Maxwell WSC	Guadalupe	LGWSP for GBRA Needs	Guadalupe River Run-of River	0	0	100	300	400	568
Goforth WSC	Guadalupe	Canyon Reservoir - Downstream Diversions	Canyon Lake/ Reservoir	500	500	0	0	0	0
Goforth WSC	Guadalupe	LGWSP for GBRA Needs	Guadalupe River Run-of River LGWSP	0	0	500	500	500	500
County Line WSC	Guadalupe	Municipal Water Conservation	Conservation	43	110	176	227	344	473
County Other	Guadalupe	Municipal Water Conservation	Conservation	21	37	36	31	28	29
			Total Projected Water Management Strategies (acre-feet per year) =	**2,057**	**3,270**	**4,255**	**6,363**	**7,582**	**8,743**

Table 9. Projected water management strategies in Hays County through 2060. All data are from the 2007 State Water Plan

Water User Group	River Basin	Water Management Strategy	Source Name	2010	2020	2030	2040	2050	2060
Mountain City	Guadalupe	Municipal Water Conservation	Conservation	1	3	6	10	16	22
Mountain City	Guadalupe	Local Groundwater (Barton Springs Edwards Aquifer)	Edwards BFZ Aquifer	0	0	0	0	50	50

Kyle	Guadalupe	Canyon Reservoir - Downstream Diversions	Canyon Lake/ Reservoir	2,368	2,588	0	0	0	0
Kyle	Guadalupe	Municipal Water Conservation	Conservation	0	27	96	167	302	443
Kyle	Guadalupe	Hays/Caldwell Carrizo Project - Temporary Overdraft	Carrizo-Wilcox Aquifer	0	0	0	0	0	300
Kyle	Guadalupe	Hays/Caldwell Carrizo Project - Temporary Overdraft	Carrizo-Wilcox Aquifer	0	0	0	0	0	700
Kyle	Guadalupe	LGWSP for GBRA Needs	Guadalupe River Run-of-River LGWSP	0	0	2,865	3,025	3,522	3,522
Niederwald	Guadalupe	Canyon Reservoir - Downstream Diversions	Canyon Lake/ Reservoir	23	66	0	0	0	0
Niederwald	Guadalupe	Municipal Water Conservation	Conservation	0	1	8	15	27	42
Niederwald	Guadalupe	LGWSP for GBRA Needs	Guadalupe River Run-of-River LGWSP	0	0	113	157	213	257
San Marcos	Guadalupe	Hays/Caldwell Carrizo Project - Temporary Overdraft	Carrizo-Wilcox Aquifer	0	0	0	0	0	5,500
San Marcos	Guadalupe	Municipal Water Conservation	Conservation	417	554	815	1,282	1,875	2,656
San Marcos	Guadalupe	LGWSP for GBRA Needs	Guadalupe River Run-of-River	0	5,000	5,000	5,000	5,000	5,000
San Marcos	Guadalupe	Recycled Water Programs	Direct Reuse	0	0	0	5,778	5,778	5,778
San Marcos	Guadalupe	Hays/Caldwell Carrizo Project - Temporary Overdraft	Carrizo-Wilcox Aquifer	0	0	0	0	0	1,500
San Marcos	Guadalupe	Surface Water Rights	Guadalupe River Combined Run-of-River Irrigation	0	0	1,952	1,952	1,952	1,952
San Marcos	Guadalupe	Surface Water Rights	Guadalupe River Combined Run-of-River Irrigation	0	0	344	344	344	344
San Marcos	Guadalupe	Surface Water Rights	Guadalupe River Combined Run-of-River Manufacturing	0	0	571	571	571	571

Woodcreek	Guadalupe	Municipal Water Conservation	Conservation	0	0	2	6	20	37
Woodcreek	Guadalupe	Wimberley and Woodcreek Water Supply from Canyon Reservoir	Canyon Lake/ Reservoir	118	187	257	325	436	506
Buda	Colorado	Development of Trinity Aquifer	Trinity Aquifer	0	394	869	1,354	1,932	2,224
Buda	Colorado	Construct GBRA Pipeline	Canyon Lake/ Reservoir	1,120	1,120	1,120	1,120	1,120	1,302
Dripping Springs	Colorado	LCRA Contract Renewals	Highland Lakes System	0	0	0	0	560	560
Dripping Springs	Colorado	Municipal Conservation	Conservation	81	277	470	549	661	748
Dripping Springs	Colorado	Amend LCRA Contract	Highland Lakes System	1,875	1,875	1,875	1,875	2,258	2,428
Dripping Springs WSC	Colorado	Amend LCRA Contract	Highland Lakes System	1,156	1,156	1,156	1,156	773	926
Wimberley WSC	Guadalupe	Municipal Water Conservation	Conservation	0	0	0	0	19	70
Wimberley WSC	Guadalupe	Wimberley and Woodcreek Water Supply from Canyon Reservoir	Canyon Lake/ Reservoir	177	400	628	847	1,248	1,479
Woodcreek Utilities Inc.	Guadalupe	Municipal Water Conservation	Conservation	56	177	337	455	619	771
Woodcreek Utilities Inc.	Guadalupe	Wimberley and Woodcreek Water Supply from Canyon Reservoir	Canyon Lake/ Reservoir	475	872	1,292	1,702	2,255	2,651
Maxwell WSC	Guadalupe	LGWSP for GBRA Needs	Guadalupe River Run-of-River	0	0	0	100	100	132
Goforth WSC	Guadalupe	Canyon Reservoir - Downstream Diversions	Canyon Lake/ Reservoir	500	500	0	0	0	0
Goforth WSC	Guadalupe	Municipal Water Conservation	Conservation	0	0	0	0	22	111
Goforth WSC	Guadalupe	Local Groundwater (Barton Springs Edwards Aquifer)	Edwards BFZ Aquifer	150	150	150	150	150	150
Goforth WSC	Guadalupe	Local Groundwater (Trinity Aquifer)	Trinity Aquifer	400	400	400	400	400	400
Goforth WSC	Guadalupe	LGWSP for GBRA Needs	Guadalupe River Run-of-River LGWSP	0	0	1,000	1,500	2,000	2,500
Plum Creek Water Company	Guadalupe	Municipal Water Conservation	Conservation	0	0	0	0	12	54

Plum Creek Water Company	Guadalupe	LGWSP for GBRA Needs	Guadalupe River Run-of-River	0	73	274	479	738	941
Crystal Clear WSC	Guadalupe	Regional Carrizo for SSLGC Project Expansion - Temporary Overdraft	Carrizo-Wilcox Aquifer	0	300	600	900	900	900
County Line WSC	Guadalupe	CRWA Siesta Project	Direct Reuse	0	500	500	1,000	1,000	1,000
County Line WSC	Guadalupe	Edwards Transfers	Edwards BFZ Aquifer	1,000	1,000	1,000	1,000	1,000	1,000
County Line WSC	Guadalupe	LGWSP for GBRA Needs	Guadalupe River Run-of-River	0	500	1,000	1,000	1,000	1,000
County Line WSC	Guadalupe	Local Groundwater (Trinity Aquifer)	Trinity Aquifer	404	404	404	404	404	808
Cimarron Park Water Company	Colorado	Municipal Conservation	Conservation	24	17	13	9	5	7
Cimarron Park Water Company	Colorado	Expansion of Edwards BFZ Aquifer	Edwards BFZ Aquifer	17	110	207	305	422	513
County Other	Guadalupe	Canyon Reservoir - Downstream Diversions	Canyon Lake/ Reservoir	4,480	4,480	0	0	0	0
County Other	Guadalupe	Municipal Water Conservation	Conservation	0	0	12	49	112	184
County Other	Colorado	LCRA Contract Renewals	Highland Lakes System	0	0	0	0	1,915	1,915
County Other	Colorado	Construct GBRA Pipeline	Canyon Lake/ Reservoir	1,680	1,680	1,680	1,680	1,680	1,680
County Other	Colorado	Purchase Water from COA	Colorado River Run-of-River	1,100	1,100	1,100	1,100	1,100	1,100
County Other	Guadalupe	LGWSP for GBRA Needs	Guadalupe River Run-of-River LGWSP	0	0	4,480	4,480	4,480	4,480
County Other	Colorado	Onion Creek Recharge Dams	Edwards BFZ Aquifer	0	0	4,000	4,000	4,000	5,043
Manufacturing	Colorado	Temporary Overdraft of Trinity Aquifer	Trinity Aquifer	0	0	6	126	234	333
Steam Electric Power	Guadalupe	Industrial, Steam Electric Power Generation, and Mining Water Conservation	Conservation	0	1,231	2,522	4,095	6,013	8,351
Livestock	Guadalupe	Local Groundwater (Trinity Aquifer)	Trinity Aquifer	82	82	82	82	82	82

Mining	Guadalupe	Recycled Water Programs	Direct Reuse	82	88	92	94	106	107
Total Projected Water Management Strategies (acre-feet per year) =				**17,786**	**27,312**	**39,298**	**50,643**	**59,426**	**75,130**

15. ESTIMATE OF GROUNDWATER USE IN THE DISTRICT

Based upon data available from the Texas Water Development Board, the District estimates the historical annual use of groundwater within the District as follows:

Caldwell County

Year	Aquifer	Total
1997	CARRIZO-WILCOX	2,411
	OTHER	504
	QUEEN CITY	50
	Total	**2,965**
1998	CARRIZO-WILCOX	2,942
	OTHER	528
	QUEEN CITY	176
	Total	**3,646**
1999	CARRIZO-WILCOX	2,853
	OTHER	532
	QUEEN CITY	152
	Total	**3,537**
2000	CARRIZO-WILCOX	2,476
	OTHER	530
	QUEEN CITY	34
	Total	**3,040**
2001	CARRIZO-WILCOX	2,587
	OTHER	512
	QUEEN CITY	57
	Total	**3,156**
2002	CARRIZO-WILCOX	2,699
	OTHER	491
	QUEEN CITY	57
	Total	**3,247**
2003	CARRIZO-WILCOX	2,769

	OTHER	723
	QUEEN CITY	33
	Total	**3,525**

NOTE: All Pumpage reported in acre-feet
Source: TWDB Water Use Survey Database 03/17/2007
(http://www.twdb.state.tx.us/wushistorical/DesktopDefault.aspx?PageID=2)
Hays County

Year	Aquifer	Total
1997	EDWARDS (BFZ)	12,808
	TRINITY	3,036
	Total	**15,844**
1998	EDWARDS (BFZ)	14,208
	TRINITY	3,370
	Total	**17,578**
1999	EDWARDS (BFZ)	14,118
	TRINITY	3,380
	Total	**17,498**
2000	EDWARDS (BFZ)	9,649
	TRINITY	2,283
	Total	**11,932**
2001	EDWARDS (BFZ)	8,198
	TRINITY	3,182
	Total	**11,380**
2002	EDWARDS (BFZ)	8,776
	TRINITY	3,313
	Total	**12,089**
2003	EDWARDS (BFZ)	8,139
	TRINITY	2,600
	Total	**10,739**

NOTE: All Pumpage reported in acre-feet
Source: TWDB Water Use Survey Database
(http://www.twdb.state.tx.us/wushistorical/DesktopDefault.aspx?PageID=2)

In addition, TWDB GAM run 06-18 for the District contains a table, Table 2, that estimates 1999 groundwater usage as follows:

Table 2: Groundwater usage for the Plum Creek Conservation District in 1999 as the base year. All values are in acre-feet per year.

Aquifer / layer	Groundwater usage
Sparta aquifer / layer 1	0
Weches confining unit / layer 2	0
Queen City aquifer / layer 3	0
Reklaw confining unit / layer 4	0
Carrizo aquifer / layer 5	3
Wilcox(upper) / layer 6 (Calvert Bluff Formation)	0
Wilcox(middle) / layer 7 (Simsboro Formation)	650
Wilcox(lower) / layer 8 (Hooper Formation)	1,889

16. PROJECTED ANNUAL RECHARGE OF GROUNDWATER RESOURCES WITHIN THE DISTRICT

Recharge and water budget

A groundwater budget included here from GAM run 06-18 summarizes how the model estimates water entering and leaving the aquifer. The groundwater budget for the average values from the transient model (1980 to 1999) is shown in the following table. The components of the budgets shown, required for the management plan to include, are:

• Precipitation recharge—This is the recharge distributed over an area due to precipitation falling on the outcrop areas of the aquifers within the district.

• Surface water inflow and outflow—This is the total surface water entering the aquifer (inflow) through streams or reservoirs, or total surface water exiting the aquifer (outflow) to streams, reservoirs, drains, or through evapotranspiration.

• Net inter–aquifer flow—This describes the vertical flow, or leakage, between two aquifers. This flow is controlled by the relative water levels in each aquifer and aquifer properties of each aquifer that define the amount of leakage that can occur. "Inflow" to an aquifer from an overlying or underlying aquifer will always equal the "Outflow" from the other aquifer, except for the top layer where flow from and to overlying younger aquifers are simulated with a general head boundary condition.

• Lateral flow into and out of district—This component describes lateral flow within the aquifer between the district and adjacent counties.

Groundwater Flow Budget for the Plum Creek Conservation District

Aquifer / layer	Precipitation recharge	Average surface water inflow	Average surface water outflow	Average inflow into district	Average outflow from district	Average net Inter-aquifer flow (upper)	Average net Inter-aquifer flow (lower)
Sparta aquifer / layer 1	0	0	0	0	0	0	0
Weches confining unit / layer 2	0	0	0	0	0	0	0
Queen City aquifer / layer 3	0	0	0	0	0	0	0
Reklaw confining unit / layer 4	0	0	0	0	0	0	0
Carrizo aquifer / layer 5	121	0	0	0	-128	0	-5
Wilcox(upper) / layer 6 (Calvert Bluff Formation)	0	0	0	0	-3	5	-2
Wilcox(middle) / layer 7 (Simsboro Formation)	3,062	574	-5,743	1,398	-1,037	2	625
Wilcox(lower) / layer 8 (Hooper Formation)	2,867	634	-1,164	845	-444	-625	0

Note: Negative signs refer to flow out of the district. No sign refers to flow into the district. All numbers are rounded to the nearest acre-foot.

Based upon data available from the Edwards model from the Edwards Aquifer Authority, the District estimates the annual recharge to the Edwards (Trinity) Limestone; Midway and Navarro groups; the Wilcox Group; and the Carrizo Sands groundwater formations within the District to be 12,500 ac-ft/year. Data are not available to estimate the recharge to either the Recent Alluvium deposits or the Leona formation. According to the TWDB GAM run 06-18, the projected annual recharge from precipitation to the southern part of the Queen City, the Sparta and the Carrizo-Wilcox aquifers within the District is approximately 6,050 acre-feet from local areas.

17. WATER LEVELS

Figures 1 through 6 display historical water levels for select wells in the Wilcox formation that comprise the District's current well monitoring program based upon information and data available from the Texas Water Development Board. Figure 7 reflects a summary of the six selected wells depicted in Figures 1 through 6. Based upon the data reflected in Figures 1 through 7, water levels in the Wilcox formation appear to have remained relatively constant over the last 20 years. Figure 8 is a map reflecting the locations of the selected wells.

18. ESTIMATE OF MANAGED AVAILABLE GROUNDWATER IN THE DISTRICT BASED ON THE DESIRED FUTURE CONDITION ESTABLISHED IN JOINT PLANNING

The desired future condition of the aquifers has not been established in accordance with Chapter 36.108 of the Texas Water Code. In establishing the desired future conditions of the aquifers, the districts shall consider uses or conditions of an aquifer within the management area that differ substantially from one geographic area to another. The districts may establish different desired future conditions for each aquifer, or each geographic area overlying an aquifer in whole or in part or subdivision of an aquifer within the boundaries of the management area.

Figure 1

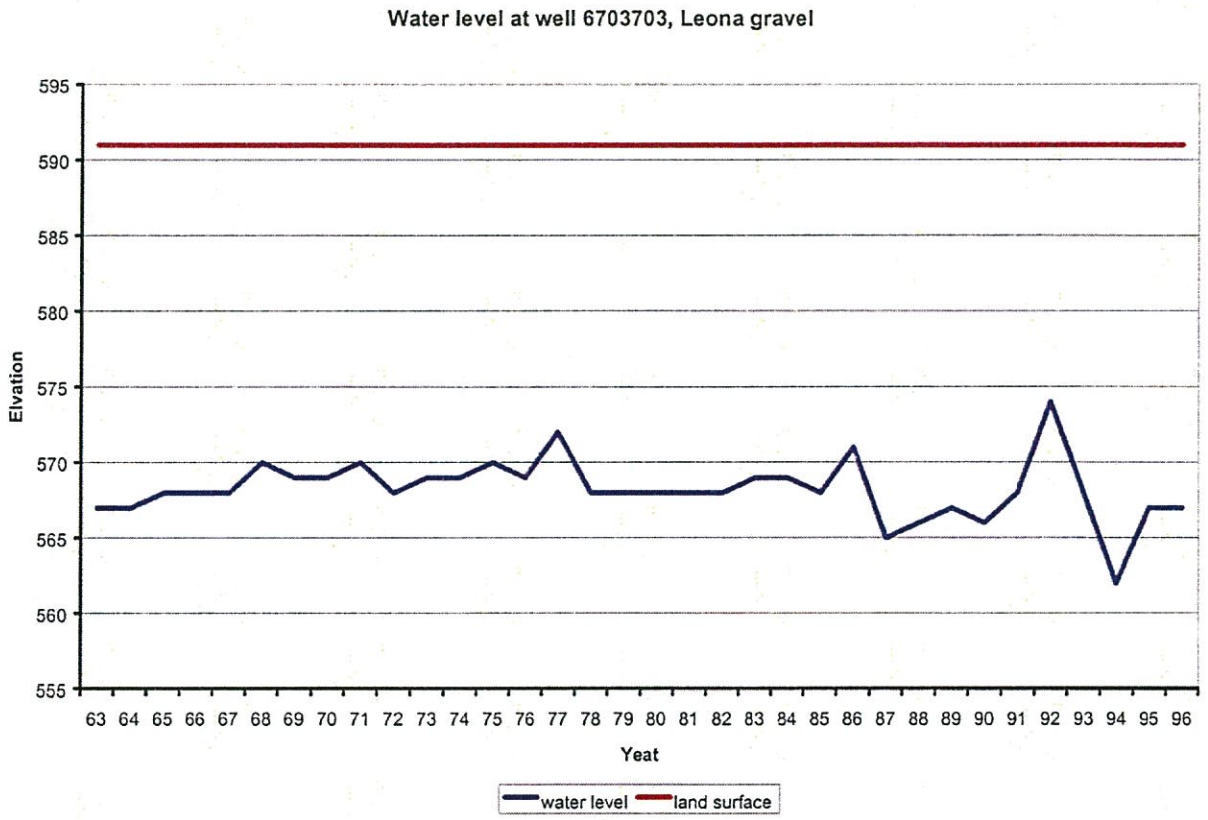

Water level at well 6703703, Leona gravel
595
590
585
580
575
570
565
560
555
Elvation
63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96
Yeat
water level
land surface

Figure 2

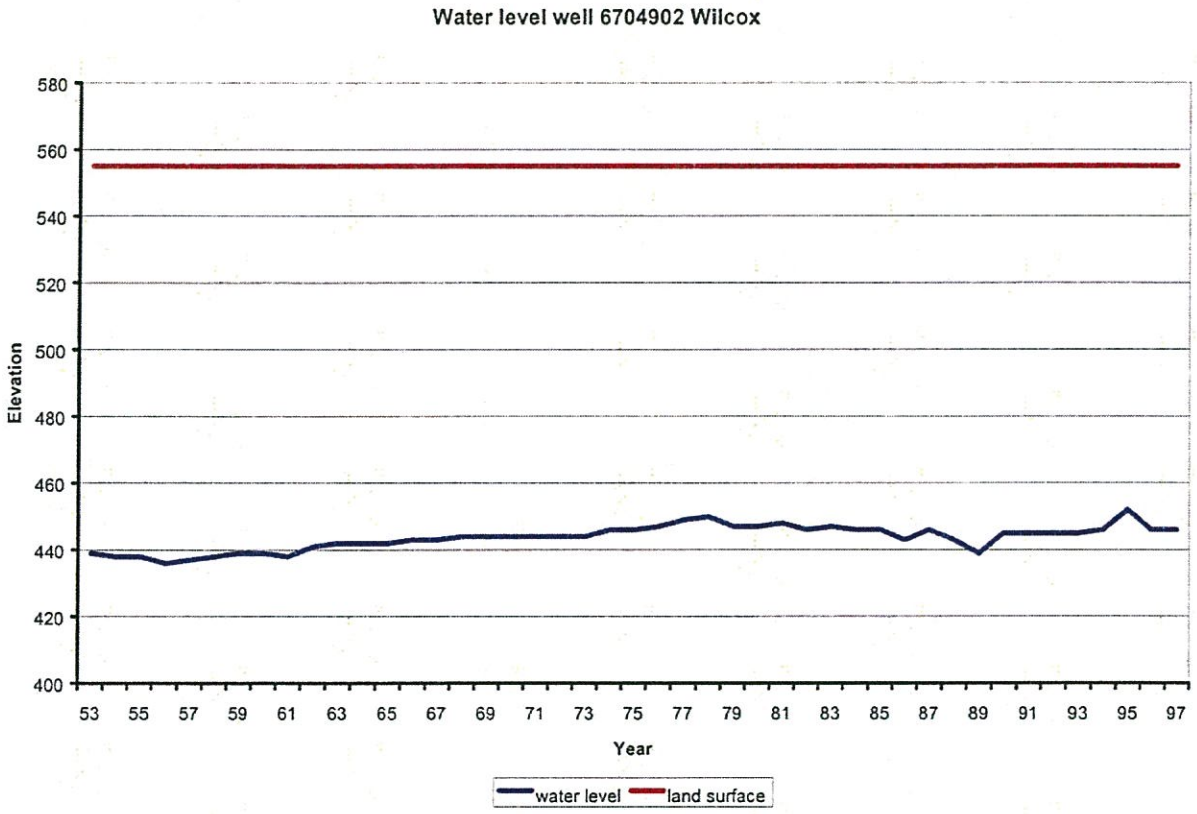

Water level well 6704902 Wilcox
Elevation
580
560
540
520
500
480
460
440
420
400
53 55 57 59 61 63 65 67 69 71 73 75 77 79 81 83 85 87 89 91 93 95 97
Year
water level
land surface

Figure 3

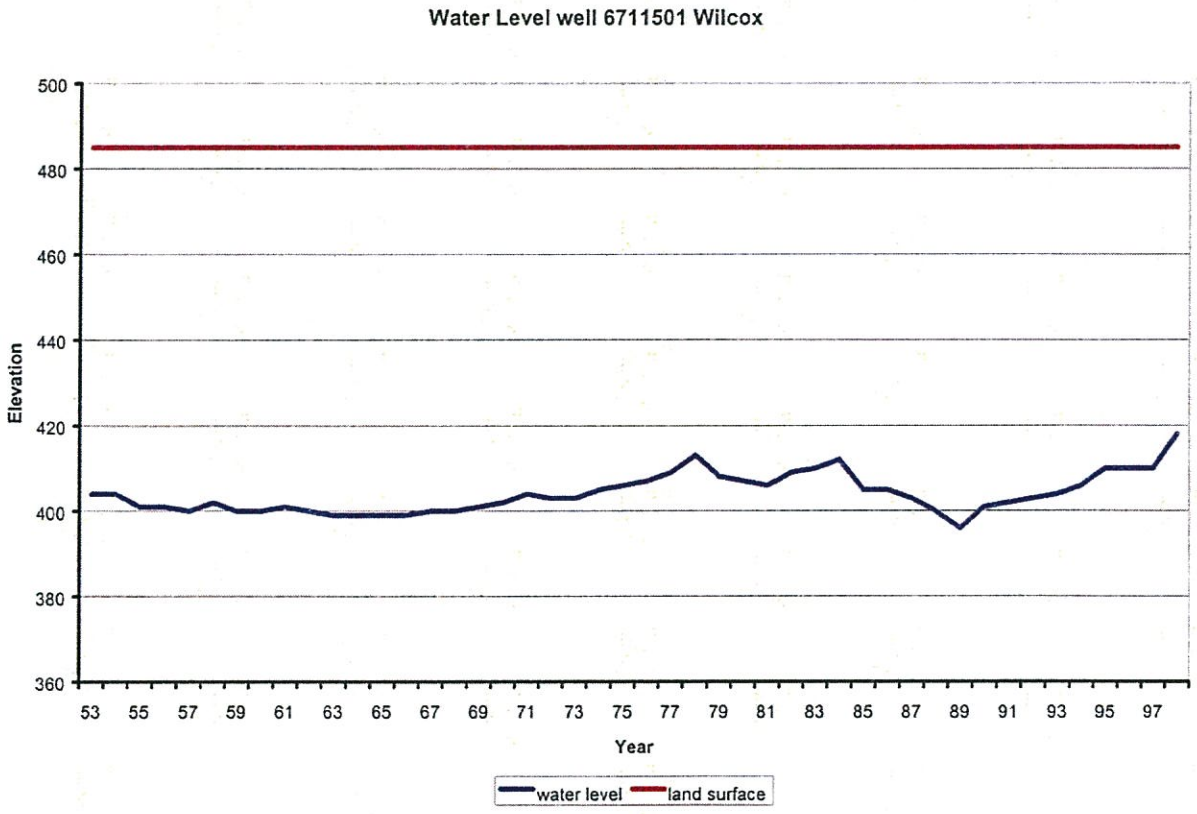

Water Level well 6711501 Wilcox
500
480
460
440
420
400
380
360
Elevation
53 55 57 59 61 63 65 67 69 71 73 75 77 79 81 83 85 87 89 91 93 95 97
Year
water level
land surface

Figure 4

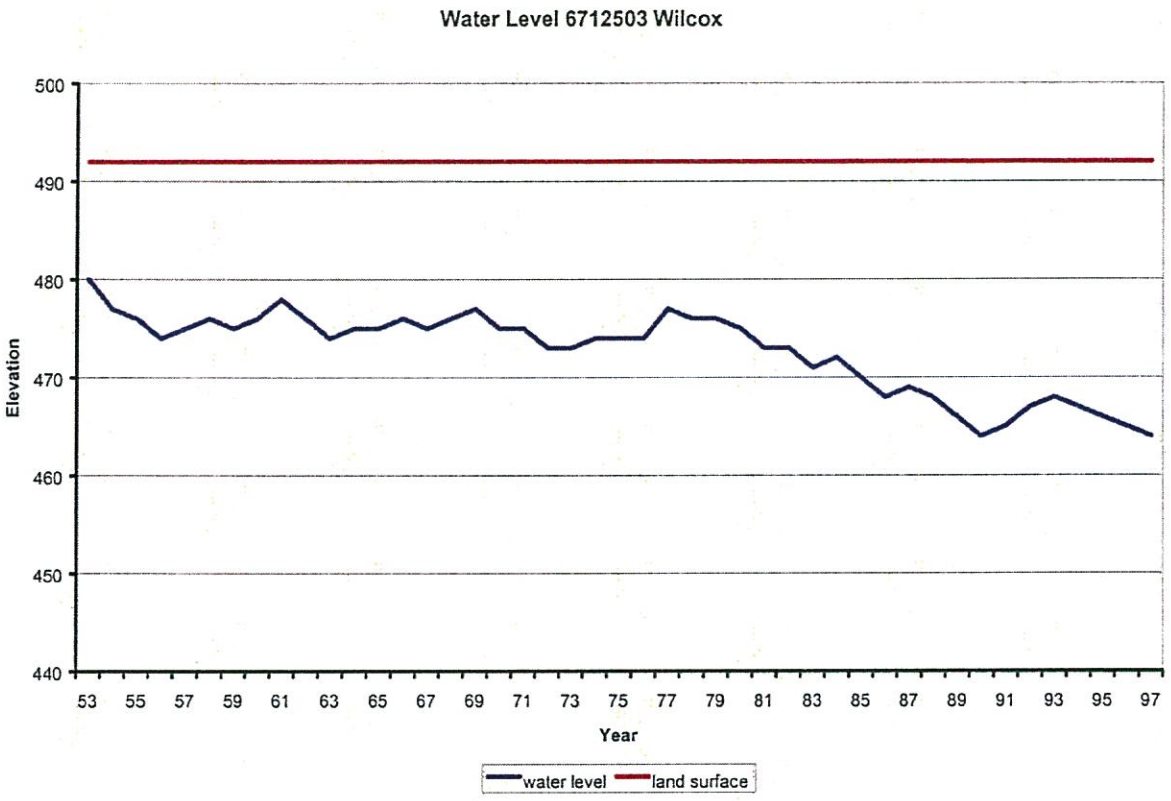

Water Level 6712503 Wilcox
500
490
480
470
460
450
440
Elevation
53 55 57 59 61 63 65 67 69 71 73 75 77 79 81 83 85 87 89 91 93 95 97
Year
water level
land surface

Figure 5

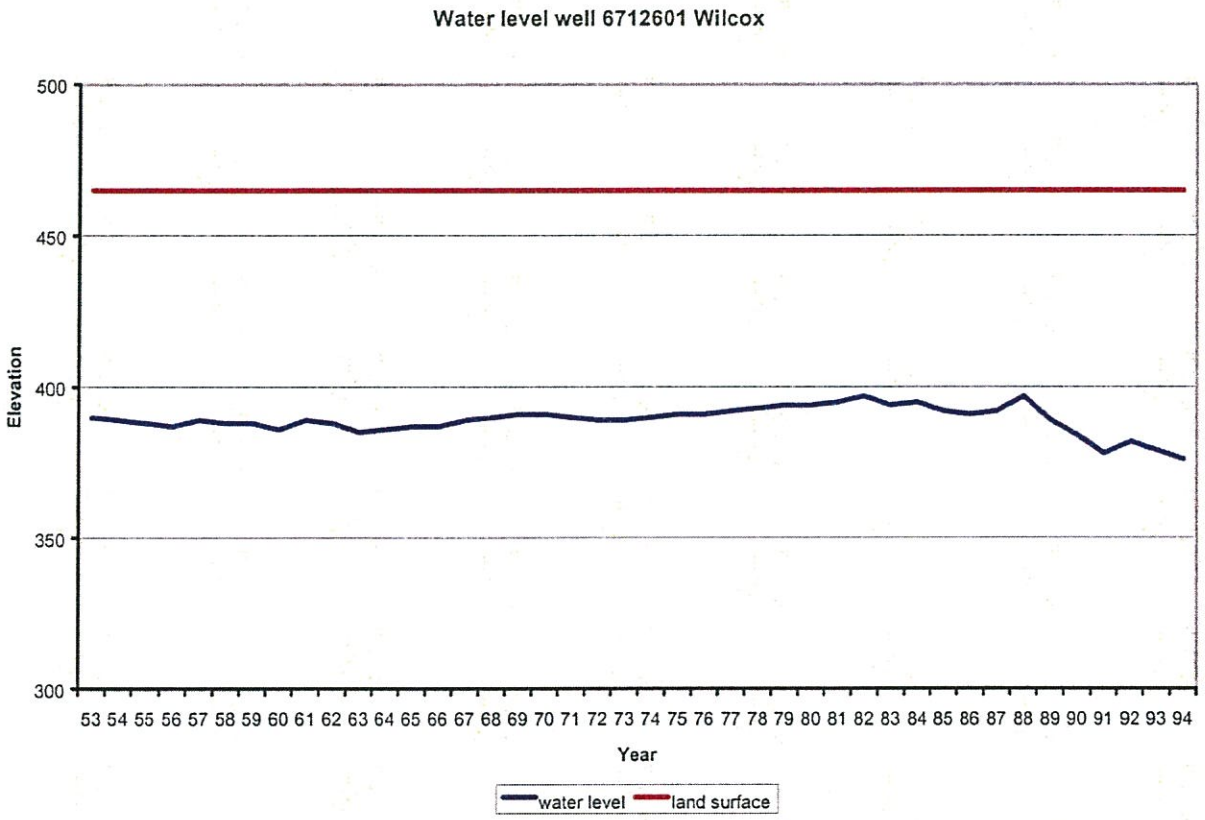

Water level well 6712601 Wilcox
500
450
400
350
300
Elevation
53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94
Year
water level
land surface

Figure 6

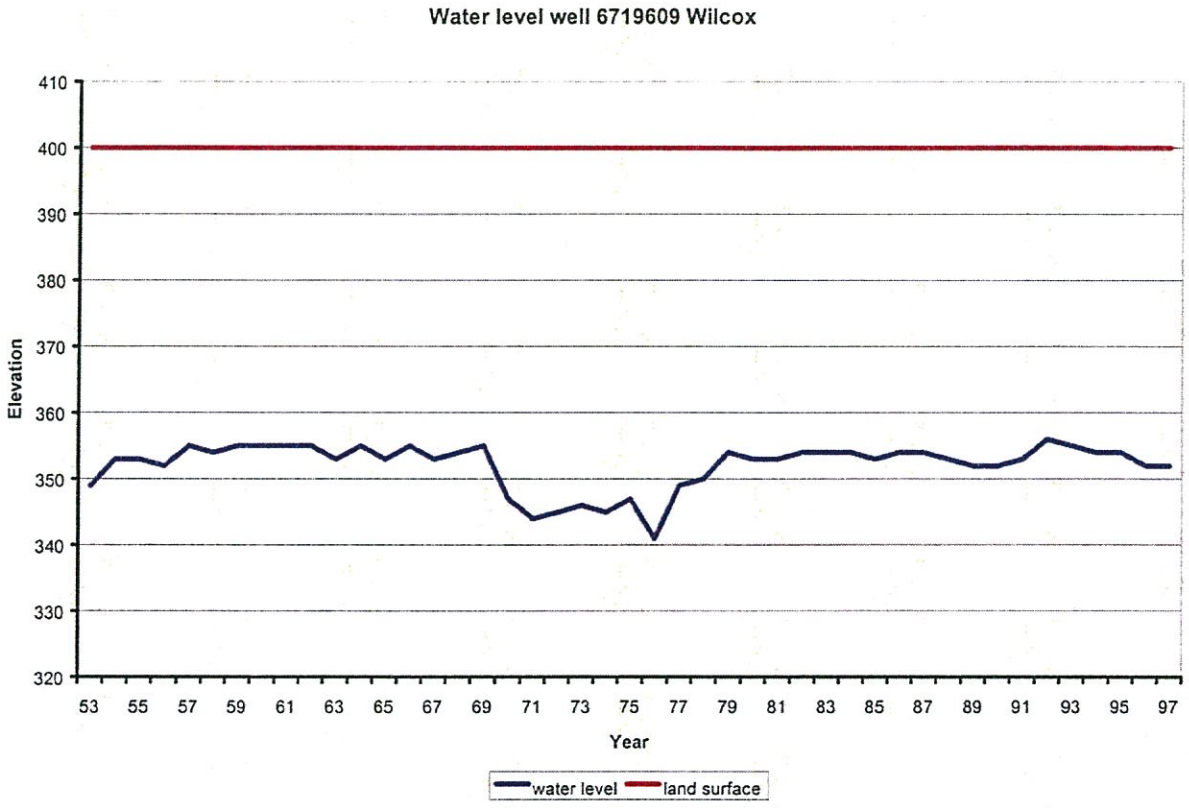

Water level well 6719609 Wilcox
410
400
390
380
370
360
350
340
330
320
Elevation
53 55 57 59 61 63 65 67 69 71 73 75 77 79 81 83 85 87 89 91 93 95 97
Year
water level
land surface

Figure 7

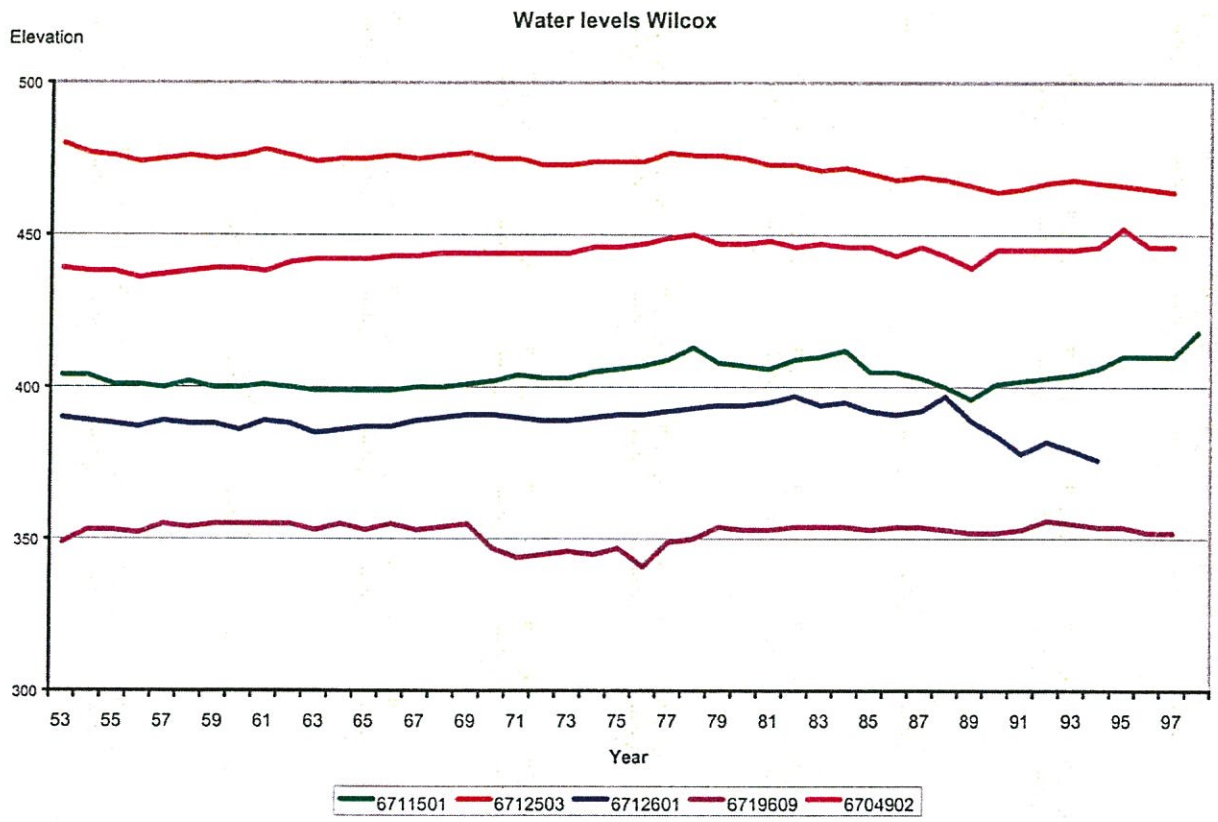
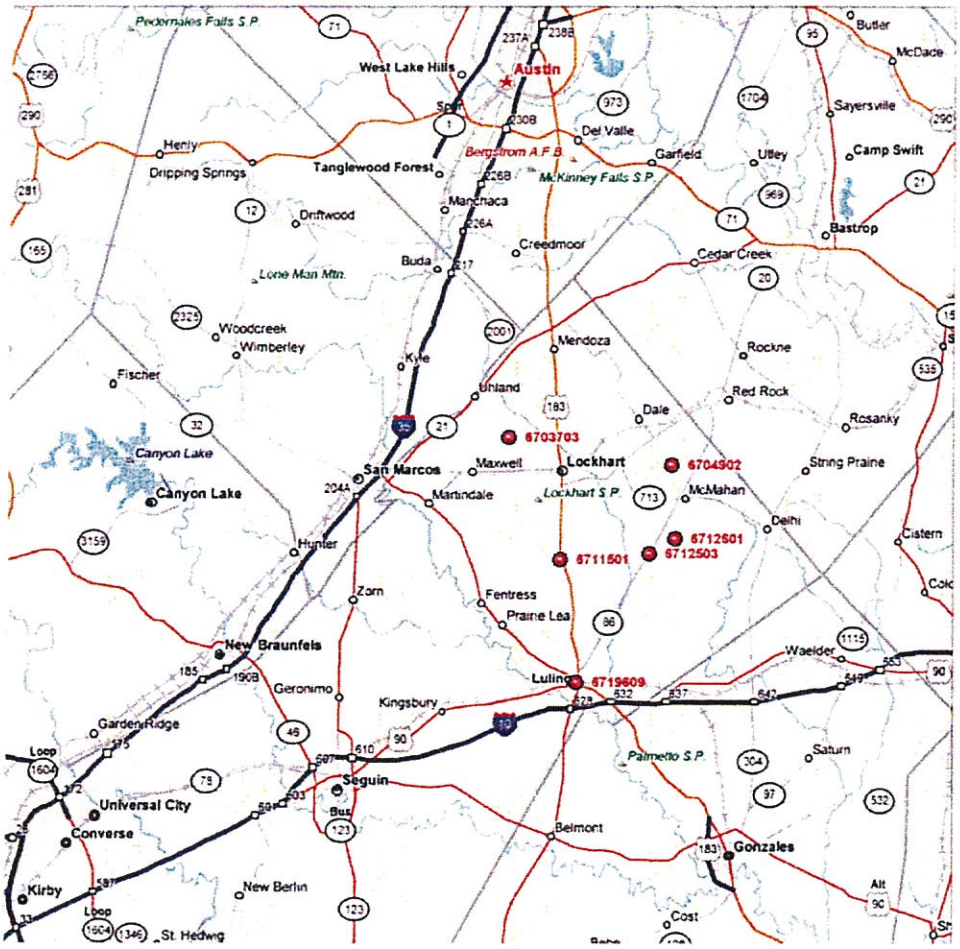

Water levels Wilcox
Elevation
500
450
400
350
300
53 55 57 59 61 63 65 67 69 71 73 75 77 79 81 83 85 87 89 91 93 95 97
Year
6711501
6712503
6712601
6719609
6704902

Figure 8

Location of Selected Wells



We the undersigned members of the Board of Directors do hereby certify and confirm the adoption of this revised and amended Groundwater Management Plan of the Plum Creek Conservation District on this the 13th day of November, 2007 as evidenced by our signatures below:

Board of Directors

James A. Holt, Jr., President

James O. Lipscomb, Vice President

Lucy Fielder, Director

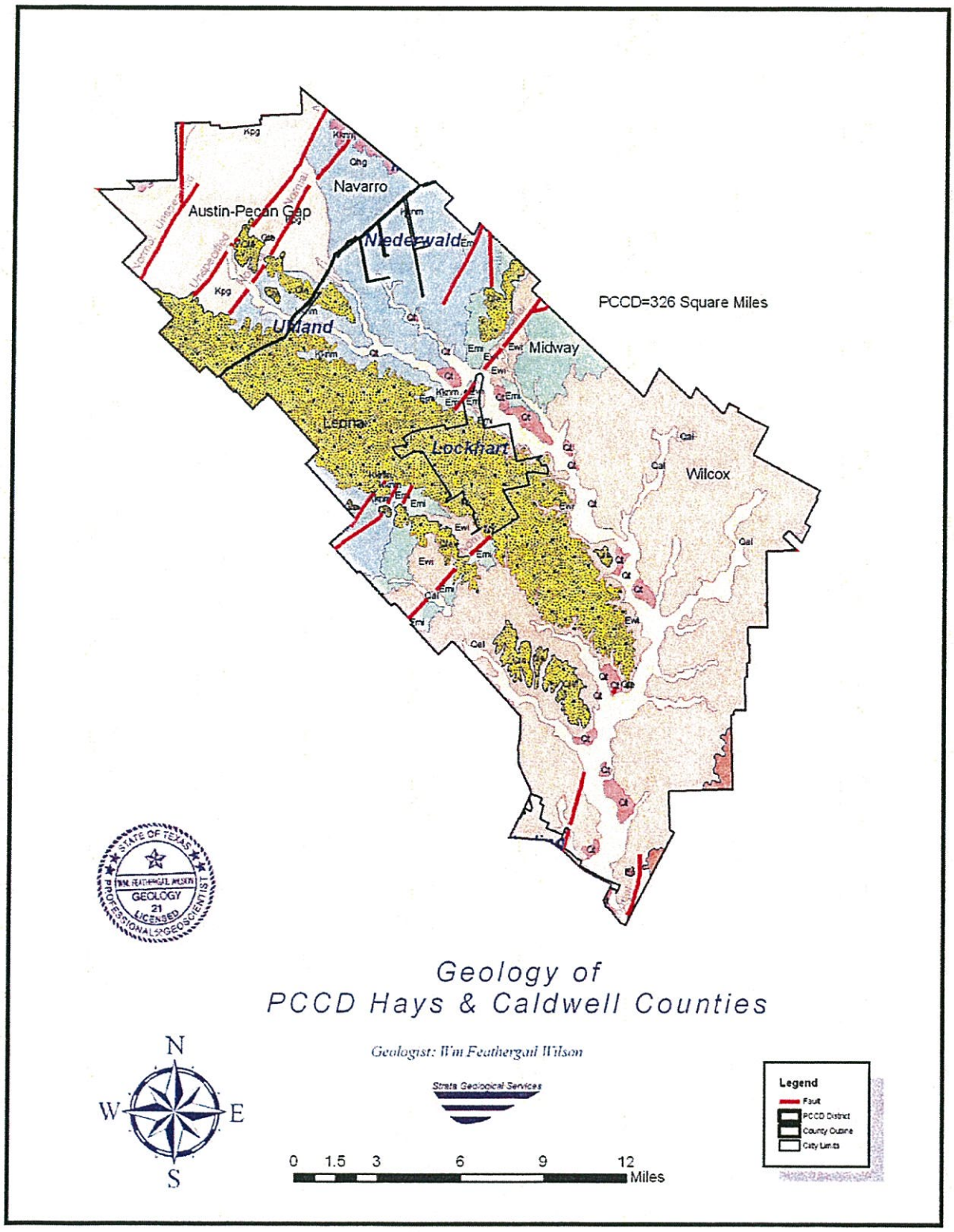
Melvin Baim Director

Ben Twidwell, Director

Fred Rothert, Director

Attested by: Johnie Halliburton, Executive Manager

Attachment A


Navarro
Austin-Pecan Gap
Niederwald
Uhland
Midway
Lockhart
Wilcox
PCCD=326 Square Miles
STATE OF TEXAS
WM. FEATHERGILL WILSON
GEOLOGY
21
LICENSED
PROFESSIONAL GEOSCIENTIST
Geology of
PCCD Hays & Caldwell Counties
Geologist: Wm Feathergail Wilson
Strata Geological Services
N
W
E
S
0 1.5 3 6 9 12
Miles
Legend
Fault
PCCD District
County Outline
City Limits