



ADDENDUM

Rattlesnake Creek

Four-Year Review of Management Plan

Subbasin Water Resource Management Program

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I. Introduction

In 1993, the Rattlesnake Creek Subbasin Partnership formed to cooperatively develop and implement water resource solutions. The partners agreed to use a community involvement approach as the guiding principle to address the water resource concerns within the subbasin. The Partnership includes Big Bend Groundwater Management District No. 5 (GMD No. 5), Water Protection Association of Central Kansas (Water PACK), Kansas Department of Agriculture-Division of Water Resources (KDA-DWR) and the U.S. Fish and Wildlife Service (USFWS) with a Cooperative Agreement signed June 1994.

The goal of the management program is to reduce the total amount of water used in the subbasin through methods outlined in management plan, particularly in identified priority areas. The management program addressed water resource solutions for both the short and long-term. Active participation by water users in the subbasin is essential to achieving the goals of reducing water use in the area.

The chief engineer, Division of Water Resources, Department of Agriculture, in July 2000, approved the management program. A start date of August 1, 2000 benchmarks the beginning of a 12-year implementation schedule for the management program. The management plan calls for a review of the management strategies every four years.

This report focuses on the first four-year review. The report includes the data analyzed, results of the analysis and the recommendations needed the next four years to meet the goals outlined in the management plan.

II. Four-Year Evaluation of Management Program

The management program outlined the process for evaluation and for the review and evaluation conducted at least every 4 years (4, 8, and 12 years). Each 4-year evaluation would provide an opportunity to determine the success of the new management program and allow for changes to the program to enhance the effectiveness. A review of each specific management strategy will occur to determine the effectiveness and if improvements are necessary to meet long-term goals.

Each four-year evaluation is to include at least the following criteria:

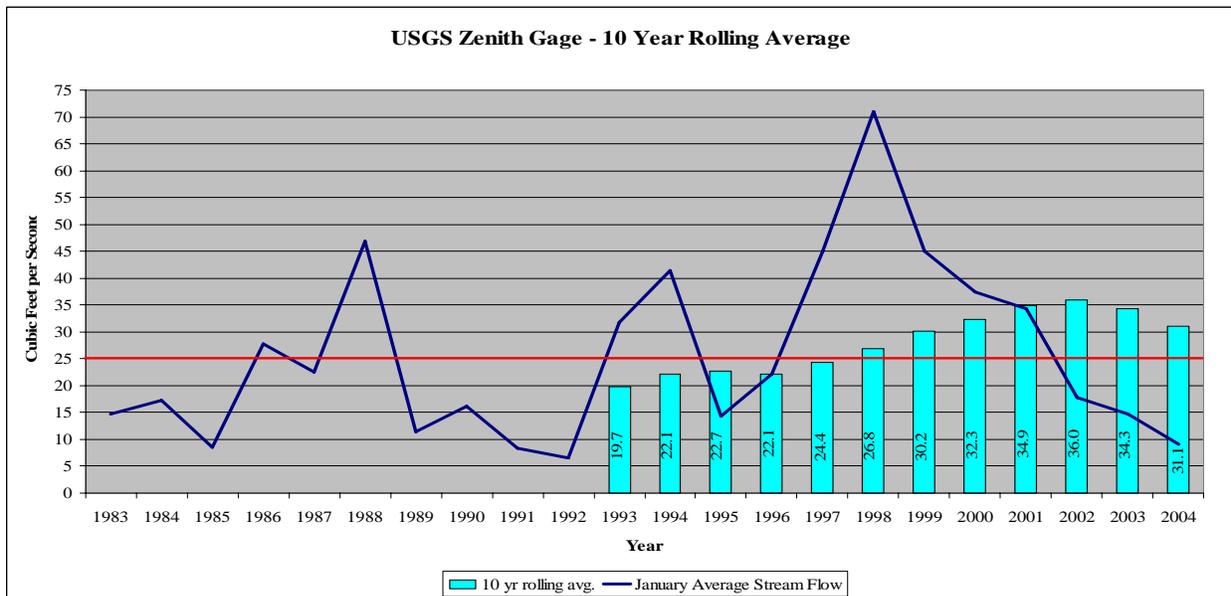
1. Determine if January 10-year rolling average of 25 cfs is achieved at the Zenith Gaging Station.
2. Review of 10-year rolling average annual water use and compare to target values outlined. The calculations compared with 1996 for the improved water conservation and enforcement/compliance programs.
3. Evaluation of Minimum Desirable Stream flow (MDS).
4. Achieve reduction of at least 4% in water use every four years with a goal of 12% by the end of the 12-year program.
5. Stabilize water levels in high decline areas
6. Stabilize water levels outside the ground-water priority area

The priority areas and strategies included in the management program for evaluation:

1. Stream Corridor Area
2. Groundwater Management Area
3. Mineral Intrusion Area
4. Water Rights Purchase Program
5. Water Banking
6. Flex Accounts
7. Conservation Practices and Irrigation Management
8. Voluntary Removal of End Guns
9. Enhanced Compliance and Enforcement Activities
10. Water Appropriation Transfers
11. Mineral Intrusion Area-replacement wells
12. Augmentation
13. Low Head Dams
14. Alternative Actions

III. Four-Year Evaluation 2000 – 2004

A. Streamflow: January 10-year rolling average of 25 cfs:



In the management plan, a goal is to meet a 10-year rolling average of 25cfs at the Zenith Gaging station. By achieving 25 cfs, base flows should be restored to the Rattlesnake Creek. During the first four years, the 10-year rolling average has maintained an average above the 25 cfs level. To determine if goal is achieved, an evaluation of streamflow data should occur to determine the trend. Streamflow analysis indicates the present trend is declining and if this continues this average will fall below the 25 cfs level in the next few years. Based on this analysis of streamflow data goals are still being met in the stream corridor area.

Minimum Desirable Stream flow (MDS) at the Zenith Gages

For the period January 1, 2000 to November 7, 2004, 78.5% of the time streamflow met MDS at the Zenith gage. In the month of January MDS has been met 65.8% over this same period.

Both the GMD board and Water Pack believe the MDS statement in the original Rattlesnake Plan (VII. Evaluation of Management Program) pertains to only the Zenith gage

Stream Corridor Area

The Stream Corridor Area is described as a 4-mile wide zone, 2 miles on either side of the Rattlesnake Creek from the Quivira National Wildlife Refuge boundary where the Rattlesnake Creek enters the refuge to the west side of Section 10, Township 27 South, Range 17 West in Kiowa County Kansas (see Figure 1). Section 10 line that extends north and south creates the cut off point for the upper end of the corridor area. This area was selected based on the hydrologic relationship to the stream. The division of the corridor into separate areas was for targeting water right purchase funds to higher priority areas.

The objective is to reduce average groundwater use within the corridor. Based on hydrologic analysis and average water use should be 27,407 acre-feet which calculates to a 12% reduction from the 1987 to 1996 average water use.

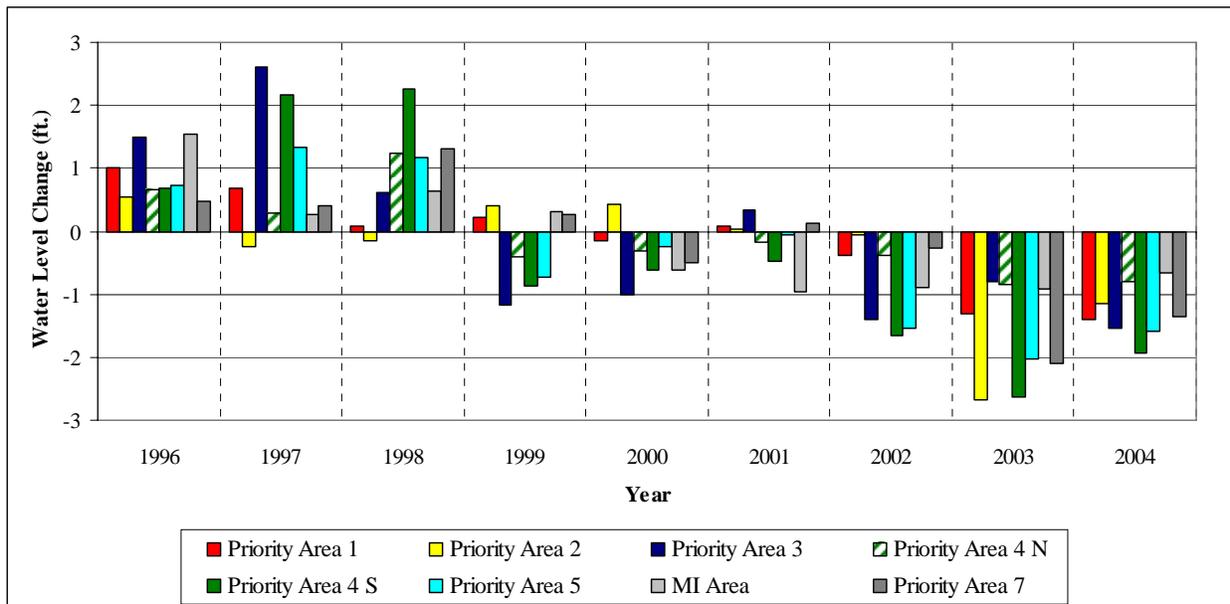
B. Groundwater: Review of 10-year rolling average annual water use

Overall Average Water Use Percent 87-02		72.74%
Year	10 YEAR ROLLING AVERAGE	PERCENT USE OF AUTHORIZED
1996	165,194	71.01%
1997	163,107	70.11%
1998	161,910	69.60%
1999	161,697	69.51%
2000	159,829	68.70%
2001	158,817	68.27%
2002	165,974	71.35%
2003	173,066	74.57%

Overall, water use did not vary much across the subbasin but in some years, water use was down approximately 4%. However, in some specific areas the average water use was high.

Water Level Trends

Year	MI Area	Priority Area 4 N	Priority Area 1	Priority Area 2	Priority Area 3	Priority Area 4 S	Priority Area 5	Priority Area 7
1996	1.54	0.66	1.01	0.55	1.50	0.68	0.74	0.47
1997	0.26	0.28	0.69	-0.24	2.61	2.16	1.33	0.40
1998	0.65	1.24	0.07	-0.16	0.61	2.26	1.16	1.30
1999	0.32	-0.40	0.22	0.40	-1.16	-0.87	-0.73	0.28
2000	-0.60	-0.32	-0.15	0.42	-1.01	-0.62	-0.24	-0.51
2001	-0.97	-0.18	0.08	0.04	0.34	-0.48	-0.05	0.14
2002	-0.90	-0.39	-0.39	-0.06	-1.39	-1.67	-1.54	-0.27
2003	-0.92	-0.83	-1.31	-2.67	-0.81	-2.63	-2.02	-2.10
2004	-0.66	-0.81	-1.41	-1.15	-1.55	-1.93	-1.58	-1.35



The table represents water level trends within the Rattlesnake Creek subbasin since 1996. Overall, the trends show a decline in water levels. Refer to Figure one for information on specific priority areas. Precipitation has been below average in recent years with the exception of 2004 when above average precipitation fell in parts of the basin. This led to an increase in groundwater use and a decrease in recharge causing water level declines.

Ground-water Management Area

Target management strategies to address ground-water declines, water use patterns, and saturated thickness in the ground-water management area located north/central in the subbasin. This area consists of parts of Kiowa, Edwards, Stafford, and Pawnee counties with a focus along the northern boundary of the watershed in parts of Edwards, Pawnee, and Stafford counties.

A smaller area highlighted within the ground-water management area located in Stafford and Pawnee counties is as an area in which the management strategies should be concentrated due to the more substantial ground-water declines that have occurred. There are 34 sections either partially or totally in contact with this priority area. The following describes the High Priority Area:

- T 22 S, R 14 W, Sections 29 thru 32
- T 23 S, R 14 W, Sections 5 thru 8, 17 thru 21, and 28 thru 32
- T 22 S, R 15 W, Section 36
- T 23 S, R 15 W, Section 1 thru 2, 11 thru 15, 22 thru 27, and 35 thru 36

This is a smaller area identified as Priority Area 2 and includes management alternatives in order to enhance the reduction of water use (see Figure 1).

The objective is based on hydrologic analyzes, average water use and should not exceed 83,967 acre-feet using a 10-year rolling average. Overall, this is a 16% reduction (16,480 acre-feet) of the 1987 to 1996 average water use.

Mineral Intrusion Area

The natural mineral intrusion area extends east and north of Highways 281 and 50 in the Rattlesnake Creek subbasin. This area defined by the Groundwater Management District No. 5 and documented in publications by the Kansas Geological Survey in cooperation with GMD #5. Addition description of this area is included in the 'Mineral Intrusion Area-Replacement Wells' section.

Objective is to decrease the effects of pumping on natural mineral intrusion into the fresh water aquifer. Wells in the mineral intrusion area were brought under a special management program, which should lead to a higher quality groundwater trend.

C. Management Strategies

The management strategies were amended following an extensive review of each strategy and its effectiveness over the last four years. An extensive evaluation of water rights by priority in the subbasin was also conducted reflecting changes in total appropriations and water use.

Water Rights Purchase Program

The State Conservation Commission (SCC) implements the Water Rights Purchase Program. Currently, there is no funding allocated for the program. However, local, state, and federal entities actively pursued funding resources. In the 2004 legislative session, SCC worked to include a proviso to the program that would allow receipt and expenditure of funds directed to an Irrigation Transition Assistance Program (ITAP). The ITAP proviso allows for the expenditure of federal funds, dismissal of the water rights, and removal of the 20-percent local entity cost-share requirement. The following is the proviso language:

“During fiscal year 2005, the State Conservation Commission is authorized and directed to receive and expend funds from the federal government, or any other public or private source, for the purpose of implementing a pilot program for irrigation transition grants, subject to provisions prescribed in K.S.A. 2-1915 and 2-1919, with the condition that there is no cost-share requirement for the State or local entity. The State Conservation Commission shall adopt rules and regulations by no later than March 1, 2005 to implement the pilot program for irrigation transition grants. Any water rights returned to the state under the provisions of K.S.A. 2-1915 with the above irrigation transition program condition shall be permanently dismissed by the chief engineer.”

The amended management goal is 7396 acre-feet. Recommend to implement ITAP in the Rattlesnake Creek Subbasin and pursue local, state, and federal funding for the program.

Water Banking

Legislation for the water-banking program passed in 2000. The chief engineer adopted water banking rules and regulations in August 2004. After several years of development, the proposed charter for the Central Kansas Water Bank was submitted to the chief engineer for consideration. The Central Water Bank proposal is to comprise of the entire Big Bend Groundwater Management District No. 5 and administered from the District office.

The primary purpose of the ground-water bank is to allow a water user the ability to deposit all or part their water right into the bank. Compensation occurs when another water user leases the water. In addition, water users will be able to establish a safe deposit account that allows a carryover of a portion of annual unused water for use in later years. A representative past period of 1987 to 1996 will be used to base deposit and lease water use quantities. Attached to both the leases and deposits is a conservation component.

The goal of the water-banking program is to reduce water use in priority management areas. The water banking rules and regulations and the proposed Central Water Bank Charter require a minimum ten percent savings in consumptive use. The proposed charter prevents the water moved within two miles of the Rattlesnake Creek and any area with over twenty feet of decline. A point system that allows for a potential twenty-percent savings is proposed to prevent potential impacts from the water-banking program. Parameters used to determine the conservation component for each transaction are saturated thickness, sustainable yield, and location in respect to the stream, and the amount of ground-water decline.

The Central Water Bank has proposed using a bulletin board system that allows water users the ability to post water available for deposit and lease. The review of banking operations occurs after five years in operation to determine if the water-banking program has affected the subbasin.

Implementation of the water-banking program did not occur within the first four years. Once the program is implemented monitoring of participation and evaluation will occur for the first five years.

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The amended management goal is 2,390 acre-feet. Recommend the Rattlesnake Creek Partnership seek funding through the Kansas Water Office's technical assistance program for the five-year review.

Five Year Water Rights Program

The Flex Account Program was established since the adoption of the Rattlesnake Creek Management Program and should replace this strategy. The Flex Account Program (K.A.R. 5-16-1 through 5-16-7) objective is to establish a voluntary water right management program that enables water users to manage their water rights in a manner, which promotes conservation and efficiency, yet allow for crop demands in dry years.

Participants receive a five-year term permit, which deposits a maximum quantity of water authorized for diversion in five consecutive calendar years. The program adds the total actual water use for the period 1996 to 2000, divides the total quantity by five, multiplies that quantity by 0.9, and then multiplies that quantity by five. This term permit includes a ten-percent conservation component reflected in the total authorized amount for the five-year period.

At the time of the four-year review, no water users in the subbasin had participated in the program. A goal of 761-acre feet has been set for this program.

The amended management goal is 953 acre-feet. Recommend identifying components in the program that hinder participation and evaluate the method used to calculate the water quantity for the five-year term permit.

Conservation Practices and Irrigation Management

The State Conservation Commission targets \$25,000 per year of cost-share towards more efficient irrigation systems in the Rattlesnake Creek Subbasin. Participation is variable with most of the money spent on hardware upgrades for improved efficiency. The question lies if the conversions are actually conserving water or simply delivering the same amount of water just more efficiently.

The State Water Plan cost-share funds expended \$280,000 from 1999 to 2003 in the Rattlesnake Creek Subbasin for 146 projects. If matching funds are included, the total cost expended is \$496,191 for these projects. Implementation of these projects projected a water conservation savings of 4408 AF/yr. The state water plan cost per acre-foot is \$63 and the combined state and matched funds are \$113.

The state agencies have contracted to have an in depth evaluation of the correlation between upgrades to more efficient irrigation systems and a reduction in water use. The study proposed Kansas State University and United States Geological Survey conduct the evaluation.

A presentation to the Natural Resource Sub cabinet of the evaluation will occur in order for them to make recommendations to the legislature for program improvements.

The Partnership placed an overall water savings goal of 9,269 acre-feet on average water use from 1987 to 1996. The four-year review of average water use indicates this goal has not been achieved. Therefore, the recommendation is following the results of the proposed study, for the Partnership to review this strategy and the water savings goal associated to determine if the value requires adjustment or value needs replaced with an achievable strategy.

The amended management strategy is 7,909 acre-feet. For additional information on water conservation implemented in the subbasin, by priority area, refer to Appendix A.

Voluntary Removal of End Guns

The strategy outlined in the management plan expired with no participation from water users in the Rattlesnake Creek Subbasin. Options are for the Partnership to review funding opportunities for an End Gun removal program in the subbasin to replace the original proposed strategy. The federal EQIP program may offer opportunities to fund, but consideration should be given to any impacts a program would have on the farm program.

The removal of end guns strategy placed a potential water savings of 5,562 acre-feet. The original program expired; therefore, the recommendation is apply the savings to a new strategy while the Partnership is reviewing new opportunities.

An amended management strategies goal of 2,375 acre-feet is set for this program. The Division of Water Resources and the State Conservation Commission proposed to initiate a pilot program in the stream corridor area and made a proposal to the Groundwater Management District No. 5 in December 2004. The board decided not to proceed with any end gun removal program.

Enhanced Enforcement and Compliance

The Division of Water Resources with some assistance from GMD No. 5 have enhanced the current compliance and enforcement efforts to ensure water right conditions are followed and that guidelines pertaining to the use of new management options are followed.

The ongoing efforts to conserve water, even prior to the implementation of the management program, compliance with water rights conditions is quite good, which is why originally a relatively small quantity (927 acre-feet) of water was estimated for the strategy. Since 2000, DWR has focused the Blatant and Recurring Over pumping (BRO) enforcement program to the Rattlesnake Creek subbasin. The increased concentration of compliance inspections has increase awareness of the monitoring efforts as well as the quantity of water savings but the true savings to be associated to this strategy has been underestimated.

The amended management goal was raised to 1,582 acre-feet to more accurately reflect savings from compliance and enforcement.

Water Appropriation Transfers

K.A.R. 5-25-18, allows water right holders within the Rattlesnake Creek Subbasin the ability to move water rights, or portions thereof, to other locations in the subbasin that are not experiencing major water level fluctuations. The purpose is to add flexibility in achieving the overall objective of the management program by allowing water rights to move from within the two-mile corridor and the high ground-water decline areas to other locations in the subbasin. An overall reduction in water use should take place. No water rights are allowed to move in the stream corridor, closer to the stream, or into the high decline priority areas.

All proposed transfers greater than 2,640 feet shall be subject to the following review:

1. The average saturated thickness within the two-mile-radius circle in which the proposed well will be located is greater than 40 feet as shown on the saturate thickness map adopted by K.A.R. 5-25-19.
2. The water level within the two-mile-radius circle surrounding the proposed well location has not declined in excess of 20 feet of the predevelopment water level as referenced in the Kansas Geological Survey bulletins numbered 65, 80, and 88.
3. No authorization of other wells by the chief engineer located within a one-mile radius of the proposed well location under the provisions of this regulation.

The program implementation occurred in November 2003 with no participation documented in the subbasin. A goal of 927 acre-feet was set for this strategy. The overall effectiveness of this strategy is in question as a reduction in water use would occur only at the point of the water right removed and increase where it was re-drilled. Even relocation of the water right in a place where safe yield is not exceeded the depletion to the stream would still occur just at a later time.

The amended management goal is 15 acre-feet.

Water Saving Goals

The average water use savings goals total for all management strategies is 22,620 acre-feet over a twelve-year period as outlined in the management plan. Every four years the target for groundwater use in the corridor is a reduction in water use equal to or greater than 4%. For the first four years, this goal was not achieved. Multiple factors played a role for implementation of the management strategies to meet the first four-year water savings goal. Examples are funding, requirement for legislation, rules, and regulations, non-participation by local water users and return of CRP land to irrigation.

No participation documented for the Five Year Water Right Program (Flex Account), Voluntary Removal of End Guns and Water Appropriation Transfers. The targeted water use reduction for these programs is 3343 acre-feet. Of this quantity, 2,375 acre-feet allotted to the End Gun Removal Program, which expired. Water Banking required new legislation, rules and

regulations, and a Charter in order to implement the program in the subbasin. It is anticipated this program will be available to water users in 2005. Only one program required funding to achieve targeted goals, which is the Water Rights Purchase Program.

Mineral Intrusion Area-Replacement Wells

GMD No. 5 implemented this management strategy through a program designed to delineate wells withdrawing high chloride water and then recommend modifications to well replacement and construction when the wells are re-drilled. The results of the water quality monitoring survey were beneficial in reducing the intrusion of the highly mineralized water.

All water right holders of existing ground-water wells within the natural mineral intrusion area located in the Rattlesnake Creek subbasin east and north of the federal highways US-281 and US-50, respectively, were required to participate in this water quality monitoring survey.

Well sampling began in August 2001 to determine the potential effects of heavy seasonal ground water pumping. A representative of GMD No. 5 and the landowner/tenant were present during the sample collection. It was required to have the sample split and for the landowner/tenant to have the one sample analyze by KDHE certified laboratory and then submit the results to the District. In addition, GMD No. 5 analyzed the other sample in the District laboratory for comparison.

The survey included 87 water rights covering 84 points of diversion with 79 samples collected in August 2001. The additional wells, four were determined to be in either CRP or WRCP, and one well was experiencing technical prohibiting use of the well, therefore not sampled.

The results of the 2001 survey indicated that the 79 wells sampled, 10 wells had chloride concentrations greater than 300-mg/L limits, which required additional action. Sixteen wells retested in 2002, of which 11 had chloride concentrations greater than 250-mg/L, and five were not in operation in 2001.

Of the 16 wells retested in 2002, four were in CRP or WRCP and were not tested. Of the 12 remaining wells, eight sampled with the remaining four shut down prior to sampling or had not pumped. Of these eight wells sampled in 2002, six had previous (2001) chloride concentrations greater than 300-mg/L. In 2002, five of these wells had concentrations greater than 300-mg/L; one had a concentration of 59-mg/L. The well with a concentration of 59-mg/L in 2002 had a concentration of 1580-mg/L in 2001, which led to extensive testing and reconstruction during the year to eliminate future problems. The remaining wells had concentrations less than 250-mg/L.

In December 2003 notification was sent to owners of nine water rights that exceeded the 300-mg/L chloride limits in 2001 and 2002 that an observation well to bedrock (K.A.R. 5-25-10(a)) would need to be drilled before any change in point of diversion could be approved as required under K.A.R. 5-25-16.

In October 2003, District adopted regulation K.A.R. 5-25-16 to implement the requirements set forth in the Rattlesnake Creek Management Program.

Augmentation

GMD No. 5 investigated augmentation of stream flow by ground water pumping into the stream. The District spent a considerable amount of time and money investigation the feasibility of the program. Costs associated with the program projected to exceed \$2.5 million every ten years due to the costs involved in purchasing existing water rights. The District tabled the project until the project becomes economically feasible.

Low Head Dams

A study completed in 1999 for the Quivira National Wildlife Refuge by Burns and McDonnell indicate recharge estimates of as much as 2500 to 5000 acre-feet per year by constructing a number of low head dams on the Wild Horse Creek, which is a tributary to the Rattlesnake Creek and overlies much of the area where declines occur. GMD No. 5 initiated action to secure grants to fund a pilot project (\$360,000) with the submission of grant application letters to several institutions. The District was unsuccessful in their first attempt, but should continue to explore potential grants for this pilot project and assess the feasibility.

IV. Alternative Action Management Strategies

Originally, alternative action management strategies focused on the corridor and groundwater decline area. If we include the entire subbasin, an evaluation would need to occur.

The following should be included if alternative action management strategies occur within the subbasin.

Allow a water user that has two or more wells to have the opportunity to take the total required reduction from one or more wells. Allowing a rotational reduction scheme should reduce the economic impact of the reductions and increase flexibility for the water user.

V. Goals for Next Four Years (August 2004 to August 2008)

Water Conservation:

The following is the programs the Partnership agreed are the focus for the next four years.

- Big Bend Groundwater District will pursue developing a program that would encourage participation in removing end guns in the Rattlesnake Creek by January 2007. The State Conservation Commission (SCC) will evaluate options they have in offering cost-share for the removal of end guns. This would provide options for water users to receive economic incentives.
- Continue to work with Legislature to get funding for ITAP.

- Water PACK is promoting tillage practices such as strip-till as a way to conserve water. In addition, they are evaluating alternative cropping practices such as growing cotton and canola as ways to conserve water. These practices among others can be promoted through field days and annual meetings. They plan to work with SCC and NRCS to target both state and federal dollars for these practices and promote irrigation scheduling.
- GMD #5 is working with SCC and NRCS to prioritize areas where EQIP funding would be focused to achieve the most water savings.
- All Partners are working together to create a point system that would give credit to irrigators that participate in water conservation practices.
- Amend Flex Account Program to make it more usable in the subbasin by working with the legislature to make changes.

Appendix A

Table 2 represents the average water use by priority area. In addition, information related conservation practices implemented in the subbasin during both the base period (1987 to 1996) and the present day (1997 to 2002) is included in Table 3.

Note: Analysis does not include the Mineral Intrusion Area or areas of the subbasin outside of priority areas (refer to figure one)

Priority Area	Map Area	Authorized Qty	Avg WU 1987 to 1996	Avg WU 1997 to 2002	% Change in Use
One	Red	9,992	6,686	6,662	Less than 1% decrease
Two	Yellow	7,528	5,008	5,369	Approx. 6% increase
Three	Blue	7,606	5,727	5,635	Less than 2% decrease
Four	Green	25,200	18,731	18,827	Less than 1% increase
Five	Light Blue	111,461	78,959	85,983	8% increase
Seven	Gray	59,281	43,078	45,500	5% increase
Total		221,068	158,189	167,976	6% increase

Table 2

Priority Area	AC in Conservation Program Base Period	AC remain Present day	AC returned Present day	% Returned
One	0	0	0	0%
Two	240	240	0	0%
Three	0	0	0	0%
Four	583.3	445.3	138	24%
Five	2502.5	634.2	1868.3	75%
Seven	3242.5	1448	1794.5	55%
Total	6568.3	2767.5	3800.8	58%

Table 3

VI. Summary

Primary changes that resulted in either an increase or decrease in water use was system changes from flood to center pivot or center pivot sprinkler to center pivot with drop nozzles, cropping changes (double cropping, corn, alfalfa), water quality, change in irrigated acres, return of CRP acres to irrigation and dismissal of water rights for non-use.

In total, approximately 6660 acres were enrolled in either CRP or WRCP through the base period with 3800 (58%) of the acres returned to irrigation production and only 2800 acres remain in a conservation program. Many entered the programs in 1987 and exited the programs in 1997 and 1998. The majority of the land in CRP that returned to irrigation production exchanged hands.

The water use was estimated to see how much water was over pumped during the two periods. The water use was adjusted if over pumped to the authorized quantity and the average water use was recalculated without the over pumped quantity. Trend was approximately 4% of the average water use was over pumped.

Overall, water use increased during the 1997 to 2002 period by approximately 9500-acre feet when compared to the 1987 to 1996 base period. An estimated 3800 acres returned to irrigated production that were once in a conservation program which accounts for about 3990 acre feet of this increase (based on 12.6 inches or average 70% water use in the subbasin).

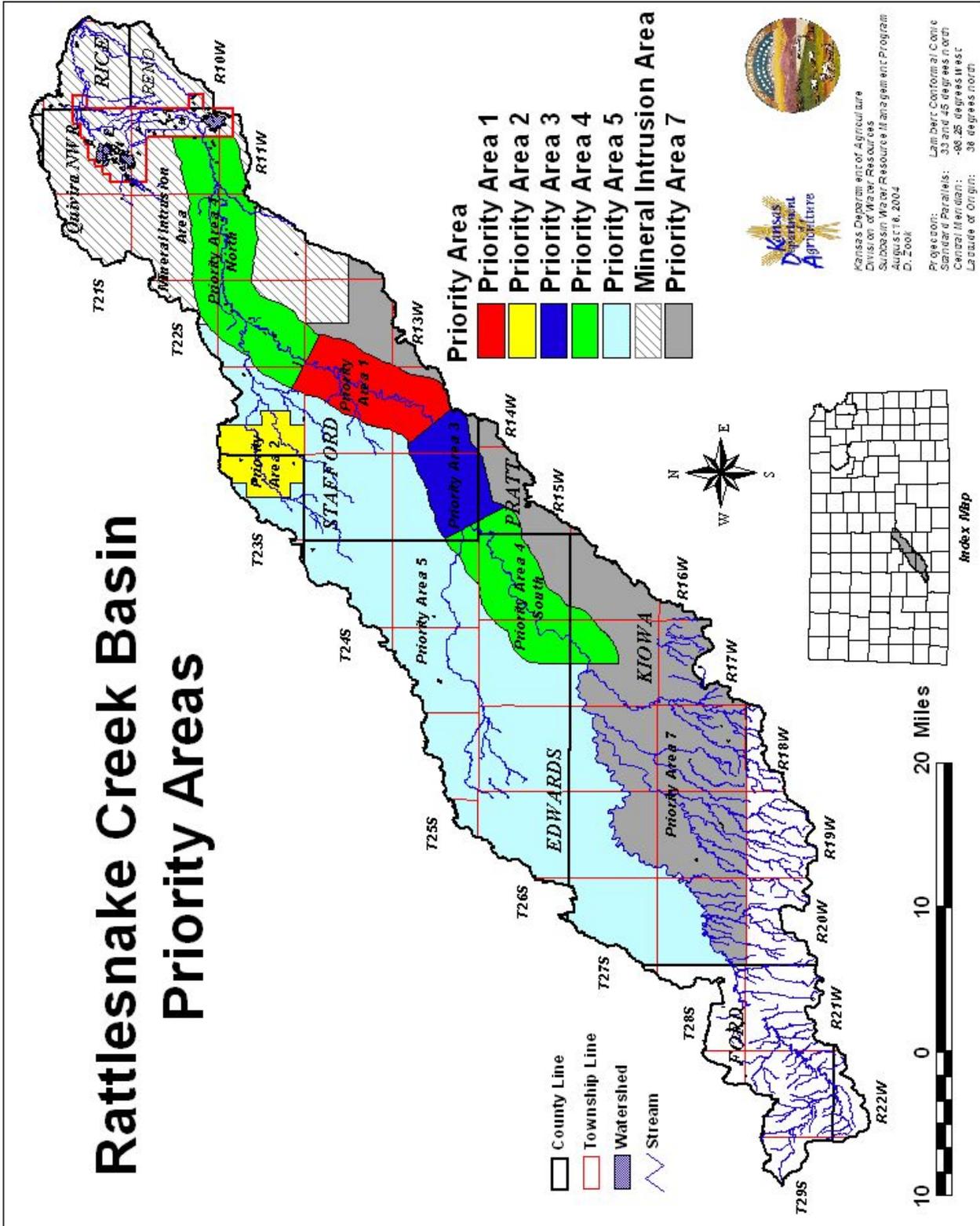


Figure 1 Map of priority areas in the Rattlesnake Creek Subbasin

Table 1 - Rattlesnake Management Alternative Numbers and Funding

Updated January 2005

PA = Priority Area

	16%	12%	7.50%	Totals
	Groundwater Unit	4-mile Corridor	Basinwide	
Program Goals	PA 2 and 5	PA 1,3, and 4	PA 7	All PA
Appropriated Quantity within Priority Area (AF)	118,989	42,798	59,281	221,068
1987 to 1996 Avg. WU/Yr. (70% of Total Apprn) (AF)	83,967	31,144	43,078	158,189
Appropriated Quantity WU/YR Goal in each Priority Area (AF)	99,951	37,662	54,835	192,448
Average Water Use per Year Goal (70% of Appropriations) (AF)	70,532	27,407	39,847	137,786
Savings Needed From Current Appropriations to Reach Goal (AF)	19,038	5,136	4,446	28,620
Average Water Use Savings Needed to Reach Goal (AF)	13,435	3,737	3,231	20,403
Improved Water Conservation				
Objective: Water Use Reduction of 5%				
Avg. 1987 to 1996 WU/Yr. (70% appropriated quantity)(AF)	83,967	31,144	43,078	158,189
Savings based on Appropriated Quantity(AF)	5,949	2,140	2,964	11,053
Average Water Use Savings (AF)	4,198	1,557	2,154	7,909
Compliance and Enforcement				
Objective: Water Use Reduction of 1%				
1987 to 1996 Avg. WU/Yr. (70% of Total Apprn) (AF)	83,967	31,144	43,078	158,189
Savings based on Appropriated Quantity (AF)	1,190	428	593	2,211
Average Water Use Savings (AF)	840	311	431	1,582
Water Rights Purchase Program/ITAP				
Objective: Reduce Appropriations				
Appropriated Quantity within Priority Area (AF)	118,989	42,798	59,281	221,068
1987 to 1996 Average Water Use (70% of Apprn) (AF)	83,967	31,144	43,078	158,189
Total Quantity to Buy Back over 12 year period (AF)	8,333	2,083		10,416
Percent of Total Appropriation in Priority Area (AF)	7.00%	4.87%		4.71%
Estimate of Cost per AF	\$500	\$500		\$500
12 year Program Total	\$4,166,500	\$1,041,500		\$5,208,000
Total Local/GMD Cost = 20%	\$833,300	\$208,300		\$1,041,600
Total State Cost = 80%	\$3,333,200	\$833,200		\$4,166,400
Annual Cost of Program From Local/GMD Interests	\$69,442	\$17,358		\$86,800
Annual Cost of Program From State	\$277,767	\$69,433		\$347,200
Authorized Quantity Goal in Priority Area (AF)	132,606	44,034		176,640
Savings based on Appropriated Quantity (AF)	8,333	2,083		10,416
Average Water Use Savings (AF)	5,880	1,516	0	7,396
Water Banking				
Objective: Water Use Reduction of 10 %				
Anticipate ~ 15% Participation				
Appropriated Quantity within Priority Area (AF)	118,989	42,798	59,281	221,068
15% of Appropriated Quantity (AF)	17,848	6,420	8,892	33,160
1987 to 1996 Average WU/Yr. (70% of Participants Apprn)(AF)	12,595	4,672	6,462	23,728
Conservation Component	10%	10%	10%	10%
Savings based on Appropriated Quantity (AF)	1,785	680	889	3,354
Average Water Use Savings(AF)	1,260	484	646	2,390
Five Year Water Right Program/Flex Accounts				
Objective: Water Use Reduction of 5%				
Anticipate ~ 11% Participation				
Appropriated Quantity within Priority Area (AF)	118,989	42,798	59,281	221,068
15% of Appropriated Quantity (AF)	17,848	6,420	8,892	26,741
1987 to 1996 Average WU/Yr. (70% of Participants Apprn) AF	12,595	4,672	6,462	19,057
Conservation Component	5%		5%	5%
Savings based on Appropriated Quantity (AF)	892		445	1,337
Average Water Use Savings (AF)	630	0	323	953
Voluntary Removal of End Guns				
Objective: Water Use Reduction of 10%				
Anticipate ~ 30% Participation				
Appropriated Quantity within Priority Area (AF)	118,989	42,798	59,281	221,068
30% of Appropriated Quantity (AF)	35,697	12,839	17,784	66,320
1987 to 1996 Average WU/Yr. (70% of Participants Apprn) (AF)	24,898	9,343	12,923	47,165
Conservation Component	10%	10%	10%	10%
Savings based on Appropriated Quantity (AF)	1,785	642	889	3,316
Average Water Use Savings (AF)	1,245	484	646	2,375
Water Appropriation Transfers				
Objective: Water Use Reduction of 5%				
Anticipate ~ 2 water rights				
Appropriated Quantity within Priority Area (AF)	118,989	42,798	59,281	221,068
2 Water Rights	130	130	130	390
1987 to 1996 Average WU/Yr. (70% of Participants Apprn) (AF)	91	91	91	273
Conservation Component	5%	5%	5%	5%
Savings based on Appropriated Quantity (AF)	7	7	7	21
Average Water Use Savings (AF)	5	5	5	15
Totals				
Conservation Practices WU Savings (AF)	4,198	1,557	2,154	7,909
Compliance and Enforcement WU Savings (AF)	840	311	431	1,582
Water Rights Purchase WU Savings (AF)	5,880	1,516	0	7,396
Water Banking WU Savings (AF)	1,260	484	646	2,390
Five Year Water Right Program (AF)	630	0	323	953
Voluntary Removal of End Guns (AF)	1,245	484	646	2,375
Water Appropriation Transfers (AF)	5	5	5	15
Savings based Appropriated Quantity (AF)	19,941	5,979	5,787	31,708
Appropriated Quantity in excess of management goal(AF)	903	844	1,341	3,088
Average Water Use Savings (AF)	14,058	4,357	4,205	22,620
Avg Water Use Quantity in excess of management goal(AF)	623	620	974	2,217

06/24/2008