

MINUTES OF THE HOUSE ENVIRONMENT COMMITTEE

The meeting was called to order by Chairperson Joann Freeborn at 3:30 P.M. on February 2, 2006 in Room 231-N of the Capitol.

All members were present except:

Representative Pat George- excused
Representative Tom Sloan- excused

Committee staff present:

Raney Gilliland, Legislative Research Department
Lisa Montgomery, Revisor of Statutes Office
Pam Shaffer, Committee Secretary

Conferees appearing before the committee:

Mary Jane Stankiewicz, Association of Ethanol Processors
Ron Hammerschmidt, PhD, Director, Division of Environment, Department of Health of Environment
Will Boyer, Lower Kansas River Extension Watershed Specialist
Fred Cholick, Dean of Agriculture, Kansas State University

Others attending:

See attached list.

Chairperson Freeborn asked for everyone in the gallery to please sign the guest list. She announced Tuesday, February 7th's agenda: Hearing on **HB2710 - Creates the water right transition program**, and Hearing on **HB2716 - Granting of easement for diversion works on Kansas river for water district number 1 of Johnson County**. She told all committee members that they had the following handouts, response to committee questions from Rod Bremby regarding chat piles (See attachment 1), Topeka River front and the Stream map; requested information related to water releases and management of Cedar Bluff Reservoir from the Kansas Water Office (See attachment 2) and requested documents regarding ethanol from Mary Jane Stankiewicz (See attachment 3).

Chairperson Freeborn asked if there were any bill requests, this is the last day for bill requests. There were none.

Chairperson Freeborn welcomed Fred Cholick, Dean of Agriculture, Kansas State University, who presented a review on research and extension programs at Kansas State. The publication he passed out to the committee members and referred to in his presentation, "An Informal Report to the Kansas Legislature January 2006" is available on the internet at www.oznet.ksu.edu, it is not attached. Mr. Cholick talked about the Genetic resource center, The Wheat Genetic and Genomic Resources Center stores stocks of wild wheats and wheat related grasses that help breeders worldwide preserve and improve varieties. Some of the center's accomplishments include releasing 47 improved germplasms, training more than three dozen visiting scientists and students and leading efforts on gene sequencing. Researchers have determined simple, cost-effective measures to help livestock producers to prevent runoff of pollutants into nearby surface waters. Proper range management, such as strategic placement of shelter, feed, and minerals away from water sources are inexpensive and take little time. Another solution is to plant vegetative cover or a buffer strip near the stream, creating a barrier for runoff. Mr. Cholick talked about water quantity issues, working with Nebraska, Colorado, Missouri and Oklahoma. Subsurface irrigation systems is something being looked at, it can produce the same amount of corn with half the water. They have the crop allocator water model, which is a computer model allowing them to test the use of water and increase efficiency. Mr. Cholick introduced Mr. Will Boyer, Lower Kansas River Extension Watershed Specialist who talked about water quality. (See attachment 4). Two major focus areas one which has been one-on-one assistance with livestock producers, building awareness of water capacity. This program's success has led to greater awareness and action at the local level, especially by small and mid-sized livestock producers.

Questions and discussion followed the review.

Chairperson Freeborn opened the hearing on **HCR5029 - Congress urged to ban MTBE in gasoline by**

CONTINUATION SHEET

MINUTES OF THE House Environment Committee at 3:30 P.M. on February 2, 2006 in Room 231-N of the Capitol.

January 1, 2010.

Mary Jane Stankiewicz, Association of Ethanol Processors, proponent testified. (See attachment 5)

Ron Hammerschmidt, Director, Division of Environment, Kansas Department of Health and Environment, neutral, testified (See attachment 6).

Questions and discussion followed the testimony.

Chairperson Freeborn closed the hearing on **HCR 5029.**

Chairperson Freeborn adjourned the meeting at 4:35pm. The next scheduled meeting is February 7.

HOUSE ENVIRONMENT COMMITTEE GUEST LIST

DATE: 02/02/06

NAME	REPRESENTING
Fred A. Cholick	K-state
Will Boyer	K-State Extension
Steven Graham	K-state Research + Extension
C Jordan	K DA
Julie Kaufman	Co-op
BT McLindless	—
JOESPH E. STILES	US JAYCEES GOUTE MOUNT Comm
Gary Blackburn	Kansas Dept. of Health + Env.
Mary Jane Staniewicz	KAEP
Frank Hornum	KDHE
John Hasele	KDHE
Clad Ruffey	KDHE



KANSAS

RODERICK L. BREMBY, SECRETARY

KATHLEEN SEBELIUS, GOVERNOR

DEPARTMENT OF HEALTH AND ENVIRONMENT

MEMORANDUM

To: House Environment Committee
From: Roderick L. Bremby, Secretary, KDHE
Date: January 31, 2006
Re: Responses to questions from the committee

Chat piles:

The chat piles are commonly used for road construction. Another use has been for filling open mine holes, shafts, and depressions during reclamation work. Reprocessing the material for further mineral extraction has been examined by private companies who determined it was not practical. The chat piles' reuse as aggregates appears to be a locally well-established enterprise. KDHE will continue to raise possible reuse of the chat material in agency work with Commerce and Housing and contractors.

Topeka Riverfront:

KDHE's Orphan Sites Unit is currently conducting, at Topeka's request, a Phase II Brownfields Targeted Assessment at properties located immediately north and south of the Kansas River between the Kansas Ave. and Topeka Blvd. bridges as part of the Topeka Riverfront Development Project Area. A Phase I Assessment was conducted in 2005 and involved searches of state and federal environmental databases, site visits, and interviews with property owners. Several potential environmental issues were identified from activities on these properties. Potential issues included underground storage tank sites, old landfills, drum and chemical storage, underground oil/water separators, and other visual evidence of contaminant release. Phase II Brownfields Assessment investigates these potential issues further, and it is expected to be completed by early 2006.

Stream Maps:

Maps are provided which illustrate classified stream segments (blue) and segments removed (red) from classification. Removal of a stream segment follows an on-site visit to the stream and documentation of conditions, called a use attainability analysis. The segments removed were confirmed to be dry except during runoff events. Also provided is Kansas River map showing the river's 22 classified segments. All segments of the Kansas River have the same designated uses: Class B Recreational Use, water supply, irrigation, industrial, livestock watering, ground water recharge, and food procurement. A link to KDHE's web-site listing Kansas streams and their uses is noted on the map, and follows here:

http://www.kdheks.gov/befs/download/2004_WR_ALL_052405.pdf

Status of Classified Streams

December 31, 2005






1-2



DATA SOURCE:

List of Classified Streams, 2005: KDHE
Political boundaries: KGS/KCDB
National Hydrology Database: USGS

DHE/BEFS January, 2006 DRAFT

- | | | | |
|---|-----------------|---|------------------|
|  | Wildlife Area |  | Deleted Streams |
|  | Lakes |  | Retained Streams |
|  | County Boundary | | |



K A N S A S

TRACY STREETER, DIRECTOR

KANSAS WATER OFFICE

KATHLEEN SEBELIUS, GOVERNOR

January 31, 2006

The Honorable Joann Freeborn
State Capitol, Room 143-N
Topeka, Kansas 66612

Dear Representative Freeborn:

On May 20, 2005, we received a letter from you requesting information related to water releases and management of Cedar Bluff Reservoir be provided on or around February 1 during the 2006, 2007 and 2008 Legislative Sessions to House Committee on Environment and the Senate Committee on Natural Resources. Attached, please find information in response to that request.

This information was compiled through collection of data from the Kansas Department of Agriculture Division of Water Resources, the Kansas Department of Wildlife and Parks and staff from the Kansas Water Office.

Should you have additional questions, please do not hesitate to contact me.

Sincerely,

Tracy Streeter, Director
Kansas Water Office

TS:JLF
Attachment

Cc: Senator Carolyn McGinn
Senator Ralph Ostmeyer
Representative Larry Powell
Representative Virginia Beamer

House Environment Committee

February 2, 2006
Attachment 2

Update on Cedar Bluff Issues

Kansas Water Office
February 1, 2006.

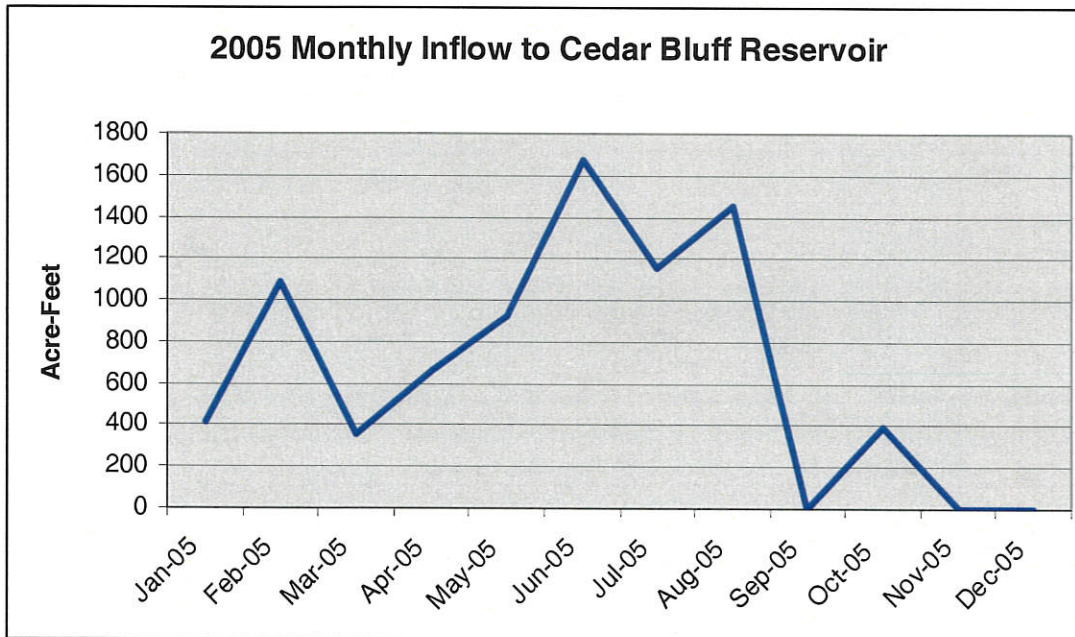
All data is for calendar year 2005.

1. Cedar Bluff Annual Visitation

The Kansas Department of Wildlife and Parks reports Cedar Bluff State Park visitation was 237,225 in 2004 and 87,226 in 2005.

2. Inflows

Inflows into Cedar Bluff Reservoir for 2005 are shown in the table below.



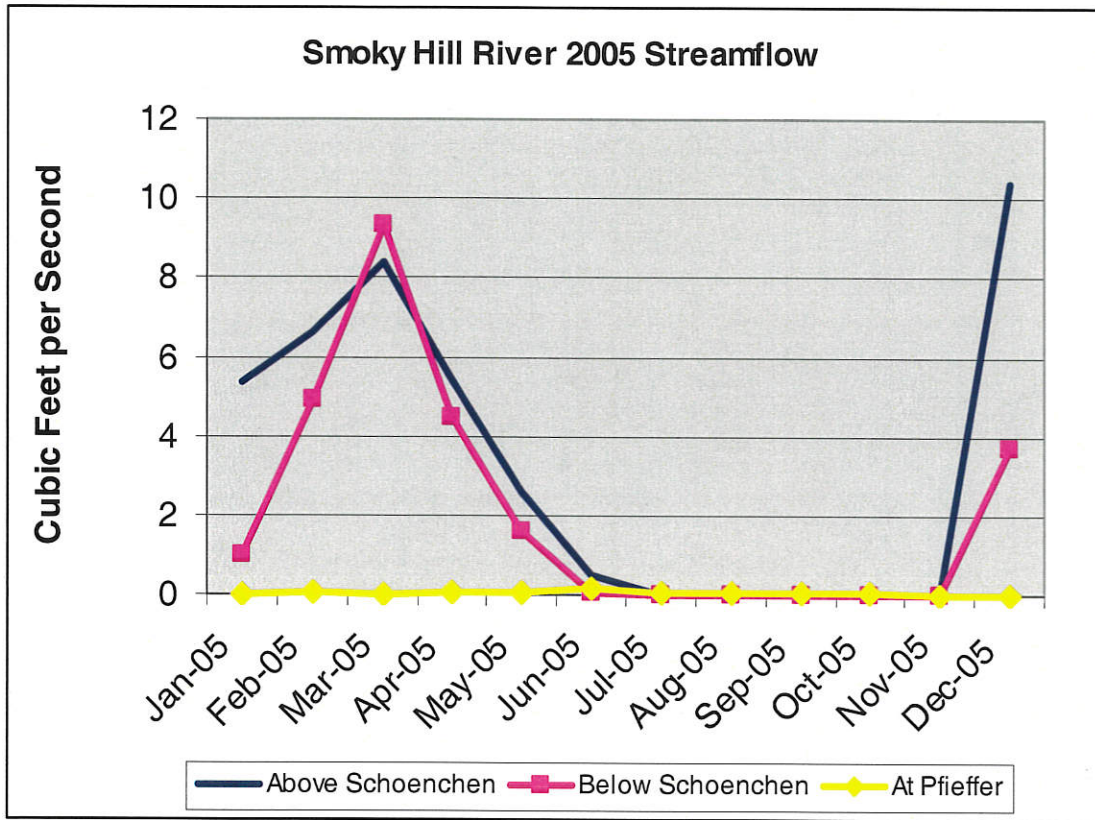
Also see Attachment A, Table of Cedar Bluff Accounting.

3. 2005 Releases

The Bureau of Reclamation reports three releases from Cedar Bluff Reservoir in 2005. These were three (3) acre feet in June, one (1) acre foot in July and 1409 acre feet in December for a total of 1409 acre feet released in 2005. The December release was for the City of Russell. Details of that release are included in Attachment B; Report to the House Agriculture and Natural Resources Budget Committee. Also see Attachment A, Table of Cedar Bluff Accounting for reservoir pool quantities throughout the year.

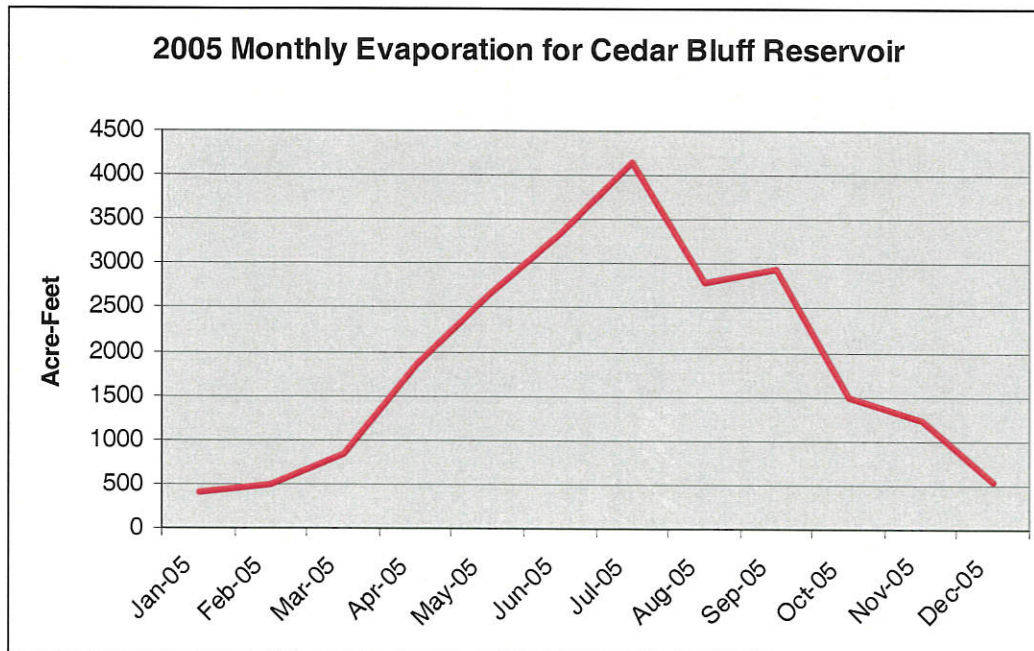
4. Smoky Hill River Gauge Readings East of Cedar Bluff

Smoky Hill River stream flow, as recorded at United State Geological Survey stream gages at three locations below, Cedar Bluff Reservoir are shown in the following table.



5. Monthly Evaporation

Evaporation for 2005 is shown in the table below. Evaporation for the year totaled 22,755 acre feet.



Also see Attachment A, Table of Cedar Bluff Accounting.

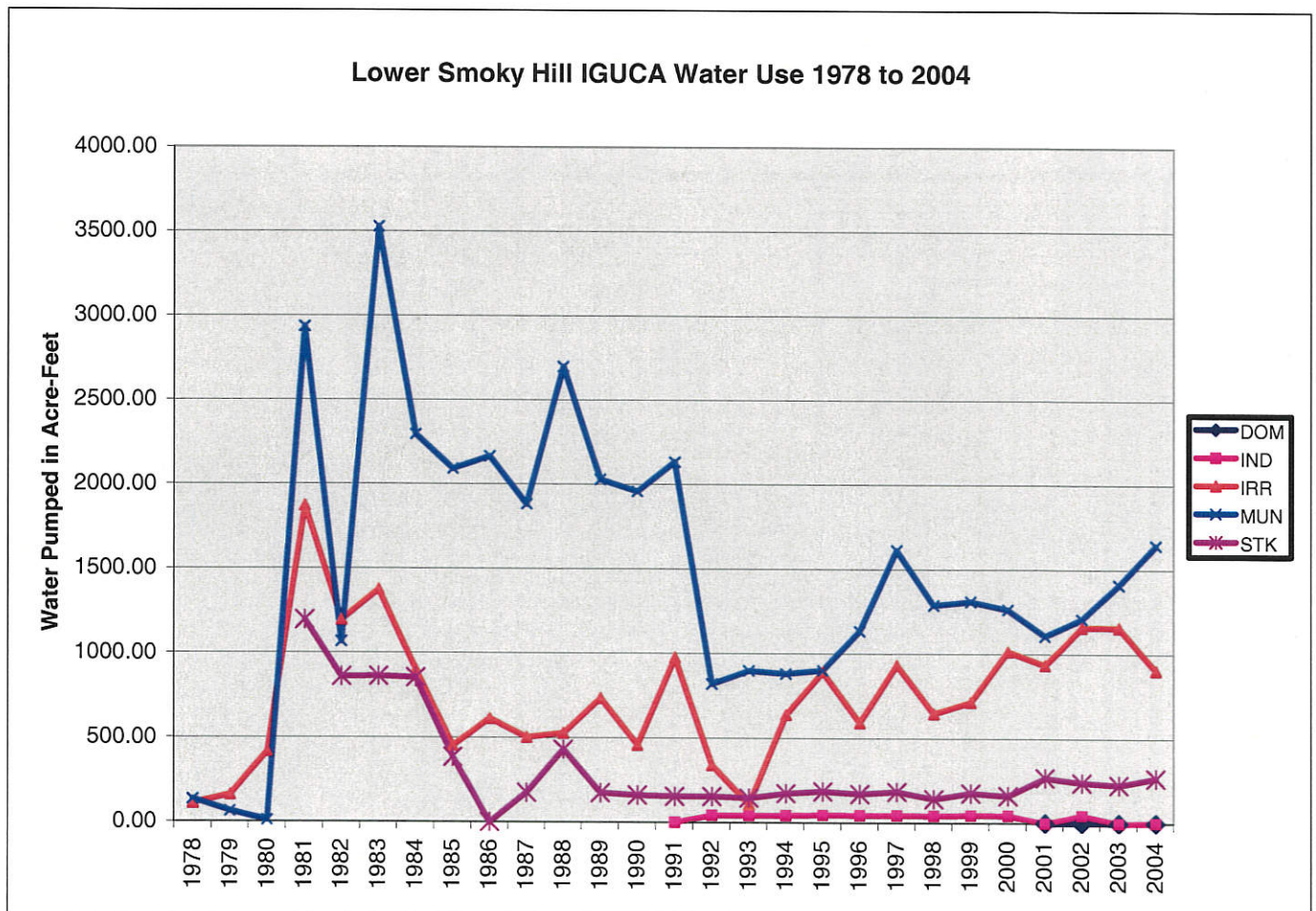
6. Water Savings from IGUCA

Reduction in authorized use

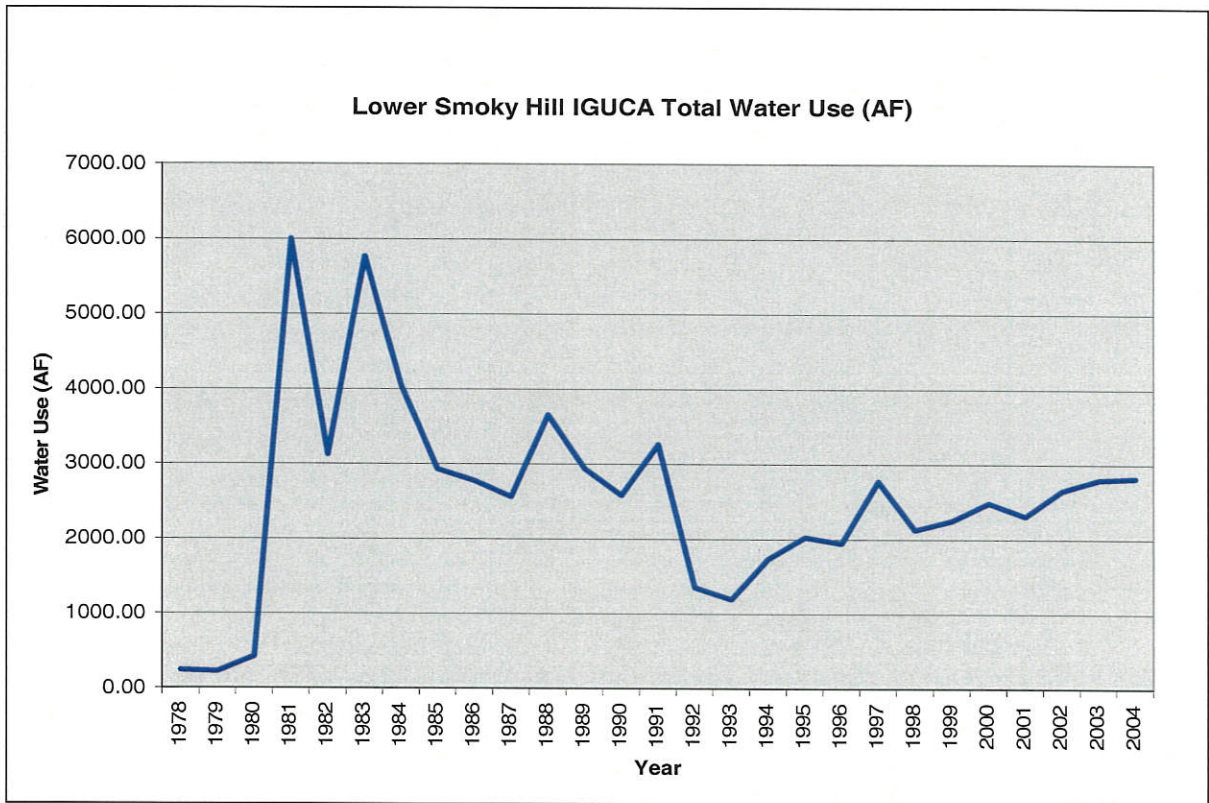
The IGUCA went into effect in 1984 with the first water use reductions beginning that year. Irrigation use was restricted to 15 inches on the maximum number of authorized acres irrigated under those rights during any one of the calendar years 1977-1982 or the amount authorized, whichever is less. For uses other than irrigation, usage was restricted in 1984 to 95% of maximum usage for any one of the calendar years 1981-1983, and for 1985 and any subsequent year usage was restricted to 90% of maximum usage for any one of the calendar years 1981-1983, but in no case was usage to exceed the amount authorized.

Comparison of water use reports pre IGUCA and post

Intensive groundwater control area (IGUCA) reductions began in 1984. The following table shows reported water use before and after required reductions by beneficial use category. Kansas Department of Agriculture, Division of Water Resources reports the water use by type in the IGUCA shown in the table below.



The total water use before and since the creation of the IGUCA is summarized by the table below.



7. Sedimentation Rate and Impact on Reservoir Pools

A sediment survey was completed in the year 2000 which indicated that a total of 12,608 acre-feet of sediment had been deposited in Cedar Bluff Reservoir. Of this total 8,779 acre-feet of sediment was deposited in Cedar Bluff Reservoir between the elevations of 2090.00 and 2144.00. According to the data, the flood pool gained 30 acre-feet of space and the pool below elevation 2090.00 lost 3,859 acre-feet of space. The following tables indicate the original and pool storage and the updated storage based on the incorporation of the 2000 sediment data according to water right:

Water Right Pools (including 2000 Sediment Survey)

Water Right File No.	Pool	Holder	Original Pool Size (af)	Quantity (af)
7,627	Fish, Wildlife and Recreation	KDWP	10,900	10,900
7,628	Municipal Water Supply	Russell	2,700	2,700
7,684	Artificial Recharge	KWO	5,400	5,110
7,684	Fish, Wildlife and Recreation	KDWP	22,140	10,161
7,684	Joint Use	KDWP	147,090	139,179

Storage lost to sediment deposition was deducted from the pools with storage covered by Water Right File No. 7,864, based on the percentages of 3.31, 6.58 and 90.11 of the water right.

8. Stream Flow Below the Dam

The US Bureau of Reclamation reports that there are four toe drains below Cedar Bluff Dam. These drains do not and have not had any flow for several years, regardless of reservoir elevation and would therefore not contribute to any streamflow. There is a small amount of leakage on the river regulating gate, but this leakage does not reach the stream.

The weir located northeast of the dam operator's house in the natural draw does flow a small amount of water, however, it appears that the flow in this gully is decreasing as the reservoir level drops. There is no "sill" on the north end of the dam that would allow for overtopping resulting in discharge down the gully. The BOR investigation nearly 15 years ago found no other avenues for reservoir seep.

The total flow leaving the reservoir is captured by the parshall flume, those measurements have been maintained by the USBR and will continue to be in the future as a Dam Safety program.

Additional stream flow investigation has been carried out by the Division of Water Resources (DWR) during 2005. Attachment B contains a description of that investigation. Attachment C discusses the DWR investigation into a potential stream gage site for seepage measurements and related measurement issues.

A summary of the 2005 average monthly stream flow at the three (3) gages was provided in section 4.

9. 2002-2005 impairment documents

Attachment D contains documentation of shortage of water for water rights in the area representing potential impairments.

10. Artificial Recharge Pool Operation Agreement Implementation

Preliminary triggers were determined based on best available information. Triggers are a function of stream flow, groundwater levels and season. If there is water in the Artificial Recharge pool and if any one of the release triggers is met, it may be requested that a release be made. The rate and duration of releases will be adjusted as system response is evaluated.

Schedule for Artificial Recharge Pool

There is no set schedule for releases. Any releases are based on trigger thresholds and requests by water users for a release. One water right holder requested release of artificial recharge water.

Outcomes during 2005

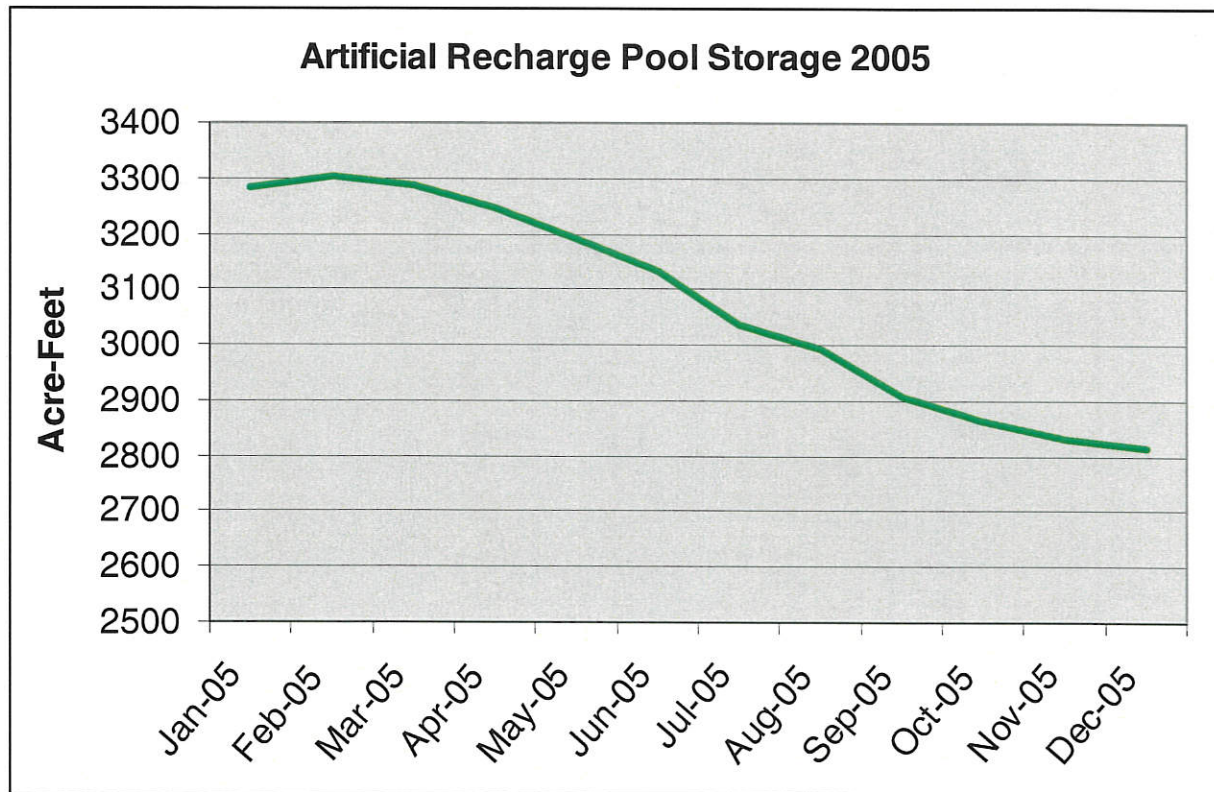
After sufficient experience has been gained by releasing water for the benefit of the downstream water right holders, the amount and timing of future releases may be refined or changed.

Although triggers were met in 2005 and a release was requested by the City of Russell, there was no release from the Artificial Recharge Pool due to litigation.

Full agreement is provided in Attachment E, the September 22, 2004 Artificial Recharge Pool Operation Plan.

11. Water Available for Release from Artificial Recharge Pool

Storage in the artificial recharge pool is calculated on a monthly basis with charges for evaporation and credits for inflows in proportion to spool size and according to water right priority. The 2005 storage quantities varied throughout the year as shown in the table below. The complete accounting for 2005 is included in Attachment A, Table of Cedar Bluff Accounting.



ATTACHMENT A

TABLE OF CEDAR BLUFF ACCOUNTING

2-9

CEDAR BLUFF RESERVOIR ACCOUNTING

Calendar Year 2005

Date	CEDAR BLUFF RESERVOIR		Dead Pool Storage (AF)	INFLOW Monthly Inflow (AF)	EVAP Reservoir Evap. (AF)	Water Rights Accounting											
	EOM Elevation	EOM Storage (AF)				Fish Hatchery (Water Right No. 7,627)				City of Russell (Water Right No. 7,628)				State of Kansas (Water Right No. 7,687)			
						Inflow Share (AF)	Use (AF)	Evap. Share (AF)	EOM Storage (AF)	Inflow Share (AF)	Use (AF)	Evap. Share (AF)	EOM Storage (AF)	Inflow Share (AF)	Use (AF)	Evap. Share (AF)	EOM Storage (AF)
Jan-05	2134.93	117211	4402	415	415	136	0	40	10804	34	0	10	2676	245	0	365	99329
Feb-05	2135.04	117789	4402	1083	505	49	0	49	10900	12	0	12	2700	1022	0	444	99787
Mar-05	2134.95	117316	4402	360	833	80	0	80	10900	20	0	20	2700	260	0	733	99314
Apr-05	2134.72	116116	4402	668	1868	180	0	180	10900	45	0	45	2700	443	0	1643	98114
May-05	2134.39	114413	4402	926	2629	257	0	257	10900	64	0	64	2700	605	0	2308	96411
Jun-05	2134.06	112731	4402	1678	3357	336	3	333	10900	82	0	82	2700	1260	0	2942	94729
Jul-05	2133.46	109726	4402	1152	4156	419	1	418	10900	104	0	104	2700	629	0	3634	91724
Aug-05	2133.19	108397	4402	1456	2785	288	0	288	10900	71	0	71	2700	1097	0	2426	90395
Sep-05	2132.58	105447	4402	0	2950	0	0	309	10591	0	0	77	2623	0	0	2564	87831
Oct-05	2132.35	104354	4402	396	1489	396	0	156	10831	0	0	39	2584	0	0	1294	86537
Nov-05	2132.09	103130	4402	0	1224	0	0	133	10698	0	0	32	2552	0	0	1059	85478
Dec-05	2131.67	101181	4402	0	544	0	0	59	10639	0	1405	14	1133	0	0	471	85007
TOTAL				8134	22755	2141	4	2302		432	1405	570		5561	0	19883	

CEDAR BLUFF RESERVOIR ACCOUNTING

CALENDAR YEAR 2005

2-10

Date	EOM Elevation	EOM Storage (AF)	INFLOW		Dead Pool Storage (AF)	City of Russell				KDWP				KWO				Joint Use							
			Monthly Inflow (AF)	Reservoir Evap. (AF)		Inflow Share (AF)	Use (AF)	Evap. Share (AF)	EOM Storage (AF)	Inflow Share (AF)	Use (AF)	Evap. Share (AF)	EOM Storage (AF)	Inflow Share (AF)	Use (AF)	Evap. Share (AF)	EOM Storage (AF)	Inflow Share (AF)	Use (AF)	Evap. Share (AF)	EOM Storage (AF)				
			Jan-05	2134.93		117211	415	415	4402	34	0	10	2700	152	0	64	17428	8	0	12	3284	221	0	329	89397
			Feb-05	2135.04		117789	1083	505	4402	12	0	12	2700	116	0	78	17466	34	0	15	3303	921	0	400	89918
05	2134.95	117316	360	833	4402	20	0	20	2700	97	0	128	17435	9	0	24	3287	234	0	661	89492				
1	2134.72	116116	668	1868	4402	45	0	45	2700	209	0	288	17356	15	0	54	3248	399	0	1481	88411				
5	2134.39	114413	926	2629	4402	64	0	64	2700	297	0	409	17244	20	0	76	3191	545	0	2080	86876				
Jun-05	2134.06	112731	1678	3357	4402	82	0	82	2700	419	3	527	17133	42	0	97	3136	1135	0	2651	85360				
Jul-05	2133.46	109726	1152	4156	4402	104	0	104	2700	460	1	657	16935	21	0	120	3036	567	0	3275	82652				
Aug-05	2133.19	108397	1456	2785	4402	71	0	71	2700	360	0	448	16848	36	0	80	2992	989	0	2186	81455				
Sep-05	2132.58	105447	0	2950	4402	0	0	77	2623	0	0	478	16370	0	0	85	2907	0	0	2310	79145				
Oct-05	2132.35	104354	396	1489	4402	0	0	39	2584	396	0	241	16525	0	0	43	2864	0	0	1166	77978				
Nov-05	2132.09	103130	0	1224	4402	0	0	32	2552	0	0	203	16322	0	0	35	2829	0	0	954	77024				
Dec-05	2131.67	101181	0	544	4402	0	1405	14	1133	0	0	90	16232	0	0	16	2814	0	0	424	76600				
TOTAL	0.00	0	8134	22755		432	1405	570	0	2507	4	3610		184	0	658		5011	0	17917					

ATTACHMENT B

**REPORT TO THE HOUSE AGRICULTURE AND NATURAL
RESOURCES BUDGET COMMITTEE**

UPDATE ON CEDAR BLUFF ISSUES
HOUSE AGRICULTURE AND NATURAL RESOURCES BUDGET COMMITTEE

Tracy Streeter, Director
Kansas Water Office

January 24, 2006

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STATUS OF CEDAR BLUFF RESERVOIR MOU ON THE JOINT USE POOL

Over the past few legislative sessions, the Kansas Water Office and the Kansas Department of Wildlife and Parks have been asked about the possibility of transferring the storage owned by the Kansas Water Office in Cedar Bluff Reservoir to the Kansas Department of Wildlife and Parks. Under the transfer of storage to the state from the federal government and the Cedar Bluff Irrigation District in the early 1990's, the Kansas Water Office owned the Artificial Recharge Pool and an undivided one half interest in the Joint Use Pool. The Artificial Recharge Pool was intended to replace return flows from the irrigation district. Both agencies believed that this purpose fit better with the role of the Kansas Water Office. The KWO and the KDWP agree that the appropriate use of the Joint Use Pool is for recreation within the reservoir. As such, it is appropriate to transfer full ownership and control to the KDWP.

The Kansas Water Office and Kansas Department of Wildlife and Parks developed a memo of understanding to transfer KWO portion of Joint Use Pool to KDWP. The MOU was posted on web for public comment Dec.9 – Jan. 3 and signed by the Secretary of KDWP and the Director of KWO on January 9th 2006. (Copy attached)

Cedar Bluff Sub-Pools

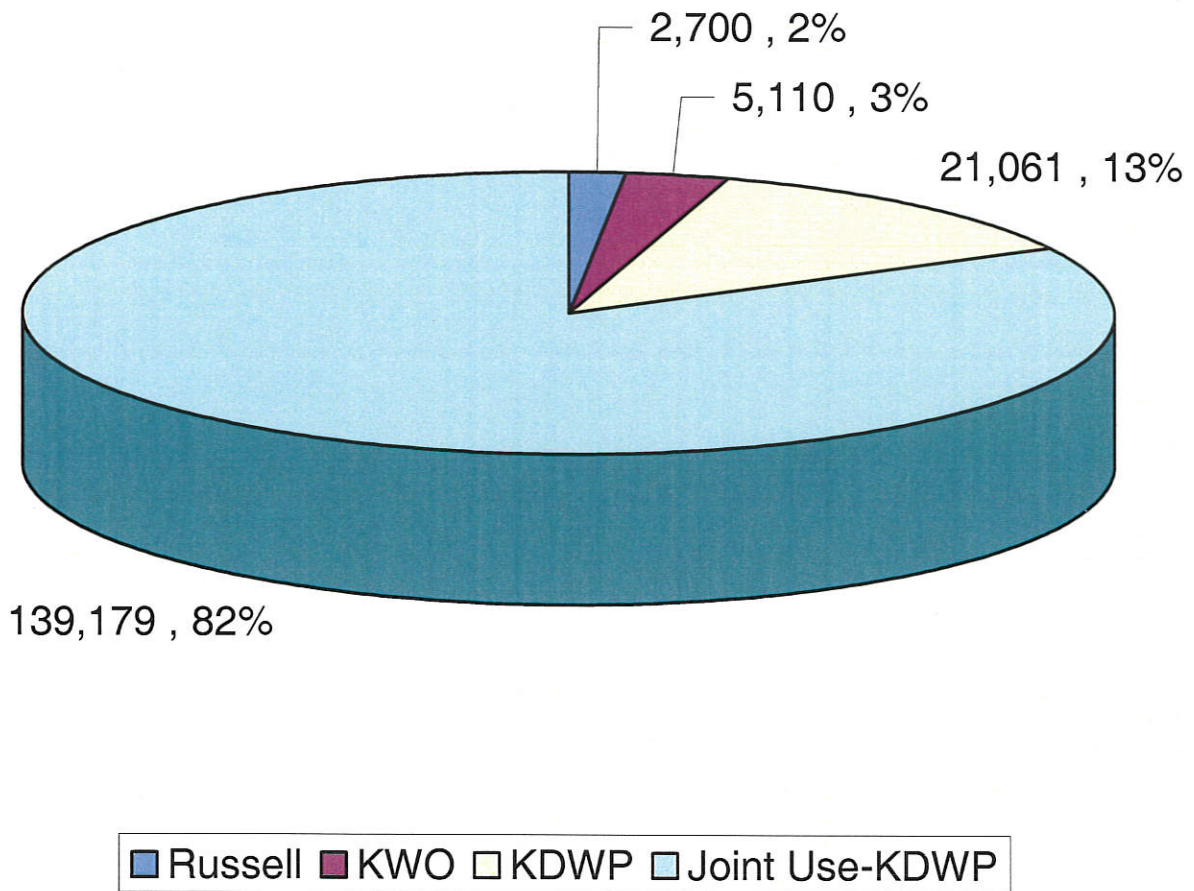


Figure 1. Relationships of "pools" in Cedar Bluff. Joint use pool now controlled solely by KDWP.

After the Cedar Bluff Irrigation District disbanded, the allocation pools in the Reservoir included the City of Russell's original water storage right, which remained unchanged; an artificial recharge pool under control of the Kansas Water Office; and a fish, wildlife, and recreation pool under control of the Kansas Department of Wildlife and Parks. A "joint-use pool" was established for water supply, flood control, and environmental and recreation purposes. Water rights for the joint-use pool were held jointly between the Kansas Department of Wildlife and Parks and the Kansas Water Office. The January 2006 MOU changes control of the joint use pool water rights solely to KDWP.

RUSSELL'S RELEASE OF WATER FROM CEDAR BLUFF RESERVOIR

Russell released a total of 1405 AF from their pool beginning on December 14, 2005 at 7:30 AM. The 50 CFS release continued until 11:30 AM on December 28, 2005.

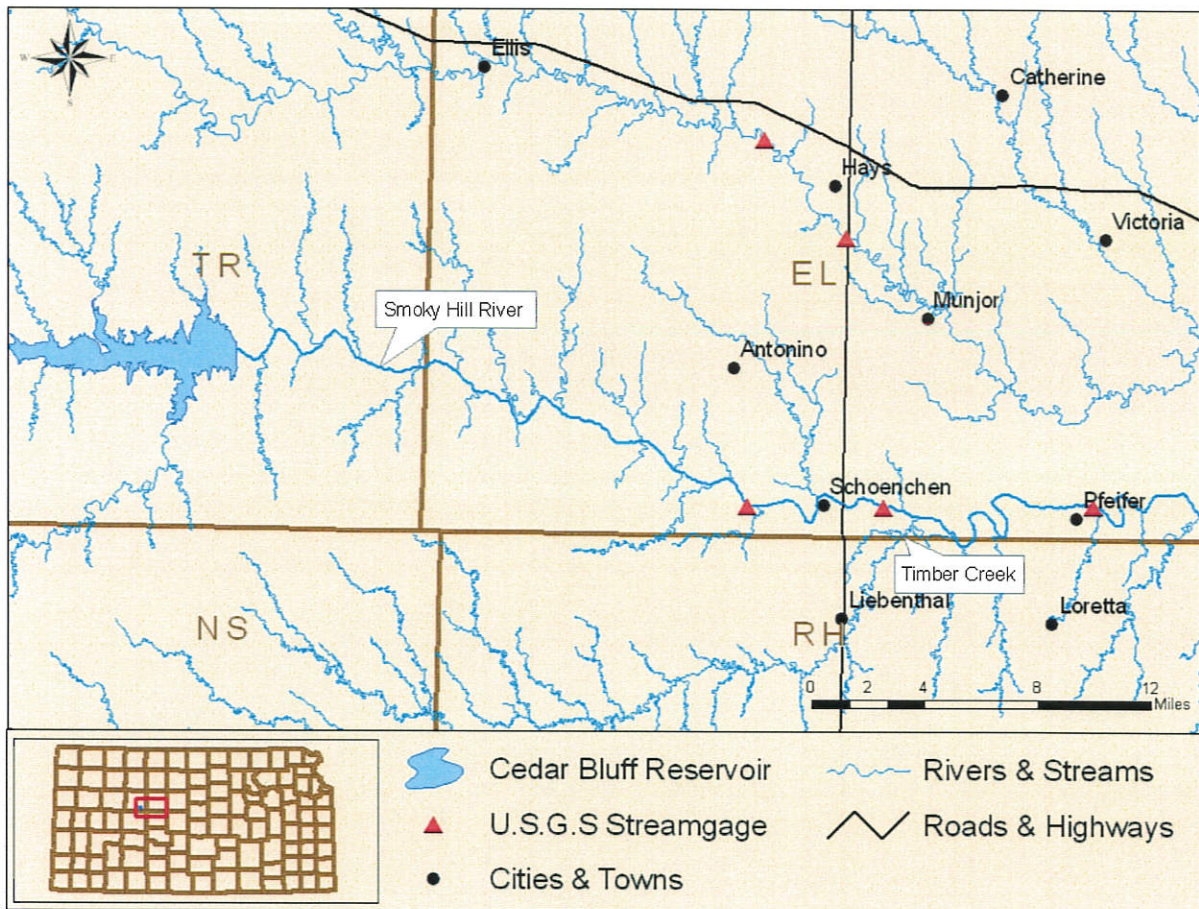


Figure 2. Hydrologic components related to Smoky Hill River system.

Cedar Bluff Reservoir

The Bureau of Reclamation, which manages the reservoir, recorded the official, lake level declined during the period of release as 4.32 inches. Reservoir losses were from two mechanisms, the 1,405 acre-feet of water (458 million gallons) released and another 218 acre-feet of water (16 million gallons) during this time period from evaporation. The reservoir lost 68 acres of water surface. The monthly accounting of water in storage accounts can be found at www.kwo.org. The current accounting table is included as Attachment B.

Current conditions (January 20, 2006) at the reservoir are:

Pool Elevation is 2131.6 Feet

Reservoir Storage is 100,769 Acre-Feet

Reservoir Inflow is 0.0 CFS

Reservoir Outflow is 0.0 CFS

Reservoir Active Conservation Pool is 54.4 % Full

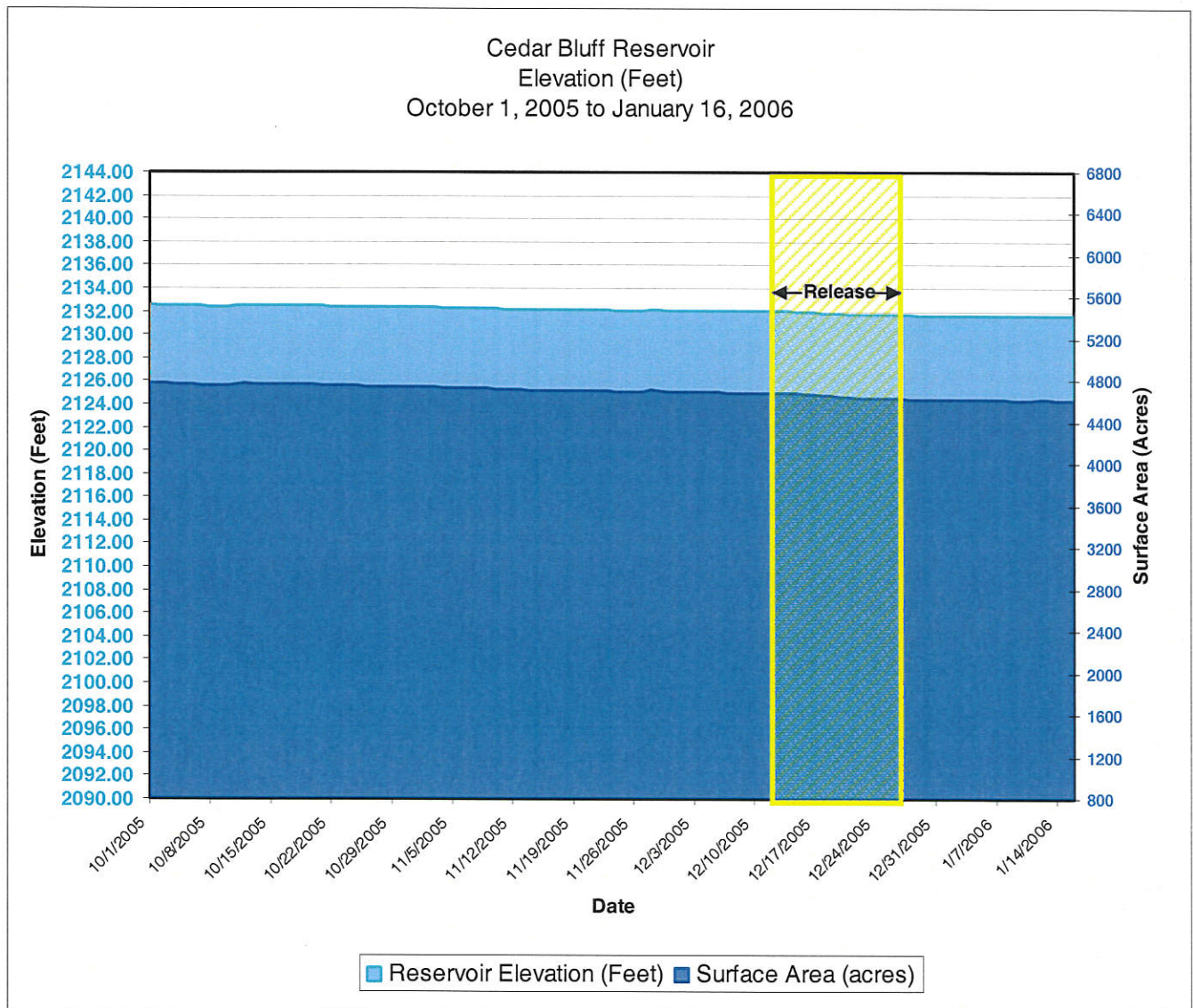


Figure 3. Cedar Bluff Reservoir elevation (feet) and surface area (acres) from October 1, 2005 to January 16, 2006.

Streamflow

The release traveled slowly, pooling behind ice dams and recharging the alluvium in order to move downstream.

Flows reached the first observation point 1.42 miles below the outlet works after 6 hours putting the initial travel time at about .23 miles per hour. This is reach that is fairly clear of debris and vegetation as it is maintained by USBR for dam safety reasons. In subsequent reaches the speed of the water slowed down.

The crest of the released flow arrived at the Near Schoenchen USGS Gage Station (Upper Schoenchen Gage) approximately 25.87 miles, after 188 hours, at 3:30 AM on December 22, 2005. The speed to that point was approximately 0.13 MPH.

Estimates by the USGS at approximately 11:00 AM on December 22, 2005 were 12.3 CFS at the gage above the Schoenchen well field. Note: Those are not official measurements due to the ice conditions in the river at the time off the measurements.

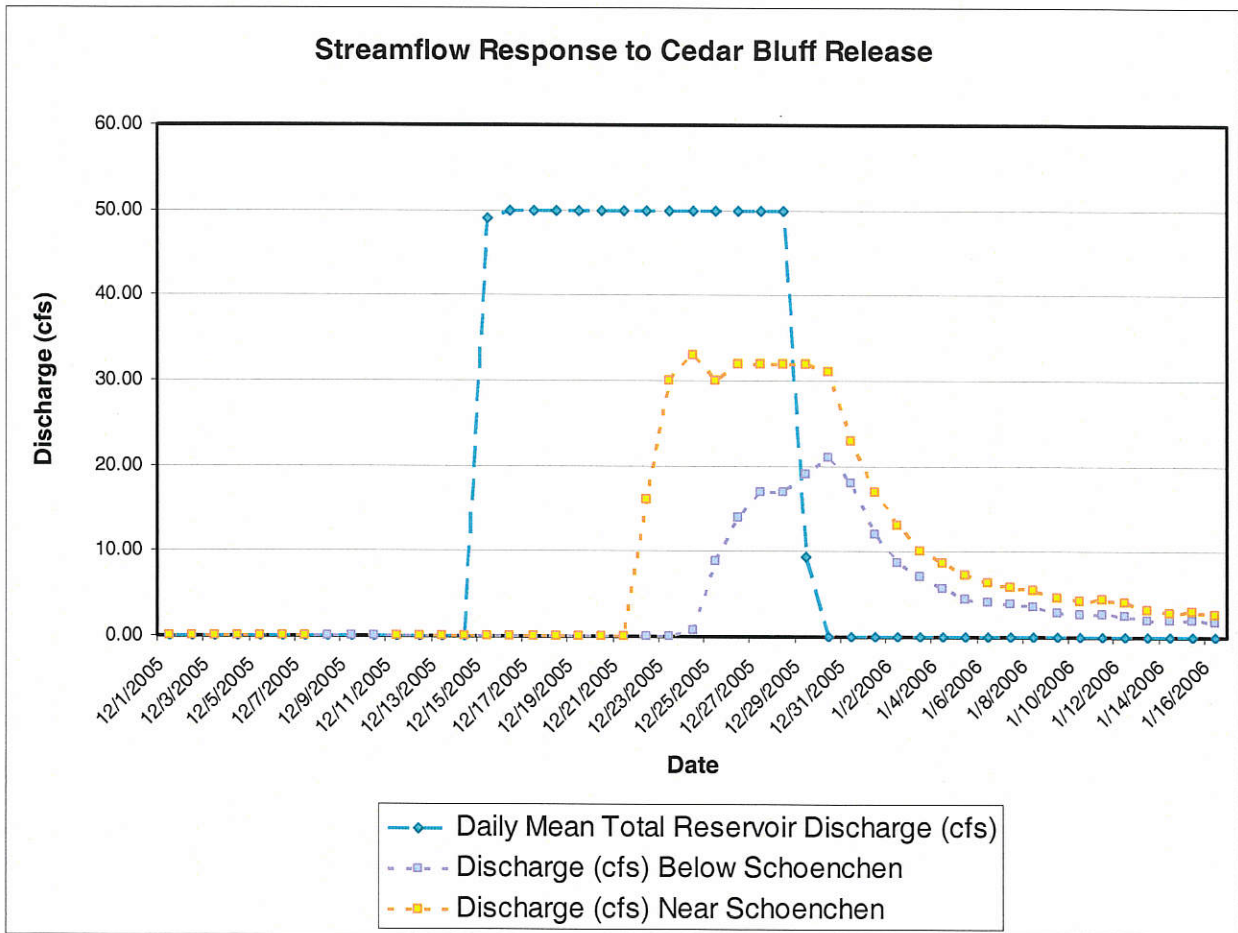


Figure 4. Smoky Hill River response to December release from Cedar Bluff Reservoir.

By December 26, 2005, flow had reached the confluence of the Smoky Hill River and Timber Creek, which is approximately 10 river miles above the Russell well field at Pfeifer. The flow in the Smoky Hill River near the Timber Creek confluence was estimated at 3 CFS about noon.

As of 9:00am, Friday, December 30, 2005, the water released from Cedar Bluff had made it to about ¼ miles west of the Pfeifer Pump station/dam. At this time, the USGS gage below the Schoenchen well field was flowing 20 CFS and the gage station above the Schoenchen well field was flowing 32 CFS.

The flow during the release was considerably slower than could be expected during normal conditions due to the cold weather. The release experienced some ice dams as it progress and took time to either break through or go around the ice dam. The slow progress and temporary storage behind ice dames probably resulted in additional recharge to the aquifer.

Alluvium

The Kansas Department of Agriculture, Division of Water Resources (DWR) observed the flow on Friday December 23, 2005 as well as measured ground water levels along the river. Well measurement provided an indication of water infiltration into the alluvial deposit, for bank storage.

DWR also watched the water levels in the Schoenchen area well field which was nearly 2 feet below normal levels for the area prior to the release. Water levels in the Schoenchen well field were on the rise at this time. It was reported that most come up significantly, the rate of rise being fairly steady.

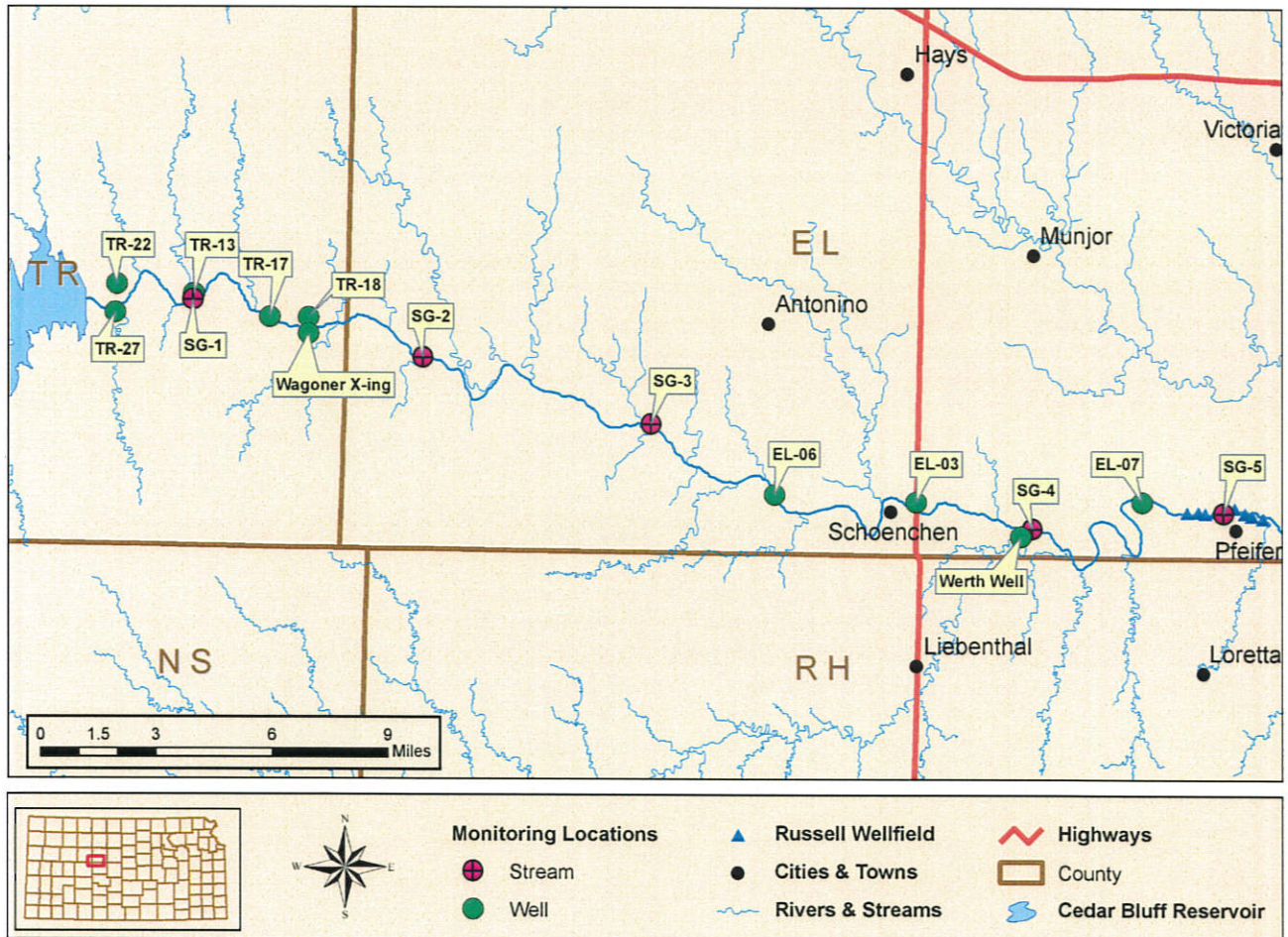


Figure 5. Release monitoring, green dots are observation wells, and the cross hairs are the locations where DWR measured the river elevations.

Groundwater Response to Reservoir Release

Trego and Ellis County and Werth Wells

The following hydrographs from monitoring well TR-13 and the Werth Well in Russell County (see Figure 4) illustrate changes in the alluvial aquifer because of the release from Cedar Bluff Reservoir. A release at this rate, quantity and duration did have a measurable impact on the water table in the alluvial aquifer. Similar groundwater increases were observed in wells from immediately below Cedar Bluff (TR-27 and TR-22) and further downstream towards Schoenchen (EL-6 and EL-3).

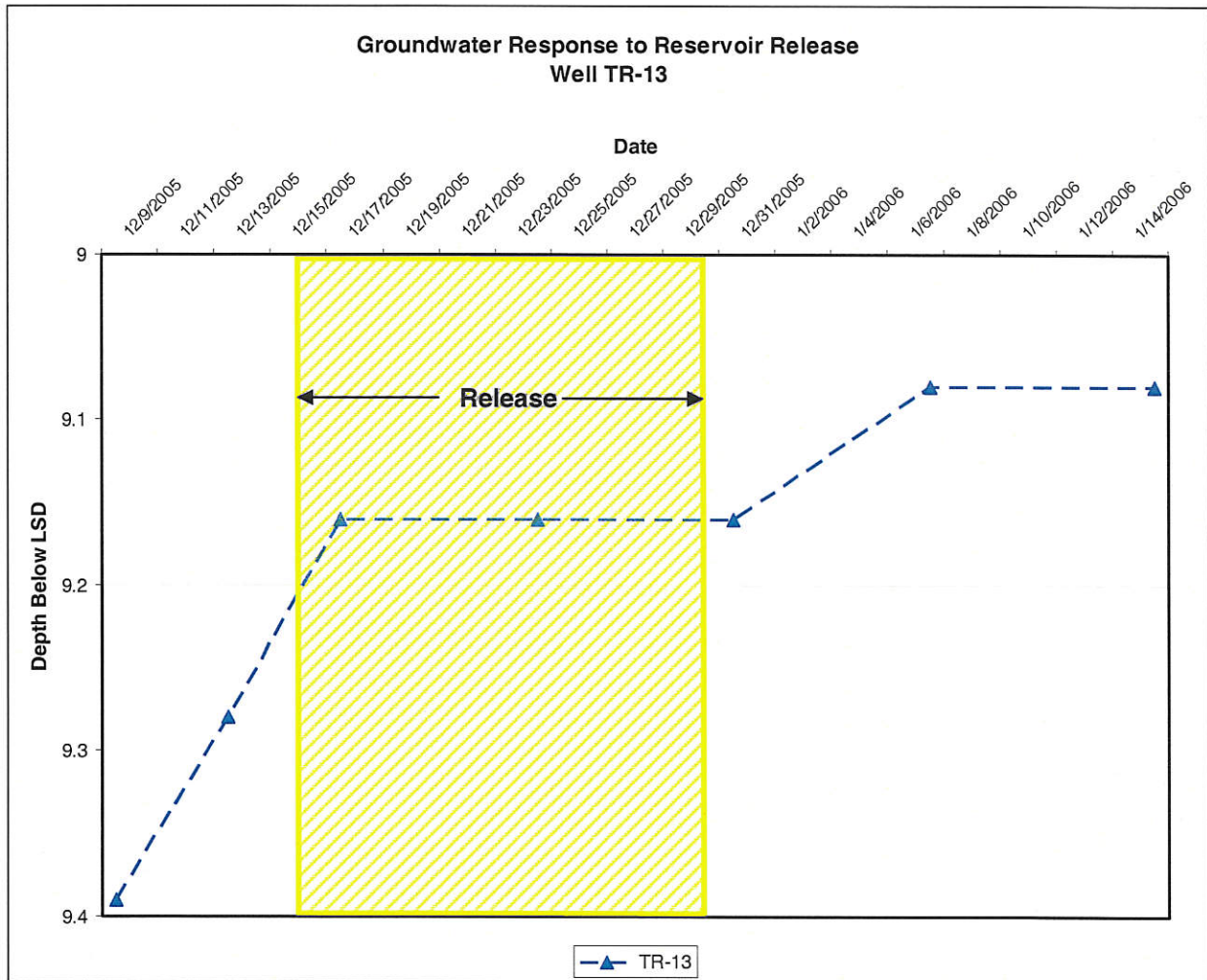


Figure 6. Groundwater response to reservoir release, Well TR-13.

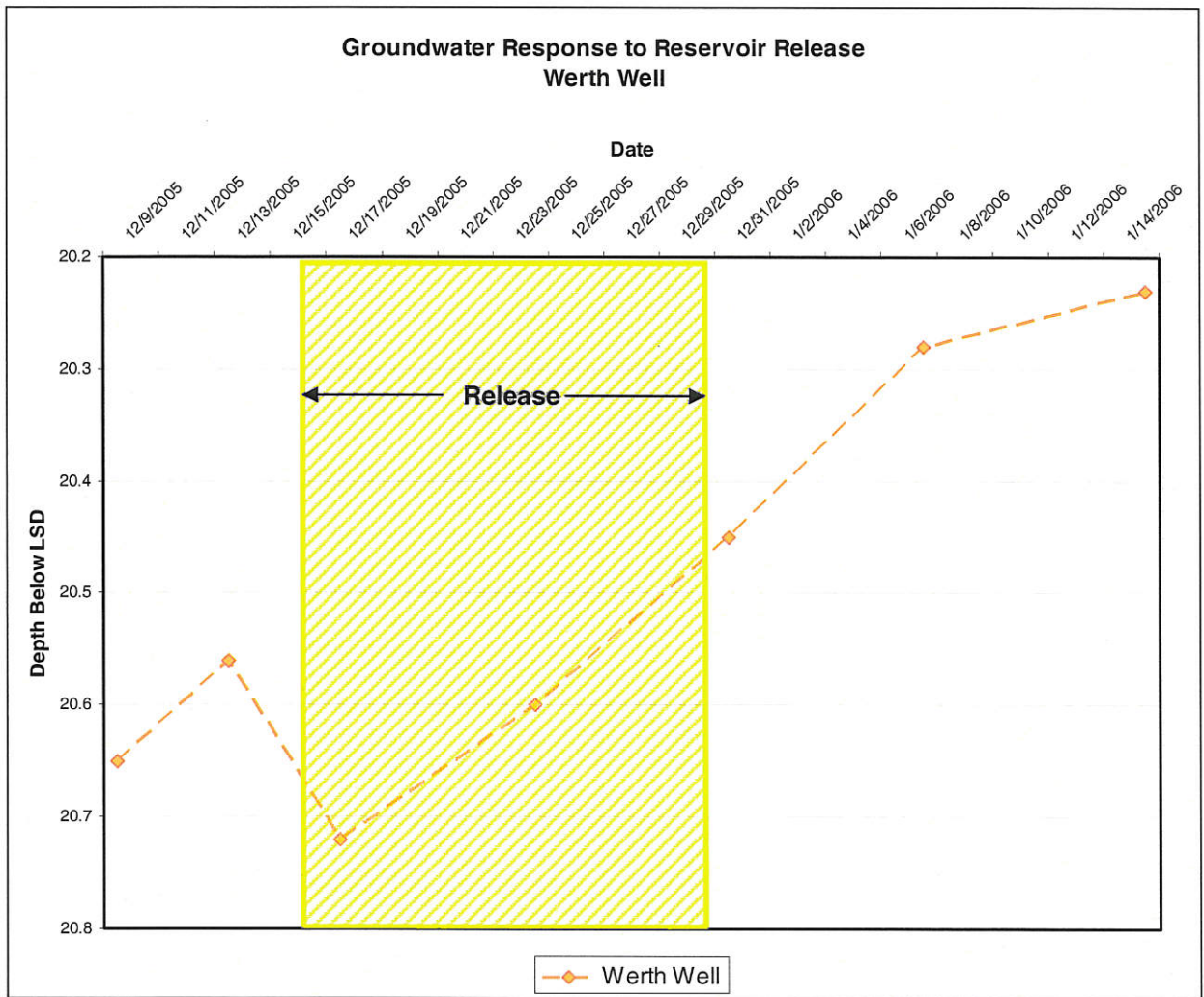


Figure 7. Groundwater response to reservoir release, Werth Well.

City of Hay's Schoenchen Wellfield

Groundwater levels in the alluvium have risen up to four (4) feet in the Hays wellfield while changes of 0.5 to 1.5 feet are common in the remaining alluvial wells. Subsequent to the release, water levels have come down, but have not yet returned to pre-release levels.

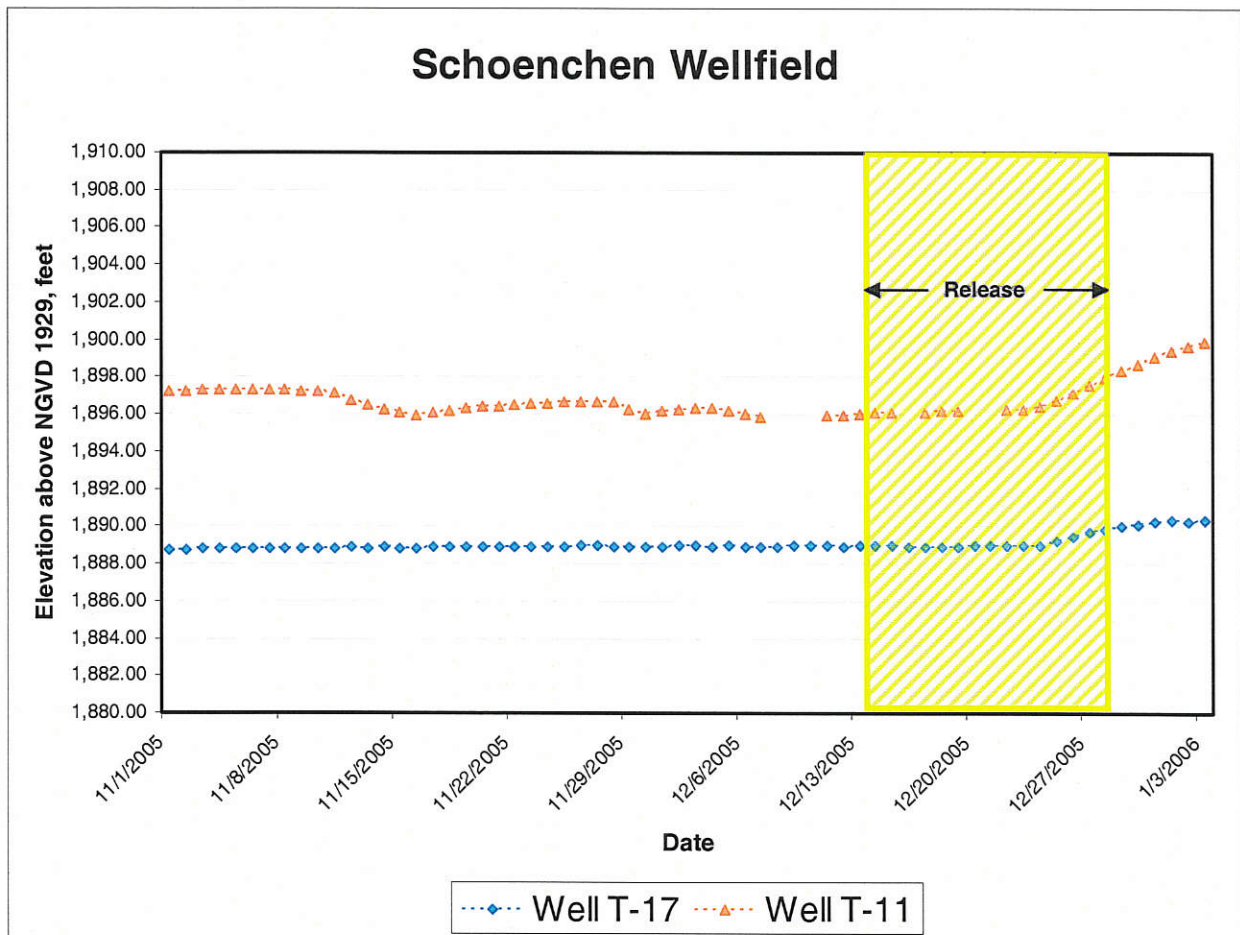


Figure 8. Elevation changes of Schoenchen wellfield, November 1, 2005 to January 3, 2006.

Russell's Pfeiffer Wellfield

On May 31st, 2005 the average depth to water level in the water supply wells for the City of Russell, at Pfeifer was 18 feet. On December 20th, 2005, the average depth to water level in the wells was 27 feet. This is a drop in water level average of 9 feet. The average depth of water over the intake screens was 7 feet prior to the December release.

As of January 17, 2006, the release of Russell's water from Cedar Bluff Reservoir has resulted in a cumulative rise in water level in each of nine wells that varied from 0.67 to 9.08 feet depending on proximity to the river, the alluvial deposits and location along the river.

Average of all wells increase was 0.9 feet between December 13 and December 30, 2005, then another 2.03 feet by January 2, 2006. The increase in ground water level has continued as water is held by the Russell structure below the well field.



Figure 9. Smoky Hill River at Russell Well Field, January 3, 2006.

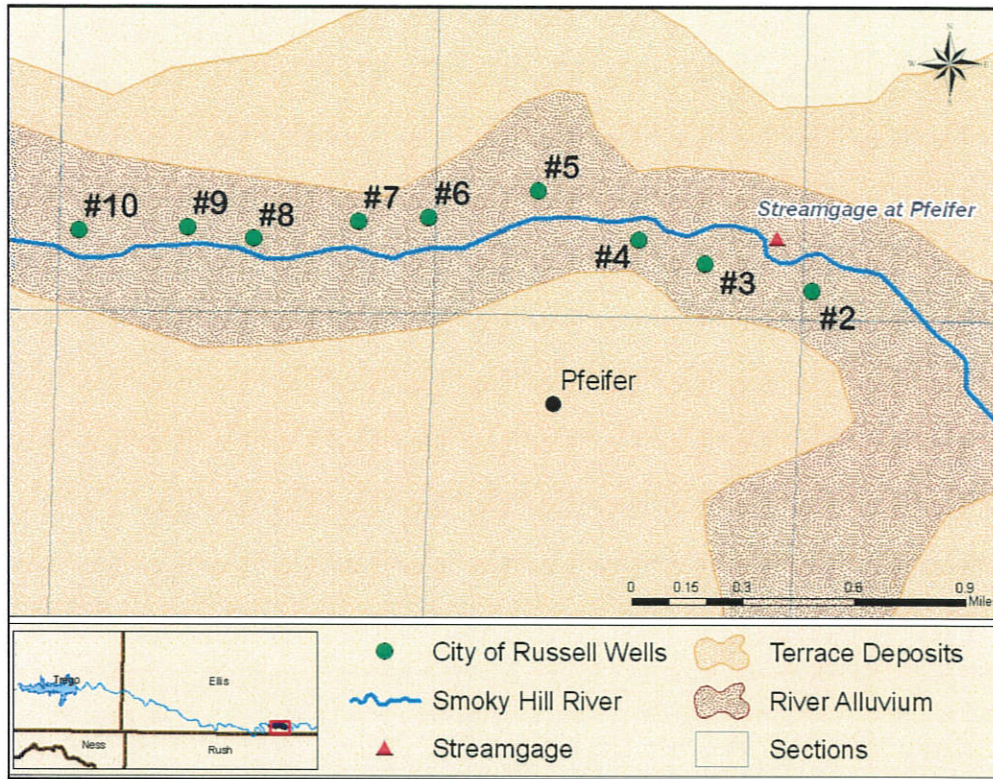


Figure 10. Russell Wells near Pfeifer.

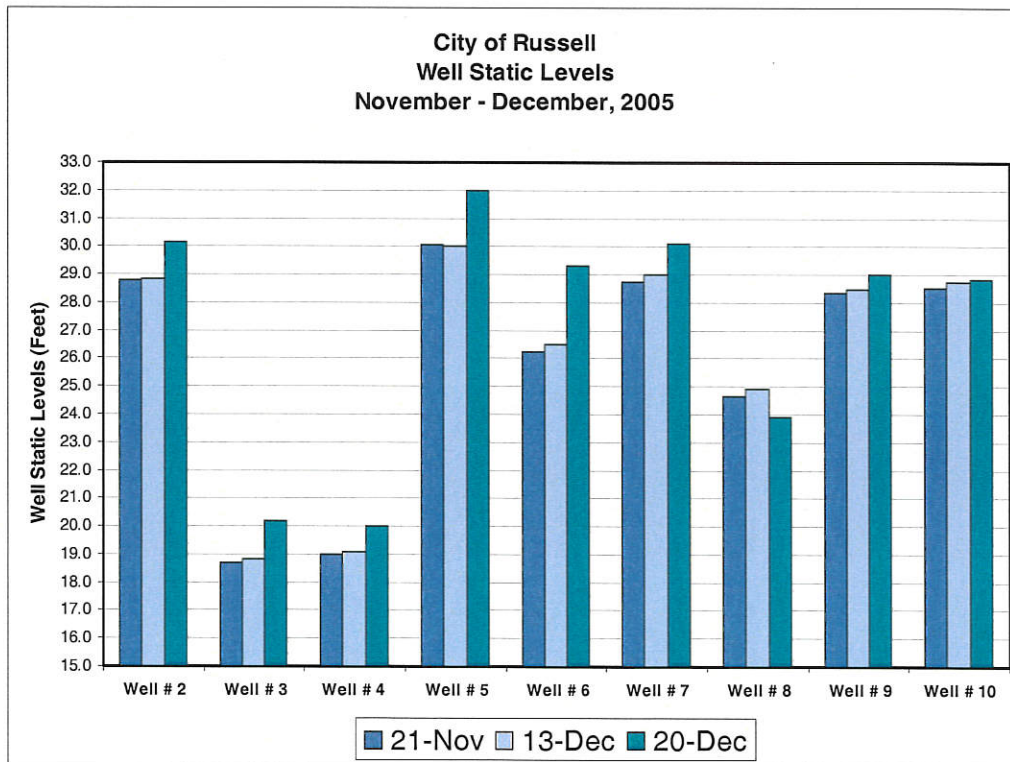


Figure 11. Russell well water level changes.

SEEPAGE OF WATER THROUGH THE DAM AT CEDAR BLUFF RESERVOIR

The U.S. Bureau of Reclamation reports that there are four toe drains below Cedar Bluff Dam. These drains do not and have not had any flow for several years, regardless of reservoir elevation and would therefore not contribute to any streamflow. There is a small amount of leakage on the river regulating gate, but this leakage does not reach the stream.

A weir located northeast of the dam operator's house in a natural draw does flow a small amount of water, however, it appears that the flow in this gully is decreasing as the reservoir level drops. There is no "sill" on the north end of the dam which would allow for some seepage resulting in discharge down the gully. The BOR investigation nearly 15 years ago found no other avenues for reservoir seepage.



Figure 12. DWR photo of outlet from existing deposits.

The total flow leaving the reservoir is captured by the Parshall flume, those measurements have been maintained by the USBR and will continue to be in the future as a Dam Safety program. A graphic from a Bureau of Reclamation study of the seepage compared to reservoir elevation as measured by the Parshall flume is shown in Figure 13.

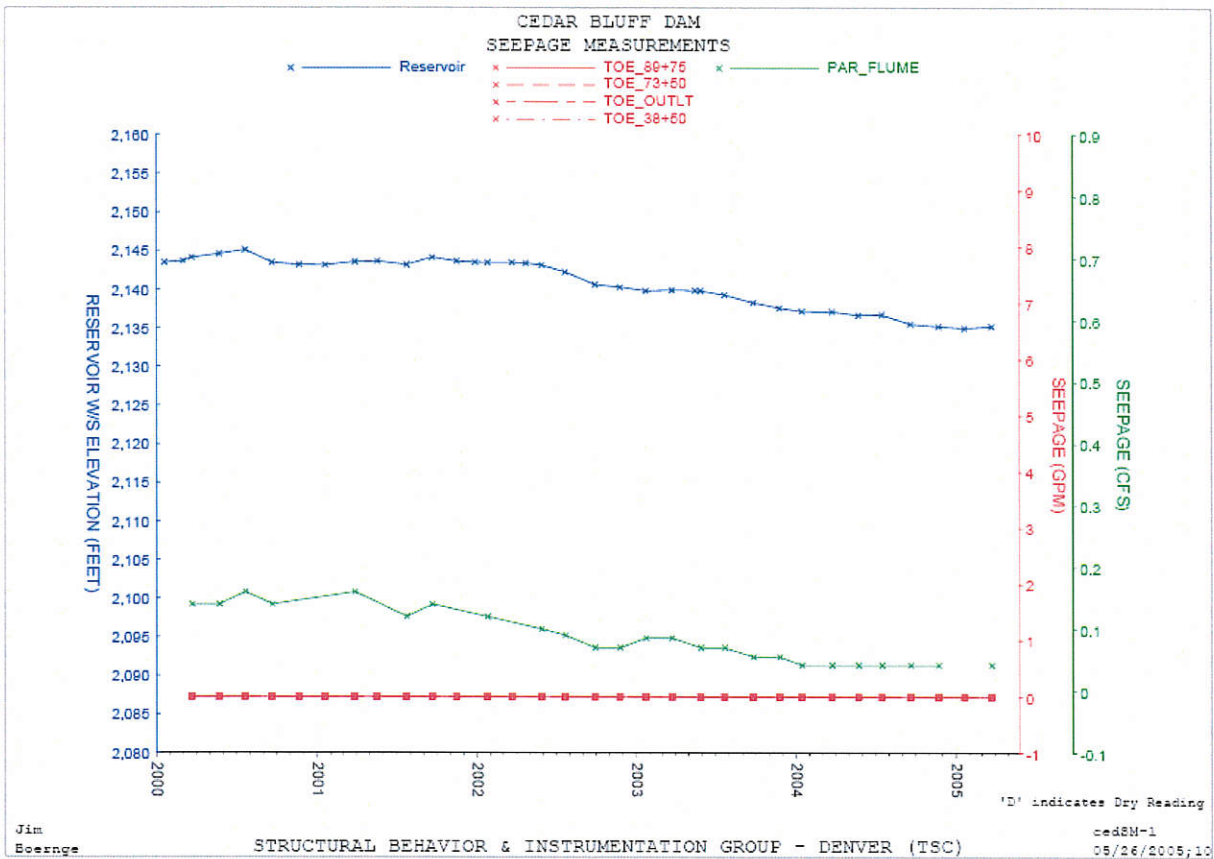


Figure 13. U.S. Bureau of Reclamation Seepage.

DWR field investigation this past year of seepage at seven sites identified as potentially contributing to river flow below Cedar Bluff Dam. Observations of tributary contributions to flow were observed and measurements taken where possible on the initial survey May 4, 2005 and a walking survey June 23, 2005. Measuring locations are shown in Figure 4. Dry drainages were observed on the June 23, 2005 survey at Map sites 1 and 5. Site 2 had flow that was measured at 0.47 CFS. Minimal flow in vegetation was observed at Site 3 but could not be measured directly. A man-made channel and drop structure enabled measurements at Site 4 that includes any flow from sites 1, 2 and 3. This combined flow was measured in the June survey flow as 1.04 CFS at Site 4. There is a staff gage at Site 6 providing a good measurement. This water is leakage from terrace deposits (KGS Bulletin No. 174) and not seepage from Cedar Bluff Dam.

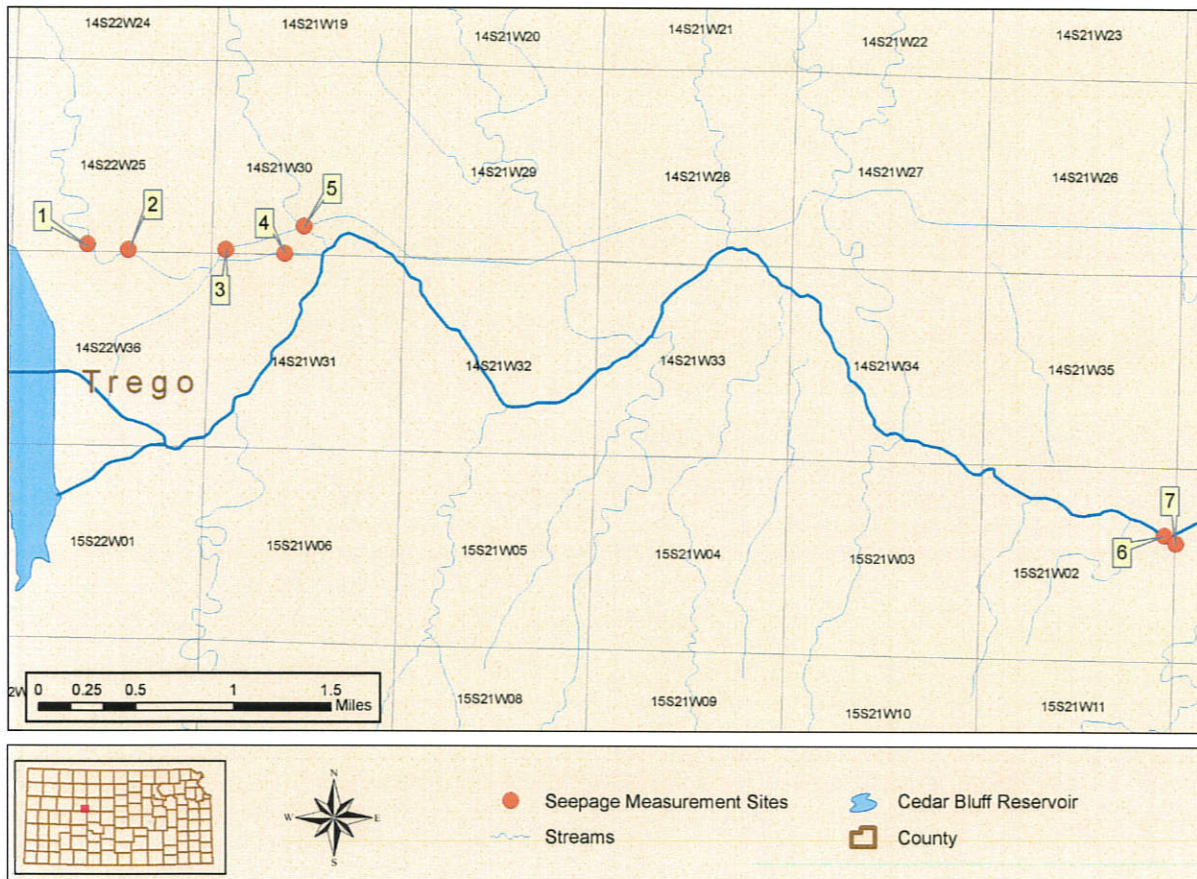


Figure 14. Map of Seepage Measurement Sites.

Date	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7
5/4/2005	<.05 cfs	.3 cfs	0.5	0.6	0.05	1.08	1.04 cfs
5/10/2005	dry	.1 cfs	0.5	0.6	0.5	1.9	0.55
5/19/2005	dry	0.43 cfs*	0.5	0.6	0.5	1.05	0.42
5/23/2005	dry	0.4	0.5	0.6	0.5	0.65	0.42
6/8/2005	dry	0.4	0.5	0.6	0.5	0.42	0.31
6/15/2005	dry	0.4	0.5	0.6	0.5	0.72	0.29 cfs *
6/23/2005	dry	0.47 cfs*	0.5	1.04 cfs *	dry	0.31	0.27 cfs *
7/7/05						dry	dry
7/20/2005	dry	0.4	0.5	0.5	dry	dry	dry
7/26/2005	dry	0.3	0.3	0.5	dry	dry	dry
9/7/2005	dry	0.2	0.2	0.3	dry	dry	dry
10/19/2005	dry	0.2	0.2	0.2	dry	dry	dry
11/21/2005	dry	0.2	0.2	0.3	ponded	ponded	ponded
12/12/2005	dry	0.2	0.2	0.3	0.3	ponded	ponded

Table 1. Seepage Measurements below Cedar Bluff Reservoir.

An in-stream measuring devise was completed July 20, 2005 to obtain flow data. The first flow through the gage was reported December 5, 2005 at 0.1 foot.



Figure 15. DWR photo of culvert gage constructed summer of 2005.

ATTACHMENT A

JOINT USE POOL

MEMORADUM OF UNDERSTANDING

JANUARY 2006

Memorandum of Understanding
Between
The Kansas Water Office
and
The Kansas Department of Wildlife and Parks
For
The Control of Cedar Bluff Reservoir Water Storage

This Memorandum of Understanding is entered into this ninth (9th) day of January, 2006, by and between the following parties, the Kansas Water Office (hereinafter referred to as KWO) located at 901 S. Kansas Avenue, Topeka, Kansas 66612 and the Kansas Department of Wildlife and Parks (hereinafter referred to as KDWP) located at 1020 S. Kansas, Topeka, Kansas 66612.

WHEREAS, the Purpose of this Memorandum of Understanding is to identify the control and management of the stored water owned by the State of Kansas in Cedar Bluff Reservoir;

WHEREAS, this Memorandum of Understanding seeks to replace an existing Operations Agreement for Cedar Bluff Reservoir by and between the Kansas Water Office and the Kansas Department of Wildlife and Parks originally dated February 4, 1994;

WHEREAS, this Memorandum of Understanding is in accordance with Contract Number 9-07-60-W0387 by and between the United States of America and the State of Kansas, initially entered into on February 27, 1989 and last amended October 21, 1993 for the acquisition of an interest in the conservation capacity of Cedar Bluff Reservoir (hereinafter referred to as Contract No. 9-07-60-W0387);

WHEREAS, KWO and KDWP seek to enter into this Memorandum of Understanding for the control of the stored water owned by the State in Cedar Bluff Reservoir to better identify allowed uses of water and historic operations of the Reservoir;

NOW THEREFORE, the rules regarding the portions of the conservation capacity of Cedar Bluff Reservoir between KWO and KDWP are herein established by this Memorandum of Understanding, and are as follows:

1. KWO and KDWP agree that as of the date of this Agreement, storage allocations within the conservation pool are as follows:

Table 1. Storage Space Allocation

Water Right	Pool Owner	Purpose	Pool Size (af)
7627	Kansas Department of Wildlife & Parks	Fish, Wildlife & Recreation	10,900
7628	City of Russell	Municipal Water Supply	2,700
7684	Kansas Water Office	Artificial Recharge	5,110
7684	Kansas Department of Wildlife & Parks	Fish, Wildlife and Recreation	10,161
7684	KWO & KDWP	Joint Use	139,179

2. operation and maintenance purposes, the Municipal Water Supply, Artificial Recharge and Fish, Wildlife and Recreational pool shall be herein referred to as The Designated Operating Pool.
3. The United States Corp of Engineers (herein referred to as COE) shall continue jurisdiction and responsibility for controlling water releases from the existing flood control pool between elevations 2144.00 and 2166.00 mean sea level.
4. The Bureau of Reclamation (herein referred to as BOR) shall continue jurisdiction and responsibility for making releases from storage when water is above elevation 2166.00 mean sea level.

Thus, the KWO and KDWP agree to the following:

1. KDWP shall be designated as the state agency to coordinate activities with the Bureau of Reclamation relative to Contract No. 9-07-60-W0387.
2. The KDWP, after consultation with the KWO, agrees to annually meet with the United States Bureau of Reclamation to develop an Annual Operating Plan for Cedar Bluff Reservoir in accordance with paragraph 4.f. of Contract No. 9-07-60-W0387.
3. The KDWP shall continue to administer reservoir lands and lake areas for fish, wildlife and recreation including the existing Cedar Bluff State Park in accordance with existing agreements.
4. KWO shall be responsible for making a call to BOR for any water releases from the artificial recharge pool.
5. KDWP shall be responsible for making a call to BOR for any water releases from the fish, wildlife and recreation pool and the joint use pools.
6. KDWP and KWO shall communicate and notify the other party prior to initiating any releases from the suballocation pool within their respective authority. Notification shall be as follows: By phone call, to the director or secretary, or their designated staff.
7. KDWP and KWO through 2008, shall continue to pay their proportionate share (designated operating pool –KWO 20%, KDWP 80% -- joint use pool – 50%/50%) of the state's annual operation, maintenance and replacement obligation to the federal government, as outlined in Contract No. 9-07-60-W0387.

a) Commencing in calendar year 2009, KDWP and KWO proportionate share shall be as follows:

- I. For KWO, \$3,000 or 20 percent of the total annual

operation, maintenance and replacement costs associated with the designated operating pool whichever is greater.

II. For KDWP, the remaining state share of the operation, maintenance and replacement costs.

b) In the event funding designated for payments outlined in section I. is excluded from either KWO or KDWP budget authority, responsibility for payment of KWO or KDWP proportionate share of annual operation, maintenance and replacement costs shall revert to those as detailed in Contract No. 9-07-60-W0387.

8. Any water rights currently held by KWO for storage in Cedar Bluff Reservoir in the "joint use pool" as defined in Contract No. 9-07-60-W0387 shall be transferred to KDWP with the execution of this MOU and with written notice to the Division of Water Resources. This will result in pool ownership in the table 2.

Table 2. Cedar Bluff Storage Allocation after Transfer.

Water Right	Pool Owner	Purpose	Pool Size (af)
7627	Kansas Department of Wildlife & Parks	Fish, Wildlife and Recreation	10,900
7628	City of Russell	Municipal Water Supply	2,700
7684	Kansas Water Office	Artificial Recharge	5,110
7684	Kansas Department of Wildlife & Parks	Fish, Wildlife & Recreation	10,161
7684	Kansas Department of Wildlife & Parks	Joint Use	139,179

9. KWO and KDWP shall consult and agree on administration of water rights or changes of the use of any pool before application to Kansas Department of Agriculture, Division of Water Resources is made.

10. KWO shall maintain the accounts of the suballocation pools on a monthly basis and report the account to KDWP. Procedures used to account for inflows, releases, losses and water in storage in each pool within Cedar Bluff Reservoir multipurpose pool will follow all provisions of the "Contract Administration Memorandum (Memo) between the United States represented by the Department of Interior Bureau of Reclamation and the City of Russell, Kansas, and the State of Kansas regarding Reservoir Accounting Procedures for Cedar Bluff Reservoir, Trego County, Kansas" dated November 2003.

TERMS AND CONDITIONS

1. This Memorandum of Understanding shall be subject to the laws of the State of Kansas.
2. The parties agree not to assign this Memorandum of Understanding to any other entity, nor the respective rights or duties thereof.

3. No third party beneficiaries are created by this Memorandum of Understanding.
4. This Memorandum of Understanding may be modified by mutual written agreement by both parties.
5. Equal opportunity to participate in and benefit from programs described herein is available to all individuals without regard to their race, color, religion, national origin, ancestry, sex, age, or disability. Complaints of discrimination should be sent to the Office of Secretary, Kansas Department of Wildlife & Parks, 1020 S. Kansas, Suite 200, Topeka, Kansas 66612.
6. In the event any of the provisions of this Memorandum of Understanding are deemed to be invalid or unenforceable, the same shall be deemed severable from the remainder of Memorandum of Understanding. If such provision shall be deemed invalid due to its scope and breadth, such provision shall be deemed valid to the extent of the scope and breadth permitted by law.
7. All parties signing this Memorandum of Understanding hereby attest to authorization as a signatory for the respective entities involved.

This Memorandum of Understanding is effective upon the last signing by a duly authorized representative of the aforementioned parties.

01/09/2006

Date

Tracy Streeter

Tracy Streeter, Director
Kansas Water Office

01/09/06

Date

J. Michael Hayden
J. Michael Hayden, Secretary
Kansas Department of Wildlife and Parks

ATTACHMENT B

CEDAR BLUFF STORAGE ACCOUNTS

2-34
19
~~234~~

2-35

CEDAR BLUFF RESERVOIR ACCOUNTING

Calendar Year 2005

Date	CEDAR BLUFF RESERVOIR		Dead Pool Storage (AF)	INFLOW Monthly Inflow (AF)	EVAP Reservoir Evap. (AF)	Water Accounting											
	EOM Elevation	EOM Storage (AF)				Fish Hatchery (Water Right No. 7,627)				City of Russell (Water Right No. 7,628)				State of Kansas (Water Right No. 7,687)			
						Inflow Share (AF)	Use (AF)	Evap. Share (AF)	EOM Storage (AF)	Inflow Share (AF)	Use (AF)	Evap. Share (AF)	EOM Storage (AF)	Inflow Share (AF)	Use (AF)	Evap. Share (AF)	EOM Storage (AF)
Jan-05	2134.93	117211	4402	415	415	136	0	40	10804	34	0	10	2676	245	0	365	99329
Feb-05	2135.04	117789	4402	1083	505	49	0	49	10900	12	0	12	2700	1022	0	444	99787
Mar-05	2134.95	117316	4402	360	833	80	0	80	10900	20	0	20	2700	260	0	733	99314
Apr-05	2134.72	116116	4402	668	1868	180	0	180	10900	45	0	45	2700	443	0	1643	98114
May-05	2134.39	114413	4402	926	2629	257	0	257	10900	64	0	64	2700	605	0	2308	96411
Jun-05	2134.06	112731	4402	1678	3357	336	3	333	10900	82	0	82	2700	1260	0	2942	94729
Jul-05	2133.46	109726	4402	1152	4156	419	1	418	10900	104	0	104	2700	629	0	3634	91724
Aug-05	2133.19	108397	4402	1456	2785	288	0	288	10900	71	0	71	2700	1097	0	2426	90395
Sep-05	2132.58	105447	4402	0	2950	0	0	309	10591	0	0	77	2623	0	0	2564	87831
Oct-05	2132.35	104354	4402	396	1489	396	0	156	10831	0	0	39	2584	0	0	1294	86537
Nov-05	2132.09	103130	4402	0	1224	0	0	133	10698	0	0	32	2552	0	0	1059	85478
Dec-05	2131.67	101181	4402	0	544	0	0	59	10639	0	1405	14	1133	0	0	471	85007
TOTAL				8134	22755	2141	4	2302		432	1405	570		5561	0	19883	

CEDAR BLUFF RESERVOIR ACCOUNTING

CALENDAR YEAR 2005

2.36

Date	EOM Elevation	EOM Storage (AF)	INFLOW EVAP		Dead Pool Storage (AF)	City of Russell				KDWP				KWO				Joint Use					
			Monthly Inflow (AF)	Reservoir Evap. (AF)		Inflow	Use	Evap.	EOM	Inflow	Use	Evap.	EOM	Inflow	Use	Evap.	EOM	Inflow	Use	Evap.	EOM		
			Share			Share	Storage	Share		Share	Storage	Share		Share	Storage	Share		Share	Storage	Share		Share	Storage
			(AF)	(AF)		(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)
Jan-05	2134.93	117211	415	415	4402	34	0	10	2700	152	0	64	17428	8	0	12	3284	221	0	329	89397		
Feb-05	2135.04	117789	1083	505	4402	12	0	12	2700	116	0	78	17466	34	0	15	3303	921	0	400	89918		
	2134.95	117316	360	833	4402	20	0	20	2700	97	0	128	17435	9	0	24	3287	234	0	661	89492		
	2134.72	116116	668	1868	4402	45	0	45	2700	209	0	288	17356	15	0	54	3248	399	0	1481	88411		
	2134.39	114413	926	2629	4402	64	0	64	2700	297	0	409	17244	20	0	76	3191	545	0	2080	86876		
Jun-05	2134.06	112731	1678	3357	4402	82	0	82	2700	419	3	527	17133	42	0	97	3136	1135	0	2651	85360		
Jul-05	2133.46	109726	1152	4156	4402	104	0	104	2700	460	1	657	16935	21	0	120	3036	567	0	3275	82652		
Aug-05	2133.19	108397	1456	2785	4402	71	0	71	2700	360	0	448	16848	36	0	80	2992	989	0	2186	81455		
Sep-05	2132.58	105447	0	2950	4402	0	0	77	2623	0	0	478	16370	0	0	85	2907	0	0	2310	79145		
Oct-05	2132.35	104354	396	1489	4402	0	0	39	2584	396	0	241	16525	0	0	43	2864	0	0	1166	77978		
Nov-05	2132.09	103130	0	1224	4402	0	0	32	2552	0	0	203	16322	0	0	35	2829	0	0	954	77024		
Dec-05	2131.67	101181	0	544	4402	0	1405	14	1133	0	0	90	16232	0	0	16	2814	0	0	424	76600		
TOTAL	0.00	0	8134	22755		432	1405	570	0	2507	4	3610		184	0	658		5011	0	17917			

ATTACHMENT C

DIVISION OF WATER RESOURCES MEMO



KANSAS DEPARTMENT OF AGRICULTURE

MEMORANDUM

TO: File

FROM: Mark Billinger

DATE: January, 18 2006

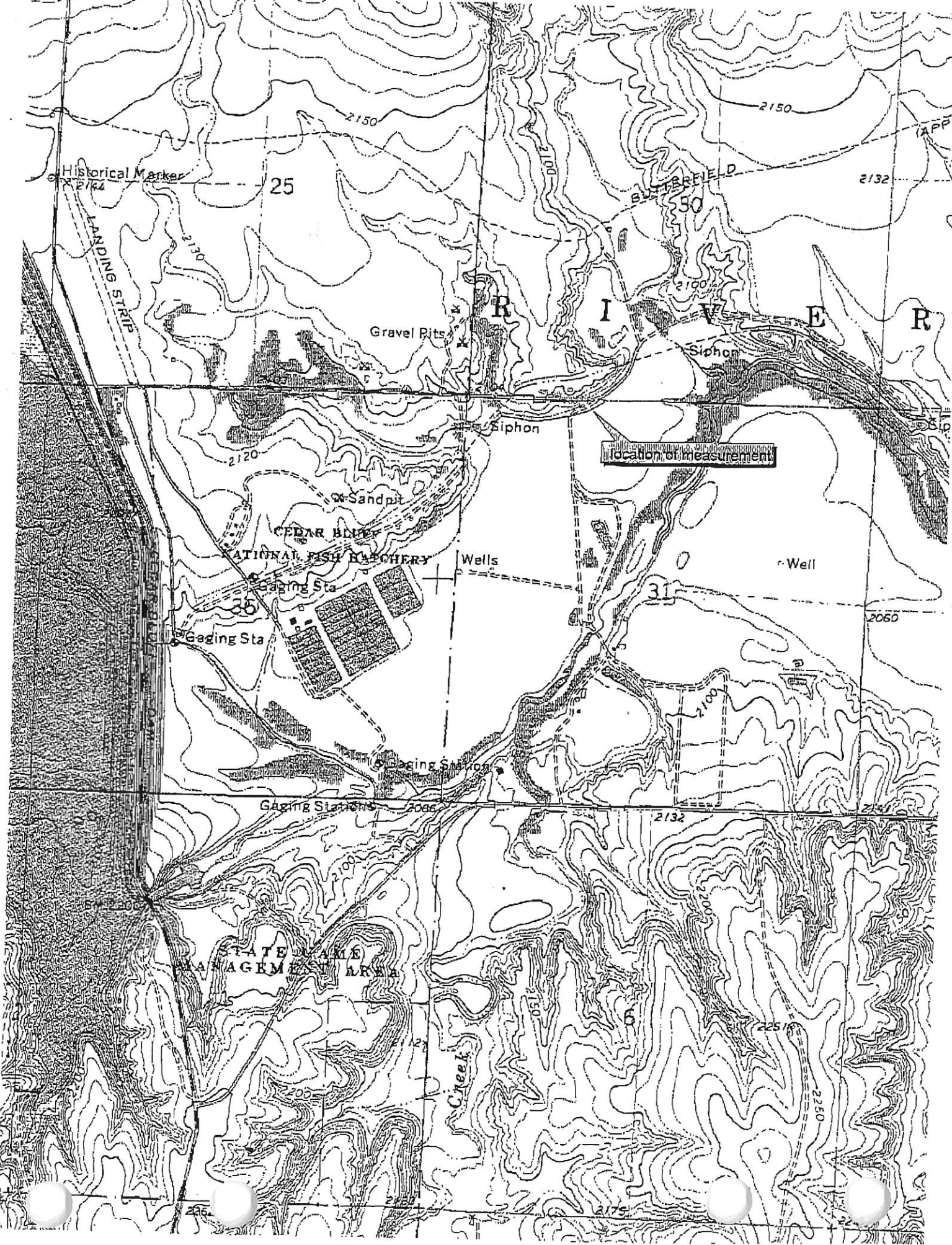
SUBJECT: Streamflow measurement below Cedar Bluff Dam

On this day upon request from Scott Ross, I met Bill Scott below Cedar Bluff dam to measure streamflow at a site he has selected. He met me there and was accompanied by the owner of the Sport Haven bait and tackle store, also present was Pete Weber, owner of property where Mr. Scott wanted the measurement done. The site was the drainage canal below the concrete drop structure located next to the north entrance road to the feedlot (see attached map).

Mr. Weber asked Mr. Scott what his intentions were and what the Western Water Watcher's organization was trying to accomplish. Mr. Scott said he was doubtful of the accuracy of the USBR measurement of the recent release made of the reservoir and that he wanted a USGS gaging station installed to more accurately account for seepage from the reservoir. Mr. Scott said that they feel this seepage should count against water rights associated with Hays and Russell's well fields and should be recognized as fulfilling requirements to recharge well fields downstream. Mr. Weber replied that he was opposed to a gaging station being installed on his property because it will create more government involvement on his property. He said he didn't mind wells being measured or a streamflow measurement done from time to time but if he can help it he wants to minimize the government presence on his land. Mr. Scott also expressed negativity towards the recent release made by Russell stating that it did not benefit Russell's well field that much, only Hays' well field. After much discussion between Mr. Weber and Mr. Scott, Mr. Weber granted us permission to conduct the measurement and also requested that DWR notify him when doing well or stream measurements on his property in the future. Mr. Weber told Mr. Scott that he has a surface water right to divert water out of this canal (WR file # 1706B) and when he uses it will divert all flowing surface water out of this canal. Mr. Weber also stated that back in 1980's when Cedar Bluff was nearly dry that the flow in this canal remained constant and thought it was likely that the water was coming from the north from the "sand pit area" and not exclusively from the reservoir.

I measured the open channel flow approximately 300 ft downstream of the concrete drop structure (see attached map). The measured flow was 0.84 cfs. Mr. Scott seemed displeased with the results (thought there was more than 2 cfs flowing through the concrete drop structure) and requested if I could measure farther upstream. I made a second measurement approximately 20 feet upstream of the concrete drop structure and the measured flow was 0.82 cfs.

Attached is a map of the general area, stream discharge notes and computed discharge. Mr. Scott requested a copy of the discharge calculation to be mailed to him.



ATTACHMENT D

DOCUMENTS OF PROBABLE CLAIMS OF IMPAIRMENT

City of Hays letter to Governor Sebelius
State Response letter
City of Russell emails

April 28, 2003

RECEIVED

MAY 01 2003

KS WATER OFFICE

GOV. KATHLEEN SEBELIUS
212-S State Capitol
300 S.W. 10th Ave.
Topeka, Kansas 66612-1590

Dear Governor Sebelius:

I represent the City of Hays, Kansas.

As I am sure you know, scarcity of water has been an albatross around the neck of the City of Hays for many years. The problem has been compounded by unreasonable administrative roadblocks we have faced in our dealings with Kansas water agencies. This letter describes the specific problems we face in this regard. I am asking for your direct intervention in the situation before we are forced to turn to the courts for a solution.

Kansas Water Law

Please forgive me if what follows is perceived as elementary, but one of the things I have discovered in attempting to deal with these problems over the last two decades is that water law is so arcane that few people know the jargon or the rules that have been laminated onto the hydrological facts.

Kansas law provides that all water within the State is dedicated to the use of the State and subject to its control and regulation. K.S.A. 82a-702. The Division of Water Resources ("DWR"), under the Department of Agriculture, which is ultimately subject to your direction and control, administers the system of water appropriation rights. K.S.A. 82a-706. One of the most important principles of Kansas water law is "first in time is first in right." K.S.A. 82a-706, 82a-707(c), 82a-711(b)(3), and 82a-716. The date of priority of a water appropriation right, and not its purpose of use, determines the right to divert and use water when the supply is not sufficient to satisfy all water rights that draw from the same source of supply. *Id.* When uses of water for different purposes conflict, and the priority in time is equal, the order of preference is: 1. domestic; 2. municipal; 3. irrigation; 4. industrial; 5. recreational; and 6. water power. K.S.A. 82a-707(b).

GOV. KATHLEEN SEBELIUS

April 28, 2003

Page 2

The Physical Setting

The Smoky Hill River originates in eastern Colorado and flows through southern portions of Trego, Ellis and Russell Counties. It joins the Saline and Solomon Rivers east of Salina and then flows on to Junction City where it joins with the Republican River to form the Kansas River. In Trego, Ellis and Russell Counties, the river alluvium is fairly narrow, but water can be pumped from the sands adjacent to and under the River. The River replenishes these sands as water is withdrawn.

Cedar Bluff Reservoir is a Bureau of Reclamation project sitting astride the Smoky Hill River in Trego County. It is approximately 30 miles west (upstream) of the Hays well field which is near Schoenchen. The Kanopolis Reservoir is also on the Smoky Hill River east of Hays in Ellsworth County.

The Competing Water Appropriation Rights

The City of Hays, Kansas, owns three groundwater appropriation rights in the Smoky Hill River alluvium near Schoenchen, approximately eleven miles south of the City of Hays. Those water rights have priority dates of March 4, 1953, July 3, 1956, and July 19, 1979. They total 2,832 acre feet,¹ 2,500 acre feet of which are the first two very senior water rights numbered 1248 and 5757². The third water right is numbered 33,296. All three are "municipal water rights".

The City of Russell, Kansas, owns a 2,000 acre foot water right in Cedar Bluff Reservoir, number 7628, with a priority date of October 18, 1957. This is also a "municipal" water right. As you read this letter you will see why that is especially significant.

The Kansas Department of Wildlife and Parks ("KWP") and the Kansas Water Office ("KWO") own water appropriation rights in the Cedar Bluff Reservoir which total more than 186,000 acre feet. The pertinent DWR water appropriation right file numbers are 7627 and 7684. The dates of priority are October 18, 1957 and January 3, 1958. The stated purposes are "recreation", "artificial recharge", and "municipal". The water right belonging to the City of Russell is equal in time and priority to the State's more senior water right, No. 7627, both having a priority date of October 18, 1957. The beneficial use for the State's 4,000 acre foot water right is "recreation". The relative priority of each of these rights is as follows:

¹ An acre foot is the amount of water needed to cover one acre of land to a depth of one foot. Each acre foot equals 325,851 gallons of water.

² As a general proposition, the lower the DWR file number, the more senior the water right.

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Owner:	Priority Date:	DWR File No.:	Authorized Use:
Hays	March 4, 1953	1248	Municipal RIVER
Hays	July 3, 1956	5757	Municipal RIVER
Russell	October 18, 1956	7628	Municipal 2,000 AF
KWO WTP	October 18, 1956	7627	Recreation 21,639 AF HATCHMAN
KWP/KWO	January 3, 1958	7684	Recreation, Artificial RWD 5,400 RECHG Recharge, Municipal. JR. USE 176,040

The Intensive Groundwater Use Control Area

In 1978, the State of Kansas enacted legislation providing that the Division of Water Resources could initiate proceedings, under certain conditions, to designate Intensive Groundwater Use Control Areas (IGUCAs). DWR could implement various remedies, such as closing an area to new appropriations, apportioning permissible total withdrawal among right holders, (subject however to the provision that it had to be done "in accordance with dates of priority"), and others not relevant to this dispute.

In 1984, the Division of Water Resources, acting through David Pope, Chief Engineer, implemented an IGUCA along the Smoky Hill River, purporting to reduce the City of Hays water rights by 10%. Thus began a period of steady decline in Hays' ability to take water from its primary well field at Schoenchen.

The Hays Water Problem

In 1992, the City of Hays reached a low point in its ability to extract water from the Schoenchen well field. Because of the administrative restrictions that had been placed on the well field by the Division of Water Resources and a shortage of water in the river and its associated aquifer, the City was unable to produce more than about 700-800 acre feet annually from its Schoenchen well field.

To say that this has been a learning experience for the residents and representatives of the City of Hays would be the understatement of the century. We have attempted to deal with the situation in as responsible a manner, both socially and hydrologically, as possible. We have met with less than full and complete cooperation and assistance from the various State agencies which have involved themselves in the situation. In some instances we have been the victim of active and hostile opposition by State agencies and employees.

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The City of Hays and the City of Russell formed a Public Wholesale Water Supply District Number 15 ("PWWSD #15" or the "District") for the purpose of cooperating to locate additional water for the member cities. Public Wholesale Water Supply Districts are creatures of statute, and constitute separate municipal entities.

The City of Hays purchased a ranch in Edwards County, Kansas, located along the Arkansas River. The Ranch has in excess of 5,000 acre feet of water rights perfected for irrigation use. Later, and in association with the formation of the PWWSD #15, the City of Hays sold the City of Russell an interest in the land and water rights as part of the joint effort to find additional water. PWWSD #15 has been providing management of the Ranch on behalf of the cities with the primary goals of preserving and maximizing the water rights in anticipation of the use of water for municipal purposes. Several years ago the District recommended that the cities place the Ranch on the back burner and search for other options to meet short and medium term water needs. While cost and timing were issues, the major factor driving this recommendation was stiff but sometimes subtle opposition to the use of the Ranch from DWR and KWO.

The cities of Hays and Russell and the Public Wholesale Water Supply District have spent at least 8 million dollars, over the past eleven years, in an effort to correct the water situation for this region. Because there has been not only an actual shortage of water, but, just as importantly, a widespread perception of a shortage of water, the City of Hays has been bypassed by numerous prospects for what is generally referred to as economic development. Cessna and Russell Stover are two that come immediately to mind. Both were heavily influenced not to locate in Hays by its inability to promise water availability. Neither of these proposed plants was particularly water intensive in use. Rather, the reluctance arose from the City's inability to promise to be able to accommodate the attendant growth in population that would result from the relocation of a major employer to this area.

We have good evidence that the Kansas Department of Commerce and Housing, knowing of Hays' reputed and actual water shortages, has been screening inquiries from in-state and out-of-state firms interested in locating or relocating manufacturing and other facilities. They have diverted many prospects from the Hays area.

Years before we experienced the rather sudden effects of the drought of the early 90's, the City of Hays instituted water use restrictions taken directly from communities located in the most arid sections of this country. As a result, the average citizen in Hays uses less water per day than any other municipal citizen in the State of Kansas. That, of course, has been a two-edged sword. It has stretched our water supply, allowing us, along with other stopgap measures, to avoid the worst effects of the water shortage. But it has also emphasized the public perception locally and across the State that there is something very wrong with the water situation in Hays.

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DWR Roadblocks

DWR has been actively, albeit slowly and steadily, throttling back Hays' ability to exercise its rights, knowing that the real problem was that water rights granted to junior holders (in this case, the Department of Wildlife and Parks and the Kansas Water Office) were preventing the City from obtaining the water to which it had an absolute right. While there has been the facial appearance of cooperation in our dealings with DWR, it has now become apparent that the Division was never dealing in complete good faith with Hays. We recently unearthed an internal memorandum, dated April 4, 1984, from a DWR employee to David L. Pope, Chief Engineer, Division of Water Resources, which states,

"After observing the situation around Norton, Webster, Kirwin, and Cedar Bluff reservoirs, I have come to the conclusion that these dams are impairing senior downstream domestic, municipal, irrigation and other rights. In the past few years below each of these reservoirs a "dead zone" has developed where there is no base flow for several miles downstream from the dam, probably due to the effectiveness of the dam construction. At the same time inflow above the dam is stopped and stored. No natural flows are released downstream, thus depriving stream flow and groundwater recharge in the valley.

If upstream junior rights are regulated, as per Bureau of Reclamation demand, then downstream senior rights to storage should be entitled to streamflow and recharge because any additional flows would come downstream, if the dam were not present. At the present time senior domestic rights have not been taken into account. There is no doubt in my mind if these people understood the law, banded together, and demanded their share of the inflow, all of the above reservoirs would be bypassing all but extreme flood flows.

I listened to numerous comments in 1983 below Cedar Bluff Dam concerning its operation. The most frequent comment was: Why waste all the inflows since 1978 (last year of district) for evaporation? Why not release these flows downstream? We (mostly domestic rights) were here before the dam.

After watching the severe decline in summer-fall of 1983, I believe the downstream rights have a valid point. You may wish to point this out to the Bureau of Reclamation."

This memorandum and its message were never revealed during the IGUCA process or at any time after that. The Division of Water Resources, acting by and through its Chief Engineer, imposed the IGUCA, purporting to reduce the City's water rights in violation of the language of the statute which makes it clear that it can only reduce the water rights in accordance with dates of priority.

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A second example occurred during the severe drought in 1991. The City had to beg DWR, KWO and the Bureau of Reclamation to release water from Cedar Bluff to replenish the Hays well field. The agencies made a big show of it, holding a hearing which was supposed to be needed in order to allow the release of water from Cedar Bluff because Hays does not have a contract with the Bureau of Reclamation. The Chief Engineer could have and should have simply ordered the release of water.³

The Division of Water Resources has not only failed to perform its lawful duties, but it has arrogated to itself duties not given to it, and, it has knowingly concealed the fact that the chief engineer was advised of the exact nature of the problem, and then, knowing that, he concealed that knowledge and has used his broad powers to attempt to manipulate the situation and divert the City from its lawful rights. And, faced with a water crisis in the early 1990s, he failed to exercise his authority to order the release of water. Most recently, the Stockton DWR office has responded to contacts by the agents and employees of the City and the PWWSD #15 by refusing to communicate, other than referring all contacts to the Topeka office.

KWO Roadblocks

The Kansas Water Office is a parvenu to the water game in Kansas. While it has evidenced a desire to be a major player, the Kansas Legislature has not seen fit to imbue it with significant powers, probably because to do so would involve a complete revision of the Kansas water law. In any event, the KWO acquired water rights in Kanopolis Reservoir, about 80 miles downstream from the City of Hays' Schoenchen well field, and has been attempting to justify that purchase (and its own existence) by marketing the water from that reservoir to the City of Hays, the City of Russell, and PWWSD #15.

While the District was pursuing its efforts to secure other water sources for Hays and Russell, it was carefully herded away from its development of water rights in Edwards County, Kansas, and eventually it began centering in on water rights along the Smoky Hill River south of Russell, downstream from the Schoenchen well field. When the Kansas Water Office realized that the District was nearing a possible solution to the water situation that did not involve its water marketing program, it internally decided to influence the situation and require the City of Hays, the City of Russell and the Public Wholesale Water Supply District, to come to Kanopolis Reservoir for water.

³ The agencies may argue that because Hays has no contract with the Bureau of Reclamation, their hands were tied. The nut of this argument is that contractual arrangements among state agencies and federal government regarding the use and storage of water override Kansas statutory law. DWR may or may not have had the power to order the Bureau of Reclamation to release water, but it certainly had and has the power and obligation to order KWO and KWP to do so. KWO and KWP cannot hide behind their contracts with the Bureau of Reclamation which in effect violated the preexisting Kansas statutory priority system.

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The cities spent significant amounts of money on the Ranch and preparing to acquire new water rights along the Smoky Hill River. DWR and KWO began chipping away at the potential water rights, imposing stricter and stricter requirements, making the options less and less attractive to the cities and the water district.

The City of Hays and the City of Russell, because of disparities in short-term need for water because of potential industrial prospects, began looking at the possibility of constructing a relatively short pipeline to Cedar Bluff Reservoir for the purpose of transferring Russell's 2,000 acre feet of water in a non-evaporative method and allocating the water between the two cities according to contractual principles that were being negotiated.

The KWO, knowing of existing contracts between and among Hays, Russell and PWWSD #15, acting through Mr. Clark Duffy, and, we believe, in concert with the Economic Development Director of Trego County, Kansas, began manipulating the situation in an attempt to separate Hays and Russell from each other and to create a situation where the only alternative was to construct a pipeline to Kanopolis Reservoir, at a cost of as much as 80 million dollars. Mr. Duffy told Russell representatives that unless it ceased cooperating with Hays, its water rights in Cedar Bluff would be administratively and politically reduced to the point of elimination. Hays has been given the message that Kanopolis is the only solution palatable to the State.

We believe that the actions of the Director of the Kansas Water Office went far beyond his statutory powers, and constitute a tortuous interference with contractual rights and business relationships.

Wildlife and Parks Roadblocks

The Department of Wildlife and Parks acquired water rights in Cedar Bluff Reservoir and other reservoirs, and is involved in other projects involving impoundment of water in Kansas for purposes related to its legislative charge. It evinced an interest in acquiring the Edwards County ranch in return for water rights in Cedar Bluff, but when recent events resulted in some opposition to Hays and Russell accessing water from Cedar Bluff, that interest waned.

Legal Issues and Remedies

The Fifth Amendment to the Constitution of the United States, applicable to states by way of the Fourteenth Amendment, prohibits government from taking property for public use without compensation. As you know, normally, when the State decides to take someone else's property, it exercises that power through the use of eminent domain. When it fails to use formal condemnation proceedings and there is no intention or willingness on the part of the State to bring an action to acquire the property, Kansas courts have recognized the principle of inverse condemnation, which is what the situation is here. Where there has been inverse condemnation, the condemnee (City of Hays) is required to file suit to force payment.

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We believe that there have been compensable and significant takings by the State, from the City of Hays, Kansas. The maintenance by the State of an impoundment facility upstream of our well field, coupled with the actions of the Division of Water Resources, the Department of Wildlife and Parks, and actions by the Kansas Water Office, have deprived the City of an average of 2,100 acre feet of water per year, for more than twenty years.

In addition, the IGUCA imposed by the Division of Water Resources, which far exceeds its statutory powers, compounded the problem by purporting to take from the City 10% of its water rights. The doctrine of exhaustion of administrative remedies plays into the issue of condemnation and inverse condemnation. We know that a simplistic reading of this situation would dictate that we should start by asking the State to administer the water rights on the Smoky Hill River. The result, instead of taking only the relatively small amount of water that would have been involved in the proposed pipeline which was spiked by the wrongful activities of the Kansas Water Office, would be to require the release of enough water to refill the aquifer at the Schoenchen well field, and thus allow the City to pump its entire water right of 2,832 acre feet. I will leave it to the engineers to inform you as to how much water it would take under current climatological conditions to accomplish that. It will certainly be many multiples of 2,000 acre feet. In addition, I would anticipate that the City of Russell has the like right to have its well field at Pfeifer, Kansas replenished, but the practical effect of the water rights being administered for Hays will be that much of the water will make its way downstream to Russell's well field, anyway. That is what the law provides for, and that is where this matter is headed if another solution is not implemented.

We believe that Hays is entitled to be made whole for the water taken for at least the last fifteen years, and for all the money spent, and apparently wasted, in its efforts to satisfy the State's requirement that we look elsewhere for our water than where we already owned water.

Conclusion

The City Commission of the City of Hays has given me and the City Manager, Randy Gustafson, authorization to resolve this matter by negotiation, administrative action or litigation. To be very specific, we are asking that you exercise your authority to insure that David Pope orders the release of sufficient water from the Cedar Bluff Reservoir, on an ongoing basis, to replenish the Hays well field near Schoenchen, and that he set aside or reopen the IGUCA order, restoring Hays to its full original water rights, and that Wildlife and Parks, the Kansas Water Office, and Division of Water Resources begin to cooperate with Hays to solve water supply problems in a manner that meets the City's needs in an affordable way rather than constantly focusing on the agencies' own political agendas. If in fact the State wishes to take our water rights on the Smoky, it should pay for the cost of replacing them. Hays should be reimbursed for its past losses and expenses.

I know that your duty is to look out for the welfare of all the citizens of the State of Kansas, and that is exactly what I think I am asking you to do when I suggest that we join efforts to resolve this issue,

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once and for all. If we proceed along the path towards litigation, the cost to the State will be far greater than many of the potential solutions. In addition, this situation may afford you with a unique opportunity to break a long standing deadlock in this state regarding water policy. We propose to meet with you and the appropriate staff to further inform you of the situation and to begin the process of resolution. We are sensitive to the nuances of the situation and can assure you that our sole goal is to secure a long-term resolution to the water problem in Hays, Kansas, and we will conduct ourselves accordingly.

Thank you for your consideration of this request.

Very truly yours,

GLASSMAN, BIRD & BRAUN, L.L.P.

By

JOHN T. BIRD

City Attorney

City of Hays, Kansas

JTB/elk

c: Randy Gustafson

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K A N S A S

KANSAS WATER OFFICE

KATHLEEN SEBELIUS, GOVERNOR

May 23, 2003

John T. Bird, Attorney
City of Hays
113 W. 13th St.
Hays, Kansas 67601-6313

RE: Water supply for the City of Hays, Kansas

Dear Mr. Bird:

I am writing in response to your letter of April 28, 2003, which discusses the City of Hays' need to expeditiously obtain an adequate water supply, not only for its current uses, but also for future growth in the City of Hays. Governor Sebelius fully supports the City of Hays' goal.

To begin that process of cooperation between the City of Hays and the State, I met with you and Randy Gustafson on Friday, May 16, 2003. The state of Kansas will do everything that it can to assist the City of Hays in obtaining an adequate water supply insofar as it is able to do so within the powers and jurisdiction of the State.

All this having been said, I would like to respond to some of the points that you have raised in your letter in an attempt to clear up some apparent misunderstandings.

Kansas Water Law

Kansas has one of the most comprehensive and efficient water administration systems in the 17 western states, and one of the most important principles of the Kansas water appropriation act is the principle of "first in time is first in right." K.S.A. 82a-707(b) provides in part, "...the date of priority of an appropriation right, and not the purpose of use, determines the right to divert and use water at any time when the supply is not sufficient to satisfy all water rights that attach to it."

901 S. KANSAS AVENUE, TOPEKA, KS 66612-1249

Voice 785-296-3185 Fax 785-296-0878 www.kwo.org

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As you pointed out, it also provides, "Where uses of water for different purposes conflict, such uses shall conform to the following order of preference: domestic, municipal, irrigation, industrial, recreational, and water power uses." However, in Kansas once an application for a water right is received and given a file number, each application has a separate priority, even if it is received on the same day. In times of shortage, water rights do not conflict and are administered based solely on priority, unless an order has been issued pursuant to the intensive groundwater use control area proceeding, which I will discuss more later. For example, the water right held by the Department of Wildlife and Parks, File No. 7,627 and the water right held by the City of Russell, File No. 7,628 are not of equal priority. The water right held by the Department of Wildlife and Parks is senior to the water right held by the City of Russell. When water rights are being administered according to the priority system, the water right held by the Kansas Department of Wildlife and Parks would be senior and therefore entitled to water before the water right held by the City of Russell.

On page three of your letter, you set forth a table summarizing certain aspects of various water rights held by the City of Hays, the City of Russell, Kansas Water Office, and the Kansas Department of Wildlife and Parks. While that table is generally correct, set forth below is a corrected summary of that information as shown in the records of the chief engineer.

Owner:	Priority Date:	File No.	Type of Use:	Annual Quantity
Hays	March 4, 1953	1,248	Municipal	Limited to a total combined quantity of 2,286 acre-feet
Hays	July 3, 1956	5,757	Municipal	
Hays	July 19, 1979	33,296	Municipal	
KDWP	October 18, 1957	7,627	Recreation	Limited to 375 a.f.
Russell	October 18, 1957	7,628	Municipal	Limited to 1,436 a.f at Pfeifer
KDWP/KWO	January 3, 1958	7,684	Recreation, Artificial Recharge, Municipal	19,035 a.f.

Intensive groundwater use control area

In 1978 the legislature passed laws providing that the Chief engineer could initiate proceedings under certain circumstances to designate an intensive groundwater control area.

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K.S.A. 82a-1038(b) provides the chief engineer with the authority to enact any one of the five following corrective control provisions, "(1) A provision closing the intensive groundwater use control area to any further appropriation of groundwater in which event the chief engineer shall thereafter refuse to accept any application for a permit to appropriate groundwater located within such area; (2) a provision determining the permissible total withdrawal of groundwater in the intensive groundwater use control area each day, month or year, and, insofar as may be reasonably done, the chief engineer shall apportion such permissible total withdrawal among the valid groundwater right holders in such area in accordance with the relative dates of priority of such rights; (3) a provision reducing the permissible withdrawal of groundwater by any one or more appropriators thereof, or by wells in the intensive groundwater use control area; (4) a provision requiring and specifying a system of rotation of groundwater use in the intensive groundwater use control area; (5) any one or more other provisions making such additional requirements as are necessary to protect the public interest."

In accordance with this statutory authority, the chief engineer initiated proceedings to designate an intensive groundwater control area, gave notice of hearings, held hearings, and on May 31, 1984 issued an order declaring an Intensive Groundwater Use Control Area (IGUCA) in the Smoky Hill River Basin below Cedar Bluff Reservoir to its confluence with Big Creek subject to certain corrective control provisions.

As part of those corrective control provisions, all non-irrigation "usage" was limited by the IGUCA order to "90 percent of the maximum usage for any one of the calendar years 1981, 1982 and 1983..." or the maximum annual quantity of water authorized, whichever was less. In the early 1980's, the City of Hays still had fairly high per capita usage of water because that was before its conservation efforts had taken place. Because its per capita usage is now lower, the 10 percent reduction of water use from the Smoky Hill basin has had a relatively minor impact on Hays' water supply. Irrigation uses were also restricted pursuant to the IGUCA order to a similar degree. It should be noted that the City of Hays participated in the IGUCA hearings and the following persons testified on behalf of the city: Laren Dinkel, water and sewage plant superintendent; Leo Wellbrock, public works director; and Ken Carter, city manager. At the hearings, the city generally documented its water usage and its efforts to conserve water. There is no indication in the record that the City of Hays opposed the creation of the IGUCA or its control provisions.

The IGUCA order also created a task force to study the water supply and demand situation in the Smoky Hill Valley and make further recommendations to the chief engineer. Ken Carter, city manager of Hays, was Hays' representative on the task force. The task force filed its unanimous report and recommendations in November, 1985.

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In a letter dated June 18, 1986, the City of Hays filed a written request with the chief engineer requesting that he "develop a plan to protect" the City of Hays water rights from impairment. Following discussions on July 1, 1986, the chief engineer responded to Hays' request on October 21, 1986 reviewing Hays' various alternatives and concluding that the "IGUCA and the task force appointed in connection with it is such a plan." Recommendation number 11 of the task force was that the chief engineer "extend the boundaries of the control area above Cedar Bluff Dam...." On July 20, 1988, the chief engineer extended the boundary of the IGUCA above Cedar Bluff Dam and closed the Smoky Hill and Hackberry Creek basins above the dam to new appropriations with certain minor exceptions. This was done primarily to protect the inflows to Cedar Bluff from further degradation.

Hays' water problem

The City of Hays has reported the following water usage from its Schoenchen well field.

YEAR	AF PUMPED	YEAR	AF PUMPED
1981	2300.37	1992	765.64
1982	662.79	1993	846.72
1983	2540.06	1994	826.16
1984	1998.35	1995	790.24
1985	1906.79	1996	868.65
1986	1788.09	1997	1055.78
1987	1590.48	1998	1181.76
1988	1972.15	1999	1173.47
1989	1704.69	2000	956.07
1990	1871.42	2001	759.90
1991	1745.14	2002	876.12

Since 1984, the quantity of water diverted from the Schoenchen well field has never reached the annual quantity of water of 2,286 acre-feet currently authorized from the well field. Failure to divert 2,286 acre-feet from the well field in any one year appears to be due entirely to lack of water supply, operational decisions by the City of Hays, use of other water supplies, or reduced

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demand, not to any administrative restrictions imposed on the Hays well field by the chief engineer. For example, the reduction of use of the Schoenchen well field may have occurred because of reduced demand due to Hays' excellent water conservation plan, its use of new water from the Dakota aquifer, and maximization of water use from the Big Creek Alluvium.

On page 4 of your letter, you indicate that there was "stiff but sometimes subtle opposition to the use of the Edwards County Ranch from DWR and KWO." Without more information it is not possible to comment on this statement. I have no knowledge of any position being taken by any of the agency heads involved regarding the Edwards County Ranch and certainly no formal proceedings. It is my understanding that DWR staff member responded to inquiries regarding the transfer of water use by citing the requirements of K.S.A 82a-708b and also K.S.A. 82a-1501 *et. seq*, which are the applicable provisions to any water user under similar circumstances. Application of the relevant law should not be construed as opposition to the City's proposed change of use.

The State agrees that there is a need for more water for economic development and growth in Hays, Kansas. It also agrees that the city has in place an excellent water conservation plan, which is one of the best in the state of Kansas.

Kansas Department of Commerce & Housing

The Department of Commerce and Housing has had, and continues to have, an excellent working relationship with the Ellis County Coalition for Economic Development. The Department is very aware of the positive steps that have been taken over the last several years to improve the long-term water availability in Hays. The Department has recommended Ellis County and Hays to many prospects in the last ten years. When water availability is an important requirement in a project, the Ellis County Coalition has had the opportunity to address the issue, just like every other community that is being considered for the project. Simply stated, the Department of Commerce and Housing has not diverted prospects from the Hays area.

DWR roadblocks

The chief engineer does not understand the statement that DWR has "been actively, albeit slowly and steadily, throttling back Hays' ability to exercise its rights..." In fact, under the provisions of the Kansas Water Appropriation Act the City of Hays has every right to ask to have its water rights administered in priority with other water rights from the same source of supply. As stated above the chief engineer has not further restricted the quantity of water Hays could use from its Smoky Hill well fields since 1984. In fact, the Division has also worked with Hays to utilize water from the Dakota and enhance its water use from Big Creek alluvium. At Hays' request the chief engineer also declared an IGUCA in Hays in 1985 to support the city's conservation of water used for lawn watering.

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Since 1978, the chief engineer has had a regulation, K.A.R. 5-4-1, setting forth the procedures for a water right owner to file a complaint that its water right is being impaired. To our knowledge, the City of Hays has never filed a formal request to have its water right administered in priority on the Smoky Hill River. If such a request were filed, the chief engineer would act on that request and determine whether the City of Hays' water rights were being impaired. If they were, he would determine whether administration of junior water rights would provide any significant benefit to the City of Hays at the time that the City of Hays needed the water. It should be noted at this point that determination of whether water rights above a reservoir could be administered to provide benefits to a well field below the reservoir is not a simple matter, and considerable time and expense would be necessary to make such a determination. At this time that the City of Hays has no water right of any kind in Cedar Bluff Reservoir, nor does it have any contract with the Bureau of Reclamation for storage of water in Cedar Bluff. At this time the City of Hays has no legal right to call for releases of stored water. The city's only apparent option is to call for water entering Cedar Bluff Reservoir to be by-passed through the reservoir. This assumes water is flowing into the reservoir at a time when the City of Hays' use of water is being impaired by junior water right holders, and administration of those water rights will actually provide the City of Hays with a significant increase of water.

KWO roadblocks

Neither the chief engineer nor the Kansas Water Office has denied any request from the City of Hays or the City of Russell to utilize any source of water. They have however, explained to the City of Hays on numerous occasions the legal processes and requirements necessary to obtain and use water from various sources. These were not new requirements that were imposed on the City of Hays. The chief engineer and the Kansas Water Office were merely explaining the statutory and regulatory restrictions that apply to all water users in the State.

Kansas Water Office does have a desire to sell water to users with a need. The Kansas Water Office has had long-term discussions with Public Wholesale Water Supply District No. 15 regarding the use of Kanopolis Reservoir. The discussions predate June 10, 1996, when the District filed an application to negotiate a water supply contract.

The Kansas Water Authority must provide final approval of water marketing contracts. Their longstanding policy has been focused on preventing the sale of water until the need for water is documented. The Authority has never had a policy of actively promoting the sale of water from State storage.

Wildlife and Parks Roadblocks

Interest by the State in acquiring the Edwards County Ranch has not waned. The State is still willing to negotiate a possible purchase of the ranch.

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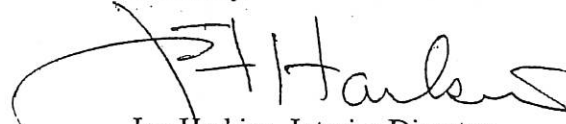
Legal issues and remedies

Finally, you raised the issue of whether the reduction of a water right constitutes a compensable taking. The State would agree that the takings clause of the Fifth Amendment to the United States Constitution prohibits the State from taking private property for public use without compensation and is made applicable to the states through the Fourteenth Amendment. Granting of a water right does not guarantee that waters will be available and water is subject to appropriation only upon legal and physical availability. The State does not agree that the partial reduction in "water usage" imposed upon the City of Hays by the lawful IGUCA proceedings is a compensable taking. The IGUCA order was issued in May, 1984, and was not timely appealed. For this and many other reasons, the State believes that the City of Hays is not entitled to compensation for water that it may not have diverted since 1984.

Conclusion

I assure you that the state of Kansas, including the Kansas Water Office, Kansas Department of Agriculture Division of Water Resources, and the Kansas Department of Wildlife and Parks, and any other appropriate state agencies, will work together with the City of Hays to resolve its water supply problem. I will be your contact person for this joint effort.

Sincerely,



Joe Harkins, Interim Director
Kansas Water Office

cc: Governor Kathleen Sebelius
Adrian Polansky, Secretary of Agriculture
Mike Hayden, Secretary of Wildlife and Parks
David L. Pope, Chief Engineer, Division of Water Resource, Kansas Department of
Agriculture
Randy Gustafson, City Manager, Hays, Kansas
Rod Bremby, Secretary of Health & Environment
Lt. Governor John Moore, Secretary of Commerce and Housing

From: Lewis, Earl
Sent: Tuesday, January 31, 2006 11:38 AM
To: Coe, Diane
Subject: FW: November static levels

Attachments: November static levels.xls

From: Gary Hobbie [mailto:garyh@russellcity.org]
Sent: Monday, November 07, 2005 3:32 PM
To: Lewis, Earl
Subject: FW: November static levels

Earl, I received this email today from the water department and it has a suggestion that I send this to you. I agreed so here it comes.

So, the attached spreadsheet shows our water well levels taken recently. We are unable to use our Big Creek surface water due to low flow and a chemical spill upstream, causing us to use Pfeifer 100% of the time. (KDHE staff from Hays relayed the spill information to us two weeks ago.) These levels show extreme usage this year, caused by TTHM's and low flow in Big Creek. We asked DWR to shut down irrigator upstream in Big Creek but flows have not resumed to normal levels. We drove the creek back from a Hays meeting last week, and every crossing shows the same low flow.

We need to have you release some water from Cedar Bluff to wet the stream bed and we will consider releasing water from our pool at a later time to sustain our well field. I understand the law suit has changed complexities, but with notice this water could be released, in my understanding.
Let me know your thoughts.

Gary Hobbie
City of Russell

From: Arlyn [mailto:aunrein@russellcity.org]
Sent: Monday, November 07, 2005 11:31 AM
To: garyh@russellcity.org; mark@russellcity.org
Subject: FW: November static levels

Gary: I think we should forward these levels to Earl Lewis. Last winter the stream did not begin running until late in the year and then only ran for a short time.

Do we need to ask the state to do a release from Cedar Bluff?

Arlyn

From: Gerald Penka [mailto:butch@russellcity.org]
Sent: Monday, November 07, 2005 9:46 AM
To: Arlyn Unrein
Subject: november static levels

Arlyn; I am getting very concerned about the static levels in the Pfeifer well field. there seems to be a considerable difference in them from 2004 to 2005. The static levels seem to increase every month.

Butch

2-57

From: Lewis, Earl
Sent: Tuesday, January 31, 2006 11:38 AM
To: Coe, Diane
Subject: FW: Water Release

From: Gary Hobbie [mailto:garyh@russellcity.org]
Sent: Tuesday, November 29, 2005 2:02 PM
To: Lewis, Earl
Subject: Water Release

Earl, we have been looking at our water well levels and are seriously considering a release of water from Cedar Bluff early next month. We will be calling on Friday this week to verify releases from the Bureau and to notify you of our intent. We are considering a short release of high volumes then slow the release down to the minimum for as little time as it takes to get water at our Russell Well Field, with the goal of not taking anymore release water as necessary and when it gets to or near Russell we would shut it off.

We ask that you consider requesting Hays cease water production from the Smokey Hill River during our release period, allowing us the maximum flow into our well field. Is this a possibility for KWO to do this request?

Thanks for your help.
Gary Hobbie
City of Russell
City Manager

ATTACHMENT E

**ARTIFICIAL RECHARGE POOL OPERATION PLAN
SEPTEMBER 22, 2004**

**CEDAR BLUFF RESERVOIR
ARTIFICIAL RECHARGE POOL
OPERATIONS AGREEMENT**

September 22, 2004

This Operation Agreement constitutes the policies and responsibilities of operating the artificial recharge storage identified in Section 1 for the Cedar Bluff Reservoir. Since the responsibility of water management along the Smoky Hill River is shared between the Kansas Water Office and the Division of Water Resources, Kansas Department of Agriculture (hereinafter referred to as "the Division of Water Resources"), those responsibilities are outlined and acknowledged in Section 2 of this Operations Agreement.

This agreement recognizes the hydraulic connection between streamflow in the Smoky Hill River and the adjoining alluvium. The purpose of this Operation Agreement is to effectively manage the water stored in Cedar Bluff Reservoir for artificial recharge under File No. 7,684 for the benefit of all water users in the valley. It is believed that maintaining the hydrologic system as a source of supply within the parameters allowed by the above noted file number is in the best interest of the State and the region. It is recognized that at the time of this agreement File No. 7,684 includes 5,110 acre-feet of storage space for artificial recharge and that this space will be reduced over time as sedimentation replaces some storage space.

Section 1. Reservoir Allocations

The Kansas Water Office, Division of Water Resources, and the Cities of Hays and Russell agree that as of April 20, 2004, the storage allocation for Cedar Bluff Reservoir are as presented in Table 1.

Table 1. Storage Space Allocation – 1994 Agreement, Original Pool Ownership

Pool Owner	Purpose	Pool Size (af)
City of Russell	Municipal Water Supply	2,700
Kansas Water Office	Artificial Recharge	5,110
Kansas Department of Wildlife and Parks	Fish, Wildlife and Recreation	21,061
KWO & KDWP	Joint Use	139,179

Section 2. Operational Policies and Responsibilities

The Kansas Water Office, the Division of Water Resources, and the Cities of Hays and Russell agree to the following terms and responsibilities regarding the operation of Cedar Bluff Reservoir to maintain the water supplies of the Smoky Hill Valley as well as flows of the Smoky Hill River.

- I. Release Triggers
 - A. Table 2 shows the primary trigger values associated with the releases used in this Operations Agreement. Trends in measured values and the season of the year are also important factors to consider in rate of releases.

Table 2. Primary Indicator Variable and Values for Releases.

Date	Variable	Target Value for Release
Nov - Mar	Streamflow at upper Schoenchen gage	2 cfs
	Streamflow at Pfeifer gage	1 cfs*
	Ground Water Levels	1.5' below baseline
Apr, May & Oct	Streamflow at upper Schoenchen gage	2.5 cfs
	Streamflow at Pfeifer gage	1 cfs*
	Ground Water Levels	1.5' below baseline
June, Sept & Oct	Streamflow at upper Schoenchen gage	2 cfs
	Streamflow at Pfeifer gage	1 cfs*
	Ground Water Levels	1.5' below baseline
July & Aug	Streamflow at upper Schoenchen gage	3 cfs
	Streamflow at Pfeifer gage	1 cfs*
	Ground Water Levels	1.5' below baseline

- B. Demand within the cities, pumping between the reservoir and the well fields and long term forecast of weather conditions should all be taken into consideration when determining the duration and quantity to be released.
- C. *The intent of the trigger at the Pfeifer stream gage is to determine a live stream condition. Accurate measurement is expected above one (1) cubic foot per second. Initial live stream conditions for the purpose of this agreement are defined as one (1) cubic foot per second.
- D. The water table elevation in the Smoky Hill River alluvium within the Hays and Russell well fields shall be the average water table in representative monitoring wells over a one week period within the Hays and Russell well fields. When this average water table elevation has dropped 1.5 feet below baseline elevation, it will provide adequate storage space in the alluvium to store a release of recharge water. The baseline elevation will be agreed upon by all parties once operational data has been obtained and shall be adjusted, if necessary, when actual system response has been determined based on actual experience.
- E. The rate of release from reservoir storage will depend upon whether releases are being made through the outlet gate (minimum release rate of 11 – 13 cfs) or the pipeline connecting the goose rearing facilities to the reservoir (maximum release rate approximately 3 -4 cfs). The rate and duration of releases will be based on rates that consider the physical limitations of the outlets of Cedar Bluff Dam, basin conditions, and availability of storage space in the well field and will be a cooperative operational decision of all parties.
- F. The rate and duration of releases will be adjusted as system response is evaluated.

II. Release Procedures

- A. Each party will designate one individual to serve as the point of contact.
- B. The Kansas Water Office and the Cities will routinely monitor streamflow at the active USGS gages.
- C. The Cities will monitor ground water levels within their respective well fields. Measurements will be at a minimum of three times within one week to determine that a ground water trigger has been met. Less frequent monitoring is acceptable when water levels are not approaching the ground water trigger.

- D. If there is water in the Artificial Recharge pool and if any one of the release triggers are met, the Kansas Water Office will contact the other parties to determine if a release from Artificial Recharge storage is needed. If a release is needed the Kansas Water Office will contact the Bureau of Reclamation to request a release from the Artificial Recharge pool and notify all parties.
- E. The Kansas Water Office will coordinate with the U.S. Bureau of Reclamation for the release of water from storage from the Artificial Recharge pool.
- F. If no water is available in the Artificial Recharge pool and any one of the release triggers are met, the Kansas Water Office will notify both the City of Russell and the City of Hays.
- G. The Cities of Russell and Hays will monitor the progress of any release from Cedar Bluff Reservoir made pursuant to the agreement.
- H. The Division of Water Resources will protect releases from the Municipal Water Supply storage from diversion by users not covered as an authorized place of use under Water Right No. 7,628.

III. Release Accounting

- A. Accounting of releases will follow all provisions of the "Contract Administration Memorandum (Memo) between the United States represented by the Department of Interior Bureau of Reclamation and the City of Russell, Kansas, and the State of Kansas regarding Reservoir Accounting Procedures for Cedar Bluff Reservoir, Trego County, Kansas" dated November 2003.
- B. All water released from Cedar Bluff Reservoir in response to release triggers identified in this agreement will be charged to the Artificial Recharge pool as long as water is available in such pool.

Section 3 Binding Nature of Agreement

The provisions of this agreement shall be binding on the parties insofar as the operations of Cedar Bluff Reservoir and associated river reaches are concerned. However, any party may call for temporary changes to meet unforeseen circumstances and upon agreement by all parties such changes will be implemented.

It is recognized that this agreement can not address the regulation of water appropriated to those not party to this agreement. The State of Kansas is required by law to regulate all water users withdrawing water from the same source of supply in accordance with the provisions of the Kansas Water Appropriation Act.

Section 4. Data Exchanges

Upon reasonable notice, each party to this agreement shall timely furnish any hydrologic, operational, and other data necessary to administer and evaluate this agreement to any other party requesting data.

Section 5. Agreement Renewal

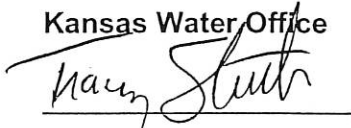
- A. This Operations Agreement shall remain in effect for the effective life of Cedar Bluff Reservoir.

- B. After sufficient experience has been gained by releasing water for the benefit of the Cities, the terms of this Operation Agreement may be reviewed upon request by any party.
- C. Five years after the approval of this Operations Agreement, and every five years thereafter, the Operations Agreement will be reviewed and updated to encompass changes in operations, policies, and procedures; and to reflect altered conditions in the basin.
- D. This agreement may be amended at any time by the unanimous written agreement of the parties.

Section 6. Dispute Resolution

In the event that agreement cannot be reached by all parties for interpretation, application or changes to this agreement, the Kansas Supreme Court alternative dispute resolution process shall be utilized.

Kansas Water Office

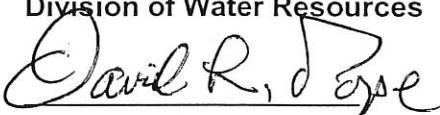


Tracy Streeter
Acting Director

9-30-24

Date

**Kansas Department of Agriculture
Division of Water Resources**

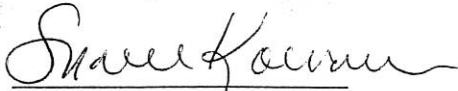


David L. Pope
Chief Engineer and Director

9-30-2004

Date

City of Hays



SUNELL KOERNER
Mayor of Hays

9-24-04

Date

ATTEST:

Mark Loughry
MARK LOUGHRY
City Clerk

9-24-04
Date

(SEAL)



City of Russell

Henrietta Wenthe
HENRIETTA WENTHE
Mayor of Russell

10.12.04
Date

ATTEST:

Karen Gates
KAREN GATES
City Clerk

10.12.04
Date

(SEAL)



Ethanol - *Made in Kansas*

Association Of Ethanol Processors

TO: House Environment Committee
FROM: Mary Jane Stankiewicz, VP and General Counsel
DATE: January 31, 2006
RE: Requested Documents regarding ethanol

Per your request for information regarding ethanol's impact on the ozone and ethanol's use with older cars, please find the following information:

1. "New Study Finds Ethanol is a Win-Win". This overview outlines a new study from University of California-Berkeley that reaffirms that ethanol is net positive on the energy balance issue and also finds that the use of ethanol can reduce greenhouse gas emission by 15% compared to gasoline. This overview came from the Renewable Fuels Association website at www.ethanolrfa.org.
2. "SEMCOG Study Omissions Discount Ethanol's Smog Reducing Power. The study was independently done but the overview of the study was prepared by the Renewable Fuels Association whose website is www.ethanolrfa.org. This study suggests E10 reduces smog formation.
3. "Consumer Myth-Busters". This states one the bottom of page one that older cars can run on ethanol without problems. This comes from the National Corn Growers Association website at www.ncga.com.
4. "Changes in Gasoline and the Classic Auto". This details that older car issue and concludes that the ethanol can be run in the classic car. This study was done by the Downstream Alternatives, Inc. and was found at www.ethanolrfa.org.

House Environment Committee
February 2, 2006
Attachment 3



RFA PRESS RELEASES: 2006 ARCHIVE

NEW STUDY FINDS ETHANOL IS A WIN-WIN

Findings Reinforce What Those In the Industry Already Understand

JANUARY 26, 2006

Washington, DC – A new study to be published in the journal *Science* on Friday, January 27 by Professors Daniel Kammen, Alex Farrell, and their associates at University of California-Berkeley's Energy and Resources Group and the Goldman School of Public Policy has concluded that ethanol yields more energy than it takes to produce and that ethanol decreases dangerous greenhouse gas emissions. The study sought to analyze the conflicting reports that exist about the energy balance of ethanol. According to the results, producing ethanol from corn uses much less petroleum than producing gasoline. More information on the report is available at <http://rael.berkeley.edu/EBAMM/>.

"While this report is not news to those who are familiar with the ethanol industry, it is significant in that it provides a comprehensive review of all the ethanol energy studies out there and concludes that ethanol is a net energy positive," said Bob Dinneen, president of the Renewable Fuels Association. "Detractors of the ethanol industry have received too much media attention for their questionable findings with respect to ethanol's energy balance. This study will help put their unfounded arguments to rest."

The study found that the production and use of ethanol reduces greenhouse gas emission by 15 percent compared to oil and gasoline use. These findings are consistent with those of the U.S. Department of Energy's Argonne National Laboratory, which estimates that the use of 10 percent ethanol blends would reduce greenhouse gas emissions by up to 19 percent.

"A 15 percent reduction in greenhouse gas emissions is significant and puts ethanol at the forefront in the effort to address global warming," said Dinneen. "No other liquid fuel in widespread use today can make that claim."

The study also noted that new technology to convert cellulosic material, such as corn stalks, switchgrass and woody material, to ethanol holds even more potential.

"There isn't an ethanol producer in the country that isn't actively pursuing a cellulose-to-ethanol research program," said Dinneen. "While corn will continue to be the major feedstock for U.S. ethanol production, the development of cellulosic ethanol technology offers a promising compliment and a new era for the U.S. ethanol industry."

Currently, 95 ethanol plants have a combined production capacity of more than 4.3 billion gallons a year. There are 31 ethanol plants and nine expansions under construction with a combined annual capacity of more than 1.5 billion gallons.

###

For more information, visit the Renewable Fuels Association website at:
www.ethanolRFA.org.

SEMCOG Study Omissions Discount Ethanol's Smog Reducing Power
Prepared by the Renewable Fuels Association

The recent report "Emission reductions from Changes to Gasoline and Diesel Specifications and Diesel Retrofits the Southeast Michigan Area" (SEMCOG report) contains speculative assumptions on permeation but fails to include new data showing a larger CO reduction and a smaller NOx increase for ethanol. This selective "correcting" of the Complex and Predictive models works to discount ethanol's role in reducing overall smog-forming emissions. Further, the analysis is limited by only measuring mass emissions and failing to evaluate the impact of those emissions on air quality. If this had been done, the SEMCOG report would provide a compelling case for the use of 100% E10 as a positive strategy for Southeast Michigan and other areas around the country to help obtain the federal ozone standards.

Determining Smog Formation Impacts Requires Air Shed Modeling

Smog (ozone) results from the combination of NOx and VOC in the presence of sunlight and carbon monoxide (CO). The impact from changes to the emission levels of these three pollutants can only be determined through air shed modeling. In fact, the SEMCOG report calls for air shed modeling to determine overall smog performance of the various fuels reviewed.¹ No conclusions on smog formation can be drawn from the SEMCOG report.

Ethanol Likely Reduces Smog Formation

Given the large reduction of VOC-equivalent emissions with ethanol and only a slight NOx increase, existing air shed modeling suggests 100% E10 would reduce smog formation. Whether in a VOC dominated air shed like California and Chicago or a NOx dominated area like Atlanta, prior air shed modeling shows ethanol reduces smog formation as the VOC-equivalent emissions reductions more than offset any increase in NOx emissions.

Ethanol Reduces CO Emissions

The SEMCOG report specifically states, "It is generally known that ethanol in gasoline reduces exhaust hydrocarbons and carbon monoxide emissions from on road and off road vehicles and equipment."² In fact, the SEMCOG report states, "If ethanol were not utilized in Michigan (No E10 option), CO emissions would increase by roughly 80 tons per day."³ Using 100% E10 would maximize the CO reductions. With ethanol, some evaporative VOC emissions, like permeation, do increase. However, it is important to look at the overall impact of ethanol on all emissions and not to fixate on one subset.

¹ Page 87, SEMCOG Report

² Page 21, SEMCOG Report

³ Page 13, SEMCOG Report

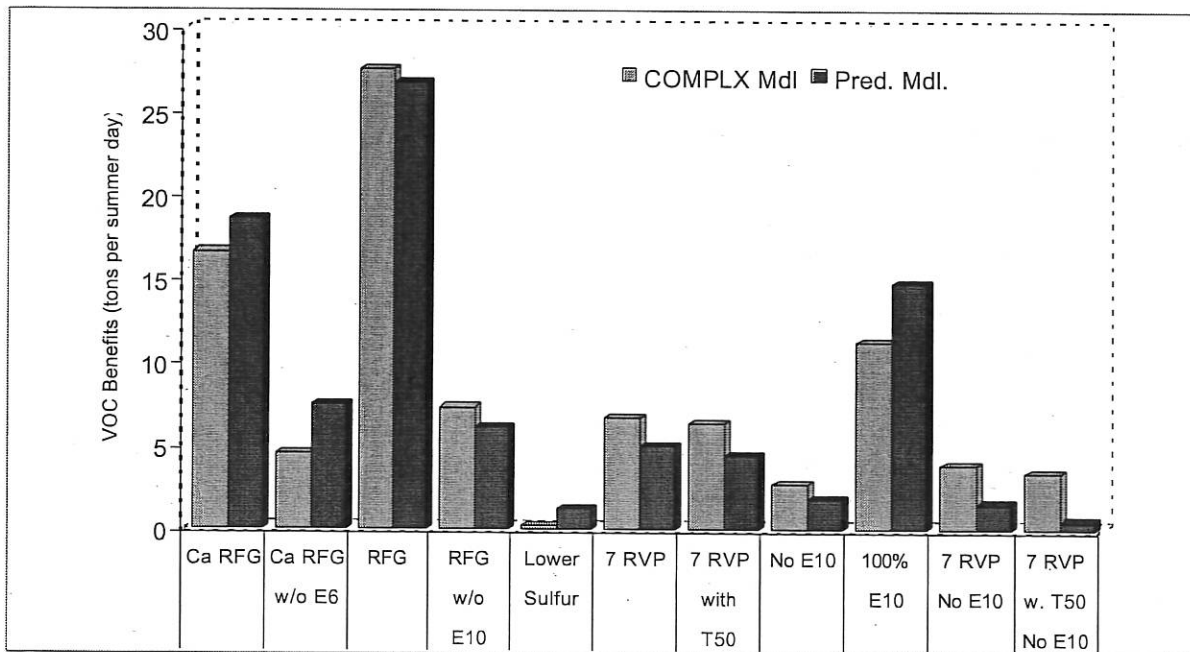
Ethanol Reduces VOC-equivalent Emissions

While the SEMCOG report examines the mass emission impacts from various fuel formulations, it is important to consider the reactivity of these emissions. CO acts like a VOC in ozone formation. Therefore, taking into consideration its reactivity, reductions in mass emissions of CO can be converted to a "VOC-equivalent."

Modeling for CO's effect on ozone by the U.S. EPA determined that a 15 to 1 ratio was appropriate between CO and VOC⁴. In other words, reducing 15 tons of CO is equivalent to reducing 1 ton of VOC. Using the SEMCOG report's CO and VOC mass emission numbers, the chart below outlines total VOC-equivalent emissions. Ethanol blended fuels (CaRFG, RFG, and 100% E10) produce the largest VOC-equivalent benefits compared to other fuels. The total net benefit includes the net effects of permeation, exhaust and evaporative VOC and CO emissions of on-road and off-road including the impacts of an RVP waiver for ethanol use.

Figure 1. Net VOC-equivalent Benefits (includes net VOC emissions and CO emissions converted to VOC-equivalents).

SEMCOG Figure ES-1a Modified to Include Net VOC and CO Reductions
(tons per summer day)



⁴ EPA (2001) Federal Register (66 FR 37156, 17 July, 2001)

It should be noted that the SEMCOG report's CO reduction numbers for ethanol may be conservative. The SEMCOG report does not incorporate new Automobile Alliance data showing a significant decrease in CO from ethanol in newer cars.⁵ Also not reflected are CO reductions from ethanol that occur during off-cycle modes such as the REP05 driving cycle.⁶ When these effects are taken into account ethanol fuels provide an even more significant advantage for total VOC-equivalent reductions compared to other fuel options.

NOx Increase with Ethanol is Overstated

The EPA Complex Model shows a small increase in NOx emissions for ethanol while California's Predictive Model yields a large increase. The SEMCOG Executive Summary states, "Therefore, [the Predictive Model] is generally believed to provide better NOx emissions estimates for fuels containing ethanol."⁷ However, given the latest data, many experts believe the Complex Model is more accurate.

Indeed, the author himself notes the uncertainty regarding potential NOx increases with ethanol, stating, "Readers are cautioned that when the NOx effects are evaluated using the Predictive Model, the results in this study could overestimate the NOx effect, especially in the outlying projection years when 1996 and later vehicles predominate."⁸

For example, the Predictive Model assumes a large NOx increase associated with ethanol for new cars. But, new Auto Alliance data overwhelmingly suggests this supposed NOx increase for newer cars does not exist.⁹ Further, the SEMCOG report states, "The Complex Model shows a more detailed analysis for fuel effects on high emitters than the Predictive Model."¹⁰ This analysis more accurately reflects the emission effects of oxygen on NOx emissions.

Permeation Impacts of Ethanol Uncertain

To both the Predictive and Complex Models, the SEMCOG report adds an increase in permeation VOC emissions due to the use of ethanol "based on the CRC on-road data, and other data that is available..."¹¹ The CRC testing was done with CaRFG (with 5.7% ethanol) on 10 cars to model a California vehicle fleet that is much older than in most states due to the mild climate. Using this CRC on-road data for California and extrapolating it for the use of E10 in on-road, non-road, and plastic containers requires a series of highly speculative assumptions. In fact, there were so many questions regarding the impact for on-road vehicles left unanswered by the original CRC permeation study that additional testing was required. That work is ongoing.

⁵ Automobile Alliance, page 17, www.arb.ca.gov/fuels/gasoline/meeting/2001/AlliancePrestn.pdf

⁶ California Air Resources Board, www.arb.ca.gov/fuels/gasoline/ethanol/testrpt.pdf

⁷ Page 13 SEMCOG Report

⁸ Page 23 SEMCOG Report

⁹ Automobile Alliance, page 15, www.arb.ca.gov/fuels/gasoline/meeting/2001/AlliancePrestn.pdf

¹⁰ Page 62 SEMCOG Report

¹¹ Page 23 SEMCOG Report

Vehicle Fleet Turnover Outweighs Any Fuel Change Option

As the SEMCOG report compares different models, discusses numerous points of uncertainty, and recognizes that new data is becoming available every day, it should be noted there is one area where everyone seems to agree: on-road emissions are going down.

The SEMCOG report highlights the on-going reductions in vehicle emissions of NOx, VOC, and CO due to existing federal regulations. In fact, maximum changes to emissions from any of the fuel options reviewed are small compared to emissions reductions due to fleet turnover. Newer cars emit fewer emissions regardless of fuel type. By 2007, the SEMCOG report predicts VOC and NOx emissions will decline by 40 percent if the fuel remains the same. Comparatively, the benefit/disbenefit of any fuel change would have a maximum impact of approximately 2 to 8 percent on NOx and VOC respectively.

Other facts are certain as well. We know ethanol use reduces toxics. The SEMCOG report shows CaRFG and RFG, both with ethanol, to have the best toxic benefits.¹² We know ethanol use reduces greenhouse gas emissions. A recent study by MIT for the Pew Center of Global Climate Change called ethanol and other fuels the most cost effective short-term solution to reducing CO₂ from transportation.¹³ We know ethanol use reduces imports of crude oil and gasoline components. We know ethanol production creates manufacturing jobs and boosts the U.S. economy.

Conclusion

The SEMCOG report data identifies a significant reduction of VOC-equivalent emissions from ethanol and a small, decreasing, and highly uncertain increase in NOx emissions. Air shed modeling of the total impacts of all VOC, CO and NOx emissions from ethanol will likely show ethanol fuels to be an important strategy for reaching Federal ozone standards in any region.

From a policy perspective that considers other factors such as CO₂, energy diversity, increased supply and economic development, as well as air quality, ethanol blended fuels represent a very positive choice.

Prepared March 2005

¹² Page 14 SEMCOG

¹³ "Ethanol and other fuels that can be blended with petroleum offer the greatest promise for reducing transportation GHG emissions during the next 15 years." Full report can be found at www.pewclimate.org/policy/transp_substitute.cfm



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CONSUMER MYTH-BUSTERS

In spite of the fact that billions of trouble-free miles have been driven using ethanol-blended gas on E-10 Unleaded), some myths still persist regarding its use. Here are the facts:

MYTH: *Ethanol causes "vapor lock."*

FACT: State and federal statutes continue to lower vapor pressure levels, virtually eliminating problems that were reported in the past. Additionally, all major auto manufacturers now use in-line fuel pumps, which are not subject to vapor lock problems as were the older in-line fuel pumps.

MYTH: *Ethanol plugs up fuel lines and fuel injectors.*

FACT: Situations involving plugged fuel filters are virtually non-existent today. In the past (especially made prior to 1975), switching to ethanol-blended gasoline occasionally resulted in the fuel system scrubbed clean due to the cleansing nature of ethanol. The loosened residue would be caught in the filter—requiring a filter change. Once the filter was changed, the fuel system remained clean, and engine performance.

Some components in gasoline, such as olefins (which are a waxy substance), can cause deposits on fuel injectors. But since ethanol burns 100 percent and leaves no residue, it cannot contribute to the deposits. In fact, ethanol blends help keep fuel injectors cleaner.

MYTH: *Ethanol blends can't be used in small engines.*

FACT: E-10 Unleaded is perfectly acceptable in lawn mowers, snowmobiles, ATVs and other small engines that run on ordinary unleaded gasoline. Virtually every small engine manufacturer, including Briggs & Stratton, Honda, Toro/Lawnboy, Kohler and Snapper, approves the use of E-10 Unleaded in its products.

MYTH: *Most auto mechanics tell people not to use ethanol-blended gasoline.*

FACT: A mechanic who says not to use E-10 Unleaded simply does not have correct information, particularly since every major automaker in the world approves the use of 10 blends ethanol blends. Fuel formulation and fuel quality have changed dramatically over the years, and many mechanics simply don't have current information or knowledge of these changes and how they affect engine performance. The result: When a problem appears to be fuel related, some mechanics will immediately blame E-10 Unleaded has been used—and if so, blame ethanol for the problem. In some states, E-10 Unleaded advocates have offered a substantial reward to any customer who can document damage from E-10 Unleaded to his or her car—and so far, no one has ever collected.

MYTH: *E-10 Unleaded cannot be used in older cars.*

FACT: The formulation of gasoline has changed considerably over the past few years without affecting the performance of older cars. Many older cars were designed to run on leaded gasoline, with the lead providing the octane necessary for engine performance. When lead was phased out of gasoline, oil companies added toxic chemicals to raise the octane rating and other additives to replace the "lubrication" value of lead.

The ethanol in E-10 Unleaded raises octane in gasoline by three points and it does so using a renewable additive that works well in older engines.

Last reviewed June 10, 2005

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Changes in Gasoline & The Classic Auto (DAI Informational Document # 960501, May 1996)



Introduction

The ongoing effort to alter gasoline to minimize its impact on the environment has refocused attention on fuel quality issues. The reformulation of gasoline and the addition of oxygenates such as ethanol, MTBE (methyl tertiary butyl ether) and other ethers have prompted questions and sometimes raised concerns. For the owner of a classic automobile that question is usually-Will today's fuels work in yesterday's automobiles?

Owners of classic vehicles have unique considerations. Their vehicle's fuel system may differ significantly from those of modern vehicles. The car is usually not driven often and is stored for long periods. It probably operates rich at specified air/fuel settings compared to modern vehicles. In the case of muscle cars, the compression ratio may dictate the use of very high octane gasoline and if the valve seats are not hardened, the effect of unleaded gasoline on exhaust valve seats may be an issue.

Unfortunately, limited information has been written in a manner that addresses these concerns from the perspective of the classic car owner. That is what this information paper does, address the fuel related questions and concerns of the classic auto owner.

Background

Gasoline is constantly changed and reformulated based on a variety of factors including the type of crude oil used, the mix of finished products provided, and advancements in process technology. More recently, changes have been driven by environmental concerns. The seventies saw the introduction of unleaded gasoline. The eighties and nineties saw the reduction in use of lead in automotive gasoline. Fuel volatility was reduced in 1989 and again in 1992 by requiring fuels with lower vapor pressure. The next round of environmental changes were driven by the 1990 Clean Air Act Amendments. This legislation ushered in the age of oxygenated fuels in carbon monoxide non-attainment areas in 1992 and the introduction of reformulated gasoline (RFG) in January 1995. This legislation also requires certain controls of so called "conventional gasoline" and required the complete elimination of lead

use in automotive gasoline as of December 31, 1995. Finally, the legislation required that all gasoline sold after January 1, 1995 contain a detergent effective in controlling carburetor, fuel injector and intake valve deposits.

These various legislative and regulatory requirements necessitated more alterations to gasoline formulations. It is important to note that the above requirements are environmentally driven. At the same time, gasoline must continue to meet certain performance standards and industry guidelines.

Gasoline performance standards are established by the American Society for Testing and Materials (ASTM). The standard specification for gasoline includes requirements and guidelines for such important fuel properties as octane, volatility, corrosivity, and stability.

Whether a gasoline is reformulated, oxygenated, or conventional it should still meet the ASTM performance guidelines. In addition some oil companies have requirements that exceed those of ASTM.

It is important to note that the ASTM standards do not generally dictate what should be in gasoline but rather how the gasoline should perform.

The following provides an overview of the various areas of special interest to the classic auto owner.

Fuel Oxygenates

Fuel oxygenates are comprised of hydrogen, carbon, and oxygen and therefore add oxygen to the fuel. The oxygenates include various alcohols and ethers but only a few are used today. The only alcohol being used is ethanol. The most common ether is MTBE with some use of TAME (tertiary amyl methyl ether) and ETBE (ethyl tertiary butyl ether).

These oxygenates are used in reformulated and oxygenated gasolines to comply with environmental standards and in conventional gasoline to raise octane quality.

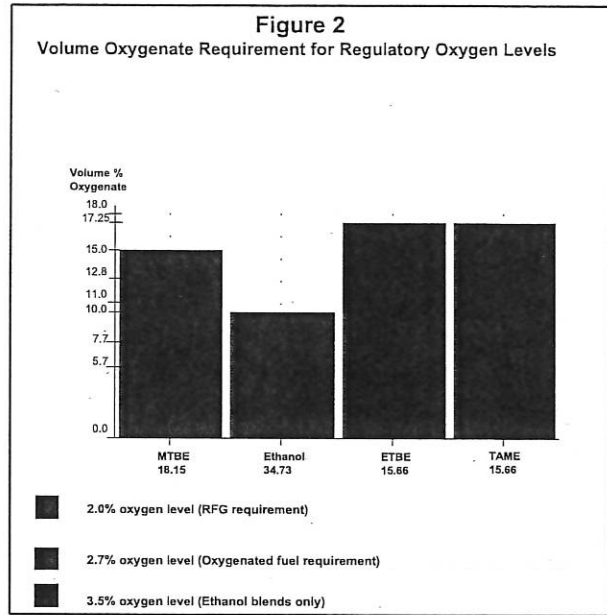
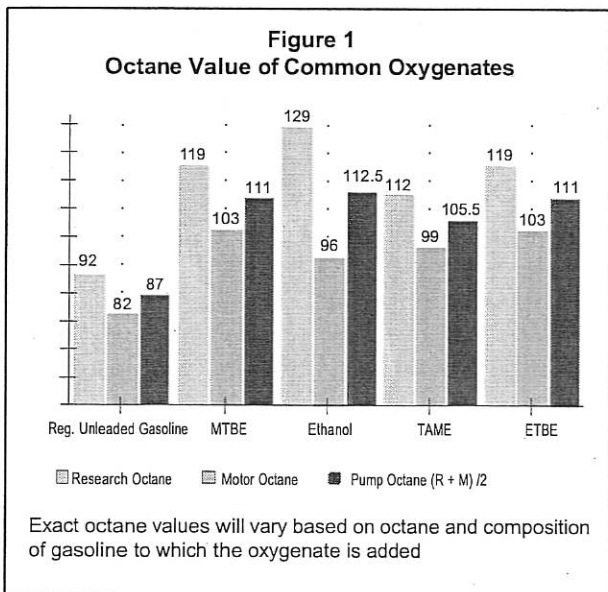
Ethanol is the same alcohol used in beverage alcohol. For fuel use it is 200 proof and denatured to make it unfit for drinking. There is an ASTM standard

for the quality of ethanol blended to gasoline. Ethanol has been used in gasoline since the late seventies and about 12% of all gasoline sold in the U.S. contains ethanol. The most common level used in gasoline is the 10% maximum allowed under federal law, although some companies blend at the 5.7% or 7.7% levels for environmental program compliance. Therefore the oxygen content of a gasoline/ethanol blend generally ranges from 2.0% to 3.5%. Ethanol is also an octane enhancer and raises the octane level of the gasoline to which it is added by approximately 2.5 numbers.

MTBE and the other ethers are manufactured by reacting refinery petrochemicals with an alcohol. The ethers are blended in ranges up to about 17% depending on the ether used. MTBE, the most common ether used is generally blended at 11% in reformulated gasoline and 15% in winter time oxygenated fuels. This equates to an oxygen level of 2.0% to 2.7%. MTBE is used in 25% to 30% of all gasoline sold in the U.S. It also is an octane enhancer raising octane levels by around 2.5 numbers when blended at maximum permitted levels.

Figure 1 shows the octane values of common oxygenates compared to regular unleaded gasoline. Figure 2 shows the oxygen content of typical oxygenate blend levels.

Probably no fuel components have generated as much controversy and misinformation as the fuel oxygenates. Various myths have gained almost folk lore status and are therefore addressed in the appropriate sections of this paper.



Octane

Octane is nothing more than a measure of a fuel's ability to resist engine knock. When octane is too low for a given engine, the fuel will spontaneously ignite resulting in an explosion that collides with the flame front initiated from the spark plug resulting in engine knock or ping.

Octane is rated in single cylinder laboratory engines using specified reference fuels. There are two test methods, the Research Method which yields a Research Octane Number (RON) and a Motor Method which yields a Motor Octane Number (MON). The number posted on the gasoline pump is an average of those two numbers, (R+M)/2.

Today, gasoline octanes range from 85 to 94 (R+M)/2 with the typical grades being regular unleaded at 87, midgrade at 89, and premium at 91 to 94. Prior to the eighties, gasoline octane was often posted based solely on the Research Octane Number which allowed postings as high as 100 octane. Premium gasolines sold today often have a research octane number of 100 or higher but must post the (R+M)/2 value. For instance, a 93 octane premium will likely have a motor octane of 85 and a research octane of 101 $(101 + 85) \div 2 = 93$.

Some classic vehicles fall into the "muscle car" category and for these higher compression ratio engines sufficient octane may be an issue. Most higher octane premiums can satisfy the octane requirements of these vehicles. However if engine ping is experienced on the highest octane gasoline available it may be necessary to take other actions.

One course is to retard the timing although this

reduces performance. Other mechanical steps could include richening the air/fuel mixture although this would increase exhaust emissions.

Since maximum octane requirement occurs at an air/fuel ratio of 14.7:1 going rich from that point will lower octane requirement. Other mechanical causes should also be checked out. A marginal cooling system that results in higher operating temperatures can increase the octane requirement of a vehicle as can excessive combustion chamber deposits. Eliminating such problems is obviously preferable to adjustments that would have a negative effect on performance.

There are also "over-the-counter" octane enhancers although most of these provide only a fraction of an octane number. Another approach is to blend a portion of racing fuel with the premium grade available to achieve the desired octane level. Racing fuels are preferred to aviation gasoline (AV-gas) because AV-gas does not have the necessary scavengers and additive packages for automotive use. However, most racing gasolines sold at race tracks and aviation gasolines are no longer legal for street use because they do not meet EPA's requirements for that use.

As mentioned, the oxygenates are octane enhancers. Furthermore all gasolines must meet the octane number posted on the pump. The oxygenates will enlean the air/fuel charge by up to a half number. This is equivalent to the increased oxygen content of the atmosphere for a 30° to 40° temperature drop. If your vehicle is set leaner than factory specifications this added oxygen may necessitate richening the air/fuel ratio to compensate for the extra oxygen.

NOTE: In some areas later model classic cars are subject to Inspection and Maintenance Programs. In this case you must ensure that any adjustments do not result in the vehicle exceeding specified exhaust emissions levels.

Lead Phase Out and Exhaust Valve Seat Recession

In addition to providing cheap, albeit unhealthy, octane, lead also resulted in a buildup of lead oxide

deposits on exhaust valve seats. These lead oxides prevented metal to metal contact between the exhaust valve and exhaust valve seat thereby preventing exhaust valve seat recession (EVSR) in engines without hardened valve seats.

Over a period of time operating without lead these oxides diminish exposing the engine to possible EVSR (see Figure 3). Most tests have shown that engines are not at great risk unless they are operated at high rpms or under heavy loads (such as pulling a trailer). The mechanical fix is, of course, to install hardened valve seats. However there are also chemical fixes. There are lead replacement additives, sometimes called "lead substitutes" which can be added to gasoline. The active ingredient in these additives is usually sodium or phosphorous, both of which prevent the exhaust valve from recessing into its valve seat. These products are generally sold over the counter under such names as ValveGuard, ValvePro, Valve Tect, Instead O Lead, etc.

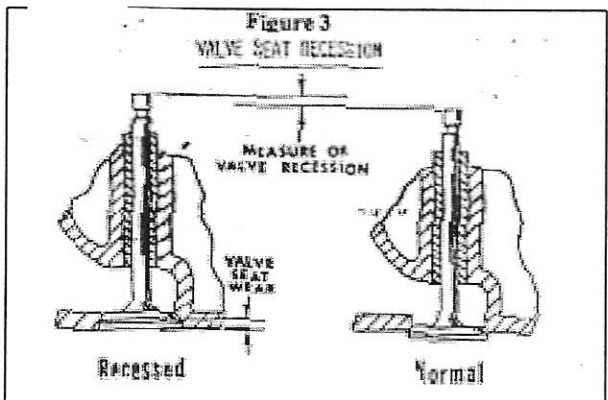
These additives should not be added at higher than the recommended dose rates since to do so could increase engine deposits.

Fuel oxygenates have not been shown to be a significant factor in EVSR. All gasolines, whether oxygenated or not, are unleaded and it is really an issue of whether or not to use a lead replacement.

Fuel Volatility

Volatility is a measure of a fuels ability to vaporize and is an important characteristic of gasoline. Fuel must be volatile enough to provide good cold start and warm-up performance. However it must not be made excessively volatile or it can contribute to hot restart problems, vapor lock/fuel foaming, and poor fuel economy. Refiners adjust gasoline based on the prevailing climate in the area in which the fuel is to be sold. More volatile gasolines are sold in the winter, less volatile in the summer. While the gasoline volatility of winter fuels has not changed much in recent years, the volatility of the summer grade has been reduced especially for reformulated gasoline. These less volatile fuels may not provide cold start and warm up performance comparable to gasolines of the late eighties. However, they will be less likely to contribute to vapor lock and similar problems.

The effect of oxygenates on volatility varies but is not of great concern since the maximum volatility of all summer grades is now regulated by the U.S. Environmental Protection Agency (EPA) and is at much lower levels than gasoline sold in the late eighties. This has eliminated any hot restart/vapor lock problems in all but



the most sensitive vehicles.

Enleanment

Oxygenates do enlean the air/fuel ratio. An oxygenated fuel usually contains between 2.0% and 3.5% oxygen. To put this into perspective, this is the same effect that would be experienced for the denser air resulting from a 30°F temperature drop or a decrease of 1500 feet in altitude. All regular street driven vehicles experience these changes in circumstances and do not require any special modifications. Unless an engine is tuned to the absolute limit (very few non-race engines are) oxygen presents no problem.

On a race car that is tuned to a specific air/fuel ratio, the enleanment from the oxygen can be offset by increasing fuel flow by a percentage comparable to the oxygen content of the fuel. This is normally accomplished by changing the carburetor jets to the next largest size since each jet size usually represents a 3 to 4% increase in fuel delivery.

Materials Compatibility

Obviously the fuel system materials used in late model vehicles are dramatically improved compared to the original equipment used in vintage/classic vehicles.

Older fuel systems could contain natural rubber or synthetic rubber much less compatible with today's fuels than the Viton® and fluoroelastomers used in modern fuel systems. Usually, however, older cars have already had most fuel system components replaced. Components provided by the aftermarket since the early eighties are compatible with today's fuel formulations.

Most questions on materials compatibility usually pertain to the oxygenates. However that is not the only gasoline ingredient to consider. As refiners decreased the use of lead, something else had to be increased or added to maintain octane quality. This is often done by increasing the aromatic level of gasoline. On an octane equivalent basis, some of the aromatics are more aggressive to elastomers than the oxygenates. Whether octane is achieved by oxygenate addition or increases in aromatics, today's gasolines are generally more aggressive to elastomers than those of the sixties and seventies. Where can one obtain a gasoline comparable to those sold in bygone years? You can't unless you have mastered time travel.

It should be kept in mind that extended storage

periods without proper treatment of gasoline can also increase elastomer deterioration. Overuse (beyond recommended treat rate or excessive frequency) of certain over-the-counter additives may also contribute to accelerated deterioration of fuel system components.

If it becomes necessary to replace fuel lines and other fuel system components, preferred materials are Viton® and fluoroelastomers such as 3M Fluorel®.

There should be no major concern about metals corrosion. While all gasoline is potentially corrosive, the ASTM specifications include guidelines for corrosivity. Petroleum companies routinely add corrosion inhibitors to their gasoline. Oxygenated fuels are treated with corrosion inhibitors to provide a level of corrosion protection comparable to that of other gasolines.

Fuel Economy

There is a great deal of misinformation about the fuel economy (miles per gallon) of various gasolines, especially those containing oxygenates. Various fuel programs that require oxygenates have traditionally been implemented in the winter when gasolines are made more volatile for good cold start and warm up performance. These "lighter" winter gasolines contain less energy. Furthermore a number of driving conditions that occur in the winter reduce fuel economy.

Besides fuel related factors, there are a number of vehicle and climate related issues to consider. Vehicle technology, state of tune, ambient temperatures, head

Factor	Fuel Economy Impact	
	Average	Maximum
Ambient temperature drop from 77°F to 20°F	-5.3%	-13.0%
20 mph head wind	-2.3%	-6.0%
7% road grade	-1.9%	-25.0%
27 mph vs. 20 mph stop and go driving pattern	-10.6%	-15.0%
Aggressive versus easy acceleration	-11.8%	-20.0%
Tire pressure of 15 psi versus 26 psi	-3.3%	-6.0%

winds, road grade, tire pressure, use of air conditioners, and numerous other factors have an impact on fuel economy. Some of those that have been documented in testing are covered in Table 1. Even whether or not the car is level each time you fill it can distort fuel economy readings by several percentage points.

3-12

It is easy to see from the table why an individual using one or perhaps a few vehicles cannot make an accurate determination of the fuel economy impact of various gasolines. There are simply too many variables.

Through the course of a year, gasoline energy content can range from 108,500 British thermal units (btu) per gallon to 117,000 btu/gal. Winter grades are made more volatile (less dense) to aid in cold start and warm up performance and typically contain 108,500 to 114,000 btu/gallon. Summer grades are of much lower volatility to minimize evaporative emissions and hot start/hot driveability problems. Summer grades will typically contain 113,000 to 117,000 btus/gallon. So the energy content, and therefore the fuel economy, can vary 3.4% to 5.0% just based on the energy content of the fuel. Furthermore comparing the highest energy content summer fuels to lowest energy content winter fuels demonstrates that the variation in energy content

	Summer grade btu	Winter grade btu
Maximum	117,000	114,000
Minimum	113,000	108,500
%	3.4	5.0
Difference between summer maximum and winter minimum-7.26%		

is up to 7.26% (see Table 2).

The lower energy content of winter fuels and the other wintertime influences on fuel economy can easily lead to reductions of 10-20% in miles per gallon during the coldest winter months.

Oxygenated fuel programs, being wintertime only programs, have therefore been incorrectly blamed for massive fuel economy losses when in fact numerous other variables also contribute to fuel economy losses during winter months.

The reduction in btu/gallon from the addition of oxygenates is generally in the 2% to 2.5% range although fuel economy may not be that much lower. As an example, ethanol contains 76,100 btu per gallon. A 10 volume percent ethanol blend would contain about 3.4% less energy per gallon. However, in controlled tests the fuel economy loss has been far less than would be indicated by the 3.4% lower energy content.

Table 3 lists the btu/gallon (energy content) of each of the four oxygenates currently in use and also the energy content of resulting fuels when those oxygen-

Oxygenate	Energy content (btu/gal)	Finished blend 2.0 wt.% oxygen btu/gallon	Finished blend 2.7 wt.% oxygen btu/gallon
Ethanol	76,100	111,836	111,082
MTBE	93,500	111,745	110,925
ETBE	96,900	111,811	111,059
TAME	100,600	112,215	111,688

ates are blended into a 114,000 btu gallon base fuel. The 2.0% oxygen level column is typical of reformulated gasoline while a 2.7% oxygen level is representative of gasoline sold in oxygenated fuel program areas.

Comparing each of the blends in Table 3, you can see that a blend containing 2.0 wt. % oxygen averages just under 2.0% lower energy content. A blend containing 2.7 wt. % oxygen will average about 2.5% lower energy content.

Older vehicles typically have a energy correlation factor of .6 meaning that 60% of any increase or drop in btus per gallon will be reflected in fuel economy. More simply put, a 2.5% reduction in energy content translates to about a 1.5% drop in miles per gallon in older vehicles.

Actually in some tests, older vehicles have shown improved miles per gallons on oxygenated fuels. This is thought to be because the enleaning effect of the oxygenates results in more complete combustion thereby improving fuel economy.

Lubrication

This is perhaps the area of most inaccurate myths. There are no special lubricant requirements for using oxygenated fuels. Some automotive writers have reported that oxygenates, particularly ethanol, might wash lubricants from cylinder walls. However, they were basing their reports on vehicles that operate on pure alcohol such as those in Brazil. When the fuel is a high percentage of ethanol or methanol (i.e. over 50%) a special motor oil is required. However tests have shown no such special needs for lower levels of ethanol such as those used in oxygenated and reformulated gasolines.

Over-Blends

Some service shops have expressed concerns about the effects of overblends, fuels containing higher than the permitted levels of ethanol or MTBE. Everyone

seems to have a favorite story of a 20% or higher blend although those tales usually date to the late seventies or early eighties.

Today, whether blended at the terminal or refinery, the blending process is very sophisticated and usually employs computerized injection blending equipment or at a minimum preset metering devices. Both ethanol and MTBE cost much more than gasoline so no refiner or blender would intentionally add them in excess since it would raise costs. The price differential and modern blending equipment eliminates any need to worry about overblends.

Fuel System Cleanliness and Detergents

Since January 1, 1995 the U.S. EPA has required that all gasolines contain a detergent/deposit control additive that is effective at controlling carburetor, fuel injector, and intake valve deposits. These standards also apply to oxygenated and reformulated gasolines and are performance specifications based on established test procedures. Therefore, regardless of the brand or grade of gasoline you purchase you will be getting a detergent treated gasoline. There is no need to add over-the-counter detergents unless excessive deposits already exist. In fact, using detergents too frequently or at higher dose rates than recommended can cause elastomer degradation (fuel lines, fuel pump diaphragms) and also oil thickening, which could contribute to insufficient lubrication.

Off Season Storage

Most owners of classic/vintage autos store their vehicles for extended periods of time at some point. Gasoline can deteriorate, weather, and take on moisture during storage. Storage considerations are therefore very important.

Gasoline stored for extended periods will "oxidize" resulting in the formation of gums which contribute to fuel system and engine deposits. Gasoline is typically stable for a period of at least 90 days but may be 30 days old when you purchase it. Therefore if you are storing your vehicle for a period in excess of 60 days you should add a fuel stabilizer. Those stabilizers are "anti-oxidants" that extend the storage life of gasoline. Examples include Gold Eagles "STA-BIL" and NAPA's "Store It-Start It". Some refiners' gasolines remain stable well in excess of 90 days but it is difficult to identify such gasolines unless they are so advertised.

Gasoline will also weather in storage. Some of the gasoline evaporates leaving a less volatile mixture. The remaining less volatile fuel may not provide cold start and warm up performance comparable to when the fuel

was first purchased.

Since gasoline volatility is adjusted seasonably, it is also possible that when the vehicle is taken out of storage it may not have the proper volatility grade for the season. For instance, a car containing a summer or fall grade of gasoline that is pulled out of storage during mid-winter may result in longer cranking time and poor warm up performance because the gasoline is not volatile enough.

Finally moisture levels and phase separation should be considered. Different types of gasoline will hold various levels of water before it phase separates and the water falls to the bottom of the tank.

A gallon of conventional gasoline containing no oxygenates can dissolve and suspend only about 0.15 teaspoon of water (at 60°F) per gallon. A gasoline/MTBE blend can suspend about a half teaspoon of water per gallon while a gasoline/ethanol blend containing 10% ethanol can suspend nearly 4 teaspoons of water per gallon.

When a non-oxygenated gasoline reaches the 0.15 teaspoon level mentioned, excess water will phase separate and form a water phase on the bottom of the tank. MTBE blends would require a half teaspoon of water before water separation occurs. Ethanol blends would require about four teaspoons of water before phase separating. It should be noted that in the case of ethanol blends, when the water begins to phase separate the ethanol will begin to separate with the water and form an ethanol/water layer on the bottom of the tank.

Since water increases corrosion, you should always take precautions to eliminate any introduction of moisture into the fuel system. The tank should be kept reasonably full during storage to minimize condensation on the tank walls.

Contrary to popular belief, it is difficult, if not nearly impossible, to absorb enough water from the atmosphere to induce phase separation. At 70°F and a 70% relative humidity, it would take over two years to saturate a gallon of non-oxygenated gasoline and much much longer than that to saturate oxygenated gasolines.

So if you have taken steps to eliminate accidental introduction of water and tank wall condensation, phase separation should not be of great concern.

Additives

As is the case for engine oil treatments, there are a number of gasoline additives available over the counter. The use of some additives may prove beneficial while others may not. Overuse of some additives cause more harm than good.

Examples of beneficial additives include "lead

replacement" or "lead supplement" additives and fuel stabilizers as covered earlier. Beyond these, gasoline generally contains the appropriate detergent/deposit control additive, corrosion inhibitors, and anti-oxidants for normal every day use.

Using additives too frequently or at too high a dose rate may lead to such problems as elastomer deterioration, oil thickening (reduced lubrication), and excessive combustion chamber deposits.

Use additives with care, follow the recommended treat rates, and use them only when it is necessary to

address a specific problem or condition.

Conclusion

The gasolines made today, whether conventional, oxygenated, or reformulated, differ somewhat from those available when vintage/classic cars were first produced. However the principles of combustion remain the same in all vehicles and today's gasolines continue to meet the ASTM performance guidelines.

By exercising a reasonable amount of care, especially regarding extended storage, the classic auto owner can run yesterday's car on today's fuel.

The information contained in this document is based on a variety of technical papers, test reports, and information sources. While presented in a condensed form, Downstream Alternatives Inc. has made every attempt to represent the information as accurately as possible, and it is believed to be accurate as of the date of printing.

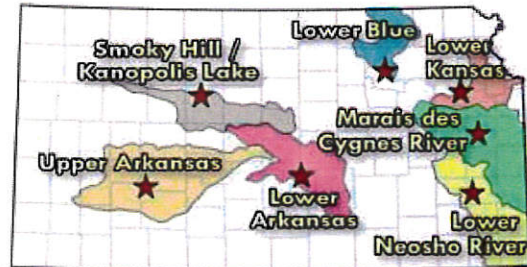
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LEADING THE WAY TO CLEAN WATER: THE K-STATE EXTENSION WATERSHED SPECIALIST PROGRAM

Presented by: Will Boyer, Lower Kansas River Extension Watershed Specialist

Kansas has established TMDLs in all twelve of the major river basins of the state. As part of the state’s strategy in meeting TMDLs and with major funding from KDHE, K-State established seven full-time extension watershed specialists located in the seven highest priority watersheds with TMDLs:

- Upper Arkansas
- Lower Arkansas/Little Arkansas
- Middle Smoky Hill/Kanopolis Lake
- Lower Big Blue/Tuttle Creek Lake
- Lower Kansas/Upper Wakarusa
- Marais des Cygnes
- Lower Neosho



The majority of the specialists are former county agents with 10-30 years of extension experience.

The goals of the program include:

- 1) building local awareness and capacity to address water quality issues;
- 2) providing assistance in assessing water quality conditions and developing watershed protection plans;
- 3) working with agricultural producers and others, either in small groups or one-on-one, to implement management changes to improve water quality; and
- 4) monitoring and evaluating change.

In the past year:

- an estimated 25,000 contacts have been made through displays, information booths, and presentations at statewide and local meetings;
- an additional 250,000 contacts have been made through newspaper inserts, general mailings, and radio announcements;
- over 1000 agricultural producers have been reached through small group meetings and field tours;
- about 300 farms have had on-farm visits and consultations by watershed specialists;
- about 150 producers have implemented water quality improvements on their farms, most of them small to mid-size livestock producers, impacting a little over 20,000 animal units, mostly beef, dairy, and swine; many of these are some of the more significant contributors as they are located on streams and/or are under scrutiny by KDHE.

The types of improvements made by producers include:

- relocation of confined feeding areas
- modification of open lots
- grass buffer systems
- improved feeding management
- manure pits or runoff lagoons
- hoop structures for swine
- terraces and runoff diversions
- construction of sediment basins
- improved manure application
- extended grazing season
- fencing cattle out of streams
- alternative water sources



Partners in the effort have included:

- USDA/NRCS
- Conservation Districts
- County Extension
- Local KDHE district staff
- Conservation Commission
- Kansas Dept. of Agriculture
- Kansas Forest Service
- Kansas Water Office
- Kansas Livestock Assn.
- Kansas Farm Bureau
- And a variety of watershed based groups and local leaders



The program's success has led to greater awareness and action at a local level, especially by small and mid-size livestock producers (mostly less than 1000 animal units); other areas of the state are requesting similar assistance. Current funding is provided by KDHE from EPA 319 funds and by K-State Research and Extension.



Ethanol - *Made in Kansas*

Association of Ethanol Processors

House Environment Committee

HCR 5029

February 2, 2006

Good afternoon Chair Freeborn and members of the House Environment Committee. I am Mary Jane Stankiewicz and I am the vice president and general counsel for the Kansas Association of Ethanol Processors (KAEP) and I appear in support of HCR 5029.

KAEP represents all of the major ethanol processors in Kansas, representing 160 million gallons of the 170,000 million gallons produced in Kansas.

The use of methyl tertiary butyl ether (MTBE) gained significant momentum after the Clean Air Act of 1990 was enacted. This act required reducing air pollution by reducing emissions from automobiles. MTBE and ethanol both provide clean air oxygenates and at the time MTBE was readily available and cost effective. However over the last number of years it has been determined that MTBE has become a significant water contaminant.

Therefore, while it has characteristics that are attractive regarding air pollution it is a problem regarding our water supply. Due to the water contamination issues, EPA has already started to work toward eliminating MTBE from gasoline. The Department of Energy has also encouraging a 3% cap on the amount of MTBE that can be used in hopes of protecting the water supplies.

Currently there are 20 more states that either ban or limit the use of MTBE and Kansas is one of these states. K.S.A. 55-527 states that "on or after July 1, 2004, motor vehicles should not contain more than 0.5% MTBE by volume as long as KDHE has obtained a waiver from EPA prohibiting the usage of MTBE. It is my understanding the EPA has granted this waiver to KDHE. Therefore, I do not think it will be unreasonable to see a ban or limit of use of this product.

House Environment Committee
February 2, 2006
Attachment 5



KANSAS

RODERICK L. BREMBY, SECRETARY

KATHLEEN SEBELIUS, GOVERNOR

DEPARTMENT OF HEALTH AND ENVIRONMENT

House Concurrent Resolution 5029

to

House Environment Committee

by

Ronald F. Hammerschmidt, Ph.D.
Director, Division of Environment

February 2, 2006

Chairperson Freeborn and members of the House Environment Committee, I am Ron Hammerschmidt, Director of the Division of Environment for the Kansas Department of Health and Environment. I am here today to give you a brief description of the agency's experience with methyl tertiary butyl ether or MTBE. This compound was widely used as an octane enhancer for gasoline. As stated in House Concurrent Resolution 5029 it has been identified as a possible human carcinogen. KDHE has been actively involved in investigating and remediating groundwater contamination at underground and above ground storage tank sites in Kansas since the mid 1980s. We estimate MTBE was present at approximately 85% of the contaminated sites investigated by the Storage Tank Program. The amount of MTBE found at these sites ranges from 1 to 500,000 parts per billion. About 7% of the sites have levels above 5,000 parts per billion.

One of the first sites at which MTBE was discovered is in the vicinity of Rush Center approximately 5 miles south of Lacrosse. Releases from underground fuel storage tanks resulted in a plume from Rush Center to the area of the Lacrosse public water supply well field. The technology used to address this contamination was a combination of soil vapor extraction, air sparging and air stripping of the contaminated water and soil. In addition, excavation of contaminated soil is also performed at some sites. We feel that we have been successful in removing MTBE along with other constituents at these contaminated sites.

Unfortunately our experience has been repeated in states across the United States. States that have looked for MTBE contamination have also found significant releases. These states have also struggled with remediation of soil and groundwater adversely affected by MTBE and refined fuel constituents. We have not seen similar problems with other enhancers or fuel additives such as ethanol.

I am happy to attempt to answer any questions you may have.

DIVISION OF ENVIRONMENT
CURTIS STATE OFFICE BUILDING, 1000 SW JACKSON ST., STE. 400, House Environment Committee
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February 2, 2006
Attachment 6