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STATE OF KANSAS #1411
HAMILTON COUNTY

This instrument was filed for record on the 11 day of December A.D. 1986 at 10:43 o'clock P.M. and duly recorded in book 38 M Page 201 fee \$ 38.00
Margaret A. Leit Register of Deeds

STATE OF KANSAS, Gray County
This instrument was filed for record on the 24 day of Dec A.D. 19 86 at 9:35 AM. and duly Recorded in Book 76 on Page 386-399
Barbara Bothaker Register of Deeds

STATE OF KANSAS KEARNY COUNTY | SS
This instrument was filed for record on the 17 day of November A.D. 19 86 at 10:00 O'clock A.M. and duly recorded in Book 40 of misc at Page 335
Marilyn A. Evans REGISTER OF DEEDS
By Marilyn A. Evans Deputy

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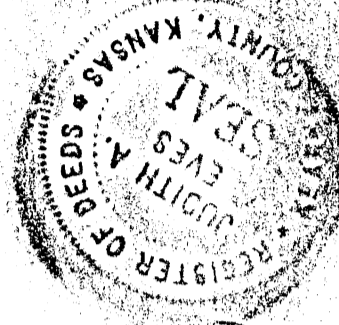
STATE OF KANSAS SS.
FINNEY COUNTY

This Instrument was filed for Record on the 7 day of January A.D. 1987 at 11:30 o'clock A.M. and duly recorded in book 108 Page 313 Fee \$ 38.00
Rita Olson Register of Deeds

STATE OF KANSAS
DIVISION OF WATER RESOURCES
KANSAS STATE BOARD OF AGRICULTURE
TOPEKA, KANSAS

BEFORE

DAVID L. POPE, CHIEF ENGINEER
DIVISION OF WATER RESOURCES
KANSAS STATE BOARD OF AGRICULTURE



INDEXED ✓
DIRECT ✓
INDIRECT ✓

IN THE MATTER OF THE PROPOSED DESIGNATION OF AN INTENSIVE GROUNDWATER USE CONTROL AREA IN HAMILTON, KEARNY, FINNEY, GRAY AND FORD COUNTIES, KANSAS

The Chief Engineer, Division of Water Resources, Kansas State Board of Agriculture, (hereinafter referred to as "Chief Engineer"), after having given due consideration to all evidence, testimony and other information presented to him at the hearing in Garden City, Kansas, on November 6, 1985, regarding the proposed designation of an intensive groundwater use control area (hereinafter referred to as "IGUCA") in the Arkansas River Valley in the reach between the Kansas/Colorado state line in Hamilton County, Kansas, and the eastern boundary of Ford County, Kansas, hereby makes the following findings and order:

FINDINGS

- 1. That on January 21, 1977, Guy E. Gibson, Chief Engineer, Division of Water Resources, Kansas State Board of Agriculture, declared a moratorium on the approval of applications for permit to appropriate water for beneficial use in an area in Hamilton and Kearny Counties adjacent to the Arkansas River as described below:

HAMILTON COUNTY

- Township 23, Range 43, Sections 21 through 28, 33 through 36
- Township 23, Range 42, Sections 19 through 36
- Township 23, Range 41, Sections 19 through 36
- Township 24, Range 43, Sections 1 through 4, 9 through 16
- Township 24, Range 42, Sections 1 through 36
- Township 24, Range 41, Sections 1 through 36
- Township 24, Range 40, Sections 1 through 36
- Township 24, Range 39, Sections 1 through 36

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Township 25, Range 39, Sections 1 through 18

KEARNY COUNTY

Township 24, Range 38, Sections 25 through 36

Township 25, Range 38, Sections 1 through 36

Township 24, Range 37, Sections 12, 13, 24 through 36

Township 25, Range 37, Sections 1 through 36

Township 23, Range 36, Sections 22 through 27, 34 through 36

Township 24, Range 36, Sections 1 through 3, 7 through 36

Township 23, Range 35, Sections 19 through 36

Township 24, Range 35, Sections 1 through 36

Township 25, Range 35, Sections 1 through 36

Township 25, Range 36, Sections 1 through 36;

that the moratorium was to remain in effect until a study could be completed to determine whether diversions of groundwater along the Arkansas River impair existing water rights or prejudicially and unreasonably affect the public interest; that applications to appropriate water within this area were received and assigned priority dates but were not to be acted upon until completion of the study.

2. That in 1985, the Chief Engineer received notification that the last study requested by the Chief Engineer concerning the relationship of groundwater withdrawals to flows in the Arkansas River was completed by the United States Geological Survey; that the results of the studies are contained in three reports entitled:
 - a. Analysis and Computer Simulation of Stream-Aquifer Hydrology, Arkansas River Valley, Southwestern Kansas, U.S. Geological Survey Water-Supply Paper 2200, 1983.
 - b. Projected Effects of Ground-Water Withdrawals in the Arkansas River Valley, 1980-99, Hamilton and Kearny Counties, Southwestern Kansas, U.S. Geological Survey Water-Resources Investigations Report 84-4082, 1984.
 - c. Geohydrology and Model Analysis of Stream-Aquifer System along the Arkansas River in Kearny and Finney Counties, Southwestern Kansas, U.S. Geological Survey Water-Supply Paper 2253, 1985.
3. That on January 1, 1978, K.S.A. 82a-728 became effective providing that:

...it shall be unlawful for any person to appropriate or threaten to appropriate water from any source without first applying for and obtaining a permit to appropriate water in accordance with the provisions of chapter 7 of article 82a of the Kansas Statutes Annotated and acts amendatory thereof or supplemental thereto or, for any person to violate any condition of a vested right,

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appropriation right or an approved application for a permit to appropriate water for beneficial use.

4. That in accordance with the provisions of K.S.A. 82a-1036 through K.S.A. 82a-1040, the Chief Engineer may, upon his own initiative, initiate proceedings for designation of an IGUCA outside the boundaries of an existing groundwater management district whenever he or she has reason to believe that groundwater levels in the area are declining or have declined excessively, the rate of withdrawal of groundwater in the area in question equals or exceeds the rate of recharge in such area, or conditions exist within an area in question which require regulation in the public interest.
5. That in accordance with the provisions of K.S.A. 82a-1036 through K.S.A. 82a-1040, the Chief Engineer may initiate proceedings for designation of an IGUCA within a groundwater management district whenever a groundwater management district recommends the same.
6. That by letter dated January 12, 1984, Mr. Wallace McCune, Vice President, Southwest Kansas Groundwater Management District No. 3, requested, in accordance with the action of the Board of Directors on January 11, 1984, that the Chief Engineer initiate proceedings for designation of an IGUCA along the Arkansas River in the Southwest Kansas Groundwater Management District No. 3.
7. That by letter received March 22, 1984, Mr. Rick Illgner, the then Manager, Southwest Kansas Groundwater Management District No. 3, transmitted to Mr. David L. Pope, Chief Engineer, a list of the land to be included within the boundary of the proposed IGUCA in accordance with a motion passed by the Board at its meeting on February 8, 1984. The IGUCA proposed by the District is generally bounded by lines running parallel to the Arkansas River through the length of the groundwater management district approximately one mile from the river on the north side of the river and three miles from the river on the south side of the river unless hydrologic and geologic conditions suggested otherwise.
8. That based upon information contained in the files of the office of the Chief Engineer, it appeared that groundwater levels in the area in question were declining or had declined excessively, that the rate of withdrawals of groundwater within the area in question equaled or exceeded the rate of

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recharge in such area, and that conditions existed within the area in question which required regulation in the public interest.

9. That on April 12, 1984, David L. Pope, Chief Engineer, issued an order initiating proceedings for designation of an IGUCA with proposed boundaries as follows:

HAMILTON COUNTY

Township 23, Range 43, Sections 14, 15, 16, 21 through 28, 35, 36
 Township 23, Range 42, Sections 19, 20, 21, 25 through 36
 Township 23, Range 41, Sections 31, 32, 33
 Township 24, Range 42, Sections 1, 2, 3, 4, 12
 Township 24, Range 41, Sections 1 through 15
 Township 24, Range 40, Sections 7, 8, 9, 13 through 27
 Township 24, Range 39, Sections 17 through 36
 Township 25, Range 39, Section 1

KEARNY COUNTY

Township 24, Range 38, Sections 29 through 33
 Township 25, Range 38, Sections 1 through 6, 9 through 13
 Township 25, Range 37, Sections 3 through 10, 15 through 18
 Township 24, Range 36, Sections 12, 13, 14, 20 through 36
 Township 24, Range 35, Sections 1, 2, 7 through 34
 Township 25, Range 36, Sections 1 through 12, 16 through 20

FINNEY COUNTY

✓ Township 23, Range 34, Sections 31 through 36 ✓
 ✓ Township 23, Range 33, Sections 31 through 34 ✓
 ✓ Township 24, Range 34, Sections 1 through 26, 30 ✓
 ✓ Township 24, Range 33, Sections 1 through 36 ✓
 ✓ Township 24, Range 32, Sections 6 through 10, 15 through 23, 25 ✓
 through 36 ✓
 ✓ Township 24, Range 31, Sections 30 through 32 ✓
 ✓ Township 25, Range 32 West, Sections 1 through 4, 11 through 13 ✓
 ✓ Township 25, Range 31, Sections 3 through 11, 13 through 28, 35, 36 ✓

GRAY COUNTY

Township 25, Range 30, Sections 16 through 36
 Township 25, Range 29, Sections 19, 20, 21, 26 through 36

Township 25, Range 28, Sections 31

Township 26, Range 30, Sections 1 through 6

Township 26, Range 29, Sections 1 through 6, 8 through 16, 23, 24

Township 26, Range 28, Sections 1 through 28

Township 26, Range 27, Sections 4 through 30, 36

FORD COUNTY

Township 26, Range 26, Sections 7, 8, 16 through 23, 25 through 36 ✓

Township 26, Range 25, Sections 25 through 36 ✓

Township 26, Range 24, Sections 29 through 33

Township 26, Range 21, Sections 12, 13, 14, 23, 24, 25, 26, 34, 35, 36

Township 27, Range 26, Sections 1, 2, 3, 4, 10, 11, 12

Township 27, Range 25, Sections 1 through 17

Township 27, Range 24, Sections 1 through 26

Township 27, Range 23, Sections 7, 8, 14 through 30, 32 through 36

Township 27, Range 22, Sections 19, 20, 25 through 36

Township 27, Range 21, Sections 1 through 4, 9 through 16, 20 through
23, 26 through 34

Township 28, Range 22, Sections 1 through 6, 9 through 12

Township 28, Range 21, Sections 4 through 7

10. That on October 3, 1985, David L. Pope, Chief Engineer, issued notice of a public hearing to be held at 9:00 a.m. on Wednesday, November 6, 1985, at the 4-H Building, South 9th and Fredrick, Garden City, Kansas, at which time all interested parties would have an opportunity to be heard regarding the proposed designation of an IGUCA in the area described in Paragraph No. 9 above; the purpose of the hearing was to determine if an IGUCA should be established and, if so, what the boundaries should be and what types of restrictions, if any, should be placed on the appropriation of water in that area.
11. That notice of this hearing was sent to all water right holders of record in the office of the Chief Engineer and all known land owners in the proposed IGUCA; that notice of the hearing was also published in the Garden City Telegram, the Spearville News, the Dodge City Daily Globe, the Syracuse Journal, the Bucklin Banner, the Lakin Independent, The Montezuma Press, The Cimarron Jacksonion and the Kansas Register; that affidavits of publica-

tion show these newspapers published notice of this hearing more than 30 days prior to the hearing; that notice of the hearing was also sent to state agencies having an interest in water resources, members of the Kansas Water Authority and other public officials with an interest in the matter; that numerous articles and considerable news coverage appeared in the local news media concerning the proposed IGUCA.

12. That on November 6, 1985, at approximately 9:15 a.m., the hearing was convened in the 4-H Building, South 9th and Fredrick, Garden City, Kansas, by the Chief Engineer; that Leland E. Rolfs and Donald L. Pitts, Legal Counsel for the Division of Water Resources, were also present and assisted the Chief Engineer at the hearing.
13. That the Southwest Kansas Groundwater Management District No. 3 appeared by its attorney, Mr. Van Smith, 1135 College Drive, Suite L-2, Garden City, Kansas 67846.
14. That land owners in Hamilton County, Frontier Ditch Irrigation Company, and the Val-Agri, Inc., appeared by their attorney, Mr. Michael Ramsey, 607 North Seventh, Garden City, Kansas.
15. That Mr. Patrick A. Craig, hydrologist, Southwest Kansas Groundwater Management District No. 3, testified that the Groundwater Management District is changing the value of the storage coefficient (specific yield) of the Ogallala aquifer used in its allowable depletion formula from 20 percent to 15 percent; that the need for this change is indicated by data and papers from the United States Geological Survey; that the new formula will reduce the amount of water available for appropriation from between 25 to 30 percent depending on the saturated thickness of the Ogallala aquifer in any given area; although the formula is to be applied in individual situations on a local basis, Mr. Craig stated that in an area wide application of the formula, using the acreage involved, the average saturated thickness of the counties (Kearny County, approximately 176.1 feet; Finney County, 254.1 feet; Gray County, 171.3 feet; and Ford County, 85.3 feet) and the District's current depletion formula, that he had derived a number which is the allowable annual appropriation in acre feet for each one of those counties in the proposed IGUCA; that on an acre wide basis, based on the District's current allowable depletion formula contained in its rules and regulations, Kearny County has

48,134 acre feet of water, Finney County 85,280.6 acre feet, Gray County has 56,018.8 acre feet, and Ford County has 49,830 acre feet available for appropriation (assuming there are no existing water rights or permits to appropriate water) and that this equals a combined total of 239,236.4 acre feet per year; that the current appropriations in acre feet for the entire area equals 348,076.3 acre feet per year; that compared to the District's allowable depletion formula total, the 348,076.3 acre feet exceeds the allowable rate of depletion by 108,812.9 acre feet per year; that under this general analysis, the area within the proposed IGUCA is already, on an average, 45.5 percent over appropriated based on the District's current 40 percent allowable depletion rate in 25 years.

16. That Mr. Craig testified that under the new allowable depletion formula of the Groundwater Management District, which would become effective May 1, 1986, there are no areas which are located within the district and the proposed IGUCA in which a permit to appropriate water would be approved.
17. That Mr. Craig testified that the reason for the apparent over appropriation is the bulk of development in this area which occurred before the formation of the Groundwater Management District and the establishment of allowable depletion policies in the mid 1970's that limited the appropriation of water.
18. That Mr. Gary L. Baker, Manager of the Southwest Kansas Groundwater Management District No. 3, presented the recommendations of the Board of Directors of the District pertinent to this order as follows:
 - a. That because the Ogallala aquifer is continuing to decline and because withdrawals are far exceeding the recharge, the District recommends the designation of the proposed area as an IGUCA.
 - b. That the application of the District's current allowable depletion formula to the area which is located both within the IGUCA and the District indicates that the area is vastly over appropriated and further development could impair existing rights already established and therefore is not in the public interest; that the District recommends a moratorium on the approval of new applications to appropriate water in amounts over 25 acre feet per year, however, the board recommends that small wells (wells limited to a maximum rate of 50 gallons per minute and a quantity of 25 acre feet or less per year) should be allowed; that

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domestic wells and temporary permits should not be affected by this recommendation.

- c. That replacement wells be drilled no closer to the river channel than the original well or within 300 feet of the original location as allowed by the Chief Engineer; that in order to protect and enhance recharge potential, the District recommends that the Division of Water Resources not allow land from outside the IGUCA to be added to the authorized place of use under an existing right with the IGUCA.
 - d. That all unplugged abandoned water wells pose a threat of pollution and the District recommends that the Chief Engineer make such declaration and forward the same to the Kansas Department of Health and Environment.
 - e. That the District will not support any requirement for water meters in the IGUCA; that meters are a good management tool and their use is encouraged whenever possible; however, because of installation problems on existing wells, it will cost an average of \$1,500 per well if metering is mandatory and the current economic conditions will not support this requirement.
 - f. That the District urges the Chief Engineer to enforce the requirement that all water users, other than domestic users, file a water use report and to compile a more accurate record of actual water use; that accuracy needs to be emphasized.
 - g. That the District recommends that the Division of Water Resources and the Southwest Kansas Groundwater Management District No. 3 annually review the water supply and the water quality conditions in the IGUCA; that any changes in the original order of the Chief Engineer establishing the IGUCA should require a hearing for all water users concerned.
 - h. That the District believes that any mandated pumping restrictions are premature, since natural forces at work today will more than likely solve more problems than any other control.
19. That Mr. Edward D. Jenkins, consulting hydrologist for the Groundwater Management District 3., testified that the proposed IGUCA includes two distinct hydrologic structures:

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- a. That in the Upper Reach, there is an alluvial valley channel, or trough, that extends from the Kansas/Colorado state line through Hamilton County and into Kearny County down to the Bear Creek Fault area; that the fault follows a line running generally in a northeasterly to southwesterly direction just to the west of Lakin; that it is not a fixed line but probably curves over several miles; that the valley trough is relatively narrow compared to the whole high plains area and the water in storage in this trough can be removed quite rapidly or recharged quite rapidly because the volume is small; that as the trough comes down to the area of the fault, the bedrock drops several hundred feet downward and continues at this depth through the Lower Reach;
- b. That in the Lower Reach, debris was deposited by water from Colorado filling a large depression east of the fault which holds a huge volume of water in storage in what is known as the Ogallala aquifer. Above the Ogallala aquifer is a confining zone separating it from the upper aquifer, through which runs the Arkansas River alluvium.
20. That the document entitled Groundwater in Kearny County, Southwestern Kansas by Gutentag, Lobmeyer and McGovern, Hydrologic Atlas HA-416, U.S. Geological Survey, Washington, D.C., 1972, indicates that the Bear Creek Fault runs across the IGUCA in approximately a northeasterly to southwesterly direction from the Northeast Corner of Section 21, Township 24 South, Range 36 West to the Southwest Corner of Section 19, Township 25 South, Range 36 West, all in Kearny County, Kansas.

UPPER REACH OF THE ARKANSAS RIVER

21. That Mr. Renee Barker, hydrologist with the United States Geological Survey, testified regarding a paper he had co-authored entitled Analysis and Computer Simulation of Stream-Aquifer Hydrology, Arkansas River Valley, Southwestern Kansas, U.S. Geological Survey Water-Supply Paper 2200 (hereinafter referred to as "Paper 2200"), which presents the results of a computer model study of the Arkansas River alluvium in the reach of the Arkansas River from the Colorado/Kansas state line through Hamilton County, Kansas down to the Bear Creek Fault zone, located in central Kearny County, Kansas. He testified

that the objectives of the study were first to define the relationship between the groundwater, the surface water and the climatic factors operating in that area. Secondly, the study evaluated the effects of groundwater pumpage on stream flow conditions. Thirdly, the study synthesized everything into a computer model of the Upper Reach alluvial system which represents, through simulation, the hydrology of the area.

22. That Mr. Barker indicated that the data sources for the study included existing data and records that were available from previous reports, data compiled in the Division of Water Resource's Garden City field office, long-term data that came from observation wells in the projection area, data from two gaging stations located at Coolidge and Syracuse, Kansas, data from two new gaging stations downstream of Syracuse at Kendall, data from the Amazon Ditch headgates southeast of Sutton, Kansas and data from newly established observation wells across the area.
23. That Mr. Barker testified that, hydrologically, the alluvium in the study area is bounded on the north, the south and the bottom by an impermeable bedrock of limestone; that within that bedrock trough, there is very coarse alluvium consisting of sand and gravel; that it is an extremely permeable alluvium with good hydraulic contact with the river bed.
24. That Mr. Barker testified that the sources of recharge for the alluvium in the study area are precipitation and infiltration which results from irrigation and leakage from the stream and canals; that discharge from the alluvium consists of evapotranspiration, withdrawal of water through wells and discharge from the aquifer to the stream; that there is lateral subsurface flow coming into the alluvium from Colorado and lateral subsurface flow going out of the alluvium through the Bear Creek Fault zone; that the bank-to--bank river widths are less than 100 feet, and the part of the river which is covered with water for most of the year is about 20 feet wide; that the gradient on the river is about six feet per mile; that the gradient on the water table approaches seven feet per mile.
25. That Mr. Barker described the hydrologic history of the alluvium as follows:
 - a. River Flow - The average state line flow for the period of 1951 through 1969 was 232 cubic feet per second (c.f.s.). Whereas the average state line flow for the period from 1970 through 1979 was reduced to 85

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- c.f.s. Although the stream had been perennial prior to about 1975, the channel downstream of Kendall has been dry most of the time, each year since about 1975.
- b. Ditch Diversions - The ditch diversions dropped off dramatically from the period of 1951 through 1969 to the period of 1970 through 1979. On the Frontier Ditch, the 1951 through 1969 average was 9,700 acre feet per year, whereas after 1970, the Frontier's diversions dropped off, averaging from around 7,000 to 8,000 acre feet per year during the entire decade. On the Amazon and Great Eastern Ditches, the diversions averaged 40,000 acre feet prior to 1970 while during the 1970's, diversions were decreased by more than one-half, averaging approximately 19,000 acre feet per year.
- c. Precipitation - The area receives an average of about 16 inches of precipitation annually with approximately 75 percent occurring between May and October. Annual precipitation during the 1970's at Syracuse averaged 14 percent (or nearly 2.5 inches) less than average.
- d. Groundwater Pumpage - The groundwater pumpage in the study area during the 1970's increased in response to the shortage of incoming stream flow and the deficiency of precipitation. The number of wells increased from about 89 in 1970 to a total of 160 irrigation wells in 1979.
26. That Mr. Barker testified that an average of the conditions during the period from 1951 to 1969 reveal steady state or equilibrium conditions (as much water entered the system as left the system); that after 1970, however, the prolonged continuous decline in the water levels parallels the decline in the incoming stream flow; that during the period between 1951 to 1964, the Arkansas River averaged a net gain in stream flow between Coolidge and Syracuse (a distance of about 20 miles) of 15 c.f.s.; that after 1965, the river experienced an average net loss of approximately four and one-half c.f.s. between Coolidge and Syracuse; that this gradient reversal was related to three contributing factors: first, the decrease in the incoming stream flow from Colorado, secondly, the increased pumpage in groundwater adjacent to the streams, and thirdly, the less than average precipitation during the period

- between 1951 to 1964; that the average water level in Hamilton County during the 1970's declined at a rate of approximately one-half foot per year.
27. That Mr. Barker testified that the relative influences of each of the contributing factors could not be ranked without developing a computer flow model of the stream aquifer system.
 28. That Mr. Barker testified that the computer model, based on a finite element numerical technique, was calibrated to reproduce, with acceptable accuracy, the observed water level and stream flow responses to the unprecedented hydrologic stresses during the 1970's. That by simulating water levels, stream flow, and a water budget, the model quantified the stream-aquifer system during 1970-79 and provided projections of possible future conditions.
 29. That Paper 2200 states that the portion of the proposed IGUCA area which is upstream of the Bear Creek Fault zone is a relatively shallow and narrow alluvium (whose hydrology is dominated by horizontal intra-aquifer flow and vertical interaction with the river) whereas the portion of the proposed IGUCA area which is downstream of the fault zone is characterized by a multilayered aquifer system having significant components of vertical flow among the layers and limited interaction with surface water; that for the purpose of the model, the alluvial material upstream of the fault was considered as a single aquifer unit.
 30. That Paper 2200 states that the model simulation indicates that during 1975-79 the aquifer was:
 - a. Recharged - by leakage from the river (about 15,000 acre feet per year), lateral subsurface inflow across the State line (9,000 acre feet per year), and deep percolation of precipitation and irrigation water (50,000 acre feet per year);
 - b. Discharged - by lateral outflow across the Bear Creek Fault zone (12,000 acre feet per year), leakage to the river (1,000 acre feet per year), groundwater evapotranspiration (11,000 acre feet per year), and pumpage (57,000 acre feet per year).
 31. That Paper 2200 shows that corresponding to the average decrease in groundwater or aquifer storage of about 7,000 acre feet per year between 1975-79, water levels declined during that period nearly 0.5 feet per year; that in response to the doubling of pumpage and severe reductions in

incoming stream flow between 1970-74 and 1975-79, deep percolation increased nearly 40 percent and the ratio of river loss to gain increased from less than 3 to 1 during the period from 1970-74, to about 20 to 1 during the period from 1975-79; that deep percolation increased from about 22 percent of incident water (irrigation return flow plus precipitation) to about 26 percent; that in accord with the declining water levels, both subsurface lateral inflow and outflow decreased slightly, and groundwater evapotranspiration decreased by one-third; that simulation shows that aquifer storage decreased slightly more than 1,000 acre feet per year between the beginning and end of 1970's decade.

32. That Paper 2200 states that the results of model experimentation with hypothetical 1970-79 conditions show that water levels and stream flow within the study area were more directly affected by the reductions in incoming stream flow (compared to 1951-69 average conditions) than by either the smaller than average amounts of annual precipitation or the increased pumpage during the 1970's; that simulation indicates that: (1) The effects of less recharge during periods of smaller than average amounts of precipitation were offset by more recharge during brief periods when precipitation was much greater than the mean monthly amount and (2) the effects of the increased pumpage were partly offset by increased recharge resulting from increased irrigation return flow.
33. That Paper 2200 states that model projections from 1980 to 1982 indicate that even under continued conditions of normal precipitation in Kansas with 1979 rates of pumpage and incoming stream flow, water levels would continue to decline, while stream flow rates would essentially stabilize at a low value; that model projections also indicate that water level declines and stream flow reductions would stabilize or reverse during 1980-82 if one of the following conditions prevailed: (1) Monthly precipitation increased to 25 percent greater than normal for 3 years, (2) pumpage decreased to 50 percent of the 1979 rate, or (3) incoming stream flow increased to the 1951-69 rate.
34. That Mr. James Bagley, engineer in charge of the Technical Services Section of the Division of Water Resources, testified presenting the results of a study entitled Geohydrology Along the Arkansas River in Hamilton County,

Southwestern Kansas for the Proposed Arkansas River Intensive Groundwater Use Control Area, prepared by his staff and under his direction.

35. That Mr. Bagley testified that the primary purpose of this document was to examine the groundwater situation in terms of water levels and the recharge to the groundwater in the Hamilton County portion of the proposed IGUCA; that for the years 1983 and 1984, the average annual stream flow in the Arkansas River at the state line was approximately 240 c.f.s., which is just slightly more than the average annual stateline flow of 232 c.f.s. during the 1951 through 1969 period; the study shows that the water levels in the alluvial wells within the study area have risen since 1979 to within approximately two and one-half feet of the 1966 level;
36. That Mr. Bagley testified that the data seems to indicate the computer model constructed by Mr. Barker did accurately predict what would happen if there was a return to the stream flow conditions represented by the period 1951 through 1969.
37. That Mr. Richard Lindgren, hydrologist with the United States Geological Survey, presented the results of a report entitled Projected Effects of Ground-Water Withdrawals in the Arkansas River Valley, 1980-99, Hamilton and Kearny Counties, Southwestern Kansas, U.S. Geological Survey Water-Resources Investigations Report 84-4082, 1984, which evaluated the effects of additional groundwater development on the Arkansas River stream flow and on water levels in the aquifer; that Mr. Lindgren testified that the study utilized the same computer model referred to by Mr. Barker.
38. That Mr. Lindgren testified that the computer model study ran 16 projections; that the model utilized varied input amounts for the stream flow at the Colorado/Kansas state line and for the amount of pumpage; that the precipitation amounts input into the model remained constant based on the average annual precipitation from 1941 to 1970 at Syracuse, which was approximately 16.8 inches; that the projections utilized four different stream flow options and six different pumpage options.
39. That Mr. Lindgren testified that projection number 1 utilized the 1971 to 1980 gaged stream flow average of 85 c.f.s. near the Colorado/Kansas state line; that this was combined with the annual pumpage rate of 60,540 acre feet from all 147 wells in the study area that had water rights as of 1981 (using actual

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- amounts pumped in 1979); that projection number 1 showed a net annual river loss of 23,360 acre feet and established a base water level for the aquifer from which to compare the other projections in the study.
40. That Mr. Lindgren further testified that projection number 3 utilized the same stream flow option as projection number 1 and the same wells as in projection number 1, plus 12 existing wells which had applications for permits pending at the time of the study; that projection number 3 showed an annual pumpage rate of 64,700 acre feet, which is an increase of 4,160 acre feet over the total in projection number 1, a net annual river loss of 24,140, which is an increase of 780 acre feet over the total in projection number 1, and a two foot decline in the aquifer water levels from that in projection number 1.
41. That Mr. Lindgren further testified that projection number 4 included the same wells as in projection number 3, plus 19 proposed wells which had applications for permit pending at the time of the study for a total of 178 wells; that projection number 4 showed: an annual pumpage rate of 71,960 acre feet which is an increase of 11,420 acre feet over the total in projection number 1, an annual river loss of 25,130 acre feet which is an increase of 1,770 acre feet over the total in projection number 1, and a two foot decline in water levels over that in projection number 1; that the area of decline was larger than the area of similar decline in projection number 3.
42. That Mr. Jamey Kent Cheatum, irrigation farmer in Hamilton County, testified that he felt he should not be included in an IGUCA because the large users in the sandhill areas and other areas in his county are not included within the confines of the proposed intensive area; that in his opinion the sandhill wells seemed to be on the decline and going dry while the alluvial wells have risen in the last three years; that he felt that anything west of the Bear Creek Fault should be eliminated from the proposal but that he was not in favor of more wells being put in if it would disrupt the equilibrium of the area.
43. That Mr. Ben W. (Bill) Wood, County Commissioner in Hamilton County, read a resolution passed by the Hamilton County Commissioners; the resolution stated that the Commission was opposed to the proposed water use area in Hamilton County due to unanswered questions concerning the nature of restrictions and the economic impact on the County.

44. That Mr. Wood also presented a petition in opposition to the proposed designation of an IGUCA signed by 38 water users of Hamilton County.
45. That Mr. Wood testified that he personally opposed the designation of the area along the Arkansas River in Hamilton County as an IGUCA because the groundwater level in Hamilton County has increased dramatically since 1979; that he felt the groundwater declines during 1970 to 1979 were effected more directly by departures from historic rates of stream flows than by either smaller amounts of precipitation or increased pumpage during the 1970's; that it would appear any effort to gain the State's fair share of water flowing in the Arkansas River through Colorado would be of much greater benefit than putting restrictions on wells in Hamilton County; that in his opinion, the alluvium has a rising water table that is eight to 30 feet below the surface and that the hope of recharging the water tables in uncontrolled areas away from the stream where waters must be pumped several hundred feet to the surface does not seem very efficient; that he felt, that if a user could meet the State's criteria for granting of an appropriation permit, then further permits should be allowed.
46. That a letter from Gerald Cleary, manager of Cowtown Feeders, stated opposition to the IGUCA because, in his opinion, an area of such magnitude will leave the farmers in the Syracuse area unfairly represented particularly with regard to their unique soil and water requirements.
47. That a letter from Mr. George Wilson at Syracuse Feed Yard stated his opinion, that water is a resource vital to our area and there is need for structured, responsible resource controls and management; that he felt that regulation and control should be administered from within each region, thus insuring that the economic wellbeing of that region is maintained and fairly administered.
48. That a letter from Richard Plunkett of Plunkett Feedlot stated his opinion that there is no need for such burdensome regulations as an IGUCA; that he felt that the cost of pumping water in the economic squeeze has done an excellent job of eliminating any waste of water; that feedlots are very dependent on the irrigated river water for its forage supply and he felt that any reduction in the use of water for crops would be an economic hardship.

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49. That Mr. Harold Guldner, State Representative of the 122nd District, Syracuse, Hamilton County, Kansas, testified that, in his opinion, the alluvium above the Bear Creek Fault is a very thin soil area which cannot raise adequate crops without irrigation water and that any alluvial water pumped to the surface for irrigation returns to the alluvium with loss only by natural evaporation or evapotranspiration of plants.
50. That Mr. Irvin David Brownlee, irrigator in Hamilton County, testified that, in his opinion, the one-half mile limit on well spacing should apply only when the Ogallala and deeper zones are the sources; that a one-quarter mile spacing is adequate in the Arkansas River alluvium; that no new irrigation wells should be drilled under the streambed of the Arkansas River, nor within one-quarter mile of either streambank unless the well is a replacement for any irrigation well existing and in use prior to the moratorium of 1977; that he feels every acre within the boundaries of our state has an inherent water right either on or below its surface, and that any yield proven from surface or under the surface through use should be recognized and recorded for a period of years from 1985 through 1995; that averaging those 10 years of production, would give an annual permitted use from 1996 forward.
51. That Mr. Wade Berlier stated for the record his support of Mr. Brownlee's statement.
52. That Representative Carl Holmes from the 125th District testified that he was a strong believer in local control, and that the Southwest Kansas Groundwater Management District No. 3 had recommended the proposal for the IGUCA except for Hamilton County, which is outside its boundaries; that he was in favor of establishing an IGUCA.

LOWER REACH OF THE ARKANSAS RIVER

53. That Mr. Richard Lindgren, hydrologist with the United States Geological Survey, testified regarding a paper he had co-authored entitled Geohydrology and Model Analysis of Stream-Aquifer System along the Arkansas River in Kearny and Finney Counties, Southwestern Kansas, U.S. Geological Survey Water-Supply Paper 2253 (hereinafter referred to as "Paper 2253"), which presents the results of a computer model study of the Arkansas River

alluvium and lower aquifer in the reach of the Arkansas River from the Bear Creek Fault zone located in central Kearny County, Kansas to the western line of Gray County, Kansas. He testified that the objectives of the study were to better define the geohydrology of the stream and aquifer and to construct and calibrate a digital computer model of the unconsolidated aquifer system east of the Bear Creek Fault zone located in central Kearny County, Kansas; that the study area consisted of approximately 850,000 acres located east of the Bear Creek Fault zone, bounded on the south and east by the Finney County lines and bounded on the north by a line six miles south of the northern Finney County line.

54. That Mr. Lindgren indicated that the data sources for the study included historical data on the hydrogeology of the area, other characteristics from past published reports, as well as data from approximately 2,900 irrigation wells as of 1980, a seepage run on the Farmers Canal to determine seepage from the canal bed to the underlying aquifer (which averaged approximately 1.4 c.f.s. per mile) and approximately 140 observation wells which were measured weekly, monthly, or quarterly.
55. That Mr. Lindgren testified that the alluvium is bounded on the north by loess covered high plains and on the south by the sand hills; that the alluvial aquifer overlies a bedrock composed of interlayered shales and sandstones which serves as an impermeable boundary with little or no exchange of water between the bedrock and the aquifer; that the lower part of the aquifer consists of sand and gravel with some interlayered clay and corresponds with what is referred to as the Ogallala aquifer; that the confining zone above the lower aquifer consists primarily of clay with some interbedded sand layers which serves to retard the movement of water between the lower aquifer and the upper aquifer which overlies the confining zone; that the valley aquifer or alluvium consists of coarse sand and gravel; that the upper aquifer which extends to the north and south of the river valley is composed of fine to coarse sand and gravel and is hydrologically connected with the valley aquifer; that north of the Arkansas River Valley, the upper aquifer at the time of the study was dewatered.
56. That Mr. Lindgren testified that the sources of recharge to the valley alluvium and the upper aquifer consist of subsurface inflow from the west

- through the valley alluvium, precipitation, infiltration, return flow from irrigation and seepage from the Arkansas River; that recharge to the lower aquifer occurs through boundary inflow at the north and northwest boundaries of the study area and seepage downward from the valley alluvium and upper aquifer; that recharge to the total system by precipitation totals 66,900 acre feet per year and by river and canal seepage totals 36,200 acre feet per year.
57. That Mr. Lindgren testified that discharge from the valley and upper aquifers occurs as subsurface outflow to the south and southeast in the study area and as seepage downward to the lower aquifer; that discharge from the lower aquifer occurs by subsurface outflow to the south and southeast of the study area; that the major component of discharge is pumpage from the lower aquifer.
58. That Mr. Lindgren testified that the water budget for the entire unconsolidated aquifer system in the study area is 634,800 acre feet; that there is a mining or a depletion taking place in the amount of 500,000 acre feet annually in the system.
59. That Mr. Lindgren described the hydrologic history of the area as follows:
- a. River Flow - That when the state line flow for the period from 1970 through 1979 averaged 85 c.f.s, the stream flow at Lakin in 1978 and 1979 averaged 45 c.f.s.; that before the 1970's the Arkansas River gained and lost flow in about equal amounts as it passed through Kearny County, and was generally a losing stream in Finney County; that during the 1970's it became a losing stream in Kearny County as well and by the late 1970's it was dry most of the time throughout the study area; that in 1980 and 1981 there was significantly higher stream flows in the river, and the valley aquifer and confining zone showed increases in water level proportionate to the flow of the river; that from 1980 to 1981 the water level in the lower aquifer near the river increased by about five feet, whereas most wells in the lower aquifer away from the river showed a decrease in the water level over the same time period; that this indicates a direct connection between the river, the alluvium, the confining zone and the lower aquifer.
 - b. Groundwater Development - That the annual number of applications to appropriate groundwater in Kearny and Finney Counties increased from

approximately 300 in 1970 to over 1,200 applications by 1977; that the earlier pumpage from these wells was from the valley and upper aquifers but as the valley aquifer water levels declined most later wells were completed in the lower aquifer; that the valley aquifer shows an average annual water level decline of .25 feet from 1964 through 1969; that the rate of decline increased to an average annual rate of 1.04 feet when the water level in the valley aquifer dropped below the altitude of the streambed from 1970 through 1981; that observation wells showed that the lower aquifer from 1966 to 1974 declined approximately 1.29 feet per year; that from 1974 to 1980 the decline was 9.18 feet per year; that the rapid increase in the rate of water level declines was due to dewatering of the upper aquifer in the high plains; that from 1978 to 1979 there was little flow in the river and the water levels in the valley aquifer and the confining zone gradually decreased over time.

60. That Mr. Lindgren testified that the study utilized a Trescott finite difference model which simulates three dimensional flow; that a three dimensional flow model was necessary because of the hydrologic structure which included the upper aquifer, the confining zone and the lower aquifer.
61. That Mr. Lindgren testified that the model was well calibrated (refinement of the input data such that the simulated conditions parallel as much as possible the observed conditions); that this model was calibrated by comparing measured hydraulic heads with simulated hydraulic heads; that considering the complexity of the aquifer system in the area, there was a good calibration.
62. That Mr. Lindgren testified that the model was used to assess the effects of hypothetical conditions derived from both historical conditions and predicted future conditions; that the model indicated the relationship of the upper aquifer, the confining layer, and the lower aquifer; that flow generally occurs from the valley aquifer through the confining zone to the lower aquifer; that as pumpage from the lower aquifer increases, it increases the difference in potentiometric head (or water level) between the valley aquifer and the lower aquifer which, in turn, increases the rate of leakage downward.
63. That Mr. Lindgren testified that one projection assumed there was no pumpage in the sandhills over a period from 1974 to 1980; that the pro-

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- jection indicated that the water table in the valley aquifer would still decline and that water levels in the lower aquifer on the high plains would change very little even if there had been no pumpage in the sandhills; that the water level in the sandhills would have stabilized at pre-1974 levels.
64. That Mr. Lindgren testified that two long term 25 year projections were run varying stream flow in the Arkansas River; that one projection used 1979 river flow (an average of 20 c.f.s. at Lakin) which was the lowest stream flow during the calibration period of 1974 to 1980; the second projection used the 1980 river flow (an average of 180 c.f.s. at Lakin) which was the highest river flow during that same calibration period; that irrigation pumpage in the model for these two projections was calculated from the crop acreage multiplied by the crop consumptive use adjusted by normal precipitation and temperatures.
65. That the model projections contained in Paper 2253 for the period from 1981 to 2005 indicate that under continued conditions of normal (1941 through 1970) precipitation, 1980 irrigated acreage, and 1979 rates of recharge from the river and canals, the additional decline in the potentiometric surface of the lower aquifer (in addition to that occurring from 1970 to 1980) would range from less than 50 feet to over 150 feet by 2005; that most of the valley and upper aquifers would be dewatered by this time; that this would result in decreased recharge to the lower aquifer and increased hydraulic head declines in the sandhills and the Arkansas River valley aquifer, similar to the declines on the high plains during the mid-1970's; that the remaining saturated thickness would range from about 50 to about 250 feet in the sandhills and from about 50 feet to about 150 on the high plains; that based solely on the remaining saturated thickness in 2005, irrigation could still be occurring in the sandhills and on the high plains.
66. That Paper 2253 indicates that if 1980 conditions of recharge from the river and canals continued from 1981 through 2005 with all other factors the same as in Paragraph 65 above, the additional decline in the potentiometric surface of the lower aquifer would range from less than 50 feet to about 150 feet; that declines in hydraulic head near the river in eastern Kearny County and western Finney County would be reduced by as much as 18 feet compared to declines experienced under 1979 conditions of river and canal recharge. That

- the amount of recharge from the river and canals could influence future water level declines near the river; that even with 1980 conditions of river and canal recharge, the water table in the valley aquifer would continue to decline because of downward leakage through the confining zone to the lower aquifer.
67. That Mr. Lindgren testified that given the irrigation currently in use, it would take many years to restore the aquifer even if the study area did obtain equilibrium; that the trend for declining aquifers will continue unless there are major changes in the ratio of recharge to withdrawal.
68. That Paper 2253 states that the water table in the valley aquifer will continue to decline due to leakage of water downward from the valley aquifer faster than river and canal recharge (by seepage) can replace it; that in order to reduce future seepage losses during reservoir releases to the river, the altitude of the water table in the valley aquifer must increase to near to the altitude of the river stage; that this can be accomplished by (1) decreasing the number of wells pumping in the study area (thereby decreasing the gradient between hydraulic heads in the lower aquifer and hydraulic heads in the valley aquifer) to reduce downward leakage from the valley aquifer through the confining zone to the lower aquifer, or (2) increasing stream flow discharge in order to recharge the valley aquifer.
69. That Paper 2253 indicates that the Arkansas River lies atop the valley aquifer; that the river was once an intermittent stream, but is currently (1982) dry much of the time in the western part of the study area, except for times when water is released from John Martin Reservoir in Colorado; that the amount of water diverted from the Arkansas River for irrigation decreased during the 1970's, corresponding to a decrease in stream flow; that in the eastern part of the study area, the river is dry most of the time; that the decrease in Arkansas River stream flow can be attributed to the decrease in groundwater discharge to the river due to the declining water table in the valley aquifer and to decreased state line flows from Colorado.
70. Paper 2253 states that during 1980, approximately 2,900 irrigation wells pumped an estimated 738,000 acre feet of water to irrigate approximately 320,000 acres in the study area; that most of the pumpage was from the lower aquifer; that the use of water for irrigation has caused the

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potentiometric surface of the lower aquifer to decline from 20 to 80 feet during the period of 1974 to 1980; that this decline has induced downward leakage from the overlying aquifers and resulted in water table declines in the valley and upper aquifers; that the water table in the valley and upper aquifers is below the streambed altitude in the study area and little or no groundwater discharges to the river.

71. That Paper 2253 states that hydrographs indicate that the upper aquifer has been dewatered on the high plains since the mid-1970's; that this has reduced the recharge to the lower aquifer, resulting in an increased rate of water level decline in wells; that the water level declines in selected wells before the upper aquifer was dewatered averaged less than one foot per year; whereas during the late 1970's the decline averaged over nine feet per year in the same wells; that the increased rate of water level decline in wells completed in the lower aquifer occurred during the interval of time when the upper aquifer was dewatered and the lower aquifer remained confined; that when the hydraulic head in the lower aquifer drops below the bottom of the confining zone, the lower aquifer will no longer be confined, and it will adjust to water table conditions (a higher storage coefficient), resulting in a decrease in the rate of decline in hydraulic heads.
72. That Paper 2253 indicates that the results of model experimentation with hypothetical 1974 to 1980 conditions showed that if no pumpage had occurred in the sandhills during 1974 through 1980, the water table in the valley aquifer would still have declined near Lakin and Holcomb; that the potentiometric surface of the lower aquifer would have: (1) declined in the high plains at a similar rate as when sandhill pumpage had occurred, (2) declined slightly in the Arkansas River Valley, and (3) stabilized or declined slightly in the sandhills.
73. That Mr. W. Wiley McFarland, groundwater and surface water irrigator, testified in opposition to the establishment of the proposed IGUCA because he felt a much larger area should be included; that he felt he should not be discriminated against by being placed under regulations when people across the road or the fence are not restricted; that he felt that the situation is a large area problem, not just a four mile wide problem, and that drawing a

- line on top of the ground will not stop excessive usage unless the line is around all the users.
74. That Mr. Hubert Biehn, irrigator in Finney County, stated for the record his agreement with Mr. McFarland's testimony.
 75. That Mr. Paul Bentrup, irrigator and sheep herder at Deerfield, Kansas, testified in support of the establishment of an IGUCA; that he felt that the depletion of the aquifers was a problem which needed to be controlled.
 76. That Mr. Michael A. Reed, irrigator, Holcomb, Kansas, stated that the only thing that bothered him about the proposed IGUCA is its size and that if a control area is needed, it needs to be larger.
 77. That Mr. Ralph Jamison, Jr., Garden City, Kansas, surface water user, testified that his measurements show that the water table is back up to a foot higher than it was in 1970 when the river went dry and that the water level in the groundwater wells have risen to within 13 feet from the top of the ground; that in his opinion, the water level remains static until all of the wells start pumping including the water in the Ogallala and that the pumping of wells outside the small area of the proposed IGUCA boundaries is responsible for any declines; that he was totally opposed to the establishment of an IGUCA.
 78. That Mr. Steve Berning, groundwater irrigator, Lakin, Kansas, testified that he is in opposition to the boundaries set out by the guidelines because it presents a quick-fix to a long term problem; that he feels the problem results from water being pumped out of the Ogallala aquifer for the last 20 years so that it cannot be solved overnight with water limits on this certain area; that in his opinion, if there are going to be water limits, then it should be on an area wide basis, not just for certain individuals in a certain area that have to suffer for the whole thing; that he is opposed to new development of wells.
 79. That Mr. Tom Rost, resident of Topeka, Kansas, with irrigation interests in Ford County, Kansas, testified in opposition to the establishment of the IGUCA; that in his opinion, the farmers who are in a fragile economic position may fail if restrictions on water use are established and agriculture ought to be given first priority; that he feels there should be no more development of water use within the area.

80. That Mr. Michael Mayrath testified that the people that live outside of the proposed control area are lifting water three to four hundred feet to bring it to the surface but are not having any controls whatsoever put on them; that he feels the people within the control area are therefore being penalized and they are the ones producing the food at a lower cost; that in his opinion, decisions as to further development should be left up to the individual land owner.

CONCLUSIONS

1. That the area above the Bear Creek Fault zone consists of a relatively narrow and shallow alluvium bottomed by an impermeable bedrock in contrast to the area downstream of the fault which is a more complex multi-layered system consisting of a river alluvium and upper aquifer which overlie a moderately permeable confining zone between the upper aquifer and the lower (Ogallala) aquifer.
2. That state line flows maintained an annual average rate of 232 c.f.s. during the period from 1951 through 1969.
3. That state line flows diminished to an annual average rate of 85 c.f.s. during the period from 1970 through 1979 due to various conditions in Colorado.
4. That state line flows maintained an annual average rate of 240 c.f.s. in 1983 and 1984, mainly due to above normal runoff and other conditions in Colorado.
5. That because of the differences in the hydrologic structure, the areas above and below the Bear Creek Fault require separate consideration and may require separate control provisions.
6. That conditions exist within the area in question which require regulation in the public interest.
7. That during periods of river flow below an annual average of 232 c.f.s. at the state line, such as the flow experienced during the period between 1970 through 1979, the pumpage by junior groundwater rights partially impairs senior vested rights to the use of surface water from the Arkansas River.
8. That the rate of withdrawal of water from the Upper Reach exceeds the rate of inflow and recharge to the area whenever the average annual state line

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flow is less than 232 c.f.s. resulting in the decline of the water level in the alluvial aquifer and the reduction of surface flow.

9. That the hydrologic equilibrium of the Upper Reach, west of the Bear Creek Fault, is largely dependent on the average annual rate of Arkansas River state line flow.
10. That the outcome of the pending litigation between Kansas and Colorado may have an impact on the future rate and volume of the Arkansas River state line flow.
11. That groundwater levels in the Lower Reach have continually declined, with accelerated declines when river flow at the state line is less than an average annual flow of 232 c.f.s.
12. That the present rate of withdrawal of water from the Lower Reach exceeds the rate of inflow and recharge to the area.
13. That an IGUCA should be established within the boundaries as set forth below:

HAMILTON COUNTY

Township 23, Range 43, Sections 14, 15, 16, 21 through 28, 35, 36

Township 23, Range 42, Sections 19, 20, 21, 25 through 36

Township 24, Range 42, Sections 1, 2, 3, 4, 12

Township 23, Range 41, Sections 31, 32, 33

Township 24, Range 41, Sections 1 through 15

Township 24, Range 40, Sections 7, 8, 9, 13 through 27

Township 24, Range 39, Sections 17 through 36

Township 25, Range 39, Section 1

KEARNY COUNTY

Township 24, Range 38, Sections 29 through 33

Township 25, Range 38, Sections 1 through 6, 9 through 13

Township 25, Range 37, Sections 1 through 18, 23, 24

Township 24, Range 36, Sections 12 through 14, 20 through 36

Township 25, Range 36, Sections 1 through 12, 16 through 20

Township 24, Range 35, Sections 1, 2, 7 through 34

FINNEY COUNTY

Township 23, Range 34, Sections 31 through 36

Township 24, Range 34, Sections 1 through 26, 30

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Township 23, Range 33, Sections 31 through 34

Township 24, Range 33, Sections 1 through 36

Township 24, Range 32, Sections 6 through 10, 15 through 23, 25
through 36

Township 25, Range 32 West, Sections 1 through 4, 11 through 13

Township 24, Range 31, Sections 30 through 32

Township 25, Range 31, Sections 3 through 11, 13 through 28, 35, 36

GRAY COUNTY

Township 25, Range 30, Sections 16 through 36

Township 26, Range 30, Sections 1 through 6

Township 25, Range 29, Sections 19, 20, 21, 26 through 36

Township 26, Range 29, Sections 1 through 6, 8 through 16, 23, 24

Township 25, Range 28, Section 31

Township 26, Range 28, Sections 1 through 28

Township 26, Range 27, Sections 4 through 30, 36

FORD COUNTY

Township 26, Range 26, Sections 7, 8, 16 through 23, 25 through 36

Township 27, Range 26, Sections 1, 2, 3, 4, 10, 11, 12

Township 26, Range 25, Sections 25 through 36

Township 27, Range 25, Sections 1 through 17

Township 26, Range 24, Sections 29 through 33

Township 27, Range 24, Sections 1 through 26

Township 27, Range 23, Sections 7, 8, 14 through 30, 32 through 36

Township 27, Range 22, Sections 19, 20, 25 through 36

Township 28, Range 22, Sections 1 through 6, 9 through 12

Township 26, Range 21, Sections 12, 13, 14, 23, 24, 25, 26, 34, 35, 36

Township 27, Range 21, Sections 1 through 4, 9 through 16, 20 through
23, 26 through 34

Township 28, Range 21, Sections 4 through 7

14. That the above described area should be closed to any further appropriation of groundwater and surface water except for domestic uses, temporary permits, short term permits, non-consumptive uses or any use from a consolidated aquifer which is not hydrologically connected locally with the alluvial or Ogallala aquifers in the area, or any use at a rate not in excess of

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50 gallons per minute and a quantity not to exceed 25 acre feet per calendar year.

ORDER

NOW, THEREFORE, it is the decision and order of the Chief Engineer that an intensive groundwater use control area (hereinafter referred to as "IGUCA") should be, and is hereby established, in Hamilton, Kearny, Finney, Gray and Ford Counties, Kansas, within the boundaries set forth below, and the following corrective control provisions shall be in full force and effect within the area described from and after the date of this order:

1. That an IGUCA shall be established within the boundaries as set forth below:

HAMILTON COUNTY

Township 23, Range 43, Sections 14, 15, 16, 21 through 28, 35, 36

Township 23, Range 42, Sections 19, 20, 21, 25 through 36

Township 24, Range 42, Sections 1, 2, 3, 4, 12

Township 23, Range 41, Sections 31, 32, 33

Township 24, Range 41, Sections 1 through 15

Township 24, Range 40, Sections 7, 8, 9, 13 through 27

Township 24, Range 39, Sections 17 through 36

Township 25, Range 39, Section 1

KEARNY COUNTY

Township 24, Range 38, Sections 29 through 33

Township 25, Range 38, Sections 1 through 6, 9 through 13

Township 25, Range 37, Sections 1 through 18, 23, 24

Township 24, Range 36, Sections 12 through 14, 20 through 36

Township 25, Range 36, Sections 1 through 12, 16 through 20

Township 24, Range 35, Sections 1, 2, 7 through 34

FINNEY COUNTY

Township 23, Range 34, Sections 31 through 36

Township 24, Range 34, Sections 1 through 26, 30

Township 23, Range 33, Sections 31 through 34

Township 24, Range 33, Sections 1 through 36

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Township 24, Range 32, Sections 6 through 10, 15 through 23, 25
through 36

Township 25, Range 32 West, Sections 1 through 4, 11 through 13

Township 24, Range 31, Sections 30 through 32

Township 25, Range 31, Sections 3 through 11, 13 through 28, 35, 36

GRAY COUNTY

Township 25, Range 30, Sections 16 through 36

Township 26, Range 30, Sections 1 through 6

Township 25, Range 29, Sections 19, 20, 21, 26 through 36

Township 26, Range 29, Sections 1 through 6, 8 through 16, 23, 24

Township 25, Range 28, Section 31

Township 26, Range 28, Sections 1 through 28

Township 26, Range 27, Sections 4 through 30, 36

FORD COUNTY

Township 26, Range 26, Sections 7, 8, 16 through 23, 25 through 36 ✓

Township 27, Range 26, Sections 1, 2, 3, 4, 10, 11, 12

Township 26, Range 25, Sections 25 through 36 ✓

Township 27, Range 25, Sections 1 through 17

Township 26, Range 24, Sections 29 through 33

Township 27, Range 24, Sections 1 through 26

Township 27, Range 23, Sections 7, 8, 14 through 30, 32 through 36

Township 27, Range 22, Sections 19, 20, 25 through 36

Township 28, Range 22, Sections 1 through 6, 9 through 12

Township 26, Range 21, Sections 12, 13, 14, 23, 24, 25, 26, 34, 35, 36

Township 27, Range 21, Sections 1 through 4, 9 through 16, 20 through
23, 26 through 34

Township 28, Range 21, Sections 4 through 7

2. That this IGUCA shall be closed to further groundwater and surface water appropriation, except for:
 - a. domestic uses;
 - b. short term applications which request approval for the use of water for a period not to exceed one calendar year;
 - c. any use authorized by temporary permit granted under the authority of K.S.A. 82a-727;

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- d. any use which is non consumptive;
 - e. any use from a consolidated aquifer which is not hydrologically connected locally with the alluvial or Ogallala aquifers;
 - f. any proposed appropriation at a rate not in excess of 50 gallons per minute and a quantity not to exceed 25 acre feet per calendar year if in the judgment of the Chief Engineer approval is in the public interest, good cause is shown by the applicant and the applicant can show that there is no impairment to an existing right; that this exception does not apply to a proposed appropriation for an existing well which creates a diversion with a total rate over 50 gallons per minute or a total quantity over 25 acre feet per calendar year for that well;
3. That any application filed pursuant to the provisions of Paragraph No. 2, subparagraphs a through f of this Order, may be approved, modified, or rejected by the Chief Engineer and shall be subject to such terms, conditions and limitations as the Chief Engineer shall deem necessary in the public interest.
 4. That except as provided for in Paragraphs No. 2 and 3 of this Order, the Chief Engineer shall refuse, after the effective date of this Order, to accept any application for the appropriation of water with a proposed point of diversion within the IGUCA.
 5. That any well within the IGUCA, authorized under an approved application to change the point of diversion, shall be drilled no closer to the river channel than the original location.
 6. That any new or replacement well located within the Lower Reach of the control area where a confining layer exists between the river alluvium and the Ogallala aquifer, shall be constructed so as to minimize the leakage between the alluvial aquifer and the Ogallala aquifer.
 7. That any application proposing to change the place of use for an existing right for irrigation use within the IGUCA, to a place of use for irrigation which lies outside of the IGUCA shall not be approved.
 8. That a test log shall be provided before approval of any application for a change in point of diversion, as well as for any application for a permit to appropriate groundwater, except for domestic and temporary uses.
 9. That the moratorium on approval of applications for permit to appropriate water for beneficial use in the moratorium area in Hamilton and Kearny

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Counties adjacent to the Arkansas River, established by the Chief Engineer on January 21, 1977, and as described in Finding No. 1, is hereby terminated as of the date of this order.

10. That those pending applications to appropriate water for beneficial use which were filed on or after January 21, 1977, which are within the boundaries of the moratorium area in Hamilton and Kearny Counties, but which do not fall within the boundaries of this IGUCA, shall be processed on their own merits in accordance with the provisions of the Kansas Water Appropriation Act, the rules and regulations of the Division of Water Resources, the applicable policies of the Southwest Kansas Groundwater Management District No. 3 and any applicable administrative policies and procedures in effect in that area at the time the application was filed.
11. That any pending application to appropriate water for beneficial use with a point of diversion within the moratorium area and IGUCA for which the diversion works were completed prior to January 1, 1978 with water put to use between January 1, 1975 and January 1, 1978 and for which the application was filed before January 1, 1978, shall be processed on its own merits in accordance with the provisions of this order, the Kansas Water Appropriation Act, the rules and regulations of the Division of Water Resources, the applicable policies of the Southwest Kansas Groundwater Management District No. 3 and any other applicable administrative policies and procedures in effect in that area at the time the application was filed.
12. That any pending application for the appropriation of water with a proposed point of diversion for which the diversion works were not completed prior to January 1, 1978, that is within the moratorium area and the IGUCA and was filed on or after January 21, 1977, but before January 1, 1978, is hereby dismissed and the priority date is forfeited, subject to the exceptions and provisions of Paragraph No. 2 of this Order.
13. That any pending application for the appropriation of water within the moratorium area and the IGUCA which was filed on or after January 1, 1978, is hereby dismissed and the priority date is forfeited, subject to the exceptions and provisions of Paragraph No. 2 of this Order.

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14. That any pending application for the appropriation of water in the IGUCA, but not within the moratorium area, for which an application was filed before April 12, 1984, shall be processed on its own merits in accordance with the provisions of this Order, the Kansas Water Appropriation Act, the rules and regulations of the Division of Water Resources, the applicable policies of the Southwest Kansas Groundwater Management District No. 3 and any other applicable administrative policies and procedures in effect in that area at the time the application was filed.
15. That any pending application for the appropriation of water within the IGUCA, but not within the moratorium area which was received on or after April 12, 1984, shall be dismissed and its priority forfeited, subject to the exceptions and provisions of Paragraph No. 2 of this Order.
16. That a task force is hereby appointed to provide advice and recommendations to the Chief Engineer on plans and alternatives to conjunctively manage the waters of the Arkansas River and to alleviate the impairment of senior water rights, especially as it relates to the effect of groundwater pumpage on stream flow that the task force shall be constituted as follows:
 - a. One representative chosen from the membership of the Associated Ditch System.
 - b. One representative from the Southwest Kansas Groundwater Management District No. 3.
 - c. One representative who is a surface water user from the Lower Reach of the Arkansas River.
 - d. One representative who is a surface water user from the Upper Reach of the Arkansas River.
 - e. One representative who is a groundwater user from the Upper Reach of the Arkansas River within the control area.
 - f. One representative who is a groundwater user from the Lower Reach of the Arkansas River within the control area.
 - g. One representative who is a member of the Upper Arkansas River Basin Advisory Committee.

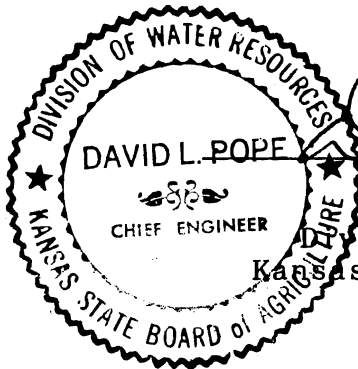
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- h. One representative who is a representative of a groundwater user for municipal or industrial purpose within the control area.
 - i. One representative of the Southwest Kansas Irrigation Association.
 - j. Two representatives at large.
17. That the task force members representing entities described in Paragraph 15, Subparagraphs a, b, g and i shall be appointed by the entities represented. That the task force members described in Paragraph 15, Subparagraphs c, d, e, f, h and j shall be selected by the Chief Engineer or in a manner specified by the Chief Engineer; that the Chief Engineer shall designate the chairperson of said task force after the representatives have been selected. All members of this task force shall be appointed or selected within sixty (60) days of the date of this Order.
18. That the task force shall have 18 months, or such additional time as may be allowed by the Chief Engineer, in which to develop its recommendations which may include, but are not limited to, consideration of the following:
- a. Possible regulation of groundwater use to prevent stream flow depletion.
 - b. Acquisition of existing water rights to provide an additional source of water in order to compensate for stream flow losses caused by groundwater pumpage.
 - c. The purchase and/or retirement of actively used water rights so as to reduce the decline in groundwater and surface water supply.
 - d. Any other recommendation as may be appropriate including but not limited to, the purchase and retirement of active permit or vested right uses which are, or may be, impaired.
 - e. Whether the boundaries of the Southwest Groundwater Management District No. 3 and the boundaries of this IGUCA should be expanded to better address the hydrologic problems.
19. That the Southwest Kansas Groundwater Management District No. 3 may petition the Chief Engineer for further hearings and make recommendations separate and apart from the Task Force created in Paragraphs No. 16 and 17 of this Order.

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20. That the Chief Engineer specifically retains jurisdiction in this matter with authority to make such changes in the boundaries of the IGUCA or the corrective control provisions which have been instituted or any other provisions of this order, and to hold any subsequent hearings in the matter of the IGUCA or the corrective control provisions, which he or she may deem to be in the public interest.

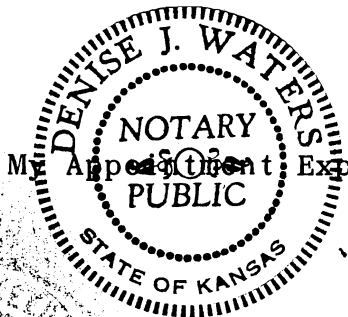
Dated at Topeka, Kansas, this 29th day of September, 1986.



David L. Pope
David L. Pope, P.E.
Chief Engineer
Division of Water Resources
Kansas State Board of Agriculture

State of Kansas
County of Shawnee

The foregoing instrument was acknowledged before me this ^{29th} day of September, 1986, by David L. Pope, P.E., Chief Engineer, Division of Water Resources, Kansas State Board of Agriculture.



Denise J. Waters
Notary Public

My Appointment Expires: March 1, 1990

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STATE OF KANSAS)
FORD COUNTY) ss.

This instrument was filed in this office on the 30 day of Nov A.D. 1988 at 9:00 o'clock A.M. and duly Recorded in Book 68 at 574-611 Page 574-611 Fees \$ 2.00

Jeanita Sulick
Register of Deeds

STATE OF KANSAS)
FORD COUNTY) ss.

This instrument was filed in this office on the 3 day of Dec A.D. 1986 at 9:00 o'clock A.M. and duly Recorded in Book 63 at 811-844 Page 811-844 Fees \$ 3.00

Jeanita Sulick
Register of Deeds