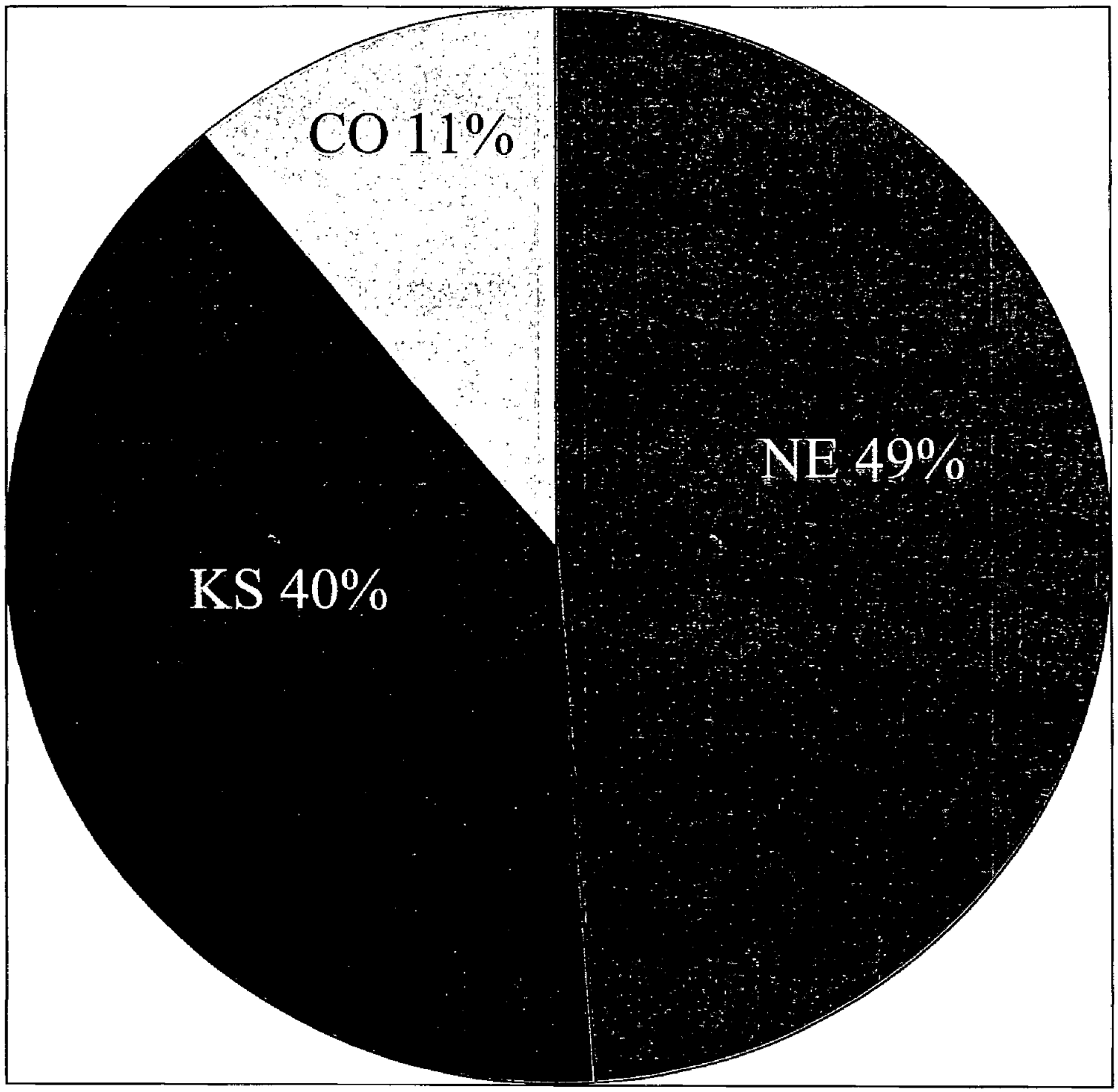
Republican River Basin

Republican River Compact

Background

- Republican River Compact – 1943
- Divided the waters of the river between Nebraska, Kansas, and Colorado
- "Virgin water supply" is allocated
- Use is measured as Beneficial Consumptive Use

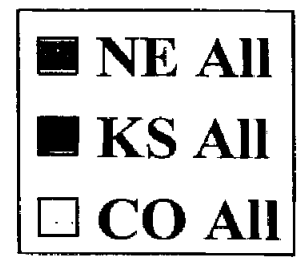


Original Compact Allocations

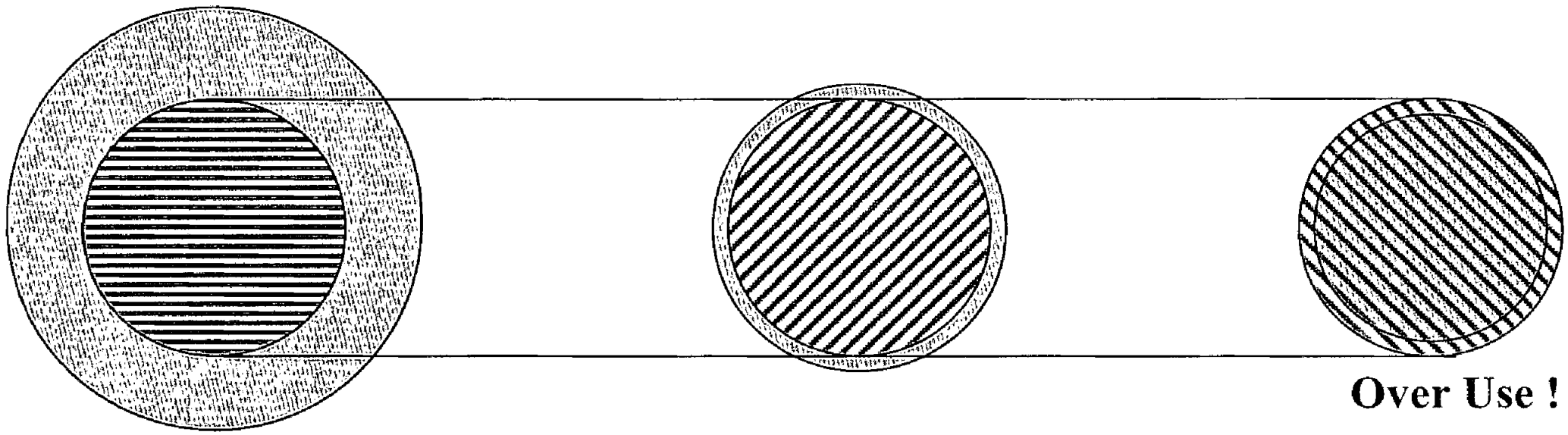
NE 234,500

KS 190,300

CO 54,100



Nebraska's 49% Share grows and shrinks with the water supply



Over Use !

Wet Year	Average Year	Dry Year
Alloc: 400K AF	Alloc: 268K AF	Alloc: 211K AF
C.U.: 267K AF	C.U.: 258K AF	C.U.: 263K AF

= Nebraska's Adjusted Allocation

= Nebraska's Consumptive Use

Background cont.

- Kansas filed suit in May 1998
- Major points of Contention
  - Proliferation of well development in Nebraska
  - Chronic overuse by Nebraska in several subbasins
  - Damages for this overuse

Rulings by Special Master

- Groundwater use counts to the extent it depletes streamflow – Jan. 2000
- Compact accounting numbers for 1959-1994 are binding and will not be changed – May 2001

Settlement Process Completed

- First Step – Agreement in Principle
  - April 30, 2002
- Second Step – Final Settlement Stipulation
  - December 16, 2002
- Third Step – Consent Decree
  - Approval of Special Master and U.S. Supreme Court - May 19, 2003

Settlement Agreement

I. Existing Development

A. Moratorium on new groundwater wells

B. Exceptions to moratorium

C. Reporting

A. Moratorium on new groundwater wells

- What - no new irrigation wells until new information shows room for more development
- Where - Republican River Basin above Guide Rock, Nebraska
- When - Adopted and took effect December, 2002

B. Exceptions to moratorium

- "mound wells"
- test holes,
- dewatering <90 days,
- wells pumping <50 gallons per minute
- replacement wells,
- emergency wells,
- transfers of historic use
- new municipal and industrial uses
- wells in Colorado and NW Kansas as long as they don't change their laws to make it easier to drill new wells

C. Reporting – annual reporting demonstrating compliance - April 15 of each year

II. Compact Accounting

A. Sub-basin Flexibility

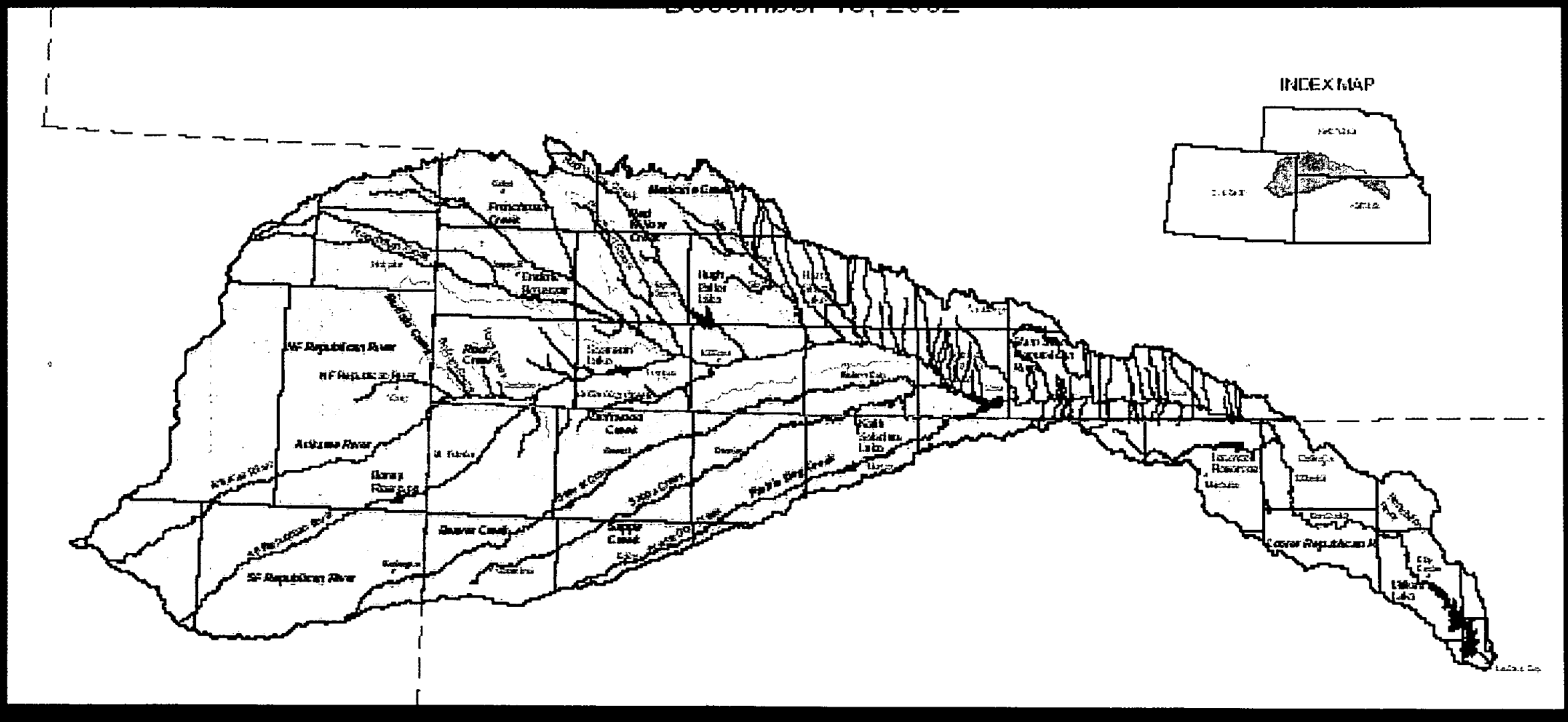
B. Stream flow depletions caused by groundwater consumptive use

C. 5 year rolling averages of VWS, allocations and consumptive use

D. Credit for mound water

E. Reporting, measurement and data

A. Compact designated sub-basins



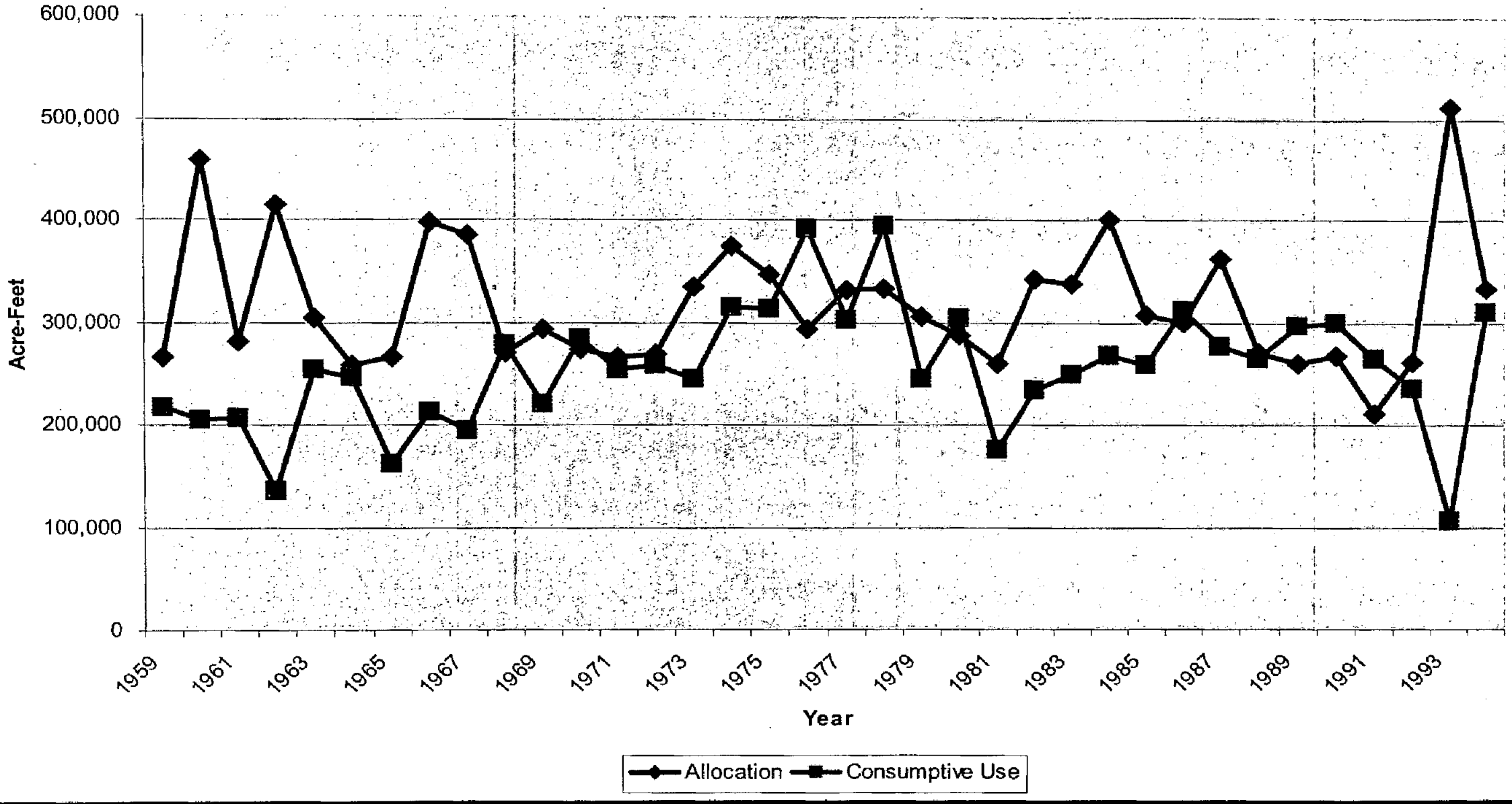
B. Stream flow depletions from groundwater use

- What – stream flow depletions caused by GW consumption will be counted
- How – create Technical Committee to jointly develop groundwater model
- When – finish by July 1, 2003

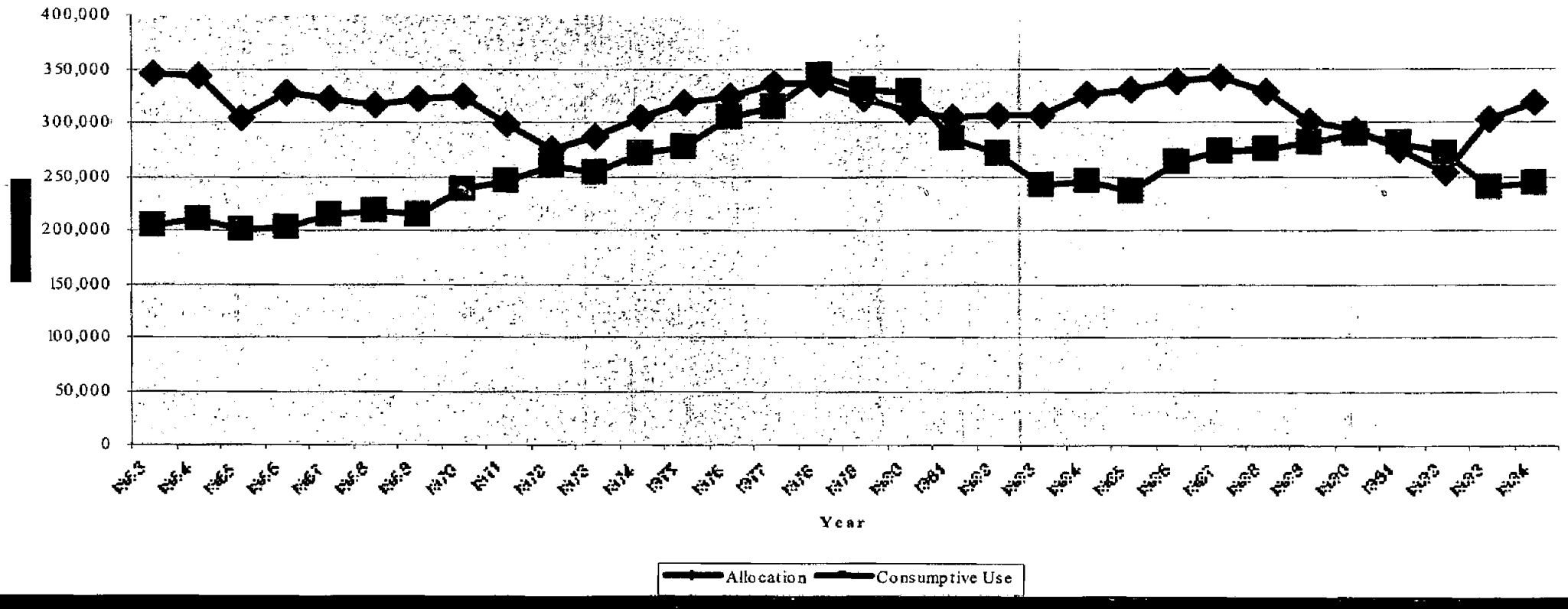
C. Five-year rolling average

- All Compact accounting will be done on five-year rolling average.
- Accounting measures available supply for each State and how much each State used.
- Does not apply in water short years

Nebraska's Official Annual Allocations and Consumptive Use



Nebraska's Allocations and Consumptive Use
Five-Year Rolling Average



D. Credit for "mound" water

- Beneficial consumptive use from imported water sources of other river basins shall not count
- Credit shall be given for any remaining imported water from other river basins that is reflected in increased stream flow
- Amounts determined by GW model

E. Reporting

- States agree to measurement techniques, data collection and reporting
- Water usage reporting will include meters on all diversions, surface water and groundwater
- Better data = better answers

III. Guide Rock

A. Additional Water Administration

< 130,000 AF from Harlan County Reservoir

B. Water short year administration

< 119,000 AF from Harlan County Reservoir

A. Additional water administration

1. Consistent with Compact entitlement -provide priority date for Kansas Bostwick Irrigation District
2. Close junior natural flow rights when projected/actual irrigation supply is less than 130,000 acre feet of storage available from HCR
3. Protect storage releases from HCR for delivery at Guide Rock
4. KS, NE and the Bureau agree to take action to minimize bypass flows at Courtland-Superior diversion dam

B. Water Short Year Administration

- What – the projected supply trigger will be in effect in those years when the projected or actual irrigation supply is less than 119,000 a.f. of storage available from HCR
- Who – when triggered the States will take additional actions
- When – determination of trigger year begins on October 1 and becomes final on June 30th of each year

B. Water Short Year Administration

1. Nebraska action

- What
  - Limit water consumed above Guide Rock to not more than NE allocation above Guide Rock
  - NE may offset overuse with imported water if imported water is useable by KS

B. Water Short Year Administration

1. Nebraska action

- How
  - NE may use one or more of several measures to maintain BCU within allocation (includes alternate supplies for NBID, allocation adjustments for alluvial wells, dry year leasing, adjustments to multi-year allocations for non-alluvial wells, reduction in irrigated acres, and any other measures) – Nebraska's Decision

B. Water Short Year Administration

1. Nebraska action

- Compact accounting
  - Compact accounting in water short year will be calculated on a two-year running average
  - Nebraska has option to use three year running average by implementing measures when hit 130,000 AF trigger

B. Water Short Year Administration

2. Colorado action

- Colorado agrees to limit its available sub-basin flexibility to the extent that any portion of Colorado's allocation from Beaver Creek cannot be used on any other sub-basin in Colorado

B. Water Short Year Administration

3. Northwest Kansas action

- Kansas agrees to limit beneficial consumptive use in designated subbasins to sum of specific allocations plus Kansas' share of unallocated supply
- Compact accounting in a water-short year will be calculated on a two-year running average

B. Water Short Year Administration

4. Modification of projected supply trigger

- If system enhancements below HCR increase the useable supply to Bostwick irrigation districts, the projected supply trigger will be adjusted in order to equitably share the benefits of such enhancements

IV. Soil and Water Conservation Measures

- Account for evaporation from ponds greater than 15 AF as beneficial consumptive use.
- Study feasibility of long-term impact of soil and water conservation measures – US 75%, states 25%

V. Dispute Resolution

- Future disputes must go to RRCA before suit can be filed
- Non-binding arbitration or other dispute resolution technique will be used

Schedule

Action	Date
• Well Moratorium	• December 15, 2002
• Complete RRCA Groundwater Model and approval by the States	• July 1, 2003 unless in arbitration
• Regulate junior diverters Harlan-County Dam to Guide Rock in Water-Short Years	• January 1, 2003
• Protect storage water Harlan-County Dam to Guide Rock	• January 1, 2004

Schedule

Action	Date
• Data exchange under RRCA Accounting Procedures Section V.	• April 15, 2004 (for the 2003 year)
• Non-Federal Reservoir inventory	• By December 31, 2004
• First year Water-Short Year Administration compliance	• 2006 (if Water-Short Year Administration year, 2-year running average is 2005-2006)
• First normal year compliance	• 2007 (5-year running average from 2003-2007)

Schedule

Action	Date
• Conservation Measures Study	• Within 5 years of RRCA approval
• System Improvement Study – Feasibility	• October 2004 – September 2007
• NE NRD actions;	
– Proposed revised rules and regulations for transfers and meters	• December, 2003
– Acres certified	• December, 2004
– Wells metered	• December, 2005

Settlement

- No damages to Kansas – either money or water
- Maintain our existing development
  - Cut back use in dry years
- Credit for imported water
- Flexibility to use water anywhere in state – above Guide Rock in dry years
- Compact Accounting will use "averages"
- Nebraska can decide how we use our allocation
- Process for future disputes

Republican River Compact Administration

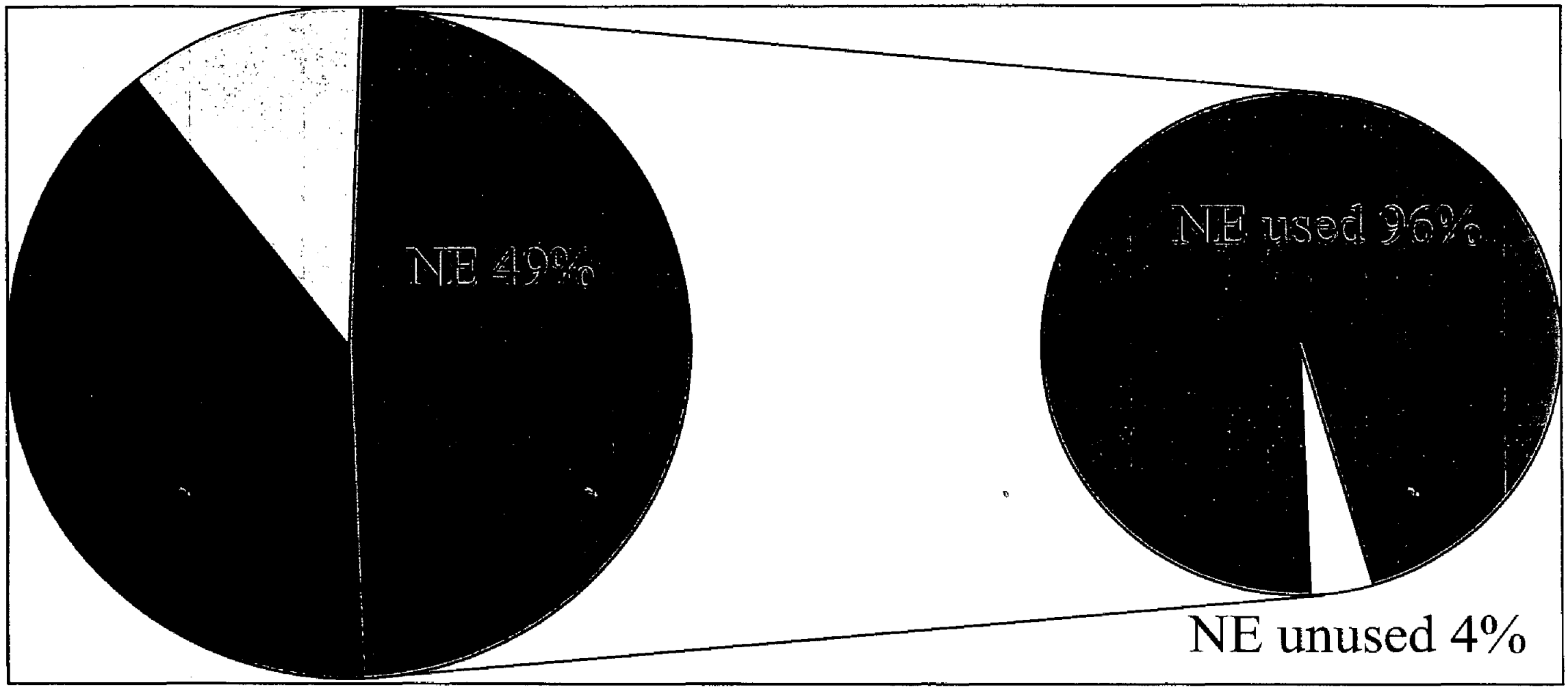
A New Era

Compact Compliance will Require Increased Responsibility for DNR

- Ultimately the State is responsible for compact compliance
- Increased water management coordination with NRDs
- Increased regulation below Harlan County Lake to protect storage water releases
- Increased studies, ground water modeling and data collection

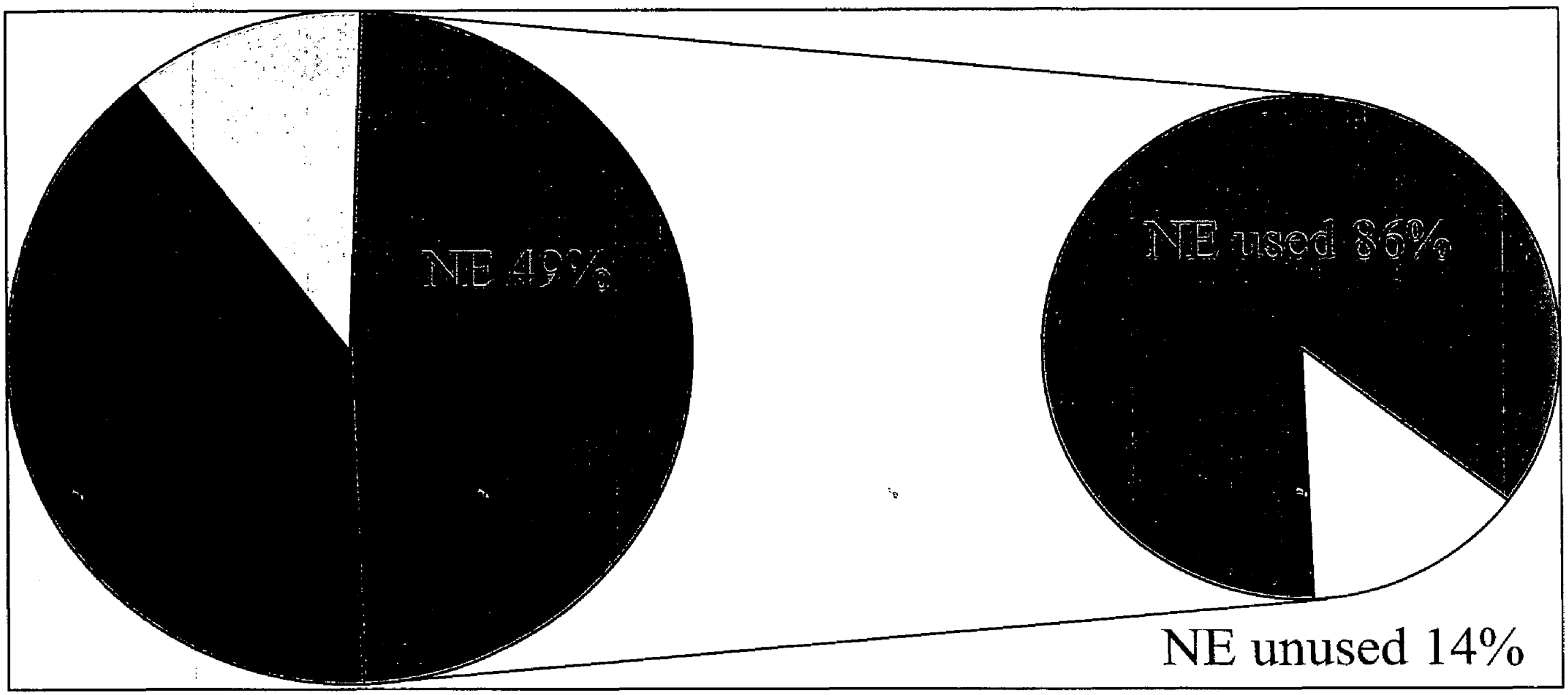
Compact Compliance will Require Increased Responsibility for NRDs

- Integrated surface water/groundwater management plans
- Increased water usage reporting
- Certification of Irrigated Acres
- Increased regulation of ground water use
  - alluvial wells
  - upland wells



NE 1970's Calculated % Use of Allocation

- KS All
- CO All
- NE CU
- NE Unused All



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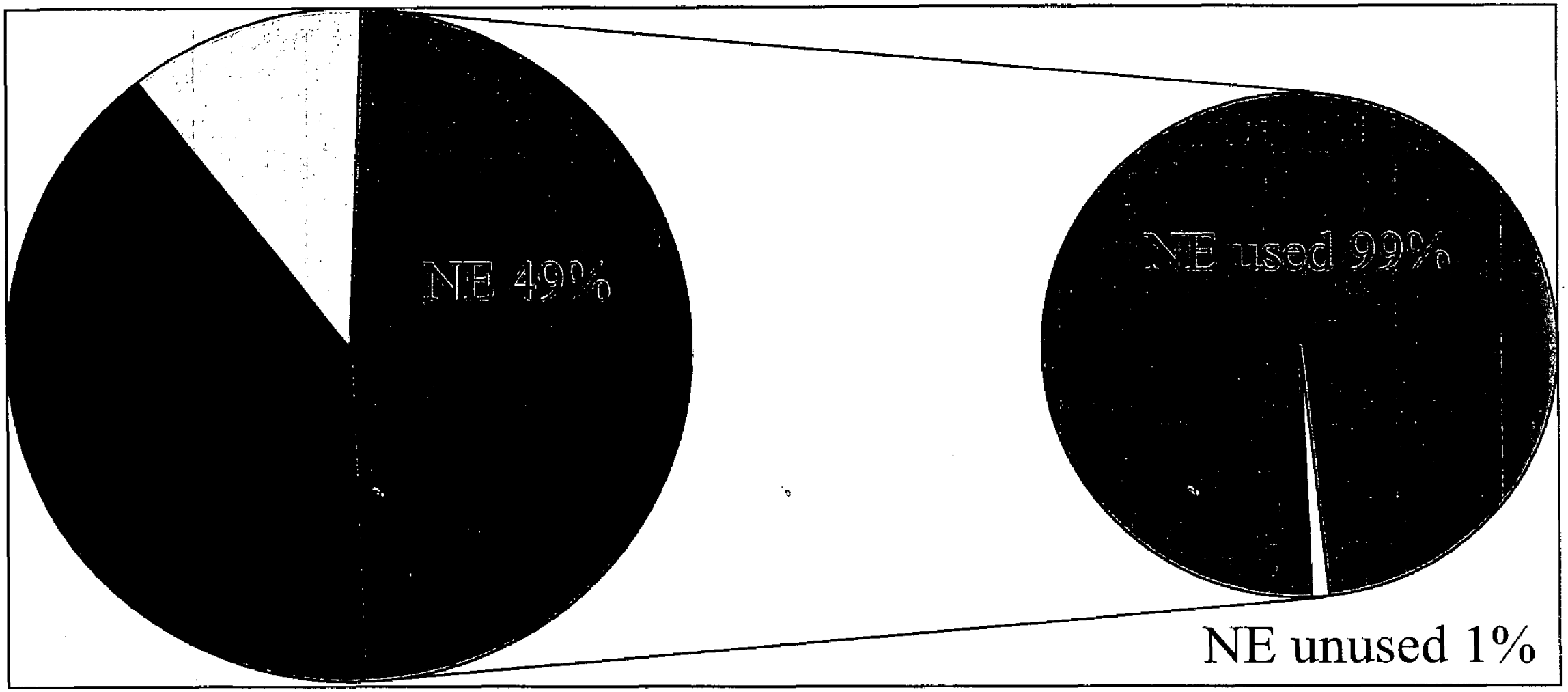
- NE Unused All



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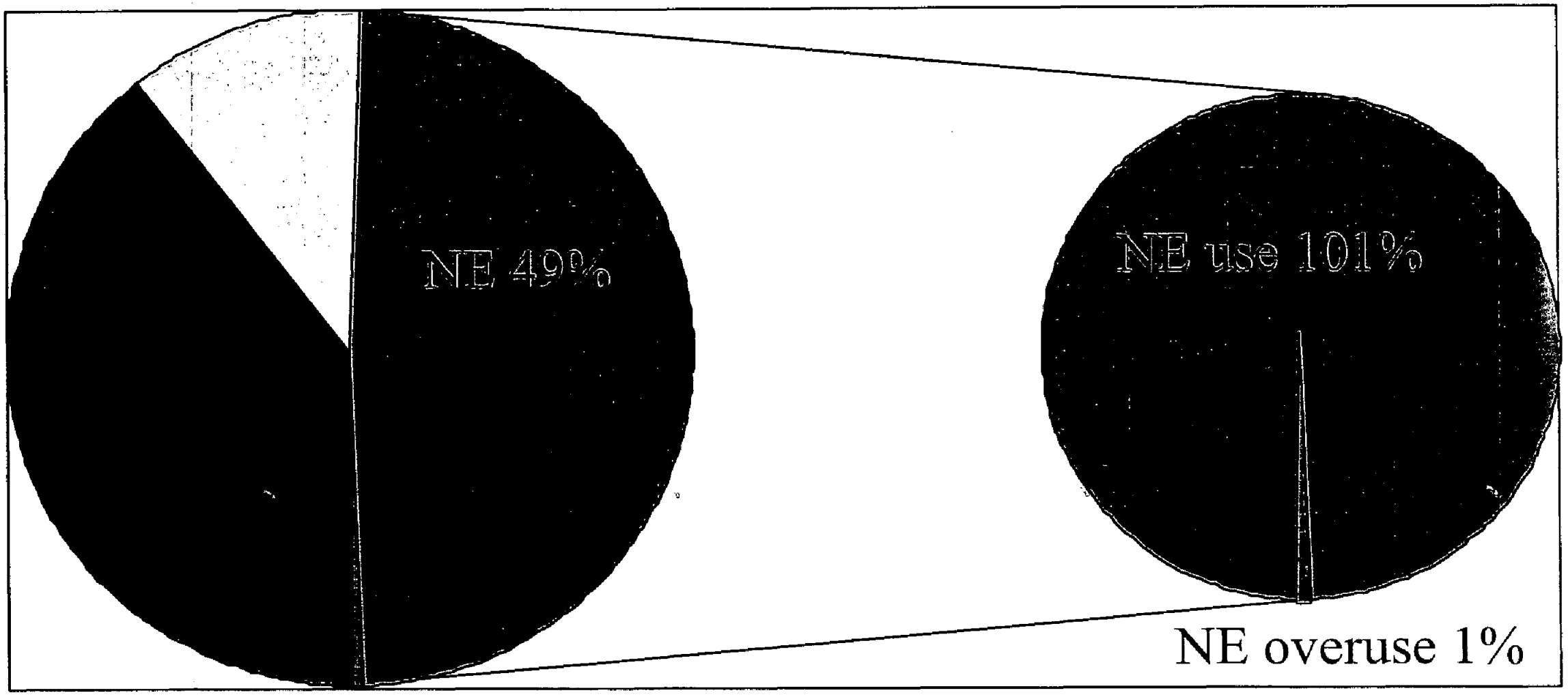
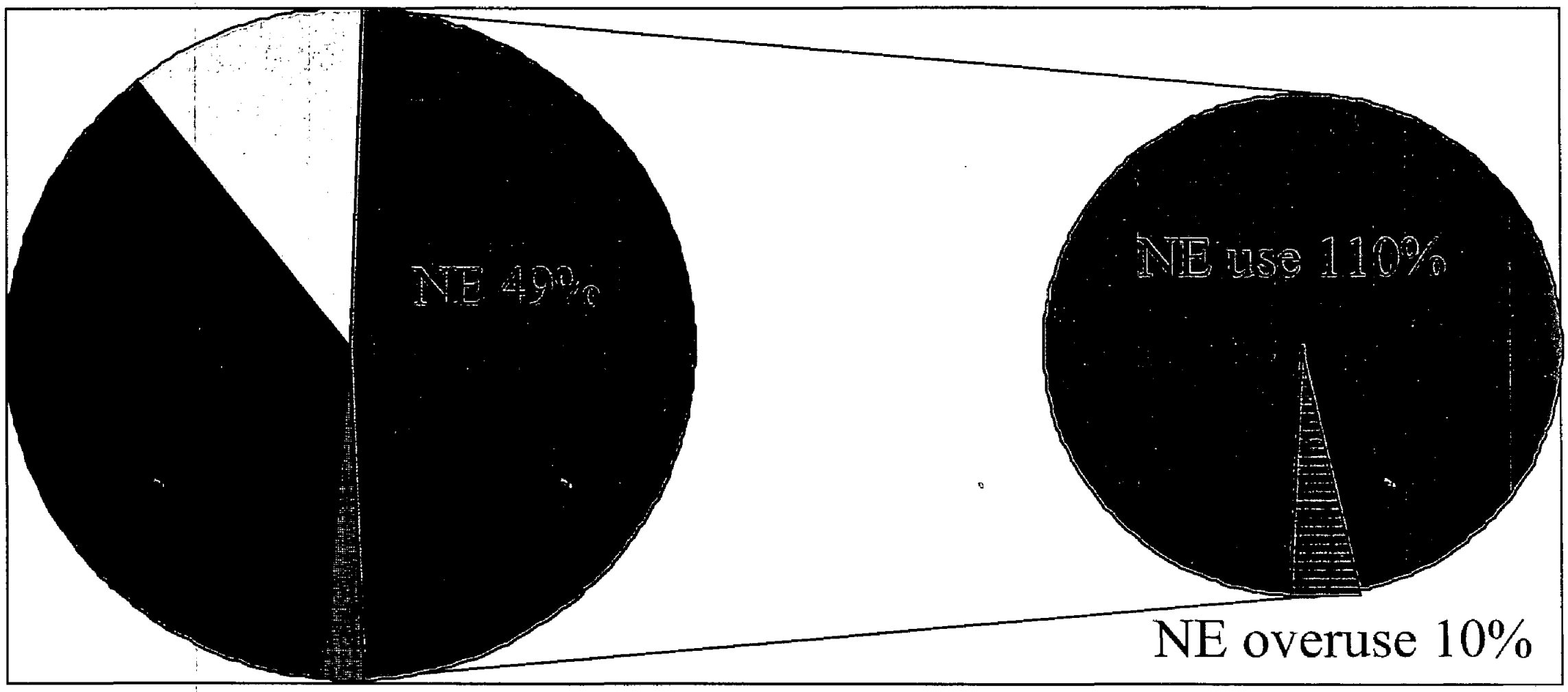


NE 2000's Projected % Use of Allocation

- KS MS All
- KS All
- CO All
- NE CU
- NE excess use



NE 2010's Projected % Use of Allocation

- KS MS All
- KS All
- CO All
- NE CU
- NE excess use

No Increase in CU Equals

No increase in number of irrigated acres or a decrease in amount of water allocated per acre

Nebraska Department of Natural Resources

The Nebraska Department of Natural Resources is dedicated to the sustainable use and proper management of the state's natural resources.

Text Only Version!

Agency Overview

- Administration
- Surface Water
- Ground Water
- Data Bank
- Field Offices
- Planning & Assistance
- Floodplain & Dam Safety
- Resource Mgt Funds

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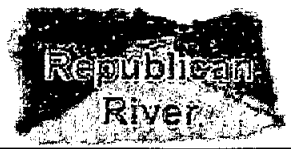
NEBRASKA Water Policy Task Force



Settlement Press Releases and Settlement Documents!

www.dnr.state.ne.us

Nebraska's Allocation Consumptive Use in Republican Basin 1984-1992 + 1994 Averages

Nebraska Allocation	Consumptive Use				
	Surface Water	Alluvial Wells	Upland Wells	Total Wells	Total CU
329,900	121,200	160,400	35,700	196,000	317,300
Percentage	38%	51%	11%	62%	100%

Nebraska's Consumptive Use in Upper Republican Basin 1984-1992 + 1994 Averages

Nebraska Allocation from NRD	Consumptive Use				
	Surface Water	Alluvial Wells	Upland Wells	Total Wells	Total CU
90,057	8,273	38,963	18,900	57,863	66,137

Nebraska's Consumptive Use in Middle Republican Basin 1984-1992 + 1994 Averages

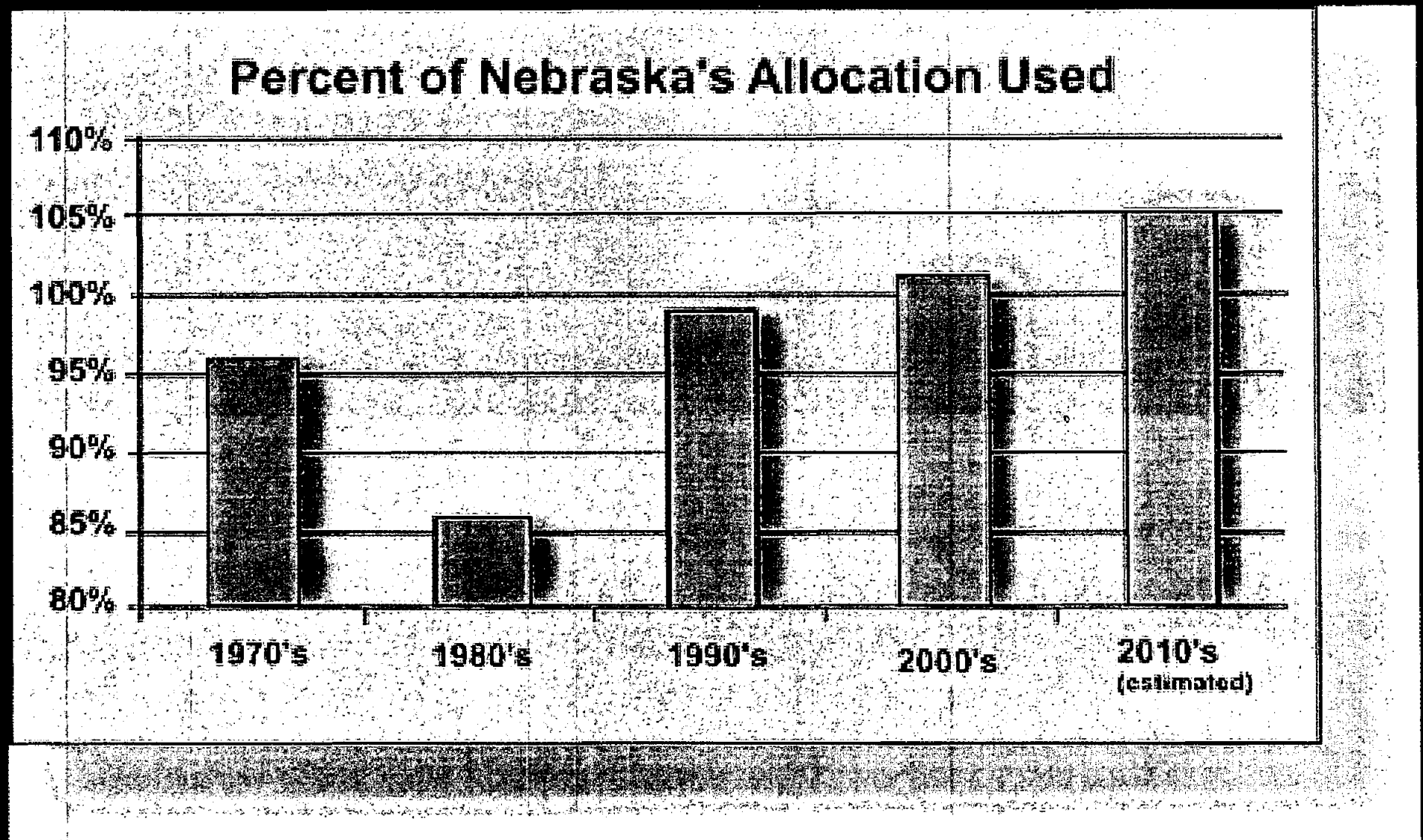
Nebraska Allocation from NRD	Consumptive Use				
	Surface Water	Alluvial Wells	Upland Wells	Total Wells	Total CU
146,673	73,875	64,478	15,350	79,828	153,703

Nebraska's Consumptive Use in Lower Republican Basin 1984-1992 + 1994 Averages

Nebraska Allocation from NRD	Consumptive Use				
	Surface Water	Alluvial Wells	Upland Wells	Total Wells	Total CU
93,212	39,027	56,946	1,450	58,396	97,432

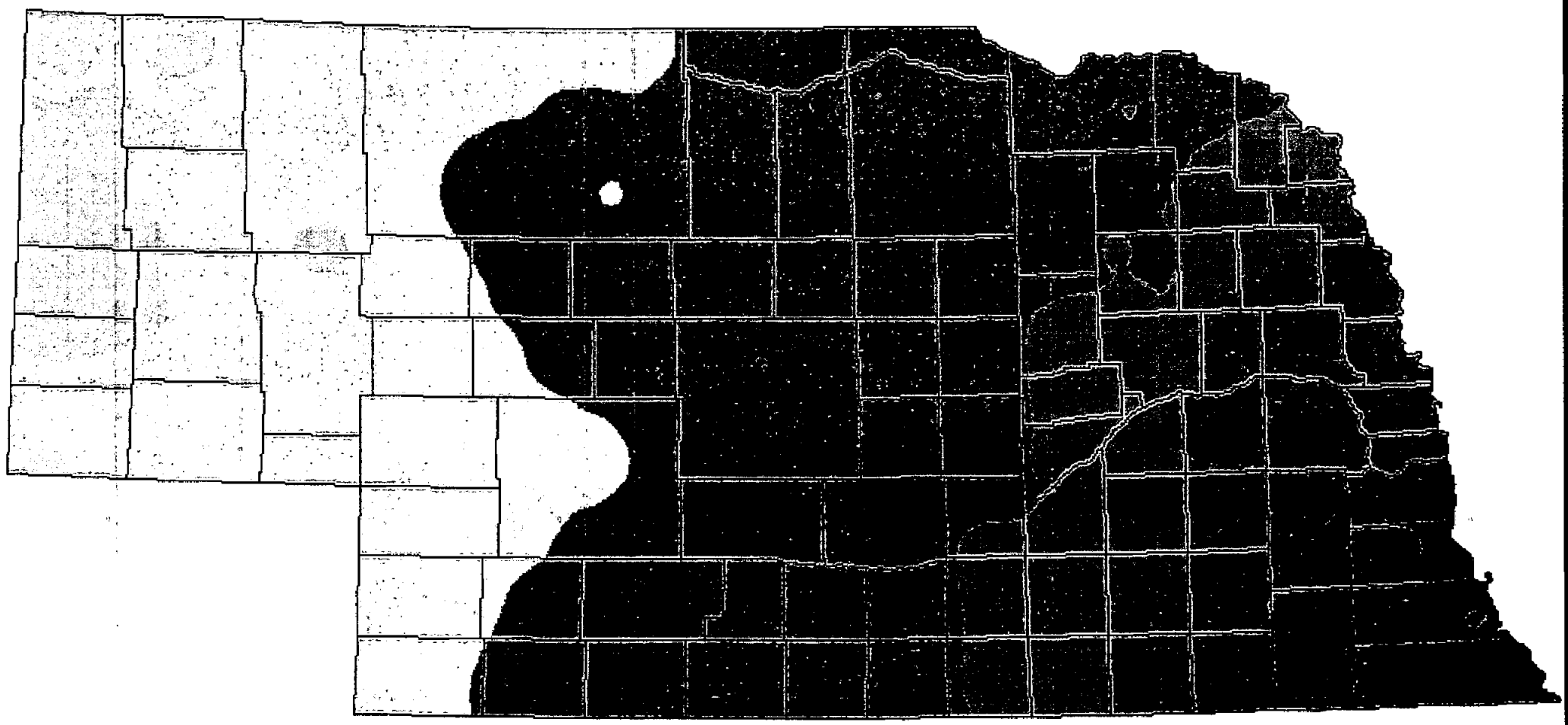
Summary Allocations and CU in Upper, Middle, Lower NRDs

	Upper	Middle	Lower	Total
Allocations	90,000	146,700	93,200	329,900
CU	66,100	153,700	97,400	317,300
Difference	23,900	-7,000	-4200	12,600


Percent of Nebraska's Allocation Used
110%
105%
100%
95%
90%
85%
80%
1970's
1980's
1990's
2000's
2010's
(estimated)

Average Annual Precipitation

Nebraska



Legend (in inches)

Under 16	26 to 28
16 to 18	28 to 30
18 to 20	30 to 32
20 to 22	32 to 34
22 to 24	Above 34
24 to 26	

Period: 1961-1990

Oregon Climate Service
Oregon State University

This map is a plot of 1961-1990 annual average precipitation contours from NOAA Cooperative stations and (where appropriate) USDA-NRCS SNOTEL stations. Christopher Daly used the PRISM model to generate the gridded estimates from which this map was derived; the modeled grid was approximately 4x4 km latitude/longitude, and was resampled to 2x2 km using a Gaussian filter. Mapping was performed by Jenny Weisberg and Nathaniel DeYoung. Funding was provided by USDA-NRCS National Water and Climate Center.

Nebraska

Deuel
Keith
Lincoln
Logan
Sedgwick
Perkins
Dawson
Buffalo
Hall
Phillips
Chase
Hayes
Frontier
Gosper
Phelps
Kearney
Adams
Clay
Dundy
Hitchcock
Red Willow
Furnas
Harlan
Franklin
Webster
Nuckolls
Washington
Yuma
Cheyenne
Rawlins
Decatur
Norton
Phillips
Smith
Jewell
Republican
Kit Carson
Sherman
Thomas
Sheridan
Graham
Rooks
Osborne
Mitchell
Cloud
Clay
Wallace

Colorado

85% Application Efficiency

50 0 50 Miles

Kansas

GROSS IRRIGATION REQUIREMENT, inches

6 - 8	12 - 14	18 - 20
8 - 10	14 - 16	20 - 22
10 - 12	16 - 18	22 - 24

CORN, MEDIUM TEXTURE SOIL

Registered Irrigation Wells by NRD

Upper Republican NRD	3360 Wells
Middle Republican NRD	3320 Wells
Lower Republican NRD	3740 Wells
Tri-Basin NRD	1560 Wells

Wells Registered Since 2001

Since January 1, 2001 there has been approximately 600 irrigation wells registered in the basin.

The total acres irrigated for these wells, as supplied with the registration records is over 70,000

Irrigation Well Registrations after 2001

(Prior to Moratoriums)

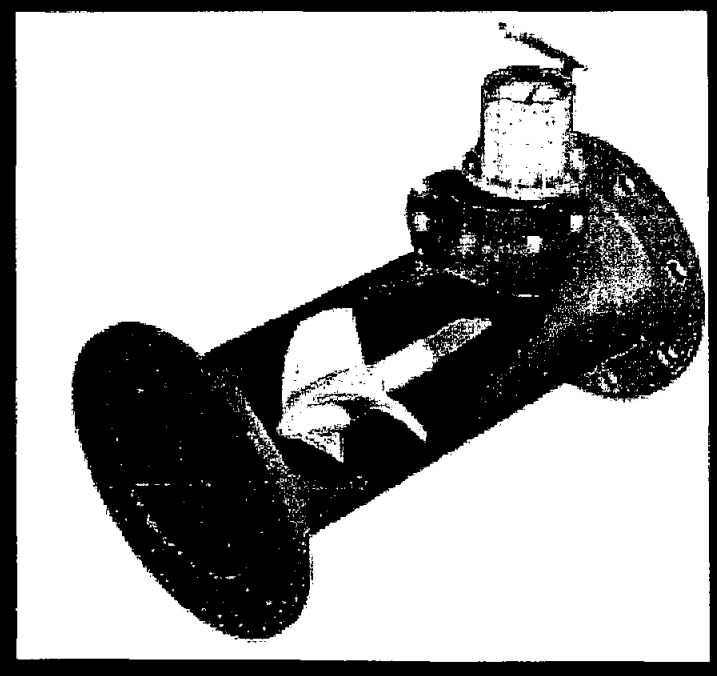
NRD	Active Wells	Regist. Acres	Inactive Wells	Regist. Acres	Total Wells	Total Acres
Upper Republican	26	1881	0	0	26	1881
Middle Republican	142	17823	32	4250	174	22073
Lower Republican	274	33339	103	10780	377	44119
Tri-Basin	30	3773	1	160	31	3933

Activities in the First Year for Compact Administration Under the Settlement

- DNR will close junior appropriators between Harlan County Dam and the Guide Rock to protect storage water
- Nebraska, Colorado & Kansas will complete the joint groundwater model
- DNR and the NRDs will collect detailed information on water use in Nebraska
- Meters will continue to be installed
- The NRDs will certify irrigated acres

Flow Meter Installation and Reporting

- Flow meters must be installed on all high capacity wells by 2005
- Annual pump withdrawals reported to the Compact Administration by April 15
- Will be used to compute GW depletions to streamflow



Irrigated Acres Certified

- Identify and Certify GW Irrigated Acres in Republican River Basin
- Irrigated Acres reported to the Compact Administration by April 15 every year
- Expansion of Acres cannot continue

Small Reservoirs

- Work with DNR to identify reservoirs over 15 AF in normal storage capacity
- Evaporation reported to the Compact Administration
- Estimated or Observed