Arkansas Ground-Water Protection and Management Report for 2011

January 2012

STATE OF ARKANSAS

ARKANSAS NATURAL RESOURCES COMMISSION
101 EAST CAPITOL, SUITE 350
LITTLE ROCK, ARKANSAS 72201

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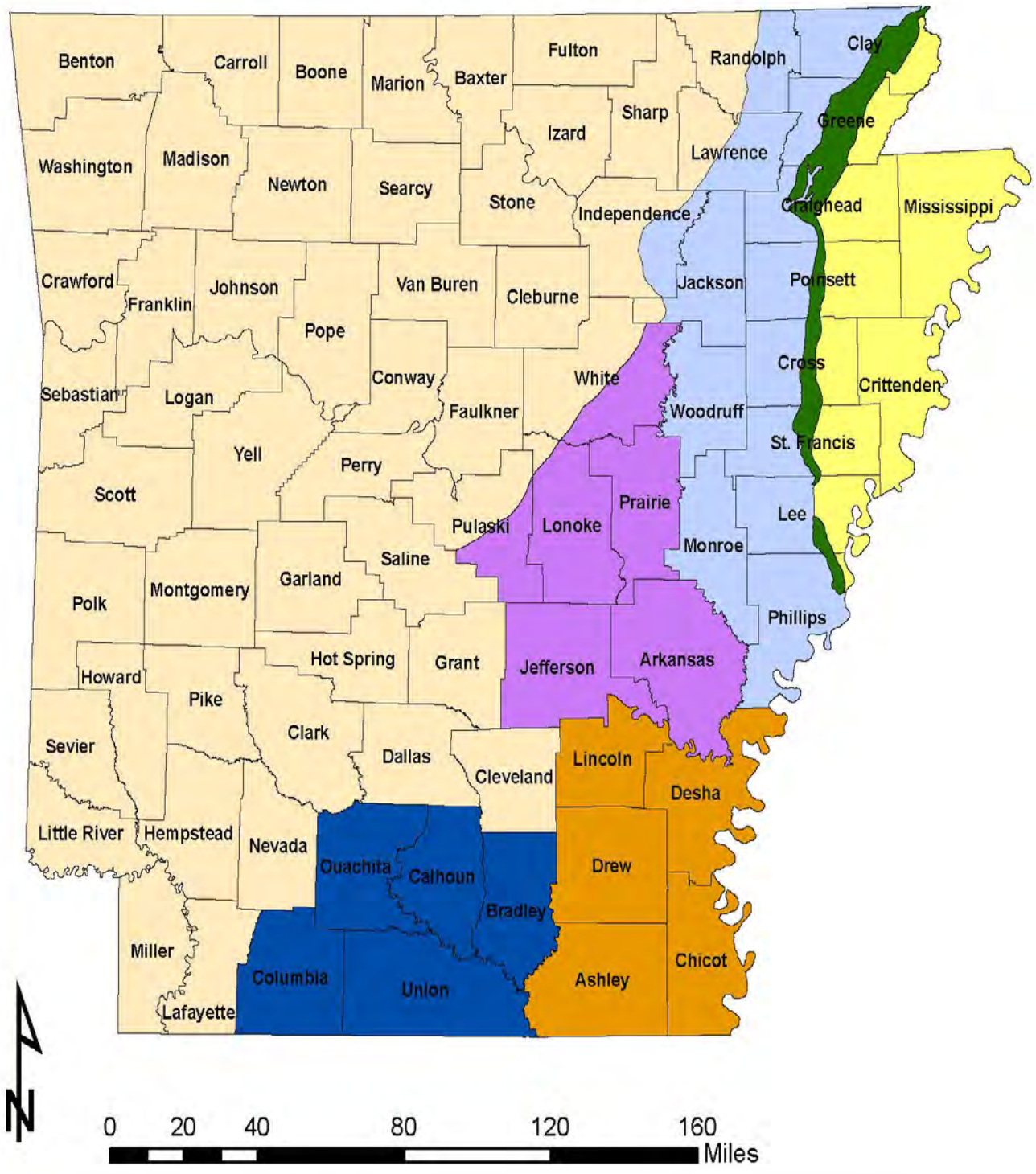
ABSTRACT

The Arkansas Ground-Water Protection and Management Report is produced annually by the Arkansas Natural Resources Commission (ANRC) pursuant to the Arkansas Ground Water Protection and Management Act of 1991, Arkansas Code Annotated 15-22-906. This report provides a summary of ground-water protection and conservation programs administered by the ANRC during the year 2011, including water-level monitoring, the development of water-quality standards, studies of water use trends, and administration of the Arkansas Water Well Construction Commission program. This report covers water level data from the spring of 2010 to the spring of 2011, as well as other ground-water activities through the end of 2011. This monitoring period consisted of an abnormally dry year with an average of only 39.11 inches of precipitation, and as a result, short-term water level comparisons for the state's aquifers showed more severe declines. The general trend in Arkansas's long-term water-level change is that the ground-water levels are declining in response to continued withdrawals at a rate which is not sustainable. Based on 2009 water use data, approximately 59.3 percent of the current alluvial aquifer withdrawal of 5687.87 million gallons per day, and 61.1 percent of the Sparta/Memphis aquifer withdrawal of 142.42 million gallons per day, is sustainable. At these pumping rates, water-level declines and the adverse impacts on the state's ground-water system will continue to be observed. As the competition for ground water becomes more intense, the challenge before Arkansas' water resources users, scientists, and conservationists is to continue to work toward conservation, education, and the conjunctive use of ground water and excess surface water in a manner that brings about the wise and sustainable use of our valuable water resources.

INTRODUCTION

This annual ground-water report is prepared to provide the State of Arkansas with a comprehensive water-quantity and water-quality document to be utilized in accordance with the Arkansas Water Plan, as a guide for water resources conservation and protection programs. It includes data, analysis, and recommendations for the ground-water protection and management program, water-quality standards activities, the Arkansas Water Well Construction Commission administrative program, and water use studies.

Arkansas Ground Water Study Areas



Legend

- South Arkansas
- Boeuf-Tensas
- Grand Prairie
- St. Francis
- Cache
- Crowleys Ridge
- County Boundaries

Fig. 1

This report and all programs described herein are built on a strong cooperative program with other appropriate state, federal, and local water resources agencies. Some of the programs described in this report are partially funded through federal grants from Region VI of the Environmental Protection Agency.

Each spring approximately 700 wells are monitored in the alluvial aquifer resulting in the largest number of water level measurements for any one aquifer in the state. This number will vary from year to year depending on the resources available. There are approximately 300 wells that are monitored for water levels in the Sparta/Memphis aquifer. A monitoring schedule has been established to obtain data from the alluvial aquifer and the Sparta/Memphis aquifer on an annual basis. These measurements are taken each spring so as to be the least affected by seasonal pumping for irrigation. The drawdown that results from seasonal pumping is also determined by the NRCS and ANRC taking measurements of the alluvial aquifer in both the spring and fall. The USGS also maintains the Arkansas Masterwell Program that supplies long term ground-water quality monitoring in 25 wells from 14 aquifers. These Masterwells are located throughout 21 counties and each year 5 sites are sampled for a variety of water-quality constituents. (Fig.4) Hydrogeologic data is collected statewide; however resources are focused on study areas where water-level declines and water-quality degradation have been observed historically.

The amount of rainfall is taken into account each monitoring period to observe the change of water levels during times of drought or excess rainfall. Lower than normal precipitation occurred throughout 2010, which finished as the 6th lowest record for precipitation in Arkansas at 39.11 inches. The monitoring period which covers the calendar year of 2011 for static water level change was completed in the spring. The data for 2010-2011 indicates a decline in 199 of 252 wells, with a maximum decline of about 20.05 feet, and an average decline of 2.11 feet. (Appendix A)

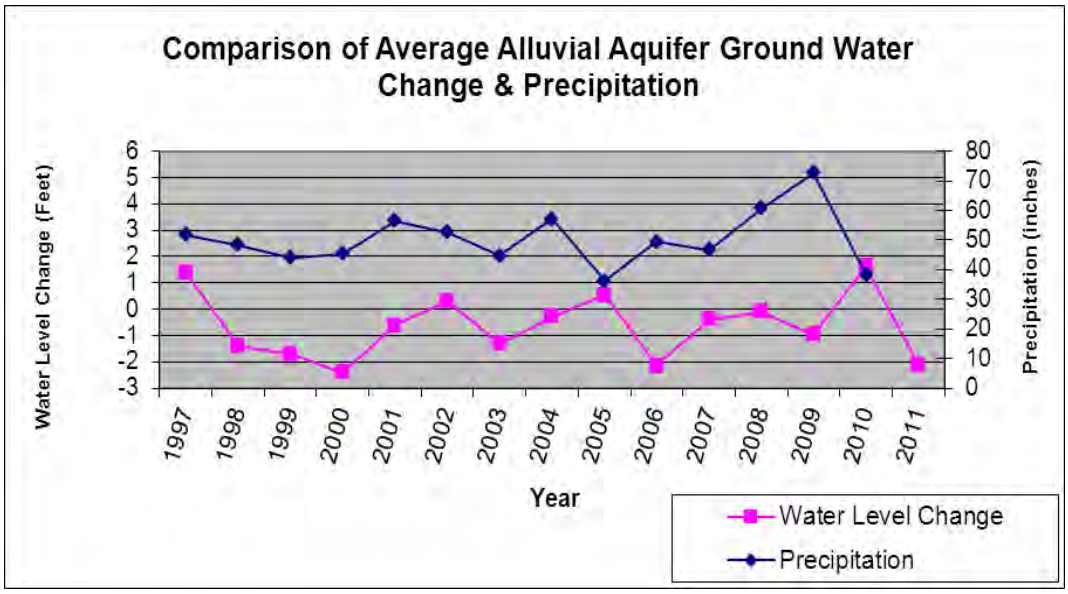


Table 1.

Long-term water-level data collected over a 25-year period indicate a statewide decline of 0.8 feet per year in the Sparta-Memphis aquifer (USGS, 2004-5055), and 0.3 feet per year in the alluvial aquifer over a 24 year period (USGS, 2006-5128). Such long-term data is valuable in revealing water-level change trends that can be masked by short-term climate variations and local pumping rates. There are areas of the state experiencing ground-water withdrawals of such magnitude that demand on the aquifer exceeds the sustainable yield, resulting in consistently falling ground-water levels, and the development of cones of depression. These areas are depressions in the potentiometric surface, and occur in both the alluvial and Sparta/Memphis aquifers. (Fig. 2) Water-level declines are consistently observed in areas where water use is highest, such as portions of the Grand Prairie area, and in the Cache study area west of Crowley's Ridge. Other programs are focused on the core Arkansas Nonpoint Source Pollution Management Program, the Section 106 water-quality data management and GIS activities, and the administration of the Arkansas Water Well Construction Commission Program.

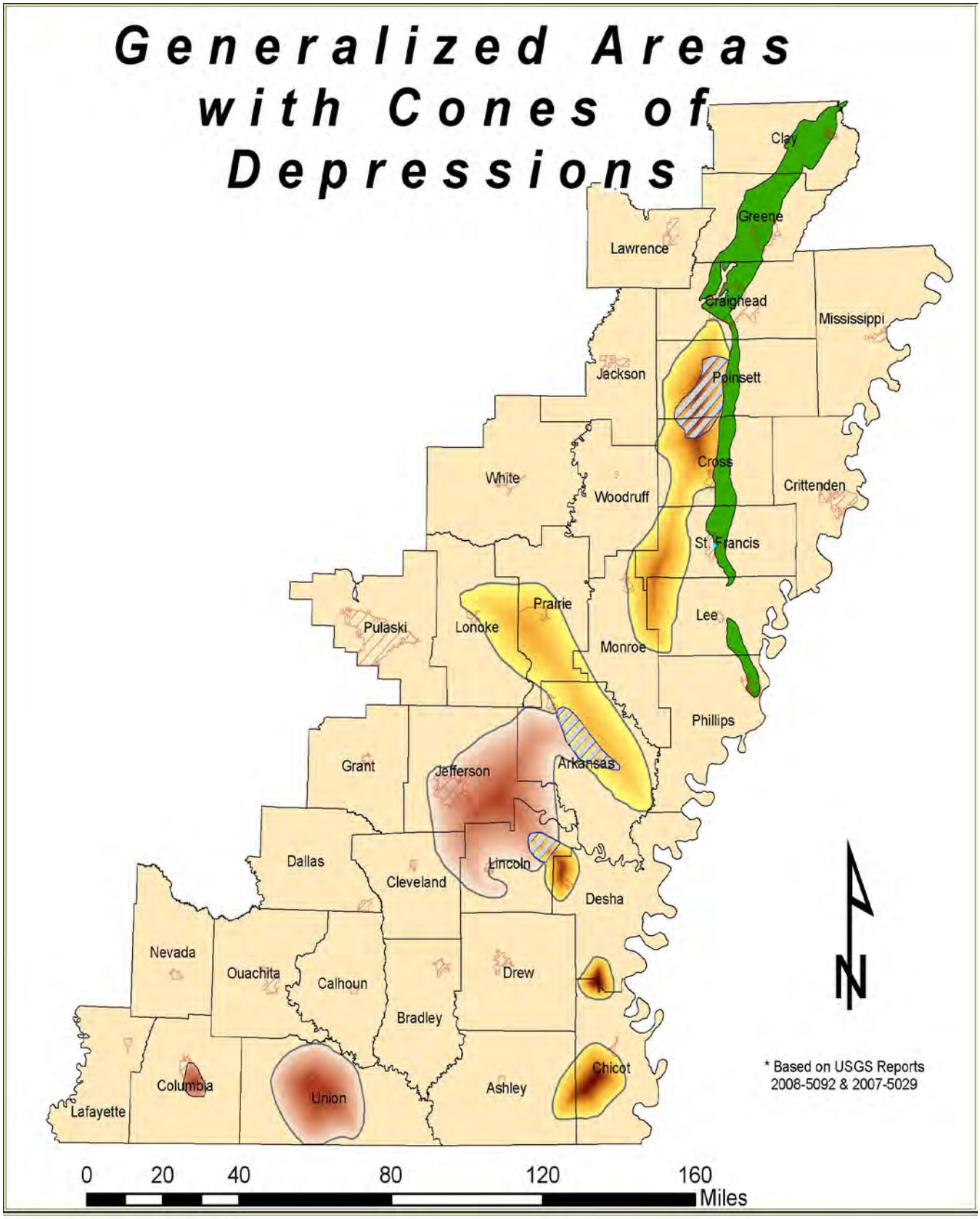
The most recent water quality data collected by the USGS showed wells with an increased specific conductance (>/= 1,000 microsiemens/cm) in the alluvial aquifer in Arkansas, Cross, Desha, Greene, Lincoln, Prairie and Chicot counties. (Schrader, T.P., 2010) An increase in the level of specific conductance indicates an increased level of dissolved solids in the ground water. In certain areas these dissolved solids are chlorides leading to the ground-water becoming unsuitable for particular irrigation purposes.

WATER POLICY

Water-resources policy in Arkansas was established in the Arkansas Water Plan, 1991, in which the ANRC advocates conservation, education, and the conjunctive use of ground and surface water, along with the development of excess surface water to meet future water use needs. It is hoped that protection of the State's ground-water resources can be achieved through these measures rather than management strategies that may require allocation of water. If conservation and the development of excess surface water are not successfully implemented in the impaired areas in the very near future, the State will have to consider regulatory alternatives to preserve the aquifers at a sustainable level.

All water-use strategies must consider the wise use of our State's water resources while protecting the sustainable yield of the State's aquifers. Stream flow needs of the State's surface-water flow system must also be taken into account if our water resources are to be protected for future generations to utilize and enjoy. The ANRC advocates that the State move toward a sustainable yield pumping strategy through conservation utilizing critical ground water area designation wherever needed to focus resources and minimize water-level declines. Designation as a Critical Ground Water Area brings about enhanced tax credits for conservation activities, focused educational programs, and sets the area as a priority for possible federal programs and funding.

Generalized Areas with Cones of Depressions

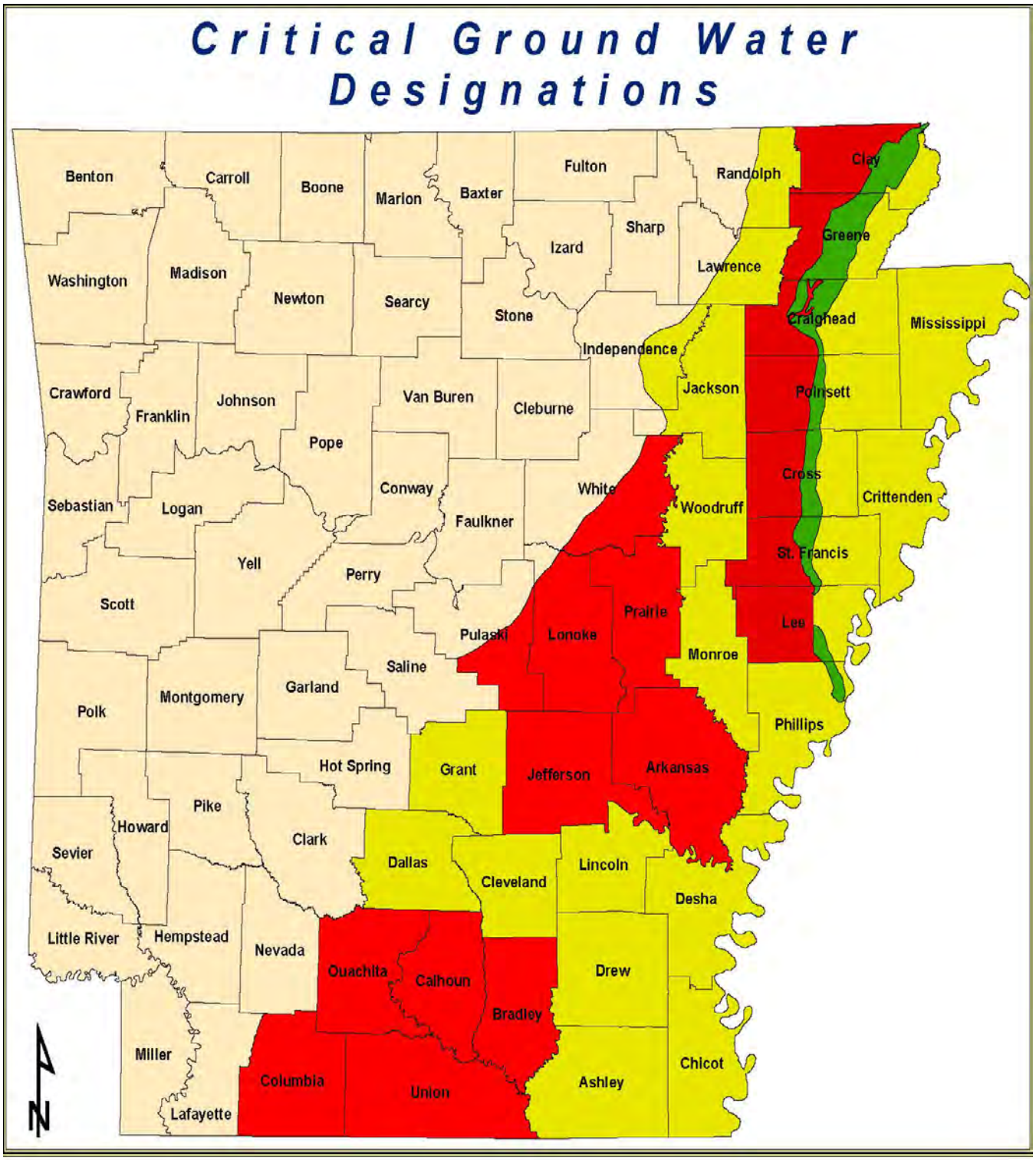


Legend

- Intersection of the two cones
- Cones of Depression in the Alluvial Aquifer
- Cones of Depression in the Sparta Aquifer
- County Seat
- Crowleys Ridge
- County Boundaries

Fig. 2

Critical Ground Water Designations



Legend

- Crowley's Ridge
- Current Study Areas
- Current Critical Areas
- County Boundary

South Arkansas Study Area for Sparta in 1996

Grand Prairie Study Area for Sparta & Alluvial in 1998

Cache Study Area for Sparta/Memphis Sand & Alluvial in 2009

0 12.5 25 50 75 100 Miles

Fig. 3

USGS Master Well Locations

Legend

- USGS Wilcox Group Master Wells (2 Wells)
- USGS Trinity Group Master Well (1 Well)
- USGS Master Wells in Terrace Deposits (6 Wells)
- USGS Sparta Master Well (5 Wells)
- USGS Tokio Formation Master Wells (3 Wells)
- USGS Nacatoch Sand Master Wells (4 Wells)
- USGS Memphis Sand Master Wells (4 Wells)
- USGS Roubidoux Master Wells (2 Wells)
- USGS Gunter Sand Master Wells (2 Wells)
- USGS Big Fork Chert Master Well
- USGS Atoka Master Well
- USGS Alluvial Master Wells (5 Wells)
- County Boundaries

Fig. 4

Hydrogeology and Statewide Water-Level Trends

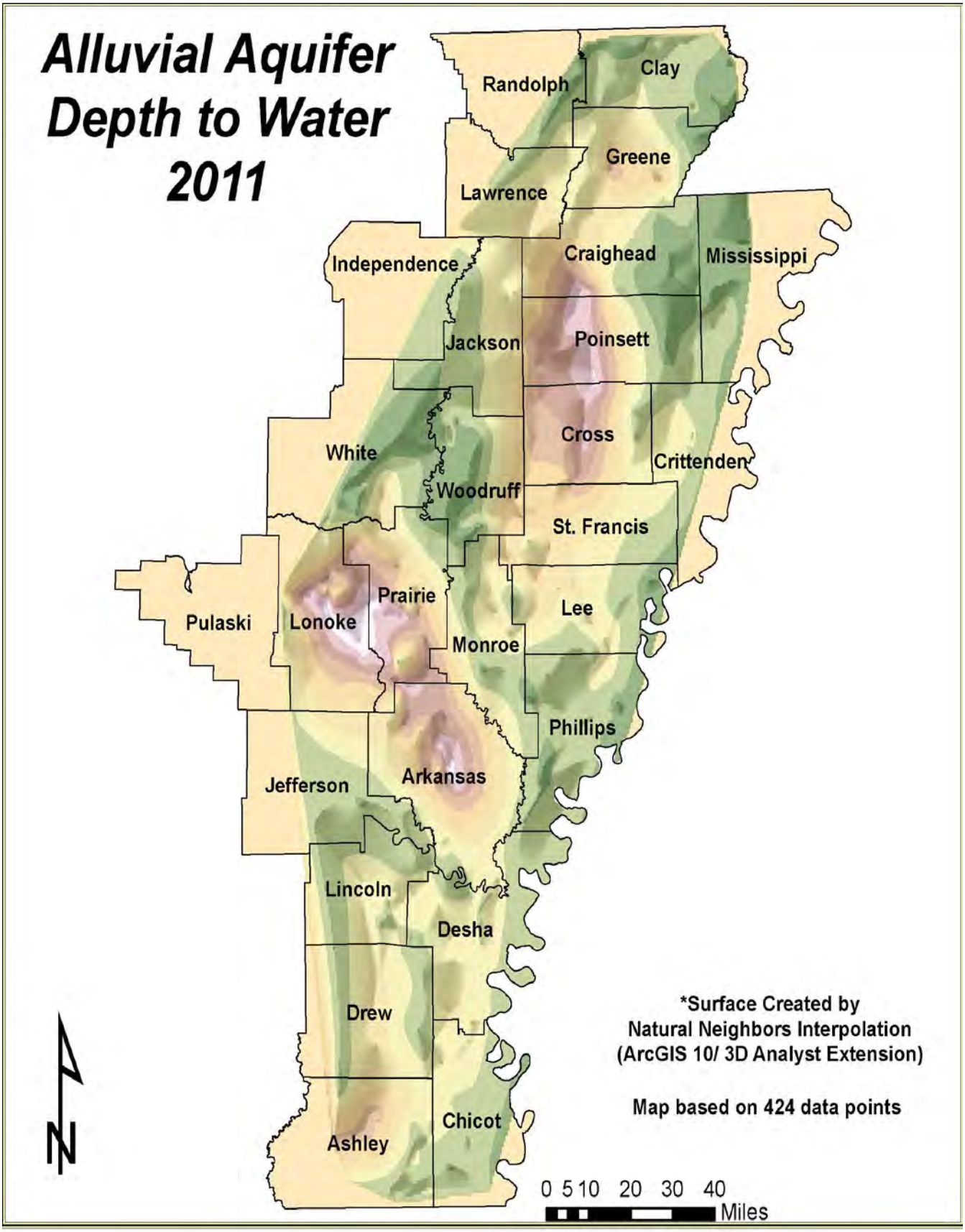
Alluvial Aquifer

The Mississippi River Valley alluvial aquifer extends north from Arkansas into Missouri, south into Louisiana, and under the Mississippi River into Tennessee and Mississippi. For the purpose of this report, the term alluvial aquifer refers to the portion of the aquifer inside the state boundaries of Arkansas. This area generally is bounded by the Fall-Line or contact with outcropping Tertiary formations to the west, the Mississippi River to the east, and the state lines to the north and south. The aquifer is the uppermost aquifer in the Mississippi Embayment and is composed of 50 to 150 feet of sand and gravel, grading from coarse gravel at the bottom to fine sand at the top. It generally is overlain by the Mississippi River Confining Unit, which is composed of 0 to 50 feet of fine-grained sand, silt, and clay. The alluvial aquifer is underlain by confining units composed of aquifers and confining units of the Mississippi Embayment, which are less permeable than the alluvial aquifer. The alluvial aquifer is connected hydraulically with several rivers and drainage areas.

Due mostly to the use of ground water for agriculture in the region, the aquifer has been pumped in ever-increasing amounts since records were kept from the early 1900's. In 2009 Arkansas had ground-water withdrawals estimated to be 5687.87 million gallons per day (Mgal/d). That is approximately a 380% increase from the amount used in 1965. (Holland, T.W. 2005, 2009).

In 2009 there was 5687.87 Mgal/d pumped from the alluvial aquifer. The estimated sustainable yield for the alluvial aquifer is 2,987 Mgal/d, leaving an unmet demand of 2,700 Mgal/d (47.5%). Ground water furnishes 63% of the state's total consumption of water, and 95% of the ground water used comes from the alluvial aquifer. Agriculture accounts for 96% of the total water that is pumped from the alluvial aquifer. Figures 5 and 6 are illustrations of the 2011 depth to water, and 5-year water level change map. Increased pumping from this aquifer has resulted in decreased outflow to rivers, increased inflow from rivers, increased inflow from the overlying confining unit, regional changes in ground-water flow, regional water level declines, reduction of aquifer storage, and decreases in well yields (Ackerman, 1996).

Alluvial Aquifer Depth to Water 2011



Legend

- 1ft to 24ft
- 25 ft to 46ft
- 47ft to 68ft
- 69ft to 90ft
- 91ft to 112ft
- 113ft to 134ft

Fig. 5

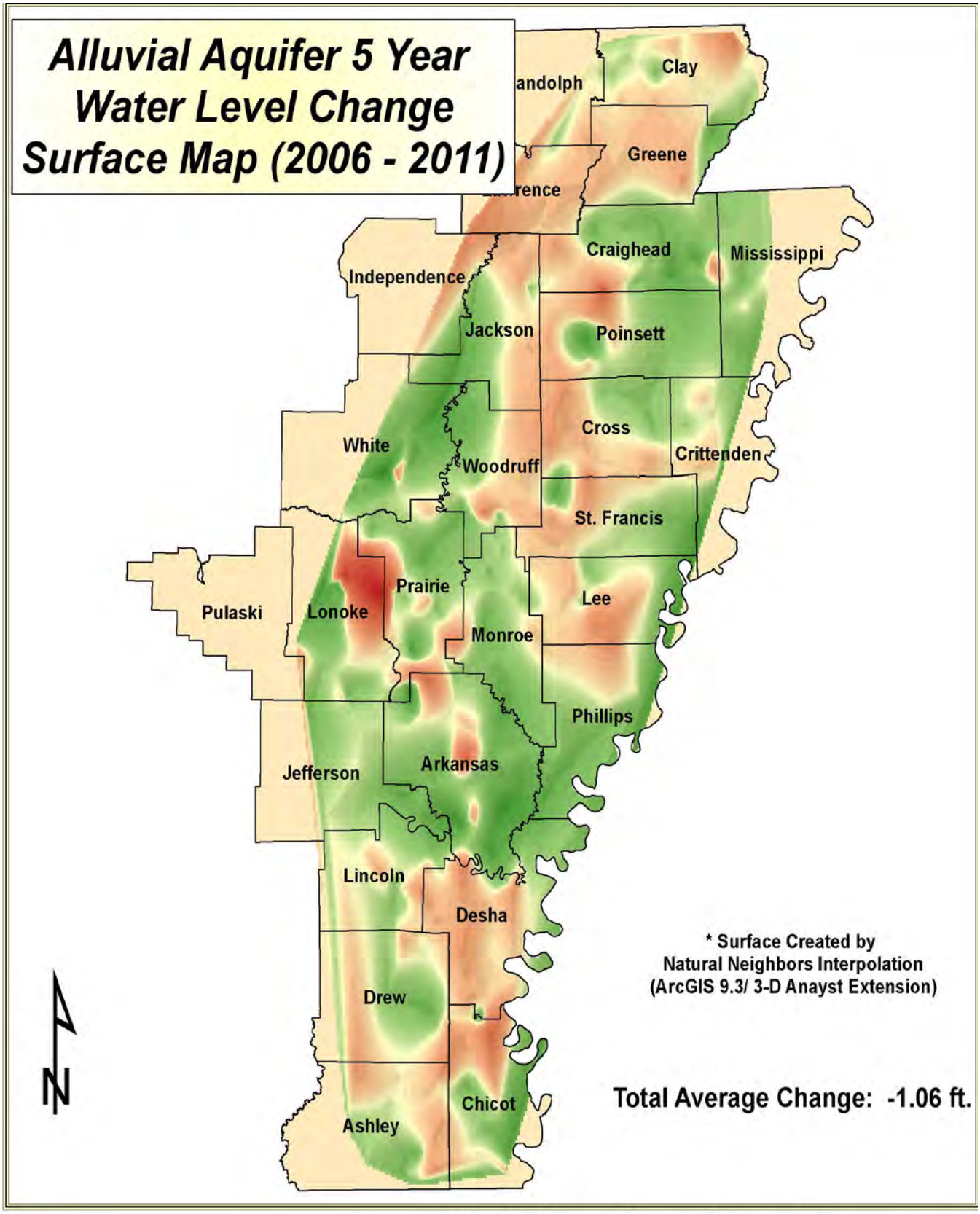
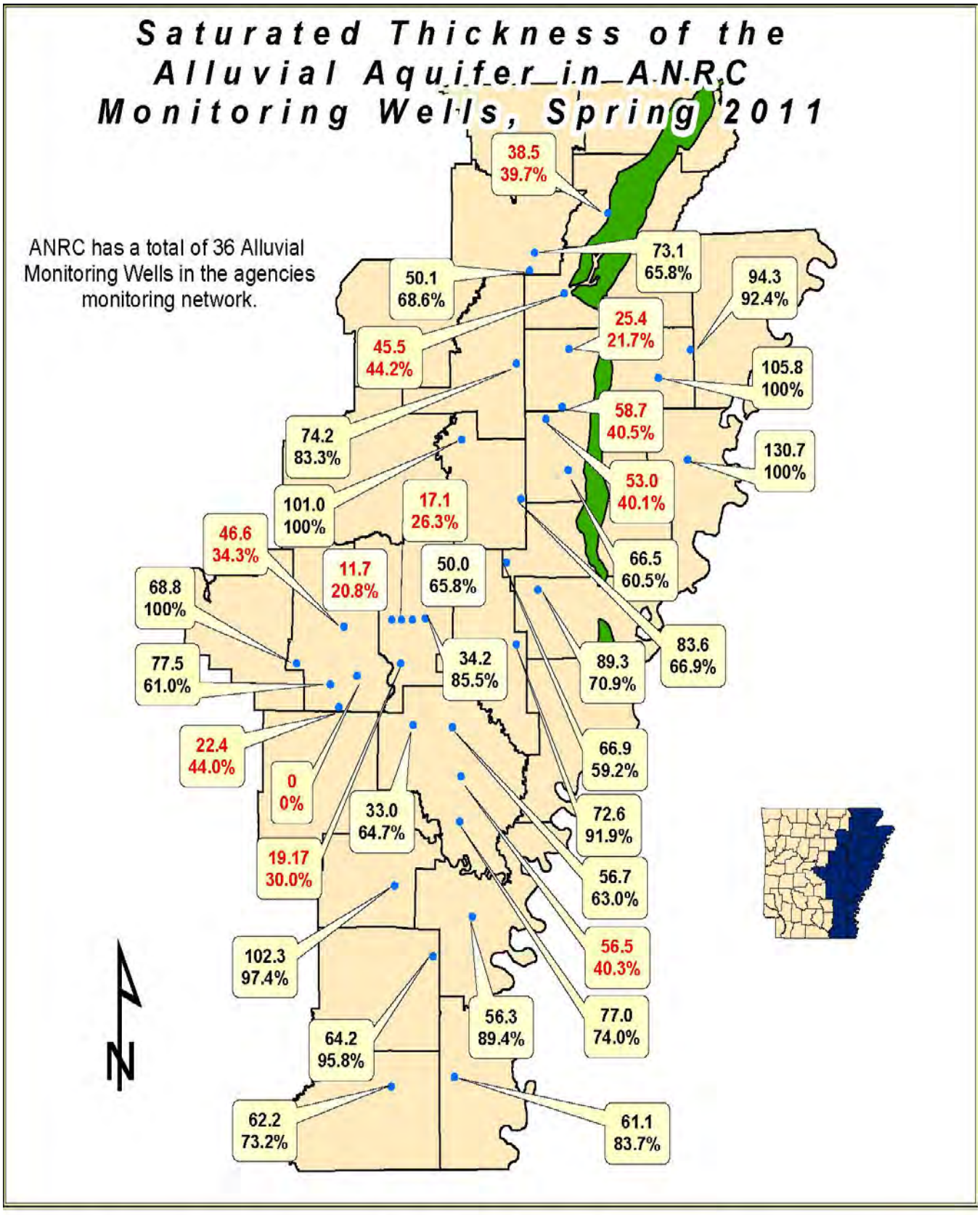

Alluvial Aquifer 5 Year Water Level Change Surface Map (2006 - 2011)
Clay
Greene
Craighead
Mississippi
Independence
Jackson
Poinsett
White
Woodruff
Cross
Crittenden
St. Francis
Prairie
Lee
Pulaski
Lonoke
Monroe
Phillips
Jefferson
Arkansas
Lincoln
Desha
Drew
Chicot
Ashley
* Surface Created by
Natural Neighbors Interpolation
(ArcGIS 9.3/ 3-D Anayst Extension)
Total Average Change: -1.06 ft.
0 10 20 40 60 80
Miles
Legend
-48ft to -31ft
-30ft to -20ft
-19ft to -12ft
-11ft to -7ft
-6ft to -4ft
-3ft to -2ft
-1ft to 0ft
1ft to 2ft
3ft to 4ft
5ft to 6ft
7ft to 8ft
9ft to 12ft

Fig. 6

Saturated Thickness of the Alluvial Aquifer in ANRC Monitoring Wells, Spring 2011



Legend

- ANRC Wells
- Crowleys Ridge
- County Boundaries

Top number is Saturated Thickness (Feet)
Bottom number Percentage of Formation Saturated

Saturated Thickness less than 50% is in red.

0 12.5 25 50 75 100 Miles

Fig. 7

There were 252 alluvial aquifer wells monitored for water-level change in both 2010 and 2011, out of these 199 (78.9%) had a decline in the static water level. The overall water-level average change was -2.11 ft. The 2010 precipitation for Arkansas was approximately 39 inches, which is below the statewide average of 49.19 inches. Of 352 alluvial aquifer wells monitored in both 2006 and 2011, 221 (62.8%) of these had declining static water levels. Over a 10-year period of time from 2001 to 2011, 122 of 171 wells (71.3%) monitored showed declines in the alluvial aquifer. The average change over the entire aquifer during the 2010-2011 monitoring period was -2.11 feet; the 5-year average change was -1.06 feet; and the 10-year average change was -2.42 feet respectively. The greatest declines over the last 5 year period are apparent in Figure 5. Significant declines are seen in northwest and southeast Arkansas county, northwest Prairie county, and south-central Greene county. As seen in Figure 5 the deepest part of the cone of depression in the grand prairie has shifted to the northwest and is located in east-central Lonoke county and west-central Prairie county. Appendix A is a table of specific water level monitoring data for the alluvial aquifer. Appendix B is a series of selected hydrographs for alluvial aquifer wells. This water-level change data reflects the exceptionally high rainfall during the data collection period of spring 2010 to spring 2011. During such years, ground-water withdrawals are reduced, while recharge is typically greater.

Sparta/Memphis Aquifer

The Sparta/Memphis aquifer of Tertiary Age is located in the south, southeast, and east regions of Arkansas, as well as portions of Texas, Louisiana, and Mississippi. The aquifer outcrops in Dallas, Hot Spring, Saline, Grant, Nevada, Columbia, and Ouachita counties throughout the state. The Sparta/Memphis Sand aquifer thickness averages approximately 600 feet, ranging from a thickness of approximately 200 to 300 feet thick in the outcrop area, to about 900 feet thick in the southeastern part of the state. The majority of the area discussed in this report is a confined aquifer underlain by the Cane River Formation and overlain by the Cook Mountain Formation, both of which are effective confining units.

The Sparta aquifer in south Arkansas consists of two units, separated by the confining unit located between them: the upper Greensand aquifer and the lower El Dorado aquifer.

The Sparta is composed mainly of sand with considerable amounts of silt, clay, shale, and lignite, which are found in lenses throughout the unit. Lithologically, it varies considerably both vertically and laterally. Glauconite, a green hydrous potassium iron silicate mineral, is sometimes found in sand lenses in the upper levels of the aquifer, hence the name "Greensand".

The Memphis Sand aquifer in eastern Arkansas is part of a thick sand section in the middle and lower portions of the Claiborne Group. It includes the Sparta Sand, the predominantly sandy facies of the Cane River, and the Carrizo Sand. The Memphis aquifer is the major source of quality drinking water in the area.

Ground-water levels were collected from 227 water wells in the Sparta/Memphis aquifer throughout the south and east portions of Arkansas in 2010 and 2011. One hundred and forty-eight of those wells (65.2%) showed declines in the static water level. The average change over the entire aquifer during the 2010-2011 monitoring period was -2.36 feet. During the monitoring period from 2006 to 2011, 232 wells were monitored for water-level change, with 80 of these wells (34.5%) showed a decline in static water levels. During the 10-year monitoring period, 228 wells were monitored with 116 (51.0%) of these wells showing declines. Appendix C is a table of specific water level monitoring data for the Sparta/Memphis aquifer. For the Sparta/Memphis aquifer the USGS Conjunctive Use Optimization Model estimates that only 61.1 percent of the 2009 withdrawal of 142.42 Mgal/d is sustainable.

Data beginning in 1965 has been plotted as hydrographs for selected wells throughout the study area. Trend line analysis indicates that the general trend for most wells included in this study is that of a lowered potentiometric surface (Fig. 8). This decline in potentiometric surface in the aquifer can be attributed to a statewide increase in water use from 139 million gallons per day (Mgal/d) in 1970 to 142.42 Mgal/d in 2009. The estimated sustainable yield for the aquifer is 87 Mgal/d leaving an unmet demand of 55.42 Mgal/d. The most recent significant increase in water use from the Sparta has been for agricultural supply in the Grand Prairie and Cache Study Areas.

The exception to this rule is the data from the South Arkansas Study Area, where local education, conservation, and the use of excess surface water has led to significantly fewer declines, as well as some rebound in water levels in some areas. The potentiometric surface in five wells has actually risen over 90 feet respectively, over a 10-year period from 2000 to

2010. The figure below shows a graph of a well in the USGS Sparta Recovery Project. Appendix D is a series of hydrographs for Sparta/Memphis aquifer wells in Arkansas.

On April 21, 2008 the U.S. Department of the Interior awarded the Union County Water Conservation Board's Sparta Aquifer Recovery Project in southern Arkansas with the 2008 Cooperative Conservation Award, which recognizes the cooperative efforts of the board, along with many other contributors to this effort including the Arkansas Natural Resources Commission and the U.S. Geological Survey, Arkansas District. This project continues to be recognized across the nation as a success story in the field of natural resources conservation and protection.

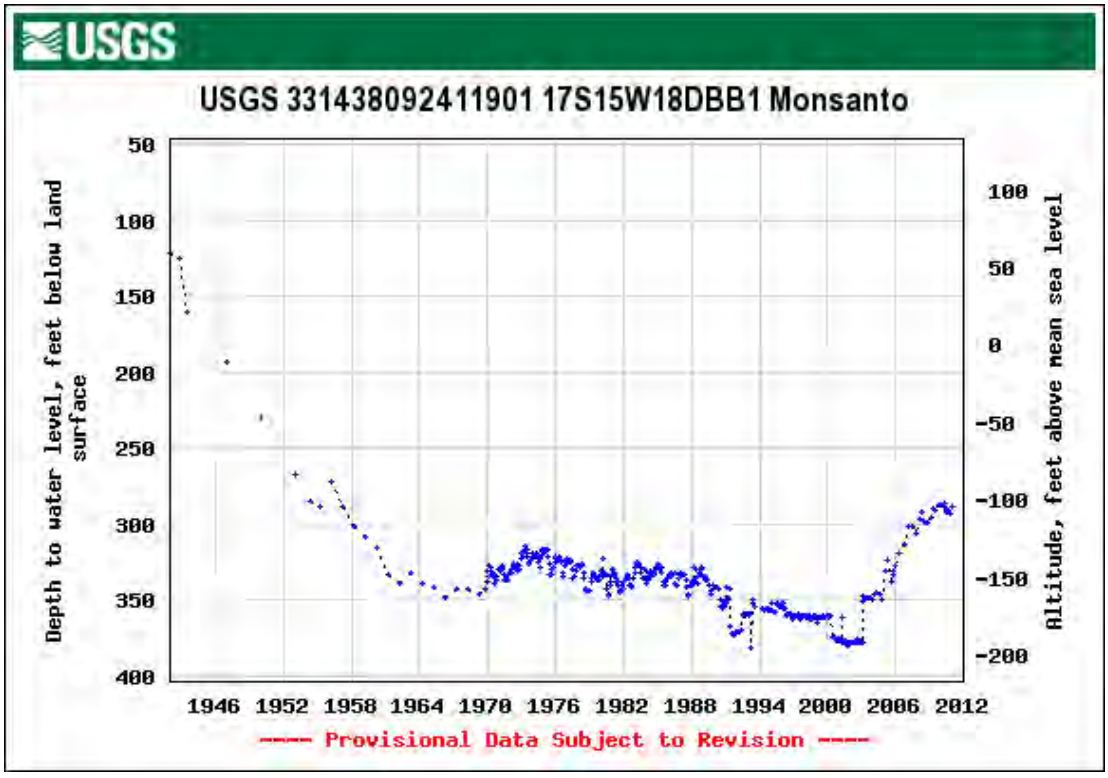


Table 2.

Nacatoch and Tokio Aquifers

During the spring of 2011 the USGS studied the Nacatoch Sand and Tokio Formation aquifers. The Nacatoch Sand and the Tokio Formation are both utilized in Sevier, Little River, Howard, Pike, Hempstead, Nevada and Clark counties in southwest Arkansas. The Nacatoch Sand is also utilized as an aquifer in Greene and Clay counties in northeast Arkansas. The monitoring wells there showed an average change of -1.2 feet over the last 20 years in the northeast, and various changes ranging from -1.68 feet in a 3-year period to +4.19 feet in a 6 year period.

Monitoring wells located in the Tokio Formation also showed fluctuations in the potentiometric surface that may be associated with changing water demands from the aquifer. A long-term USGS monitoring well in this formation showed an average change of -3.8 feet from 1971 to 2008. (Schrader and Blackstock 2010) Wells in the Tokio Aquifer showed an average decline of -2.79 over the last 3 year period. Below is a USGS hydrograph of a well monitored in the Nacatoch Sand in Clay County.

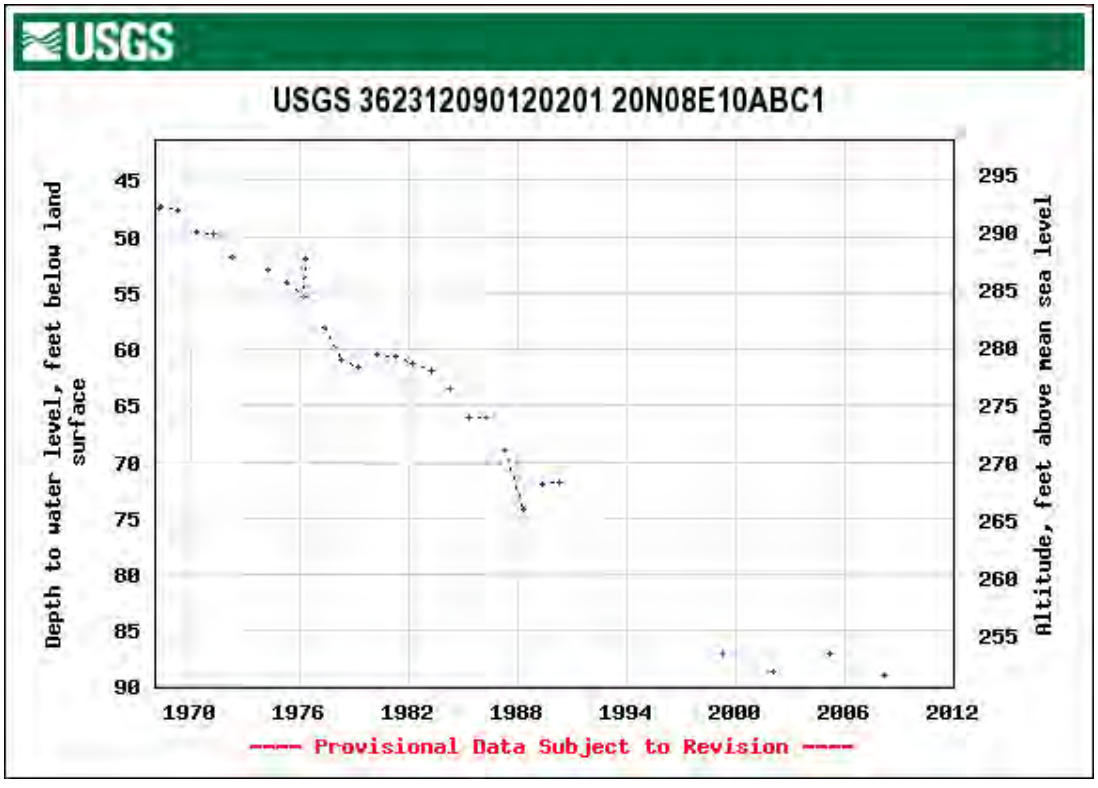
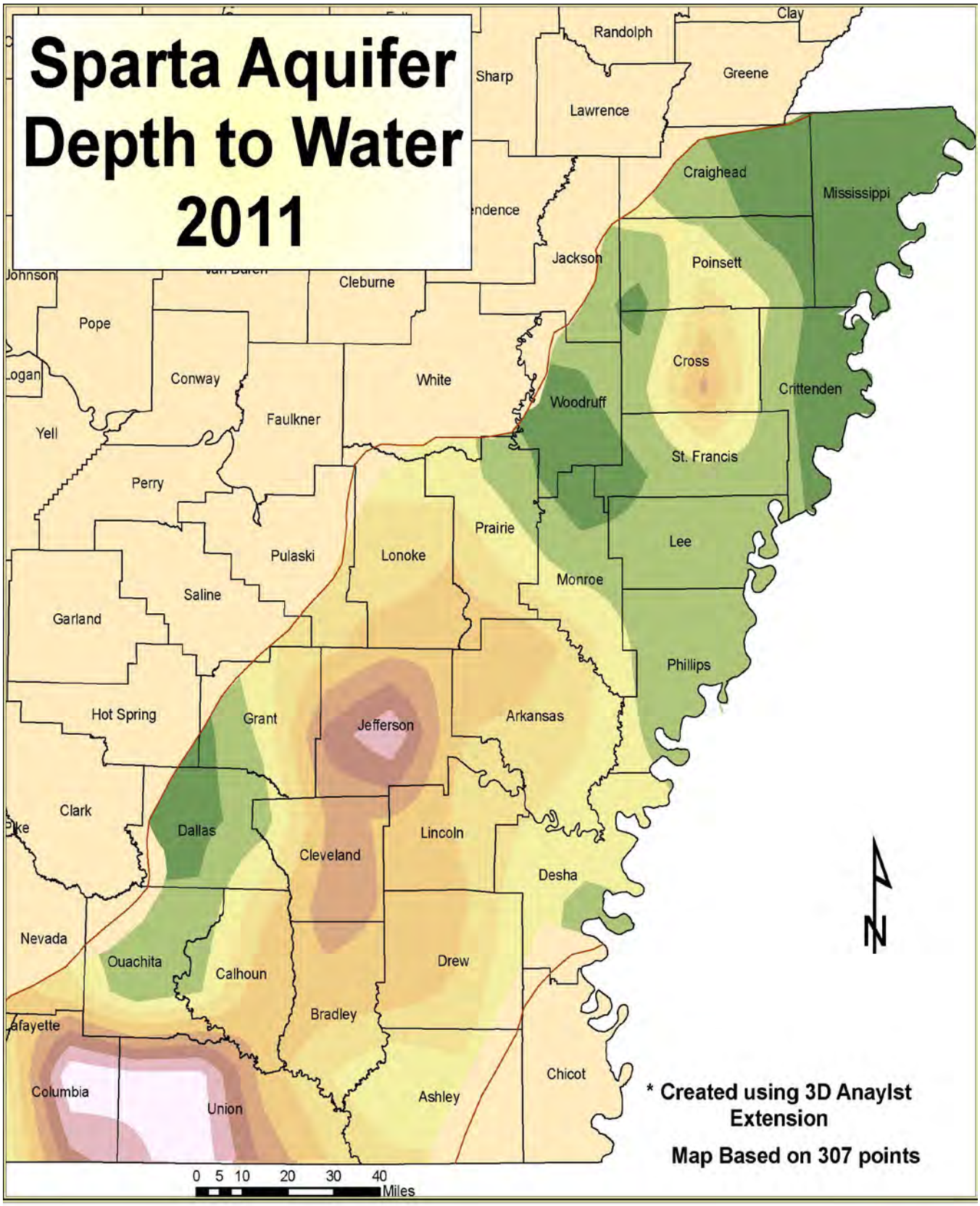


Table 3.



Legend

- Sparta Boundary
- 19ft to 49ft
- 50ft to 79ft
- 80ft to 109ft
- 110ft to 139ft
- 140 to 169ft
- 170ft to 199ft
- 200ft to 229ft
- 230ft to 259ft
- 260ft to 289ft
- County Boundaries

Fig. 8

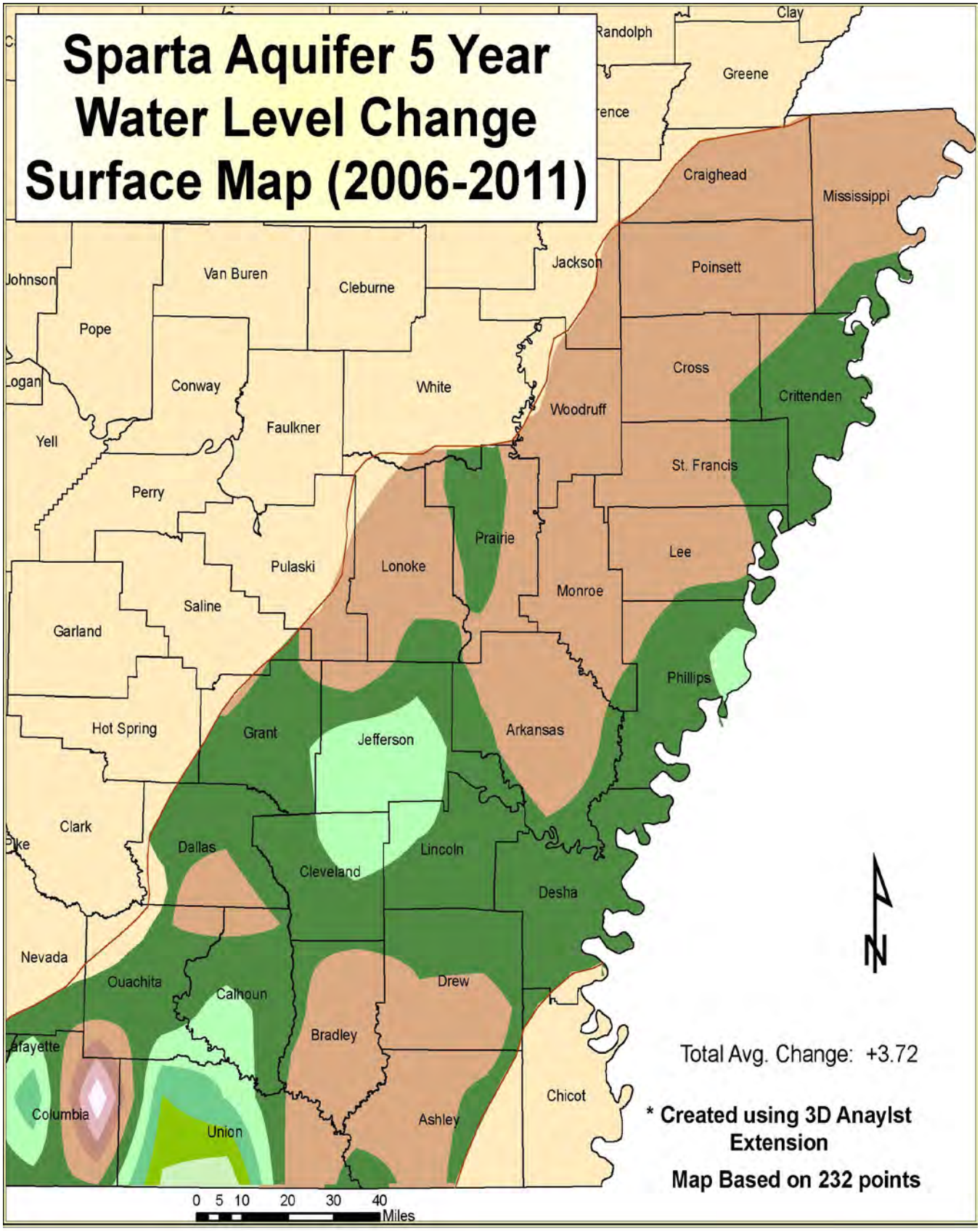

Sparta Aquifer 5 Year Water Level Change Surface Map (2006-2011)
Clay
Randolph
Greene
Craighead
Mississippi
Jackson
Poinsett
Johnson
Van Buren
Cleburne
Pope
Logan
Conway
White
Cross
Crittenden
Woodruff
Yell
Faulkner
St. Francis
Perry
Prairie
Lee
Pulaski
Lonoke
Monroe
Saline
Garland
Phillips
Hot Spring
Grant
Jefferson
Arkansas
Clark
Dallas
Lincoln
Cleveland
Desha
Nevada
Ouachita
Calhoun
Drew
Bradley
Lafayette
Chicot
Columbia
Union
Ashley
N
Total Avg. Change: +3.72
* Created using 3D Anaylst Extension
Map Based on 232 points
0 5 10 20 30 40
Miles
Legend
Sparta Boundary
-26ft to -19ft
-18ft to -12ft
-11ft to -5ft
-4ft to 0ft
1ft to 7ft
8ft to 14ft
15ft to 21ft
23ft to 27ft
28ft to 34ft
County Boundaries

Fig. 9

GROUND-WATER LEVELS AND WATER-LEVEL CHANGE

MONITORING PROTOCOL

The United States Geological Survey (USGS), in cooperation with the Arkansas Natural Resources Commission (ANRC), the Arkansas Geological Survey (AGS), and the Natural Resource Conservation Service (NRCS), monitor wells throughout the entire state for general ground water quality as well as to record water levels. In addition, several agencies continually monitor wells throughout the state in an effort to detect significant changes and/or trends in ground-water levels and ground-water quality. The ANRC has recently added to this monitoring network by constructing 50 wells primarily in the eastern part of the state used exclusively for monitoring purposes, with more to be added in the near future. (Fig.36) All water level data collected by the USGS and ANRC is collected in accordance with USGS data collection protocol.

Water-level measurements are made each spring for a designated portion of the monitoring network of approximately 1,000 wells statewide. A schedule of monitoring has been established based upon existing funding and the ANRC's management and protection responsibilities as mandated by the Arkansas General Assembly. The monitoring schedule has been set up to obtain data annually from the alluvial and Sparta/Memphis aquifers. Other aquifers with less usage are measured at least once every five years. Measurements of water levels in the alluvial and Sparta/Memphis aquifers are taken each spring to obtain as close to true static water level data as possible. This allows the water level data to be the least affected by summer pumping. Measurements in the alluvial aquifer are obtained each spring and fall by the NRCS and are helpful in evaluating the zones of drawdown that result from seasonal pumping for irrigation of crops.

SOUTH ARKANSAS CRITICAL GROUND-WATER AREA

The South Arkansas Critical Ground-Water Area is composed of the Sparta aquifer in Bradley, Calhoun, Columbia, Ouachita, and Union Counties. In 1996 this area was the first to be designated as a Critical Ground Water Area for the Sparta aquifer pursuant to the Arkansas Groundwater Protection and Management Act of 1991.

Continued monitoring of Sparta aquifer ground-water levels show that some ground-water levels in this region have stabilized or risen, while others continue to decline. The South Arkansas Study Area as a whole had an average change of -0.78 feet during the 2010-2011 monitoring period, with 47 of the 81 wells monitored showing declines (Fig.10). The diminishing declines in average change seem to indicate that the education, conservation, and development of surface water from the Ouachita River in Union county have made an impact on ground-water levels.

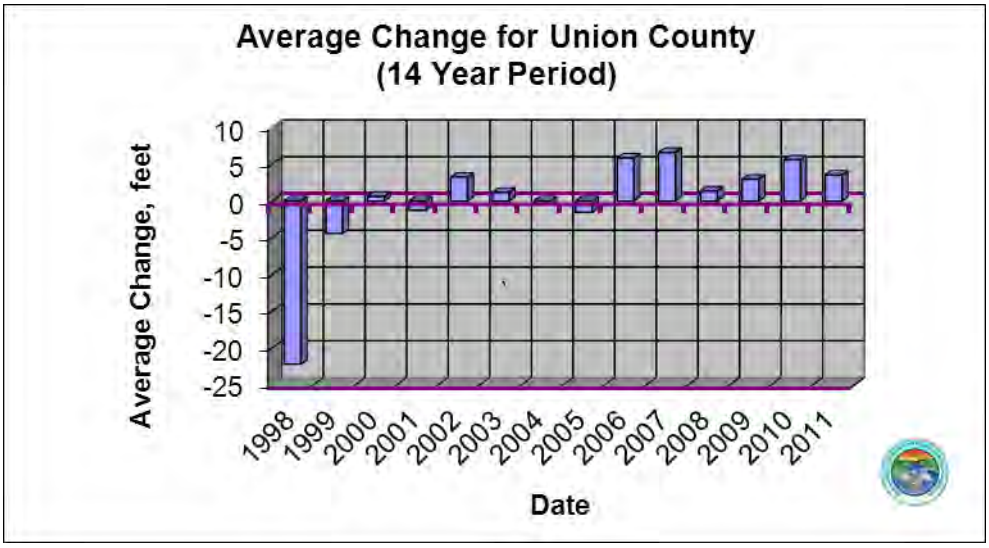


Table 4.

The USGS reports that water levels have risen in all eight of the Sparta Recovery wells since the summer of 2003. The “Monsanto” well is a good example of the recovery because it is located near the center of the cone of depression in this area. A graph of this well can be seen in table 3 on page 24.

Since the lowest water level recorded in this well 10 years ago, to the level recorded in December of 2010, the cone of depression in this study area has rebounded more than 90 feet.

During the 5-year monitoring period, from 2006 to 2011, the South Arkansas Study Area had an average change of +7.68 feet. 83 wells were monitored over this time, with 21 of them showing a decline in static water levels. Union county had an average change of +19.41 feet during this time. (Fig. 11)

Though the trend of water level increases in the South Arkansas Study Area have been encouraging, many of the wells in the area still show the potentiometric surface below the top of the formation. This criteria alone is enough for the study area to keep the designation of a Critical Ground-Water Area. The USGS ground-water flow models indicate that the withdrawals in Union county must be reduced to 28 percent of the 1997 pumping rate (4.84 Mgal/d) to maintain water levels at or above the top of the Sparta Sand. (Hays, 2000) Union county's use of 7.91 Mgal/d in 2009 is still 3.07 Mgal/d (38.8%) unmet demand.

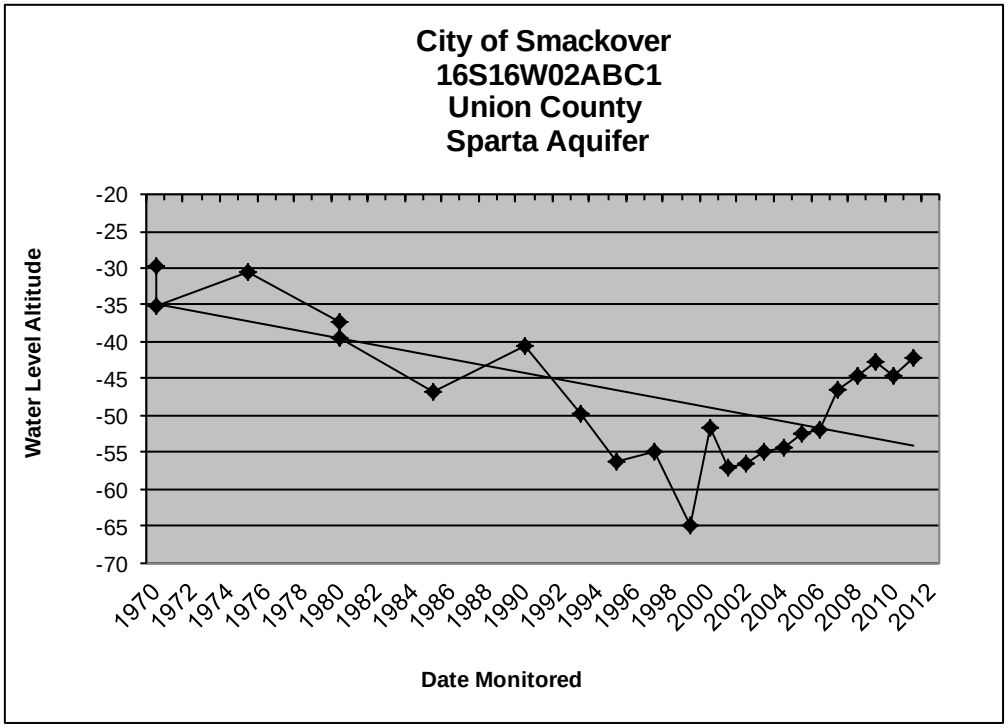


Table 5.

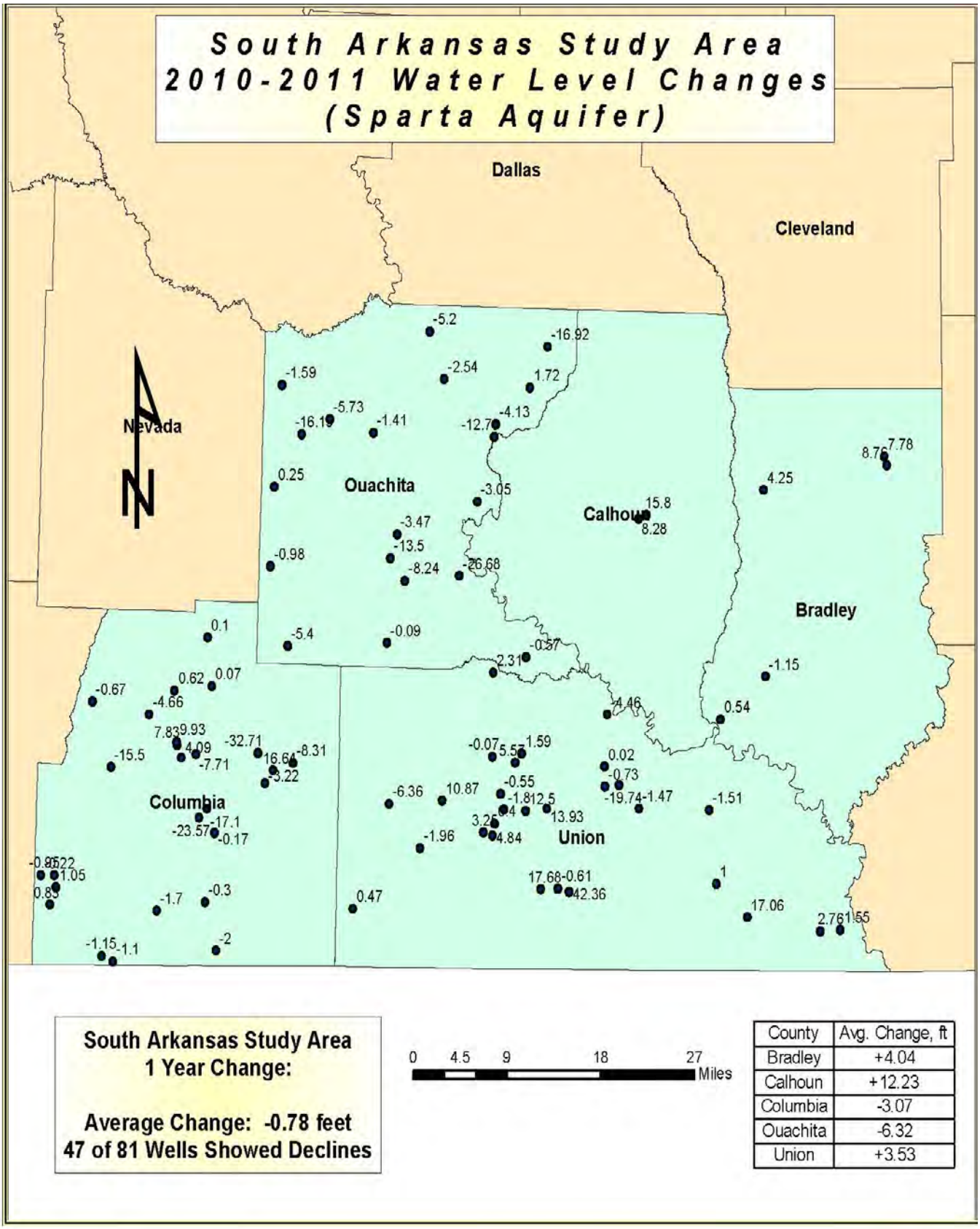
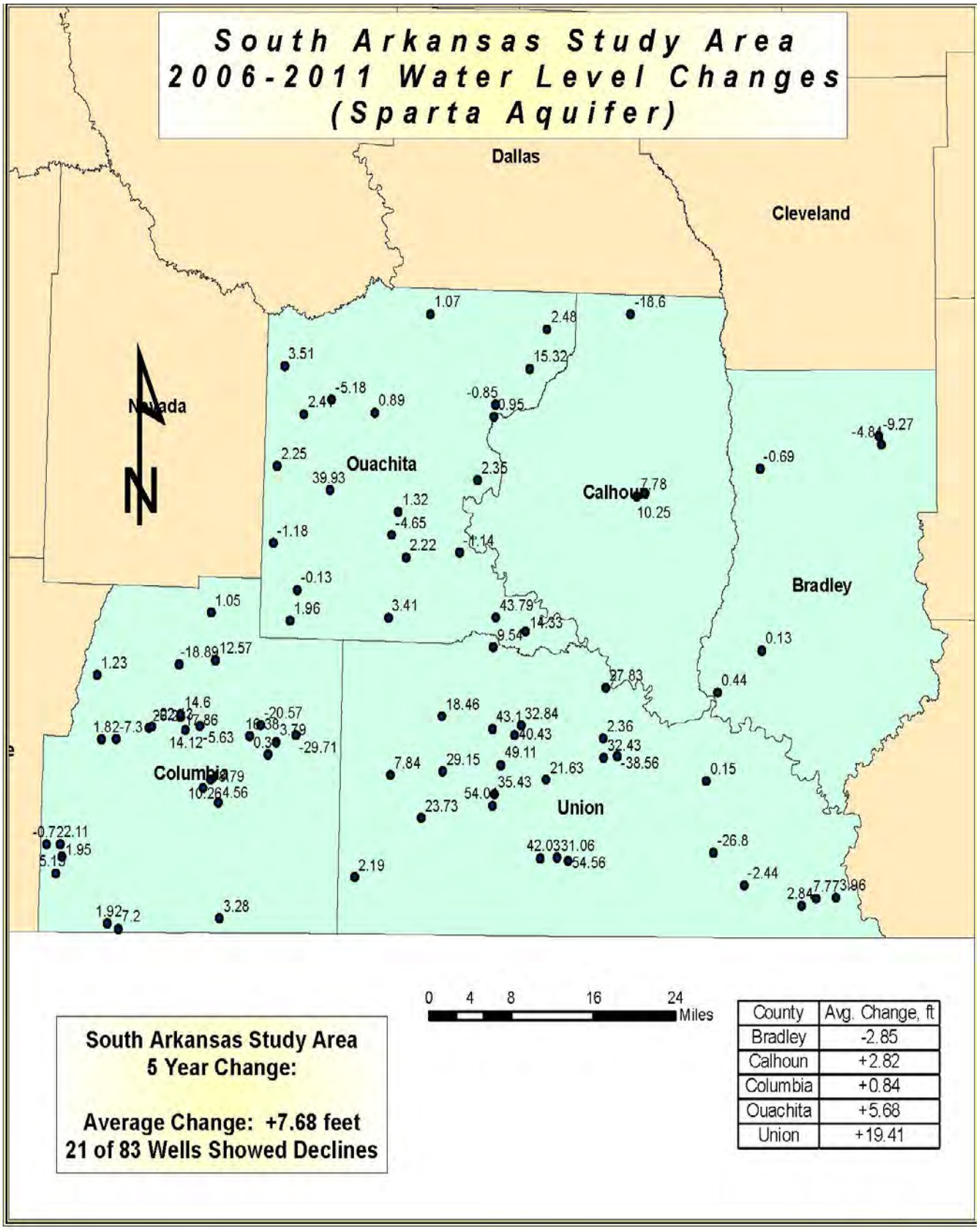

South Arkansas Study Area
2010-2011 Water Level Changes
(Sparta Aquifer)
Dallas
Cleveland
Nevada
Ouachita
Calhoun
Bradley
Columbia
Union
-5.2
-16.92
-1.59
-2.54
1.72
-5.73
-16.19
-1.41
-4.13
-12.7
0.25
-3.05
4.25
7.78
15.8
8.28
-3.47
-13.5
-0.98
-8.24
-26.68
0.1
-5.4
-0.09
-0.57
2.31
-1.15
-0.67
0.62
0.07
-4.66
4.46
0.54
7.83
9.93
-32.71
-8.31
-15.5
4.09
-7.71
16.64
-3.22
-0.07
5.57
1.59
0.02
-0.73
-6.36
10.87
-0.55
-1.81
2.5
-19.74
-1.47
-1.51
-17.1
-23.57
-0.17
3.25
4
13.93
-1.96
4.84
-0.85
22
1.05
0.85
17.68
-0.61
42.36
1
-1.7
-0.3
0.47
17.06
2.76
1.55
-1.15
-1.1
-2
South Arkansas Study Area
1 Year Change:
Average Change: -0.78 feet
47 of 81 Wells Showed Declines
0 4.5 9 18 27 Miles
County | Avg. Change, ft
Bradley | +4.04
Calhoun | +12.23
Columbia | -3.07
Ouachita | -6.32
Union | +3.53
Legend
Wells
South Arkansas Study Area

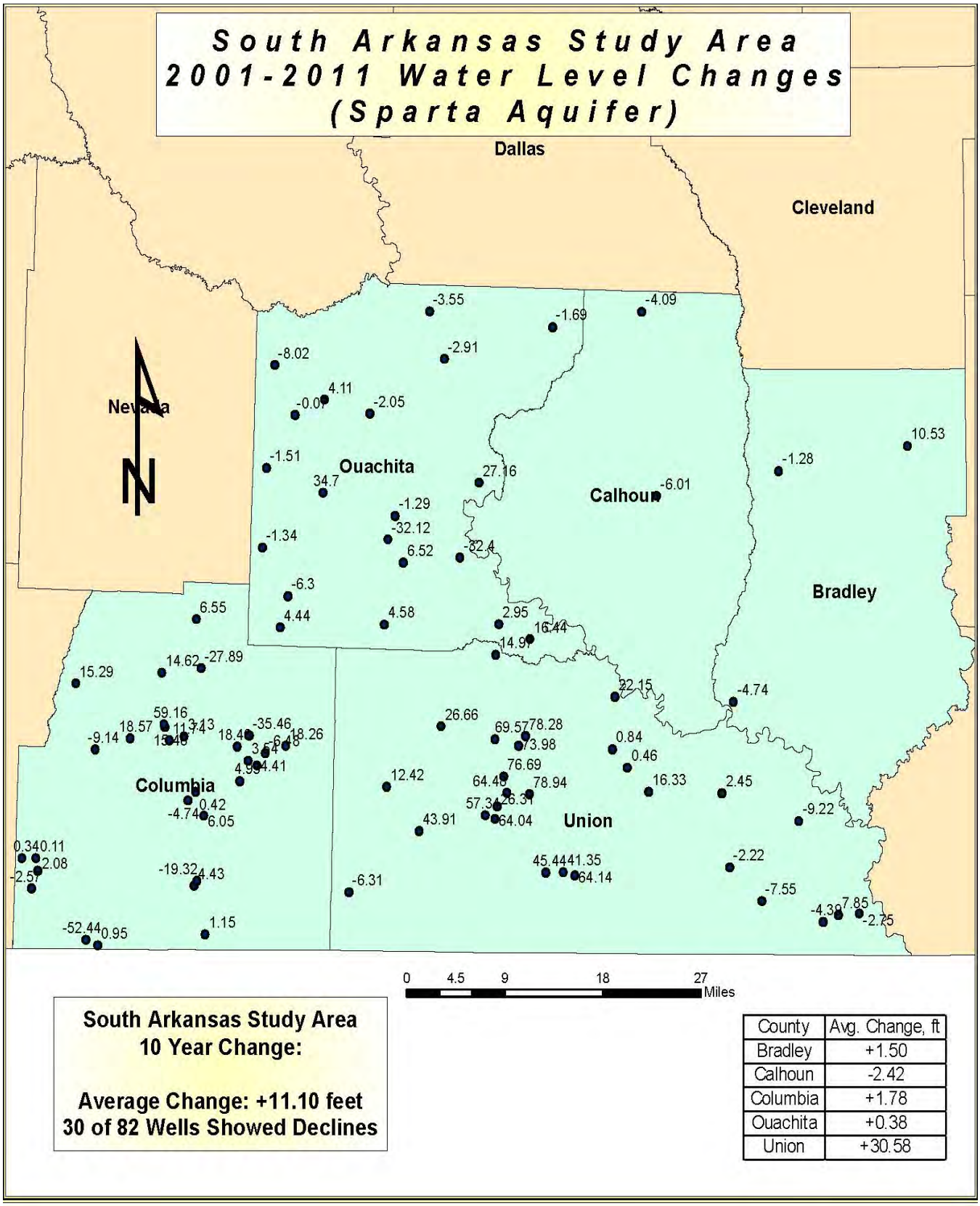
Fig. 10



Legend

- Wells
- South Arkansas Study Area

Fig. 11



Legend

- Wells
- South Arkansas Study Area

Fig. 12

GRAND PRAIRIE CRITICAL GROUND-WATER AREA

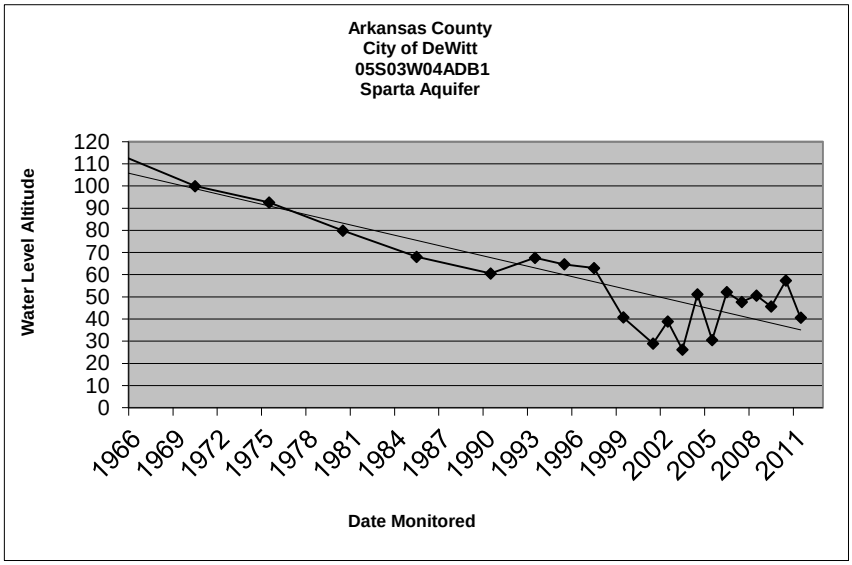
The designation “Grand Prairie” varies according to authors, but is commonly used to designate the area bounded on the south and west by the Arkansas River and on the north and east by the White and Little Red Rivers. (Ackerman, 1996) (Fig.1) This area was designated as a critical ground-water area for the alluvial aquifer and for the Sparta/Memphis aquifer in July 1998. Since designation, water levels have continued to decline throughout much of the Grand Prairie in both the alluvial and Sparta/Memphis aquifers.

During the 2010-2011 monitoring period there were 60 wells monitored with 45 (75.0%) showing average declines in the Sparta/Memphis aquifer throughout the counties in this study area. The area’s average one-year change was -5.84 feet. (Fig.12)

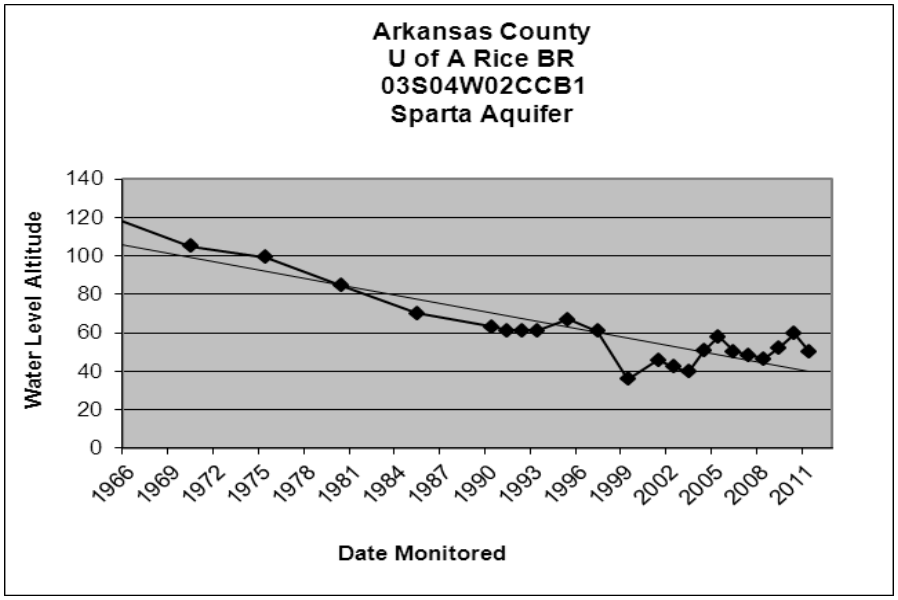
The entire Grand Prairie Study Area averaged a +1.93 foot change during this 5-year period from 2006 to 2011 in the Sparta/Memphis aquifer, with 22 of 63 (34.9%) of the wells monitored showing declines. (Fig.13)

Over the 10-year period from 2001 to 2011 the Sparta/Memphis aquifer has shown an average change of +3.60 feet. There were 77 wells monitored during this time, with 29 (37.7%) showing declines in water level. (Fig. 14)

Withdrawals form the Sparta Aquifer in Arkansas county have increased from an estimated 20.3 Mgal/d in 1970 (Halburg, 1972) to a reported water use of 37.92 Mgal/d in 2009, an increase of 87% over this time period. Also the relatively small amount of rainfall in 2010 (6^{th} smallest annual amount recorded by the NWS) resulted in the need for more pumping in this area from the aquifers. This explains the -5.84 foot decline for the one-year time period throughout the study area.



. Table 6.



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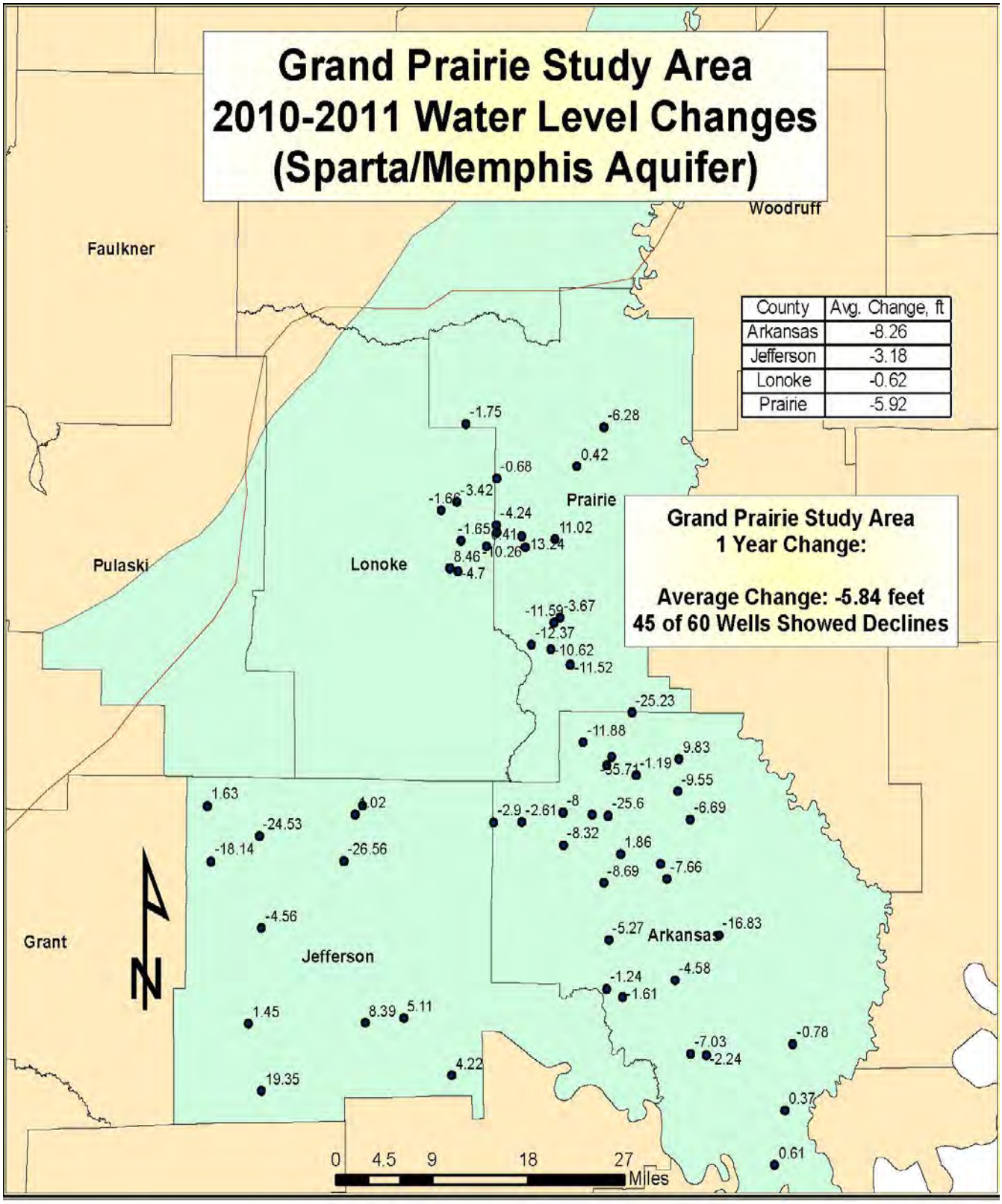
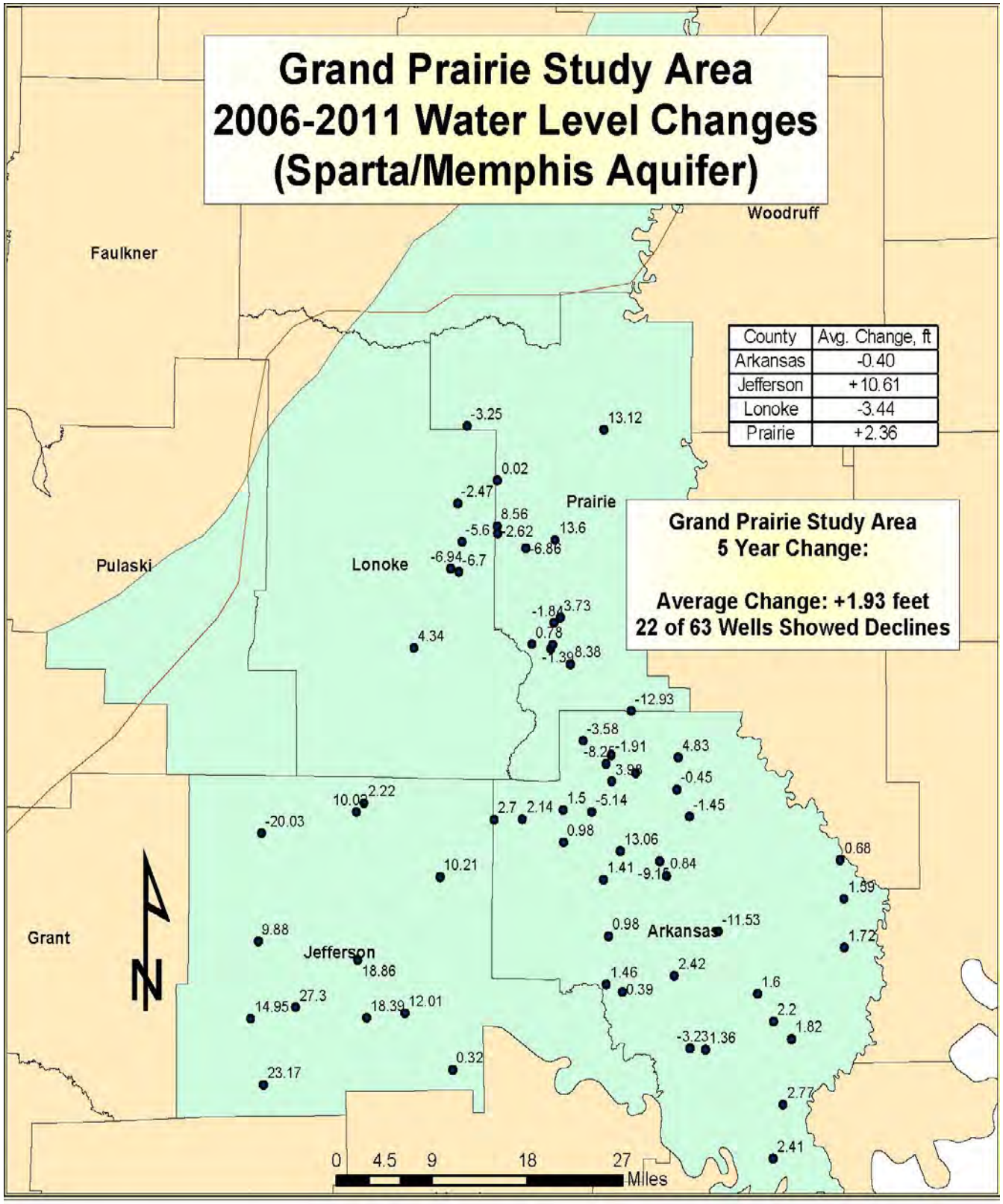


Legend

- Wells
- Sparta Boundary
- Grand Prairie Study Area

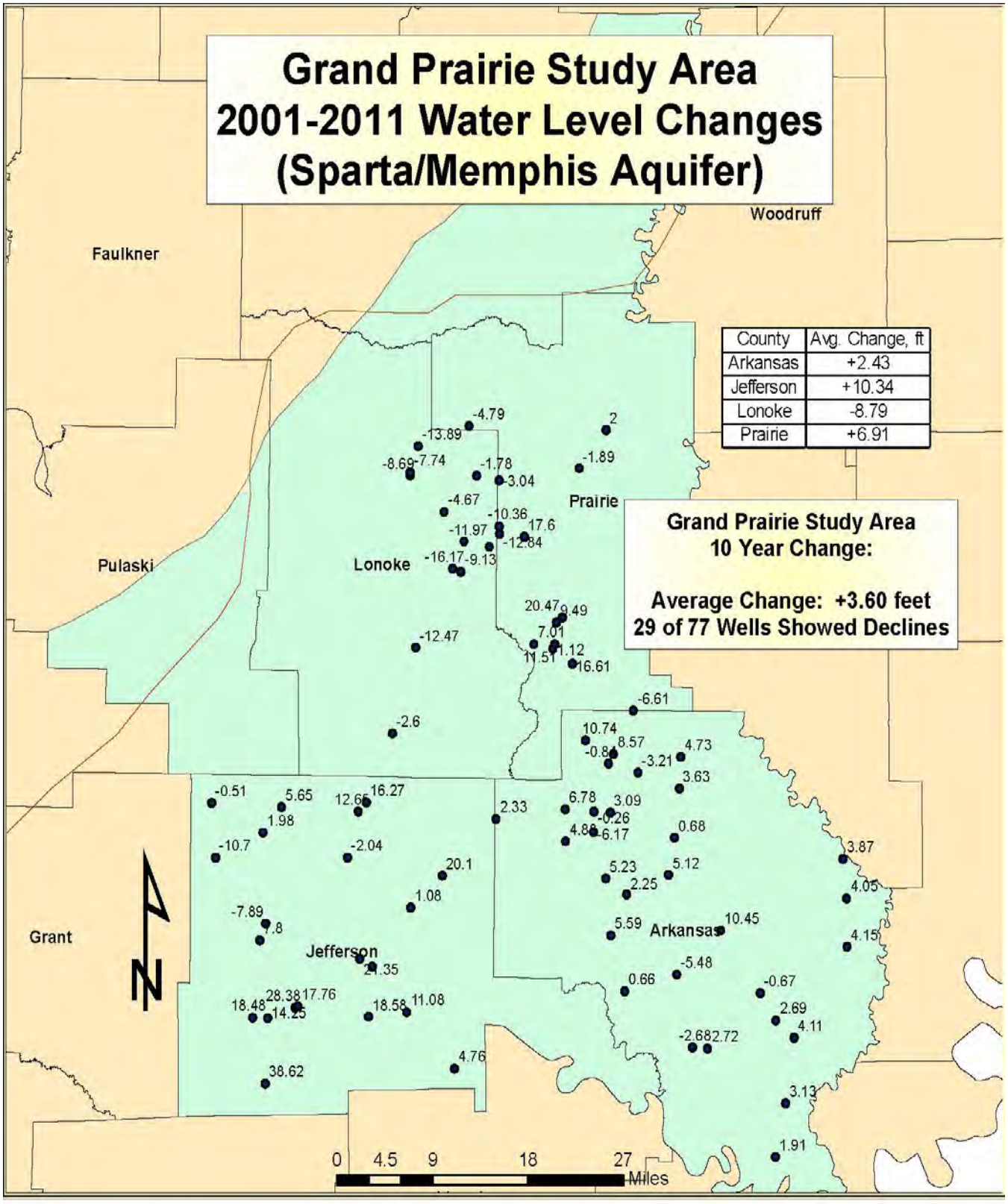
Fig. 13



Legend

- Wells
- Sparta Boundary
- Grand Prairie Study Area

Fig. 14



Legend

- Wells
- Sparta Boundary
- Grand Prairie Study Area

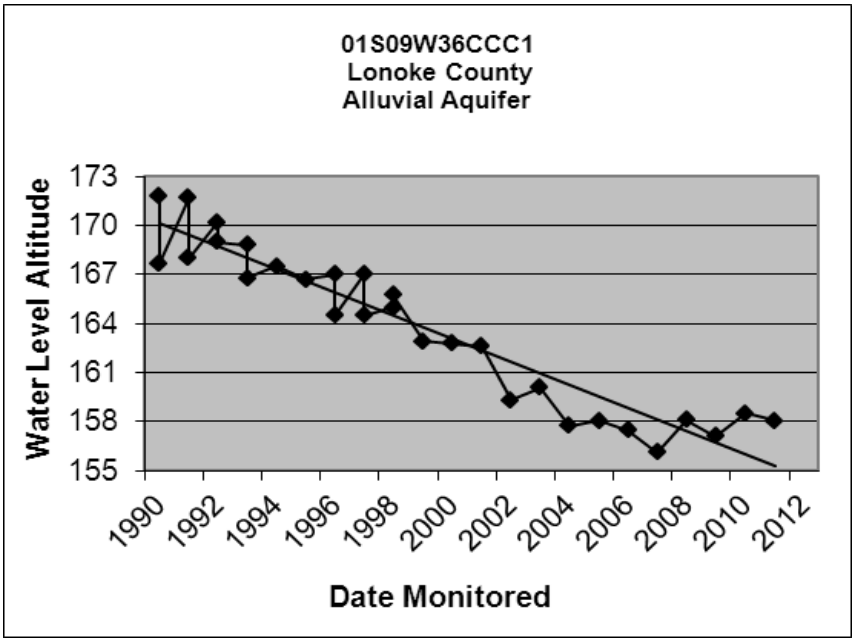
Fig. 15

In the alluvial aquifer Grand Prairie Critical Ground Water Area, there were 89 wells monitored with 67 (75.3%) showing declines from 2010 to 2011. The average change for the entire study area was -2.21 feet. (Fig.16)

During the 5-year monitoring period from 2006 to 2011, the Grand Prairie Study Area had an average change of -0.43 feet with 49 of the 98 wells (50.0%) monitored showing declines. (Fig.17)

From 2001 to 2011 the alluvial aquifer in the Grand Prairie Study Area had an average change of -0.08 feet, with 17 of 31 (54.8%) wells monitored showing declines. (Fig.18)

For the alluvial aquifer in the Grand Prairie Study Area, the USGS Conjunctive Use Optimization Model indicated that the ground-water use in this area is substantially more than is sustainable. Based on the 1997 pumping rates, Jefferson County could sustain 97.8% of the counties reported use for 2009, Prairie County 84.4%, Arkansas County 53.5%, and Lonoke County 55.8% respectively. (Fig.40) The Grand Prairie Irrigation Project, once in place, is expected to significantly help reduce these counties' unmet demands for irrigation.



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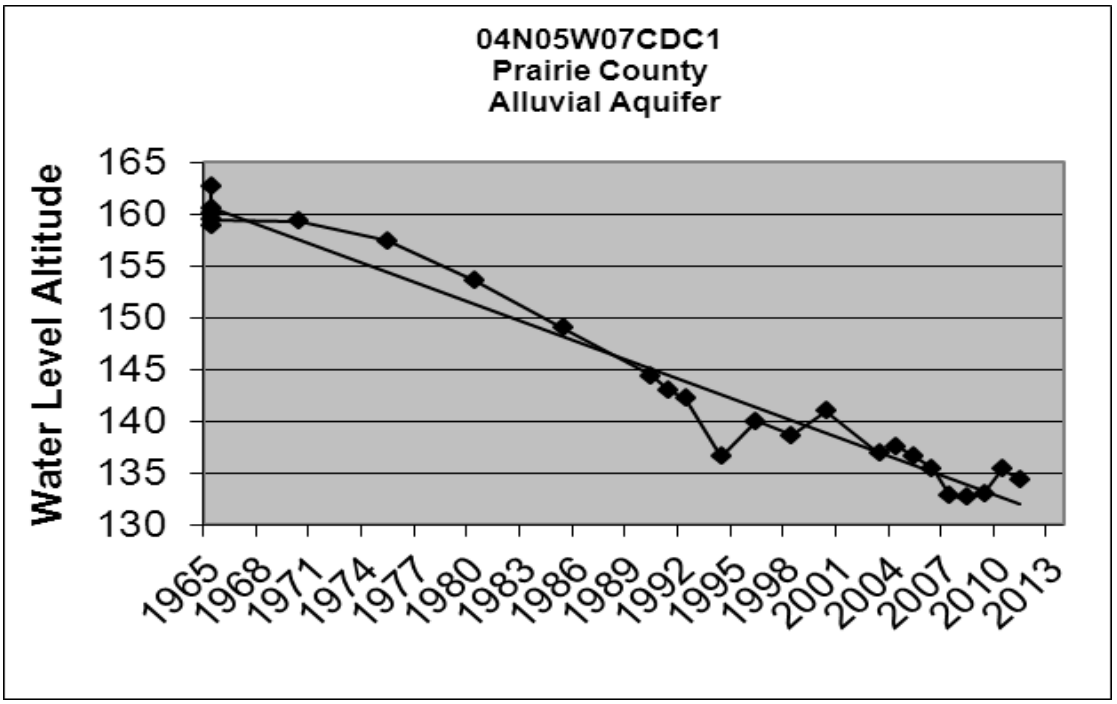

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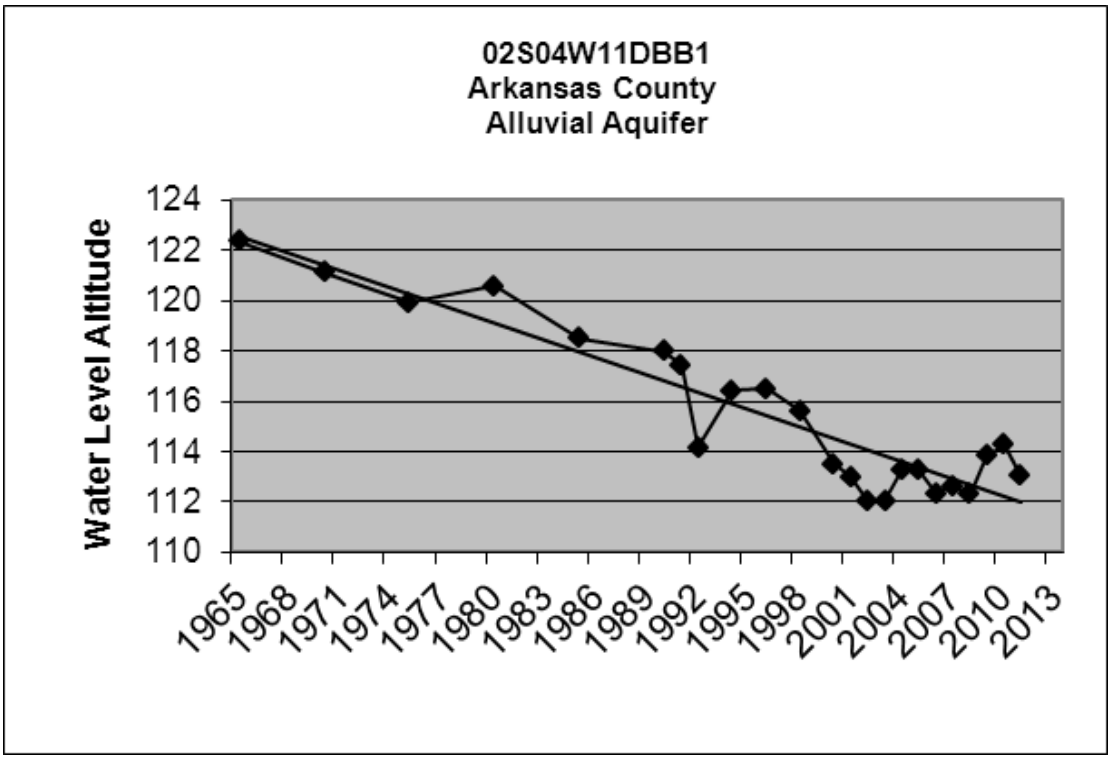
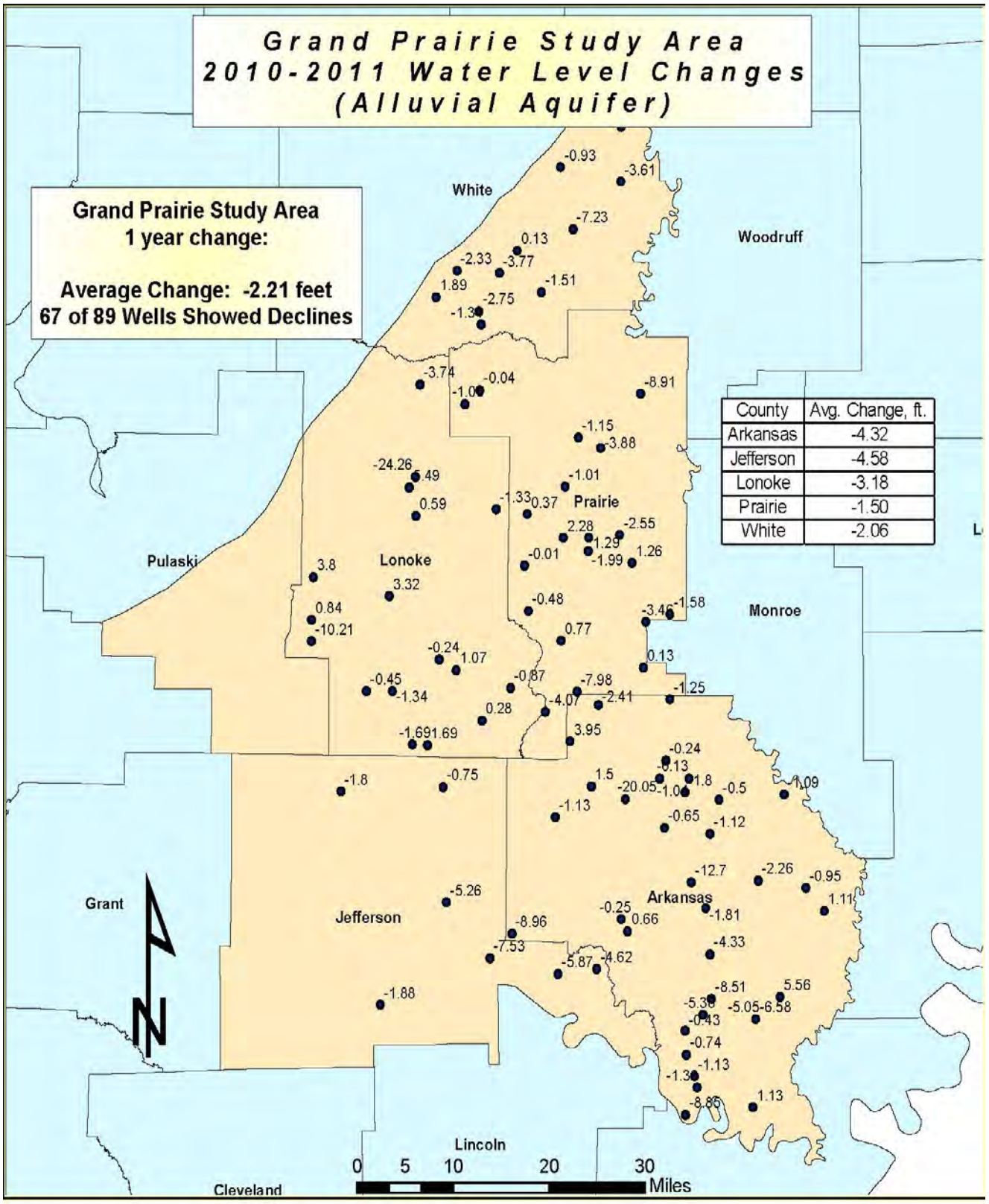


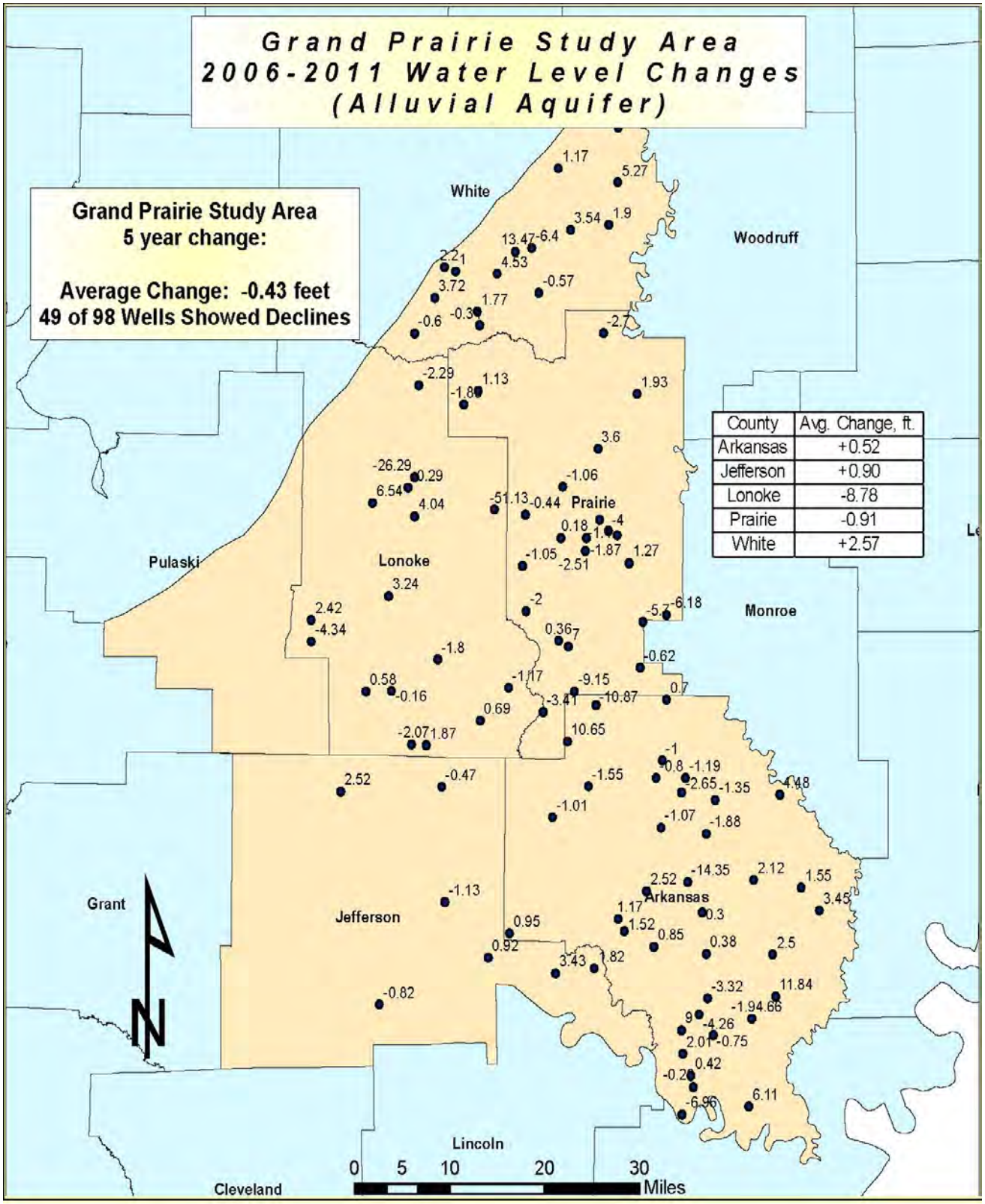
Table 10.



Legend

- Wells
- Grand Prairie Study Area

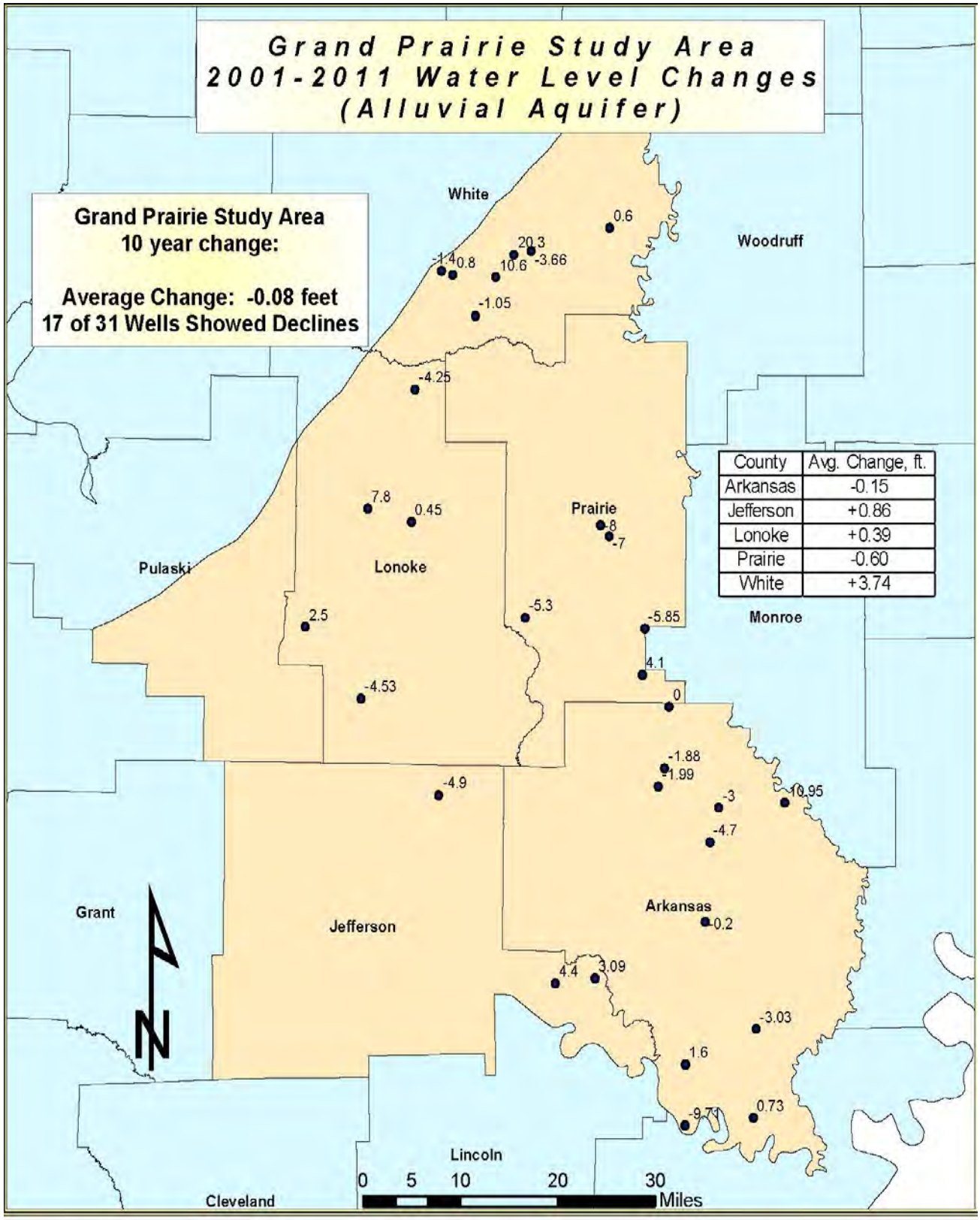
Fig. 16



Legend

- Wells
- Grand Prairie Study Area

Fig. 17



County	Avg. Change, ft.
Arkansas	-0.15
Jefferson	+0.86
Lonoke	+0.39
Prairie	-0.60
White	+3.74

Legend

- Wells
- Grand Prairie Study Area

Fig. 18

CACHE CRITICAL GROUND WATER AREA

The Cache Study Area is defined as the 7300 square mile region between Crowley's Ridge to the east, the Fall Line to the west, the state line to the north, and the White River to the south. (Ackerman, 1996) This study area includes portions of Craighead, Poinsett, Cross, St. Francis, Lee, Phillips, Monroe, Woodruff, Jackson, Lawrence, Greene, and Clay Counties. (Fig.1) Areas west of Crowley's Ridge in the Cache Study Area have been designated a Critical Ground Water Area as of 2010. (Fig.3)

Monitoring of the alluvial aquifer in this study area from 2010 to 2011 showed declines in 77 of the 94 wells monitored (81.9%). The study area showed an average change of -2.01 feet during this time. (Fig. 19)

The alluvial aquifer in the Cache Study Area was also evaluated for change in water levels for a 5-year time period from 2006 to 2011. For this period the study area had an average change of -1.65 feet, with 95 of the 127 (74.8%) wells monitored showing declines. (Fig.20)

Average change was also compared in the alluvial aquifer for a 10-year timeframe for the Cache Study Area. Of the 64 wells monitored, 56 of these (87.5%) showed an average decline. The average change for the study area over this time was a decline of -4.30 feet. (Fig.21)

Based on the USGS's Conjunctive-Use Optimization Models of the alluvial aquifer, sustainable yields were acquired based on the 1997 pumping rates. The percentage of the sustainable yield for each county in the model is shown in figure 40 and is based on the 2009 withdrawals. Water-use data shown in Table 21 is the reported use for 2009. Based on the reported water use for 2009, as well as the sustainable yields estimated from the USGS models, the percentage of water use that was sustainable in 2009 for each county in the Cache Study Area are as follows; Craighead County 66.4%, Cross County 37.9%, Greene County 34.5%, Jackson County 61.4%, Lawrence County 100%, Lee County 26.3%, Monroe County 67.2%, Phillips County 36.7%, Poinsett County 35.3%, Randolph County 59.3%, Woodruff County 97.7% and St. Francis County 27.2% respectively. It should be noted that Clay County was "allowed" 100% of its 1997 pumping rate by the USGS model as part of the optimization. When the County's pumping rate went from 234.9 Mgal/d in 1997 to 284.35 Mgal/d in 2009, this raised the sustainable yield to 82.6% from the 35% projected in 2008. The Clay County reported water use for irrigation from 2008 was found to be over-estimated,

and was modified by a Water Use Specialist at the USGS Arkansas Water Science Center. While the 234.9 Mgal/d in 1997 may not have been the maximum volume sustainable in this county, the model assigned it 100% sustainable as part of the optimization. Another factor that should be considered is the hydrogeologic boundary that is Crowley's Ridge. Due to the separation of the alluvial aquifer by the ridge in some counties in the Cache Study Area, the sustainable yields may be even lower west of the ridge, as the total county volume of groundwater was taken into account for the 1997 and 2009 pumping rates.

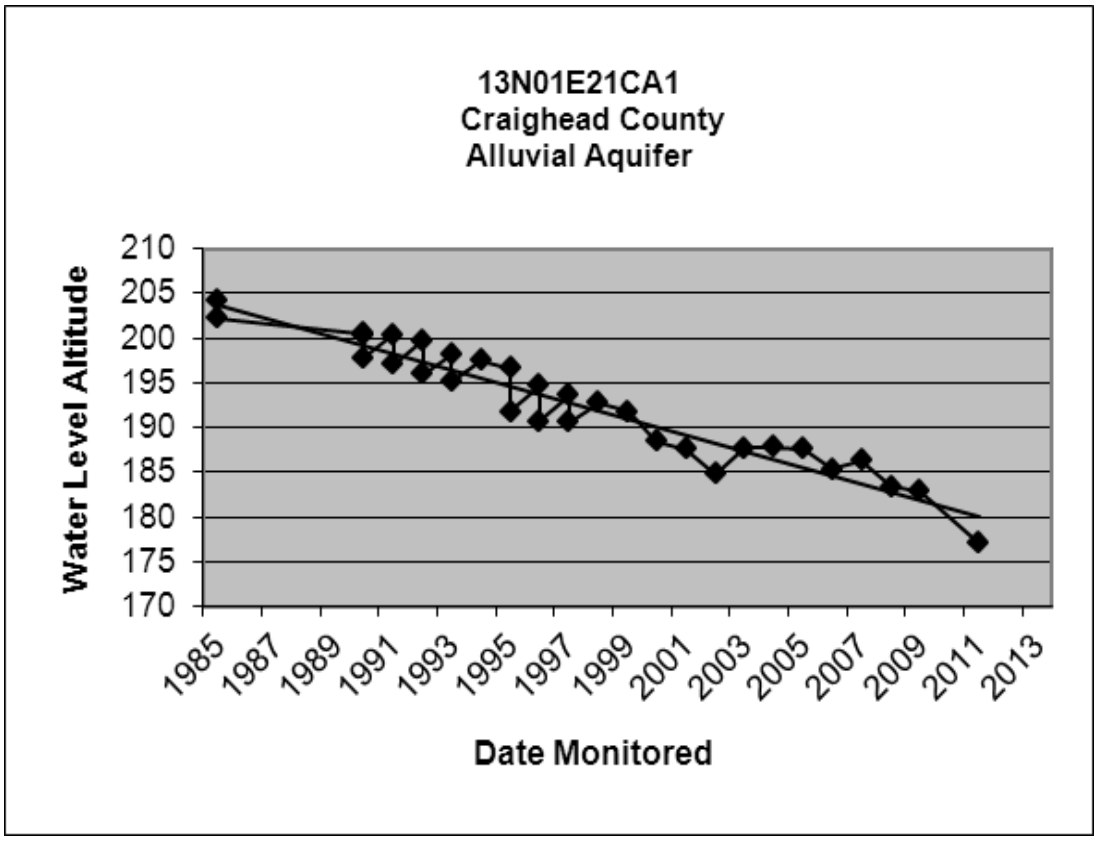


Table 11.

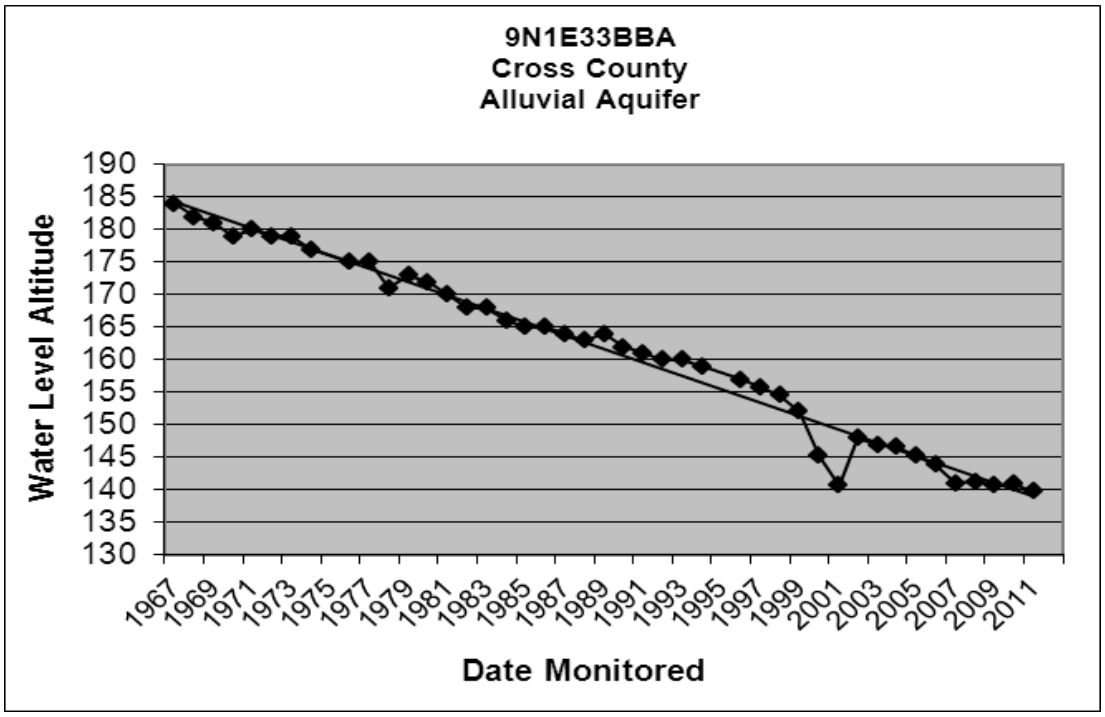


Table 12.

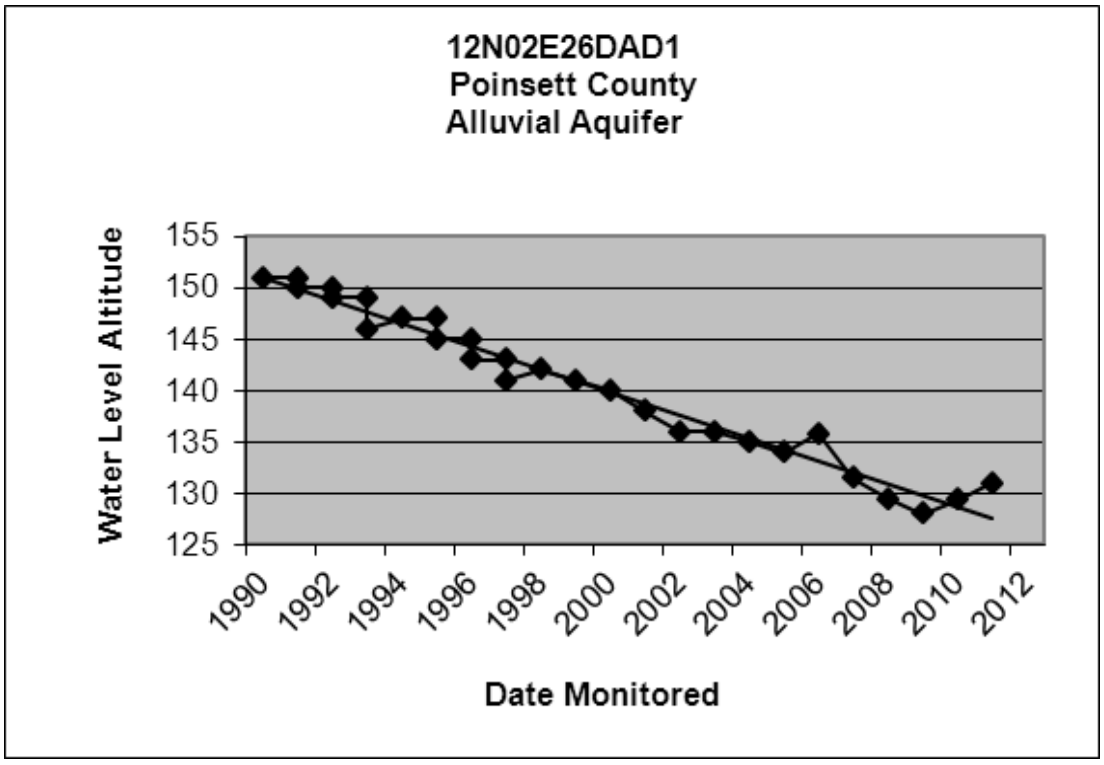
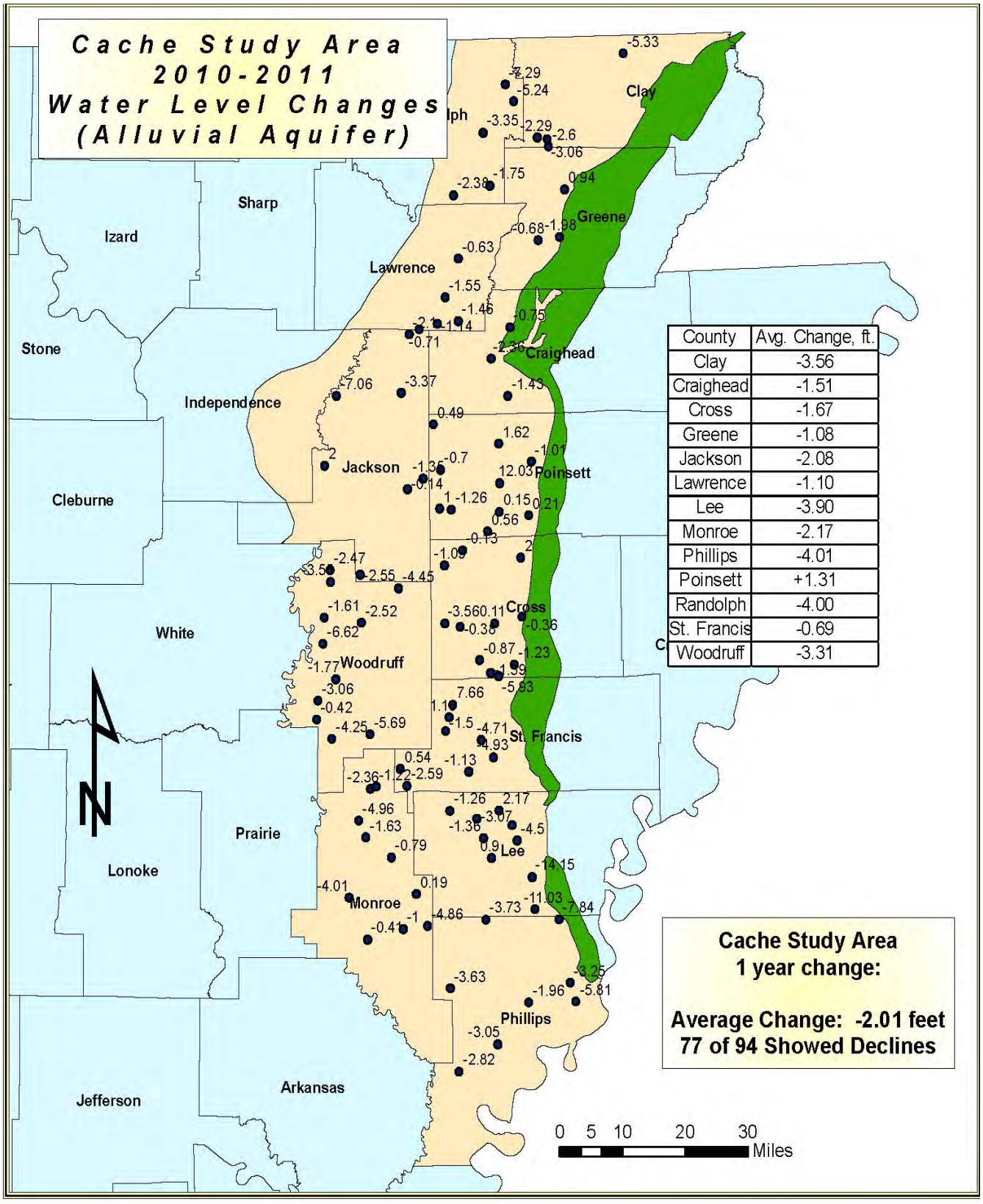


Table 13.

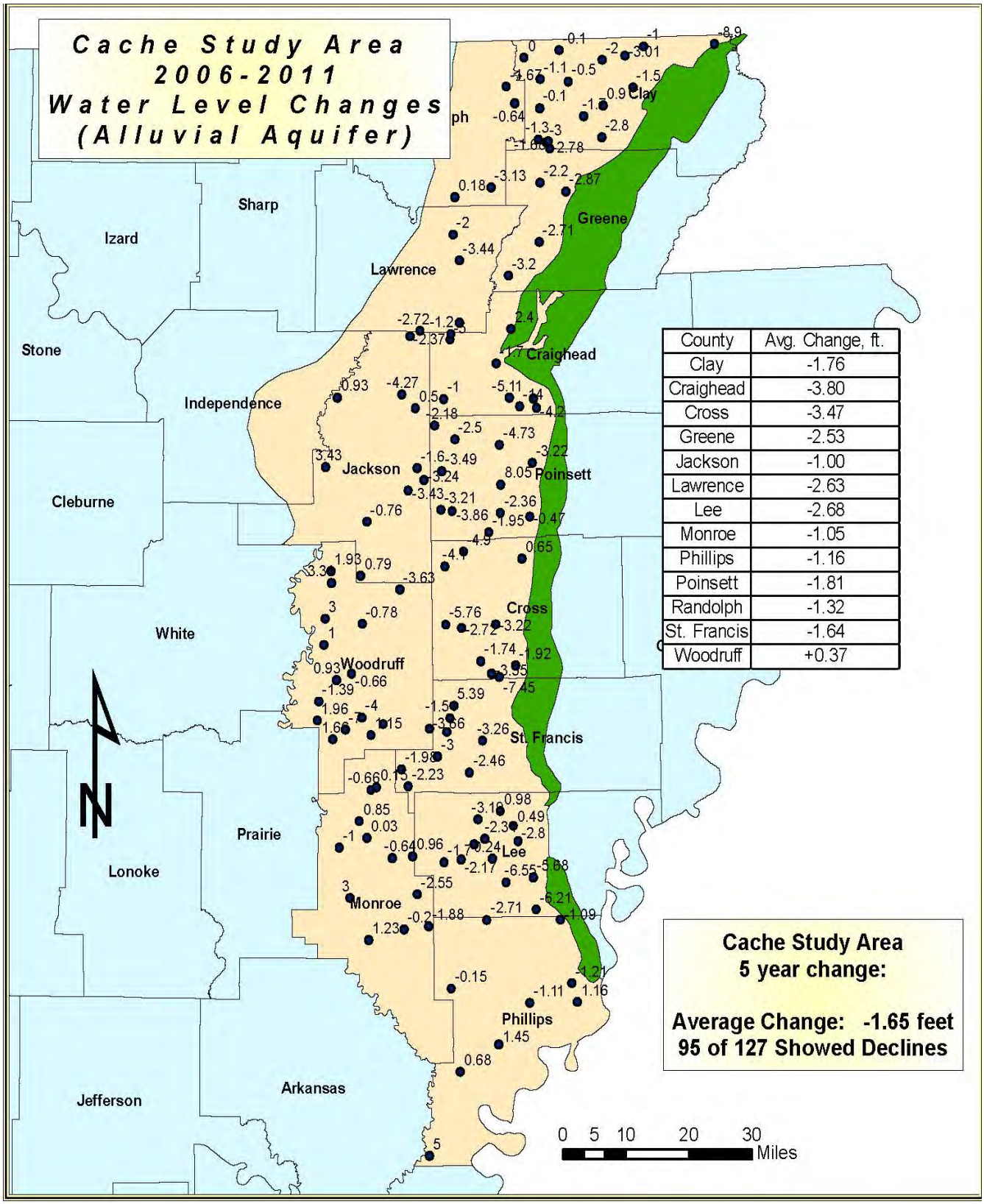


County	Avg. Change, ft.
Clay	-3.56
Craighead	-1.51
Cross	-1.67
Greene	-1.08
Jackson	-2.08
Lawrence	-1.10
Lee	-3.90
Monroe	-2.17
Phillips	-4.01
Poinsett	+1.31
Randolph	-4.00
St. Francis	-0.69
Woodruff	-3.31

Legend

- Wells
- Crowleys Ridge
- Cache Study Area

Fig. 19



County	Avg. Change, ft.
Clay	-1.76
Craighead	-3.80
Cross	-3.47
Greene	-2.53
Jackson	-1.00
Lawrence	-2.63
Lee	-2.68
Monroe	-1.05
Phillips	-1.16
Poinsett	-1.81
Randolph	-1.32
St. Francis	-1.64
Woodruff	+0.37

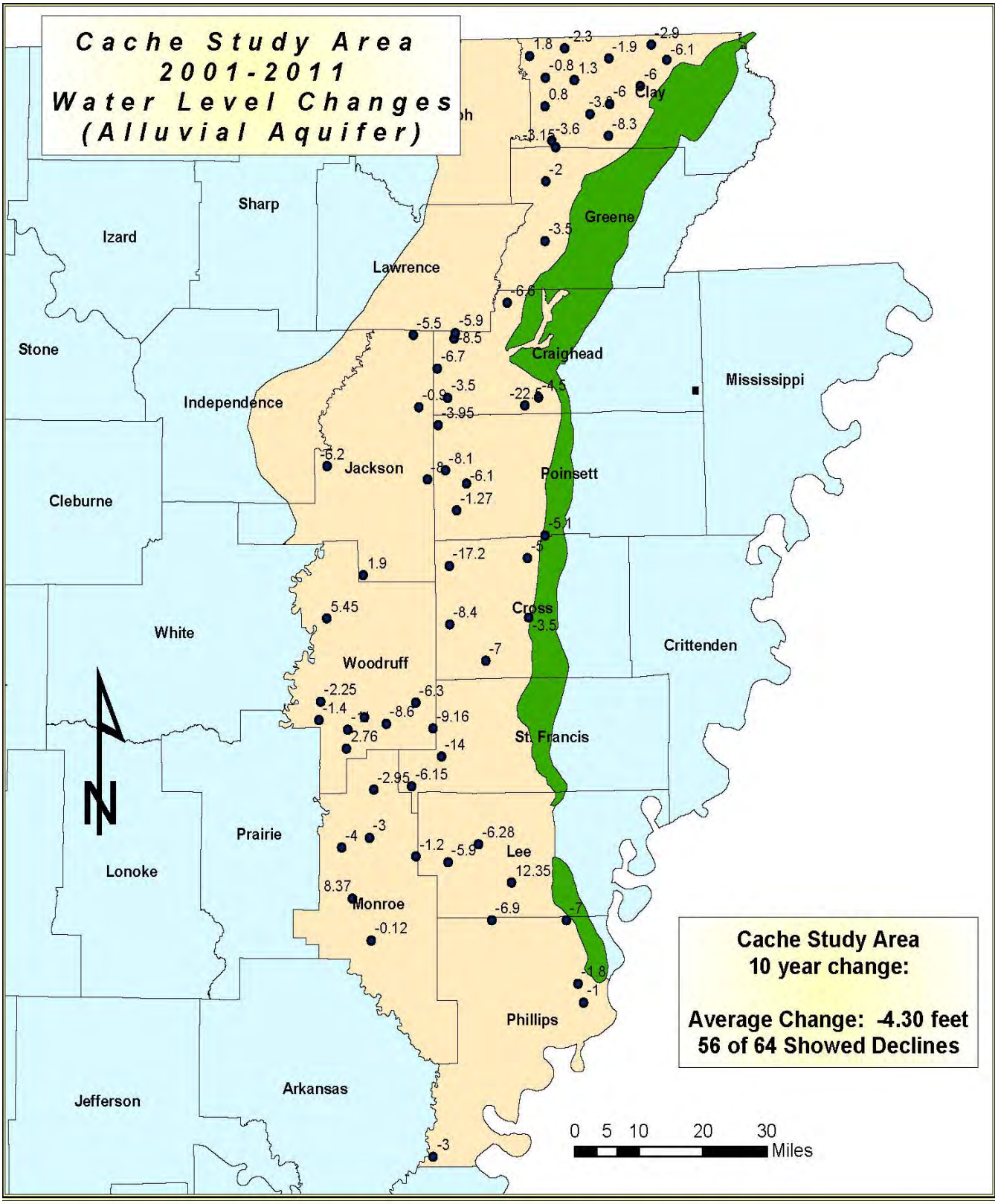
Cache Study Area
5 year change:

Average Change: -1.65 feet
95 of 127 Showed Declines

Legend

- Wells
- Crowleys Ridge
- Cache Study Area

Fig. 20



Legend

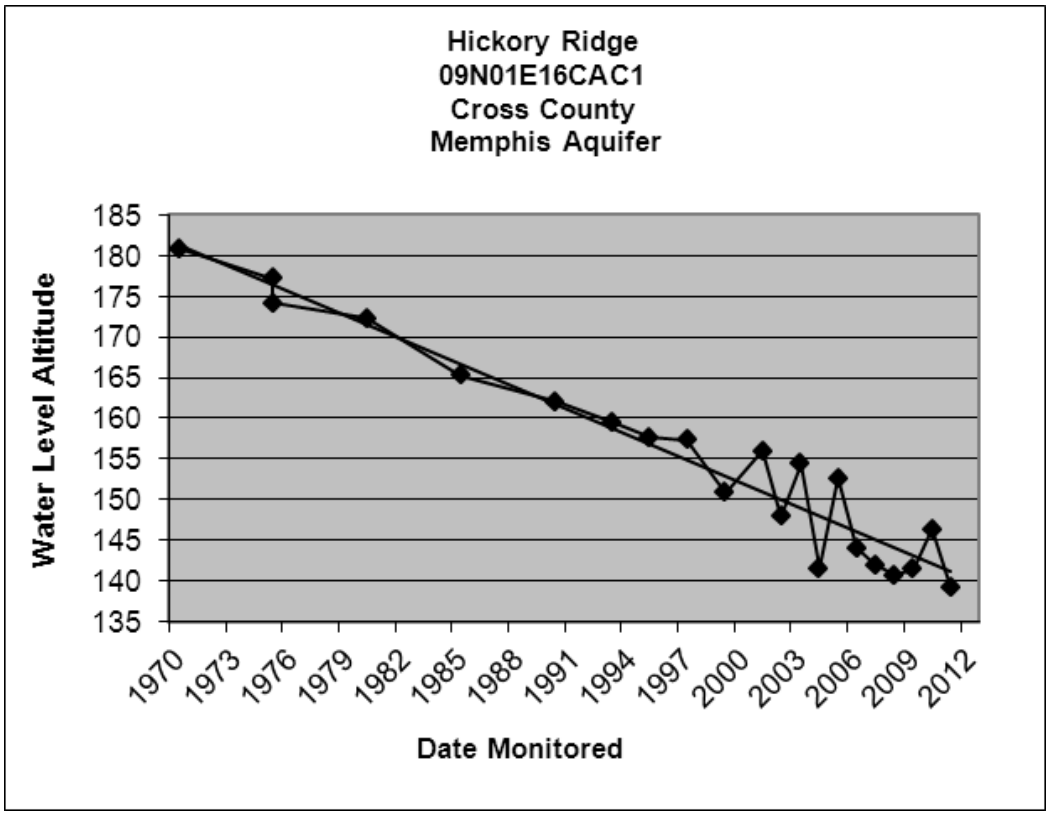
- Wells
- Crowleys Ridge
- Cache Study Area

Fig. 21

Monitoring of the Sparta/Memphis aquifer in the Cache Critical Ground Water Area from 2010 to 2011 showed that the study area had an overall average change in static water level of -2.23 feet. Although there are not as many irrigation wells in the Sparta/Memphis aquifer as there are in the alluvial aquifer in this study area, there has been an increase in recent years as the water level in the alluvial aquifer continues to drop. Twenty three of the 30 wells (76.7%) monitored showed declines during this time period. (Fig.22)

During the 2006 to 2011 monitoring period the Sparta/Memphis aquifer in the Cache Study Area had an average water level decline of -1.39 feet, with 22 of the 30 wells monitored (73.3%) showed decline. (Fig. 23)

Of the 29 wells monitored from 2001 to 2011, 20 (69.0%) show declines over this time. The average ground water level change for the Sparta/Memphis Aquifer in the study area was -2.44 feet over this 10-year period. (Fig.24)



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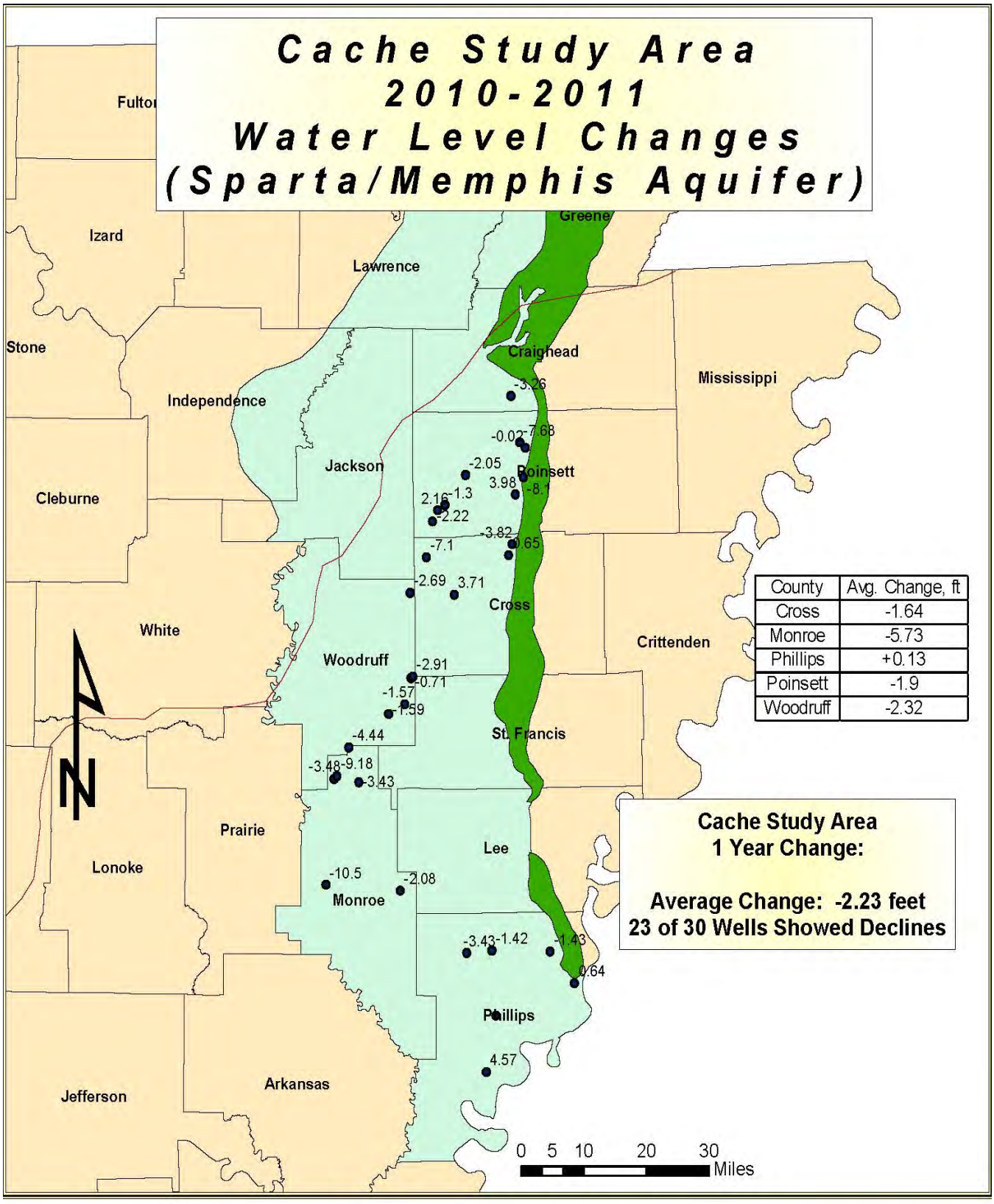
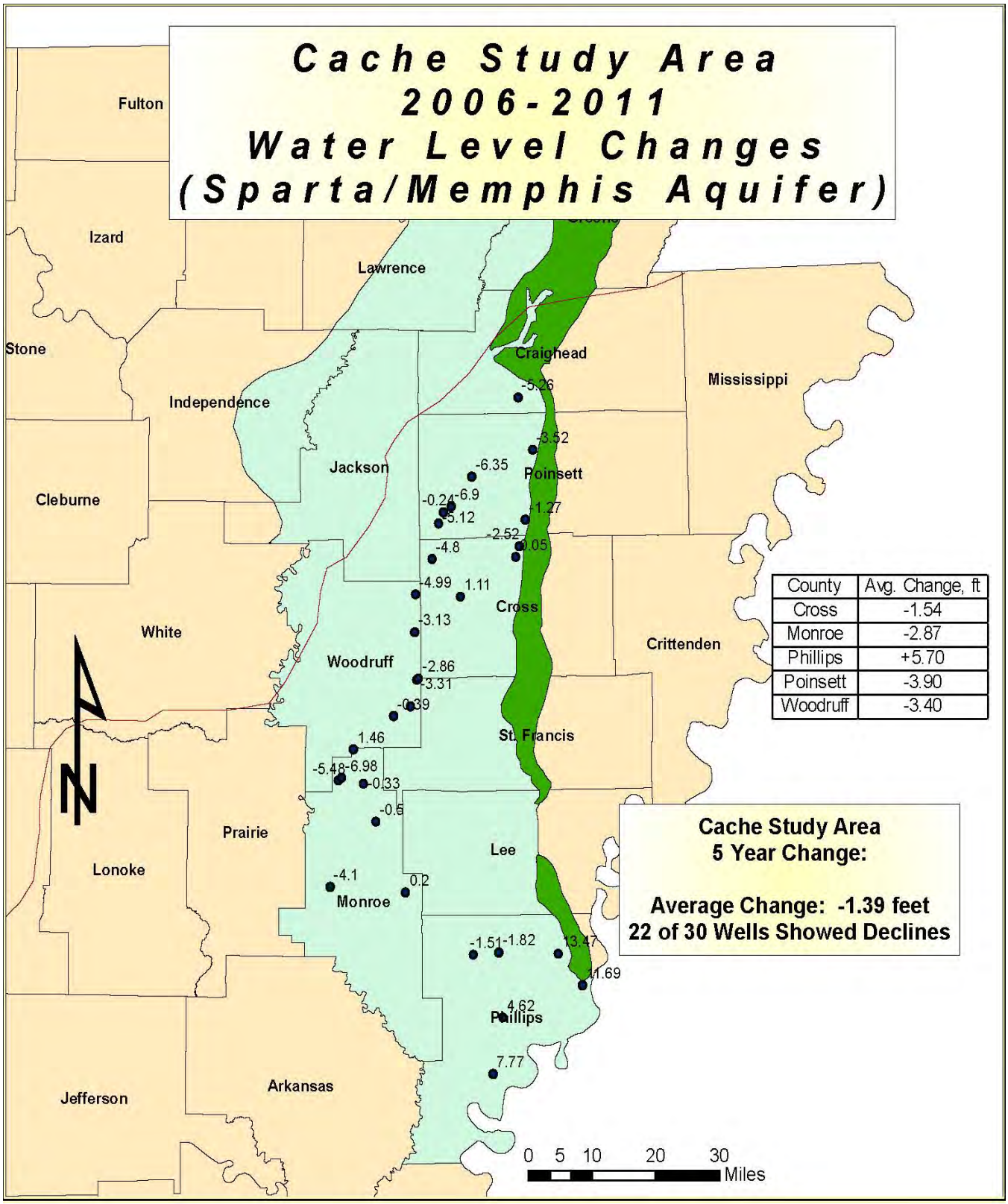

Cache Study Area
2010-2011
Water Level Changes
(Sparta/Memphis Aquifer)
Fulton
Izard
Lawrence
Greene
Stone
Craighead
Mississippi
Independence
Jackson
Poinsett
Cleburne
White
Woodruff
Cross
Crittenden
St. Francis
Prairie
Lee
Lonoke
Monroe
Phillips
Arkansas
Jefferson
-3.26
-0.02
-7.68
-2.05
3.98
-8.1
2.16
-1.3
-2.22
-3.82
0.65
-7.1
-2.69
3.71
-2.91
-0.71
-1.57
-1.59
-4.44
-3.48
-9.18
-3.43
-10.5
-2.08
-3.43
-1.42
-1.43
0.64
4.57
0 5 10 20 30
Miles
County | Avg. Change, ft
Cross | -1.64
Monroe | -5.73
Phillips | +0.13
Poinsett | -1.9
Woodruff | -2.32
Cache Study Area
1 Year Change:
Average Change: -2.23 feet
23 of 30 Wells Showed Declines
Legend
Wells
Sparta Boundary
Crowleys Ridge
Cache Study Area

Fig. 22



Legend

- Wells
- Sparta Boundary
- Crowleys Ridge
- Cache Study Area

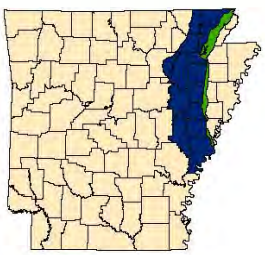


Fig. 23

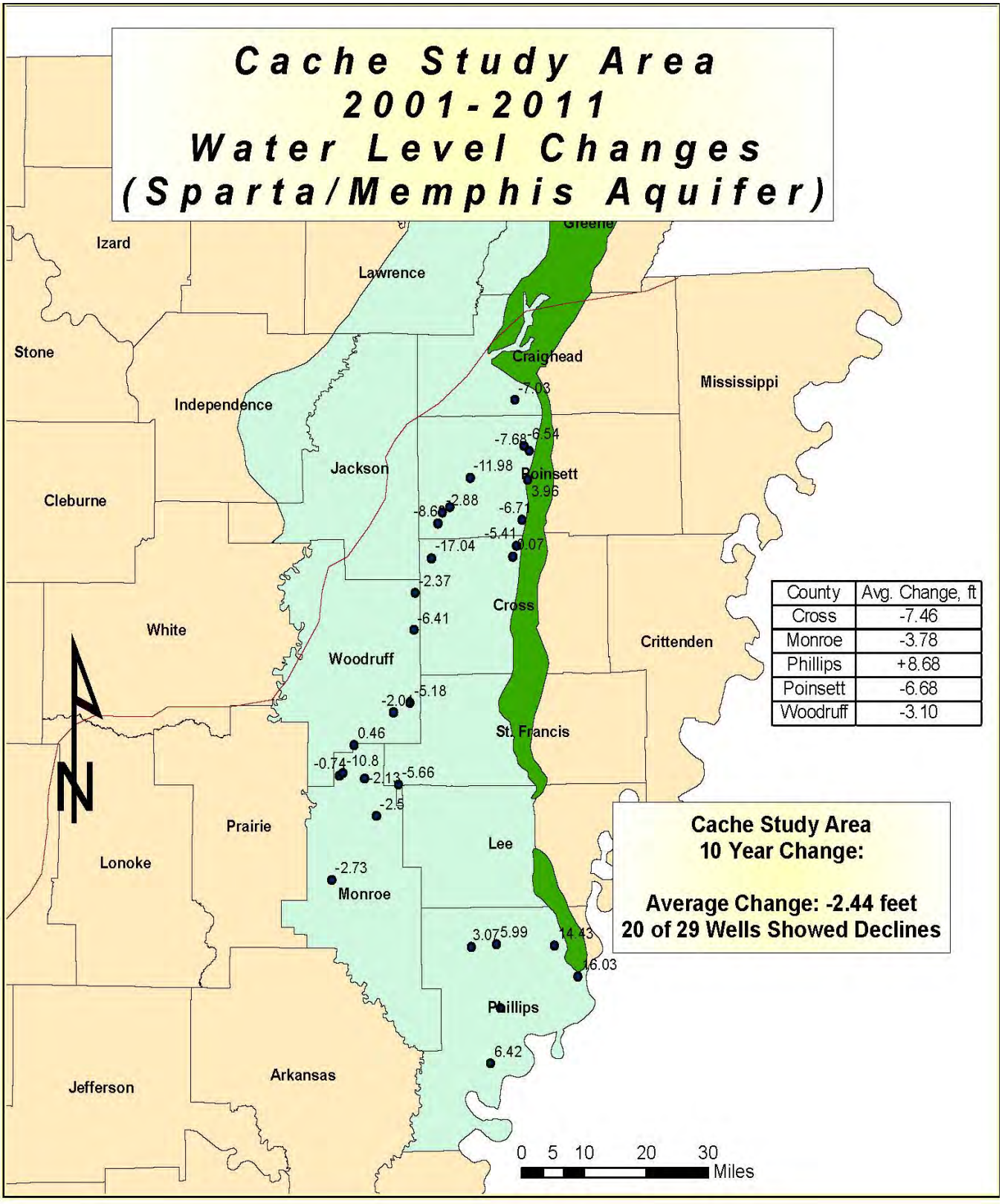

Cache Study Area
2001-2011
Water Level Changes
(Sparta/Memphis Aquifer)
Izard
Lawrence
Greene
Stone
Craighead
Mississippi
Independence
Jackson
Poinsett
Cleburne
White
Woodruff
Cross
Crittenden
St. Francis
Prairie
Lonoke
Lee
Monroe
Phillips
Jefferson
Arkansas
-7.03
-7.68
-6.54
-11.98
3.96
-2.88
-8.66
-6.71
-5.41
-17.04
-2.37
-6.41
-5.18
-2.04
0.46
-0.74
-10.8
-2.13
-5.66
-2.5
-2.73
3.07
5.99
14.43
16.03
6.42
0 5 10 20 30
Miles
County | Avg. Change, ft
Cross | -7.46
Monroe | -3.78
Phillips | +8.68
Poinsett | -6.68
Woodruff | -3.10
Cache Study Area
10 Year Change:
Average Change: -2.44 feet
20 of 29 Wells Showed Declines
Legend
Wells
Sparta Boundary
Crowleys Ridge
Cache Study Area

Fig. 24

BOEUF-TENSAS STUDY AREA

The Boeuf-Tensas study area in southeast Arkansas is comprised of Ashley, Chicot, Desha, Drew, and Lincoln counties. This hydrologic basin extends into Louisiana, but for the purposes of this study, will be bounded by the Arkansas state line to the south.

The alluvial aquifer data in the Boeuf-Tensas Study Area for the monitoring period of 2010-2011 showed the entire study area having an average change of -2.45 feet. There were 34 wells monitored for this aquifer over this time period with 30 (88.2%) monitored having declines in static water level. (Fig.25)

During the 5-year monitoring period from 2006 to 2011 the study area had an average change of -1.74 feet in the alluvial aquifer, with 52 of the 70 wells monitored (74.3%) showing declines. (Fig.26)

The data for the 10-year change in the Boeuf-Tenses showed the entire study area having an average change of -2.86 feet during this period in the alluvial aquifer, with 28 of 37 (75.7%) wells monitored showing declines. (Fig.27)

The Boeuf-Tensas area of southeastern Arkansas has been identified as a high priority study area for years because of concerns with water-level declines as well as water-quality degradation. The declines in this year's report are likely the result of a year of abnormally low precipitation. When compared to other areas of the State, such as the Grand Prairie, Cache or South Arkansas study areas, the degree of ground-water depletion is observed to be much less severe. However, potentiometric surface maps do indicate the initial stages of the formation of a cone-of-depression. Conservation practices in this area could prove to be a valuable and proactive measure that may prevent adverse impacts on the aquifer as well as water users.

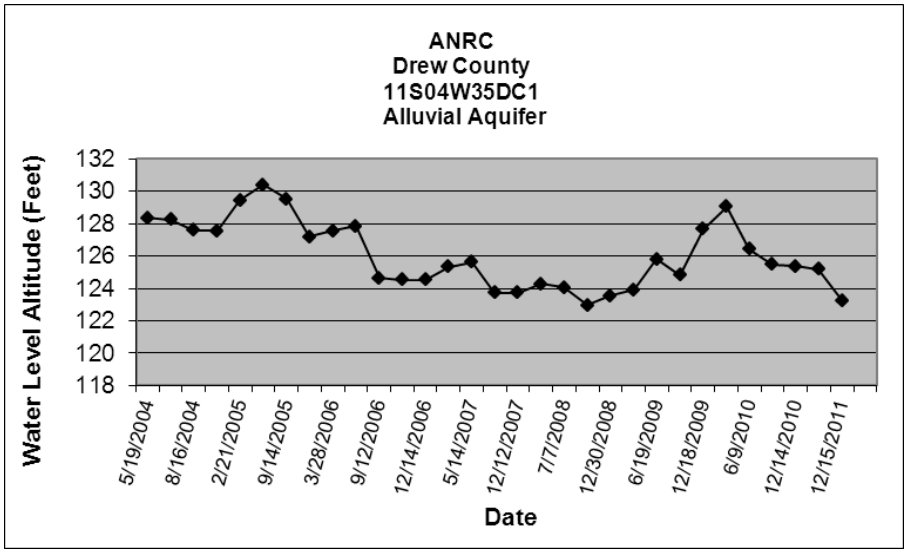
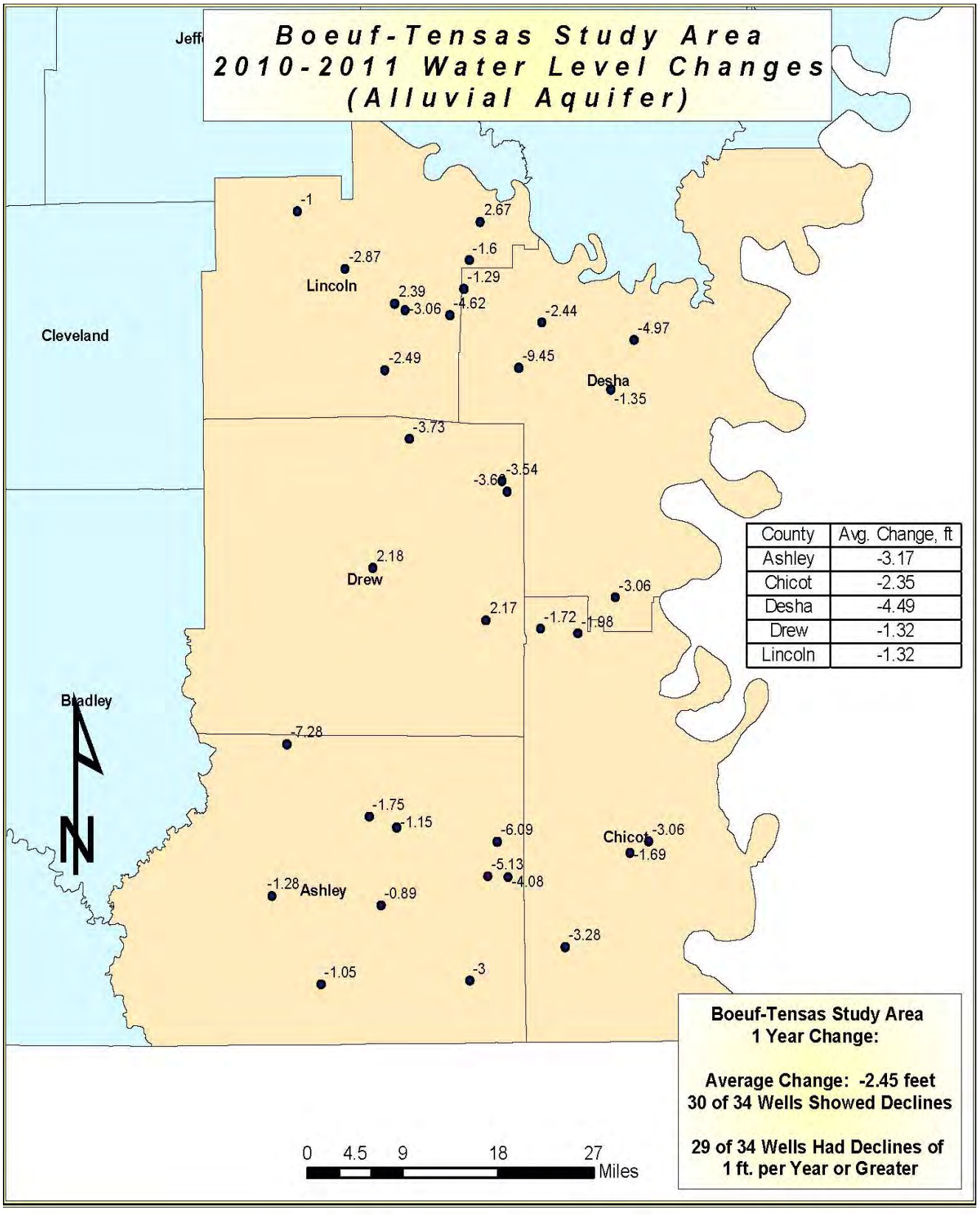


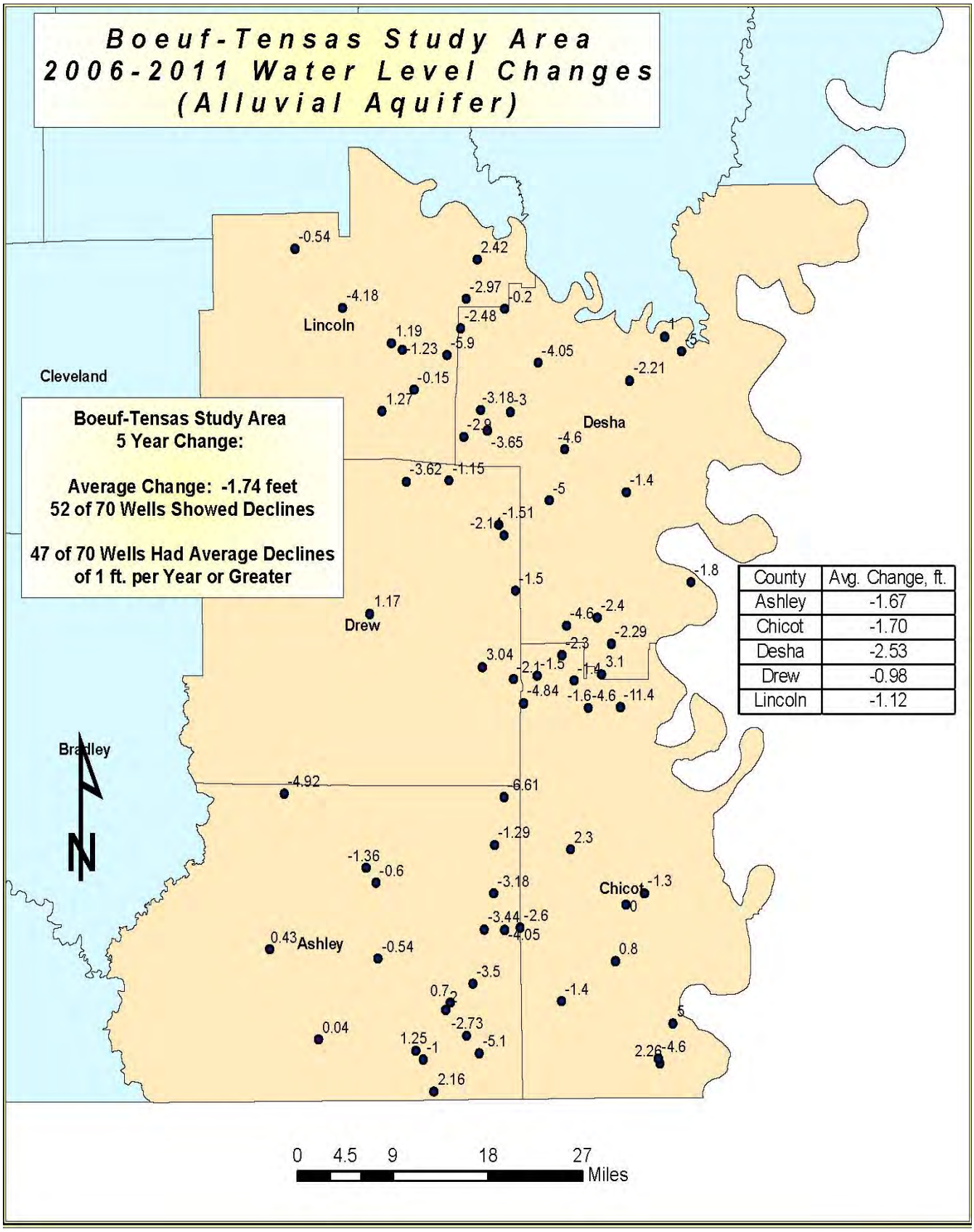
Table 15.



Legend

- Wells
- Beouf-Tensas Study Area

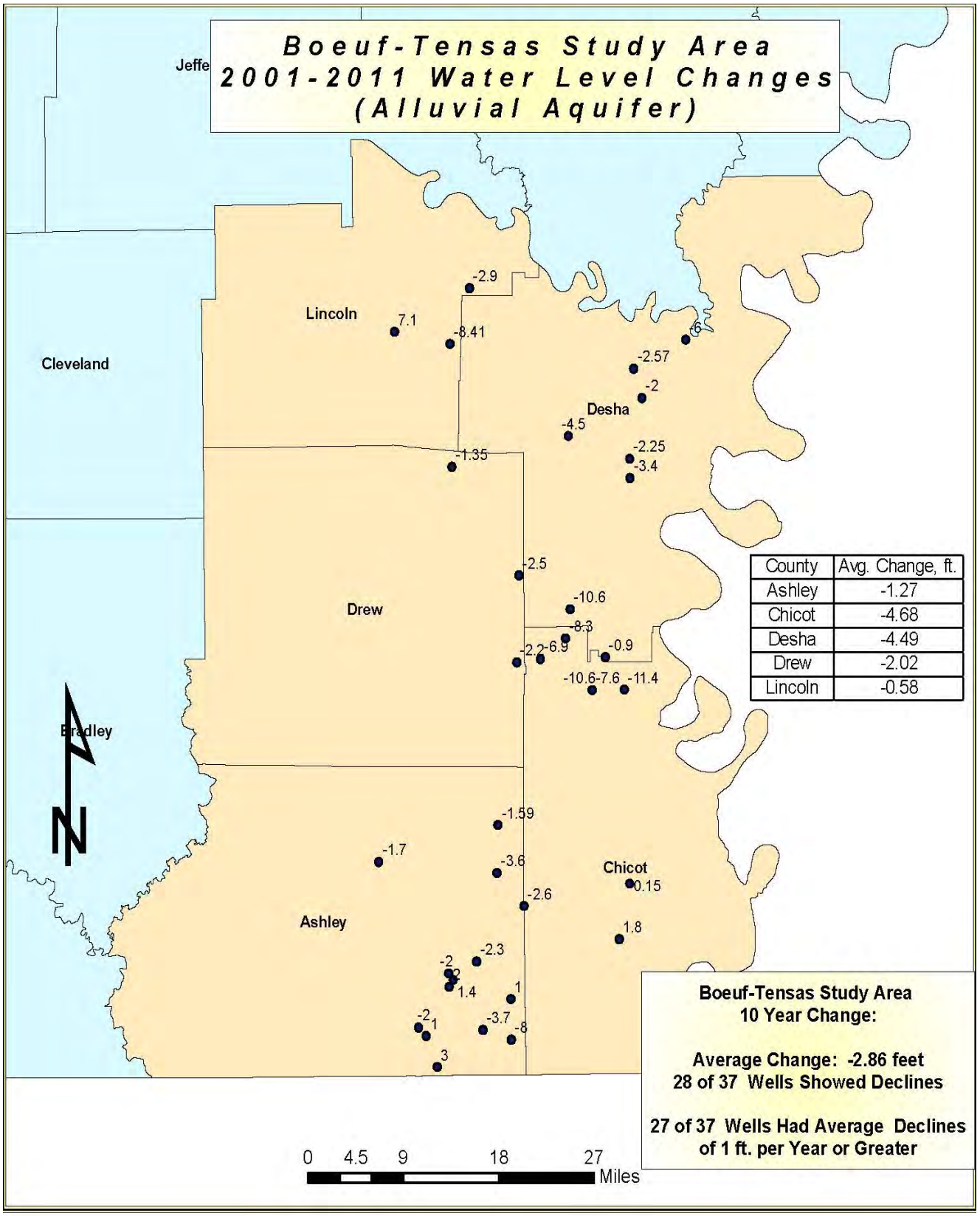
Fig. 25



Legend

- Wells
- Beouf-Tensas Study Area

Fig. 26



Legend

- Wells
- Beouf-Tensas Study Area

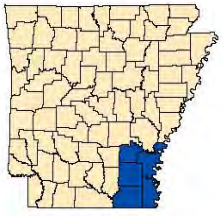


Fig. 27

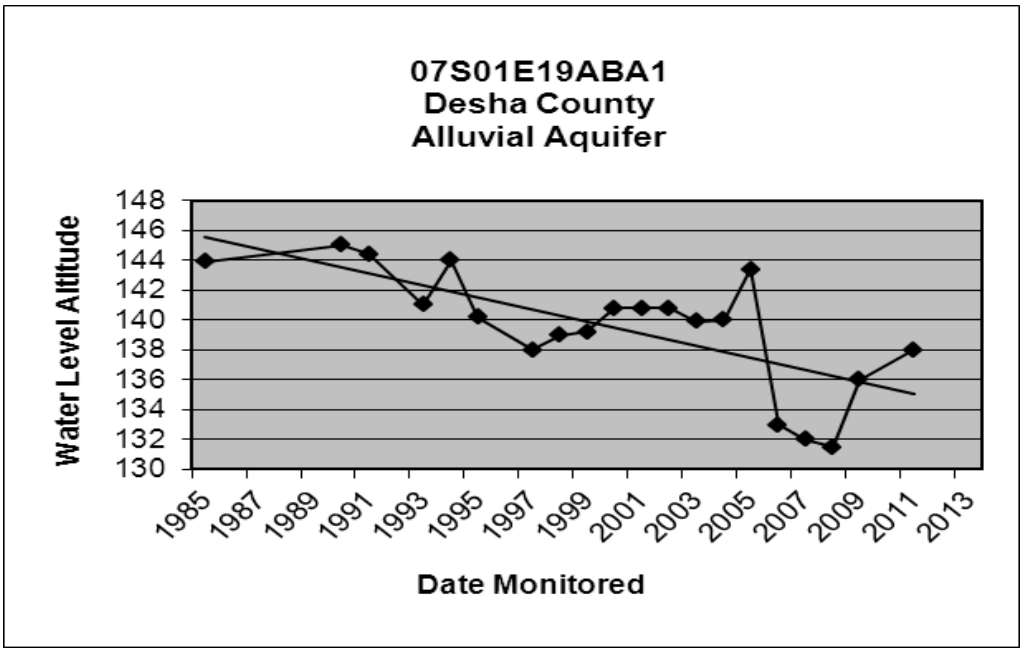


Table 16.

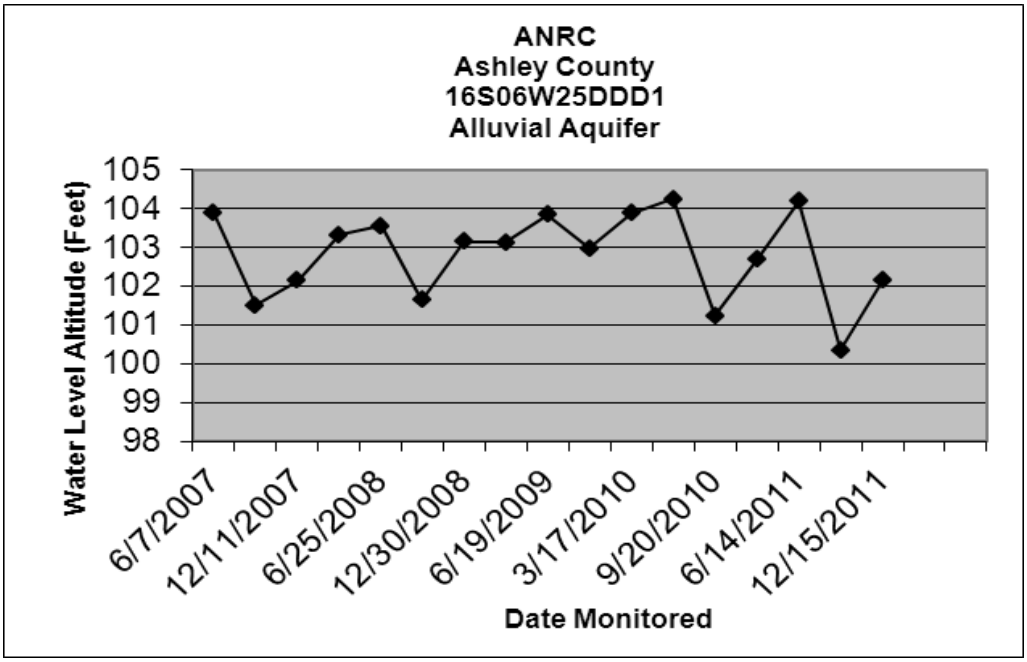


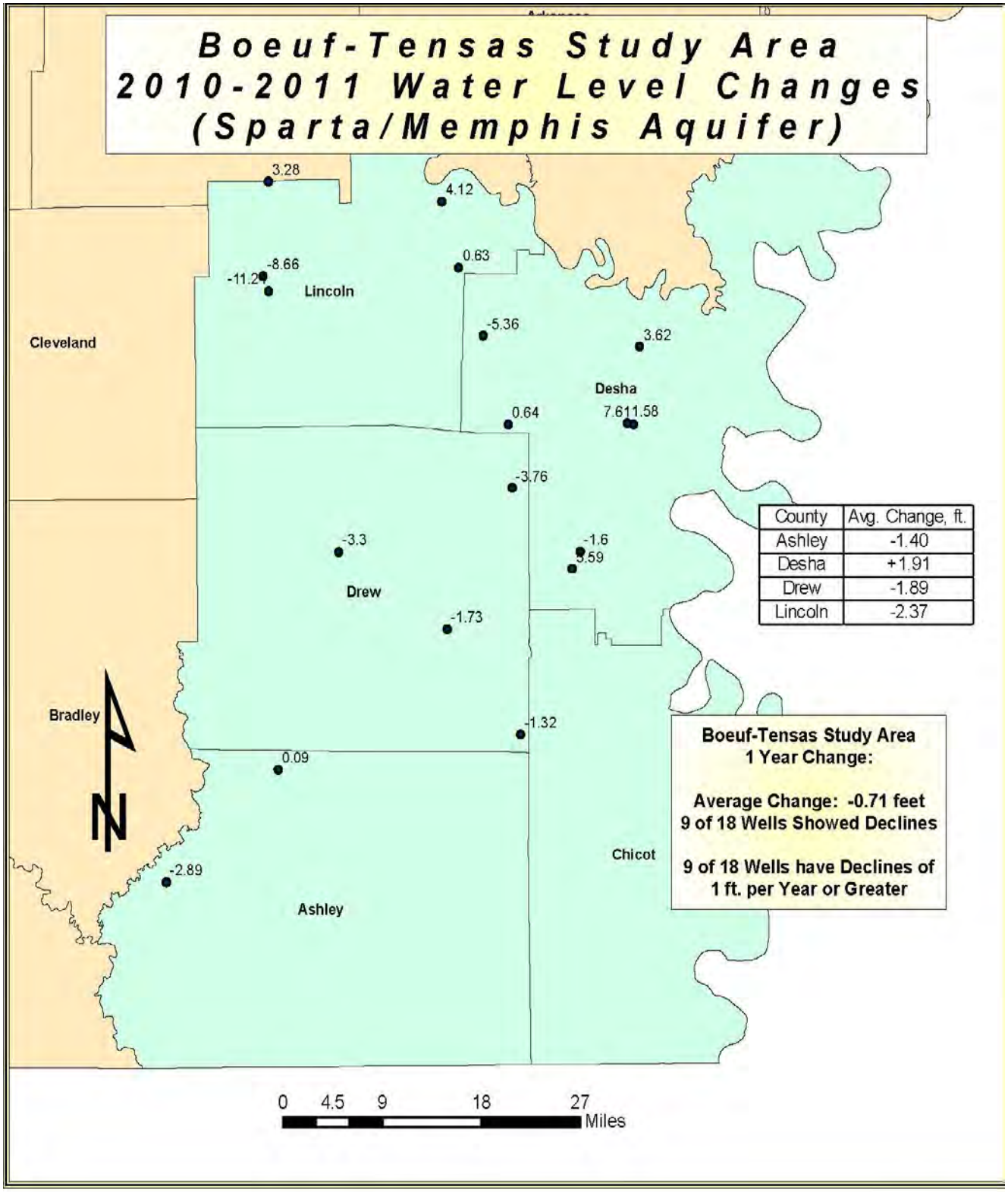
Table 17.

Continued monitoring of the ground-water levels in the Sparta aquifer of the Boeuf-Tensas Study Area shows mixed results, mostly because of the relative lack of wells that are drilled into the aquifer in this part of the state. The ANRC, as well as the USGS, continue to add Sparta aquifer wells to the database from this study area, and the historical data continues to improve each year.

During the 2010-2011 monitoring period the Boeuf-Tenses Study Area an average change of -0.71 feet in the Sparta/Memphis aquifer was observed, with 9 of the 18 wells monitored showing a decline. (Fig.28)

During the 5-year monitoring period, from 2006 to 2011, 4 of the 17 wells monitored in the Sparta/Memphis aquifer (23.5%) showed water-level declines in this study area. The entire study area had an average change of +3.63 feet during this time. (Fig.29)

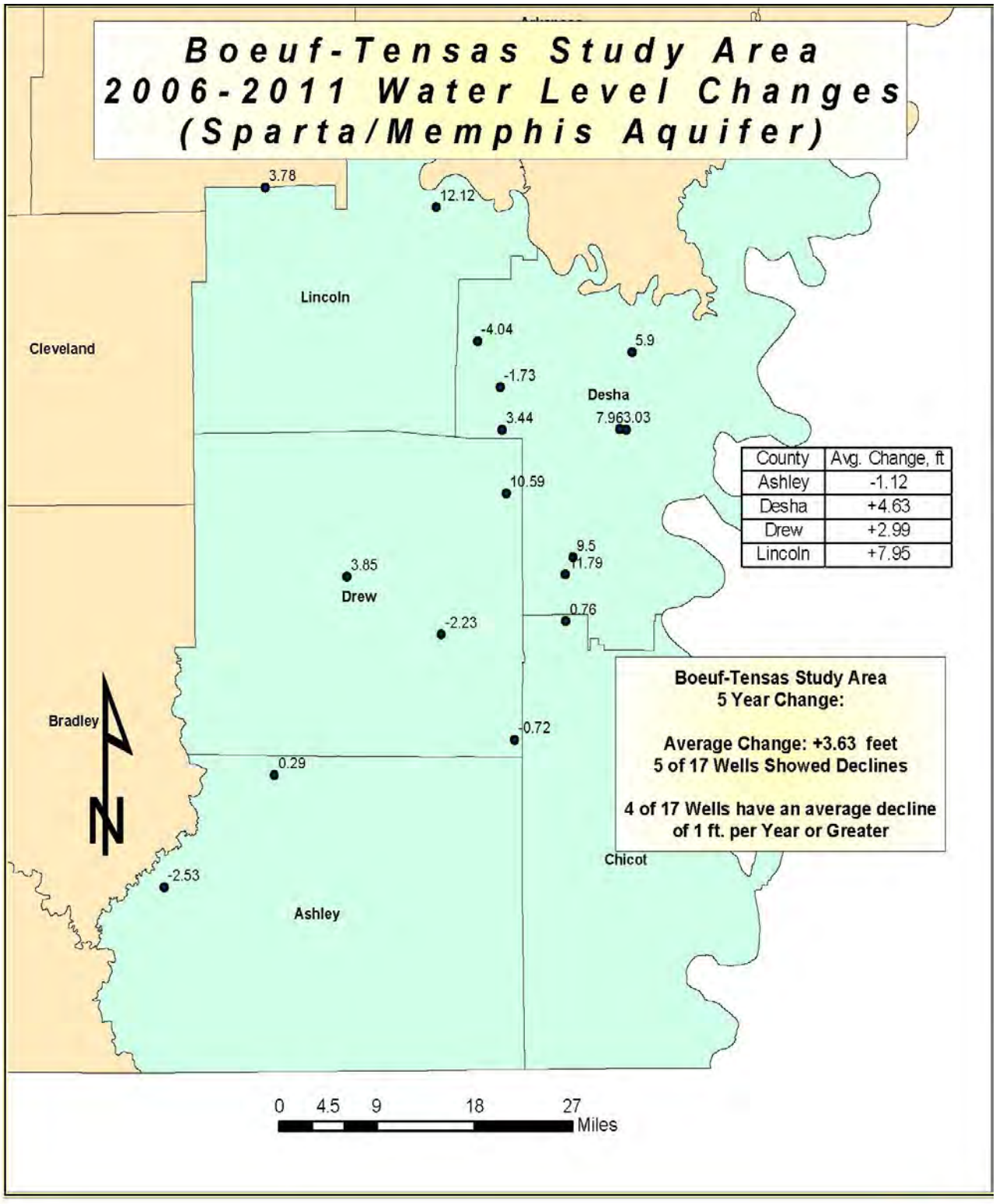
From 2010 to 2011 the entire Boeuf-Tensas Study Area had an average change of -1.52 feet in the Sparta/Memphis aquifer. Fourteen of the 21 wells monitored during this 10-year period showed declines. (Fig. 30) Most noteworthy in this study area is the average decline in the northwest portion of the area in the Sparta Aquifer in the 10-year change. (Fig.29) Also as seen in Figure 2, this is a possible long-term average decline due to the expansion of the cone of depression to the southeast out of Jefferson County. Also, water use from the Sparta Aquifer in Lincoln County has increased from 1.53 Mgal/day in 2006 to 2.89 Mgal/day in 2009.



Legend

- Wells
- Boeuf- Tensas Study Area

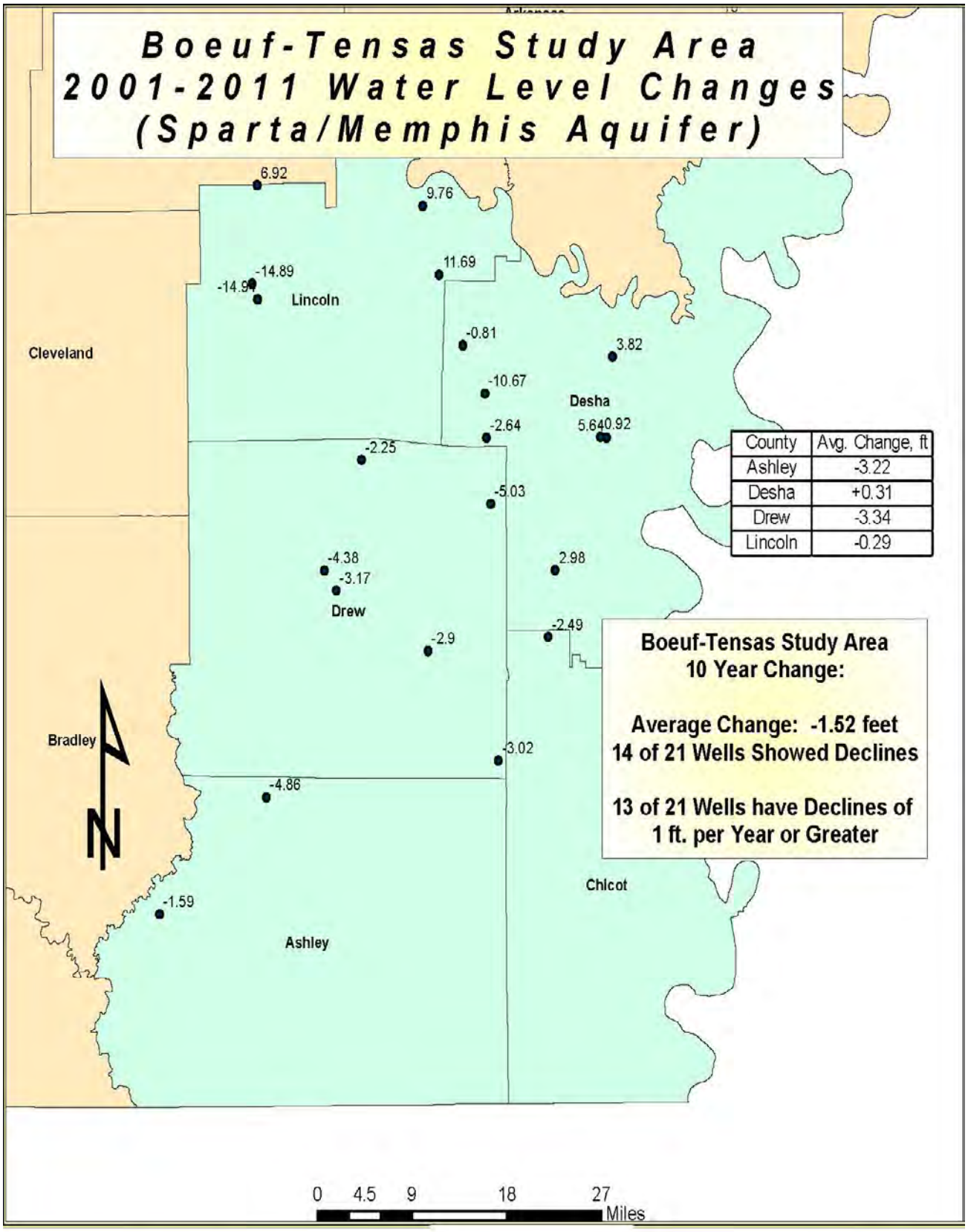
Fig. 28



Legend

- Wells
- Boeuf- Tensas Study Area

Fig. 29



Legend

- Wells
- Boeuf- Tensas Study Area

Fig. 30

ST. FRANCIS STUDY AREA

The St. Francis Study Area is defined as the area west of the Mississippi River, east of Crowley's Ridge, and south and east of the subcrop of the McNairy-Nacatoch aquifer (6900 square miles) (Ackerman, 1996). For the purpose of this report, only the area inside the boundaries of Arkansas is considered. (Fig.1)

During the 2010-2011 monitoring period there were declines in average static water levels in the alluvial aquifer in 26 of the 35 wells monitored (74.3%) with an average change of -1.78. (Fig.31)

During the 5-year monitoring timeframe from 2006 to 2011, the alluvial aquifer in this study area had an average change of +0.12 feet, with 24 of the 57 wells monitored (42.1%) showing declines. (Fig.32)

A 10-year average change was also done in the St. Francis Study Area for the alluvial aquifer static water levels. There was an average change of -0.85 feet over the entire study area for this period, with 21 of the 38 wells monitored (55.3%) showing declines. (Fig. 33)

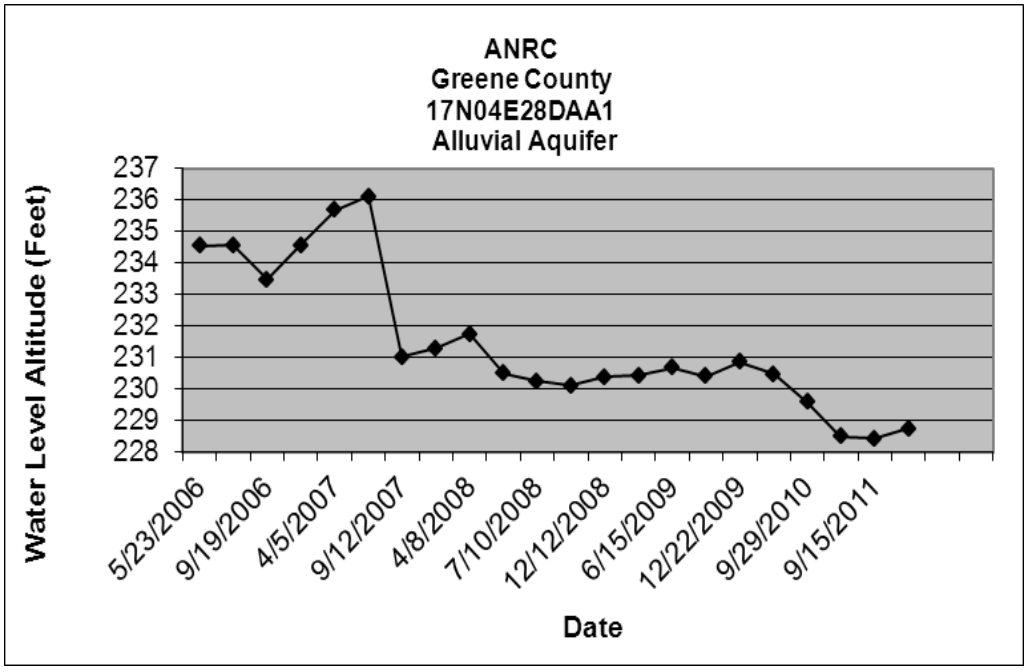
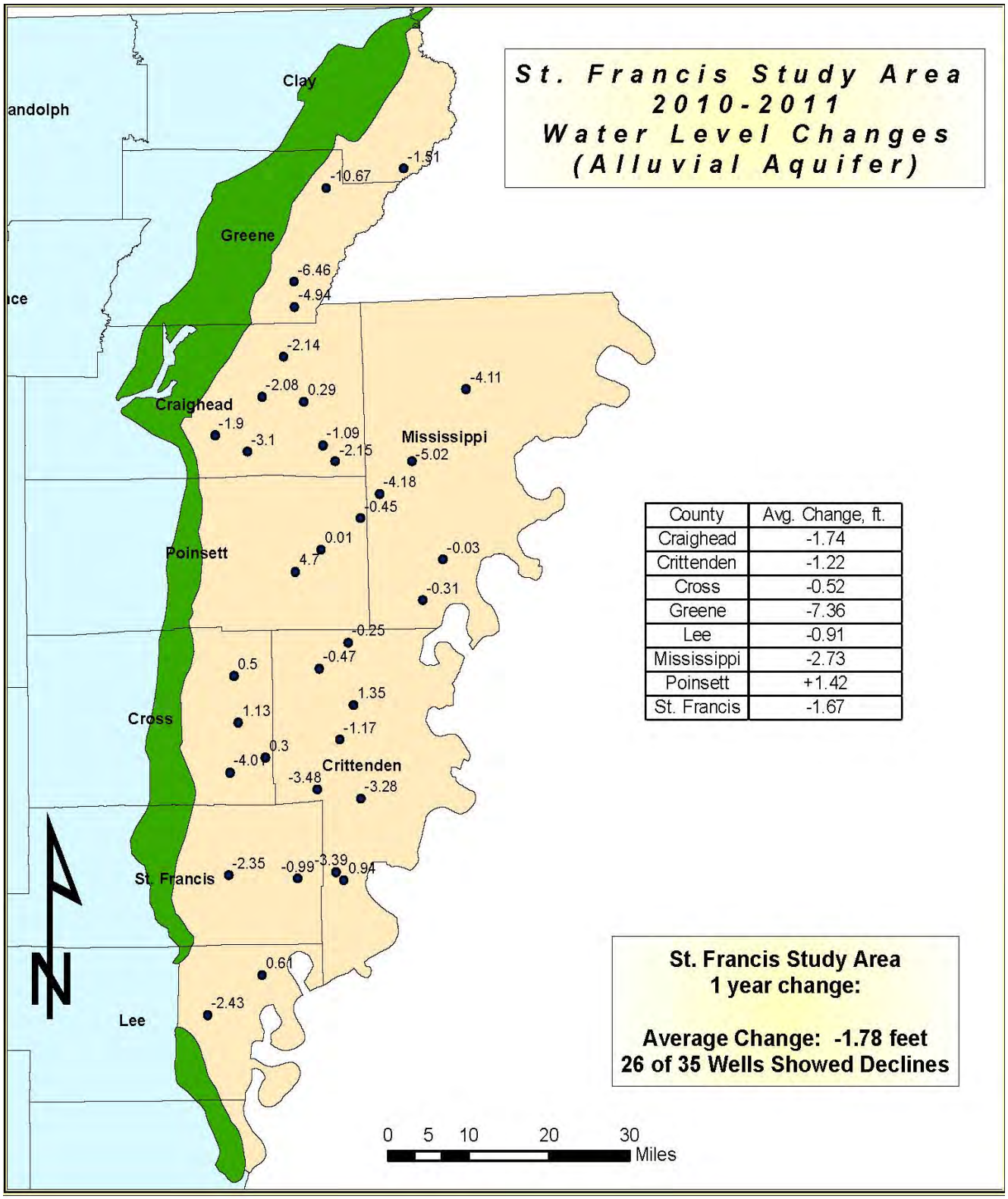


Table 18.

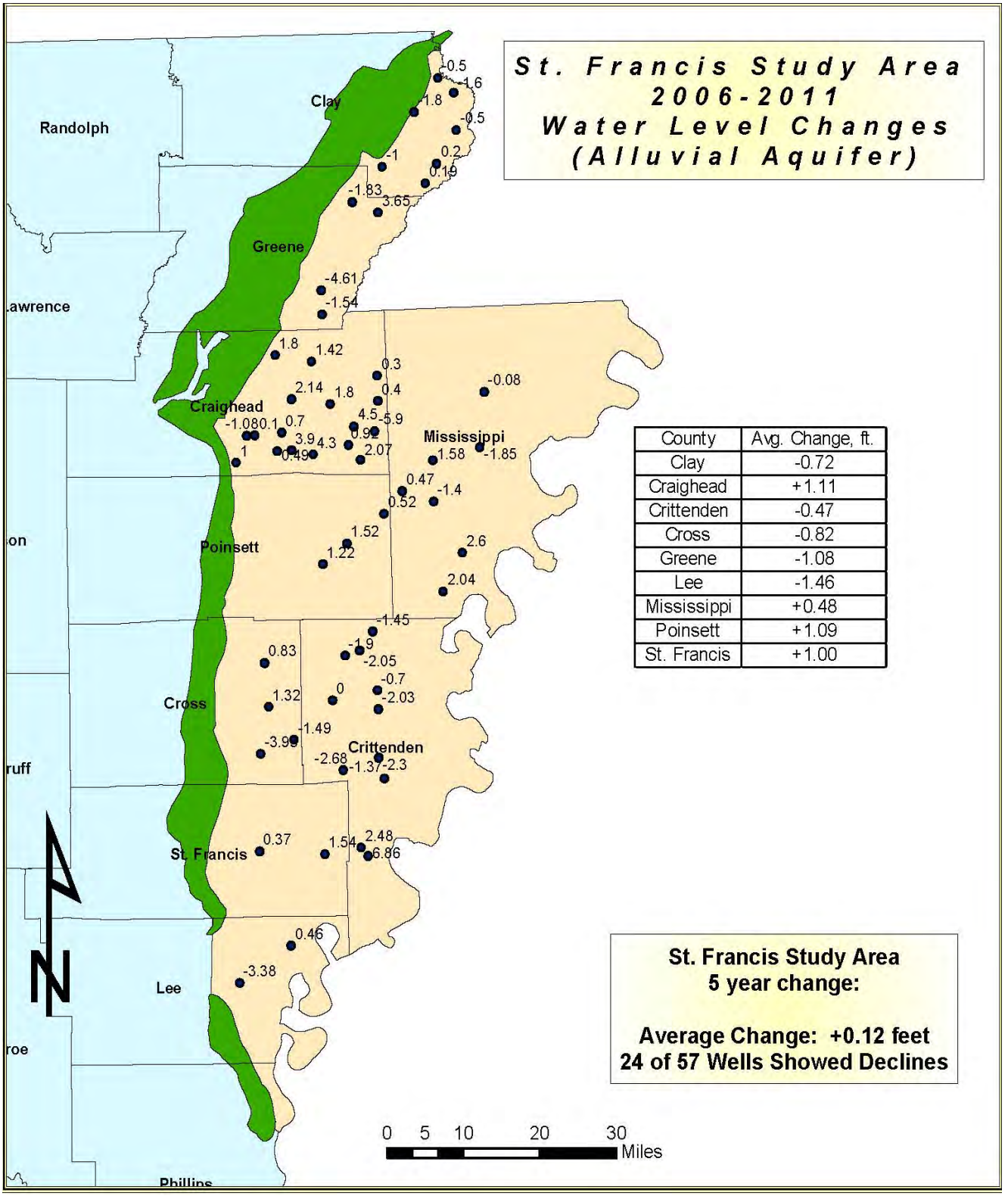


County	Avg. Change, ft.
Craighead	-1.74
Crittenden	-1.22
Cross	-0.52
Greene	-7.36
Lee	-0.91
Mississippi	-2.73
Poinsett	+1.42
St. Francis	-1.67

Legend

- Wells
- Crowleys Ridge
- St. Francis Study Area

Fig. 31



County	Avg. Change, ft.
Clay	-0.72
Craighead	+1.11
Crittenden	-0.47
Cross	-0.82
Greene	-1.08
Lee	-1.46
Mississippi	+0.48
Poinsett	+1.09
St. Francis	+1.00

St. Francis Study Area
5 year change:

Average Change: +0.12 feet
24 of 57 Wells Showed Declines

Legend

- Wells
- Crowleys Ridge
- St. Francis Study Area

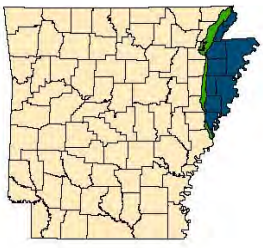
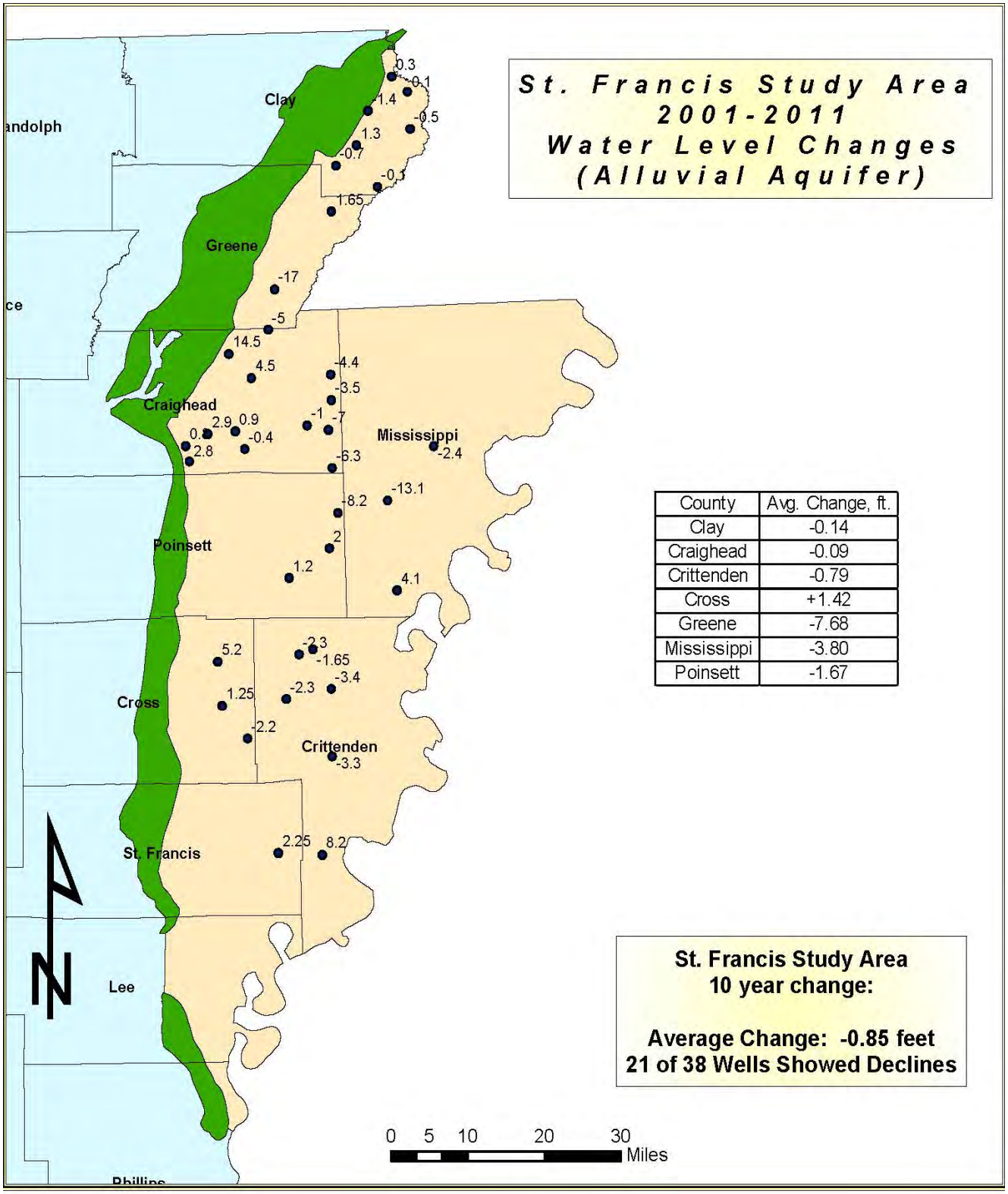


Fig. 32



County	Avg. Change, ft.
Clay	-0.14
Craighead	-0.09
Crittenden	-0.79
Cross	+1.42
Greene	-7.68
Mississippi	-3.80
Poinsett	-1.67

St. Francis Study Area
10 year change:

Average Change: -0.85 feet
21 of 38 Wells Showed Declines

Legend

- Wells
- Crowleys Ridge
- St. Francis Study Area

Fig. 33

Just as in the Boeuf-Tensas Study Area, the St. Francis Study Area has a limited number of wells drilled into the Sparta/Memphis aquifer. This should be taken into account when looking at the county changes in the figures. There are more wells being drilled into these areas as the water level in the alluvial aquifer continues to decline. USGS, as well as the ANRC, will continue to add monitoring points in these areas for the Sparta/Memphis aquifer. The hydrographs below are good representations of the static water level changes over time. Figures 34 and 35 show the actual measurements taken for the 1, and 10 year periods respectively.

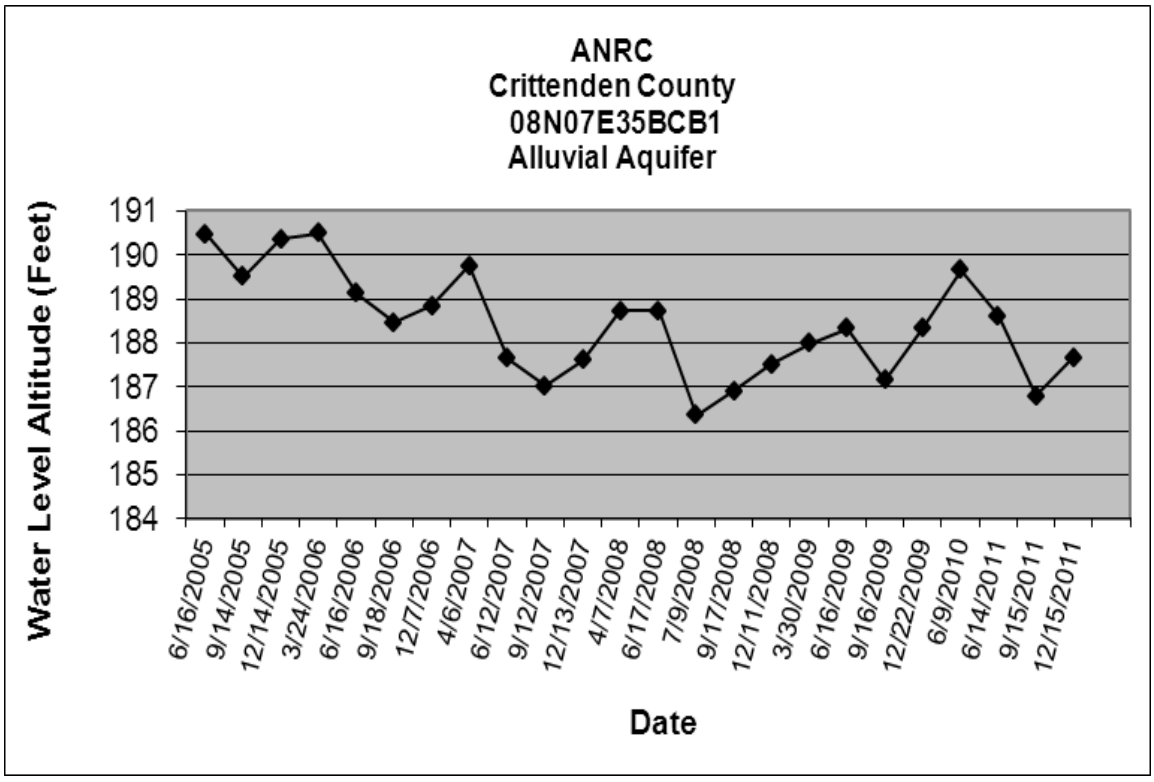
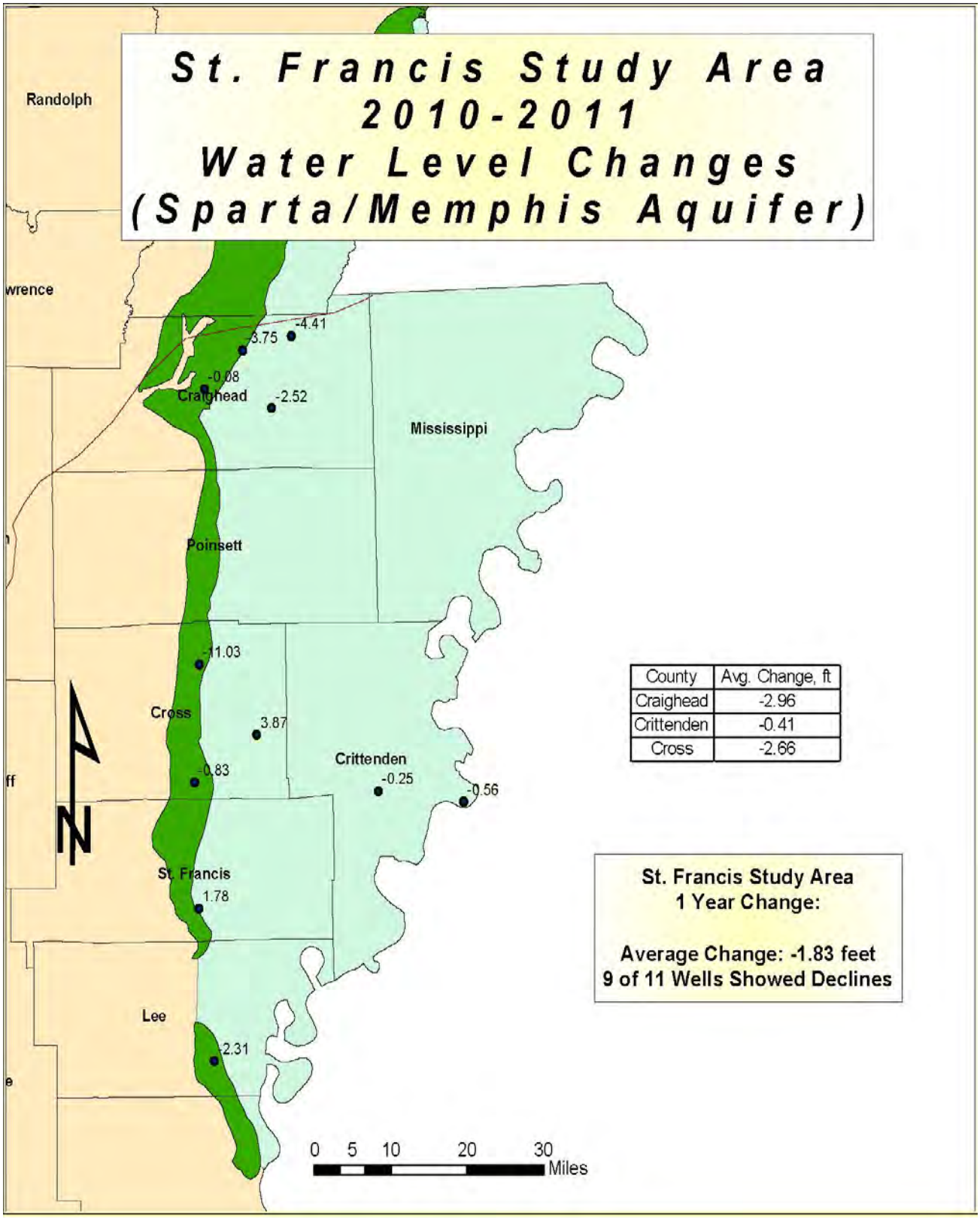


Table 19.



County	Avg. Change, ft
Craighead	-2.96
Crittenden	-0.41
Cross	-2.66

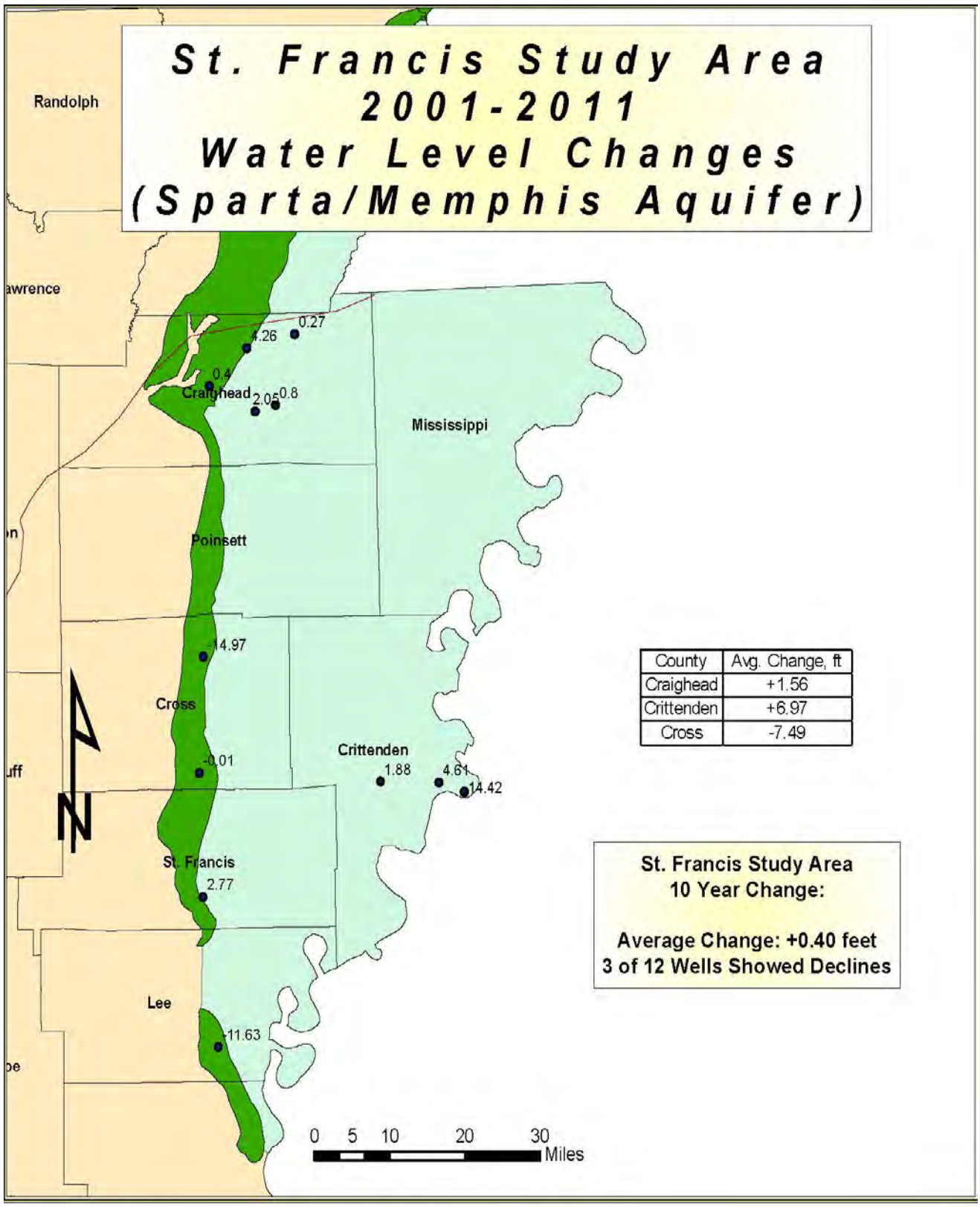
St. Francis Study Area
1 Year Change:

Average Change: -1.83 feet
9 of 11 Wells Showed Declines

Legend

- Wells
- Sparta Boundary
- Crowleys Ridge
- St. Francis Study Area

Fig. 34



Legend

- Wells
- Sparta Boundary
- Crowleys Ridge
- St. Francis Study Area

Fig. 35

Nonpoint Source Program

Introduction

ANRC's Nonpoint Source Program is supported by Section 319 (Clean Water Act) Grant Funds which provide 60 percent of the total program funding. Work concentrated on two nonpoint source ground-water projects in 2011: Development of ground-water quality standards and karst feature mapping, with primary effort directed toward development of ground-water quality standards. Significant effort was also directed toward karst and fractured rock training for Arkansas Department of Health personnel.

Ground-Water Quality Standard's development involves generation of comprehensive standards that will provide an overview of water quality conditions in the State's aquifers, as well as supplement and support revision of the Arkansas Water Plan. The goals of standards are to establish a ground-water protection policy through source water protection, which emphasizes State and local partnerships, and focuses on prevention of pollution, with special provisions that target drinking water wells. Ground-water monitoring can then provide an overview of ground-water conditions, establish baselines of water quality, and identify variable trends in ground-water quality.

ANRC has developed an appropriate model for standards development, and a draft document has been prepared. Classification of aquifers in Arkansas has also been performed, and work continues on establishing provisions and specifications for standards development.

Scientific investigation in 2011, involved continued establishment of numeric standards for specific chemicals, including review of the chemical properties and toxicity of individual compounds, and continued review of the primary and secondary model state's standards with selection of attributes and values to be included in AR's standards. The Professional Geologist performed searches for MCL (Maximum Contaminant Level) and MCLG (MCL Goals) values utilizing various search methods and contacts. The chemical review and value selection process continues, and selected MCL values were updated as revised drinking water standards are implemented at the model states or EPA. Standards development also involves coordination with existing rules of ADEQ and ADH. Revision of the draft document also continued toward completion of a final draft.

A draft list of numerical values for more than 360 chemicals is near completion. Completion of a draft text will include discussion of each section defining reason and purpose, along with discussion of difficulties encountered at select model states which fostered need for revisions in those states.

The model states: Illinois (primary), Colorado, New Jersey, North Carolina, and Rhode Island are utilized to derive the form, structure, and content of AR's standards. Investigation into

the various attributes of the model state's standards continues, with selection of specific elements for inclusion into Arkansas' standards. Numeric MCL values from the model states are utilized whenever possible however, some values must be derived from other selected states, including California, Michigan, Washington, Wisconsin, and/or other states.

Ground-water standards shall establish criteria through which ground water can be protected by defining various uses of ground water and establishing the numerical maximum chemical concentrations necessary to protect those uses. Ground-water standards will also coordinate State and federal ground-water protection programs, and establish a regulatory structure which defines the risk of contamination and level of control required to aid in prevention of future ground-water contamination, by relying on a framework of uses to be protected.

ANRC provided a draft list of AR MCLs to ADEQ in March and to ADEQ and ADH in September. Quarterly meetings are scheduled to begin in 2012 during completion and review of the draft standards.

Another non-point project involves mapping of karst features in northern Arkansas. ANRC continues to map karst features identified in recent mapping by the AR Geological Survey (AGS) as well as those presented in USGS publications. Additional sinkhole locations are also being provided by AR Department of Health (ADH), Designated Representatives (DRs who design systems) and Environmental Health Specialists (EHSs who inspect and approved systems). ANRC will continue to document karst features, including sinkholes, lineaments, and losing streams with assistance from AGS, ADH, and USGS. In March, recently revised maps displaying karst areas of northern Arkansas were provided to Region VI-EPA in Dallas to supplement their current water quality study in northeastern Oklahoma.

The goal of karst feature mapping is to allow identification of areas where direct recharge is occurring and to educate landowners in BMP implementation and ground-water protection methodology in these critical areas.

Karst and fractured rock training for ADH personnel began in 2006, and continued in 2011. ANRC provided training to each county ADH Health Unit in the Paleozoic region of the State through an on-line presentation. This training informs ADH personnel involved with design and approval of individual sewage disposal systems of the critical importance of proper design to result in more efficient planning and construction of these systems.

Karst and fractured rock training occurred at the EHS annual training event in Fayetteville, and three DR training events (Fayetteville, Newport, Russellville), in the fall of 2010. In the spring of 2011, a digital presentation was prepared and placed on a State web site that allows access to large files. Instructions documenting access procedures were E-mailed to all EHS professionals that work in Paleozoic region of state in May and June. Two annual DR training

sessions were also attended in central AR (Lonoke and Arkadelphia) in October, where handouts concerning AHD/ANRC cooperation and instructions regarding web access to the presentation were provided. The instructions inform that a DVD disk will be mailed to anyone who cannot access the file on-line. To accommodate DRs who have not viewed the presentation to-date, E-mail addresses are currently being obtained for all of those who work in the Paleozoic region, so all ADH professionals who design or approve individual sewage disposal systems will have access to the presentation early in 2012.

The advantage of digital presentations allows the information to be in-house at each ADH Health Unit. This allows newly hired EHS professionals to view the presentation when hired, and establishes Email/phone contact with ANRC hydrogeologists, to assist EHSs with questions they may have associated with ground-water quality or water wells. The purpose of the training, is to promote EHSs and DRs recognition of the potential for ground-water contamination in these terrains so better systems can be designed, resulting in protection of human health, water wells, and ground-water quality. Responses from individual ADH county health units (and some DRs) have been positive and have expressed gratitude and benefit of having access to this information.

This training will hopefully result in ground-water protection through more efficient design of individual sewage disposal systems in karst and fractured rock terrains.

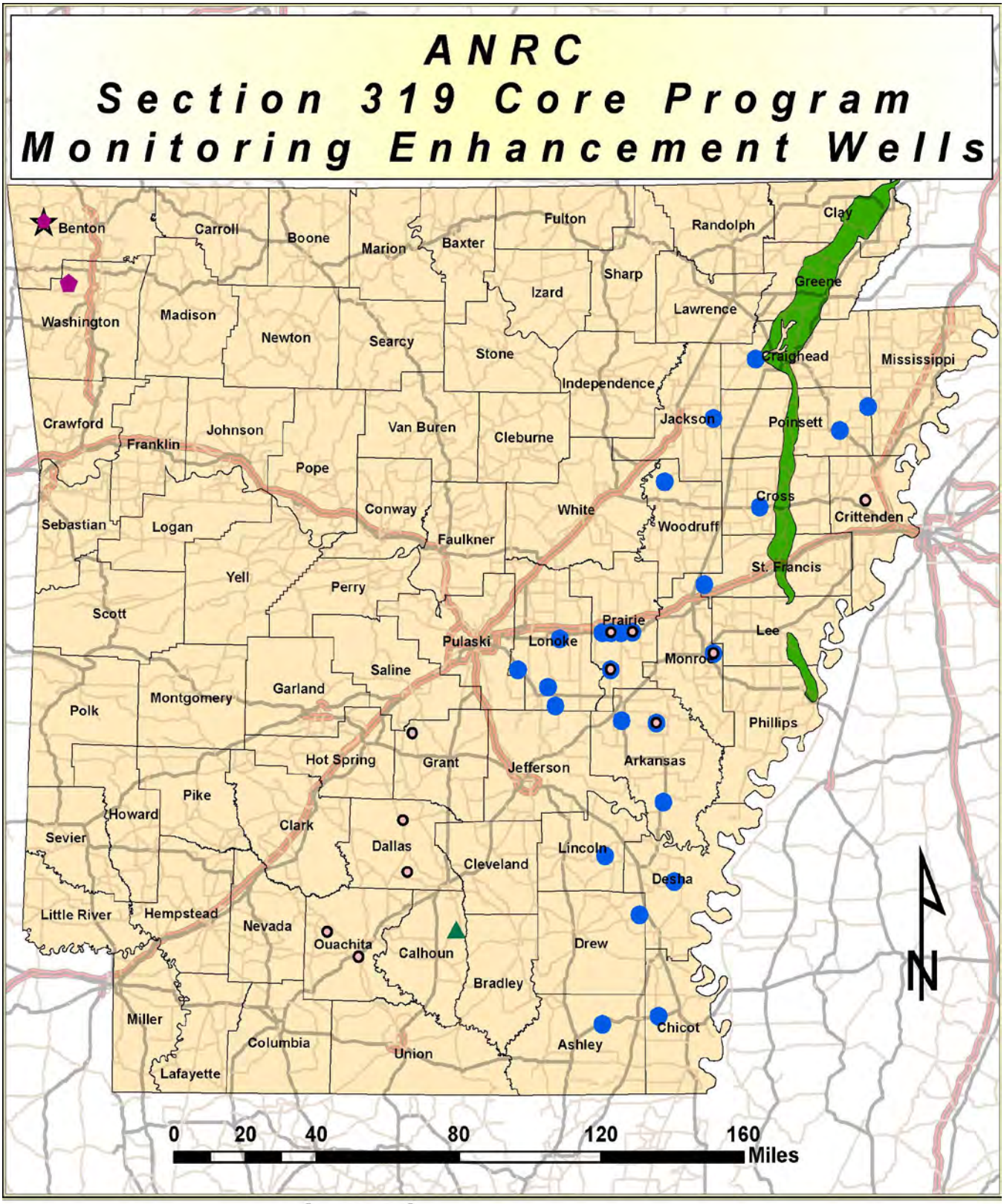
In the karst region, ADH-EHSs and DRs are also asked to assist ANRC in mapping sinkholes by inquiring if sinkholes are located on properties where new systems are installed, and acquiring GPS locations with data transfer to ANRC. ANRC is currently obtaining contact information (including email addresses) of all DRs that work in the Paleozoic region, so all ADH professionals that perform work in the region will have access to the presentation.

The Professional Geologist also attended the 2011 Karst Interest Group (KIG) Conference in Fayetteville, April 26-28. The conference featured presentations by karst researchers throughout the U.S., supports interdisciplinary collaboration and technology transfer among karst scientists, and encourages cooperative studies between karst researchers. The 5th KIG conference held since 2000 (1st in AR), was an excellent learning experience.

The Professional Geologist also provides citizens, environmental research groups, consultants, and State or Federal personnel with information regarding hydrogeology, water wells, and/or ground-water quality. Ten to fifteen phone calls or emails are received each week and vary widely in requests for information.

These projects represent the State's commitment to improve ground-water quality as part of the Nonpoint Source Pollution Management Program.

ANRC
Section 319 Core Program
Monitoring Enhancement Wells



Legend

- Alluvial Wells (36 Wells)
- Sparta Wells (11 Wells)
- Cockfield Well
- Wells in Boone Formation (2 Wells)
- Everton Well
- Crowleys Ridge
- County Boundaries

Fig. 36

ARKANSAS WATER WELL CONSTRUCTION COMMISSION

WATER WELL CONSTRUCTION PROGRAM

The Arkansas Water Well Construction Commission (AWWCC) is designed to insure "that the general health, safety, and welfare be protected by providing a means for the proper development of the natural resource of underground water in an orderly, sanitary, reasonable, and safe manner, without waste, so that sufficient potable supplies for the continued economic growth of our state may be assured" (Arkansas Water Well Construction Act, 1969). The commission is composed of seven members. The members consist of: the director of the Department of Health or a designated representative, the director of the Arkansas Natural Resources Commission or a designated representative, one member involved in the heat pump industry, and four members involved the water well drilling industry.

The commission achieves its goal by monitoring the construction of water wells in the state. Any person who engages in water well construction must obtain a water well contractors license from the commission. The contractor must keep a current bond and obtain six hours of continuing education each year to keep their license. In addition to monitoring the water well drilling industry the commission also provides services to licensed drillers as well as to the public. Some of the services include providing information on water levels in wells, construction information about wells in an area, and proper well abandonment procedures. The commission also is equipped to assist drillers in the assessment of repair work, which may be needed in damaged wells.

One way the commission keeps up with where well construction is taking place is through its relationship with Arkansas Department of Health. The Health Department has an Environmental Health Specialist in each county. These health specialists know where in the county wells would be required, and often lay out lots showing landowners where to place their septic system and well on their property. The commission's inspectors try to visit each county health office at least once a year. The commission also conducts well inspections in each county. These inspections are to insure the protection of our ground water, through compliance with the rules and regulations set forth by the commission.

The inspectors also visit licensed contractors during their county surveys and inspections gaining valuable insight about the area and industry. The local water well contractor knows more about drilling wells in his area than anyone else. This knowledge, along with grouting and sealing requirements in the commission's rules, ensure the customer clean safe water and protect this precious resource.

The Commission fields complaints from the public about water well construction, as well as inspecting wells for violations of the Commissions rules and regulations. The Commission also issues licenses to water well contractors.

There are 172 water well contractors licensed (drill and/or pump) to work in Arkansas as of 2010. The larger contractors usually employ several registered drillers and/or pump installers and can have more than one rig permitted. A new category, "Drill Only", was added in 2009. The following is a break-down of the licensed contractors, drillers, pump installers, and permitted rigs for 2004-2010.

AWWCC LICENSE SUMMARY

	Contractors License Drill and Pump	Drill only Contractors	Pump Installer Contractors	Drillers Registrations	Pump Installers Registrations	Driller Apprentice Registrations	Pump Installers Apprentice Registrations	Rigs
2004	148		37	283	271			375
2005	142		34	276	254			362
2006	149		34	305	271			392
2007	148		32	286	282	17	27	375
2008	140		31	276	268	16	29	362
2009	121	22	32	280	275	17	36	357
2010	172	23	31	287	271	15	35	362

Table 20.

On average domestic water wells make up 33% of the total number of wells drilled and irrigation wells comprise about 55% of the total number of wells drilled in Arkansas. The remaining wells are: livestock / poultry wells; monitoring wells; public or semi public supply wells; test wells; and geothermal wells for heat pump installations. The Commission typically only has geothermal contractors submit one report form for the entire loop field accounting for the total number of wells drilled.

GROUND WATER USE

REGISTERED WELLS

In accordance with Act 1051 of 1985, all wells in Arkansas that have the capacity to produce fifty thousand (50,000) gallons per day must be registered with the ANRC. Domestic wells are exempt. The quantity used must be reported by March 1st of the following year. The USGS reports for 2009 show there were approximately 49,558 registered wells reported in the State. Of this total, 48,599 (98.1 %) are agricultural wells, most of which are irrigation wells, located primarily in eastern Arkansas. The remaining 959 reported wells are used predominately for commercial, industrial, and public water supply purposes.

REPORTED WATER USE

In 2009 an estimated 6069.53 million gallons per day (Mgal/d) of water were reported to be withdrawn from the State's aquifers. The greatest reported volume is pumped from the alluvial aquifer and used primarily for irrigation. Arkansas County, Poinsett County and Cross County used the most alluvial water of all counties, with 337.76 Mgal/d, 486.4 Mgal/d, and 387.72 Mgal/d respectively. The reported total ground-water use from the alluvial aquifer during 2009 was 5687.87 Mgal/d. The Sparta/Memphis aquifer is the second largest aquifer in terms of withdrawals. The reported ground-water use from the Sparta/Memphis aquifer for 2009 was 142.42 Mgal/d, mostly used for municipal and industrial purposes. Jefferson County was the largest user of Sparta/Memphis water of all the counties, with an average withdrawal rate of 42.77 Mgal/d, followed by Arkansas County with a rate of 37.92 Mgal/d. (Holland, 2011)

Table 21 contains the reported ground-water use by aquifer per county in Arkansas for 2009 and is also broken down by category of use. This is the most recent information as supplied to the ANRC by the USGS.

The Sparta/Memphis aquifer had a reported average withdrawal of 142.42 Mgal/d during the 2009 reporting period. It is important to note that mainly due to increases in the Sparta/Memphis aquifer for irrigation in the area, Arkansas County is now the second largest

user of this aquifer's resources, with a withdrawal of 37.92 Mgal/d. Jefferson County is the largest user of Sparta/Memphis ground-water, with a withdrawal of 42.77 Mgal/d. (Table 21) Figure 37 shows water use in million gallons per day for the entire state from 1965 to 2009 in increments of 5 years. Figure 38 shows the quantity of ground water use for each county in Arkansas as reported.

The estimated sustainable yield of the Sparta/Memphis aquifer is discussed in the following section of this report, however the relation to this figure and reported water use are significant. The 2009 reported ground-water use from the Sparta/Memphis aquifer was an estimated 32.8% for agricultural uses, 43.2% for public supply use, and 22.8% for industrial uses, which combine with other uses for an estimated total use of 142.42 Mgal/d. The estimated sustainable use for the entire aquifer is 87 Mgal/d based on 1997 reported water use. This leaves a deficit of 55.42 Mgal/day, or 38.9% of the 1997 rate that is an unmet demand. (Holland, 2003, 2007, 2011)

In 2010, a letter of understanding (LOU) was signed between the Arkansas Natural Resources Commission (ANRC), the Arkansas Geological Survey (AGS), and the Arkansas District of the US Geological Survey (USGS), which created the Arkansas Water Inventory System. This database system combines the water use registration system with the water well construction report database, along with other data, to provide an extremely helpful tool for locating water use and well construction information statewide. The system currently contains water use information on 49,029 water wells, along with water well construction information on approximately 60,000 wells statewide and can be accessed at http://www.accessarkansas.org/awwcc/FramesConstructionReports.htm .

2009 Withdrawals of Ground Water from Aquifers in Arkansas Counties by Use Type

(In million gallons per day: ---, no data available)

County	Use Type	Deposits of Quaternary Age		Cockfield Formation		Cane River		Sparta-Memphis Sand		Wilcox Group		Clayton Formation		Nacatoch Sand		Tokio Formation		Trinity Group		ROCKS PALEOZOIC AGE'		All Other Aquifers		Use Type total	
		Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well
ARKANSAS	AG/IR	337.76	2097	0.38	1	--	--	36.58	174	--	--	--	--	--	--	--	--	--	--	--	--	5.81	23	380.53	2295
	IN/CO/ MI	--	--	--	--	--	--	0	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1
	WS	0	1	--	--	--	--	1.34	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1
Totals		337.76	2098	0.38	1	--	--	37.92	182	--	--	--	--	--	--	--	--	--	--	--	--	5.81	23	381.87	2304
ASHLEY	AG/IR	114.26	1044	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.71	6	114.97	1050
	IN/CO/ MI	--	--	0.01	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.01	7
	WS	--	--	1.38	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.12	2	1.5	13
Totals		114.26	1044	1.39	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.83	8	116.48	1070
BAXTER	IN/CO/ MI	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	2	0	1	0	3
	WS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	20.3	21	--	--	20.3	21
Totals		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	20.3	23	0	1	20.3	24
BENTON	AG/IR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.03	2	--	--	0.03	2
	IN/CO/ MI	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.02	3	--	--	0.02	3
	WS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.19	12	0.2	3	0.39	15
Totals		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.24	17	0.2	3	0.44	20
BOONE	IN/CO/ MI	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	2	--	--	0	2
	WS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.74	13	--	--	0.74	13
Totals		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.74	15	--	--	0.74	15
BRADLEY	IN/CO/ MI	--	--	--	--	--	--	0.44	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.44	3
	WS	--	--	0.09	2	--	--	0.23	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.32	5
Totals		--	--	0.09	2	--	--	0.67	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.76	8
CALHOUN	AG/IR	--	--	--	--	--	--	0	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	0
	IN/CO/ MI	--	--	--	--	--	--	0	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1
	WS	--	--	--	--	--	--	0.12	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.12	3
Totals		--	--	--	--	--	--	0.12	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.12	4
CARROLL	AG/IR	0	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	0

2009 Withdrawals of Ground Water from Aquifers in Arkansas Counties by Use Type

(In million gallons per day: ---, no data available)

County	Use Type	Deposits of Quaternary Age		Cockfield Formation		Cane River		Sparta-Memphis Sand		Wilcox Group		Clayton Formation		Nacatoch Sand		Tokio Formation		Trinity Group		ROCKS PALEOZOIC AGE'		All Other Aquifers		Use Type total	
		Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well
	IN/CO/ MI	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.04	6	0	3	0.04	9
	WS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.74	11	0.01	5	0.75	16
Totals		0	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.78	17	0.01	8	0.79	25
CHICOT	AG/IR	175.98	1400	0.81	5	--	--	0.05	1	--	--	--	--	--	--	--	--	--	--	--	--	0.5	5	177.34	1411
	WS	--	--	1.16	8	--	--	0.51	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.67	11
Totals		175.98	1400	1.97	13	--	--	0.56	4	--	--	--	--	--	--	--	--	--	--	--	--	0.5	5	179.01	1422
CLARK	IN/CO/ MI	--	--	--	--	--	--	--	--	--	--	--	--	0.11	3	--	--	--	--	0	3	0	1	0.11	7
	WS	--	--	--	--	--	--	--	--	--	--	0	1	0	4	0.06	2	--	--	--	--	--	--	0.06	7
Totals		--	--	--	--	--	--	--	--	--	--	0	1	0.11	7	0.06	2	--	--	0	3	0	1	0.17	14
CLAY	AG/IR	284.35	2120	--	--	--	--	--	--	0.68	1	--	--	--	--	--	--	--	--	4.21	13	67.57	220	356.81	2354
	IN/CO/ MI	0	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1
	WS	0.41	3	--	--	--	--	--	--	--	--	--	--	1.02	11	--	--	--	--	--	--	--	--	1.43	14
Totals		284.76	2124	--	--	--	--	--	--	0.68	1	--	--	1.02	11	--	--	--	--	4.21	13	67.57	220	258.24	2369
CLEBURNE	AG/IR	0.11	1																					0.11	1
Totals		0.11	1																					0.11	1
CLEVELAND	AG/IR							0	1															0	1
	WS	--	--	--	--	--	--	0.43	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.43	6
Totals		--	--	--	--	--	--	0.43	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.43	7
COLUMBIA	IN/CO/ MI	--	--	--	--	--	--	1.76	39	--	--	--	--	--	--	--	--	0	1	--	--	--	--	1.76	40
	WS	--	--	--	--	--	--	0.53	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.53	15
Totals		--	--	--	--	--	--	2.29	54	--	--	--	--	--	--	--	--	0	1	--	--	--	--	2.29	55
CONWAY	AG/IR	0.55	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.01	1	0.56	16
Totals		0.55	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.01	1	0.56	16
CRAIGHEAD	AG/IR	332.29	3154	--	--	--	--	2.11	21	--	--	--	--	--	--	--	--	--	--	--	--	6.89	62	341.29	3237
	IN/CO/ MI	0	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1
	WS	1.84	8	--	--	--	--	8.93	23	0.46	5	--	--	--	--	--	--	--	--	--	--	--	--	11.23	36
Totals		334.13	3163	--	--	--	--	11.04	44	0.46	5	--	--	--	--	--	--	--	--	--	--	6.89	62	352.52	3274
CRAWFORD	AG/IR	0.25	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.25	10

2009 Withdrawals of Ground Water from Aquifers in Arkansas Counties by Use Type

(In million gallons per day: ---, no data available)

County	Use Type	Deposits of Quaternary Age		Cockfield Formation		Cane River		Sparta-Memphis Sand		Wilcox Group		Clayton Formation		Nacatoch Sand		Tokio Formation		Trinity Group		ROCKS PALEOZOIC AGE'		All Other Aquifers		Use Type total	
		Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well
Totals		0.25	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.25	10
CRITTENDEN	AG/IR	173.17	1383	0	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.59	9	173.76	1393
	IN/CO/ MI	0.13	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	0	0.13	3
	WS	--	--	--	--	--	--	--	--	6.25	12	--	--	--	--	--	--	--	--	--	--	0	1	6.25	13
Totals		173.3	1386	0	1	--	--	--	--	6.25	12	--	--	--	--	--	--	--	--	--	--	0.59	10	180.14	1409
CROSS	AG/IR	386.46	2281	--	--	--	--	3.28	9	--	--	--	--	--	--	--	--	--	--	--	--	10.16	67	399.9	2357
	IN/CO/ MI	0.42	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.42	4
	WS	0.84	5	--	--	--	--	1.13	6	0.3	2	--	--	--	--	--	--	--	--	--	--	0	1	2.27	14
Totals		387.72	2290	--	--	--	--	4.41	15	0.3	2	--	--	--	--	--	--	--	--	--	--	10.16	68	402.59	2375
DALLAS	WS	0	1	--	--	0	2	0.79	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.79	8
Totals		0	1	--	--	0	2	0.79	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.79	8
DESHA	AG/IR	272.03	1968	1.8	7	--	--	0.08	1	--	--	--	--	--	--	--	--	--	--	--	--	14.52	120	288.43	2096
	IN/CO/ MI	--	--	0	1	--	--	1.16	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.16	5
	WS	--	--	--	--	--	--	1.09	10	--	--	--	--	--	--	--	--	--	--	--	--	0.03	1	1.12	11
Totals		272.03	1968	1.8	8	--	--	2.33	15	--	--	--	--	--	--	--	--	--	--	--	--	14.55	121	290.71	2112
DREW	AG/IR	27.61	557	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			27.61	557
	WS	--	--	--	--	--	--	2.38	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.38	9
Totals		27.61	557	--	--	--	--	2.38	9	--	--	--	--	--	--	--	--	--	--	--	--			29.99	566
FAULKNER	AG/IR	0.55	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.03	1	0.58	9
	IN/CO/ MI	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	2	--	--	0	2
	WS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	8	--	--	0	8
Totals		0.55	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	10	0.03	1	0.58	19
FRANKLIN	IN/CO/ MI	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1	--	--	0	1
Totals				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1			0	1
FULTON	AG/IR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.27	1	--	--	0.27	1

2009 Withdrawals of Ground Water from Aquifers in Arkansas Counties by Use Type

(In million gallons per day: ---, no data available)

County	Use Type	Deposits of Quaternary Age		Cockfield Formation		Cane River		Sparta-Memphis Sand		Wilcox Group		Clayton Formation		Nacatoch Sand		Tokio Formation		Trinity Group		ROCKS PALEOZOIC AGE'		All Other Aquifers		Use Type total	
		Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well
	IN/CO/ MI	0	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	2	0	3
	WS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.64	5	0.01	1	0.65	6
Totals		0	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.91	6	0.01	3	0.92	10
GARLAND	IN/CO/ MI			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	4	0	2	0	6
	WS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	3			0	3
Totals				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	7	0	2	0	9
GRANT	AG/IR	0.15	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.15	1
	IN/CO/ MI	--	--	--	--	--	--	0.26	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.26	6
	WS	--	--	--	--	--	--	1.44	12	--	--	--	--	--	--	--	--	--	--	--	--			1.44	12
Totals		0.15	1	--	--	--	--	1.7	18	--	--	--	--	--	--	--	--	--	--	--	--			1.85	19
GREENE	AG/IR	329.86	2136	--	--	--	--	--	--	1.91	15	--	--	--	--	--	--	--	--	--	--	0.27	2	332.04	2153
	IN/CO/ MI	0.08	2	--	--	--	--	--	--	0.01	4	--	--	0.02	1	--	--	--	--	--	--	--	--	0.11	7
	WS	--	--	--	--	--	--	--	--	3.84	9	--	--	0.5	4	--	--	--	--	--	--	--	--	4.34	13
Totals		329.94	2138	--	--	--	--	--	--	5.76	28	--	--	0.52	5	--	--	--	--	--	--	0.27	2	336.49	2173
HEMPSTEAD	AG/IR	--	--	--	--	--	--	0	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1
	IN/CO/ MI	--	--	--	--	--	--	--	--	--	--	--	--	0	1	--	--	--	--	--	--	0	1	0	2
	WS	--	--	--	--	--	--	--	--	--	--	--	--	0.17	4	0.32	11	--	--	--	--	--	--	0.49	15
Totals		--	--	--	--	--	--	0	1	--	--	--	--	0.17	5	0.32	11	--	--	--	--	0	1	0.49	18
HOT SPRING	IN/CO/ MI			--	--	--	--	0	1	--	--	--	--	--	--	--	--	--	--	0.03	4	--	--	0.03	5
	WS																			0.03	1			0.03	1
Totals				--	--	--	--	0	1	--	--	--	--	--	--	--	--	--	--	0.06	5	--	--	0.06	6
HOWARD	WS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.09	4	--	--	--	--	--	--	0.09	4
Totals		--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.09	4	--	--	--	--	--	--	0.09	4
INDEPENDENCE	AG/IR	36.69	314	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.75	11	38.44	325
	WS	0.97	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.97	7
Totals		37.66	321	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.75	11	39.41	332

2009 Withdrawals of Ground Water from Aquifers in Arkansas Counties by Use Type

(In million gallons per day: ---, no data available)

County	Use Type	Deposits of Quaternary Age		Cockfield Formation		Cane River		Sparta-Memphis Sand		Wilcox Group		Clayton Formation		Nacatoch Sand		Tokio Formation		Trinity Group		ROCKS PALEOZOIC AGE'		All Other Aquifers		Use Type total	
		Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well
IZARD	AG/IR	0.08	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.08	1
	WS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.52	11	--	--	0.55	14
Totals		0.08	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.52	11	--	--	0.63	15
JACKSON	AG/IR	334.24	2636	--	--	--	--	0.32	1	--	--	--	--	--	--	--	--	--	--	--	--	0.24	3	334.8	2640
	IN/CO/ MI	0.16	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.16	1
	WS	0.82	16	--	--	--	--			--	--	--	--	--	--	--	--	--	--	--	--		--	0.82	16
Totals		335.22	2653					0.32	1													0.24	3	335.78	2657
JEFFERSON	AG/IR	197.79	1643	--	--	--	--	0.14	1	--	--	--	--	--	--	--	--	--	--	--	--	0.02	1	197.95	1645
	IN/CO/ MI	5.96	7	--	--	--	--	30.01	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	35.97	37
	WS	--	--	--	--	--	--	12.62	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	12.62	39
Totals		203.75	1650	--	--	--	--	42.77	70	--	--	--	--	--	--	--	--	--	--	--	--	0.02	1	246.54	1721
JOHNSON	AG/IR	0	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	14
	IN/CO/ MI	0.13	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.13	1
Totals		0.13	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.13	15
LAFAYETTE	AG/IR	24.71	268	0.01	3	--	--	0.22	28	0.01	11	--	--	--	--	--	--	--	--	0	1	1.21	14	26.16	325
	IN/CO/ MI	--	--	--	--	--	--	0	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	2
	WS	--	--	--	--	0.36	5	0.1	4	--	--	--	--	--	--	--	--	--	--	--	--			0.46	9
Totals		24.71	268	0.01	3	0.36	5	0.32	34	0.01	11	--	--	--	--	--	--	--	--	0	1	1.21	14	26.62	336
LAWRENCE	AG/IR	155.38	1274	--	--	--	--	0.12	1	--	--	--	--	--	--	--	--	--	--	0.3	3	11.91	89	167.71	1367
	IN/CO/ MI	--	--	--	--	--	--	--	--	--	--	--	--	0	1	--	--	--	--	--	--	0.05	1	0.05	2
	WS	1.01	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.56	7			1.57	16
Totals		156.39	1283					0.12	1					0	1					0.86	10	11.96	90	169.33	1385
LEE	AG/IR	223.91	2303	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	223.91	2303
	WS	--	--	--	--	--	--	0.97	2	0.03	1	--	--	--	--	--	--	--	--	--	--	0.36	2	1.36	5
Totals		223.91	2303	--	--	--	--	0.97	2	0.03	1	--	--	--	--	--	--	--	--	--	--	0.36	2	225.27	2308
LINCOLN	AG/IR	132.08	1161	--	--	--	--	0.8	6	--	--	--	--	--	--	--	--	--	--	--	--	1.23	7	134.11	1174
	WS	--	--	--	--	--	--	2.09	15	--	--	--	--	--	--	--	--	--	--	--	--	0.07	2	2.16	17
Totals		132.08	1161	--	--	--	--	2.89	21	--	--	--	--	--	--	--	--	--	--	--	--	1.3	9	136.27	1191

2009 Withdrawals of Ground Water from Aquifers in Arkansas Counties by Use Type

(In million gallons per day: ---, no data available)

County	Use Type	Deposits of Quaternary Age		Cockfield Formation		Cane River		Sparta-Memphis Sand		Wilcox Group		Clayton Formation		Nacatoch Sand		Tokio Formation		Trinity Group		ROCKS PALEOZOIC AGE'		All Other Aquifers		Use Type total	
		Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well
LITTLE RIVER	AG/IR	3.29	27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.29	27
	IN/CO/ MI	0.16	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.16	7
	WS	0.58	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.58	6
Totals		4.03	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.03	40
LOGAN	AG/IR	0.25	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.25	19
Totals		0.25	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.25	19
LONOKE	AG/IR	232.57	2522	--	--	--	--	6.65	36	0.05	1	--	--	--	--	--	--	--	--	--	--	10.72	56	249.99	2615
	IN/CO/ MI	1.4	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.4	4
	WS	3.03	29	0.16	2	--	--	1.68	8	0.46	2	--	--	--	--	--	--	--	--	--	--	--	--	5.33	41
Totals		237	2555	0.16	2	--	--	8.33	44	0.51	3	--	--	--	--	--	--	--	--	--	--	10.72	56	256.72	2660
MADISON	AG/IR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1	--	--	0	1
Totals		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1	--	--	0	1
MARION	IN/CO/ MI	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1	0	1	0	2
	WS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	2	--	--	0	2
Totals		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	3	0	1	0	4
MILLER	AG/IR	7.47	75	--	--	--	--	0	1	--	--	--	--	--	--	--	--	--	--	--	--	0	1	7.47	77
	IN/CO/ MI	--	--	--	--	--	--	--	--	0.01	2	--	--	--	--	0.15	3	--	--	--	--	0	2	0.16	7
	WS	0.09	1	--	--	--	--					--	--	--	--	--	--	--	--	--	--			0.09	1
Totals		7.56	76	--	--	--	--	0	1	0.1	2	--	--	--	--	0.15	3	--	--	--	--	0	3	7.72	85
MISSISSIPPI	AG/IR	178.74	2301	--	--	--	--	--	--	0.04	2	--	--	--	--	--	--	--	--	--	--	0.35	3	179.13	2306
	IN/CO/ MI			--	--	--	--	--	--	0.92	7	--	--	--	--	--	--	--	--	--	--	0.86	1	1.78	8
	WS	--	--	--	--	--	--	--	--	3.15	23	--	--	--	--	--	--	--	--	--	--			3.15	23
Totals		178.74	2301	--	--	--	--	--	--	4.11	32	--	--	--	--	--	--	--	--	--	--	1.21	4	184.06	2337
MONROE	AG/IR	267.89	2236	0.71	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.16	2	268.76	2246
	IN/CO/ MI	0	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1
	WS			--	--	--	--	0.13	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.13	1
Totals		267.89	0.71	0.71	8	--	--	0.13	1	--	--	--	--	--	--	--	--	--	--	--	--	0.16	2	268.89	2248

2009 Withdrawals of Ground Water from Aquifers in Arkansas Counties by Use Type

(In million gallons per day: ---, no data available)

County	Use Type	Deposits of Quaternary Age		Cockfield Formation		Cane River		Sparta-Memphis Sand		Wilcox Group		Clayton Formation		Nacatoch Sand		Tokio Formation		Trinity Group		ROCKS PALEOZOIC AGE'		All Other Aquifers		Use Type total	
		Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well
MONTGOMERY	IN/CO/ MI	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.01	5	0.03	2	0.04	7
Totals		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.01	5	0.03	2	0.04	7
NEVADA	IN/CO/ MI	0	2	--	--	--	--	--	--	0	1			--	--	--	--	--	--	--	--	--	--	0.09	3
	WS	--	--	--	--	--	--	0.05	2			0.05	2			--	--	--	--	--	--	--	--	0.16	6
Totals		0	2	--	--	--	--	0.05	2	0	1	0.05	2			--	--	--	--	--	--	--	--	0.25	9
NEWTON	WS	0.05	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.3	7	0	1	0.35	11
Totals		0.05	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.3	7	0	1	0.35	11
OUACHITA	WS	--	--	--	--			1.16	13	--	--	--	--	0	1	--	--	--	--	--	--	0.09	1	1.25	15
Totals		--	--	--	--			1.16	13	--	--	--	--	0	1	--	--	--	--	--	--	0.09	1	1.25	15
PERRY	IN/CO/ MI	0	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1
	WS	0	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.11	3	--	--	0.11	5
Totals		0	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.11	3	--	--	0.11	6
PHILLIPS	AG/IR	243.8	1927	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.19	1	243.99	1928
	IN/CO/ MI	0.03	1	0	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.03	2
	WS	--	--	--	--	--	--	3.2	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.2	15
Totals		243.83	1928	0	1	--	--	3.2	15	--	--	--	--	--	--	--	--	--	--	--	--	0.19	1	247.22	1945
PIKE	AG/IR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1	--	--	0	1
	WS	0.05	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			--	--	0.05	1
Totals		0.05	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1	--	--	0.05	2
POINSETT	AG/IR	485.56	2864	--	--	--	--	0.89	4	--	--	--	--	--	--	--	--	--	--	--	--			486.45	2868
	IN/CO/ MI	0	2	--	--	--	--	0	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	3
	WS	0.84	8	--	--	--	--	0.03	4	1.83	8	--	--	--	--	--	--	--	--	--	--	--	--	2.7	20
Totals		486.4	2874	--	--	--	--	0.92	9	1.83	8	--	--	--	--	--	--	--	--	--	--			489.15	2891
POLK	IN/CO/ MI	0.34	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.03	2	0.01	3	0.38	9
Totals		0.34	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.03	2	0.01	3	0.38	9
POPE	AG/IR	0	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.4	2	--	--	0.4	3

2009 Withdrawals of Ground Water from Aquifers in Arkansas Counties by Use Type

(In million gallons per day: ---, no data available)

County	Use Type	Deposits of Quaternary Age		Cockfield Formation		Cane River		Sparta-Memphis Sand		Wilcox Group		Clayton Formation		Nacatoch Sand		Tokio Formation		Trinity Group		ROCKS PALEOZOIC AGE'		All Other Aquifers		Use Type total	
		Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well
	IN/CO/ MI	0.01	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.01	3
Totals		0.01	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.4	2	--	--	0.41	6
PRAIRIE	AG/IR	130.37	1776	--	--	--	--	6.46	42	1.23	10	--	--	--	--	--	--	--	--	--	--	7.1	70	145.16	1898
	WS	0.26	7	--	--	--	--	0.14	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.4	8
Totals		130.63	1783	--	--	--	--	6.6	43	1.23	10	--	--	--	--	--	--	--	--	--	--	7.1	70	145.56	1906
PULASKI	AG/IR	17.54	229	--	--	--	--	0.55	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	18.09	234
	WS	2.5	5	--	--	--	--	0.25	3	--	--	--	--	--	--	--	--	--	--	0	4			2.75	12
Totals		20.04	234	--	--	--	--	0.8	8	--	--	--	--	--	--	--	--	--	--	0	4			20.84	246
RANDOLPH	AG/IR	106.43	674	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.47	2	106.9	676
	WS	0.06	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.18	4	--	--	0.24	7
Totals		106.49	677	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.18	4	0.47	2	107.14	683
ST FRANCIS	AG/IR	244.91	2057	0.82	6	--	--	0.04	1	--	--	--	--	--	--	--	--	--	--	--	--	0.89	6	246.66	2070
	WS	1.63	12	--	--	--	--	--	--	0.24	1	--	--	--	--	--	--	--	--	--	--			1.87	13
Totals		246.54	2069	0.82	6	--	--	0.04	1	0.24	1	--	--	--	--	--	--	--	--	--	--	0.89	6	248.53	2083
SALINE	AG/IR	--	--	--	--	--	--			0	1	--	--	--	--	--	--	--	--	--	--	--	--	0	1
	WS	0.35	2	--	--	--	--	0.19	2	0.6	9	--	--	--	--	--	--	--	--	--	--			1.14	13
Totals		0.35	2	--	--	--	--	0.19	2	0.6	10	--	--	--	--	--	--	--	--	--	--			1.14	14
SCOTT	IN/CO/ MI	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	2	0	1	0	3
Totals		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	2	0	1	0	3
SEARCY	WS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.24	5	0.12	2	0.36	7
Totals		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.24	5	0.12	2	0.36	7
SEVIER	IN/CO/ MI	--	--	--	--	--	--	0	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1
	WS	0.04	1	--	--	--	--	--	--	--	--	--	--	--	--			0.17	4	--	--	0	1	0.21	5
Totals		0.04	1	--	--	--	--	0	1	--	--	--	--	--	--			0.17	4	--	--	0	1	0.21	6
SHARP	IN/CO/ MI	0	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1
	WS	0	1	--	--	--	--	--	--	--	--	--	--	--	--	0	1	--	--	0.79	11	--	--	0.79	13
Totals		0	2													0	1			0.79	11			0.79	14

2009 Withdrawals of Ground Water from Aquifers in Arkansas Counties by Use Type

(In million gallons per day: ---, no data available)

County	Use Type	Deposits of Quaternary Age		Cockfield Formation		Cane River		Sparta-Memphis Sand		Wilcox Group		Clayton Formation		Nacatoch Sand		Tokio Formation		Trinity Group		ROCKS PALEOZOIC AGE'		All Other Aquifers		Use Type total	
		Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well	Mgal/ day	# of Well
STONE	AG/IR	0.13	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.13	1
	IN/CO/ MI	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.01	1	--	--	0.01	1
Totals		0.13	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.01	1	--	--	0.14	2
UNION	IN/CO/ MI	--	--	--	--	--	--	4.04	24	--	--	--	--	--	--	--	--	--	--	--	--	0.36	2	4.4	26
	WS	0.06	1	--	--	--	--	3.87	40	--	--	--	--	--	--	--	--	--	--	--	--	0.01	1	3.94	42
Totals		0.06	1	--	--	--	--	7.91	64	--	--	--	--	--	--	--	--	--	--	--	--	0.37	3	8.34	68
WASHINGTON	IN/CO/ MI	0	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1	0	2
Totals		0	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1	0	2
WHITE	AG/IR	28.44	541	--	--	--	--	--	--	0.54	1	0.13	2	--	--	--	--	--	--	--	--	1.9	15	31.01	559
	WS	0.04	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.04	1
Totals		28.48	542	--	--	--	--	--	--	0.54	1	0.13	2	--	--	--	--	--	--	--	--	1.9	15	31.05	560
WOODRUFF	AG/IR	173.49	1931	--	--	--	--	1.06	7	--	--	--	--	--	--	--	--	--	--	--	--	29.14	392	203.69	2330
	IN/CO/ MI	0	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	2
	WS	0.4	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.4	6
Totals		173.89	1939	--	--	--	--	1.06	7	--	--	--	--	--	--	--	--	--	--	--	--	29.14	392	204.09	2338
YELL	IN/CO/ MI	0	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	2
	WS	2.04	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.04	9
Totals		2.04	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.04	11
Agriculture/ Irrigation		5661.14	46970	4.53	31			59.35	341	4.46	42	0.13	2							5.21	24	174.34	1189	5909.16	48599
Commercial/ Industrial/ Mining		8.82	52	0.01	9			37.67	113	0.94	14			0.13	6	0.15	3	0.00	1	0.14	38	1.31	24	49.26	260
Water Supply/ Domestic		17.91	148	2.79	23	0.36	7	45.40	251	17.16	72	0.05	3	1.69	24	0.47	18	0.17	4	25.3	128	1.02	24	111.11	699
Total		**5687.87**	**47170**	**7.33**	**63**	**0.36**	**7**	**142.42**	**705**	**22.56**	**128**	**0.18**	**5**	**1.82**	**30**	**0.62**	**21**	**0.17**	**5**	**30.65**	**190**	**176.67**	**1237**	**6069.53**	**49558**

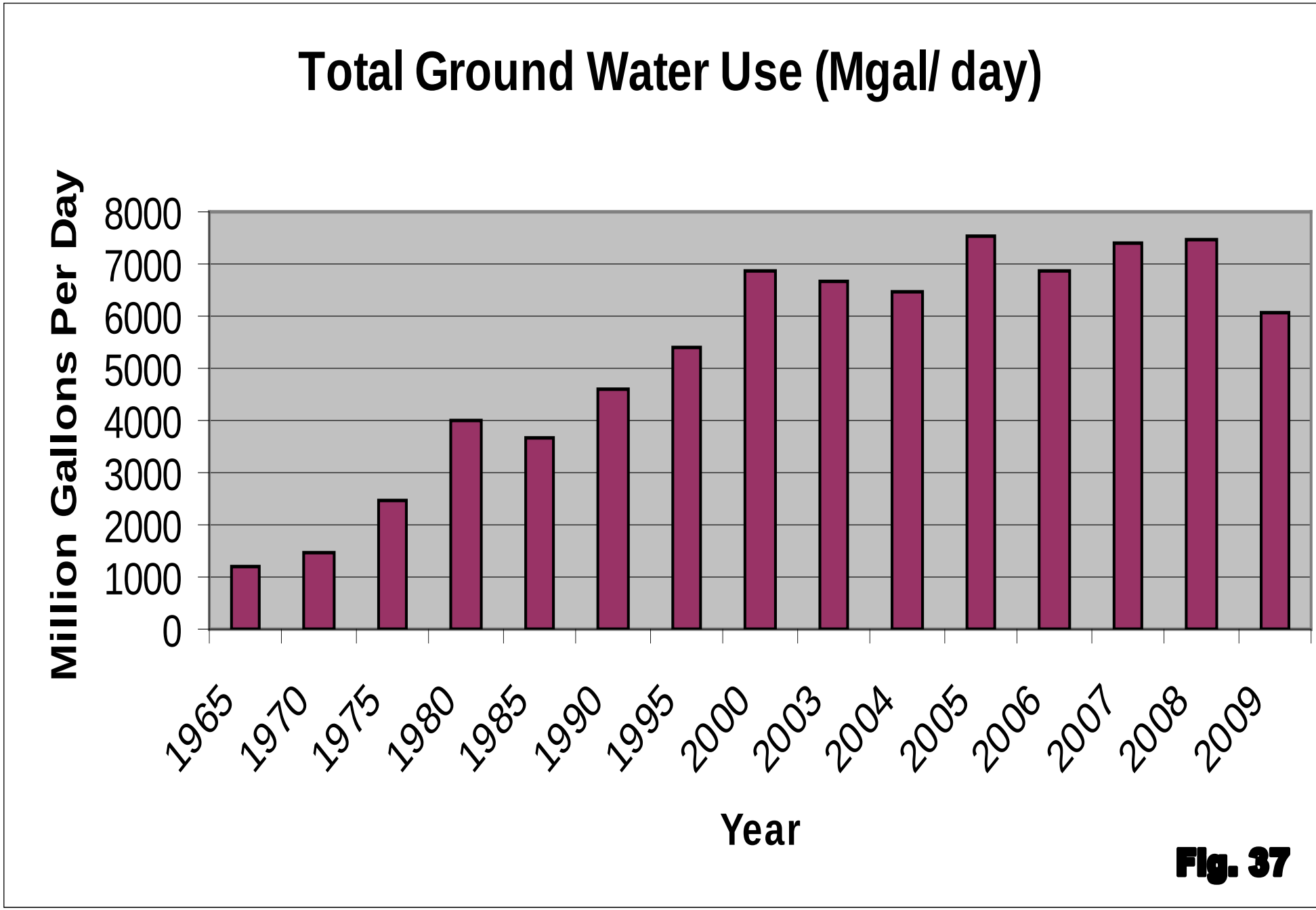
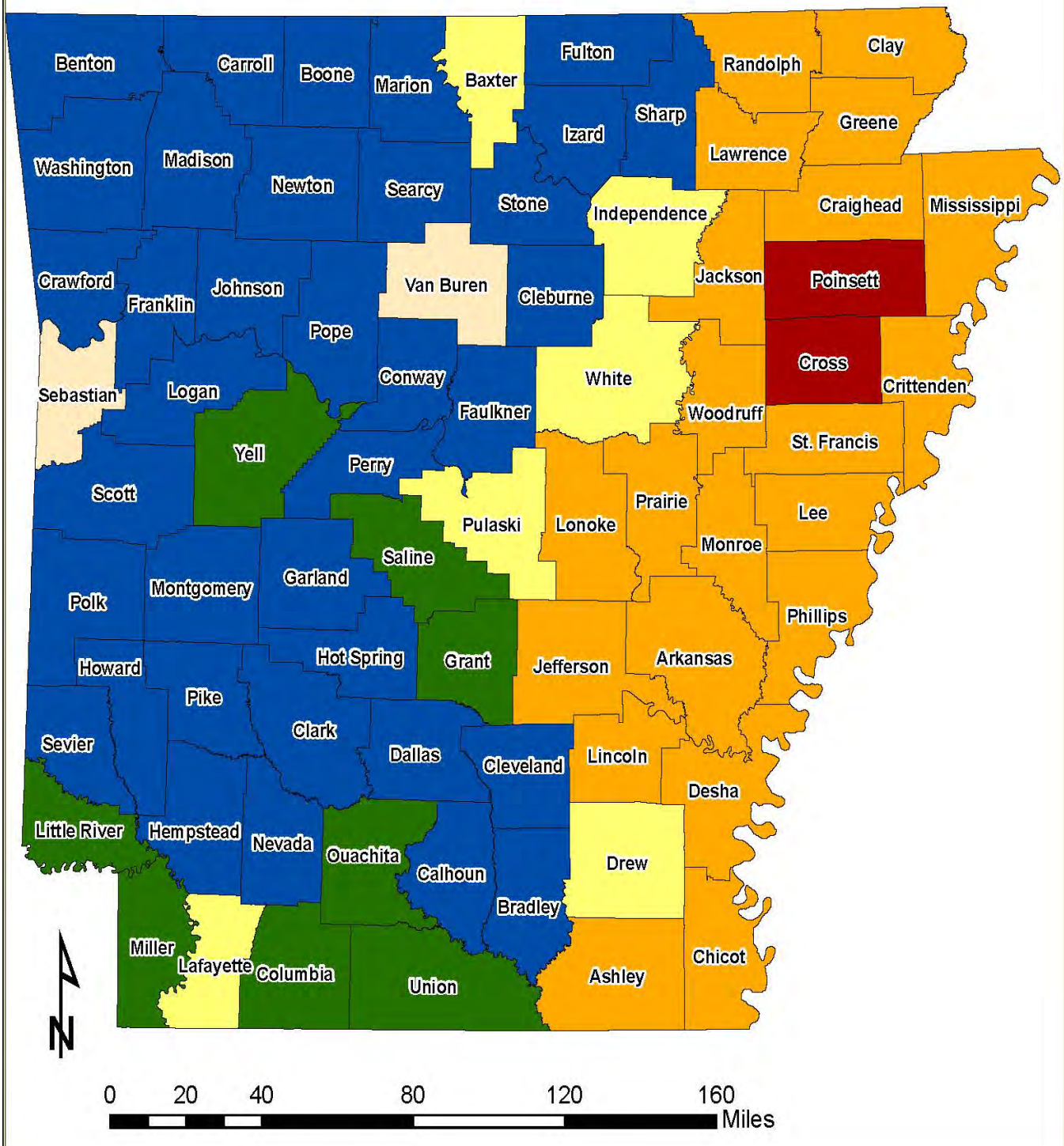

Total Ground Water Use (Mgal/ day)
Million Gallons Per Day
8000
7000
6000
5000
4000
3000
2000
1000
0
1965
1970
1975
1980
1985
1990
1995
2000
2003
2004
2005
2006
2007
2008
2009
Year

Fig. 37

Ground Water Use in Arkansas as of 2009 (Mgal/day)



Legend

- 0 - 1 Mgal/ Day
- Greater than 1 -10 Mgal/day
- Greater than 10 - 100 Mgal/day
- Greater than 100 - 400 Mgal/day
- Greater than 401 - 490 Mgal/day
- No Data Available

Total Use (Mgal/day): 6069.53

***Data Obtained from United States Geological Survey**

Fig. 38

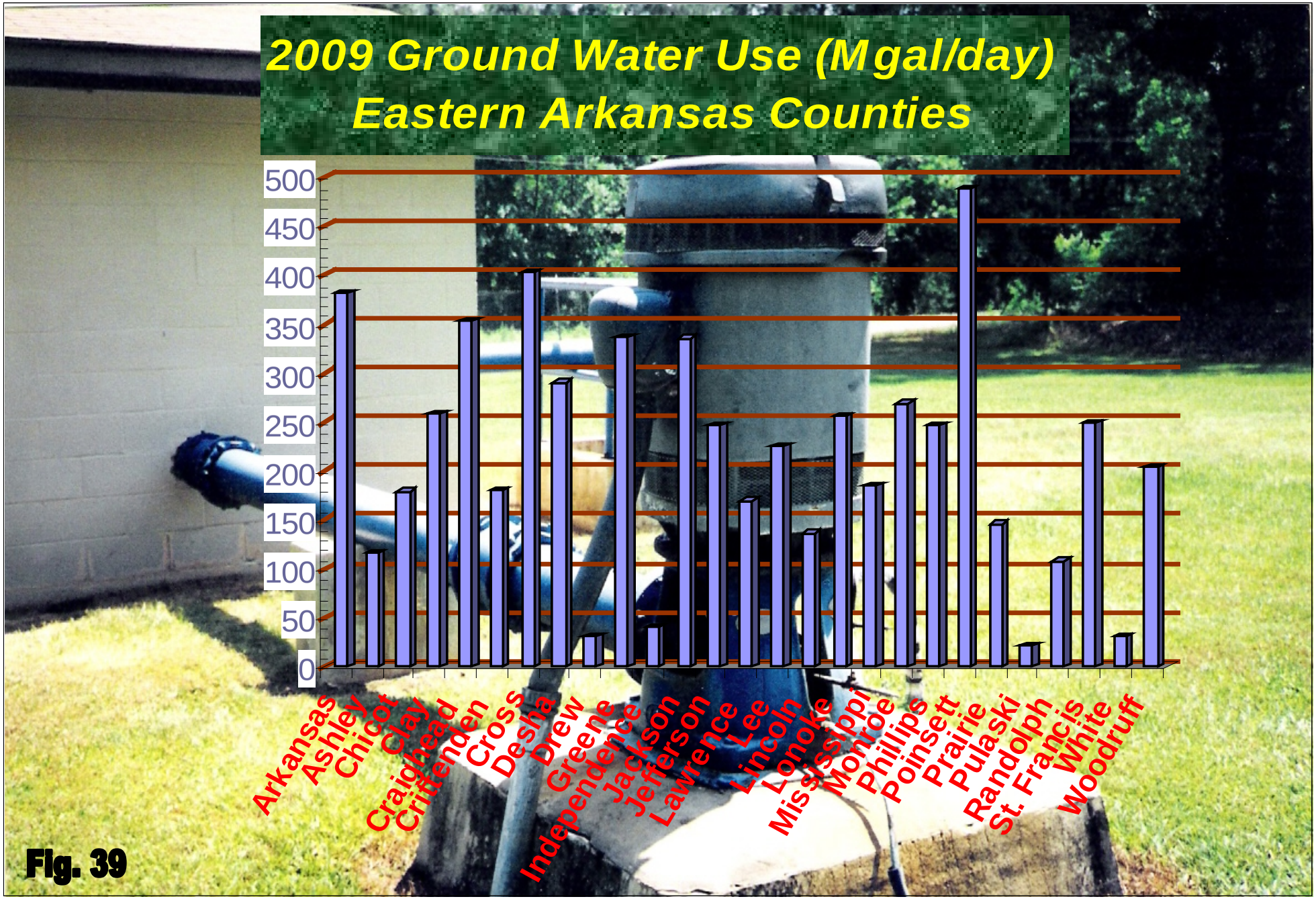
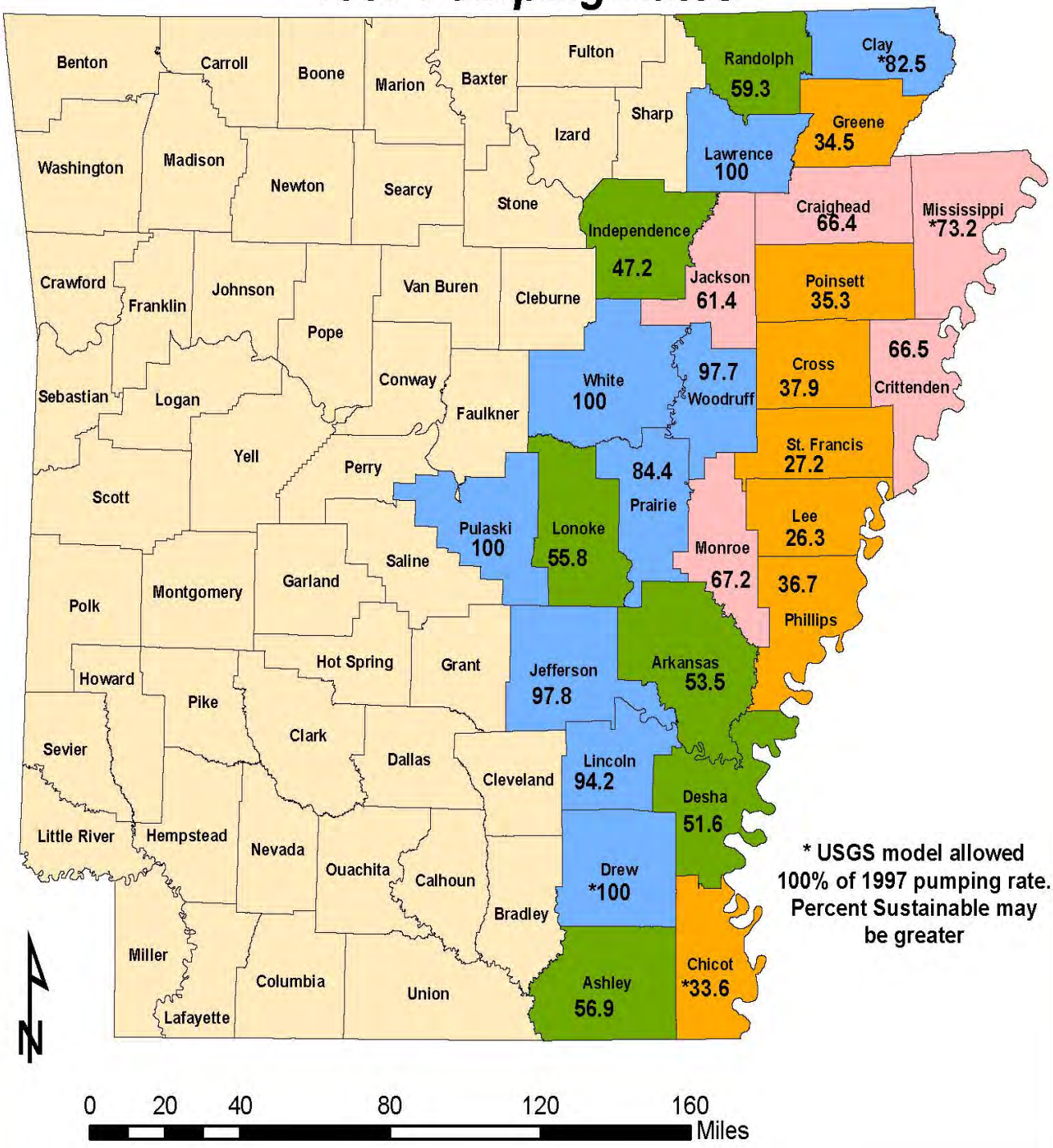

2009 Ground Water Use (Mgal/day)
Eastern Arkansas Counties
500
450
400
350
300
250
200
150
100
50
0
Arkansas
Ashley
Chicot
Clay
Craighead
Crittenden
Cross
Desha
Drew
Greene
Independence
Jackson
Jefferson
Lawrence
Lee
Lincoln
Lonoke
Mississippi
Monroe
Phillips
Poinsett
Prairie
Pulaski
Randolph
St. Francis
White
Woodruff

Fig. 39

Percentage of 2009 Water Use Sustainable for the Alluvial Aquifer based on 1997 Pumping Rates



* USGS model allowed 100% of 1997 pumping rate. Percent Sustainable may be greater

Legend

- 21 - 40%
- 41 - 60%
- 61 - 80%
- 81 - 100%
- County Boundaries

Modified from USGS Reports 2003-4230 &2007-5241

2009 Total Reported Alluvial Water Use: 5687.87 Mgal/day

Total Sustainable Yield: 59.3% of 2009 Use

Fig. 40

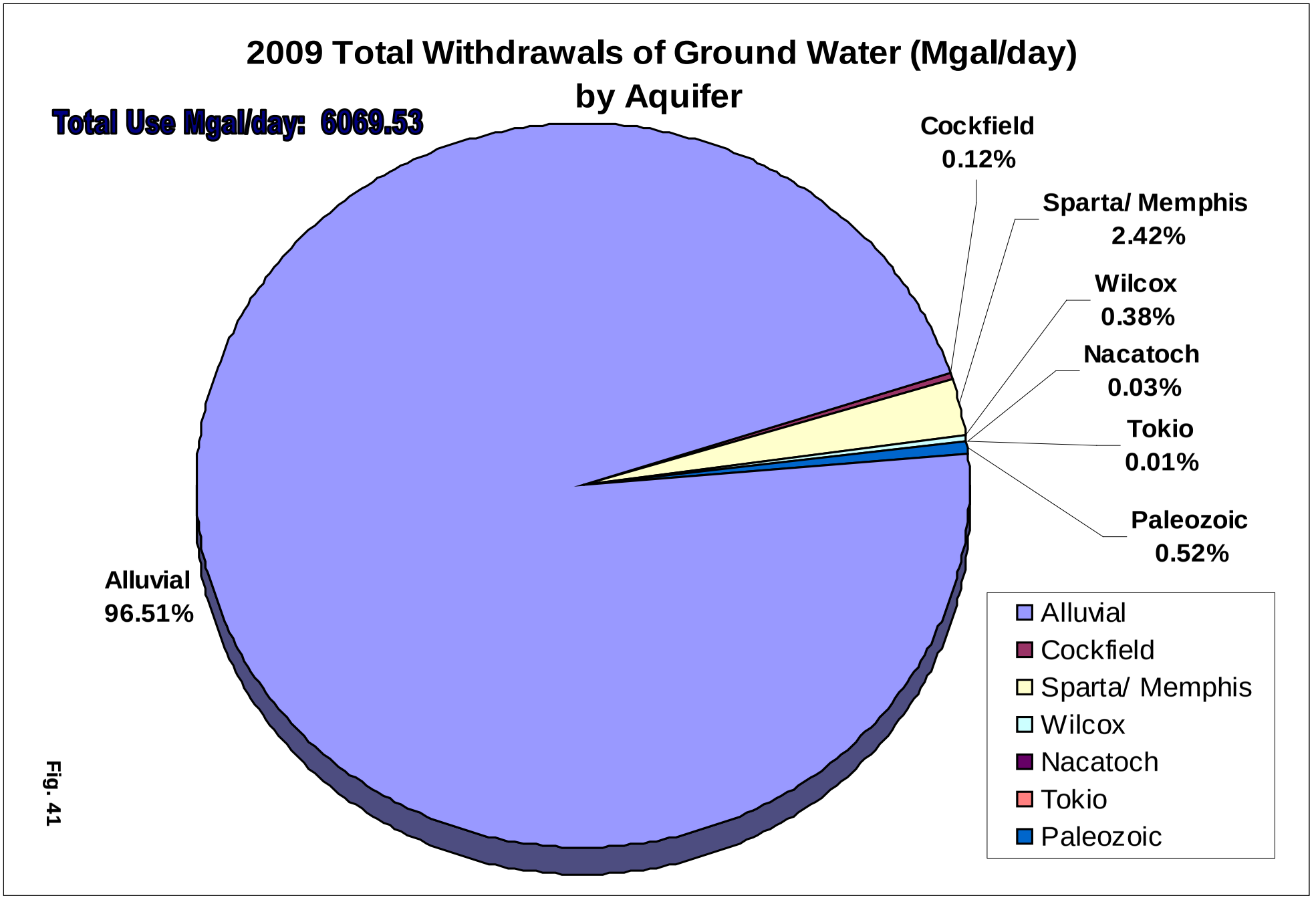

2009 Total Withdrawals of Ground Water (Mgal/day)
by Aquifer
Total Use Mgal/day: 6069.53
Cockfield
0.12%
Sparta/ Memphis
2.42%
Wilcox
0.38%
Nacatoch
0.03%
Tokio
0.01%
Paleozoic
0.52%
Alluvial
96.51%
Alluvial
Cockfield
Sparta/ Memphis
Wilcox
Nacatoch
Tokio
Paleozoic

Fig. 41

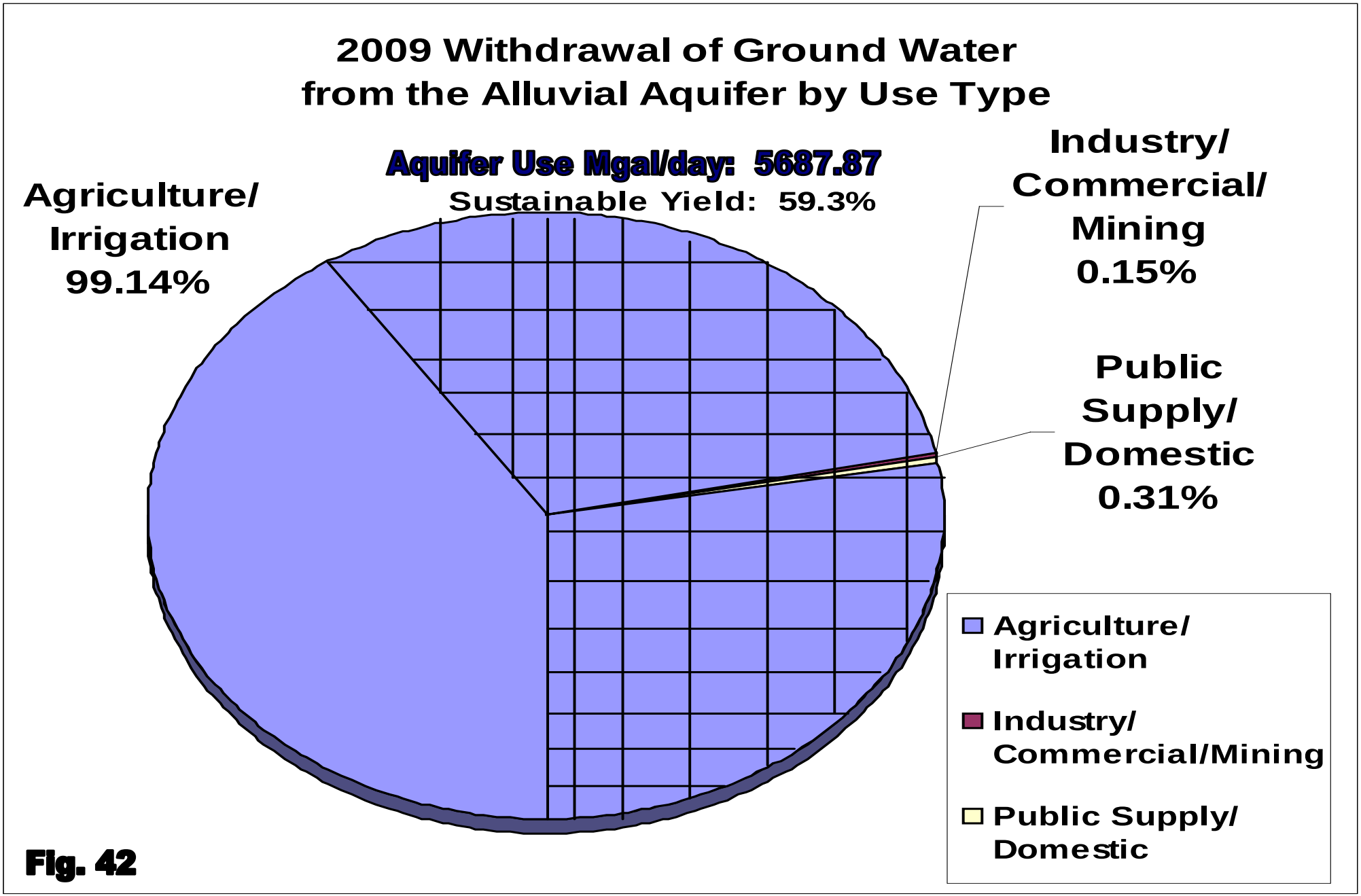

2009 Withdrawal of Ground Water
from the Alluvial Aquifer by Use Type
Aquifer Use Mgal/day: 5687.87
Sustainable Yield: 59.3%
Agriculture/
Irrigation
99.14%
Industry/
Commercial/
Mining
0.15%
Public
Supply/
Domestic
0.31%
Agriculture/
Irrigation
Industry/
Commercial/Mining
Public Supply/
Domestic

Fig. 42

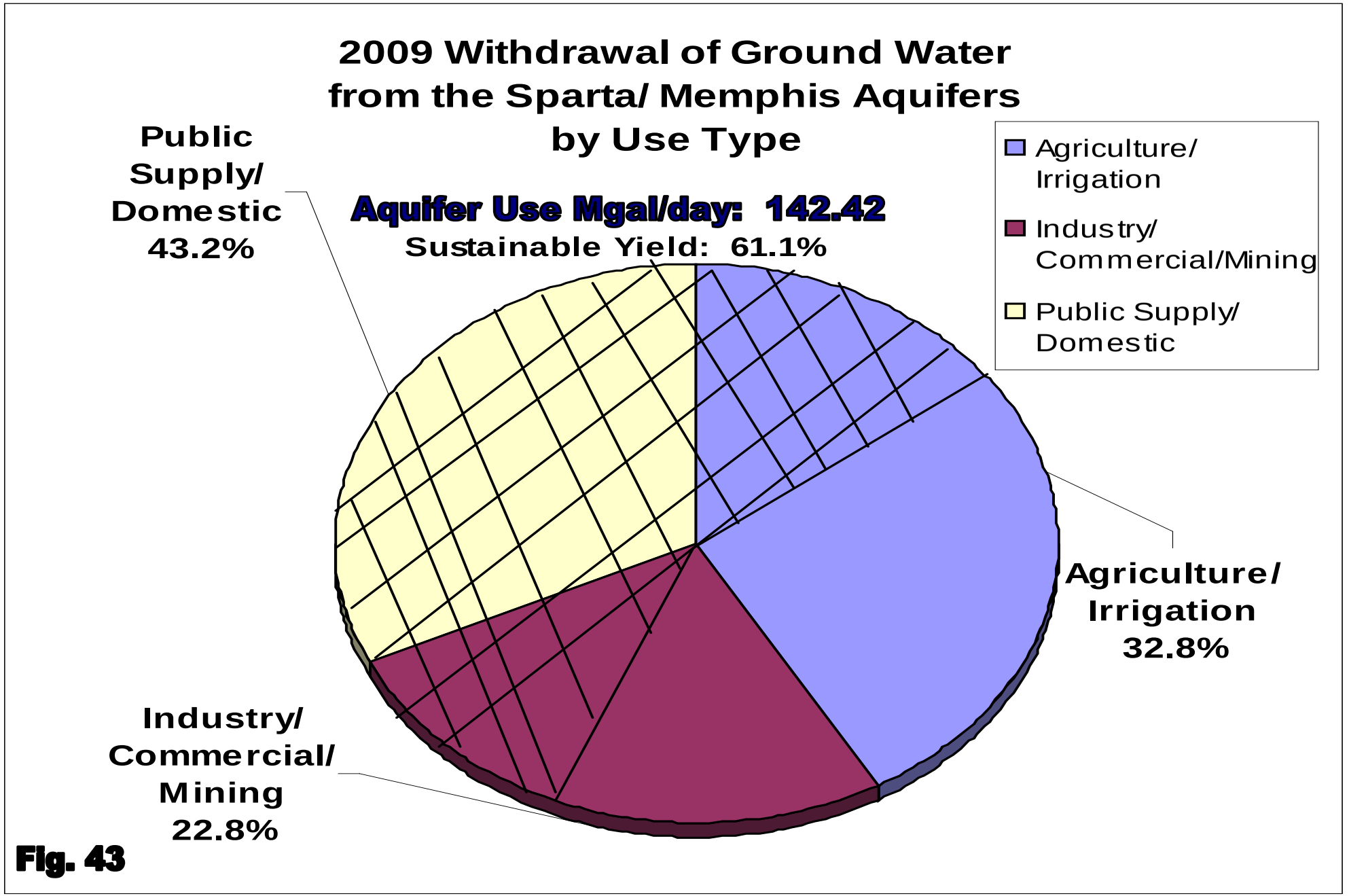

2009 Withdrawal of Ground Water
from the Sparta/ Memphis Aquifers
by Use Type
Aquifer Use Mgal/day: 142.42
Sustainable Yield: 61.1%
Public Supply/ Domestic 43.2%
Agriculture/ Irrigation 32.8%
Industry/ Commercial/ Mining 22.8%
Agriculture/ Irrigation
Industry/ Commercial/Mining
Public Supply/ Domestic

Fig. 43

SUMMARY

The Ground Water Protection and Management Report for 2011 is a summary of the activities and significant findings of the Arkansas Natural Resources Commission (ANRC). This report is prepared annually in response to legislative mandates that direct the ANRC to study the State's ground-water resources. The report also describes ground-water protection activities administered through Region VI of the U.S. Environmental Protection Agency, which are funded through Sections 106 and 319 of the Clean Water Act.

The purposes of the programs outlined in this report are to monitor the condition of the State's ground-water resources and to evaluate trends in water level and water quality fluctuations. The ANRC, the NRCS, and the USGS monitor over 1,500 water wells each year for water levels and prescribed water quality parameters. This monitoring is accomplished through a cooperative agreement with the ANRC, the USGS, and the Arkansas Geological Survey (AGS).

Spring water level measurements from 2010 to 2011 provided short term data indicating an overall average increase in water levels. The overall change in the alluvial aquifer for spring 2010 to spring 2011 was a decrease of 2.11 feet with 79 percent of measured wells showing a water-level decline. Over the same time period the Sparta aquifer had an average change of -2.36 feet. The water levels in the Cache Study area had an average change of -2.23 feet in the Sparta/Memphis Aquifer from 2010 to 2011. The areas of heightened concern due to water-level decline continue to be in the Grand Prairie, South Arkansas, and Cache Study Areas. Fluctuations may be observed in ground-water levels over a short time period, however long term records illustrate the seriousness of the declines in ground-water levels as illustrated by the hydrographs and long term change maps. These hydrographs for both the alluvial and Sparta/Memphis aquifers are included as Appendix B and Appendix D respectively.

Arkansas is withdrawing ground water from the alluvial and Sparta aquifers in eastern and southern Arkansas at a rate, which is far above sustainable. With this in mind, the ANRC should continue to promote conservation, education, and the conjunctive use of ground- and surface- water at rates that are sustainable for current and future water use needs.

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Appendix A

Alluvial Aquifer Water Level Monitoring Data

Alluvial Aquifer

01-06-10-11 WL Change

County	Station ID	Latitude	Longitude	LSA	Date Measured	2011 meas.	WL Alt. 11	WL Alt. 10	WL Alt. 06	WL Alt. 01	10-11 Change	06-11 Change	01-11 Change
Arkansas	02S04W11DBB1	343232.89	912415.21	213.04	3/30/2011	100.00	113.04	114.29	112.34	113.04	-1.25	0.70	0.00
Arkansas	02S05W15AAB1	343212.68	913126.72	213.00	3/30/2011	115.97	97.03	99.44	107.90		-2.41	-10.87	
Arkansas	02S05W31BBB1	342936.71	913536.22	198.00	4/1/2011	29.10	168.90	164.95	158.25		3.95	10.65	
Arkansas	03S02W27ABB1	342447.92	911251.01	197.00	4/7/2011	63.05	133.95	135.04	129.47	123.00	-1.09	4.48	10.95
Arkansas	03S03W05CCD1	342737.02	912131.83	201.00	4/7/2011	99.37	101.63	102.67	102.82		-1.04	-1.19	
Arkansas	03S03W18CCC1	342553	912251	196.00	7/20/2011	101.36	94.64	96.44	97.29		-1.80	-2.65	
Arkansas	03S03W27BBC1	342454.73	911944.08	195.00	4/7/2011	93.00	102.00	102.50	103.35	105.00	-0.50	-1.35	-3.00
Arkansas	03S04W02BBB1	342831	912454	197.63	4/7/2011	93.23	104.40	104.64	105.40	106.28	-0.24	-1.00	-1.88
Arkansas	03S04W03DCA16	342753.04	912515.37	205.00	6/3/2011	101.25	103.75	103.88	104.55	105.74	-0.13	-0.80	-1.99
Arkansas	03S05W13AC1	342630	913307	211.00	3/16/2011	107.30	103.70	102.20	105.25		1.50	-1.55	
Arkansas	03S05W24DAA1	342525	912922	207.00	4/7/2011	64.06	142.94	162.99			-20.05		
Arkansas	03S06W35ADD1	342411.4	913651.67	190.00	4/14/2011	53.90	136.10	137.23	137.11		-1.13	-1.01	
Arkansas	04S01W31DCB1	341753	910947	179.00	4/7/2011	51.10	127.90	128.85	126.35		-0.95	1.55	
Arkansas	04S02W29CCC1	341846.35	911538.5	191.00	4/7/2011	84.40	106.60	108.86	104.48		-2.26	2.12	
Arkansas	04S03W17ADD1	342101.87	912058.11	200.00	4/12/2011	109.60	90.40	91.52	92.28	95.10	-1.12	-1.88	-4.70
Arkansas	04S03W32BCB1	341820.31	912202.18	192.00	4/12/2011	130.80	61.20	73.90	75.55		-12.70	-14.35	
Arkansas	04S04W02ABB1	342313.2	912423.69	200.00	4/12/2011	109.70	90.30	90.95	91.37		-0.65	-1.07	
Arkansas	05S01W16BAB1	341551.59	910729.49	183.00	4/7/2011	47.60	135.40	134.29	131.95		1.11	3.45	
Arkansas	05S03W09CBA1	341624	912046	196.00	2/22/2011	114.00	82.00	83.81			-1.81		
Arkansas	05S04W07CCC1	341555.36	912931.61	194.00	4/14/2011	73.10	120.90	121.15	119.73		-0.25	1.17	
Arkansas	05S04W32BBA1	341315.97	912821.81	191.00	4/13/2011	55.90	135.10	134.44	133.58		0.66	1.52	
Arkansas	06S02W23DCD1	340852.62	911206.48	188.00	4/13/2011	57.90	130.10	124.54	118.26		5.56	11.84	
Arkansas	06S03W10BBA1	341135.97	911953.82	184.00	4/12/2011	81.60	102.40	106.73	102.02		-4.33	0.38	
Arkansas	06S03W27AAA1	340857.58	911912.78	183.14	4/12/2011	70.00	113.14	121.65	116.46		-8.51	-3.32	
Arkansas	06S03W32DDA	340740	912115	180.00	7/20/2011	59.60	120.40	125.76	124.66		-5.36	-4.26	
Arkansas	07S02W04BBB1	340707.15	911451.89	176.00	4/8/2011	44.10	131.90	136.95	133.80	134.93	-5.05	-1.90	-3.03
Arkansas	07S02W17BBA1	340707.15	911451.89	184.00	4/12/2011	49.85	134.15	140.73	129.49		-6.58	4.66	
Arkansas	07S03W18CCD1	340435.28	912316.09	186.18	4/8/2011	40.40	145.78	146.52	143.77	144.18	-0.74	2.01	1.60
Arkansas	07S03W32BBC1	340240	912216	176.92	4/12/2011	24.30	152.62	153.75	152.20		-1.13	0.42	
Arkansas	07S04W01DDD1	340625.25	912327.15	186.00	4/12/2011	38.40	147.90	148.33	138.90		-0.43	9.00	
Arkansas	08S02W08ACA1	340041.03	911505.57	179.00	4/8/2011	39.02	139.98	138.85	133.87	139.25	1.13	6.11	0.73

Alluvial Aquifer

01-06-10-11 WL Change

County	Station ID	Latitude	Longitude	LSA	Date Measured	2011 meas.	WL Alt. 11	WL Alt. 10	WL Alt. 06	WL Alt. 01	10-11 Change	06-11 Change	01-11 Change
Arkansas	08S03WT2299	340147.45	912202.5	178.00	4/12/2011	21.70	156.30	157.66	156.53		-1.36	-0.23	
Arkansas	05S04W04BAA	341750	912654	186.00	4/12/2011	89.48	96.52		94.00			2.52	
Arkansas	05S03W16ABB	341600	912047	196.00	4/12/2011	115.20	80.80		80.50	81.00		0.30	-0.20
Arkansas	06S03W03ABA	341228	911302	187.00	4/12/2011	69.40	117.60		115.10			2.50	
Arkansas	07S03W10ACD	340558	911944	187.00	4/12/2011	48.90	138.10		138.85			-0.75	
Arkansas	05S04W34BAC1	341318	912609	191.00	4/13/2011	68.30	122.70		121.85			0.85	
Arkansas	05S03W21BAA	341510	912035	196.00	4/14/2011	114.10	81.90						
Arkansas	05S03W22ABB	341511	911930	195.00	4/14/2011	111.00	84.00						
Arkansas	04S01W19ADD	341833	912447	196.00	4/25/2011	62.90	133.10						
								Declines/Wells:			26/32	16/35	6/9
								Average Change:			-4.32	0.52	-0.15
Ashley	15S07W21CBA1	332315.7	915001.37	210.00	3/1/2011	11.52	198.48	205.76	203.40		-7.28	-4.92	
Ashley	15SO4W26DCC1	332232	91290201	127.00	3/1/2011	37.70	89.30		95.91			-6.61	
Ashley	16S06W25DDD1	331640	913958	182.00	3/1/2011	79.32	102.68	103.83			-1.15		
Ashley	16S06W27BAB1	331729	914240	182.00	3/1/2011	85.20	96.80	98.55	98.16		-1.75	-1.36	
Ashley	17S04W03ABB1	331528	913010	124.00	3/1/2011	33.40	90.60	96.69	93.78	94.20	-6.09	-3.18	-3.60
Ashley	17S04W15DDC1	331252.48	912954.09	116.00	3/1/2011	30.55	85.45	89.53	89.50		-4.08	-4.05	
Ashley	17S04W21ABA1	331252	913108	117.00	3/1/2011	27.00	90.00	95.13	93.44		-5.13	-3.44	
Ashley	17S06W35CAC1	331049	914136	179.00	3/1/2011	73.16	105.84	106.73	106.38		-0.89	-0.54	
Ashley	18S08W01AAB1	331014.97	915225.12	181.00	3/1/2011	86.20	94.80	96.08	94.37		-1.28	0.43	
Ashley	19S04W06BAB2	330504	913328.6	110.00	3/1/2011	26.40	83.60	86.60	86.33		-3.00	-2.73	
Ashley	19S06W07BCC1	330403.56	914607.92	134.70	3/1/2011	31.00	103.70	104.75	103.66		-1.05	0.04	
Ashley	18S04W08CAD	330852	913218	120.00	3/1/2011	34.70	85.30		88.80	87.60		-3.50	-2.30
Ashley	19S04W09CBB	330346	913146	105.00	3/1/2011	27.30	77.70		82.80	81.40		-5.10	-3.70
Ashley	18S05W24BDC	330730	913435	118.00	3/1/2011	27.06	94.90		94.20	93.50		0.70	1.40
Ashley	16S06W35BAD1	331624	914143	175.00	3/2/2011	73.20	101.80		102.40	103.50		-0.60	-1.70
Ashley	16S04W10ABB	331902	913002	130.00	3/2/2011	36.49	93.51		94.80	95.10		-1.29	-1.59
Ashley	18S05W22DDA	330701.5	913554.7	125.00	4/25/2011	19.00	106.00		104.00	104.00		2.00	2.00
Ashley	17S05W1AAC	331529.1	913347.5	122.00	4/25/2011	29.00	93.00						
Ashley	18S05W11CCD	330816.6	913537.3	118.00	4/25/2011	25.00	93.00			95.00			-2.00

Alluvial Aquifer

01-06-10-11 WL Change

County	Station ID	Latitude	Longitude	LSA	Date Measured	2011 meas.	WL Alt. 11	WL Alt. 10	WL Alt. 06	WL Alt. 01	10-11 Change	06-11 Change	01-11 Change
Ashley	18S04W23DDD	330651.4	912941.2	103.00	4/25/2011	25.00	78.00			77.00			1.00
Ashley	19S04W14BBB	330314.2	912940.6	107.00	4/25/2011	35.00	72.00			80.00			-8.00
Ashley	19S05W22DCD	330138.8	913616	107.00	4/25/2011	21.00	86.00		83.84	83.00		2.16	3.00
Ashley	19S05W8ACA	330406.7	913815.1	111.00	4/25/2011	16.00	95.00		93.75	97.00		1.25	-2.00
Ashley	19S05W16ABB	330322	913717	116.00	4/25/2011	25.00	91.00		92.00	90.00		-1.00	1.00
								Declines/Wells:			**10/10**	**13/19**	**8/13**
								Average Change:			**-3.17**	**-1.67**	**-1.27**
Chicot	13S03W34BAA1	333110.24	912539.38	133.00	2/28/2011	44.00	89.00	90.72	90.50	95.90	-1.72	-1.50	-6.90
Chicot	13S03W35BAC1	333154.1	912245.5	134.00	2/28/2011	42.90	91.10	93.08	92.50		-1.98	-1.40	
Chicot	17S01W06BCC1	331501.18	911505.22	115.00	3/1/2011	22.70	92.30	95.36	93.60		-3.06	-1.30	
Chicot	17S02W10AAA1	331429	911712	114.00	2/28/2011	26.35	87.65	89.34	87.65	87.50	-1.69	0.00	0.15
Chicot	18S03W22ABA2	330728	912341	103.00	2/28/2011	13.50	89.50	92.78	90.90		-3.28	-1.40	
Chicot	19S01W17BBB	330309	911415	105.00	2/28/2011	18.30	86.70		91.30	90.00		-4.60	-3.30
Chicot	14S03W07BBD	332925	912704.01	134.00	2/28/2011	31.40	102.60		107.44			-4.84	
Chicot	16S03W15DAD1	331809	91233401	118.00	2/28/2011	32.85	85.15						
Chicot	19S01W17BCC1	330249	911406	105.00	2/28/2011	17.50	87.50		85.24			2.26	
Chicot	16S03W24BBC	331797	912234	118.00	2/28/2011	30.20	87.80		85.50			2.30	
Chicot	17S02W33DDA	331021	911820	120.00	2/28/2011	30.70	89.30		88.50	87.50		0.80	1.80
Chicot	13S03W27AAA	333253	912310	138.00	4/12/2011	48.30	89.70		92.00	98.00		-2.30	-8.30
Chicot	14S02W18BBA	332859	912038	130.00	4/12/2011	33.60	96.40		98.00	104.00		-1.60	-7.60
Chicot	14S02W9BD	332859	911729	135.00	4/12/2011	40.40	94.60		106.00	106.00		-11.40	-11.40
Chicot	15S03W18BB	332859	912038	125.00	4/13/2011	36.60	88.40		93.00	99.00		-4.60	-10.60
Chicot	17S03W18CBC	331257	912736	115.00	4/11/2011	35.60	79.40		82.00	82.00		-2.60	-2.60
Chicot	18S01W33BDA	330543	911245	115.00	4/13/2011	13.00	102.00		97.00	100.00		5.00	2.00
								Declines/Wells:			**5/5**	**11/16**	**7/10**
								Average Change:			**-2.35**	**-1.70**	**-4.68**
Clay	18N08E03DAB1	361323.23	901153.03	257.00	2/24/2011	7.70	249.3	250.81	249.11		-1.51	0.19	
Clay	19N03E24AAA1	361655	904157.1	278.00	2/24/2011	22.90	255.1	258.16	257.88		-3.06	-2.78	

Alluvial Aquifer

01-06-10-11 WL Change

County	Station ID	Latitude	Longitude	LSA	Date Measured	2011 meas.	WL Alt. 11	WL Alt. 10	WL Alt. 06	WL Alt. 01	10-11 Change	06-11 Change	01-11 Change
Clay	19N04E19AAA1	361654.4	904050	282.00	2/24/2011	32.75	249.25	251.85	250.93	252.40	-2.60	-1.68	-3.15
Clay	21N06E28BB1	362604.92	902607.97	292.50	2/24/2011	22.20	270.3	275.63	273.31		-5.33	-3.01	
Clay	21N03E15CB	362738	904453	292.00	4/14/2011	11.00	281		281.00	279.20		0.00	1.80
Clay	21N03E36CD	362450	904214	290.00	4/14/2011	20.10	269.9		271.00	270.70		-1.10	-0.80
Clay	21N04E9DB	362828	903853	291.00	4/14/2011	13.10	277.9		278.00	280.20		-0.10	-2.30
Clay	20N04E3AA	362425	903725	290.00	4/14/2011	16.50	273.5		274.00	272.20		-0.50	1.30
Clay	20N06E9BB	362327	902620	290.00	4/14/2011	23.50	266.5		268.00	272.50		-1.50	-6.00
Clay	21N07E1AC			303.00	4/14/2011	30.60	272.4						
Clay	19N08E8DC	361729	901402	263.00	4/14/2011	6.20	256.8			255.50			1.30
Clay	29N07E25BC	361519	901700	268.00	4/14/2011	19.00	249		250.00	249.70		-1.00	-0.70
Clay	20N09E9AB	362306	900642	279.00	4/14/2011	9.60	269.4		271.00	269.30		-1.60	0.10
Clay	19N09E30BB	361531	900921	265.00	4/14/2011	7.80	257.2		257.00			0.20	
Clay	20N05E22CA	362118	903132	290.00	4/14/2011	30.10	259.9		259.00	265.90		0.90	-6.00
Clay	21N08E3CD	362842	901211	308.00	4/14/2011	27.90	280.1		289.00			-8.90	
Clay	19N06E18DA			297.00	4/14/2011	40.30	256.7						
Clay	20N08E22BD	362111	901220	279.00	4/14/2011	10.80	268.2		270.00	269.60		-1.80	-1.40
Clay	21N07E19BD	362640	902148	295.00	4/14/2011	24.00	271			277.10			-6.10
Clay	18N08E11AB	361253	901117	259.00	4/14/2011	8.20	250.8			250.90			-0.10
Clay	19N05E15BB	361716	903152	286.00	4/14/2011	36.80	249.2		252.00	257.50		-2.80	-8.30
Clay	21N06E11BB	362839	902421	296.00	4/14/2011	16.00	280		281.00	282.90		-1.00	-2.90
Clay	21N09E31BD	362447	900851	284.00	4/14/2011	7.50	276.5		277.00	276.20		-0.50	0.30
Clay	20N05E30CA	362003	903454	293.00	4/14/2011	19.70	273.3		275.00	277.10		-1.70	-3.80
Clay	19N04E19BA	361649	904125	279.00	4/14/2011	25.00	254		257.00	257.60		-3.00	-3.60
Clay	20N03E25BA	362112	904225	288.00	4/14/2011	22.10	265.9		266.00	265.10		-0.10	0.80
Clay	21N05E22BA	362704	903132	288.00	4/14/2011	9.00	279		281.00	280.90		-2.00	-1.90
Clay	20N09E33DD	361904	900628	270.00	4/14/2011	7.50	262.5		263.00	263.00		-0.50	-0.50
Clay	20N04E02BBC	362427	903722	285.00	2/23/2011	16.75	268.25		269.30	270.00		-1.05	-1.75
								Declines/Wells:			**4/4**	**20/23**	**16/22**
								Average Change:			**-3.13**	**-1.47**	**-1.99**

Alluvial Aquifer
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County	Station ID	Latitude	Longitude	LSA	Date Measured	2011 meas.	WL Alt. 11	WL Alt. 10	WL Alt. 06	WL Alt. 01	10-11 Change	06-11 Change	01-11 Change
Craighead	13N03E29AAA1	354403.31	904712.98	251.00	4/26/2011	108.9	142.1	143.53	147.21		-1.43	-5.11	
Craighead	13N04E12ABB1	354635	903656	231.00	4/26/2011	24.90	206.1	208.00	207.18		-1.90	-1.08	
Craighead	13N05E22BAD1	354449	903243	226.00	4/26/2011	14.90	211.1	214.20	210.61		-3.10	0.49	
Craighead	13N07E20BBA1	354439.77	902216.44	223.20	4/26/2011	4.50	218.7	219.79	217.78		-1.09	0.92	
Craighead	14N02E26BBB1	354918	905125	255.00	6/14/2011	81.47	173.53	175.89			-2.36		
Craighead	14N05E25ABB1	354920.85	903025.35	238.00	4/26/2011	19.40	218.6	220.68	216.46		-2.08	2.14	
Craighead	14N06E27AAB1	354911.46	902559.08	225.93	4/26/2011	1.30	224.63	224.34	222.83		0.29	1.80	
Craighead	15N06E20DDD1	355426	902739	234.00	4/26/2011	9.80	224.2	226.34	222.78		-2.14	1.42	
Craighead	13N05E6DC	354637	903547	229.00	3/23/2011	19.90	209.1		209.00	206.20		0.10	2.90
Craighead	15N06E4AB	355744	902706	239.00	3/23/2011	17.80	221.2			226.20			-5.00
Craighead	13N04E15DC	354521	903857	230.00	4/5/2011	25.30	204.7			203.90			0.80
Craighead	14N02E15DD	354852	905044	255.00	4/5/2011	76.50	178.5		180.20			-1.70	
Craighead	15N02E12AB	355626	904930	250.00	4/5/2011	36.80	213.2			219.80			-6.60
Craighead	14N01E10BA	355204	905828	246.00	4/5/2011	56.10	189.9		194.90	198.40		-5.00	-8.50
Craighead	14N01E31DA	354817	910121	251.00	4/5/2011	62.00	189			195.70			-6.70
Craighead	13N03E23CD	354419	904434	249.00	4/5/2011	84.00	165		169.40	169.50		-4.40	-4.50
Craighead	13N07E35AD	354233	901837	249.00	4/5/2011	13.00	236			242.30			-6.30
Craighead	13N04E26BC	354340	903829	225.00	4/5/2011	25.50	199.5		198.50	196.70		1.00	2.80
Craighead	14N01E03AC	355246	905816	249.00	4/5/2011	52.10	196.9		198.10	202.80		-1.20	-5.90
Craighead	13N01E21CA	354434	905945	240.00	4/5/2011	63.00	177		178.00	180.50		-1.00	-3.50
Craighead	13N03E28CD	354322	904652	250.00	4/5/2011	123.00	127		141.00	149.50		-14.00	-22.50
Craighead	13N01E26BC	35382	905800	245.00	4/5/2011	71.00	174		176.50			-2.50	
Craighead	15N07E35DB	355241	901831	230.00	3/23/2011	14.30	215.7		215.40	220.10		0.30	-4.40
Craighead	14N6E06BB	355234	902934	240.00	4/5/2011	21.30	218.7			214.20			4.50
Craighead	15N05E22BB	355513	903241	260.00	4/5/2011	33.00	227		225.20	212.50		1.80	14.50
Craighead	13N05E2CC	354648	903202	230.00	3/23/2011	12.20	217.8		217.10	216.90		0.70	0.90
Craighead	14N07E14DD	354956	901831	230.00	3/23/2011	13.10	216.9		216.50	220.40		0.40	-3.50
Craighead	13N07E5AB	354716	902158	225.00	3/23/2011	7.80	217.2		212.70	218.20		4.50	-1.00
Craighead	13N05E24BA	354451	903045	225.00	3/23/2011	8.30	216.7		212.80	217.10		3.90	-0.40
Craighead	15N03E31AD	355313	904805	270.00	4/5/2011	61.50	208.5	209.25	206.10		-0.75	2.40	
Craighead	13N07E2CA	354642	901901	226.00	3/23/2011	10.90	215.1		221.00	222.10		-5.90	-7.00
Craighead	13N03E35AA	354308	904401	250.00	3/23/2011	98.20	151.8		156.00			-4.20	

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County	Station ID	Latitude	Longitude	LSA	Date Measured	2011 meas.	WL Alt. 11	WL Alt. 10	WL Alt. 06	WL Alt. 01	10-11 Change	06-11 Change	01-11 Change
Craighead	13N06E21AD	354421	902743	220.00	3/23/2011	5.70	214.3		210.00			4.30	
Craighead	14N01E20DA				4/5/2011	58.00							
									Declines/Wells:		**8/9**	**11/26**	**14/21**
									Average Change:		**-1.62**	**-0.77**	**-2.97**
Crittenden	05N07E28CBA1	350121.32	902139.85	201.00	4/19/2011	16.95	184.05	187.44	181.57		-3.39	2.48	
Crittenden	05N07E34BAB1	350059.39	902029.86	203.00	4/19/2011	12.60	190.4	189.46	183.54	182.20	0.94	6.86	8.20
Crittenden	06N07E13BAA1	350849.58	901807.57	205.00	4/19/2011	21.65	183.35	186.63	184.72		-3.28	-1.37	
Crittenden	07N07E05DAD1	351504	902129	215.00	4/19/2011	31.29	183.71	184.88			-1.17		
Crittenden	07N07E31CCC1	351041.9	902358.97	207.00	4/19/2011	37.60	169.4	172.88	172.08		-3.48	-2.68	
Crittenden	08N07E13CCC2	351828.34	901811.95	221.00	4/19/2011	31.90	191.1	189.75	191.80	194.50	1.35	-0.70	-3.40
Crittenden	09N07E10DDA1	352447.58	901924.64	221.00	4/19/2011	29.30	191.7	191.95	193.15		-0.25	-1.45	
Crittenden	09N07E31BAB1	352159.85	902326.57	221.00	4/19/2011	34.30	186.7	187.17	188.60	189.00	-0.47	-1.90	-2.30
Crittenden	08N07E35BBC1	351630	901933	221.00	4/19/2011	32.54	188.46	189.66	190.49			-2.03	
Crittenden	07N07E34DDA	351116	901941	215.00	4/19/2011	29.50	185.5		187.80	188.80		-2.30	-3.30
Crittenden	09N08E35BBD1	352144	901251	225.00	4/19/2011	13.18	211.82						
Crittenden	09N08E35BBD2	352143	901250	225.00	4/19/2011	14.45	210.55						
Crittenden	09N07E20DDC1	352256	902158	215.00	4/19/2011	30.25	184.75		186.80	186.40		-2.05	-1.65
Crittenden	08N06E26BBA1	351737	902552	215.00	4/19/2011	33.40	181.6		181.60	183.90		0.00	-2.30
									Declines/Wells:		**6/8**	**8/10**	**5/6**
									Average Change:		**-1.22**	**-0.47**	**-0.79**
Cross	07N01E05CDA1	351517.52	910049.05	217.00	4/20/2011	79.40	137.6	141.16	143.36	146.00	-3.56	-5.76	-8.40
Cross	07N01E11AAA1	351501.25	905705.29	217.00	4/21/2011	79.30	137.7	138.08	140.42		-0.38	-2.72	
Cross	07N02E02CCDD1	351544	905140	225.00	4/21/2011	83.22	141.78	141.67	145.00		0.11	-3.22	
Cross	07N02E29DDC1	351138.09	905409.17	220.00	4/21/2011	74.00	146	146.87	147.74	153.00	-0.87	-1.74	-7.00
Cross	07N03E05ADA1	351548.89	904738.6	254.00	4/21/2011	112.30	141.7	142.06		145.20	-0.36		-3.50
Cross	07N03E32DCC1	351045.29	904810.28	251.00	4/21/2011	98.30	152.7	153.93	154.62		-1.23	-1.92	
Cross	07N05E19CCC1	351237.7	903644.9	207.00	4/21/2011	41.20	165.8	169.81	169.73		-4.01	-3.93	

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County	Station ID	Latitude	Longitude	LSA	Date Measured	2011 meas.	WL Alt. 11	WL Alt. 10	WL Alt. 06	WL Alt. 01	10-11 Change	06-11 Change	01-11 Change
Cross	07N05E25ABA1	351228.87	903044.79	205.00	4/21/2011	38.20	166.8	166.50	168.29	169.00	0.30	-1.49	-2.20
Cross	08N05E32ADD1	351631.65	903440.45	204.00	4/21/2011	28.25	175.75	174.62	174.43	174.50	1.13	1.32	1.25
Cross	09N01E12CBB1	352505	905653	226.00	4/20/2011	94.99	131.01	131.14	135.91		-0.13	-4.90	
Cross	09N01E33BBA2	352202.76	910000.6	225.00	4/20/2011	85.20	139.8	140.89	143.90	157.00	-1.09	-4.10	-17.20
Cross	09N03E17DDC1	352408.8	904725.6	251.00	4/20/2011	105.00	146	144.00	145.35	151.00	2.00	0.65	-5.00
Cross	09N05E32BDB1	352150.53	903512.11	210.00	4/21/2011	29.80	180.2	179.70	179.37	175.00	0.50	0.83	5.20
								Declines/Wells:			**8/13**	**9/12**	**6/8**
								Average Change:			**-0.58**	**-2.25**	**-4.61**
Desha	08S03W33ABD1	335802.92	912338.18	165.04	2/22/2011	14.20	150.84	159.69	157.80	160.55	-8.85	-6.96	-9.71
Desha	09S02W26DDC1	335256.57	911529.64	149.27	2/23/2011	31.54	117.73	122.70	119.94	120.30	-4.97	-2.21	-2.57
Desha	09S03W17DCB1	335448.23	912456.66	155.08	2/22/2011	37.00	118.08	120.52	122.13		-2.44	-4.05	
Desha	09S04W06BCA1	335756.1	913243	161.00	2/22/2011	37.40	123.6	124.89	126.08		-1.29	-2.48	
Desha	10S02W20ADA1	334916	911825	148.00	2/23/2011	41.40	106.6	107.95			-1.35		
Desha	10S04W12DBB1	335100	912727	143.00	2/22/2011	35.10	107.9	117.35			-9.45		
Desha	13S02W27CAC1	333223.99	911734.76	133.00	2/23/2011	33.12	99.88	102.94	102.17		-3.06	-2.29	
Desha	10S04W09BCD1	335059	913052	164.00	2/22/2011	34.18	129.82		133.00			-3.18	
Desha	10S04W21AAA1	334929	913012	160.00	2/22/2011	30.65	129.35		133.00			-3.65	
Desha	10S04W19DAC1	334901	913233	160.00	2/22/2011	28.70	131.3		134.20			-2.90	
Desha	11S02W10ADD	334613	911635	145.00	2/23/2011	35.45	109.55			111.80			-2.25
Desha	10S03W26CCC	334759	912235	150.00	2/23/2011	45.50	104.5		109.10	109.00		-4.60	-4.50
Desha	11S2W15BAD	334446	911635	148.00	4/13/2011	35.40	112.6		114.00	116.00		-1.40	-3.40
Desha	9S1W15CBB	335501	911055	152.00	4/13/2011	41.00	111		116.00	117.00		-5.00	-6.00
Desha	10S2W1ADD	335045	911517	148.00	4/13/2011	29.00	119			121.00			-2.00
Desha	9S2W17CBC	355502	911920	153.00	4/13/2011	38.60	114.4		121.00			-6.60	
Desha	9S4W2CDA	335823	912821	163.00	4/13/2011	42.20	120.8		121.00			-0.20	
Desha	9S1W8BDA	335608	911234	151.00	4/13/2011	27.00	124		123.00			1.00	
Desha	2S1W23CBC	333803	911019	146.00	4/13/2011	27.80	118.2		120.00			-1.80	
Desha	13S2W5CDD	333535	911938	146.00	4/13/2011	47.40	98.6		101.00			-2.40	
Desha	13S2W32DBD	333126	911917	140.00	4/13/2011	39.90	100.1		97.00	101.00		3.10	-0.90
Desha	13S3W11CAB	333503	912241	142.00	4/13/2011	55.60	86.4		91.00	97.00		-4.60	-10.60

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County	Station ID	Latitude	Longitude	LSA	Date Measured	2011 meas.	WL Alt. 11	WL Alt. 10	WL Alt. 06	WL Alt. 01	10-11 Change	06-11 Change	01-11 Change
Desha	11S3W21ABB	334416	912412	139.00	4/13/2011	36.00	103		108.00			-5.00	
Desha	07S01E19ABA	3407586	9104925	154	3/30/2011	16.00	138		133.00	141.00		5.00	-3.00
Desha	10S04W12BBB	335048	912754	155	2/22/2011	35.00	120.00		123.00			-3.00	
									Declines/Wells:		**7/7**	**18/22**	**10/10**
									Average Change:		**-4.49**	**-2.53**	**-4.49**
Drew	11S04W35DC1	334144	912842	154.00	3/22/2011	28.60	125.4	129.06	127.54		-3.66	-2.14	
Drew	11S05W08CCC1	334546.48	913837.16	185.00	3/22/2011	40.10	144.9	148.63	148.52		-3.73	-3.62	
Drew	12S04W03ABB1	334133.92	912946.13	155.00	3/22/2011	25.74	129.26	132.80	130.77		-3.54	-1.51	
Drew	13S04W33BAA1	333206	913100	138.00	3/23/2011	15.10	122.9	120.73	119.86		2.17	3.04	
Drew	13S06W03DDC1	333544.69	914201.6	191.00	3/23/2011	61.00	130	127.82	128.83		2.18	1.17	
Drew	11S04W09BBB	334550	913404	160.00	3/22/2011	28.85	131.15		132.30	132.50		-1.15	-1.35
Drew	12S04W25DBB	333740	912739	150.00	3/2/2011	31.50	118.5		120.00	121.00		-1.50	-2.50
Drew	13S04W36DCC	333110	912757	140.00	3/23/2011	27.70	112.3		114.40	114.50		-2.10	-2.20
									Declines/Wells:		**3/5**	**6/8**	**3/3**
									Average Change:		**-1.32**	**-0.98**	**-2.02**
Greene	16N06E03CCC1	360224.07	902625.9	258.00	2/24/2011	67.00	191	197.46	195.61	208.00	-6.46	-4.61	-17.00
Greene	16N06E28ABB1	355938.31	902657.01	251.00	2/24/2011	27.30	223.7	228.64	225.24		-4.94	-1.54	
Greene	17N04E28DAA1	360431	903917	319.00	6/14/2011	90.51	228.49	230.47			-1.98		
Greene	17N04E30CDC1	360409.09	904217.57	265.00	2/24/2011	40.10	224.9	225.58	227.61	228.40	-0.68	-2.71	-3.50
Greene	18N04E21CBD1	361052.32	903724.76	294.00	2/24/2011	58.50	235.5	234.56	238.37		0.94	-2.87	
Greene	18N07E20BBA1	361110.37	902113.23	257.00	2/24/2011	12.75	244.25	254.92	246.08		-10.67	-1.83	
Greene	19N03E26AD1	361600.72	904258.43	281.00	2/24/2011	30.80	250.2	252.49	251.50		-2.29	-1.30	
Greene	18N03E24ABA	361141	904234	270.00	4/27/2011	33.60	236.4		238.60	238.40		-2.20	-2.00
Greene	16N03E19DBC	360000	904819	265.00	4/27/2011	41.80	223.2		226.40			-3.20	
Greene	18N07E23CCD	361022	901747	250.00	4/28/2011	5.15	244.85		241.20	243.20		3.65	1.65
									Declines/Wells:		**6/7**	**8/9**	**3/4**
									Average Change:		**-3.73**	**-1.85**	**-5.21**

Alluvial Aquifer

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County	Station ID	Latitude	Longitude	LSA	Date Measured	2011 meas.	WL Alt. 11	WL Alt. 10	WL Alt. 06	WL Alt. 01	10-11 Change	06-11 Change	01-11 Change
Jackson	09N02W32CBB1	352151.79	911347.79	220.00	4/18/2011	29.50	190.5	193.05	189.71	188.60	-2.55	0.79	1.90
Jackson	11N01W26AAD1	353329.77	910323.21	227.00	4/18/2011	70.30	156.7	158.05	159.94	164.70	-1.35	-3.24	-8.00
Jackson	11N01W29AAD1	353338.7	910635.3	225.00	4/18/2011	42.50	182.5	182.64	185.93		-0.14	-3.43	
Jackson	11N03W06DAB1	353655.13	912008.5	223.00	4/18/2011	18.80	204.2	202.20	200.77	210.40	2.00	3.43	-6.20
Jackson	13N01W20AAA1	354514.14	910627.47	242.00	4/18/2011	43.53	198.47	201.84	202.74		-3.37	-4.27	
Jackson	13N03W15CDD1	354525.9	911749.46	232.00	4/18/2011	16.00	216	223.06	215.07		-7.06	0.93	
Jackson	14N01W09AAA1	355220.36	910515.16	251.00	4/18/2011	44.80	206.2	208.30	208.57	211.70	-2.10	-2.37	-5.50
Jackson	10N02W29ABB1	352909	911309	227.00	4/18/2011	28.70	198.3		199.06			-0.76	
Jackson	11N01W11CBB1	353550	910428	227	6/15/2011	56.80	170.2						
Jackson	13N01W27DDD1	354327	910435	233.00	4/18/2011	35.90	197.1		196.60	198.00		0.50	-0.90
Jackson	11N01W10DA	353550	910428	231.00	4/18/2011	55.28	175.72		177.32			-1.60	
								Declines/Wells:			6/7	6/10	4/5
								Average Change:			-2.08	-1.00	-3.74
Jefferson	03S08W24BBC1	342620.37	914953.19	202.00	3/16/2011	51.50	150.5	151.25	150.97	155.40	-0.75	-0.47	-4.90
Jefferson	03S09W29CBD1	342516.81	920023.32	216.00	3/16/2011	26.59	189.41	191.21	186.89		-1.80	2.52	
Jefferson	05S06W31CAA1	341329.94	914206.1	189.22	3/15/2011	18.90	170.32	179.28	169.37		-8.96	0.95	
Jefferson	05S08W12DAA1	341712	914907	194.25	3/15/2011	20.11	174.14	179.40	175.27		-5.26	-1.13	
Jefferson	06S05W15BCA1	341022.95	913245	177.14	3/15/2011	16.76	160.38	165.00	158.56	157.29	-4.62	1.82	3.09
Jefferson	06S06W23AAD1	341006.74	913712.2	189.01	3/15/2011	17.80	171.21	177.08	167.78	166.81	-5.87	3.43	4.40
Jefferson	06S07W14BAA1	341124.96	914425	199.00	3/15/2011	15.15	183.85	191.38	182.93		-7.53	0.92	
Jefferson	07S08W06BAA1	340858.53	915647.26	202.31	3/15/2011	19.47	182.84	184.72	183.66		-1.88	-0.82	
								Declines/Wells:			8/8	3/8	1/3
								Average Change:			-4.58	.90	.86
Lawrence	15N01E09ABD1	355714	905900	259.00	6/14/2011	57.95	201.05	202.60			-1.55		
Lawrence	15N01E26DDA1	355412	905651	251.00	2/24/2011	54.30	196.7	198.16	199.07		-1.46	-2.37	
Lawrence	15N01E32BAA1	355352	910027	254.00	2/24/2011	55.31	198.69	199.83			-1.14		
Lawrence	15N01W35CBB1	355336.15	910356.33	250.00	2/24/2011	47.70	202.3	203.01	205.02		-0.71	-2.72	
Lawrence	16N01E11DAC2	360203.04	905639.37	262.00	2/24/2011	50.20	211.8	212.43	215.24		-0.63	-3.44	

Alluvial Aquifer

01-06-10-11 WL Change

County	Station ID	Latitude	Longitude	LSA	Date Measured	2011 meas.	WL Alt. 11	WL Alt. 10	WL Alt. 06	WL Alt. 01	10-11 Change	06-11 Change	01-11 Change
Lawrence	17N01E26CCC1	360522	905738	265.00	2/26/2011	38.00	227		229.00			-2.00	
									Declines/Wells:		5/5	4/4	
									Average Change:		-1.10	-2.63	
Lee	01N03E02BBC1	344339.29	904601.14	236.43	4/26/2011	54.25	182.18	196.33	187.86		-14.15	-5.68	
Lee	01N03E35BBA1	343923	904549	202.00	4/26/2011	16.45	185.55	196.58	191.76		-11.03	-6.21	
Lee	02N02E08ADC1	344807.34	905338.75	201.00	4/26/2011	45.80	155.2	156.56	157.54		-1.36	-2.34	
Lee	02N02E21ABC1	344621.6	905358.2	200.00	4/26/2011	37.49	162.51	161.61	162.27		0.90	0.24	
Lee	02N03E08AAD1	344810	904837	211.00	4/26/2011	46.69	164.31	168.81	167.11		-4.50	-2.80	
Lee	02N04E15DAC1	344636.73	903950.39	192.00	4/26/2011	21.00	171	173.43	174.38		-2.43	-3.38	
Lee	03N01E15CC1	345206	905947	205.00	4/26/2011	65.70	139.3	140.56			-1.26		
Lee	03N02E13BBA1	345237.4	905107.32	212.00	4/27/2011	49.00	163	160.83	162.02		2.17	0.98	
Lee	03N02E29DAD1	345013.62	905429.78	205.00	4/27/2011	45.90	159.1	162.17	162.29		-3.07	-3.19	
Lee	03N03E32CAB1	344932.65	904926.23	204.00	4/26/2011	49.43	154.57	157.28	154.08		-2.71	0.49	
Lee	03N05E14DDA1	345148.08	903203.25	193.00	4/26/2011	13.10	179.9	179.29	179.44		0.61	0.46	
Lee	02N01E23BAA2	3446300	905817	202.00	4/26/2011	52.35	149.65		151.82			-2.17	
Lee	02N01E29ABC	344542	910108	185.00	4/26/2011	52.70	132.3		134.00	138.20		-1.70	-5.90
Lee	01N03E7BBB	344258	905044	200.00	4/26/2011	25.05	174.95		181.50	162.60		-6.55	12.35
Lee	02N02E7ACA	344752	905602	200.00	4/26/2011	49.58	150.42		153.60	156.70		-3.18	-6.28
									Declines/Wells:		8/11	10/14	2/3
									Average Change:		-3.35	-2.50	.06
Lincoln	08S04W08BBB2	340253.9	913100.8	171.00	3/10/2011	19.45	151.55	148.88	149.13		2.67	2.42	
Lincoln	08S04W31CBA1	335901.09	913149.69	161.90	3/10/2011	35.60	126.3	127.90	129.27	129.20	-1.60	-2.97	-2.90
Lincoln	08S07W05DDD1	340301	914903	190.00	3/8/2011	30.50	159.5	160.50	160.04		-1.00	-0.54	
Lincoln	09S05W14ABC1	335553.02	913439.08	172.50	3/9/2011	43.11	129.39	134.01	135.29	137.80	-4.62	-5.90	-8.41
Lincoln	09S05W17BCB1	335551.59	913819.95	171.00	3/9/2011	39.90	131.1	128.71	129.91	124.00	2.39	1.19	7.10
Lincoln	09S06W04BCD1	335821.38	914345.83	181.00	3/8/2011	42.30	138.7	141.57	142.88		-2.87	-4.18	
Lincoln	10S05W05CB	335529	913832	172.00	3/9/2011	27.58	144.42	147.48	145.65		-3.06	-1.23	
Lincoln	10S05W06DCC1	335155.3	913907.96	175.00	3/9/2011	28.65	146.35	148.84	145.08		-2.49	1.27	

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County	Station ID	Latitude	Longitude	LSA	Date Measured	2011 meas.	WL Alt. 11	WL Alt. 10	WL Alt. 06	WL Alt. 01	10-11 Change	06-11 Change	01-11 Change
Lincoln	08S07W09BBD	340248	914845	189.90	3/8/2011	31.70	158.2			156.30			1.90
Lincoln	09S05W34BAB	335319	913614	170.00	3/9/2011	35.50	134.5						
Lincoln	10S05W04BBB1	335233	913725	170.00	3/9/2011	28.55	141.45		141.60			-0.15	
								Declines/Wells:			6/8	6/9	2/4
								Average Change:			-1.32	-1.12	-0.58
Lonoke	01N09W13DAB1	344235.17	915517.01	226.00	3/29/2011	83.50	142.5	139.18	139.26		3.32	3.24	
Lonoke	01N10W11BBD1	344355	920321	240.00	3/22/2011	24.70	215.3	211.50			3.80		
Lonoke	01S06W31ABB1	343459.39	914131.48	200.00	3/29/2011	79.30	120.7	121.57	121.87		-0.87	-1.17	
Lonoke	01S07W19DC1	343609	914746	206.00	6/15/2011	85.52	120.48	119.41			1.07		
Lonoke	01S08W24CDD1	343605.64	914912.37	210.00	3/29/2011	82.80	127.2	127.44	129.00		-0.24	-1.80	
Lonoke	01S09W36CCC1	343435.31	915618.98	220.00	3/29/2011	61.93	158.07	158.52	157.49	162.60	-0.45	0.58	-4.53
Lonoke	01S10W01ACB1	343926.84	920214.96	236.00	3/29/2011	43.50	192.5	191.66	190.08	190.00	0.84	2.42	2.50
Lonoke	01S10W11CCB1	343839	920337	235.00	6/15/2011	36.21	198.79	209.00	203.13		-10.21	-4.34	
Lonoke	02N08W16ABC1	344806.48	915113.61	230.00	3/22/2011	124.35	105.65	105.06	101.61	105.20	0.59	4.04	0.45
Lonoke	02S07W10CCB1	343246.5	914524.7	201.00	3/29/2011	61.70	139.3	139.02	138.61		0.28	0.69	
Lonoke	02S08W06BAA1	343430	915447	221.00	6/15/2011	67.50	153.5	154.84	153.66		-1.34	-0.16	
Lonoke	02S08W28CDC	343008	915237	211.00	6/15/2011	62.57	148.43	150.12	150.50		-1.69	-2.07	
Lonoke	02S08W34DBB1	343003	915149.8	214.00	3/29/2011	64.75	149.25	147.56	147.38		1.69	1.87	
Lonoke	03N07W35CDC2	344957.16	914332.11	232.00	3/22/2011	117.75	114.25	115.58	165.38		-1.33	-51.13	
Lonoke	03N08W21BCC1	345220.2	915220.2	247.00	3/22/2011	107.95	139.05	163.31	165.34		-24.26	-26.29	
Lonoke	03N08W32ABB3	345058.68	915255.43	250.00	3/22/2011	56.75	193.25	187.76	193.54		5.49	-0.29	
Lonoke	03N08W34ABB1	345034.9	915028.3	240.00	3/22/2011	53.35	186.65						
Lonoke	04N08W15BCB2	345832.92	915121.25	225.00	3/22/2011	37.15	187.85	191.59	190.14	192.10	-3.74	-2.29	-4.25
Lonoke	02N09W02BDB1	344955	915642	251.00	3/22/2011	119.50	131.5		124.96	123.70		6.54	7.80
Lonoke	02N10W23BCA1	344725	920321	242.00	3/22/2011	9.40	232.6						
Lonoke	02N09W17CBC3	344747	920008	255.00	4/28/2011	83.20	171.8						
Lonoke	02N09W17CBC2	344751	9200100	255.00	4/28/2011	84.95	170.05						
Lonoke	02N09W17CBC1	344753	9200100	255.00	4/28/2011	89.05	165.95						
Lonoke	02N09W18DAD3	344754	920011	255.00	4/28/2011	89.45	165.55						
Lonoke	02N09W18DAD2	344754	920020	255.00	4/28/2011	82.65	172.35						

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County	Station ID	Latitude	Longitude	LSA	Date Measured	2011 meas.	WL Alt. 11	WL Alt. 10	WL Alt. 06	WL Alt. 01	10-11 Change	06-11 Change	01-11 Change
Lonoke	01S07W12BCB1	343820	914308	211.00	3/29/2011	118.05	92.95						
Lonoke	01N07W27AAD1	344103	914410	220.00	3/29/2011	134.85	85.15						
Lonoke	01N08W26CCB1	344033	915042	212.00	3/29/2011	104.88	107.12						
Lonoke	01S07W04DAD	343850	914518	198.7	3/29/2011	102.40	96.3						
Lonoke	02N08W27DCC	344543	915106	230	3/22/2011	131.36	98.64						
Lonoke	03N10W34ABB	345058	920356	257	3/22/2011	53.45	203.55						
									Declines/Wells:		9/17	9/16	2/5
									Average Change:		-3.18	-8.78	0.39
Mississippi	10N09E08ACC1	352949.05	900925.66	230.00	6/21/2011	13.80	216.2	216.51	214.16	212.10	-0.31	2.04	4.10
Mississippi	11N09E34BBB1	353217.73	900715.17	235.00	6/21/2011	14.10	220.9	220.93	218.30		-0.03	2.60	
Mississippi	12N08E08BCB1	354047.06	901559.25	225.00	6/21/2011	9.60	215.4	219.58	214.93		-4.18	0.47	
Mississippi	13N09E30CCD1	354247.81	901028.63	230.00	6/21/2011	11.30	218.7	223.72	217.12		-5.02	1.58	
Mississippi	14N10E18ABC1	355022.36	900345.36	236.00	6/21/2011	13.10	222.9	227.01	222.98		-4.11	-0.08	
Mississippi	13N09E13DDA	354437	900425	232.00	6/21/2011	9.40	222.6		224.45	225.00		-1.85	-2.40
Mississippi	12N08E24ACA	353851	901104	225	6/21/2011	24.90	200.10		201.50	213.20		-1.40	-13.10
									Declines/Wells:		5/5	3/7	2/3
									Average Change:		-2.73	.48	-3.80
Monroe	01N01W15DBC1	344139	910542	185.00	4/27/201	51.69	133.31	133.12	135.86		0.19	-2.55	
Monroe	01N03W24BBB1	344135.21	911650.59	185.00	4/27/2011	25.63	159.37	163.38	156.37	151.00	-4.01	3.00	8.37
Monroe	01N04W33BBB2	343959.52	912648.52	218.00	4/27/2011	100.85	117.15	120.61	122.85	123.00	-3.46	-5.70	-5.85
Monroe	01S01W13CDD1	343610.94	910340.54	178.00	4/27/2011	22.25	155.75	160.61	157.63		-4.86	-1.88	
Monroe	01S01W18DCD1	343617.76	910849.2	178.00	4/27/2011	23.25	154.75	155.75	154.95		-1.00	-0.20	
Monroe	01S02W20BBB1	343612.7	911456.1	170.00	4/27/2011	12.12	157.88	158.29	156.65	158.00	-0.41	1.23	-0.12
Monroe	01S04W01BAB1	343905.86	912316.73	210.00	4/27/2011	74.88	135.12	136.70	141.30		-1.58	-6.18	
Monroe	02N01W19BBA1	344645.21	910912.46	191.00	4/27/2011	54.91	136.09	136.88	136.73		-0.79	-0.64	
Monroe	03N02W31ADC1	344958.3	911447.2	190.00	4/25/2011	38.50	151.5	153.13	151.47	154.50	-1.63	0.03	-3.00
Monroe	03N03W36AAA1	345026.65	911547.12	176.00	4/25/2011	21.35	154.65	159.61	153.80		-4.96	0.85	
Monroe	04N02W27CDD3	345540.22	911149.73	200.00	4/25/2011	45.35	154.65	155.87	154.50		-1.22	0.15	

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County	Station ID	Latitude	Longitude	LSA	Date Measured	2011 meas.	WL Alt. 11	WL Alt. 10	WL Alt. 06	WL Alt. 01	10-11 Change	06-11 Change	01-11 Change
Monroe	04N02W28DDD3	345535.05	911220.68	192.00	4/25/2011	32.85	159.15	161.51	159.81	162.10	-2.36	-0.66	-2.95
								Declines/Wells:			**11/12**	**7/12**	**4/5**
								Average Change:			**-2.17**	**-1.05**	**-1.42**
Phillips	01S02E09CBB1	343718.73	905434.06	185.00	3/30/2011	17.00	168.00	171.73	170.71	174.90	-3.73	-2.71	-6.90
Phillips	01S04E05DCD1	343802	904151	230.00	3/30/2011	50.00	180.00	187.84	181.09	187.00	-7.84	-1.09	-7.00
Phillips	02S01E28CCB1	342916.37	910058.18	174.00	3/29/2011	18.10	155.9	159.53	156.05		-3.63	-0.15	
Phillips	02S04E27AAC1	342931.57	904001.09	179.00	3/29/2011	9.80	169.2	172.45	170.41	171.00	-3.25	-1.21	-1.80
Phillips	03S02E35DDA1	342256.24	905129.93	163.00	3/29/2011	19.78	143.22	146.27	141.77		-3.05	1.45	
Phillips	03S03E04DAA1	342735	904710	171.00	3/29/2011	20.40	150.6	152.56	151.71		-1.96	-1.11	
Phillips	03S04E02CAA1	342732	903918	176.00	3/29/2011	15.00	161.00	166.81	159.84	162.00	-5.81	1.16	-1.00
Phillips	04S01E23CCA1	341931.3	905852.62	156.00	3/29/2011	12.72	143.28	146.10	142.60		-2.82	0.68	
Phillips	02S01E23CAC1	343004	905842	175.00	3/29/2011	19.70	155.3						
Phillips	02S02E33DCA1	342812	905347	185	3/29/2011	21.86	163.14						
Phillips	03S03E02DDD1	342706	904504	175	3/29/2011	21.70	153.3						
Phillips	02CBB1	343809	904604	200	3/30/2011	21.00	179.00						
Phillips	01S03E23CDA1	343516	904511	220	3/30/2011	41.30	178.7						
Phillips	01S02E9BDC	3462194	9090950	185	3/29/2011	17.50	167.5		170.20			-2.70	
Phillips	01S03E10ABB	3462846	9077520	205	3/23/2011	25.00	180.00		187.00	191.00		-7.00	-11.00
Phillips	01S03E2ADD	3463577	9074732	200	3/23/2011	20.60	179.4		183.40	191.00		-4.00	-11.60
Phillips	01S04E5DCD	3462784	9070354	230	3/23/2011	51.60	178.4		181.09	187.00		-2.69	-8.60
Phillips	01S01E20DDB	3458968	9101553	185	3/29/2011	29.00	156.00		159.00	170.00		-3.00	-14.00
Phillips	02S02E33ACC	3446783	9090134	177	3/29/2011	30.00	147.00		151.00	154.00		-4.00	-7.00
Phillips	02S02E29DDD	3447678	9090990	180	3/29/2011	29.00	151.00		152.40	159.00		-1.40	-8.00
Phillips	02S03E34BCD	3447450	9078638	165	3/23/2011	19.00	146.00		147.00	150.00		-1.00	-4.00
Phillips	02S04E27ACC	3449209	9066705	175	3/23/2011	10.00	165.00						
Phillips	03S04E2CAA	3445992	9065582	176	3/23/2011	15.20	160.8		159.84	162.00		0.96	-1.20
Phillips	04S01E1AAD	3437657	9095009	156	3/30/2011	15.00	141.00		134.00			7.00	
Phillips	04S01E29CBC	3430774	9102657	150	3/30/2011	9.00	141.00						
								Declines/Wells:			**8/8**	**13/18**	**12/12**
								Average Change:			**-4.01**	**-1.16**	**-6.84**

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County	Station ID	Latitude	Longitude	LSA	Date Measured	2011 meas.	WL Alt. 11	WL Alt. 10	WL Alt. 06	WL Alt. 01	10-11 Change	06-11 Change	01-11 Change
Poinsett	10N01E14CC1	352909.77	905813.38	231.00	4/26/2011	96.27	134.73	135.99	138.59	136.00	-1.26	-3.86	-1.27
Poinsett	10N01E16CCB1	352921.87	910005.35	225.00	4/26/2011	78.20	146.8	145.80	150.01		1.00	-3.21	
Poinsett	10N02E13BCC1	352948.52	905026.29	237.00	4/27/2011	105.60	131.4	131.25	133.76		0.15	-2.36	
Poinsett	10N02E34BBB1	352726	905231	236.00	6/20/2011	101.33	134.67	134.11	136.62		0.56	-1.95	
Poinsett	10N03E14DAB1	352947.21	904404.93	263.00	4/27/2011	119.10	143.9	143.69	144.37		0.21	-0.47	
Poinsett	11N01E17DDD1	353436.83	910013.21	230.00	4/26/2011	82.10	147.9	148.60	151.39	156.00	-0.70	-3.49	-8.10
Poinsett	11N02E26AAB1	353350.31	905034.19	241.00	4/26/2011	99.50	141.5	129.47	133.45		12.03	8.05	
Poinsett	11N03E10DDA1	353545.69	904456.54	243.00	4/27/2011	108.00	135.00	136.01	138.22		-1.01	-3.22	
Poinsett	11N07E18CAB1	353435	902320	217.00	4/29/2011	13.85	203.15	203.14	201.63		0.01	1.52	
Poinsett	12N01E07CDA1	354053.69	910141.25	236.00	4/26/2011	56.15	179.85	179.36	182.03	183.80	0.49	-2.18	-3.95
Poinsett	12N02E26DAD1	353831	905024	245.00	4/27/2011	113.98	131.02	129.40	135.75		1.62	-4.73	
Poinsett	12N07E04BAA1	354201.95	902059.69	223.00	4/29/2011	4.86	218.14	220.29	216.07		-2.15	2.07	
Poinsett	12N07E25DC1	353740	901802	226.00	4/29/2011	16.90	209.1	209.55	208.58	217.30	-0.45	0.52	-8.20
Poinsett	11N06E34BBC1	353224	902646	211.00	6/14/2011	12.00	199.00	194.30	197.78		4.70	1.22	
Poinsett	10N03E35CDD1	352651	90443701	275.00	4/27/2011	126.10	148.9			154.00			-5.10
Poinsett	10N06E11AAA	353045	902501	212	4/29/2011	13.40	198.6			197.40			1.20
Poinsett	11N07E22ADD1	353349	901922	218	4/29/2011	25.50	192.5			190.50			2.00
Poinsett	11N01E26AA1	353338	905654	236	4/20/2011	98.20	137.8			143.9			-6.10
								Declines/Wells:			**5/14**	**9/14**	**6/8**
								Average Change:			**1.09**	**-0.86**	**-3.69**
Prairie	01N06W05CCB1	344352.97	914049.08	220.00	4/5/2011	118.85	101.15	101.16	102.20		-0.01	-1.05	
Prairie	01N06W26CDD1	344014.88	913707.61	218.00	4/6/2011	106.40	111.6						
Prairie	01N06W29DDD1	344017.54	913951.46	223.00	4/6/2011	118.55	104.45	104.93	106.45	109.75	-0.48	-2.00	-5.30
Prairie	01S04W28BDB1	343522.68	912629.73	205.00	4/6/2011	97.90	107.1	106.97	107.72	103.00	0.13	-0.62	4.10
Prairie	01S05W31DDA1	343416	913431	206.00	4/6/2011	112.75	93.25	101.23	102.40		-7.98	-9.15	
Prairie	01S06W12BAB1	343826	913613	228.00	3/17/2011	119.00	109.00	108.23	108.64		0.77	0.36	
Prairie	02N04W32CCB1	344436.43	912737.79	221.00	4/6/2011	83.45	137.55	136.29	136.28		1.26	1.27	
Prairie	02N05W21CBB1	344649	913300	225.00	3/22/2011	110.02	114.98	113.69	116.85		1.29	-1.87	
Prairie	02N05W24BCA3	344659	912937	225.00	3/22/2011	90.82	134.18	136.73	134.30		-2.55	-0.12	
Prairie	02N05W29DDB2	344544	913308	228.00	4/5/2011	121.35	106.65	108.64	109.16		-1.99	-2.51	

Alluvial Aquifer

01-06-10-11 WL Change

County	Station ID	Latitude	Longitude	LSA	Date Measured	2011 meas.	WL Alt. 11	WL Alt. 10	WL Alt. 06	WL Alt. 01	10-11 Change	06-11 Change	01-11 Change
Prairie	02N06W17ABB1	344809.48	913959.44	235.00	4/5/2011	124.70	110.3	109.93	110.74		0.37	-0.44	
Prairie	02S06W14BBB1	343213.38	913728.62	201.00	4/6/2011	77.70	123.3	127.37	126.71		-4.07	-3.41	
Prairie	02N06W24CAA1	344651	913551	233.00	3/22/2011	117.92	115.08	112.80	114.90		2.28	0.18	
Prairie	03N05W03BDD2	345444.06	913115.35	207.00	3/31/2011	64.10	142.9	146.78	139.30		-3.88	3.60	
Prairie	04N04W07ADC1	345850.31	912733.07	195.00	3/31/2011	24.80	170.2	179.11	168.27		-8.91	1.93	
Prairie	04N05W07CDC1	345042.62	913440.92	212.00	3/31/2011	77.60	134.4	135.41	135.46		-1.01	-1.06	
Prairie	04N05W31DDC1	345513.7	913405.8	206.00	3/31/2011	78.38	127.62	128.77			-1.15		
Prairie	04N06W05CCC1	345933.76	914017.96	206.00	3/31/2011	61.20	144.8						
Prairie	04N07W03DCB1	345942.1	914412.48	255.00	3/31/2011	86.20	168.8	168.84	167.67		-0.04	1.13	
Prairie	04N07W28BBA1	345700.53	914544.88	258.00	3/31/2011	97.60	160.4	161.48	162.23		-1.08	-1.83	
Prairie	02N06W22BCC1	344653	913827	234.00	3/22/2011	114.76	119.24						
								Declines/Wells:			**12/18**	**11/17**	**1/2**
								Average Change:			**-1.50**	**-0.91**	**-0.60**
Randolph	18N01E34AAC1	360942.69	905729.13	266.00	2/24/2011	18.00	248.00	250.38	247.82		-2.38	0.18	
Randolph	18N02E22DCD1	361045.76	905104.7	273.00	2/24/2011	40.60	232.4	234.15	235.53		-1.75	-3.13	
Randolph	19N02E09DCA1	361759	905158	267.00	2/24/2011	8.60	258.4	261.75			-3.35		
Randolph	20N02E01ADD1	362424.2	904811.4	280.00	2/24/2011	15.60	264.4	271.69	266.07		-7.29	-1.67	
Randolph	20N03E28BA1	362113.53	904537.97	276.00	2/24/2011	13.50	262.5	267.74	263.14		-5.24	-0.64	
								Declines/Wells:			**5/5**	**3/4**	
								Average Change:			**-4.00**	**-1.32**	
St. Francis	04N01W17CBC1	345735	910801	208.00	4/25/2011	61.06	146.94	146.40	148.92		0.54	-1.98	
St. Francis	04N01W28CDD1	345535.26	910633.55	208.00	4/25/2011	73.65	134.35	136.94	136.58	140.50	-2.59	-2.23	-6.15
St. Francis	04N02E03DDD3	345848	905218	210.00	4/25/2011	46.20	163.8	168.73			-4.93		
St. Francis	04N02E19BBB1	345701	905633	209.00	4/25/2011	62.62	146.38	147.51	148.84		-1.13	-2.46	
St. Francis	05N01E15BCB1	350302.57	905942.41	209.00	4/25/2011	68.70	140.3	139.12	141.81		1.18	-1.51	
St. Francis	05N01E27BBA1	350135.73	905928.78	209.00	4/25/2011	71.00	138.00	139.50	142.07		-1.50	-4.07	
St. Francis	05N02E20ADC1	350156.9	905437.16	211.00	4/25/2011	58.05	152.95	157.66	156.21		-4.71	-3.26	
St. Francis	05N05E19DCA1	350128	903629	203.00	4/20/2011	32.40	170.6	172.95	170.23		-2.35	0.37	
St. Francis	05N06E34CAB1	350025.57	902656.87	200.00	4/20/2011	26.15	173.85	174.84	172.31	171.60	-0.99	1.54	2.25

Alluvial Aquifer

01-06-10-11 WL Change

County	Station ID	Latitude	Longitude	LSA	Date Measured	2011 meas.	WL Alt. 11	WL Alt. 10	WL Alt. 06	WL Alt. 01	10-11 Change	06-11 Change	01-11 Change
St. Francis	06N01E33ACA2	350552.33	905941.6	211.00	4/20/2011	61.75	149.25	141.59	143.86		7.66	5.39	
St. Francis	06N02E13DCA1	350812.64	905002.71	231.00	4/20/2011	81.30	149.7	155.63	157.15		-5.93	-7.45	
St. Francis	06N02E15BDD1	350841.91	905247.31	214.64	4/20/2011	63.70	150.94	152.33	154.49		-1.39	-3.55	
St. Francis	06N05E27BDD1	350654	903102	200.00	4/21/2011	39.10	160.9						
									Declines/Wells:		**9/12**	**8/11**	**1/2**
									Average Change:		**-1.35**	**-1.75**	**-1.95**
White	05N07W09AAA1	350446.87	914441.48	205.00	4/19/2011	12.55	192.45	195.20	190.68	193.50	-2.75	1.77	-1.05
White	05N07W10CCC1	350400.22	914436	203.00	4/19/2011	9.35	193.65	194.99	193.99		-1.34	-0.34	
White	06N06W04BAA1	351047.21	913909.91	220.00	4/19/2011	22.00	198.00	197.87	184.53	177.70	0.13	13.47	20.30
White	06N06W18BBC1	350851.33	914151.92	210.00	4/19/2011	13.60	196.4	200.17	191.87	185.80	-3.77	4.53	10.60
White	06N06W34AAB1	350623.57	913753.55	213.00	4/19/2011	61.20	151.8	153.31	152.37		-1.51	-0.57	
White	06N07W17DCC1	350822.47	914634.73	217.00	4/19/2011	14.70	202.3	204.63	201.30	201.50	-2.33	1.00	0.80
White	06N08W26DDB1	350639	914931	230.00	4/19/2011	10.75	219.25	217.36	215.53		1.89	3.72	
White	07N05W01AAA1	351552	912858	205.00	4/13/2011	12.25	192.75	196.36	187.48		-3.61	5.27	
White	07N05W32BAB1	351136.63	913406.19	213.70	4/13/2011	29.10	184.6	191.83	181.06		-7.23	3.54	
White	08N04W06CCB1	352028.21	912846.51	214.00	4/13/2011	12.55	201.45	202.64	193.50		-1.19	7.95	
White	08N05W32CBC1	351615.66	913416.96	199.00	4/13/2011	3.00	196.00	196.93	194.83		-0.93	1.17	
White	06N08W13ABA1	350907	914826	228.00	4/19/2011	11.40	216.6		214.40	218.00		2.20	-1.40
White	06N06W04ADD1	351037	913839	217.00	4/27/2011	41.90	175.1		181.50	178.76		-6.40	-3.66
White	07N05W26AAA1	351224	913003	200.00	4/13/2011	20.50	179.5		177.60	178.90		1.90	0.60
White	05N08W16BD	350346	915151	230.00	4/19/2011	31.10	198.9		199.50			-0.60	
									Declines/Wells:		**9/11**	**4/15**	**3/7**
									Average Change:		**-2.06**	**2.57**	**3.74**
Woodruff	04N03W03AB1	350020.93	911819.87	185.00	3/23/2011	12.95	172.05	176.30	170.39		-4.25	1.66	
Woodruff	05N02W20DCB1	350207.8	911356.2	192.00	3/23/2011	14.10	177.9	183.59	176.75		-5.69	1.15	
Woodruff	05N04W12DBA1	350426.8	912210.8	186.00	4/19/2011	4.20	181.8	182.22	179.84	183.20	-0.42	1.96	-1.40
Woodruff	06N03W15BAB1	350903.06	911807.41	188.79	4/19/2011	5.70	183.09	184.86	182.16		-1.77	0.93	
Woodruff	06N03W31BCB1	350623	912144	185.00	4/19/2011	4.25	180.75	183.81	182.14	183.00	-3.06	-1.39	-2.25
Woodruff	07N03W19AAA1	351335	912025.42	202.59	4/19/2011	11.95	190.64	197.26	189.64		-6.62	1.00	

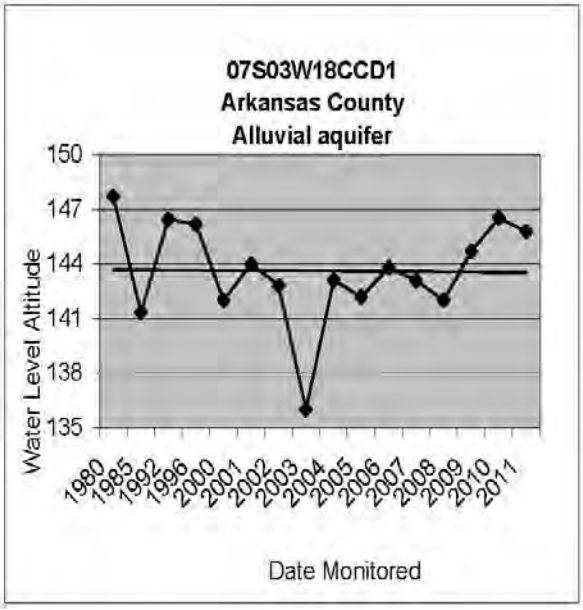
Alluvial Aquifer

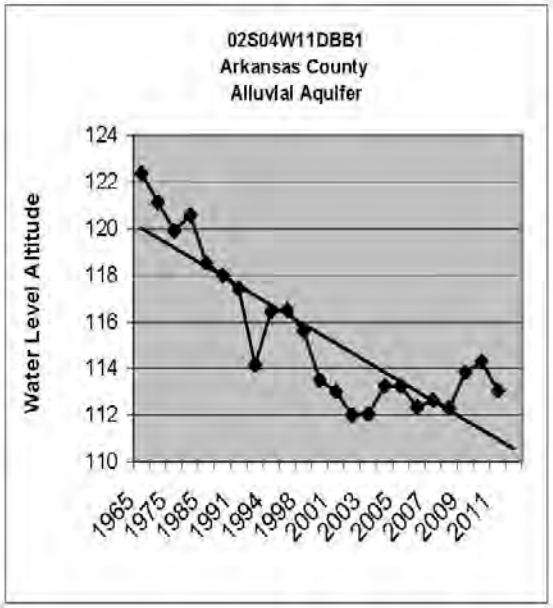
01-06-10-11 WL Change

County	Station ID	Latitude	Longitude	LSA	Date Measured	2011 meas.	WL Alt. 11	WL Alt. 10	WL Alt. 06	WL Alt. 01	10-11 Change	06-11 Change	01-11 Change
Woodruff	08N01W06DDD1	352028	910747	218.00	4/19/2011	48.20	169.8	174.25	173.43		-4.45	-3.63	
Woodruff	08N02W31DDD1	351611	911411	194.55	4/19/2011	4.80	189.75	192.27	190.53		-2.52	-0.78	
Woodruff	08N03W04BBB1	352128	911919	221.00	4/19/2011	15.69	205.31	208.86	202.00		-3.55	3.31	
Woodruff	08N03W31AAD1	351655	912028	212.00	4/19/2011	18.95	193.05	194.66	190.05	187.60	-1.61	3.00	5.45
Woodruff	09N03W29AAD1	352258	911921	220.00	4/19/2011	20.60	199.4	201.87	197.47		-2.47	1.93	
Woodruff	05N03W35CC2	350021	911735	187.00	3/23/2011	10.64	176.36			173.60			2.76
Woodruff	06N01W33ADB2	350600	910559	216.00	3/23/2011	71.00	145.00			151.30			-6.30
Woodruff	05N01W13DCC1	350242	910311	211.00	3/23/2011	78.26	132.74		136.40	141.90		-3.66	-9.16
Woodruff	06N03W12BAA	350955	911607	185.00	3/27/2011	6.71	178.29		178.95			-0.66	
								Declines/Wells:			11/11	5/13	4/6
								Average Change:			-3.31	.37	-1.82
							Total Declines/ Wells:				199/252	221/352	122/171
							Total Average Change:				-2.11	-1.06	-2.42

Appendix B

Selected Alluvial Aquifer Well Hydrographs


07S03W18CCD1
Arkansas County
Alluvial aquifer
Water Level Altitude
150
147
144
141
138
135
1980
1985
1992
1996
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date Monitored


02S04W11DBB1
Arkansas County
Alluvial Aquifer
Water Level Altitude
124
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118
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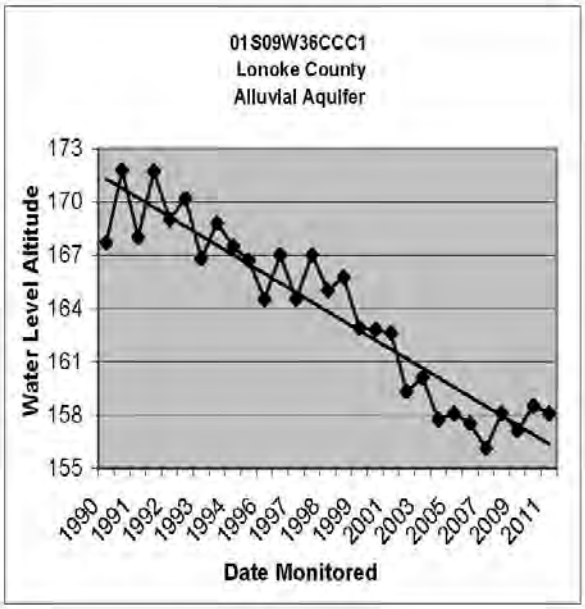
2005
2007
2009
2011


01S09W36CCC1
Lonoke County
Alluvial Aquifer
Water Level Altitude
173
170
167
164
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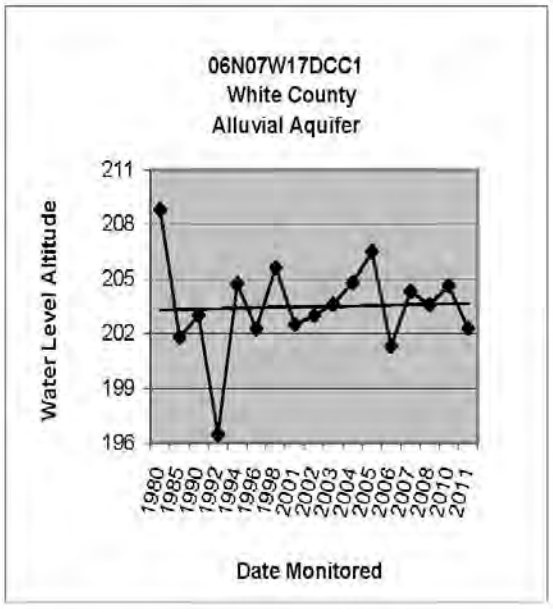
1998
1999
2001
2003
2005
2007
2009
2011
Date Monitored


06N07W17DCC1
White County
Alluvial Aquifer
Water Level Altitude
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208
205
202
199
196
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2005
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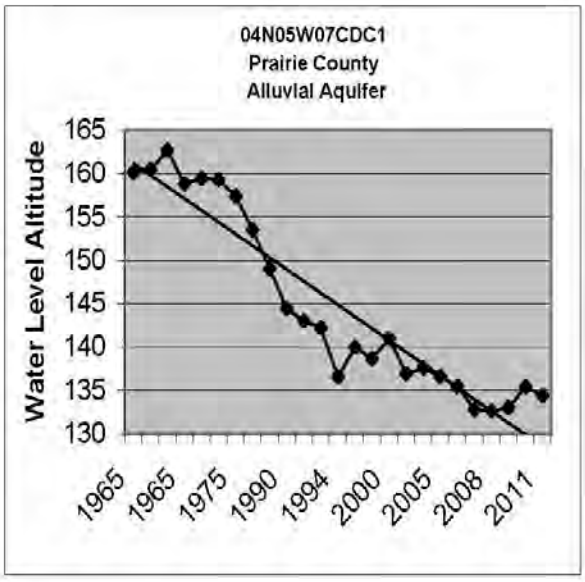
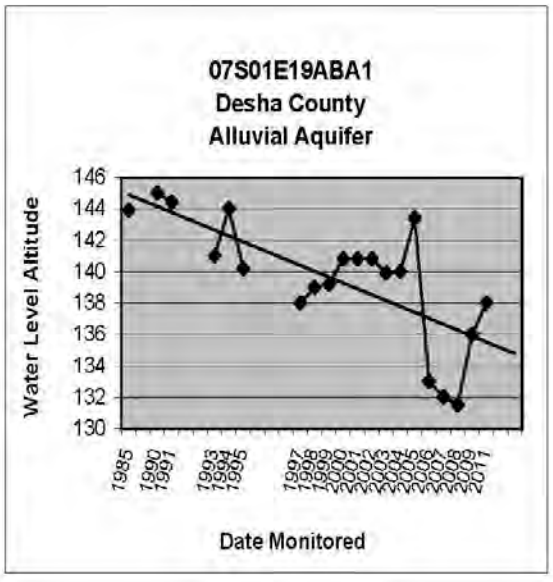
2007
2008
2010
2011
Date Monitored


04N05W07CDC1
Prairie County
Alluvial Aquifer
Water Level Altitude
165
160
155
150
145
140
135
130
1965
1965
1975
1990
1994
2000
2005
2008
2011


07S01E19ABA1
Desha County
Alluvial Aquifer
Water Level Altitude
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144
142
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138
136
134
132
130
1985
1990
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1993
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1995
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1998
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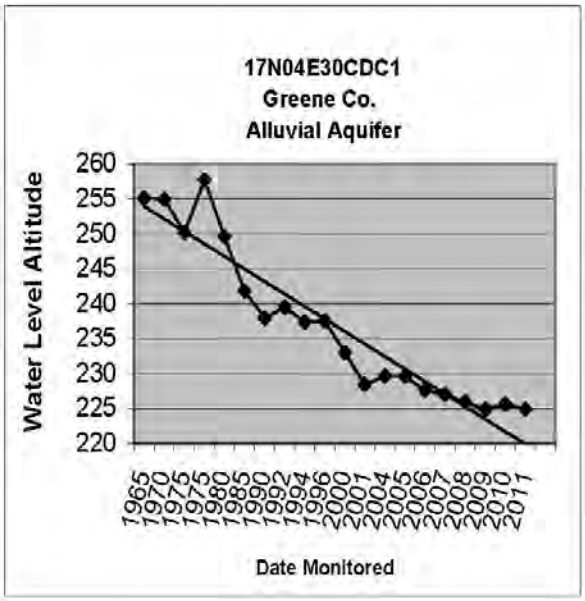
2009
2011
Date Monitored


17N04E30CDC1
Greene Co.
Alluvial Aquifer
Water Level Altitude
260
255
250
245
240
235
230
225
220
1965
1970
1975
1975
1980
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2007
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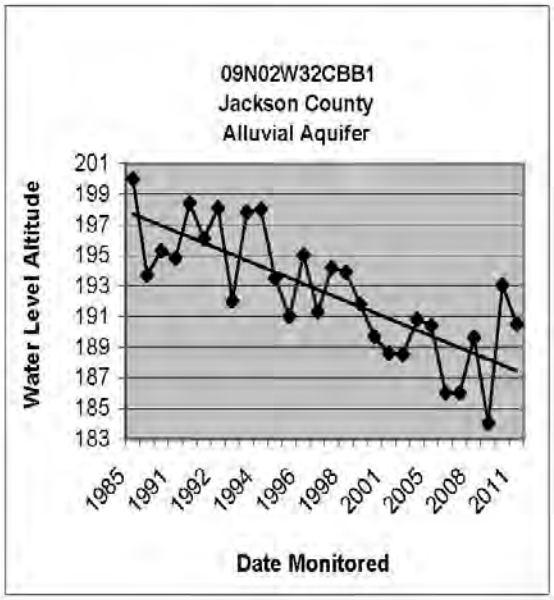
2009
2010
2011
Date Monitored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Jackson County
Alluvial Aquifer
Water Level Altitude
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191
189
187
185
183
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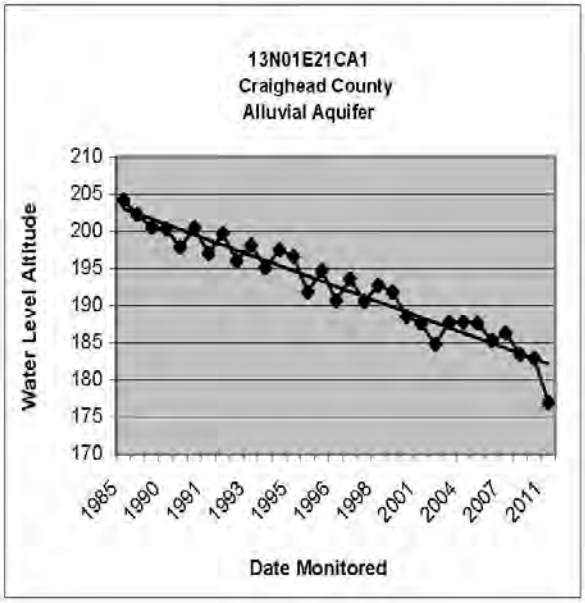
1991
1992
1994
1996
1998
2001
2005
2008
2011
Date Monitored


13N01E21CA1
Craighead County
Alluvial Aquifer
Water Level Altitude
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1985
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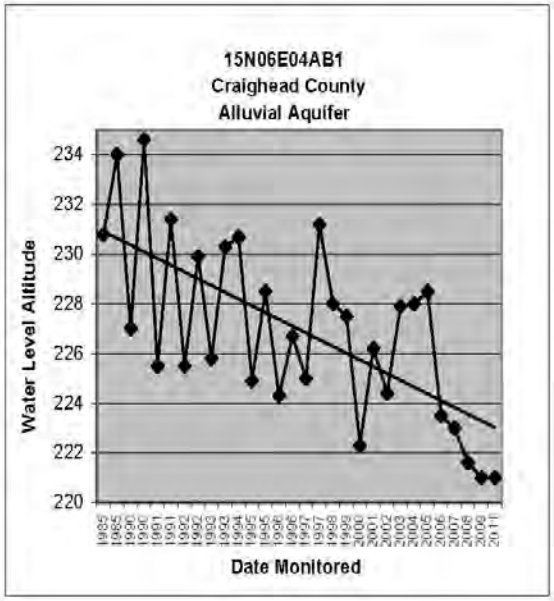
1995
1996
1998
2001
2004
2007
2011
Date Monitored


15N06E04AB1
Craighead County
Alluvial Aquifer
Water Level Altitude
234
232
230
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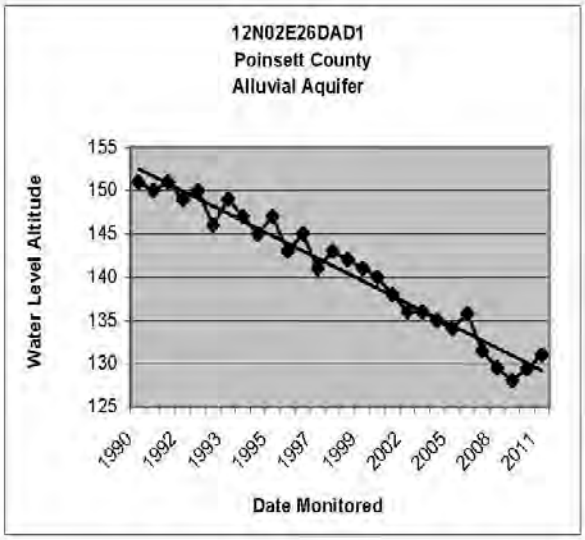
226
224
222
220
Date Monitored


12N02E26DAD1
Poinsett County
Alluvial Aquifer
Water Level Altitude
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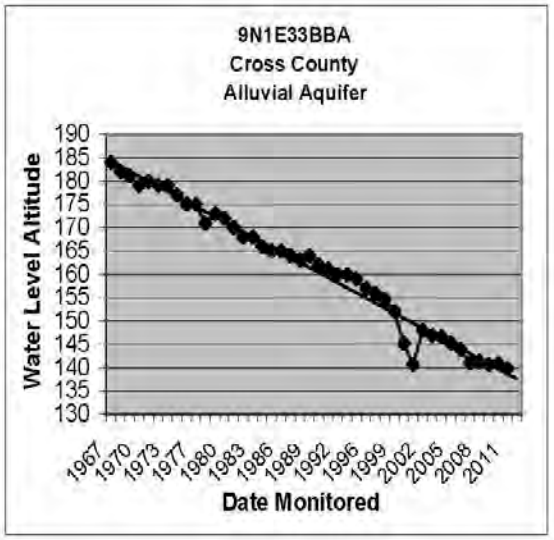
1995
1997
1999
2002
2005
2008
2011
Date Monitored


9N1E33BBA
Cross County
Alluvial Aquifer
Water Level Altitude
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150
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1967
1970
1973
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1983
1986
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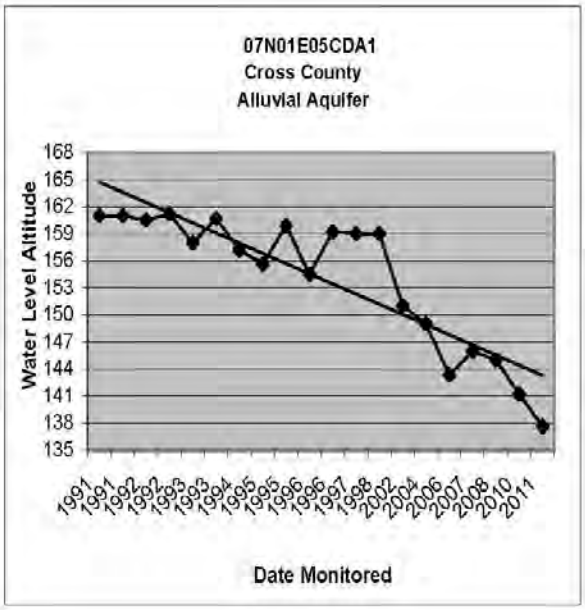
1996
1999
2002
2005
2008
2011
Date Monitored


07N01E05CDA1
Cross County
Alluvial Aquifer
Water Level Altitude
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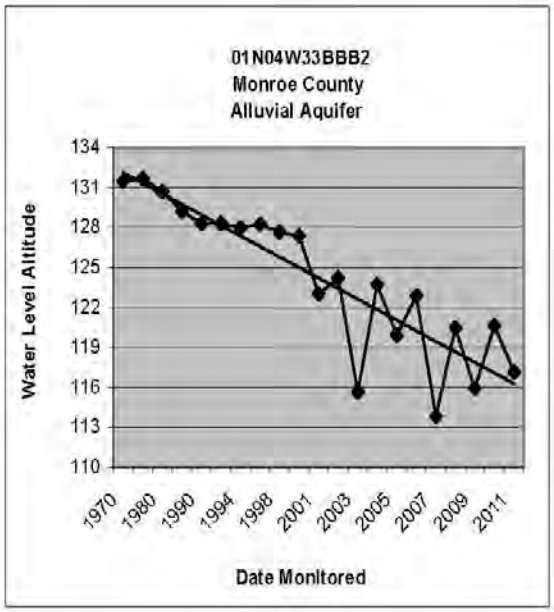
Date Monitored


01N04W33BBB2
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Alluvial Aquifer
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113
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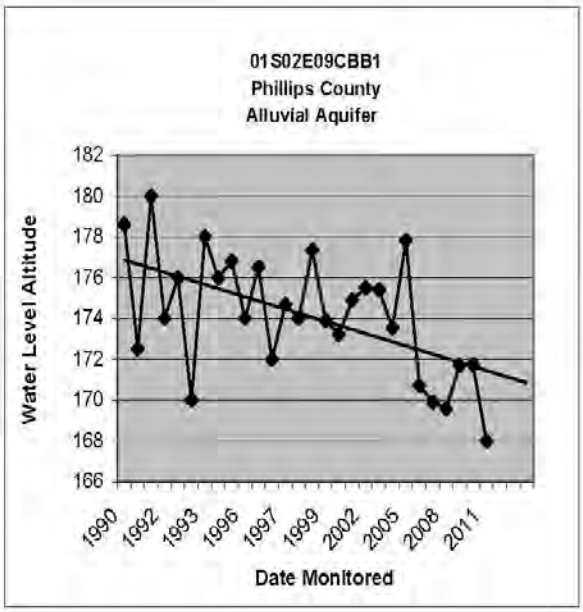
Date Monitored


01S02E09CBB1
Phillips County
Alluvial Aquifer
Water Level Altitude
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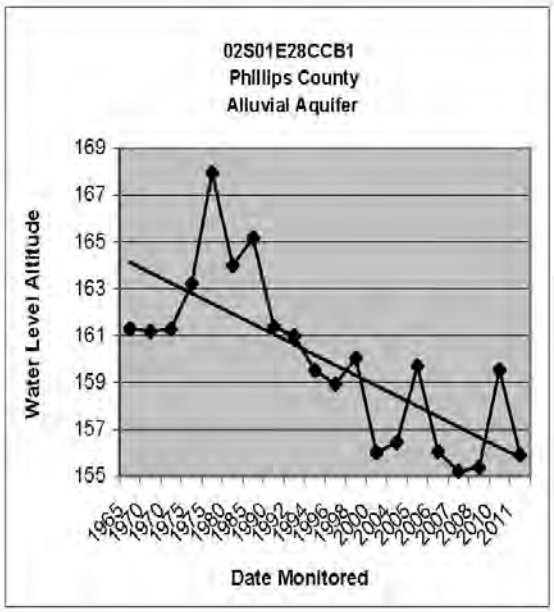
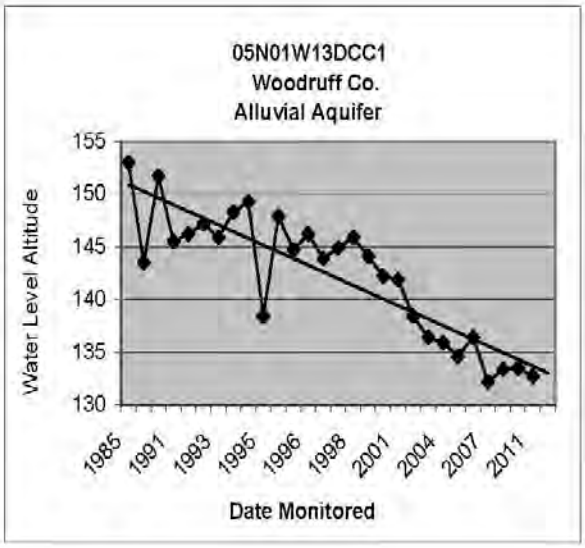
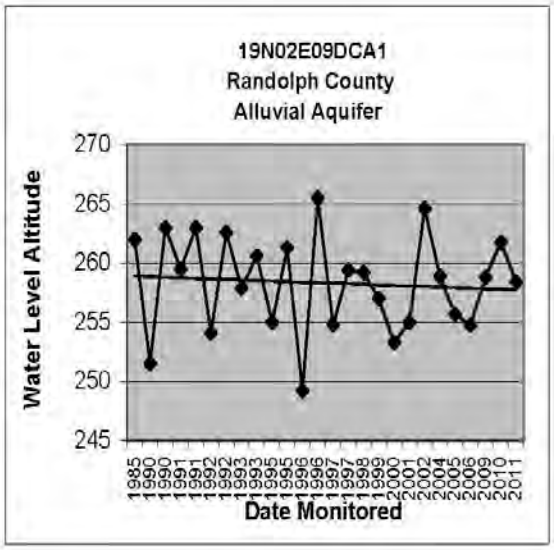
168
166
1990 1992 1993 1996 1997 1999 2002 2005 2008 2011
Date Monitored


02S01E28CCB1
Phillips County
Alluvial Aquifer
Water Level Altitude
169
167
165
163
161
159
157
155
1965 1970 1970 1975 1980 1985 1990 1992 1994 1996 1998 2000 2004 2005 2006 2007 2008 2010 2011
Date Monitored


05N01W13DCC1
Woodruff Co.
Alluvial Aquifer
Water Level Altitude
155
150
145
140
135
130
1985 1991 1993 1995 1996 1998 2001 2004 2007 2011
Date Monitored


19N02E09DCA1
Randolph County
Alluvial Aquifer
Water Level Altitude
270
265
260
255
250
245
1985 1990 1990 1991 1991 1992 1992 1993 1995 1995 1996 1997 1997 1998 1999 2000 2001 2002 2004 2005 2006 2009 2010 2011
Date Monitored

Appendix C

Sparta / Memphis Aquifer Water Level Monitoring Data

Sparta/ Memphis Sand Aquifer
2011, 10, 06, 01 WL Change

County	Station	Latitude	Longitude	LSA	Date Meas.	2011 Meas.	WL Alt.11	WL Alt.10	WL Alt.06	WL Alt.01	10-11 Change	06-11 Change	01-11 Change
Arkansas	02S04W06CDB1	343311.54	912849.29	212.00	3/28/2011	173.13	38.87	64.10	51.80	45.48	-25.23	-12.93	-6.61
Arkansas	02S04W23DAA1	343044.22	912354.53	208.00	4/1/2011	143.67	64.33	54.50	59.50	59.60	9.83	4.83	4.73
Arkansas	02S04W33BBB1	342922.14	912702.68	205.00	4/1/2011	166.19	38.81	40.00	47.30	42.02	-1.19	-8.49	-3.21
Arkansas	02S05W16CBC1	343143	913318	216.00	3/28/2011	177.38	38.62	50.50	42.20	27.88	-11.88	-3.58	10.74
Arkansas	02S05W34BDA1	342924.58	913148.02	216.00	3/28/2011	186.45	29.55	47.20	37.80	30.39	-17.65	-8.25	-0.84
Arkansas	02S05W35AAB1	342929.98	913035.31	216.00	3/28/2011	175.31	40.69	76.40	42.60	32.12	-35.71	-1.91	8.57
Arkansas	03S04W02CCB1	342747.58	912458.04	202.00	4/1/2011	151.95	50.05	59.60	50.50	46.42	-9.55	-0.45	3.63
Arkansas	03S05W13BDC1	342631.15	913004.57	210.00	3/28/2011	173.60	36.40	62.00		33.31	-25.60		3.09
Arkansas	03S05W15CBB1	342633.21	913229.33	206.00	3/28/2011	176.74	29.26	44.10	34.40	29.52	-14.84	-5.14	-0.26
Arkansas	03S05W18CAB1	342633	913523	196.00	3/28/2011	161.90	34.10	42.10	32.60	27.32	-8.00	1.50	6.78
Arkansas	03S06W21ACB1	342554	913927	200.00	3/28/2011	157.81	42.19	44.80	40.05		-2.61	2.14	
Arkansas	03S06W30BBD1	342515.54	914216.15	191.00	4/4/2011	159.30	31.70	34.60	29.00	29.37	-2.90	2.70	2.33
Arkansas	04S04W11BCC1	342156.96	912501.52	198.00	3/31/2011	161.55	36.45	54.20	45.60		-17.75	-9.15	
Arkansas	04S04W22DAA1	342006.89	912515.15	195.00	3/31/2011	153.66	41.34	49.00	40.50	36.22	-7.66	0.84	5.12
Arkansas	04S05W01BAA1	342322.23	912956.46	196.00	3/28/2011	160.44	35.56	33.70	22.50		1.86	13.06	
Arkansas	04S05W05ACC1	342302.67	913412.84	186.00	3/21/2011	156.72	29.28	37.60	28.30	24.40	-8.32	0.98	4.88
Arkansas	04S05W15AAA1	342132.16	913133.29	201.00	3/28/2011	164.44	36.56	45.25	35.15	31.33	-8.69	1.41	5.23
Arkansas	04S05W36DCC1	341752.00	913003.63	196.00	3/31/2011	158.97	37.03	42.30	36.05	31.44	-5.27	0.98	5.59
Arkansas	05S03W04ADB1	341734.14	912007.11	188.00	4/4/2011	147.43	40.57	57.40	52.10	30.12	-16.83	-11.53	10.45
Arkansas	05S04W26ACA1	341358	912435	188.00	3/31/2011	136.58	51.42	56.00	49.00	56.90	-4.58	2.42	-5.48
Arkansas	05S05W26CDD1	341324	913119	188.00	3/31/2011	35.99	152.01	153.25	150.55		-1.24	1.46	
Arkansas	05S05W36DAA	341247	912946	180.00	3/31/2011	141.61	38.39	40.00	38.00	37.73	-1.61	0.39	0.66
Arkansas	06S02W22CDB1	340904	911331.06	186.00	3/31/2011	108.18	77.82	78.60	76.00	73.71	-0.78	1.82	4.11
Arkansas	06S03W27BAA1	340859.22	912008.98	181.00	3/31/2011	117.34	63.66	65.90	62.30	60.94	-2.24	1.36	2.72
Arkansas	07S02W28ABA1	340339.67	911411.01	181.00	3/31/2011	102.13	78.87	78.50	76.10	75.74	0.37	2.77	3.13
Arkansas	07S03W06ABC1	340701.89	912247.68	185.00	3/31/2011	129.53	55.47	62.50	58.70	58.15	-7.03	-3.23	-2.68
Arkansas	08S02W09BCC1	340031.06	911447.66	174.00	3/31/2011	97.79	76.21	75.60	73.80	74.30	0.61	2.41	1.91
Arkansas	03S03W18CCC2	342553	912251	196.00	3/10/2011	145.65	50.35	57.04	51.80		-6.69	-1.45	
Arkansas	03S04W26CDA1	342416	912437	203.00	4/4/2011	142.52	60.48			59.80			0.68
Arkansas	03S05W02AAB1	342839	913032	210.00	3/28/2011	169.82	40.18		36.20			3.98	
Arkansas	03S05W28DAB1	342447	913238	204.00	4/4/2011	181.68	22.32			28.49			-6.17
Arkansas	04S01W04CBD1	342226	910758	196.00	4/5/2011	110.13	85.87		85.19	82.00		0.68	3.87

Sparta/ Memphis Sand Aquifer
2011, 10, 06, 01 WL Change

County	Station	Latitude	Longitude	LSA	Date Meas.	2011 Meas.	WL Alt.11	WL Alt.10	WL Alt.06	WL Alt.01	10-11 Change	06-11 Change	01-11 Change
Arkansas	04S01W28BAA1	341929	910739	190.00	4/5/2011	102.71	87.29		85.70	83.24		1.59	4.05
Arkansas	04S04W19CBB1	342005	912926	195.00	3/31/2011	162.49	32.51			30.26			2.25
Arkansas	04S05W31DDA1	341819	913448	184.00	4/5/2011	32.70	151.30						
Arkansas	05S01W17BAA1	341550	910742	176.00	4/5/2011	90.08	85.92		84.20	81.77		1.72	4.15
Arkansas	06S02W06ABB1	341228	911622	181.00	3/31/2011	115.90	65.10		63.50	65.77		1.60	-0.67
Arkansas	06S02W17ADA1	341023	911451	188.00	3/31/2011	110.50	77.50		75.30	74.81		2.20	2.69
								Declines/ Wells:			**24/28**	**11/33**	**8/31**
								Average Change:			**-8.26**	**-0.40**	**2.43**
Ashley	15S07W32CDD1	332117.77	915101.06	190.00	3/29/2011	138.41	51.59	51.50	51.30	56.45	0.09	0.29	-4.86
Ashley	17S09W15ACC1	331333.66	920116.44	100.00	3/29/2011	22.83	77.17	80.06	79.70	78.76	-2.89	-2.53	-1.59
								Declines/ Wells:			**1/2**	**1/2**	**2/2**
								Average Change:			**-1.40**	**-1.12**	**-3.22**
Bradley	12S09W31CCB1	333711.24	920444.21	231.00	3/29/2011	184.12	46.88	39.10	56.15		7.78	-9.27	
Bradley	13S09W06ACB3	333647	920407	208.00	3/29/2011	168.24	39.76	31.00	44.60	29.23	8.76	-4.84	10.53
Bradley	13S11W17BCD1	333453.65	921607.25	250.00	3/29/2011	191.89	58.11	53.86	58.80	59.39	4.25	-0.69	-1.28
Bradley	16S12W21CAA1	331839	922052	100.00	3/29/2011	78.36	21.64	21.10	21.20	26.38	0.54	0.44	-4.74
Bradley	15S11W31DDD1	332142	921621	131.00	3/1/2011	102.40	28.60	29.75	28.47		-1.15	0.13	
								Declines/ Wells:			**1/5**	**3/5**	**2/3**
								Average Change:			**4.04**	**-2.85**	**1.50**
Calhoun	13S13W32CDA1	333226.81	922741.66	208.00	5/19/2011	175.50	32.50	16.70	22.25	38.51	15.80	10.25	-6.01
Calhoun	14S13W05BBD1	333206.66	922801.55	189.00	5/19/2011	151.42	37.58	29.30	29.80		8.28	7.78	
Calhoun	14S13W12CCB1	333040.05	922403.54	205.00	5/19/2011	165.18	39.82	27.20	27.96	36.99	12.62	11.86	2.83
Calhoun	11S14W12CAC3	334630	922927	313.00	5/18/2011	148.82	164.18		182.78	168.27		-18.60	-4.09

Sparta/ Memphis Sand Aquifer
2011, 10, 06, 01 WL Change

County	Station	Latitude	Longitude	LSA	Date Meas.	2011 Meas.	WL Alt.11	WL Alt.10	WL Alt.06	WL Alt.01	10-11 Change	06-11 Change	01-11 Change
Calhoun	14S13W03CAB1	333145	922551	202.00	5/19/2011	169.08	32.92						
									Declines/ Wells:		0/3	1/4	2/3
									Average Change:		12.23	2.82	-2.42
Chicot	13S03W22DAD1	333317	912306	135.00	3/29/2011	70.74	64.26		63.50	66.75		0.76	-2.49
Chicot	15S03W07BCC1	332445	912723	129.00	3/29/2011	65.35	63.65						
									Declines/ Wells:				
									Average Change:				
Cleveland	09S11W11CDB1	335622.66	921250.52	233.00	5/18/2011	160.64	72.36	71.25	70.53	72.88	1.11	1.83	-0.52
Cleveland	10S09W23CDC1	334917.94	920020.5	220.00	5/18/2011	167.84	52.16	48.85	56.30	59.98	3.31	-4.14	-7.82
Cleveland	10S09W35ACD1	334758	915956	219.00	5/18/2011	164.96	54.04	74.20	41.10		-20.16	12.94	
Cleveland	10S12W12BDD1	335132.99	921743.38	220.00	5/18/2011	118.83	101.17	96.30	87.60	103.09	4.87	13.57	-1.92
Cleveland	09S11W01DCA1	335728	921133	230.00	5/18/2011	183.03	46.97		31.10	25.18		15.87	21.79
Cleveland	11S11W16AAB1	334543	921422	303.00	5/18/2011	202.97	100.03		98.80	108.79		1.23	-8.76
									Declines/ Wells:		1/4	1/6	4/5
									Average Change:		-2.72	6.88	0.55
Columbia	15S20W20CCB1	332453.37	931215.01	372.00	3/1/2011	215.70	156.30	156.20	155.25	149.75	0.10	1.05	6.55
Columbia	16S20W08DCC1	332114.08	931141.34	402.00	3/25/2011	315.03	86.97	86.90	74.40	114.86	0.07	12.57	-27.89
Columbia	16S21W14CBB1	332049	931516	281.00	3/9/2011	200.04	80.96	80.34	99.85	66.34	0.62	-18.89	14.62
Columbia	16S21W20DAD1	331955.06	931736.47	350.00	3/21/2011	254.43	95.57	100.23			-4.66		
Columbia	16S22W22CCD1	331947.61	932224.89	340.00	3/14/2011	132.97	207.03	207.70	205.80	191.74	-0.67	1.23	15.29
Columbia	17S19W15ABD1	331537	930328	325.00	3/22/2011	277.31	47.69	56.00	77.40	29.43	-8.31	-29.71	18.26
Columbia	17S19W17ACA1	331538.06	930536.26	303.00	3/24/2011	271.86	31.14	14.50	27.35	37.62	16.64	3.79	-6.48
Columbia	17S19W18CBD1	331516.81	930655.59	305.00	3/24/2011	310.11	-5.11	27.60	15.46	30.35	-32.71	-20.57	-35.46
Columbia	17S19W30ABB1	331406.12	930650.14	248.00	3/22/2011	215.52	32.48	35.70	32.10	28.07	-3.22	0.38	4.41
Columbia	17S20W17CDA1	331519.76	931200.69	325.10	3/24/2011	305.21	19.89	27.60	25.52	16.76	-7.71	-5.63	3.13

Sparta/ Memphis Sand Aquifer
2011, 10, 06, 01 WL Change

County	Station	Latitude	Longitude	LSA	Date Meas.	2011 Meas.	WL Alt.11	WL Alt.10	WL Alt.06	WL Alt.01	10-11 Change	06-11 Change	01-11 Change
Columbia	17S21W01BBC1	331743.07	931423.65	305.00	3/21/2011	250.37	54.63	44.70	40.03	-4.53	9.93	14.60	59.16
Columbia	17S21W11DCC2	331608.55	931448.61	303.00	3/22/2011	271.97	31.03	23.20	13.17	15.55	7.83	17.86	15.48
Columbia	17S21W11DCC3	331609.3	931449.35	298.00	3/22/2011	275.71	22.29	18.20	8.17	10.55	4.09	14.12	11.74
Columbia	17S22W23BBB1	331519	932136	318.00	3/23/2011	148.80	169.20	184.70	176.50	178.34	-15.50	-7.30	-9.14
Columbia	18S20W06DDC1	331142	931248	300.00	2/23/2011	303.58	-3.58	19.99	15.21	1.16	-23.57	-18.79	-4.74
Columbia	18S20W08CBC1	331114.79	931227.04	263.00	3/23/2011	272.20	-9.20	7.90	-19.46	-9.62	-17.10	10.26	0.42
Columbia	18S20W10CAA1	331054.37	931015.76	290.00	3/23/2011	271.15	18.85	19.02	14.29	12.80	-0.17	4.56	6.05
Columbia	19S20W09CBD1	330555.38	931128.72	332.00	3/9/2011	262.70	69.30	69.60		64.87	-0.30		4.43
Columbia	19S20W34BDD1	330239.09	931030.67	290.00	2/23/2011	208.50	81.50	83.50	78.22	80.35	-2.00	3.28	1.15
Columbia	19S21W16DBB1	330517.2	931724.2	284.00	2/23/2011	173.80	110.20	111.90			-1.70		
Columbia	19S23W10ABD1	330643.92	932833.33	242.00	2/22/2011	45.51	196.49	196.71	197.21	196.15	-0.22	-0.72	0.34
Columbia	19S23W11CDA2	330609.39	932744.02	248.00	2/22/2011	51.25	196.75	195.70	194.80	194.67	1.05	1.95	2.08
Columbia	19S23W11DDB1	330604.93	932722.12	246.00	2/22/2011	55.05	190.95	191.90	188.84	190.84	-0.95	2.11	0.11
Columbia	19S23W14BAB2	330555.24	932752.38	244.00	2/22/2011	45.02	198.98	198.15	193.83	201.55	0.83	5.15	-2.57
Columbia	20S22W03DCC1	330138.44	932236.27	214.00	2/23/2011	105.42	108.58	109.73	106.66	161.02	-1.15	1.92	-52.44
Columbia	20S22W11ACD1	330109.20	932133.20	271.00	2/23/2011	107.10	163.90	165.00	156.70	162.95	-1.10	7.20	0.95
Columbia	17S20W36ABC1	331306	930751	335.00	3/9/2011	292.54	42.46			37.53			4.93
Columbia	17S21W08DCA1	331613	931758	298.00	3/23/2011	141.13	156.87		179.00			-22.13	
Columbia	17S21W17BAB1	331607	931818	311.00	3/23/2011	188.48	122.52		96.32	103.95		26.20	18.57
Columbia	17S22W21ABD1	331516	932303	242.00	3/23/2011	81.28	160.72		158.90			1.82	
Columbia	19S20W08DAB1	330558	931156	320.00	3/2/2011	274.62	45.38			64.70			-19.32
Columbia	17S19W19BCA1	331433	930705	301.00	3/22/2011	271.36	29.64			26.10			3.54
Columbia	17S20W13BCD1	331533	930807	312.00	3/24/2011	307.02	4.98		-11.40	-13.48		16.38	18.46
								Declines/ Wells:			**17/26**	**8/27**	**8/29**
								Average Change:			**-3.07**	**0.84**	**1.78**
Craighead	13N03E23CDD1	354404.17	904432.83	248.00	4/28/2011	93.16	154.84	158.10	160.10	161.87	-3.26	-5.26	-7.03
Craighead	14N04E22CBD1	354928.92	903920.99	256.00	4/28/2011	58.28	197.72	197.80	196.80	197.32	-0.08	0.92	0.40
Craighead	14N05E36CBC1	354750.84	903100.18	220.00	4/27/2011	13.62	206.38	208.90	206.50	205.58	-2.52	-0.12	0.80
Craighead	15N05E29DBB1	355359.83	903432.73	258.00	4/28/2011	25.95	232.05	235.80		227.79	-3.75		4.26
Craighead	15N06E18ACA1	355544.42	902858.20	230.00	4/27/2011	19.21	210.79	215.20	210.50	210.52	-4.41	0.29	0.27

Alluvial Aquifer

01-06-10-11 WL Change

County	Station ID	Latitude	Longitude	LSA	Date Measured	2011 meas.	WL Alt. 11	WL Alt. 10	WL Alt. 06	WL Alt. 01	10-11 Change	06-11 Change	01-11 Change
Craighead	13N03E29AAA1	354403.31	904712.98	251.00	4/26/2011	108.9	142.1	143.53	147.21		-1.43	-5.11	
Craighead	13N04E12ABB1	354635	903656	231.00	4/26/2011	24.90	206.1	208.00	207.18		-1.90	-1.08	
Craighead	13N05E22BAD1	354449	903243	226.00	4/26/2011	14.90	211.1	214.20	210.61		-3.10	0.49	
Craighead	13N07E20BBA1	354439.77	902216.44	223.20	4/26/2011	4.50	218.7	219.79	217.78		-1.09	0.92	
Craighead	14N02E26BBB1	354918	905125	255.00	6/14/2011	81.47	173.53	175.89			-2.36		
Craighead	14N05E25ABB1	354920.85	903025.35	238.00	4/26/2011	19.40	218.6	220.68	216.46		-2.08	2.14	
Craighead	14N06E27AAB1	354911.46	902559.08	225.93	4/26/2011	1.30	224.63	224.34	222.83		0.29	1.80	
Craighead	15N06E20DDD1	355426	902739	234.00	4/26/2011	9.80	224.2	226.34	222.78		-2.14	1.42	
Craighead	13N05E6DC	354637	903547	229.00	3/23/2011	19.90	209.1		209.00	206.20		0.10	2.90
Craighead	15N06E4AB	355744	902706	239.00	3/23/2011	17.80	221.2			226.20			-5.00
Craighead	13N04E15DC	354521	903857	230.00	4/5/2011	25.30	204.7			203.90			0.80
Craighead	14N02E15DD	354852	905044	255.00	4/5/2011	76.50	178.5		180.20			-1.70	
Craighead	15N02E12AB	355626	904930	250.00	4/5/2011	36.80	213.2			219.80			-6.60
Craighead	14N01E10BA	355204	905828	246.00	4/5/2011	56.10	189.9		194.90	198.40		-5.00	-8.50
Craighead	14N01E31DA	354817	910121	251.00	4/5/2011	62.00	189			195.70			-6.70
Craighead	13N03E23CD	354419	904434	249.00	4/5/2011	84.00	165		169.40	169.50		-4.40	-4.50
Craighead	13N07E35AD	354233	901837	249.00	4/5/2011	13.00	236			242.30			-6.30
Craighead	13N04E26BC	354340	903829	225.00	4/5/2011	25.50	199.5		198.50	196.70		1.00	2.80
Craighead	14N01E03AC	355246	905816	249.00	4/5/2011	52.10	196.9		198.10	202.80		-1.20	-5.90
Craighead	13N01E21CA	354434	905945	240.00	4/5/2011	63.00	177		178.00	180.50		-1.00	-3.50
Craighead	13N03E28CD	354322	904652	250.00	4/5/2011	123.00	127		141.00	149.50		-14.00	-22.50
Craighead	13N01E26BC	35382	905800	245.00	4/5/2011	71.00	174		176.50			-2.50	
Craighead	15N07E35DB	355241	901831	230.00	3/23/2011	14.30	215.7		215.40	220.10		0.30	-4.40
Craighead	14N6E06BB	355234	902934	240.00	4/5/2011	21.30	218.7			214.20			4.50
Craighead	15N05E22BB	355513	903241	260.00	4/5/2011	33.00	227		225.20	212.50		1.80	14.50
Craighead	13N05E2CC	354648	903202	230.00	3/23/2011	12.20	217.8		217.10	216.90		0.70	0.90
Craighead	14N07E14DD	354956	901831	230.00	3/23/2011	13.10	216.9		216.50	220.40		0.40	-3.50
Craighead	13N07E5AB	354716	902158	225.00	3/23/2011	7.80	217.2		212.70	218.20		4.50	-1.00
Craighead	13N05E24BA	354451	903045	225.00	3/23/2011	8.30	216.7		212.80	217.10		3.90	-0.40
Craighead	15N03E31AD	355313	904805	270.00	4/5/2011	61.50	208.5	209.25	206.10		-0.75	2.40	
Craighead	13N07E2CA	354642	901901	226.00	3/23/2011	10.90	215.1		221.00	222.10		-5.90	-7.00
Craighead	13N03E35AA	354308	904401	250.00	3/23/2011	98.20	151.8		156.00			-4.20	

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County	Station	Latitude	Longitude	LSA	Date Meas.	2011 Meas.	WL Alt.11	WL Alt.10	WL Alt.06	WL Alt.01	10-11 Change	06-11 Change	01-11 Change
Dallas	10S15W18BCC1	335119.53	924120.08	328.00	5/17/2011	76.18	251.82	255.71	250.55	250.44	-3.89	1.27	1.38
Dallas	07S15W33DAC1	340402	923752	475.00	3/3/2011	33.40	441.60	447.43			-5.83		
Dallas	10S145W11DBB1	335201	923632	295.00	3/3/2011	57.21	237.79	239.92			-2.13		
Dallas	07S14W31AAA1	340429	923332	330.00	5/17/2011	113.48	216.52			220.28			-3.76
Dallas	09S14W01BDC1	335753	922918	265.00	5/17/2011	41.05	223.95						
								Declines/ Wells:			**8/9**	**2/7**	**8/9**
								Average Change:			**-2.56**	**-0.03**	**-2.10**
Desha	09S02W26AAC1	335346.00	911520.82	153.00	5/26/2011	67.50	85.50	81.88	79.60	81.68	3.62	5.90	3.82
Desha	09S04W28DDD1	335309.60	913006.71	165.00	5/26/2011	116.54	48.46	53.82	52.50	49.27	-5.36	-4.04	-0.81
Desha	10S02W26CCC2	334750.23	911623.99	148.00	5/26/2011	70.07	77.93	76.35	74.90	77.01	1.58	3.03	0.92
Desha	11S02W03CCA1	334615.78	911711.03	139.00	5/26/2011	62.54	76.46	68.85	68.50	70.82	7.61	7.96	5.64
Desha	12S03W26CBB1	333748.60	912259.18	143.00	5/26/2011	88.10	54.90	56.50	45.40	51.92	-1.60	9.50	2.98
Desha	12S03W34DAD1	333643.44	912305.04	147.00	5/26/2011	77.31	69.69	64.10	57.90		5.59	11.79	
Desha	10S04W11CBC1	335035	912903	161.00	5/26/2011	101.53	59.47		61.20	70.14		-1.73	-10.67
								Declines/ Wells:			**2/6**	**2/7**	**2/6**
								Average Change:			**1.91**	**4.63**	**0.31**
Drew	11S04W02ACA2	334631.87	912826.56	153.00	3/30/2011	93.46	59.54	58.90	56.10	62.18	0.64	3.44	-2.64
Drew	11S04W25CB2	334249.46	912706.98	148.00	3/30/2011	87.81	60.19	63.95	49.60	65.22	-3.76	10.59	-5.03
Drew	12S06W30BBD1	333807.15	914543.08	271.00	3/30/2011	224.80	46.20	49.50		50.58	-3.30		-4.38
Drew	13S05W36ACB1	333150.88	913407.59	169.00	3/30/2011	91.73	77.27	79.00	79.50	80.17	-1.73	-2.23	-2.90
Drew	15S04W12DDA1	332429.38	912723.69	125.00	3/30/2011	63.92	61.08	62.40	61.80	64.10	-1.32	-0.72	-3.02
Drew	11S06W11DBC1	334601	914121	203.00	3/30/2011	150.54	52.46			54.71			-2.25
Drew	12S06W32DAD1	333649	914400	212.00	3/30/2011	162.85	49.15		45.30	52.32		3.85	-3.17
								Declines/ Wells:			**4/5**	**2/5**	**7/7**
								Average Change:			**-1.89**	**2.99**	**-3.34**

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County	Station	Latitude	Longitude	LSA	Date Meas.	2011 Meas.	WL Alt.11	WL Alt.10	WL Alt.06	WL Alt.01	10-11 Change	06-11 Change	01-11 Change
Grant	03S13W12AAA1	342845.65	922106.24	361.00	4/14/2011	129.79	231.21	230.60	229.00	229.84	0.61	2.21	1.37
Grant	03S15W26DAA1	342600.52	923447.01	337.00	4/14/2011	10.90	326.10	326.06	328.90	328.07	0.04	-2.80	-1.97
Grant	05S13W03CAA1	341843.97	922400.47	260.00	4/14/2011	83.79	176.21	174.50	172.20	170.47	1.71	4.01	5.74
Grant	05S13W03CDA4	341837.64	922401.95	281.00	4/14/2011	105.17	175.83	173.50	169.90	166.32	2.33	5.93	9.51
Grant	05S13W07ADB1	341810	922649.75	270.00	4/14/2011	79.76	190.24	177.90	188.10	210.68	12.34	2.14	-20.44
Grant	05S14W06DCC1	341842.5	923326.69	293.00	4/14/2011	85.47	207.53	210.00	205.60	202.18	-2.47	1.93	5.35
Grant	05S15W05ABD1	341923.78	923826.87	236.00	4/14/2011	14.47	221.53	218.70	221.50	219.39	2.83	0.03	2.14
Grant	06S11W05ACD1	341340.82	921413.01	269.00	4/15/2011	189.02	79.98	89.50	72.90	64.37	-9.52	7.08	15.61
Grant	06S15W26ACA1	341021.99	923537.59	280.00	4/14/2011	63.64	216.36	221.40	212.80	211.86	-5.04	3.56	4.50
Grant	07S12W21BDB1	340558.11	921952.7	223.00	4/15/2011	4.60	218.40	219.61	219.86	219.79	-1.21	-1.46	-1.39
Grant	04S15W02DAC1	342405	923456	322.00	3/24/2011	85.00	237.00	238.26			-1.26		
								Declines/ Wells:			**5/11**	**2/10**	**3/10**
								Average Change:			**0.03**	**2.26**	**2.04**
Hot Spring	05S16W35ACA1	341459.51	924151.12	342.00	6/3/2011	35.38	306.62	309.10		306.26	-2.48		0.36
								Declines/ Wells:					
								Average Change:					
Jefferson	03S08W19BAD1	342623.76	915443.67	217.00	4/12/2011	169.28	47.72	53.20	45.50	31.45	-5.48	2.22	16.27
Jefferson	03S08W19BBD1	342628.36	915504.54	215.00	4/12/2011	162.78	52.22	51.20	42.20	39.57	1.02	10.02	12.65
Jefferson	03S10W27AAD1	342502.05	920433.81	222.00	4/12/2011	145.83	76.17	100.70	96.20	74.19	-24.53	-20.03	1.98
Jefferson	03S11W22ABC1	342650.81	921058.27	310.00	4/7/2011	170.37	139.63	138.00		140.14	1.63		-0.51
Jefferson	04S10W29ADB1	341814	920512	267.55	4/7/2011	217.06	50.49	55.05		58.38	-4.56		-7.89
Jefferson	04S11W14BAD1	342219.74	921000.07	400.00	4/7/2011	320.46	79.54	97.68		90.24	-18.14		-10.70
Jefferson	06S08W16CCC1	341143.07	915517.06	202.42	4/18/2011	239.21	-36.79	-45.18	-55.18	-55.37	8.39	18.39	18.58
Jefferson	06S08W25ADC1	341024.86	915116.18	203.48	4/18/2011	215.09	-11.61	-16.72	-23.62	-22.69	5.11	12.01	11.08
Jefferson	06S10W23ACA2	341123.09	920503.93	235.00	4/19/2011	217.55	17.45	16.00	2.50	-1.03	1.45	14.95	18.48
Jefferson	07S07W24BAB1	340632.68	914522.99	188.00	4/19/2011	160.68	27.32	23.10	27.00	22.56	4.22	0.32	4.76
Jefferson	07S10W24CAC1	340548.70	920420.81	311.00	4/18/2011	264.83	46.17	26.82	23.00	7.55	19.35	23.17	38.62
Jefferson	03S10W14CAD1	342659	920330	221.00	4/12/2011	114.48	106.52			100.87			5.65

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Jefferson	04S07W17BCC1	342140	914741	200.00	4/12/2011	166.29	33.71		23.50	13.61		10.21	20.10
Jefferson	04S08W35BBD1	341918	915049	200.00	4/12/2011	215.40	-15.40			-16.48			1.08
Jefferson	04S09W11BAA1	342309	915702	210.00	4/12/2011	142.86	67.14	93.70		69.18	-26.56		-2.04
Jefferson	05S08W30ADB1	341453	915441	221.00	4/19/2011	276.43	-55.43			-54.99			-0.44
Jefferson	05S09W24DBD	341530	915554	208.17	4/18/2011	259.74	-51.57		-70.43	-72.92		18.86	21.35
Jefferson	05S10W16BAD1	341658	920546	277.00	4/7/2011	237.62	39.38		29.50	31.58		9.88	7.80
Jefferson	06S09W17CAD1	341158	920206	233.00	4/13/2011	255.30	-22.30		-49.60	-40.06		27.30	17.76
Jefferson	06S09W17CCA1	341151	920221	234.34	4/13/2011	250.79	-16.45			-44.83			28.38
Jefferson	06S10W23DBA1	341105	920502	230.00	4/19/2011	232.62	-2.62			-16.87			14.25
								Declines/ Wells:			**5/12**	**1/12**	**5/21**
								Average Change:			**-3.18**	**10.61**	**10.34**
Lafayette	16S23W12CAD1	332140	932611	322.00	3/14/2011	61.49	260.51		260.10	250.28		0.41	10.23
Lafayette	16S24W26AAC1	331950	933303	267.00	3/14/2011	56.72	210.28		211.60	215.14		-1.32	-4.86
Lafayette	17S23W19ACC1	331520	933128	291.00	3/14/2011	53.27	237.73			238.51			-0.78
Lafayette	17S24W23BBD1	331526	933402	261.00	3/14/2011	33.61	227.39			229.32			-1.93
Lafayette	18S23W29ACC1	330911	933038	255.00	3/14/2011	17.49	237.51		239.20	244.64		-1.69	-7.13
Lafayette	19S23W29BDB1	330351	933103	250.00	3/14/2011	39.96	210.04		209.00	209.19		1.04	0.85
Lafayette	20S23W05ADB1	330223	933033	242.00	3/14/2011	37.56	204.44	204.35	203.00	202.15	0.09	1.44	2.29
								Declines/ Wells:				**2/5**	**4/7**
								Average Change:			**0.09**	**-0.02**	**-0.19**
Lee	01N04E09CDD1	344203	904116	204.00	4/26/2011	66.61	137.39	139.70	142.50	149.02	-2.31	-5.11	-11.63
								Declines/ Wells:					
								Average Change:					
Lincoln	07S07W30CDC1	340443.93	915042.86	208.00	6/2/2011	172.32	35.68	32.40	31.90	28.76	3.28	3.78	6.92
Lincoln	08S05W03BAA2	340309.54	913453.58	180.00	6/2/2011	131.58	48.42	44.30	36.30	38.66	4.12	12.12	9.76

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Lincoln	08S05W35ACC1	335906.6	913337.26	166.00	6/2/2011	122.02	43.98	43.35		32.29	0.63		11.69
Lincoln	08S08W35DBB1	335858.35	915222.4	250.00	3/30/2011	217.66	32.34	41.00		47.23	-8.66		-14.89
Lincoln	09S07W07DAD1	335633.89	915128.31	296.00	3/30/2011	274.74	21.26	32.50		36.20	-11.24		-14.94
								Declines/ Wells:			**2/5**	**0/2**	**2/5**
								Average Change:			**-2.37**	**7.95**	**-0.29**
Lonoke	01N07W03BCC1	344425.34	914503.28	223.00	3/10/2011	136.20	86.80	91.50	93.50	95.93	-4.70	-6.70	-9.13
Lonoke	02N07W06ACD1	344939.05	914737.03	241.00	3/10/2011	124.51	116.49	118.15		121.16	-1.66		-4.67
Lonoke	02N07W09AAA1	344906.42	914500.30	232.00	3/10/2011	102.77	129.23	132.65	131.70		-3.42	-2.47	
Lonoke	02N07W22DBA1	344651.49	914425.68	227.00	3/10/2011	135.45	91.55	93.20	97.15	103.52	-1.65	-5.60	-11.97
Lonoke	02N07W24DAC1	344650.23	914209.37	231.00	3/10/2011	150.94	80.06	79.65		91.58	0.41		-11.52
Lonoke	02N07W32DDD1	344448	914618	226.00	3/10/2011	139.74	86.26	77.80	93.20	102.43	8.46	-6.94	-16.17
Lonoke	03N07W03CAA1	345444.90	914426.30	235.00	3/11/2011	81.70	153.30	155.05	156.55	158.09	-1.75	-3.25	-4.79
Lonoke	01S08W02DBD1	343853	915002	210.00	3/11/2011	108.41	101.59		97.25	114.06		4.34	-12.47
Lonoke	02S07W08DCC1	343235	914700	202.00	3/11/2011	141.71	60.29						
Lonoke	02S08W16BDA1	343227	915227	216.00	3/10/2011	126.40	89.60			92.20			-2.60
Lonoke	03N07W23CCC1	345145	914347	228.00	3/11/2011	92.29	135.71			137.49			-1.78
Lonoke	03N08W11ACD1	345403	914935	248.00	3/11/2011	96.43	151.57			165.46			-13.89
Lonoke	03N08W22DAD1	345152	915024	235.00	3/11/2011	98.99	136.01			144.70			-8.69
Lonoke	03N08W22DAD2	345205	915024	233.00	3/11/2011	99.66	133.34			141.08			-7.74
								Declines/ Wells:			**5/7**	**5/6**	**12/12**
								Average Change:			**-0.62**	**-3.44**	**-8.79**
Miller	17S25W18CDB1	331604	934406	220.00	5/16/2011	12.20	207.80			213.59			-5.79
Miller	19S27W10BBA1	330719	935344	320.00	5/16/2011	17.17	302.83						
								Declines/ Wells:					
								Average Change:					

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Mississippi	11N09E26AAD3	353302	900523	240.00	6/1/2011	21.48	218.52						
Mississippi	11N09E26ABA2	353312	901203	236.00	6/1/2011	21.29	214.71						
								Declines/ Wells:					
								Average Change:					
Monroe	01N03W14CCB1	344143.93	911801.12	172.00	4/26/2011	74.30	97.70	108.20	101.80	100.43	-10.50	-4.10	-2.73
Monroe	04N02W28DDD4	345535	911221	192.00	4/26/2011	32.73	159.27	162.70	159.60	161.40	-3.43	-0.33	-2.13
Monroe	04N02W30BAC1	345617.03	911503.95	182.00	4/26/2011	15.58	166.42	169.90	171.90	167.16	-3.48	-5.48	-0.74
Monroe	04N02W30BAD1	345617.24	911514.62	176.00	4/26/2011	20.98	155.02	164.20	162.00	165.82	-9.18	-6.98	-10.80
Monroe	01N01W15DBC2	344139	910542	185.00	4/27/2011	62.00	123.00	125.08	122.80		-2.08	0.20	
Monroe	03N02W26DAB1	345043	911026	192.00	4/26/2011	49.54	142.46		142.96	144.96		-0.50	-2.50
								Declines/ Wells:			5/5	5/6	5/5
								Average Change:			-5.73	-2.87	-3.78
Ouachita	11S15W27ABD1	334440.87	923725.58	200.00	5/20/2011	69.72	130.28	147.20	127.80	131.97	-16.92	2.48	-1.69
Ouachita	11S17W14CAC1	334631.35	924927.46	146.00	5/20/2011	19.90	126.10	131.30	125.03	129.65	-5.20	1.07	-3.55
Ouachita	11S17W36CCA1	334341.11	924834.21	133.00	5/17/2011	7.94	125.06	127.60		127.97	-2.54		-2.91
Ouachita	12S15W09BBA1	334223.32	923922.44	213.00	5/20/2011	47.83	165.17	163.45	149.85		1.72	15.32	
Ouachita	12S16W25BDC1	333929.4	924210.82	140.00	5/24/2011	35.25	104.75	117.50	103.80		-12.75	0.95	
Ouachita	12S16W26ABD1	333945.55	924304.12	137.00	5/24/2011	32.23	104.77	108.90	105.62		-4.13	-0.85	
Ouachita	12S18W19CDC1	334018	925948	235.00	3/22/2011	32.58	202.42	208.15	207.60	198.31	-5.73	-5.18	4.11
Ouachita	12S18W25CAB1	333937.19	925441.87	187.00	5/16/2011	78.51	108.49	109.90	107.60	110.54	-1.41	0.89	-2.05
Ouachita	12S19W09BAB1	334251.46	930351.94	290.00	5/17/2011	14.79	275.21	276.80	271.70	283.23	-1.59	3.51	-8.02
Ouachita	12S19W35BDD1	333901.13	930145.97	350.00	5/16/2011	156.69	193.31	209.50	190.90	193.38	-16.19	2.41	-0.07
Ouachita	13S16W28ADD1	333416.22	924450.63	106.00	5/20/2011	27.4	78.60	81.65	76.25	51.44	-3.05	2.35	27.16
Ouachita	13S19W28BCD1	333433.86	930417.81	230.00	5/16/2011	37.55	192.45	192.20	190.20	193.96	0.25	2.25	-1.51
Ouachita	14S16W32BDB1	332815.62	924639.52	231.00	3/21/2011	38.28	192.72	219.40	193.86	225.12	-26.68	-1.14	-32.40
Ouachita	14S17W05CAD1	333238.01	925254.64	157.00	5/24/2011	38.02	118.98	122.45	117.66	120.27	-3.47	1.32	-1.29
Ouachita	14S17W19DBB1	333002.20	925345.44	259.00	3/21/2011	38.20	220.80	234.30	225.45	252.92	-13.50	-4.65	-32.12
Ouachita	14S17W32CAD1	332803.41	925251.18	220.00	5/24/2011	79.04	140.96	149.20	138.74	134.44	-8.24	2.22	6.52

Sparta/ Memphis Sand Aquifer
2011, 10, 06, 01 WL Change

County	Station	Latitude	Longitude	LSA	Date Meas.	2011 Meas.	WL Alt.11	WL Alt.10	WL Alt.06	WL Alt.01	10-11 Change	06-11 Change	01-11 Change
Ouachita	14S19W29ABB1	332941.45	930513.43	280.00	5/16/2011	88.38	191.62	192.60	192.80	192.96	-0.98	-1.18	-1.34
Ouachita	15S15W32DBB2	332233.72	924027.13	119.00	5/19/2011	159.17	-40.17	-39.60	-54.50	-56.61	-0.57	14.33	16.44
Ouachita	15S18W36ADD1	332310.75	925436.06	160.00	5/19/2011	91.14	68.86	68.95	65.45	64.28	-0.09	3.41	4.58
Ouachita	15S19W21CDD2	332438.02	930431.9	272.00	5/24/2011	188.00	84.00	89.40	82.04	79.56	-5.40	1.96	4.44
Ouachita	13S18W06BBA1	333819	930006	282.00	3/3/2011	188.10	93.90						
Ouachita	14S17W03CBA1	333234	925055	140.00	3/3/2011	114.60	25.40						
Ouachita	15S16W23DAC1	332415	924313	170.00	5/19/2011	126.21	43.79			40.84		43.79	2.95
Ouachita	13S18W31BDD1	333340	925958	242.00	5/19/2011	31.77	210.23		170.30	175.53		39.93	34.70
Ouachita	15S19W10DCC1	332618	930318	210.00	5/24/2011	69.83	140.17		140.30	146.47		-0.13	-6.30
								Declines/ Wells:			**18/20**	**6/22**	**12/20**
								Average Change:			**-6.32**	**5.68**	**0.38**
Phillips	01S02E32DDC1	343324.32	905455.41	211.00	5/25/2011	77.81	133.19	136.62	134.70	130.12	-3.43	-1.51	3.07
Phillips	02S02E01ADC1	343323.48	905056.27	176.00	5/25/2011	32.82	143.18	144.60	145.00	137.19	-1.42	-1.82	5.99
Phillips	02S04E02DBA1	343242.87	903906.98	250.00	5/25/2011	91.83	158.17	159.60	144.70	143.74	-1.43	13.47	14.43
Phillips	02S05E29CCC1	342850.81	903635.44	179.00	5/25/2011	15.06	163.94	163.30	152.25	147.91	0.64	11.69	16.03
Phillips	03S03E30DAA1	342402.88	904914.59	172.00	5/25/2011	37.28	134.72	132.90	130.10	128.57	1.82	4.62	6.15
Phillips	04S02E25CCC1	341824.20	905121.49	166.00	5/25/2011	29.23	136.77	132.20	129.00	130.35	4.57	7.77	6.42
								Declines/ Wells:			**3/6**	**2/6**	**0/6**
								Average Change:			**0.13**	**5.70**	**8.68**
Poinsett	10N01E12BDC1	353026.35	905629.57	234.00	4/28/2011	104.40	129.60	130.90	136.50	142.61	-1.30	-6.90	-13.01
Poinsett	10N01E15DBB1	352930.54	905825.14	232.00	6/1/2011	96.14	135.86	133.70	136.10	138.74	2.16	-0.24	-2.88
Poinsett	10N01E33ABA1	352724.90	905924.05	221.00	4/28/2011	82.62	138.38	140.60	143.50	147.01	-2.22	-5.12	-8.63
Poinsett	10N01E34BAA1	352724	905846	231.00	4/28/2011			137.70	136.20				
Poinsett	11N02E16CCC1	353448.21	905321.22	243.00	4/28/2011	113.65	129.35	131.40	135.70	141.33	-2.05	-6.35	-11.98
Poinsett	11N03E25BDD1	353324.54	904323.28	269.00	4/29/2011	127.60	141.40	149.50		137.44	-8.10		3.96
Poinsett	12N03E35BCC1	353744.78	904455.7	244.00	4/28/2011	102.98	141.02	148.70		147.56	-7.68		-6.54
Poinsett	12N03E35DDA1	353727.35	904353.06	247.00	4/28/2011	106.42	140.58	140.60	144.10	148.26	-0.02	-3.52	-7.68

Sparta/ Memphis Sand Aquifer
2011, 10, 06, 01 WL Change

County	Station	Latitude	Longitude	LSA	Date Meas.	2011 Meas.	WL Alt.11	WL Alt.10	WL Alt.06	WL Alt.01	10-11 Change	06-11 Change	01-11 Change
Poinsett	10N03E02BCD1	353144	904454	251.00	4/28/2011	113.82	137.18	133.20			3.98		
Poinsett	10N03E23CAC1	352844	904433	258.00	4/28/2011	115.27	142.73		144.00	149.44		-1.27	-6.71
								Declines/ Wells:			**6/8**	**6/6**	**7/8**
								Average Change:			**-1.90**	**-3.90**	**-6.68**
Prairie	01N05W19CDC1	344113.1	913505.27	212.00	4/6/2011	146.47	65.53	69.20	61.80	45.06	-3.67	3.73	20.47
Prairie	01N06W34CBB1	343943.01	913846.17	226.00	4/5/2011	162.87	63.13	75.50	62.35	56.12	-12.37	0.78	7.01
Prairie	01S05W06BCB1	343903.98	913531.63	220.00	4/5/2011	157.39	62.61	74.20	64.45	53.12	-11.59	-1.84	9.49
Prairie	01S05W20ABB1	343639.91	913351.89	220.00	4/5/2011	158.62	61.38	72.90	53.00	44.77	-11.52	8.38	16.61
Prairie	01S06W11DBD1	343748.99	913654.24	226.00	4/5/2011	177.72	48.28	58.90	55.50	47.16	-10.62	-7.22	1.12
Prairie	02N06W19AAB1	344718.24	914049.95	236.00	4/6/2011	152.69	83.31	87.23	85.93	96.15	-3.92	-2.62	-12.84
Prairie	02N06W20BCB1	344706.57	914032.97	236.00	4/6/2011	149.24	86.76	91.00	78.20	97.12	-4.24	8.56	-10.36
Prairie	02N06W21DAD1	344644.15	913829.47	232.00	4/6/2011	128.86	103.14	113.40	110.00		-10.26	-6.86	
Prairie	02N06W22BDD1	344653.66	913800.68	233.00	4/6/2011	130.44	102.56	115.80		84.96	-13.24		17.60
Prairie	03N05W03ADA2	345451.65	913042.51	205.00	4/6/2011	61.08	143.92	150.20	130.80	141.92	-6.28	13.12	2.00
Prairie	03N05W20CCC1	345144.72	913356.35	213.00	4/6/2011	71.28	141.72	141.30		143.61	0.42		-1.89
Prairie	03N06W20CDD1	345140.24	914003.93	225.00	4/6/2011	85.70	139.30	139.98	139.28	142.34	-0.68	0.02	-3.04
Prairie	02N06W24CAA2	344651	913551	233.00	3/22/2011	103.58	129.42	118.40	115.82		11.02	13.60	
Prairie	01S06W01BDD2	343859	913613	226.00	4/5/2011	162.73	63.27		64.66	51.76		-1.39	11.51
Prairie	02N04W19ACB1	344649	912801	211.00	4/6/2011	60.82	150.18			118.06			32.12
Prairie	02N06W04DBB1	344928	913852		4/6/2011	106.05	-106.05						
								Declines/ Wells:			**11/13**	**5/12**	**4/13**
								Average Change:			**-5.92**	**2.36**	**6.91**
Pulaski	02S11W29AAA1	343118	921234	245.00	6/3/2011	30.29	214.71						
								Declines/ Wells:					
								Average Change:					

Sparta/ Memphis Sand Aquifer
2011, 10, 06, 01 WL Change

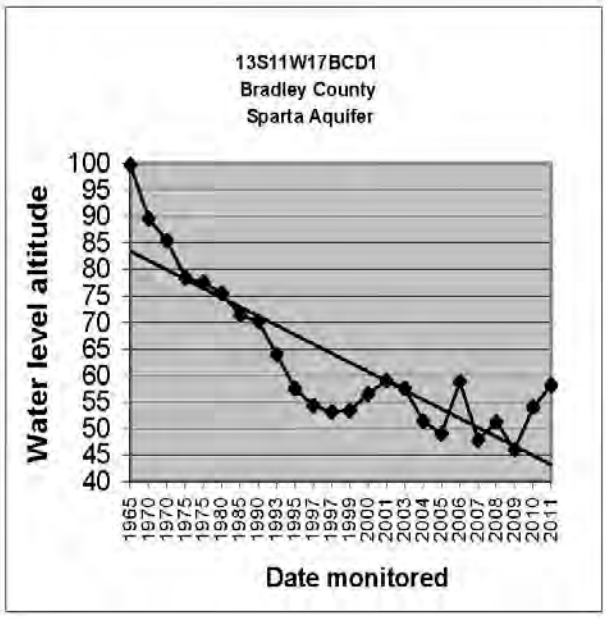
County	Station	Latitude	Longitude	LSA	Date Meas.	2011 Meas.	WL Alt.11	WL Alt.10	WL Alt.06	WL Alt.01	10-11 Change	06-11 Change	01-11 Change
St. Francis	03N01W33CDD1	345446	910635	210.00	4/27/2011	70.91	139.09			144.75			-5.66
St. Francis	04N04E18BAB1	345743.38	904319.00	220.00	4/27/2011	65.52	154.48	152.70	152.85	151.71	1.78	1.63	2.77
								Declines/ Wells:					1/2
								Average Change:			1.78	1.63	-1.44
Union	16S14W15CAB1	331944.03	923218.09	94.00	3/15/2011	133.56	-39.56	-35.10	-67.39	-61.71	-4.46	27.83	22.15
Union	16S16W02ABC1	332205	924330	116.00	4/20/2011	158.27	-42.27	-44.58	-51.81	-57.24	2.31	9.54	14.97
Union	17S12W31DDD1	331206.4	922225.88	220.00	3/17/2011	209.24	10.76						
Union	17S12W32BBC1	331202.09	922219.02	231.00	3/17/2011	247.39	-16.39	-14.88	-16.54	-18.84	-1.51	0.15	2.45
Union	17S13W31BAC1	331200.17	922915.7	216.00	3/17/2011	278.07	-62.07	-60.60		-78.40	-1.47		16.33
Union	17S14W10DCC1	331456.79	923203.26	182.00	3/17/2011	93.78	88.22	88.20	85.86	87.38	0.02	2.36	0.84
Union	17S14W15ABA1	331451.3	923159.8	169.00	3/17/2011	93.74	75.26	95.00	113.82	74.80	-19.74	-38.56	0.46
Union	17S15W06BAA1	331645.6	924133.99	170.00	1/26/2011	93.74	76.26						
Union	17S15W08CDD1	331504.77	924027.41	174.92	3/15/2011	270.36	-95.44	-97.03	-128.28	-173.72	1.59	32.84	78.28
Union	17S15W18DBB1	331438.96	924129.21	182.93	3/25/2011	286.84	-103.91	-109.48	-144.34	-177.89	5.57	40.43	73.98
Union	17S15W28DBA1	331246.08	923909.78	230.00	1/20/2011	327.77	-97.77	-110.27		-176.71	12.50		78.94
Union	17S15W31DDA1	331143.75	924104.87	261.00	1/19/2011	374.10	-113.10	-111.30		-177.58	-1.80		64.48
Union	17S16W01BAA1	331649.04	924232.96	188.84	3/15/2011	262.65	-73.81	-73.74	-116.91	-143.38	-0.07	43.10	69.57
Union	17S16W24BDB1	331357.24	924248.47	205.00	3/15/2011	324.99	-119.99	-119.44	-169.10	-196.68	-0.55	49.11	76.69
Union	17S17W25DBA2	331256	924837	250.00	3/25/2011	320.58	-70.58	-81.45	-99.73		10.87	29.15	
Union	17S17W30DCD1	331257.41	925355.54	280.00	3/17/2011	303.86	-23.86	-17.50	-31.70	-36.28	-6.36	7.84	12.42
Union	18S12W33CBC1	330650.66	922119.92	112.00	3/2/2011	303.86	-191.86						
Union	18S15W03DAB1	331103.78	923802.12	240.00	3/16/2011	328.10	-88.10	-102.03	-109.73		13.93	21.63	
Union	18S15W33ADA1	330659.32	923858.48	253.00	3/16/2011	332.36	-79.36	-97.04	-121.39	-124.80	17.68	42.03	45.44
Union	18S15W35DAC1	330635	923707	201.00	3/16/2011	261.91	-60.91	-60.30	-91.97	-102.26	-0.61	31.06	41.35
Union	18S16W11DAC1	331011.23	924316.37	272.00	3/16/2011	367.36	-95.36	-100.20	-149.40	-159.40	4.84	54.04	64.04
Union	18S16W10CDD1	331000.38	924445.32	182.00	3/15/2011	272.75	-90.75	-94.00		-148.09	3.25		57.34
Union	18S16W12ACB1	331028.75	924231.85	302.00	3/16/2011	399.92	-97.92	-98.32	-133.35	-124.23	0.40	35.43	26.31
Union	18S17W22BDD1	330855.91	925056.48	285.00	1/19/2011	327.29	-42.29	-40.33	-66.02	-86.20	-1.96	23.73	43.91
Union	19S10W16CBC1	330329	920903	82.00	3/16/2011	86.55	-4.55	-6.10	-8.51	-1.80	1.55	3.96	-2.75
Union	19S11W25AAA1	330217.84	921113.03	135.00	3/16/2011	145.49	-10.49	-13.25	-18.26	-18.34	2.76	7.77	7.85

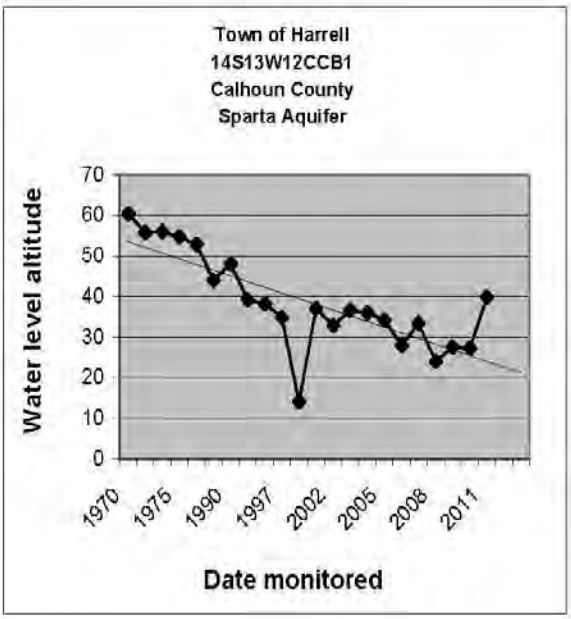
Sparta/ Memphis Sand Aquifer
2011, 10, 06, 01 WL Change

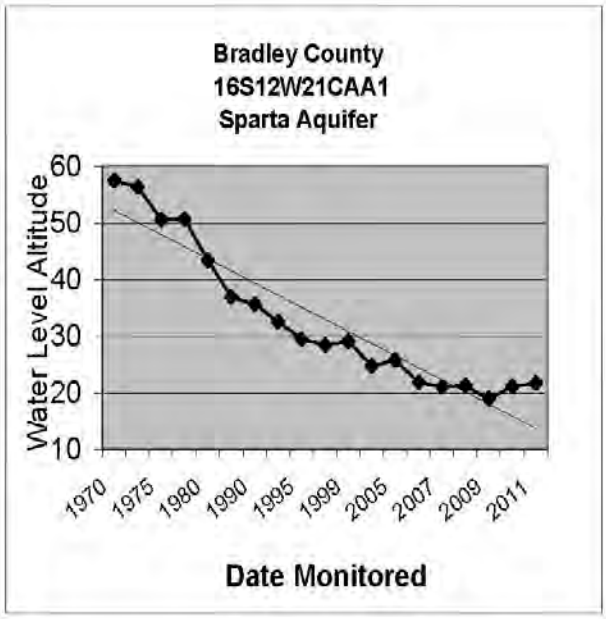
County	Station	Latitude	Longitude	LSA	Date Meas.	2011 Meas.	WL Alt.11	WL Alt.10	WL Alt.06	WL Alt.01	10-11 Change	06-11 Change	01-11 Change
Union	19S12W13AAA1	330411.26	921716.78	191.00	3/16/2011	159.66	31.34	14.28	33.78	38.89	17.06	-2.44	-7.55
Union	19S15W01CCA1	330534.81	923645.01	192.00	3/18/2011	14.34	177.66	135.30	123.10	113.52	42.36	54.56	64.14
Union	19S18W14ADA1	330451.70	925607.90	243.00	3/17/2011	190.81	52.19	51.72	50.00	58.50	0.47	2.19	-6.31
Union	16S17W36DCC1	331700	924842	180.00	1/26/2011	225.84	-45.84		-64.30	-72.50		18.46	26.66
Union	19S11W23ACA1	330255	921229	142.00	3/17/2011	151.17	-9.17		-12.01	-4.78		2.84	-4.39
Union	17S14W22BAB1	331354	923224	201.00	4/20/2011	276.92	-75.92	-75.19	-108.35		-0.73	32.43	
Union	18S11W09ABC1	331006	921443	135.00	3/16/2011	102.46	32.54			41.76			-9.22
Union	18S12W33BBB1	330651	922120	112.00	3/16/2011	138.40	-26.40	-27.40	0.40	-24.18	1.00	-26.80	-2.22
								Declines/ Wells:			11/28	3/26	6/27
								Average Change:			3.53	19.41	30.58
Woodruff	05N01W11ABA1	350425.81	910407.19	211.00	5/27/2011	61.17	149.83	151.40	160.40	155.01	-1.57	-10.57	-5.18
Woodruff	05N01W17DBB1	350310.68	910727.11	210.00	5/27/2011	46.74	163.26	164.85	163.65	165.27	-1.59	-0.39	-2.01
Woodruff	05N02W31DCB3	350026.9	911455.9	193.00	5/27/2011	13.09	179.91	184.35	178.45	179.45	-4.44	1.46	0.46
Woodruff	06N01W13ABA1	350851	910255	212.00	5/27/2011	73.51	138.49	141.40	141.35		-2.91	-2.86	
Woodruff	06N01W13ADC1	350827.39	910246.74	212.00	5/27/2011	70.11	141.89	142.60	145.20		-0.71	-3.31	
Woodruff	08N01W12CDA1	351932	910310	225.00	5/27/2011	77.89	147.11	149.80	152.10	149.48	-2.69	-4.99	-2.37
Woodruff	07N01W12BCB1	351445	910328	222.00	5/27/2011	68.43	153.57		156.70	159.98		-3.13	-6.41
Woodruff	08N02W26ADC1	351725	911003	212.00	5/27/2011	27.06	184.94						
								Declines/ Wells:			6/6	6/7	4/5
								Average Change:			-2.32	-3.40	-3.10
							Total Declines/Wells:				148/227	80/232	116/228
							Total Average Change:				-2.36	3.72	4.27

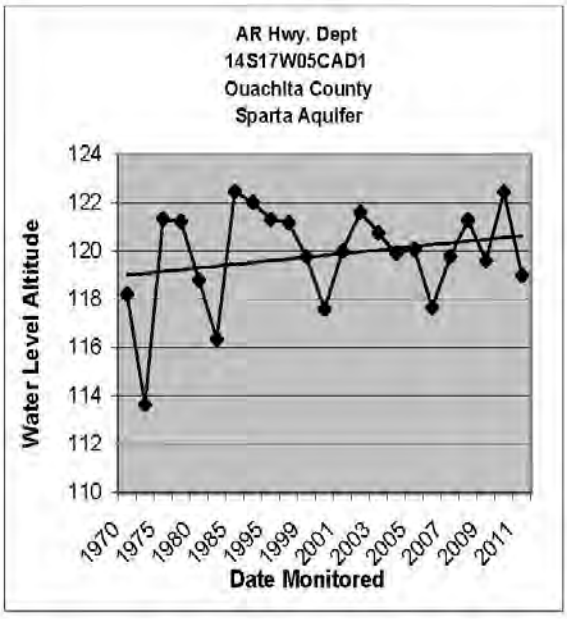
Appendix D

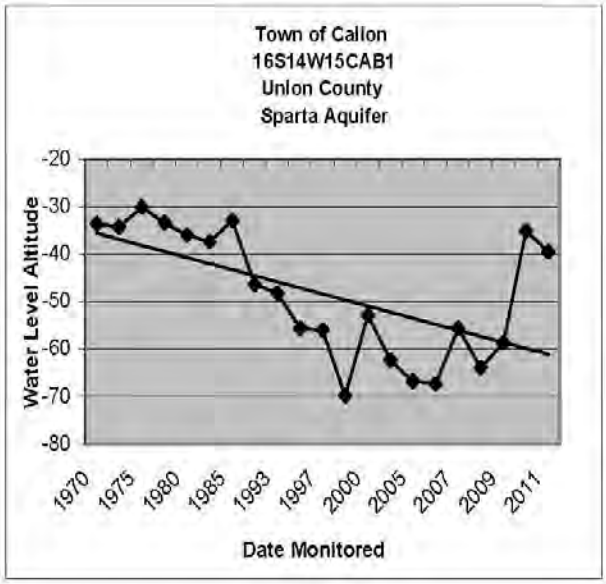
Selected Sparta / Memphis Aquifer Well Hydrographs

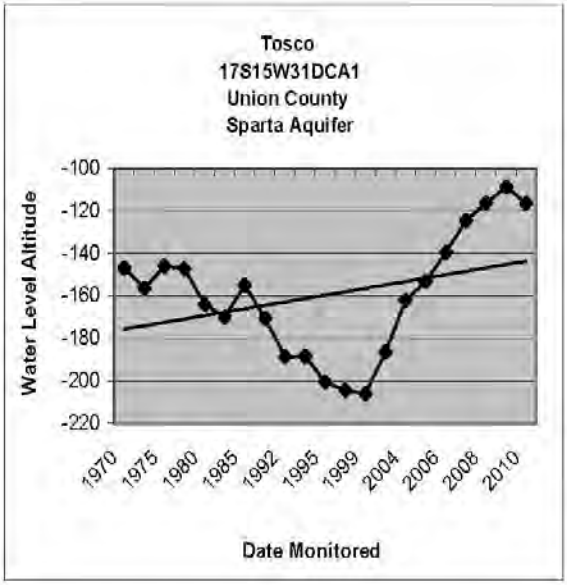

13S11W17BCD1
Bradley County
Sparta Aquifer
Water level altitude
100
95
90
85
80
75
70
65
60
55
50
45
40
1965
1970
1970
1975
1975
1980
1985
1990
1993
1995
1997
1999
2000
2001
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date monitored

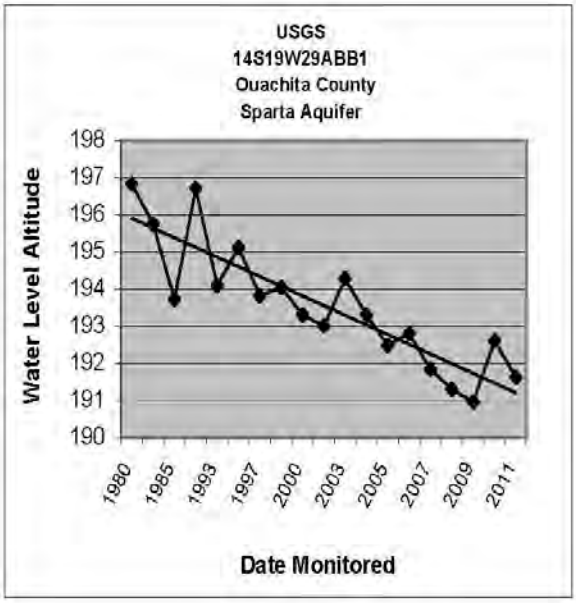

Town of Harrell
14S13W12CCB1
Calhoun County
Sparta Aquifer
Water level altitude
70
60
50
40
30
20
10
0
1970
1975
1990
1997
2002
2005
2008
2011
Date monitored

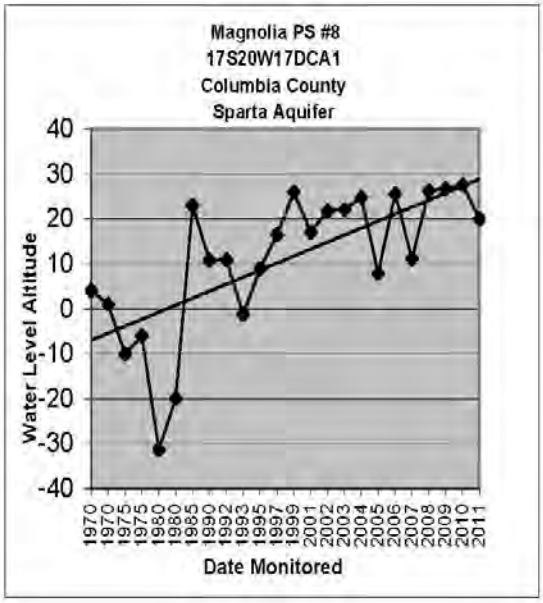

Bradley County
16S12W21CAA1
Sparta Aquifer
Water Level Altitude
60
50
40
30
20
10
1970
1975
1980
1990
1995
1999
2005
2007
2009
2011
Date Monitored

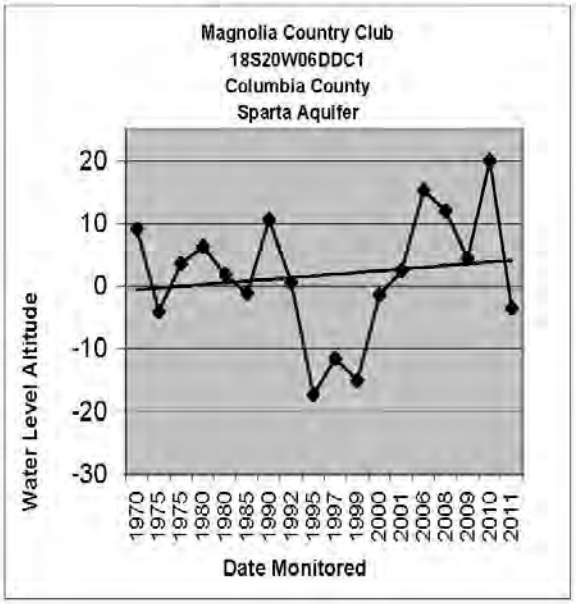

AR Hwy. Dept
14S17W05CAD1
Ouachita County
Sparta Aquifer
Water Level Altitude
124
122
120
118
116
114
112
110
1970
1975
1980
1985
1995
1999
2001
2003
2005
2007
2009
2011
Date Monitored

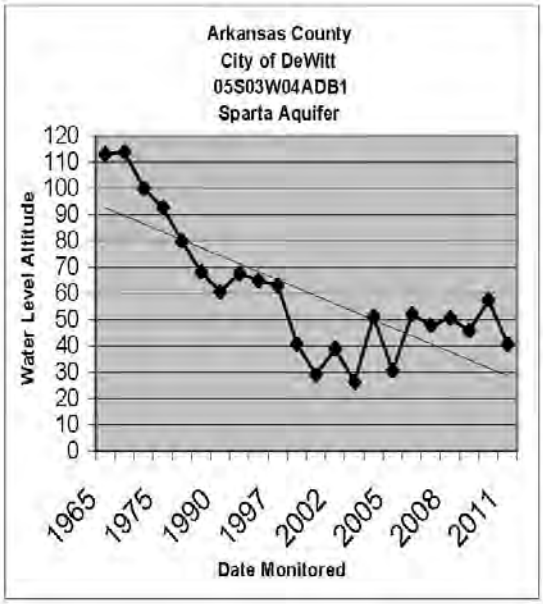

Town of Calion
16S14W15CAB1
Union County
Sparta Aquifer
Water Level Altitude
-20
-30
-40
-50
-60
-70
-80
1970
1975
1980
1985
1993
1997
2000
2005
2007
2009
2011
Date Monitored

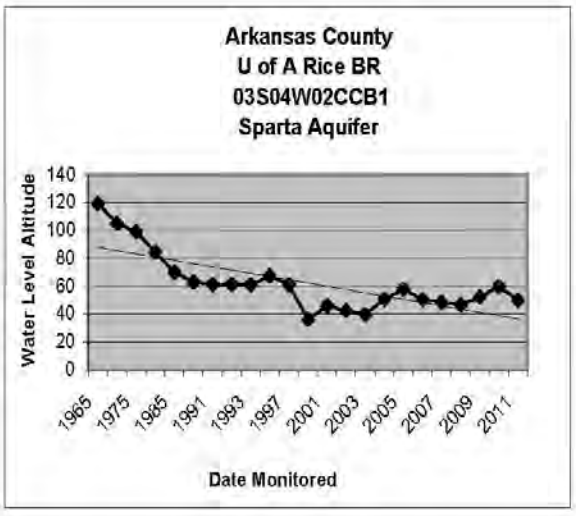

Tosco
17S15W31DCA1
Union County
Sparta Aquifer
Water Level Altitude
-100
-120
-140
-160
-180
-200
-220
1970
1975
1980
1985
1992
1995
1999
2004
2006
2008
2010
Date Monitored

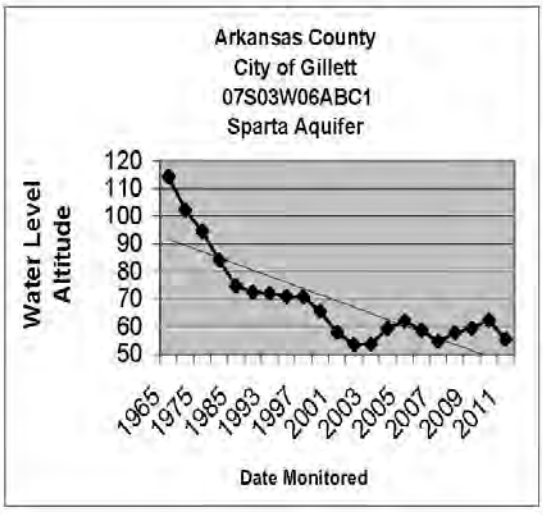

USGS
14S19W29ABB1
Ouachita County
Sparta Aquifer
Water Level Altitude
198
197
196
195
194
193
192
191
190
1980
1985
1993
1997
2000
2003
2005
2007
2009
2011
Date Monitored

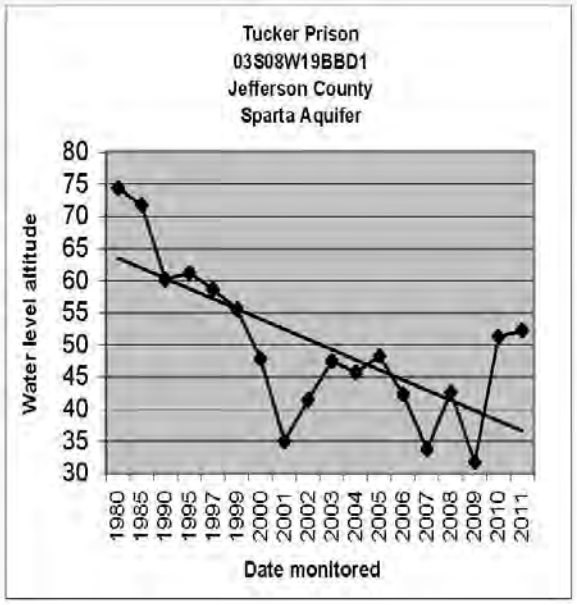

Magnolia PS #8
17S20W17DCA1
Columbia County
Sparta Aquifer
Water Level Altitude
40
30
20
10
0
-10
-20
-30
-40
1970
1970
1975
1975
1980
1980
1985
1990
1992
1993
1995
1997
1999
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date Monitored

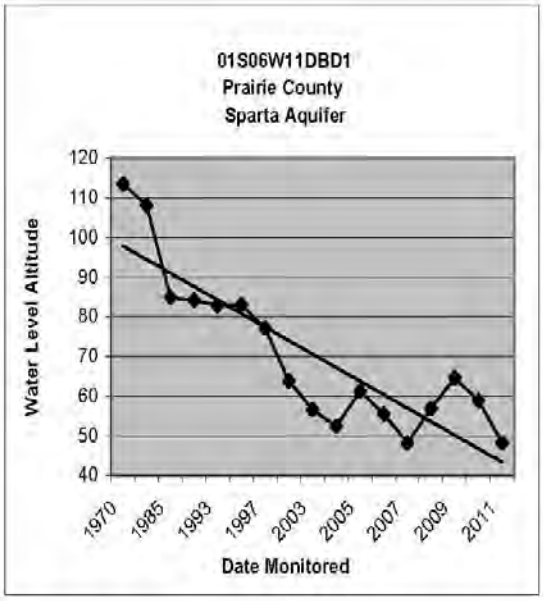

Magnolia Country Club
18S20W06DDC1
Columbia County
Sparta Aquifer
Water Level Altitude
20
10
0
-10
-20
-30
1970
1975
1975
1980
1980
1985
1990
1992
1995
1997
1999
2000
2001
2006
2008
2009
2010
2011
Date Monitored

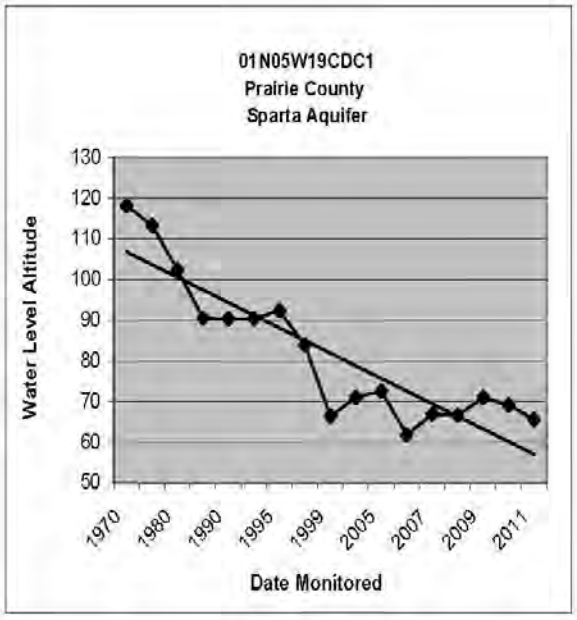

Arkansas County
City of DeWitt
05S03W04ADB1
Sparta Aquifer
Water Level Altitude
120
110
100
90
80
70
60
50
40
30
20
10
0
1965
1975
1990
1997
2002
2005
2008
2011
Date Monitored

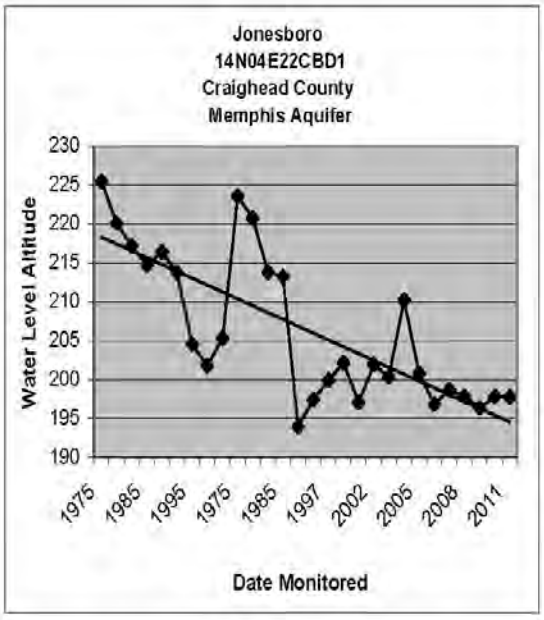

Arkansas County
U of A Rice BR
03S04W02CCB1
Sparta Aquifer
Water Level Altitude
140
120
100
80
60
40
20
0
1965
1975
1965
1991
1993
1997
2001
2003
2005
2007
2009
2011
Date Monitored

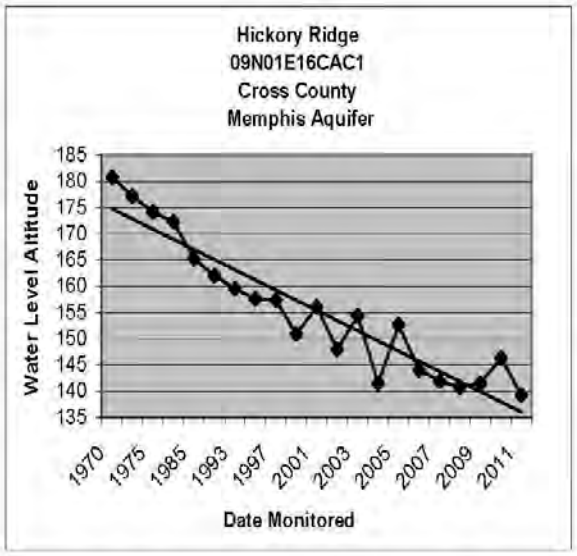

Arkansas County
City of Gillett
07S03W06ABC1
Sparta Aquifer
Water Level Altitude
120
110
100
90
80
70
60
50
1965
1975
1985
1993
1997
2001
2003
2005
2007
2009
2011
Date Monitored

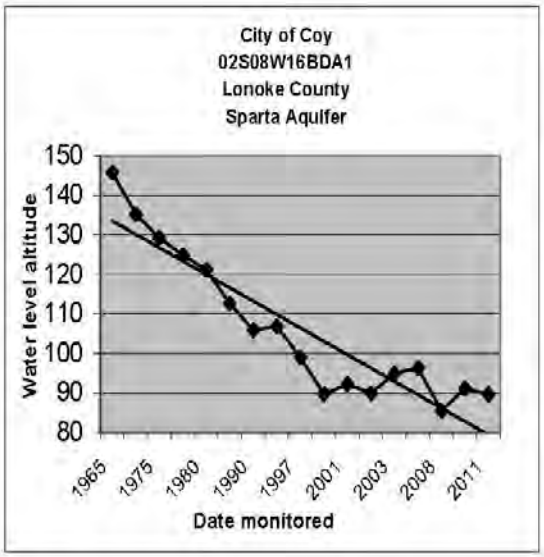

Tucker Prison
03S08W19BBD1
Jefferson County
Sparta Aquifer
Water level altitude
80
75
70
65
60
55
50
45
40
35
30
1980
1985
1990
1995
1997
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date monitored


01S06W11DBD1
Prairie County
Sparta Aquifer
Water Level Altitude
120
110
100
90
80
70
60
50
40
1970
1985
1993
1997
2003
2005
2007
2009
2011
Date Monitored


01N05W19CDC1
Prairie County
Sparta Aquifer
Water Level Altitude
130
120
110
100
90
80
70
60
50
1970
1980
1990
1995
1999
2005
2007
2009
2011
Date Monitored


Jonesboro
14N04E22CBD1
Craighead County
Memphis Aquifer
Water Level Altitude
230
225
220
215
210
205
200
195
190
1975
1985
1995
1975
1985
1997
2002
2005
2008
2011
Date Monitored


Hickory Ridge
09N01E16CAC1
Cross County
Memphis Aquifer
Water Level Altitude
185
180
175
170
165
160
155
150
145
140
135
1970
1975
1985
1993
1997
2001
2003
2005
2007
2009
2011
Date Monitored


City of Coy
02S08W16BDA1
Lonoke County
Sparta Aquifer
Water level altitude
150
140
130
120
110
100
90
80
1965
1975
1980
1990
1997
2001
2003
2008
2011
Date monitored