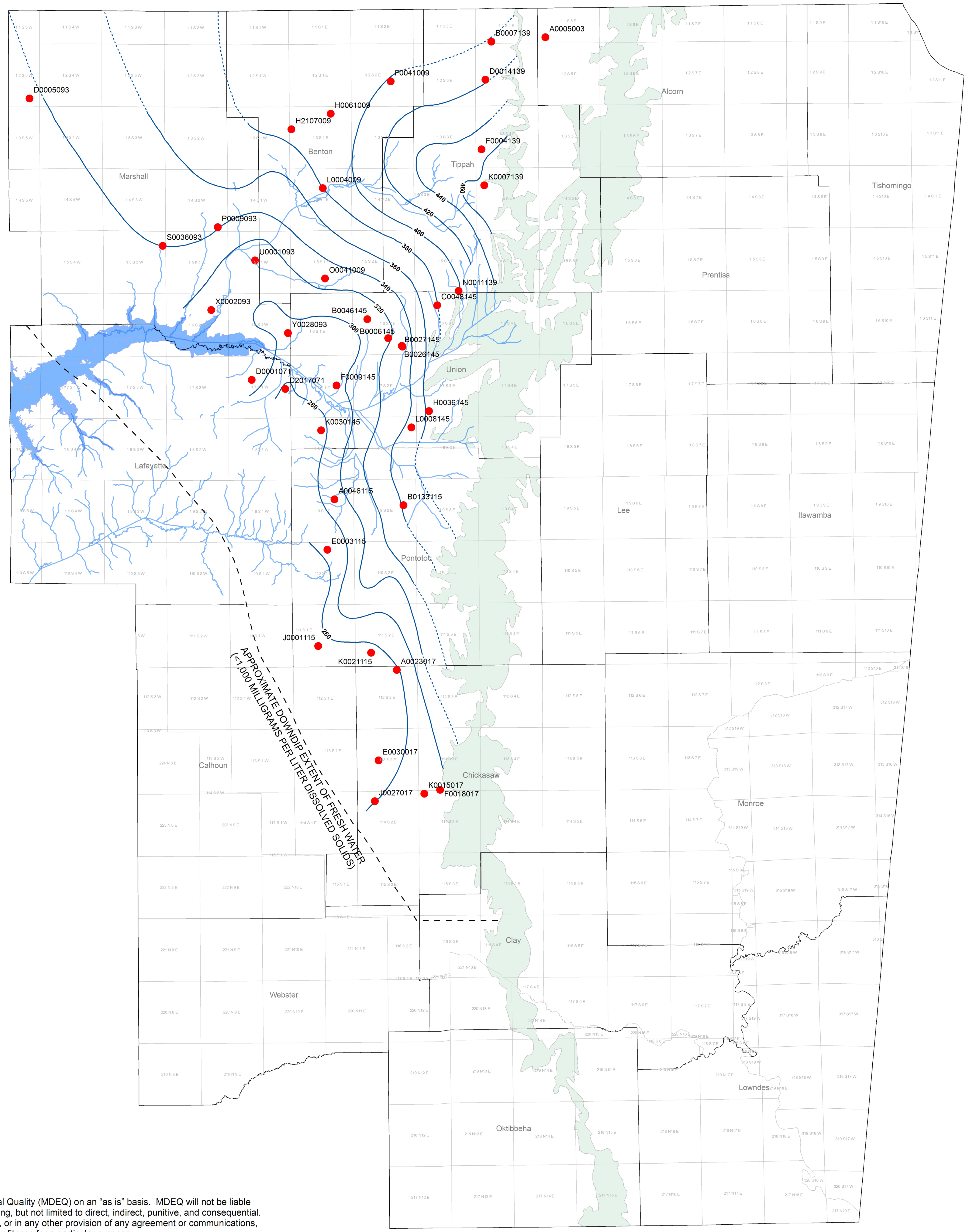
OLWR Hydrologic Map 11-5

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF LAND AND WATER RESOURCES



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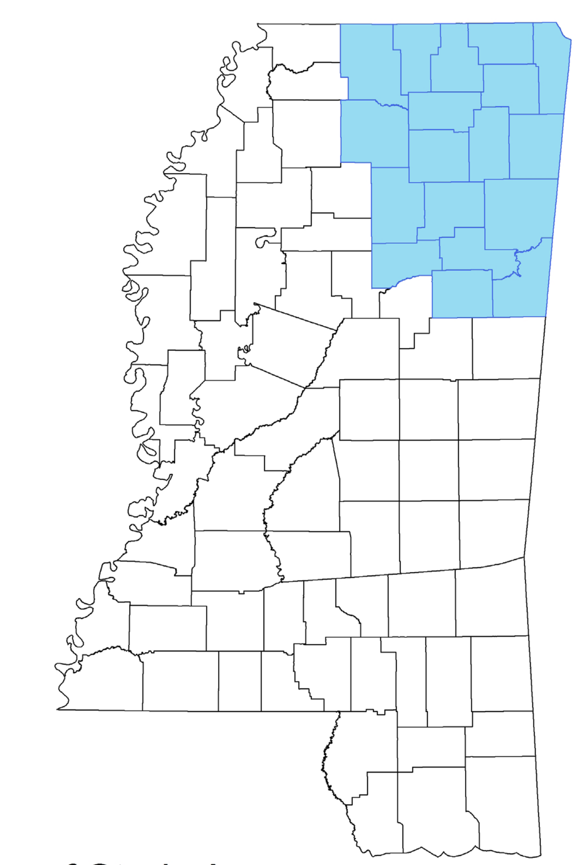
POTENTIOMETRIC MAP OF THE RIPLEY AQUIFERS IN NORTHEASTERN MISSISSIPPI 2008 TO 2011

MDEQ

John V. Banks, RPG
June, 2011



Location of Study Area

County	Well Number	Head Value in Feet Relative to MSL	Owner	Date Measured
ALCORN	A0005003	436.30	BOBBY WEAVER	11/5/2008
BENTON	F0041009	404.00	FALKNER, TOWN OF	7/28/2009
BENTON	H0061009	385.60	ASHLAND, TOWN OF	7/28/2009
BENTON	H2107009	388.10	SNOW LAKE SHORES	7/29/2009
BENTON	L0004009	380.50	FRED MCGAUGHY	8/4/2009
BENTON	O0041009	326.80	HICKORY FLAT, TOWN OF	7/29/2009
CHICKASAW	A0023017	259.75	FELIX ASTON	8/31/2010
CHICKASAW	E0030017	256.40	THORN WA	9/9/2010
CHICKASAW	F0018017	269.45	HOUSTON, CITY OF	8/31/2010
CHICKASAW	J0027017	259.93	PYLAND WA	8/26/2010
CHICKASAW	K0015017	264.00	NE MS BUTANE	8/26/2010
LAFAYETTE	D0001071	316.00	LIBERTY HILL SCHOOL	11/2/2009
LAFAYETTE	D2017071	277.90	SANDERS WA	11/2/2009
MARSHALL	D0005093	337.00	BYHALIA, TOWN OF	7/29/2009
MARSHALL	P0009093	340.82	LAKE CENTER HOUSING	8/4/2009
MARSHALL	S0036093	339.60	WALL DOXEY STATE PARK	7/29/2009
MARSHALL	U0001093	306.59	POTTS CAMP	7/29/2009
MARSHALL	X0002093	307.00	ASH	8/4/2009
MARSHALL	Y0028093	294.87	CORNERSVILLE METHODIST	8/4/2009
PONTOTOC	A0046115	291.40	TOCCOPOLA WA	6/1/2009
PONTOTOC	B0133115	341.32	THREE RIVERS LANDFILL	6/2/2009
PONTOTOC	E0003115	261.90	CAMP YOCONA	6/1/2009
PONTOTOC	J0001115	256.30	PATTERSON, REX	6/1/2009
PONTOTOC	K0021115	254.80	NEW HOULKA, TOWN OF	6/1/2009
TIPPAH	B0007139	402.20	WALNUT, TOWN OF	10/9/2009
TIPPAH	D0014139	417.72	TIPLERSVILLE WA	10/8/2009
TIPPAH	F0004139	453.90	ALVIE GOOLSBY	10/8/2009
TIPPAH	K0007139	472.80	L. SHACKLEFORD	10/7/2009
TIPPAH	N0011139	398.80	PERNELL RUEBEN	10/7/2009
UNION	B0006145	313.80	WATKINS SHEPARD	4/29/2009
UNION	B0026145	329.50	RIVERSIDE TRAFFIC	5/13/2009
UNION	B0027145	330.30	RIVERSIDE TRAFFIC	5/13/2009
UNION	B0046145	301.90	MYRTLE, TOWN OF	5/12/2009
UNION	C0048145	379.72	MCCALLISTER	4/28/2009
UNION	F0009145	294.50	W. UNION HIGH SCHOOL	5/13/2009
UNION	H0036145	364.11	OAKS COUNTRY CLUB	4/30/2009
UNION	K0030145	276.05	MUD CREEK WA	5/12/2009
UNION	L0008145	350.10	INGOMAR HIGH SCHOOL	5/13/2009

Legend

Observation Well

Potentiometric Contour — *Contour interval is 20 feet. Datum is sea level.*

Outcrop Area for Ripley Formation

N

1:425,000

0 5 10 20 30 40 Miles

Basic Overview and Proper Uses of Potentiometric Maps

Groundwater occurs under unconfined and confined conditions in aquifers. In cases where water only partially fills an aquifer, the water surface is free to rise and fall, and the water is unconfined. Wells that are screened in unconfined aquifers are water-table wells, and the water level in them indicates the position of the water table in the surrounding aquifer. Water levels in wells in unconfined aquifers are subject to the influences of topography, geology, and climate that are highly localized and site-specific. Any attempt to accurately depict the surface of the zone of saturation in an unconfined aquifer beyond a very limited area would require such a large number of control points as to be impractical. In cases where water completely fills an aquifer that is overlain by a confining bed so that the water is under pressure greater than atmospheric pressure, the aquifer is confined.

Wells that are screened in confined aquifers are artesian wells, and the water level in such wells will stand at some height above the top of the aquifer but will not necessarily rise above land surface. The static water levels in tightly cased wells screened in confined aquifer represent the level of the potentiometric surface of the aquifer.

A Potentiometric map of a confined aquifer is a depiction of the pressure in the aquifer. This pressure is measured by the height to which water from a given aquifer rises above the top of the aquifer. Such a map is of value to anyone who is interested in the development of water supplies. A potentiometric map can be utilized in conjunction with land surface altitude to estimate the minimum depth necessary for a pump to be installed in a well to produced water at a given location. By comparing the potentiometric surface with the altitude of the top of the aquifer, available drawdown can be estimated at a given location. Analysis of the configuration of equipotential contours (lines of equal water-level altitude) can be useful in determining areas of recharge and discharge, general directions of groundwater flow, and areas of significant drawdown in response to large withdrawals of water. The general direction of groundwater flow is perpendicular to the contours in the direction of decreasing hydraulic heads. A potentiometric map is not a depiction of depth-to-water and should not be utilized for such a purpose.

The potentiometric map is based upon limited water-level data and is not intended to be a substitute for site-specific information. The map is intended to provide a generalized regional description of water levels. One limitation in application of this map is related to the degree to which water levels measured in the wells represent true static water levels. Most of the water-level measurements were from active production wells. Although some pumps may have been turned off for several hours or days prior to measurement of water levels, most pumps were turned off for as little as fifteen minutes to two hours to allow water levels to recover from pumping levels. Furthermore, pumping from nearby wells may have continued, thus influencing water levels at the measured well. A second limitation is related to the complexity of the configuration of the water-bearing sand bodies that comprise a major aquifer system. More than one sand bed may be present within the interval that is considered to constitute a particular aquifer. These sand beds may be vertically separated by beds of clay, resulting in hydraulic isolation and different static water levels for the individual sands within the aquifer at a specific location; however, they may be hydraulically interconnected on a scale covering a larger area. As a result, a well screened in a sand bed other than that from which data was collected for this report could have water levels different that those indicated on the map.