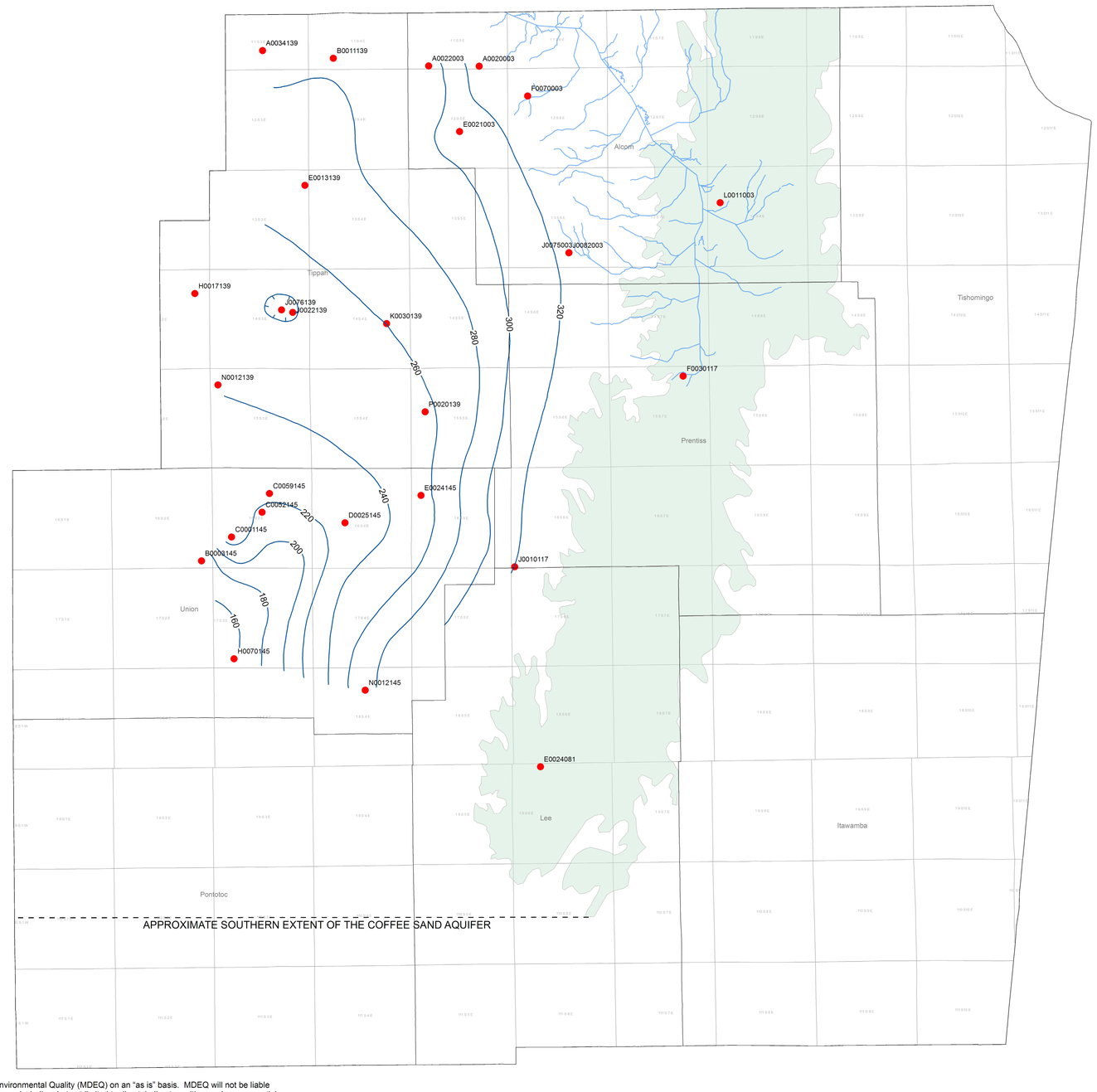
OLWR Hydrologic Map 11-4

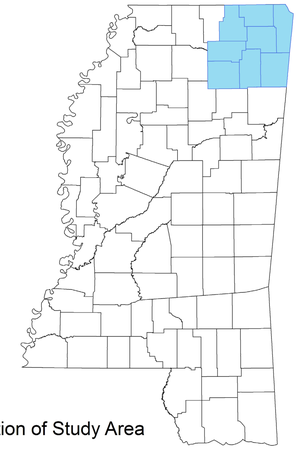
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF LAND AND WATER RESOURCES



POTENTIOMETRIC MAP OF THE COFFEE SAND AQUIFER IN NORTHEASTERN MISSISSIPPI 2008 TO 2011

John V. Banks, RPG
June, 2011

MDEQ



Location of Study Area

County	Well Number	Head Value in Feet Relative to MSL	Owner	Date Measured
ALCORN	A0020003	331.10	KOSSUTH WA	11/6/2008
ALCORN	A0022003	289.50	CHALYBEATE WA	11/5/2008
ALCORN	E0021003	306.85	KOSSUTH WA	11/6/2008
ALCORN	F0070003	333.56	RAINEY SOD FARM	10/14/2009
ALCORN	J0075003	325.03	PRENTISS-ALCORN WA	2/23/2011
ALCORN	J0082003	333.16	PRENTISS-ALCORN WA	2/23/2011
ALCORN	L0011003	435.50	PRICE, DAVID	11/5/2008
LEE	E0024081	320.60	HOPPER, JOE	2/4/2009
PRENTISS	F0030117	439.45	WADDLE, O. L.	9/2/2009
PRENTISS	J0010117	320.30	HOWELL, ROBERT	7/9/2008
TIPPAH	A0034139	285.80	THREE FORKS WA	10/8/2009
TIPPAH	B0011139	283.35	WALNUT, TOWN OF	10/9/2009
TIPPAH	E0013139	265.53	FALKNER WA	10/7/2009
TIPPAH	H0017139	250.20	SHADY GROVE WA	10/8/2009
TIPPAH	J0022139	234.64	RIPLEY, CITY OF	10/7/2009
TIPPAH	J0076139	227.65	RIPLEY, CITY OF	10/8/2009
TIPPAH	K0030139	260.05	HAWKINS INC.	10/7/2009
TIPPAH	N0012139	241.12	BLUE MOUNTAIN, TOWN OF	10/7/2009
TIPPAH	P0020139	251.87	DUMAS PINE GROVE WA	10/8/2009
UNION	B0003145	163.60	MOHASCO	4/29/2009
UNION	C0001145	234.40	TENNESSEE GAS PIPELINE	4/28/2009
UNION	C0052145	211.10	NORTH HAVEN WA	5/14/2009
UNION	C0059145	231.40	NORTH HAVEN WA	4/28/2009
UNION	D0025145	224.30	KEOWNVILLE WA	4/30/2009
UNION	E0024145	251.45	KEOWNVILLE WA	5/14/2009
UNION	H0070145	155.01	OAKS COUNTRY CLUB	4/30/2009
UNION	N0012145	276.60	BLUE SPRINGS WA	4/30/2009

Legend

- Observation Well
- Potentiometric Contour — *Contour interval is 20 feet. Datum is sea level.*
- Outcrop Area of Coffee Sand Formation

N

1:240,000

0 2 4 8 12 16 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.