

Figure 37. Changes in groundwater levels from predevelopment to Spring 2012.

## INTERCONNECTED GROUNDWATER AND SURFACE WATER

Nebraska's groundwater wealth spills over to many of its streams, rivers, lakes, and wetlands. Fed by an abundant supply of groundwater, Sand Hills rivers such as the Loups are some of the most constant, steadily flowing streams in the nation. The Platte River is a source of water for irrigation and power supply, and it supports hundreds of thousands of birds each spring and fall as they pass north and south along migratory routes. The Niobrara River is admired for its beauty and is enjoyed by many for recreation. Lakes and wetlands fed by groundwater occur throughout the Sand Hills and along river valleys. In eastern Nebraska, confining units separating the streams and aquifers can be absent or thin in certain locations, leading to discrete stretches of preferentially interconnected groundwater and surface water, such as the saline wetlands near Lincoln.

Evidence of the intimate connection between groundwater and surface water can be found across the state. Natural fluctuations in the water table near Theford in central Thomas County, for example, are almost exactly mirrored by the rate of flow in the Middle Loup River nearby (Fig. 38). Peaks in the graphs are times of high rainfall, elevated water table, and increased seepage to the stream. Troughs are drier times when the water table declines and seepage to the stream decreases. The persistence of flow from

Sand Hills rivers noted above indicates steady discharge of groundwater to streams. Conversely, some stream gauges record less flow than gauges directly upstream, showing that surface flow can be lost to the groundwater system as well.

Examples of human influence on interconnected groundwater and surface water can also be observed. Unlined irrigation canals alongside

the North Platte River in the western Panhandle have created artificially high groundwater recharge, leading to a groundwater mound in the vicinity of the canal. The groundwater mound develops annually in the spring and summer when the irrigation canals are in use, and then significantly dissipates as the water stored in the aquifer discharges into the North Platte River. The effects of this discharge can be seen in the

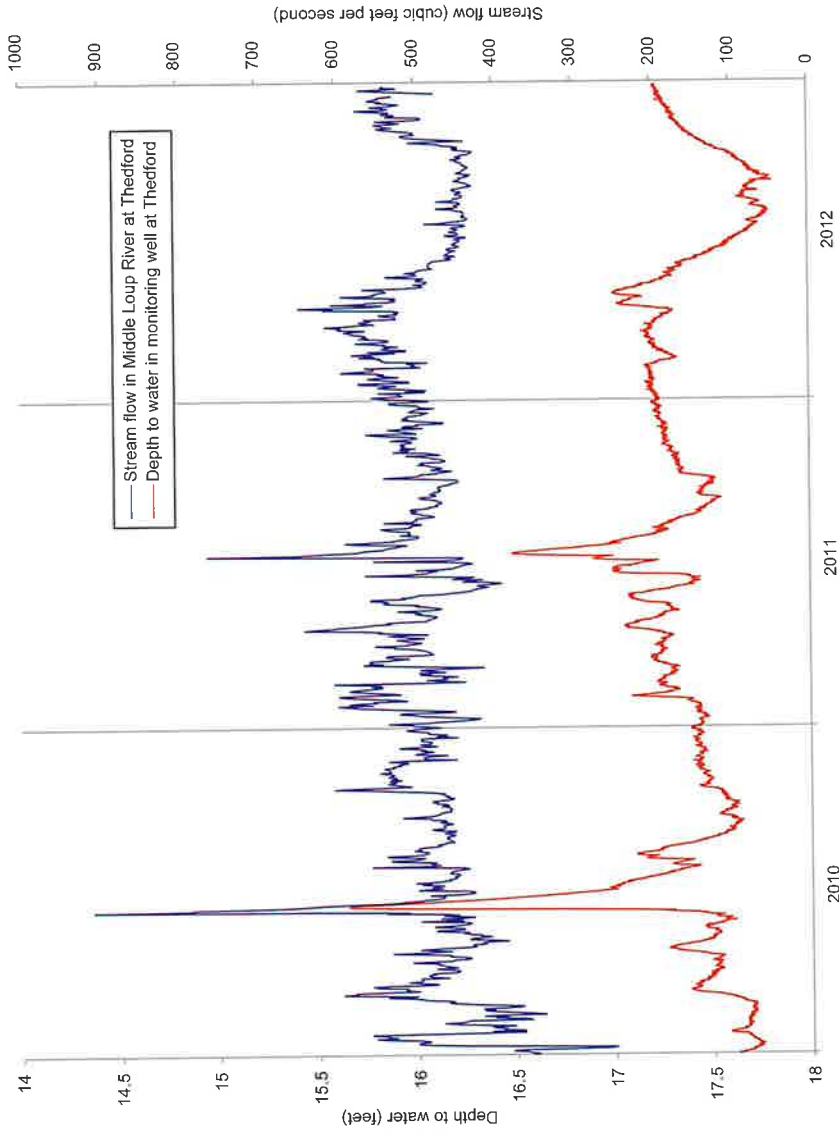


Figure 38. Stream flow and groundwater-level hydrographs from same site near Theford in central Thomas County. Similarity in fluctuations in both hydrographs illustrates connection between surface water and groundwater.