



**FORMER WESSEL PROPERTY
LA GRANGE WETLAND BANK SITE**

ISGS #52

Brown County, near La Grange, Illinois

Primary Project Manager: Keith W. Carr

Secondary Project Manager: Geoffrey E. Pociask

SITE HISTORY

- February 2000: ISGS was tasked by IDOT to conduct a Level II hydrogeologic assessment of the site.
- Spring 2000: ISGS began on-site activities with the installation of surface-water monitoring equipment and two monitoring wells in selected areas.
- Spring, Summer, and Fall 2001: ISGS installed wetland hydrology monitoring instrumentation at the site; IDOT completed a preliminary topographic survey of the site based on data acquired during the summer of 2000.
- February 2002: IDOT prepared an initial wetland banking prospectus.
- May 2002: Levees breached at two locations on the site; major portions of the site were inundated for approximately 45 days. Later in the month, the banking prospectus prepared by IDOT was presented to a group representing the Mitigation Bank Review Team (MBRT).
- August 2002: IDOT tasked ISGS and INHS to prepare a draft wetland banking instrument.
- February 2003: IDOT submitted a draft wetland banking instrument to the MBRT; final revisions are ongoing through a comment/review process.
- 2004: The bank site was declared an Exemplary Ecosystem Initiative by the Federal Highway Administration.

WETLAND HYDROLOGY CALCULATION FOR 2004

We estimate that the total area of the site that satisfied wetland hydrology criteria for greater than 5% of the growing season in 2004 was 1004 ac (406 ha). In addition, 876 ac (354 ha) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. These estimates are based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in nearby Rushville is April 6 and the season lasts 208 days; 5% of the growing season is 10 days and 12.5% of the growing season is 26 days.
- During the period from September 2003 to August 2004, a significant portion of the data were missing from the two nearby MRCC weather stations (Beardstown and Rushville). Due to flood damage of the ISGS rain gauge, as well as database problems at the nearby MRCC stations, June, July and August of 2004 lack any sort of complete precipitation data set. Nevertheless, using data from both MRCC stations, augmented with ISGS on-site data where available, total precipitation at the site (and in the vicinity) between September 2003 and March 2004 was found to be generally below the normal range, leading to relatively dry

conditions at the start of the growing season. The three months immediately preceding the 2004 growing season (January to March) were especially dry, with precipitation only about 52% of normal. Precipitation returned to the normal range in May 2004, contributing to the eventual flooding of the site.

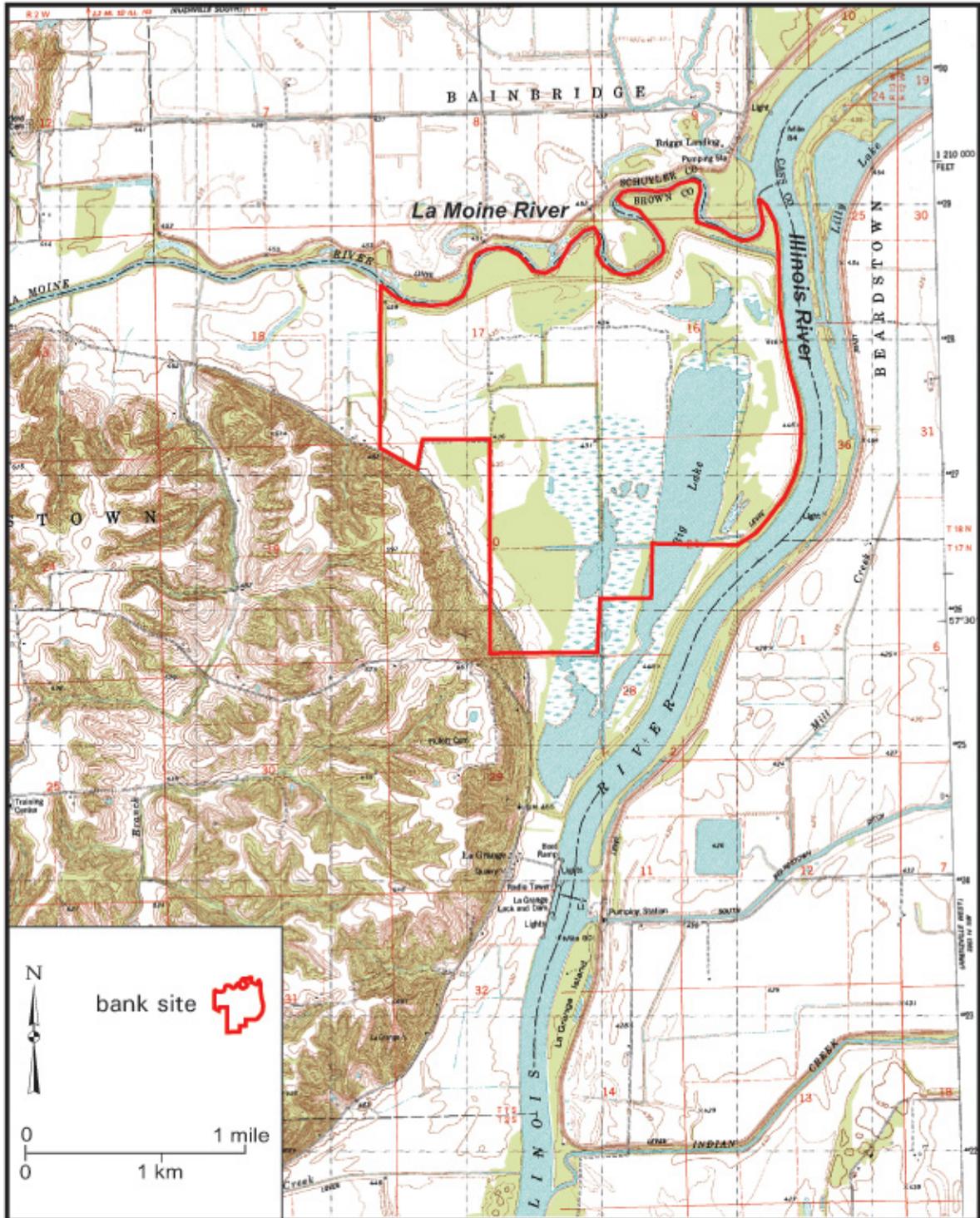
- In 2004, water levels measured in the following 16 soil-zone wells satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. Soil-zone wells showing saturation for greater than 5% of the growing season included 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 15S, 16S, 17S, 18S, 19S, 20S, 21S and 23S. In addition, the same 16 wells also satisfied wetland hydrology criteria for greater than 12.5% of the growing season.
- Also in 2004, data loggers, staff gauges, and off-site U.S. Army Corps of Engineers gauging data indicated surface-water inundation in the Big Lake basin to an elevation of 132.35 m (434.21 ft) for a period greater than 5% of the growing season. The same suite of loggers and gauges also showed surface-water inundation in the Big Lake basin to a slightly lower elevation of 132.10 m (433.39 ft) for a period greater than 12.5% of the growing season. This difference in inundation elevation, amounting to 0.25 m (0.82 ft), was the primary reason for the slightly greater acreage of documented wetland hydrology at the 5% threshold (in comparison to the 12.5% threshold).
- Limitations of the wetland hydrology determination are as follows:
 - On several occasions during this monitoring year, persons unknown opened or closed a gate valve connecting the site to the Illinois River in order to raise or lower water levels across the site. The actual area and timing of wetland hydrologic conditions may have been affected by these changes.
 - The area of wetland hydrology was calculated using GIS methods. The wetland hydrology polygons were guided by both soil-zone well locations, and by a topographic map of the site. This map, produced from ground-surface elevations surveyed by IDOT, was generated with a 0.25 m [0.76 ft] contour interval and superimposed on a DOQ of the site.
 - Instrument locations were determined using a differentially-corrected Trimble GPS unit. These GPS locations were superimposed on a digital orthophotograph, and were subsequently entered into the GIS model of the site.

PLANNED FUTURE ACTIVITIES

- Monitoring of hydrology will continue until no longer required by IDOT.
- Installation of five to six additional soil-zone monitoring wells may help improve delineation of wetland hydrology in some portions of the site.
- Current plans call for the installation of a network of staff gauges to measure sediment accumulation across the site. Installation will likely take place in the Spring of 2005.
- A Level II Hydrogeologic Characterization Report prepared for this site is currently in review.

Former Wessel Property, La Grange Wetland Bank Site General Study Area and Vicinity

from the USGS Topographic Series, Cooperstown, IL 7.5-minute Quadrangle (USGS 1980)
contour interval is 10 feet



Former Wessel Property, La Grange Wetland Bank Site

Locations of ISGS Monitoring Equipment

map based on USGS digital orthophotograph Cooperstown, NE quarter quadrangle
 produced from 4/14/98 aerial photography (ISGS 2002)

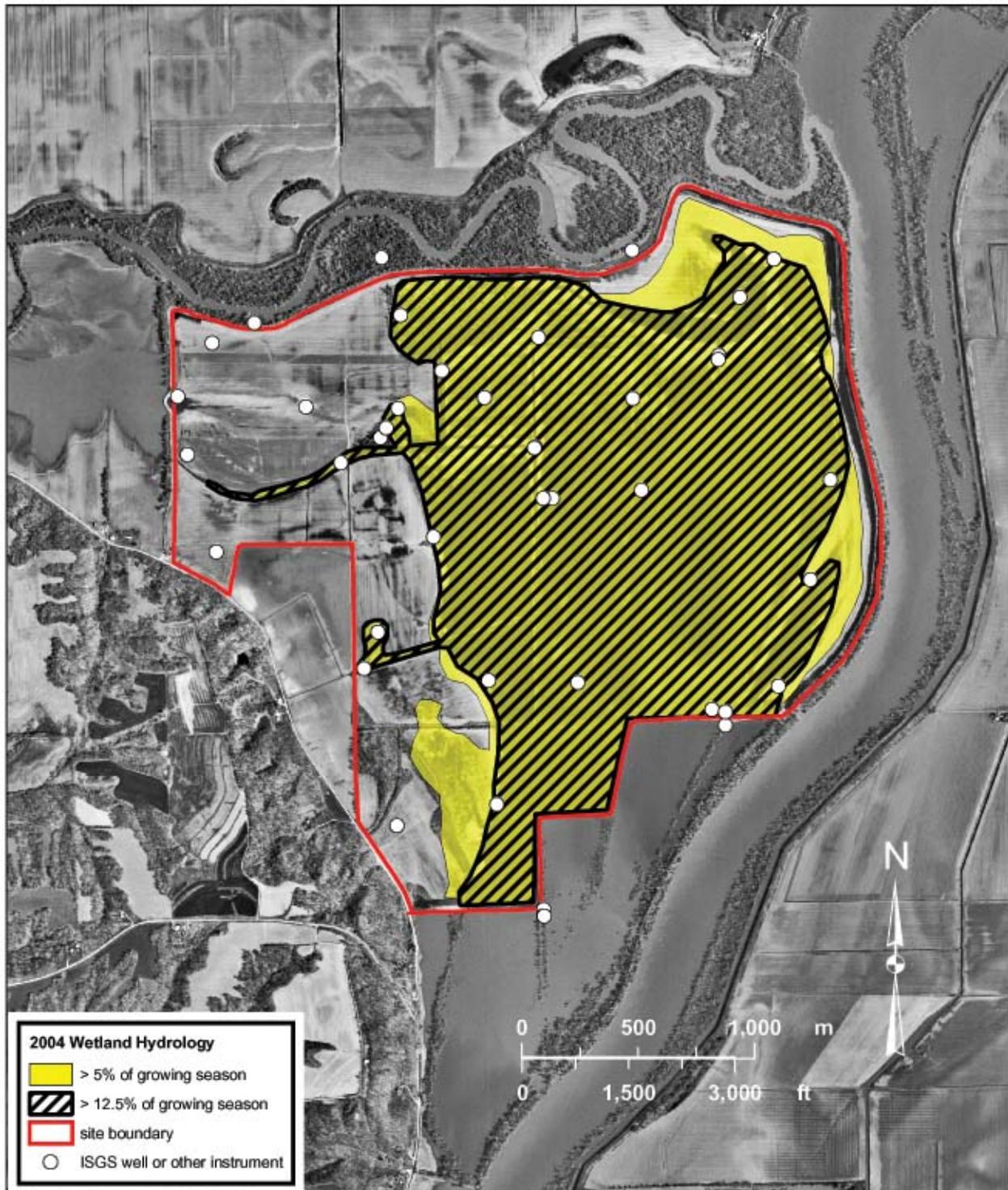


- | | | | |
|---|--------------------|---|---------------------|
| △ | RDS data logger | ○ | monitoring well |
| ✻ | rain gauge | □ | staff (stage) gauge |
| ⊙ | Global data logger | ▣ | Sonic data logger |

Former Wessel Property, La Grange Wetland Bank Site

Extent of 2004 Wetland Hydrology

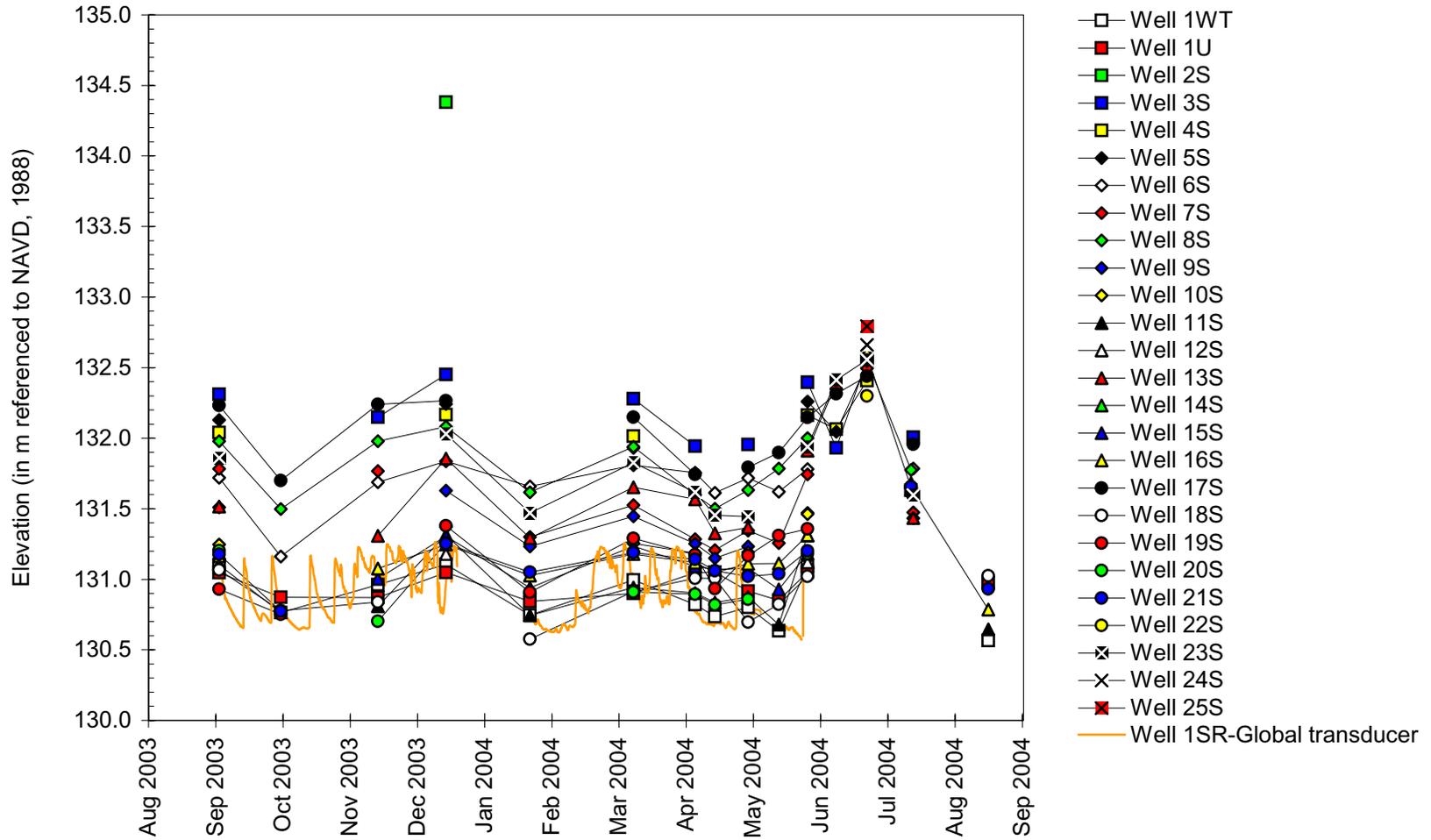
map based on USGS digital orthophotograph, Cooperstown, NE quarter quadrangle
produced from 4/14/98 aerial photography (ISGS 2002)



Former Wessel Property, La Grange Wetland Bank Site

September 1, 2003 to September 1, 2004

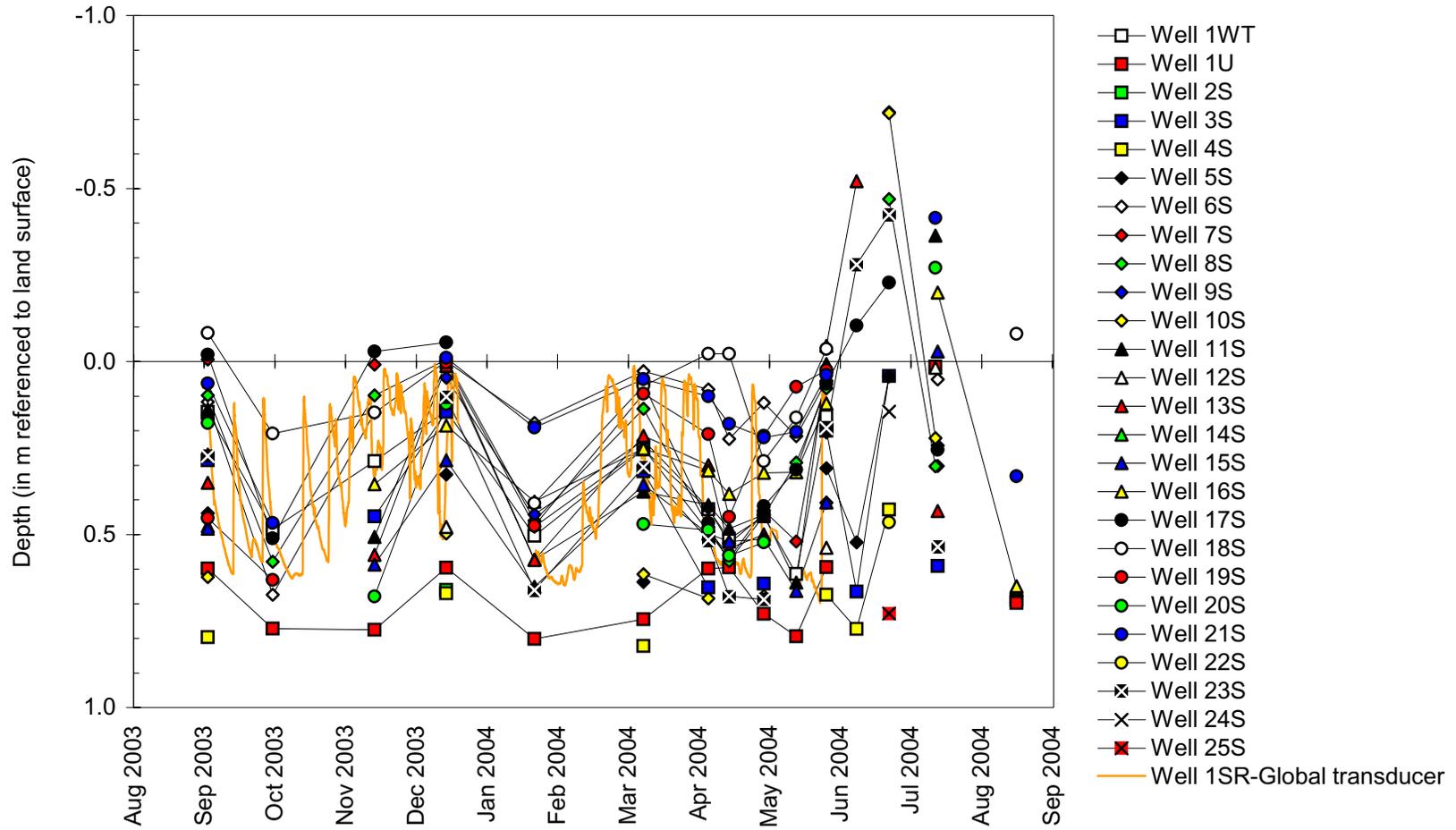
Water-Level Elevations in Shallow Monitoring Wells



Former Wessel Property, La Grange Wetland Bank Site

September 1, 2003 to September 1, 2004

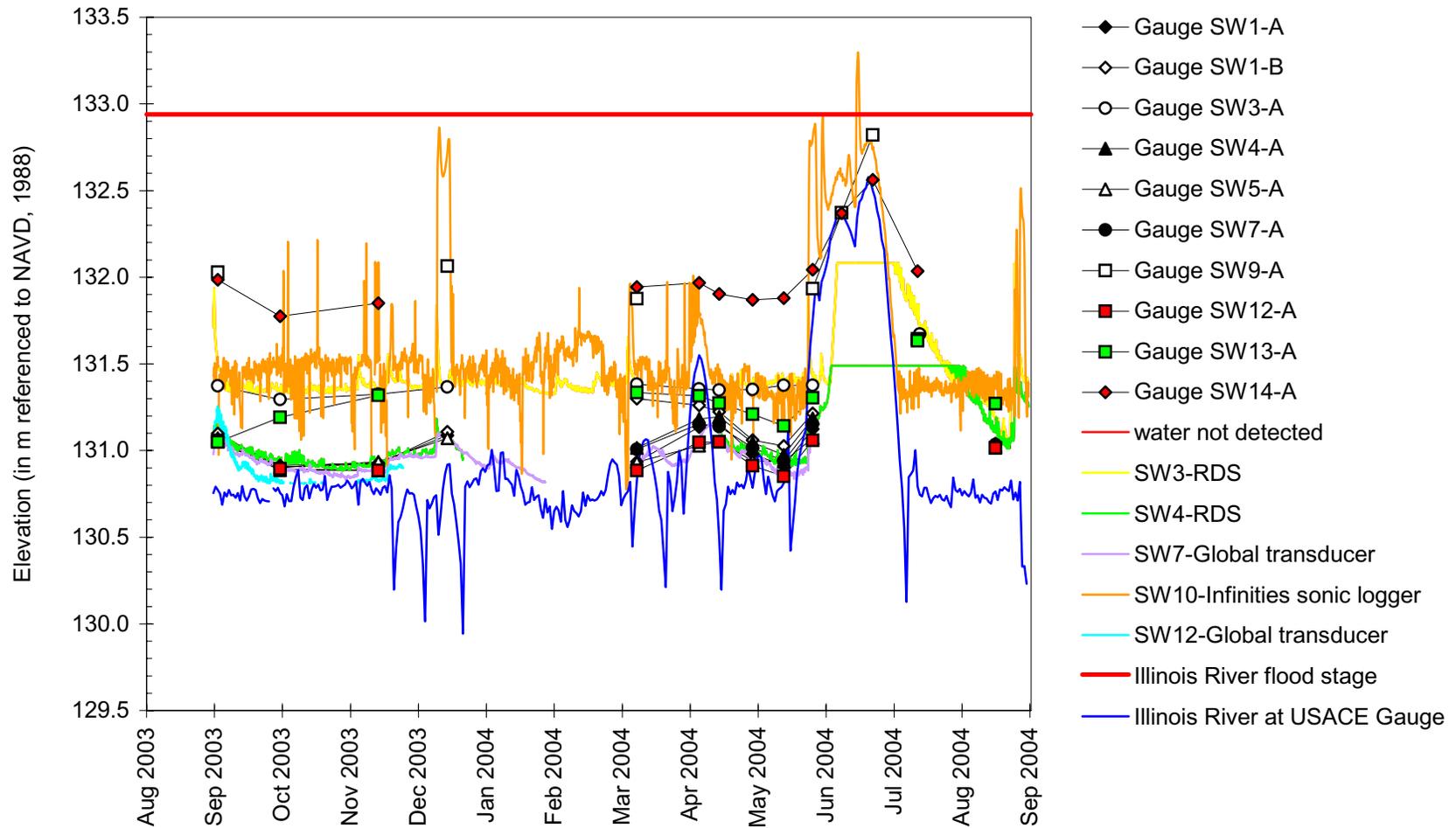
Depth to Water in Shallow Monitoring Wells



Former Wessel Property, La Grange Wetland Bank Site

September 1, 2003 to September 1, 2004

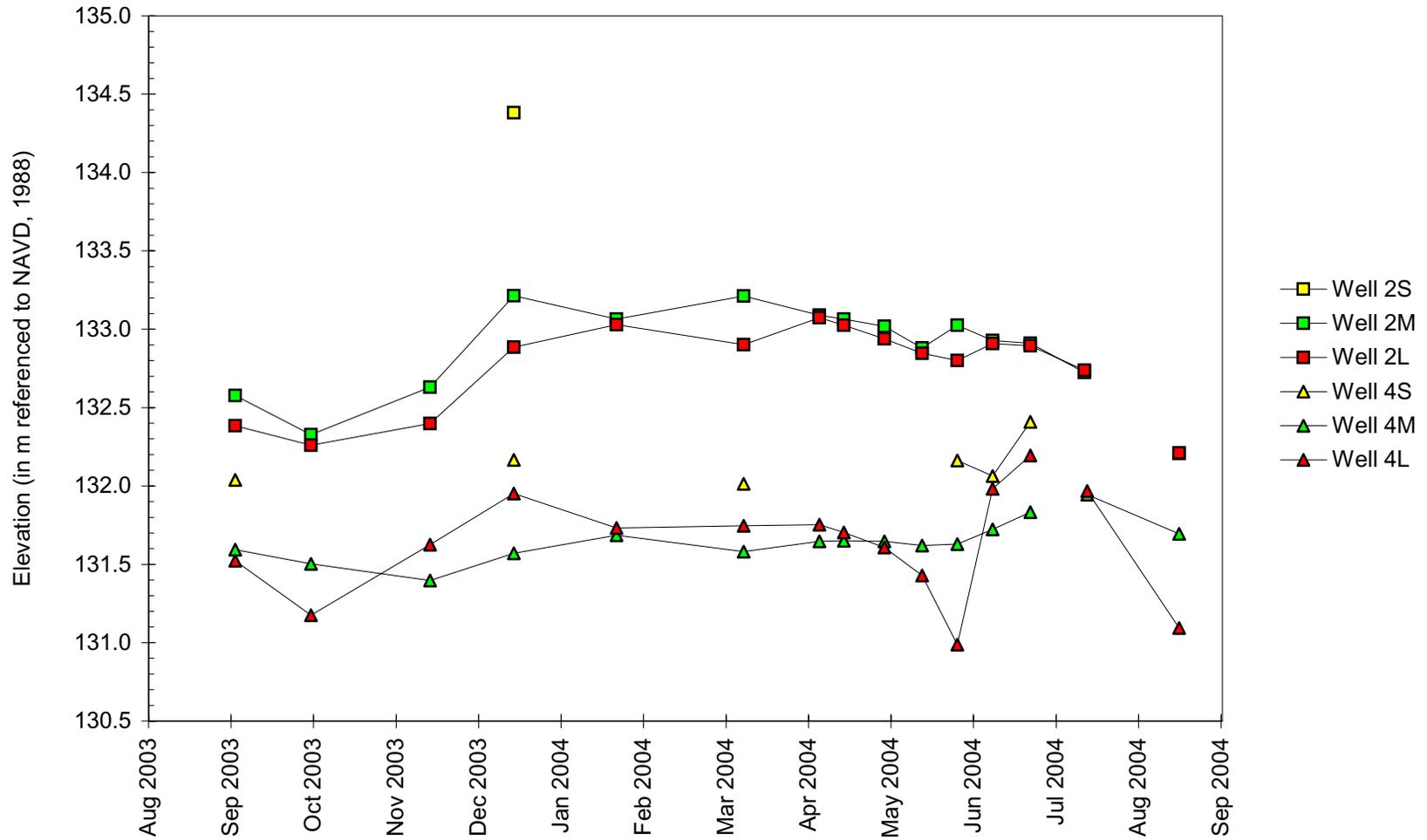
Water-Level Elevations on Stage Gauges and Data Loggers



Former Wessel Property, La Grange Wetland Bank Site

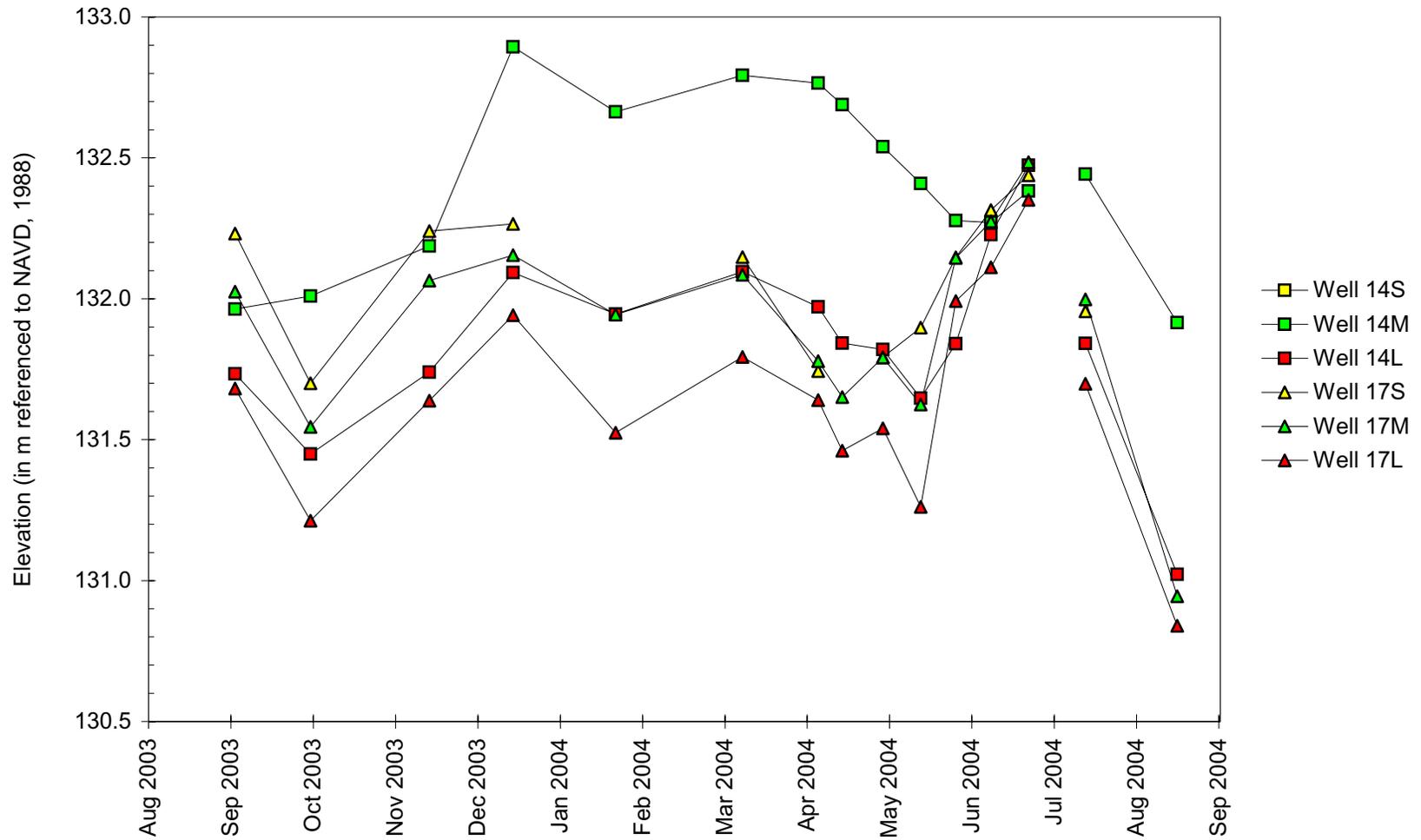
September 1, 2003 to September 1, 2004

Water-Level Elevations in Well Nests on the Upper Terrace



Former Wessel Property, La Grange Wetland Bank Site
September 1, 2003 to September 1, 2004

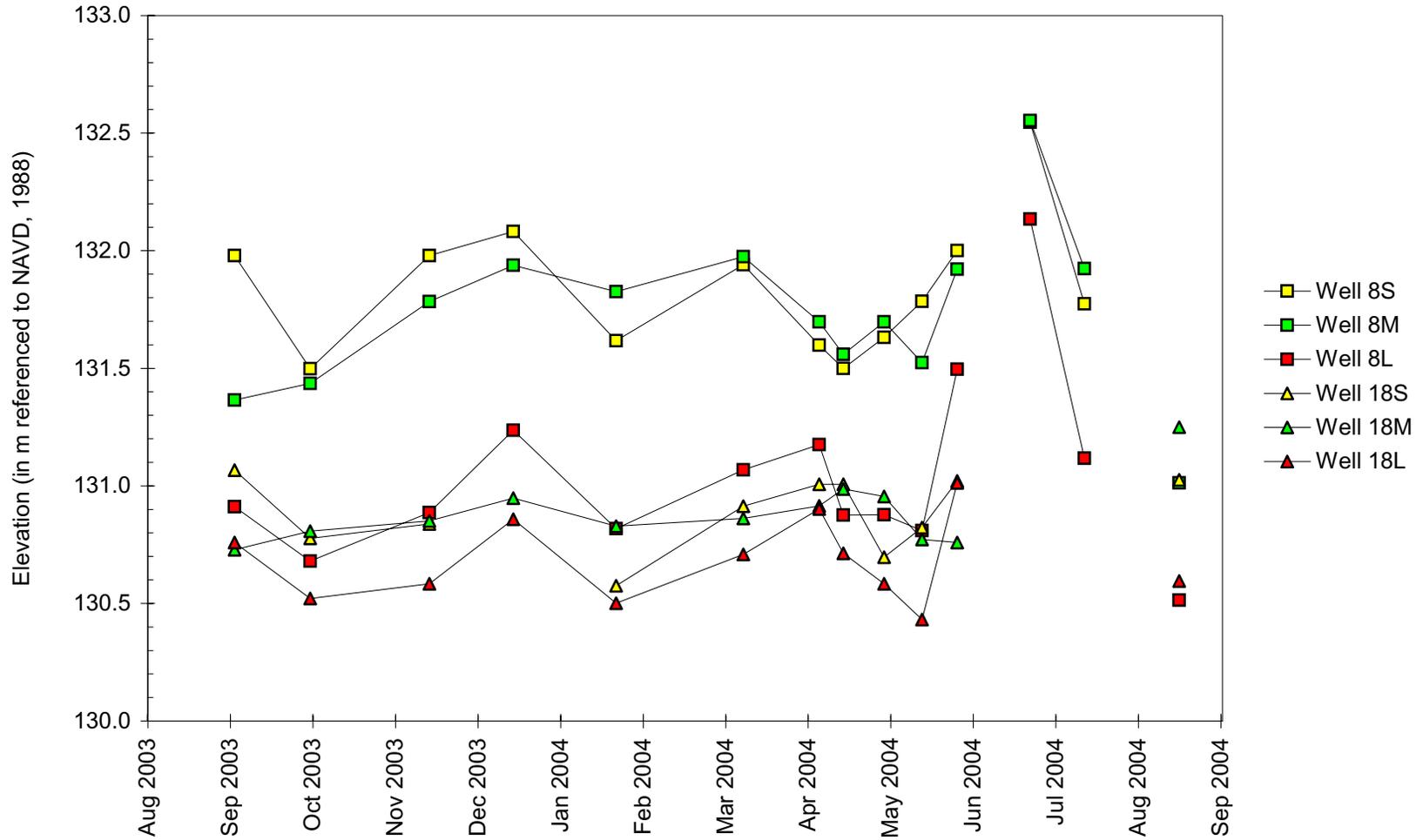
Water-Level Elevations
in Well Nests on the Upper Terrace



Former Wessel Property, La Grange Wetland Bank Site

September 1, 2003 to September 1, 2004

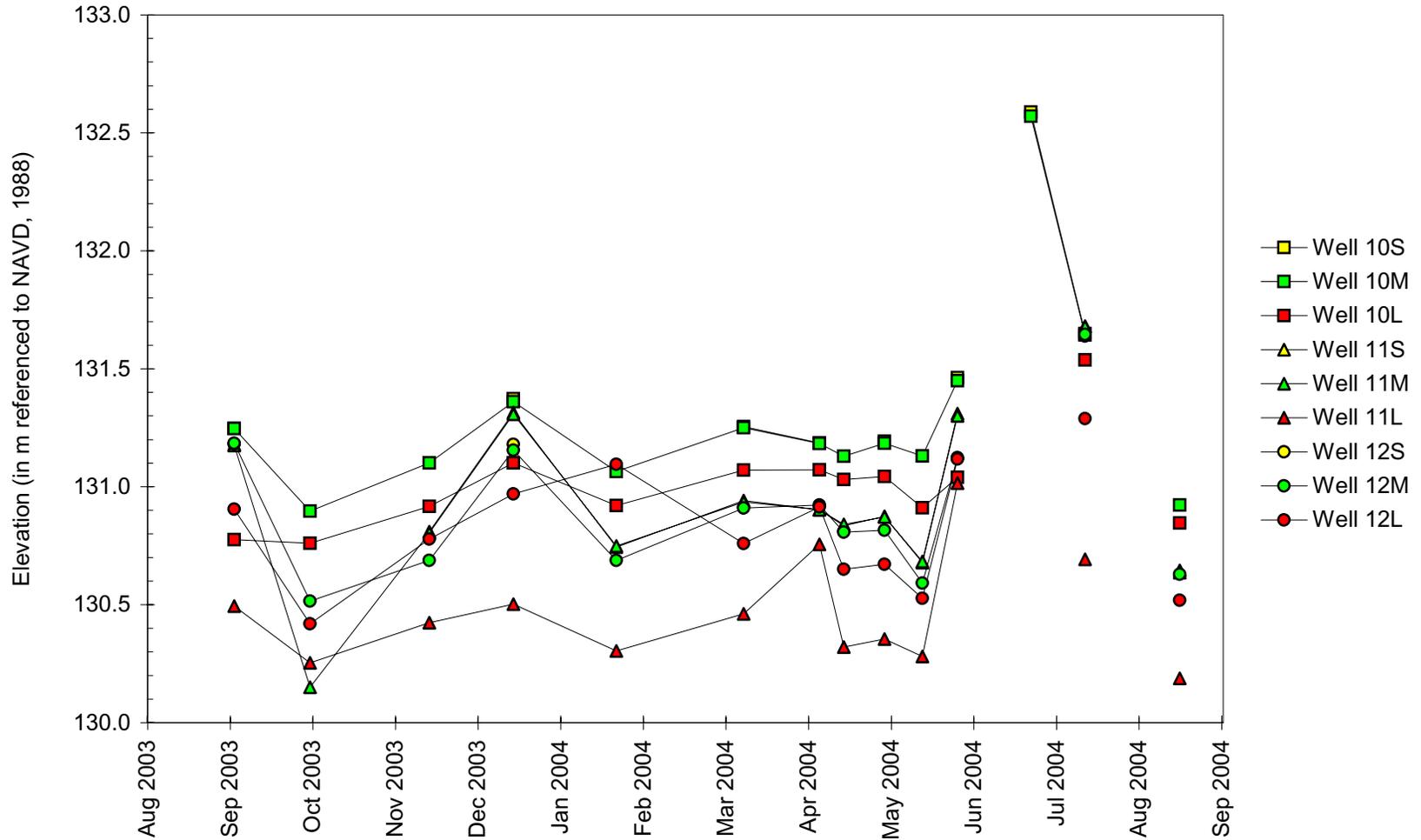
Water-Level Elevations in Well Nests on the Lake Plain



Former Wessel Property, La Grange Wetland Bank Site

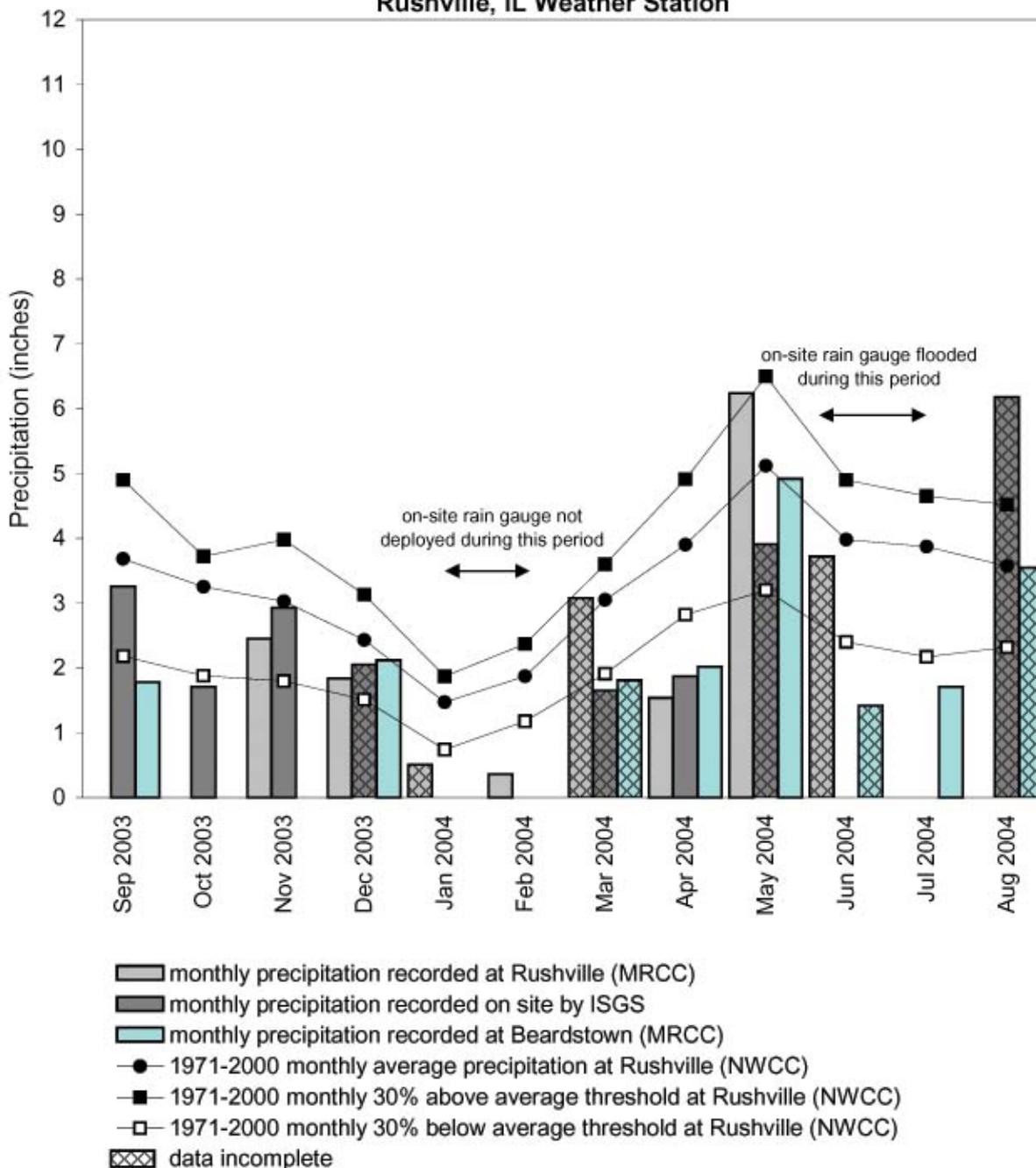
September 1, 2003 to September 1, 2004

Water-Level Elevations in Well Nests near the River



Former Wessel Property, La Grange Wetland Bank Site September 2003 through August 2004

Total Monthly Precipitation Recorded On Site and at the
Rushville, IL Weather Station



Graph last updated October 1, 2004