



**FORMER TIERNAN PROPERTY, NEW RIVER CROSSING  
POTENTIAL WETLAND COMPENSATION SITE**

**ISGS #57**

FAP 999

Sequence #33G

St. Clair County, near Cahokia, Illinois

**Primary Project Manager: Bonnie J. Robinson**

**Secondary Project Manager: not assigned**

**SITE HISTORY**

- July 2000: The ISGS was tasked to perform a Level II hydrogeologic assessment of the site.
- March–November 2001: Thirty-two S wells, ten VS wells, 5 M wells, two staff gauges, and six benchmarks were installed and surveyed. Six soil-moisture probes were installed in three clusters in the northern field. Water-quality sampling was terminated because no quality standards were exceeded in any of the initial samples.
- July 2005: A Level II hydrogeologic characterization report was submitted to IDOT (ISGS Open File Series 2005–11).

**WETLAND HYDROLOGY CALCULATION FOR 2005**

The area that satisfied wetland hydrology criteria (Environmental Laboratory 1987) for greater than 5% of the growing season was estimated to be 10.1 ha (25.0 ac), and was identical to the area that satisfied the criteria for greater than 12.5% of the growing season. The estimates for 2005 are based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in nearby Belleville, Illinois, is April 6 and the season lasts 199 days; 5% of the growing season is 10 days and 12.5% of the growing season is 25 days.
- Precipitation during the monitoring period was 92% of normal. Water levels rose over the fall and winter months with above normal precipitation in October and November 2004 and January 2005. Following a peak in early January, water levels steadily decreased as a result of below average precipitation from February through June 2005.
- In 2005, water levels measured in wells 14S, 21S, 25VS, 27S, 27VS, 28VS, 29S, 29VS, 30S, 30VS, 31S and 31VS satisfied the wetland hydrology criteria for greater than 12.5% of the growing season. No additional wells satisfied wetland hydrology criteria for greater than 5% of the growing season. Surface-water stage data from Gauge D indicate that inundation occurred to an elevation of 120.97 m (396.88 ft) for a period sufficient to satisfy wetland hydrology criteria for greater than 5% of the growing season and to an elevation of 120.80 m (396.34 ft) for 12.5% of the growing season.
- Most of the southern half of the site (the former borrow pit) is mapped as pre-existing wetland, the hydrology of which is controlled primarily by the water level in Blue Waters Ditch southeast of the site. Above normal precipitation through the winter months resulted in widespread flooding in the southern half of the site in January and early February.

However, this water receded by the beginning of the growing season in April as a result of the precipitation deficit.

- The hydrology of the northern half of the site (the former farm field) is dominated by precipitation ponding on land surface. Identification of saturated conditions in the northern half of the site was augmented using data from soil-moisture probes deployed at well clusters 26, 27, and 28. Data from all the probes indicate saturated conditions in the upper 0.30 m (1 ft) of the soil column for nearly the entire period from early January to late May, confirming the water level readings in the adjacent wells.

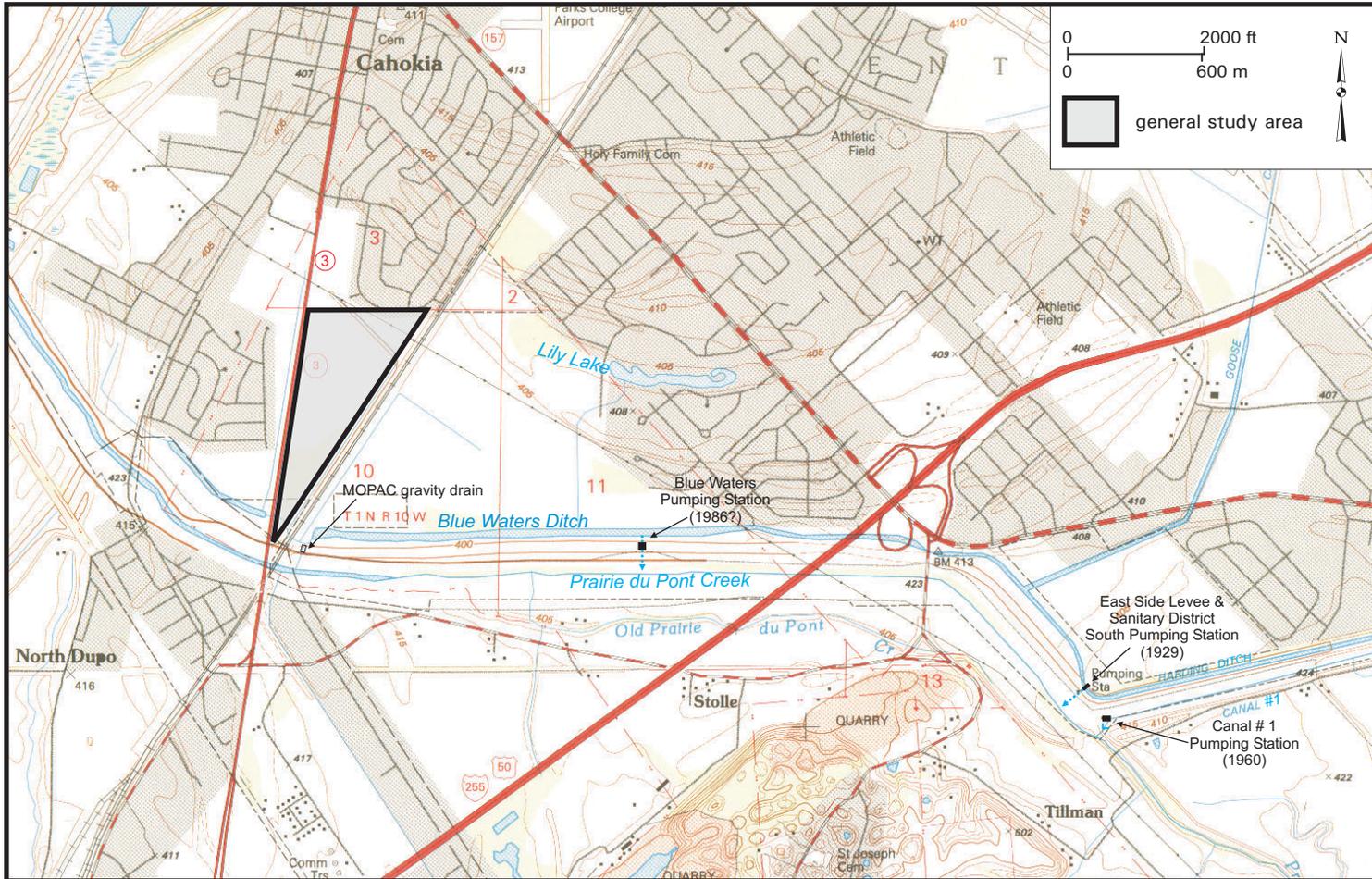
#### PLANNED FUTURE ACTIVITIES

- Monitoring will continue until no longer required by IDOT.

# Former Tiernan Property, New River Crossing Potential Wetland Compensation Site (FAP 999)

## General Study Area and Vicinity

from the USGS Topographic Series, Cahokia, IL 7.5-minute Quadrangle (USGS 1993)  
contour interval is 10 feet

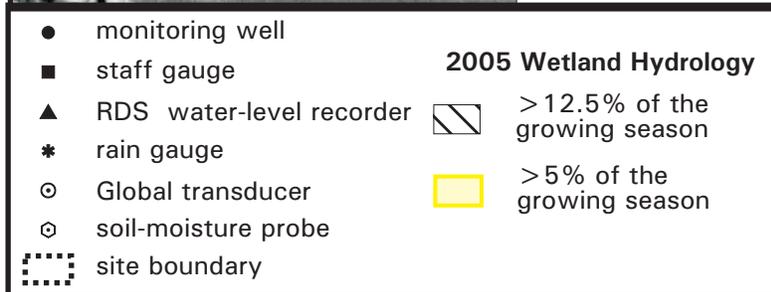
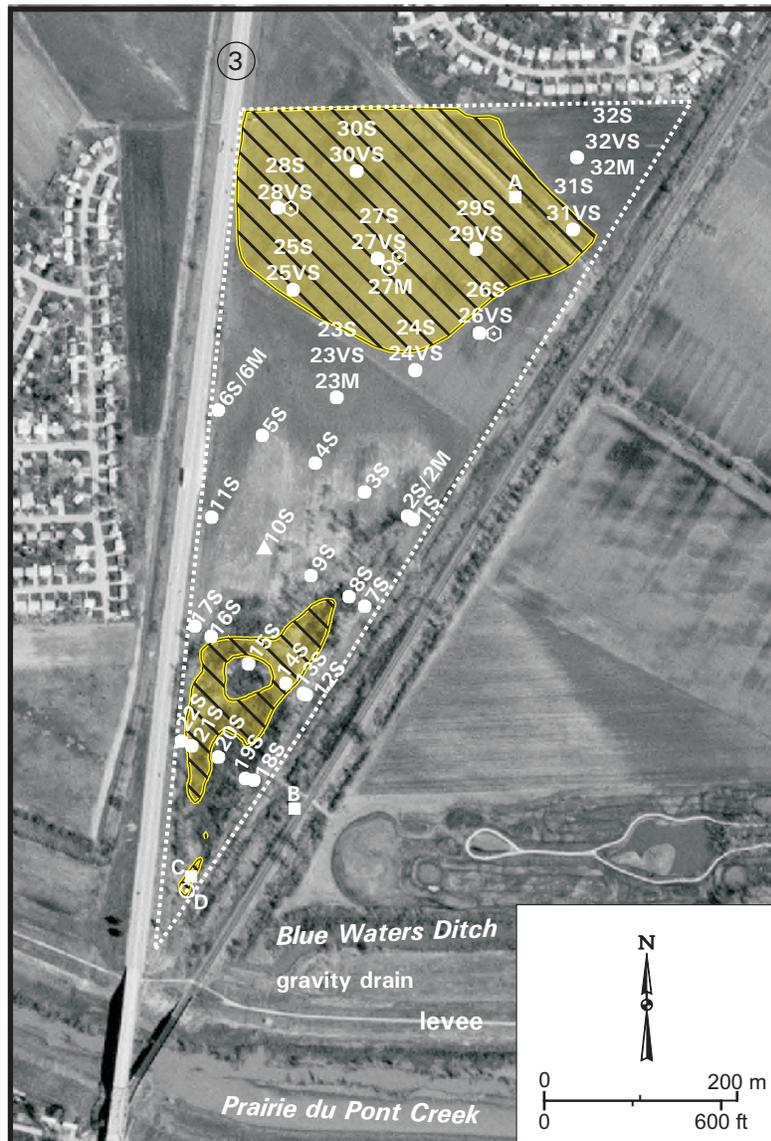


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## Estimated Areal Extent of 2005 Wetland Hydrology

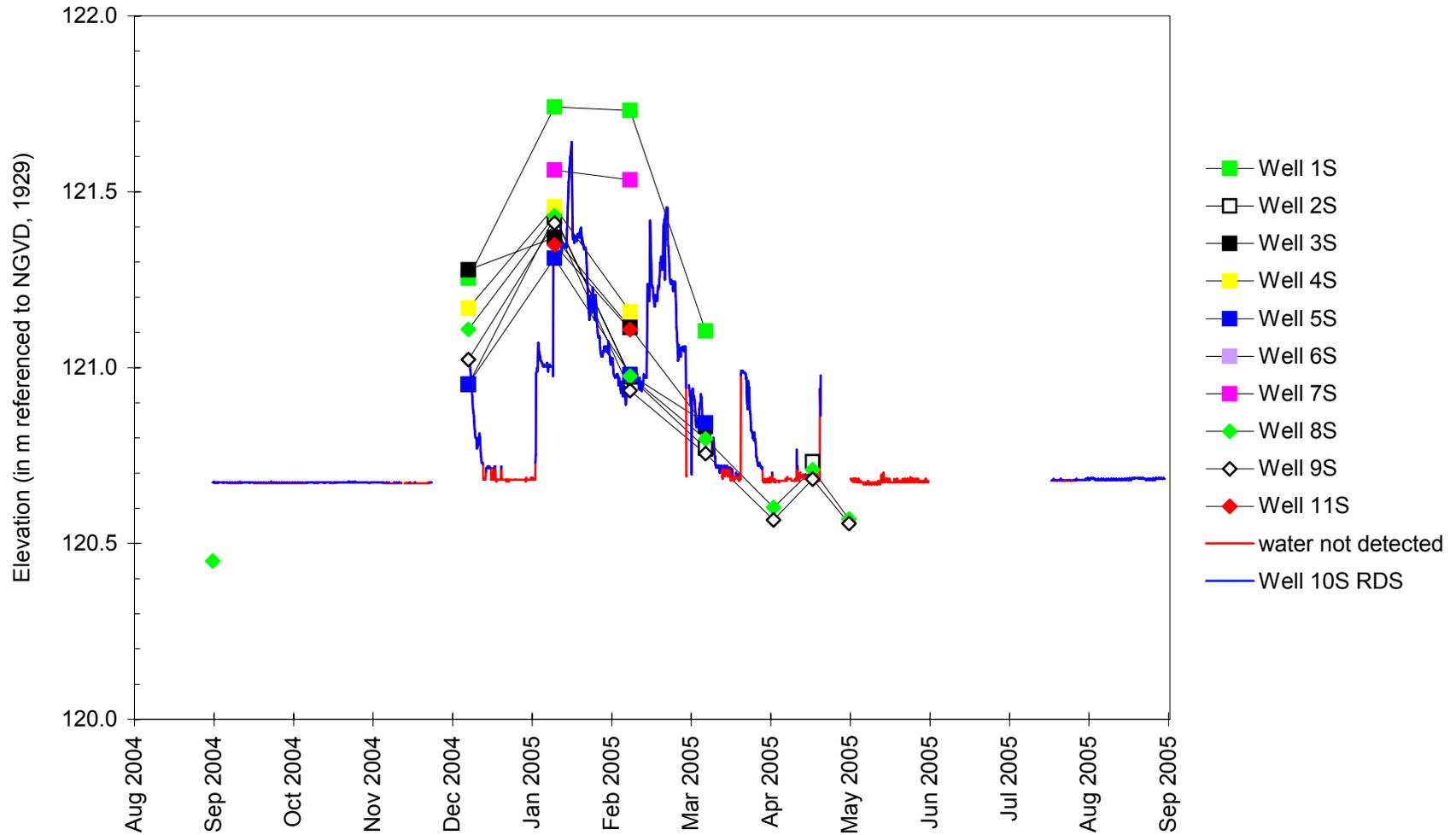
based on data collected between September 1, 2004 and September 1, 2005

Map based on USGS digital orthophotograph, Cahokia, SW quarter quadrangle  
produced from 4/2/98 aerial photography (ISGS, 2000)



# Former Tiernan Property, New River Crossing Potential Wetland Compensation Site September 1, 2004 to September 1, 2005

## Water-Level Elevations

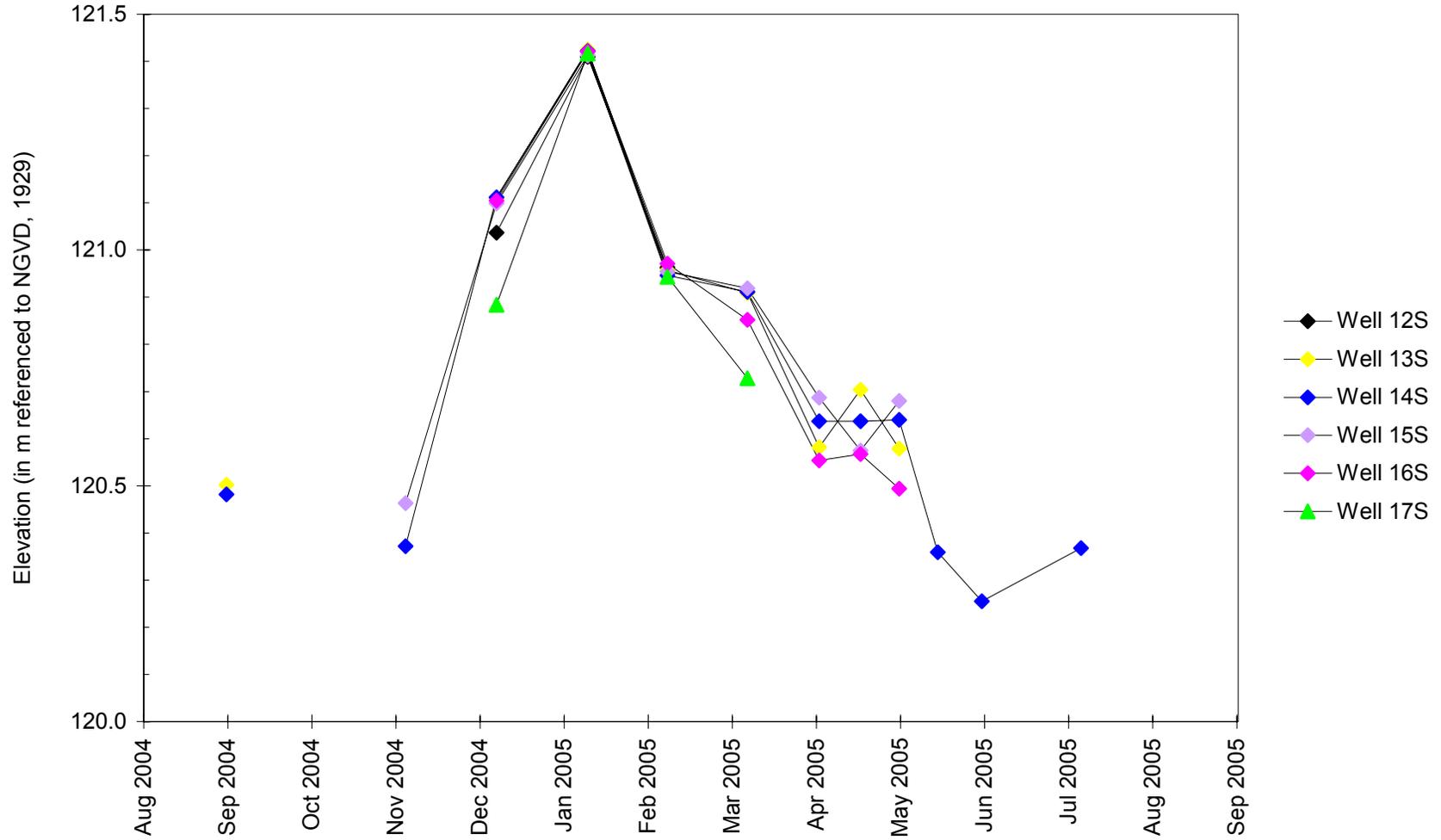




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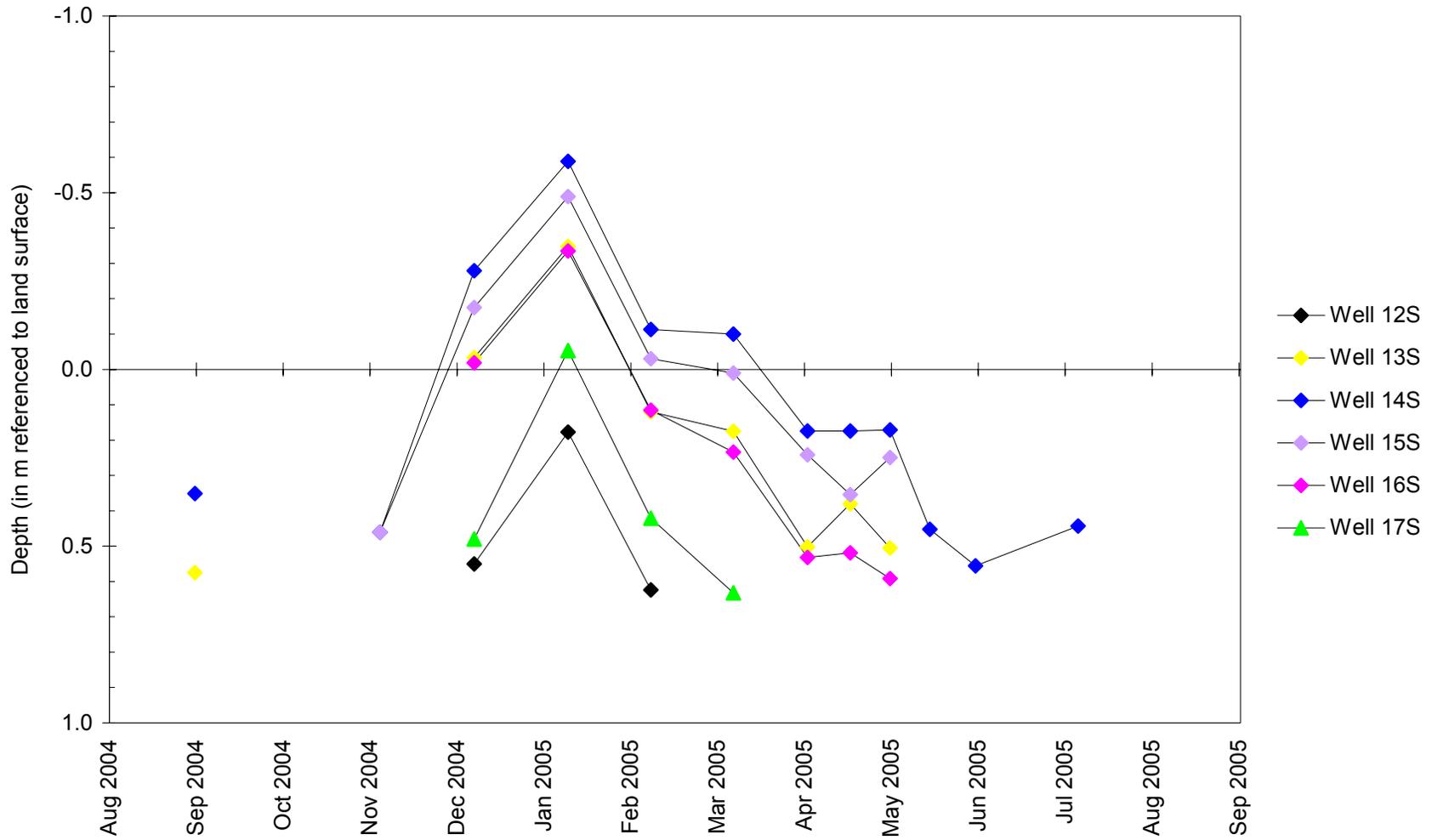
September 1, 2004 to September 1, 2005

## Water-Level Elevations



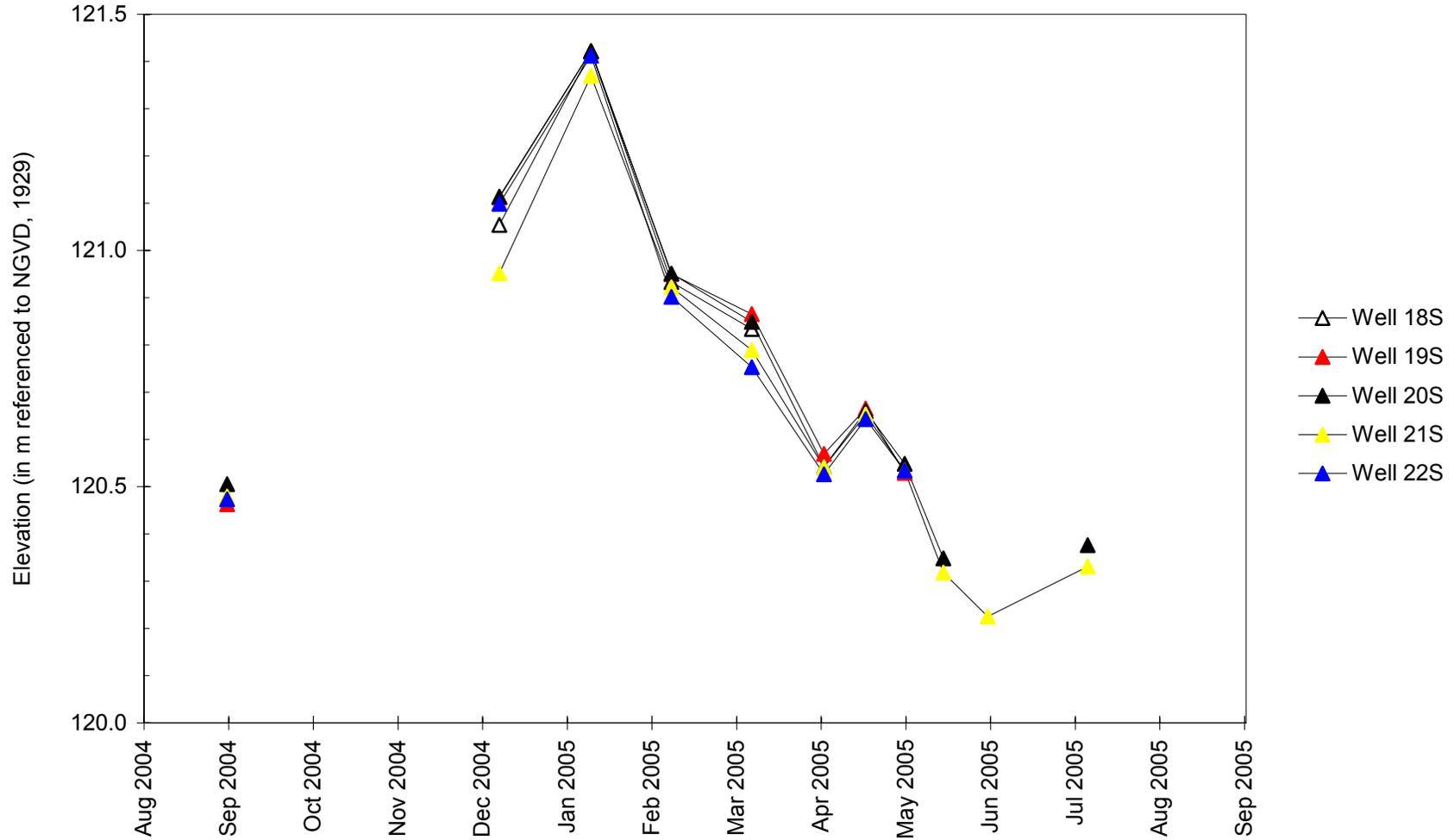
**Former Tiernan Property, New River Crossing Potential Wetland Compensation Site**  
**September 1, 2004 to September 1, 2005**

**Depth to Water**



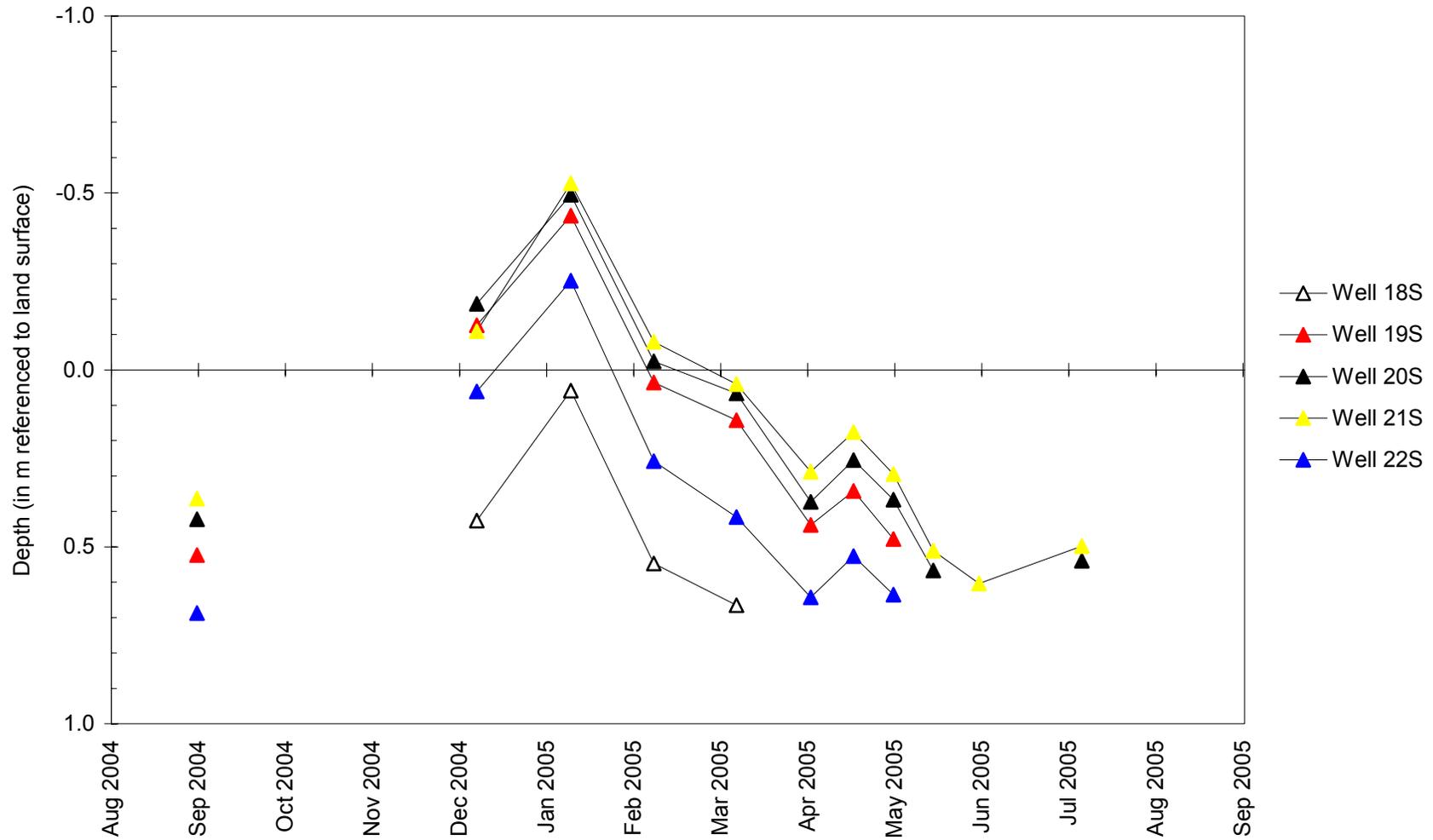
# Former Tiernan Property, New River Crossing Potential Wetland Compensation Site September 1, 2004 to September 1, 2005

## Water-Level Elevations



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**September 1, 2004 to September 1, 2005**

**Depth to Water**

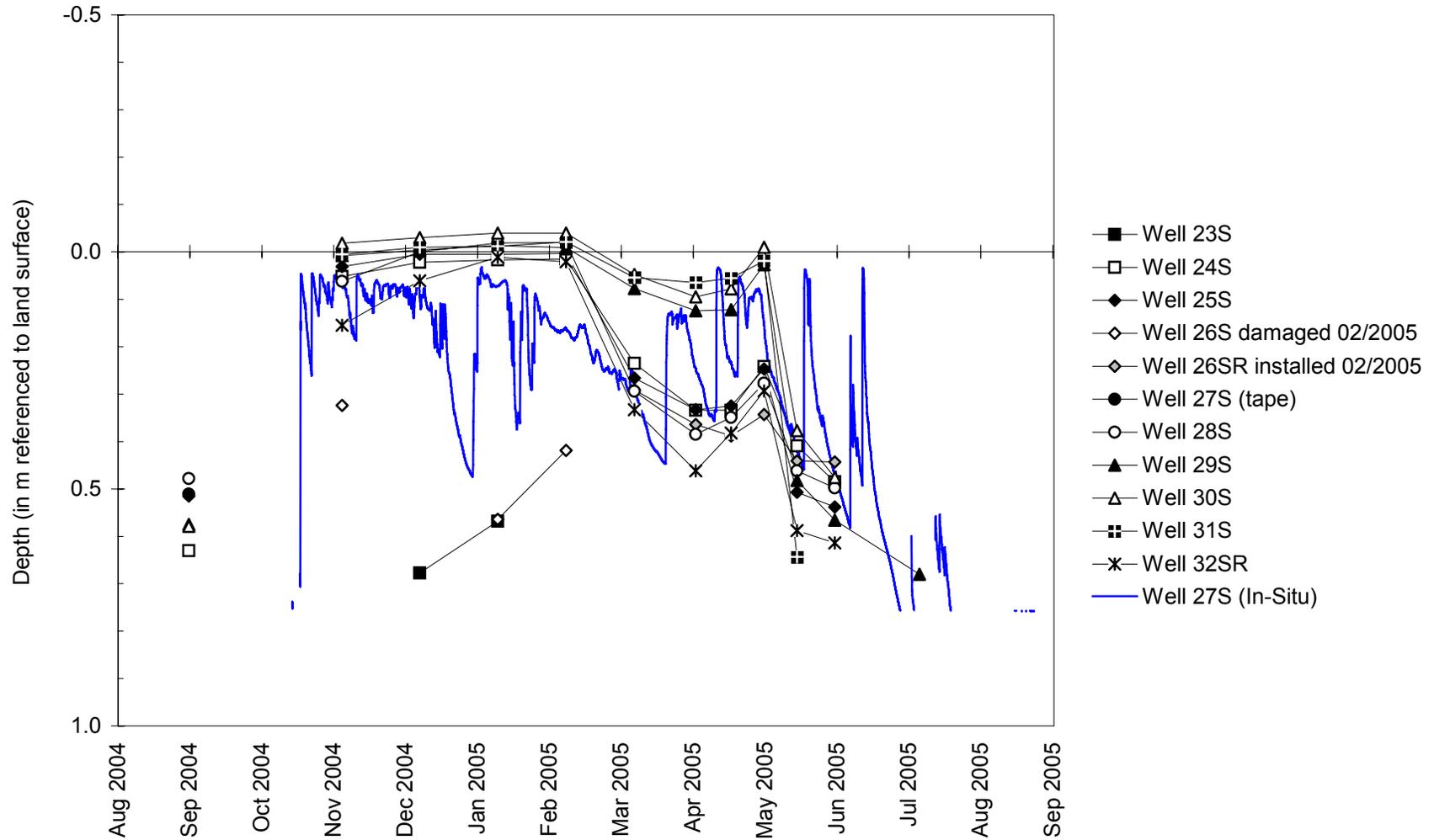




# Former Tiernan Property, New River Crossing Potential Wetland Compensation Site

September 1, 2004 to September 1, 2005

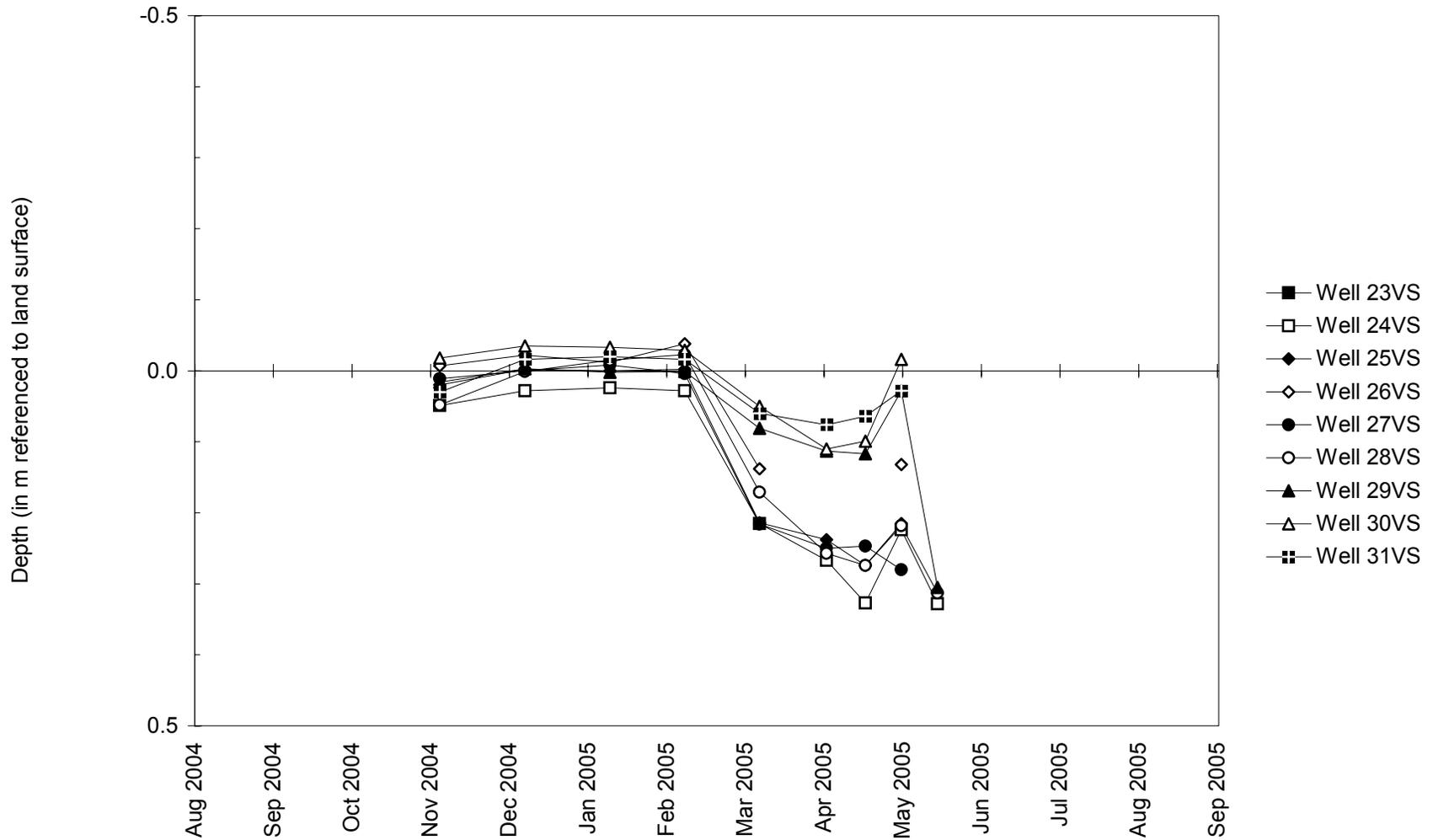
## Depth to Water





**Former Tiernan Property, New River Crossing Potential Wetland Compensation Site**  
**September 1, 2004 to September 1, 2005**

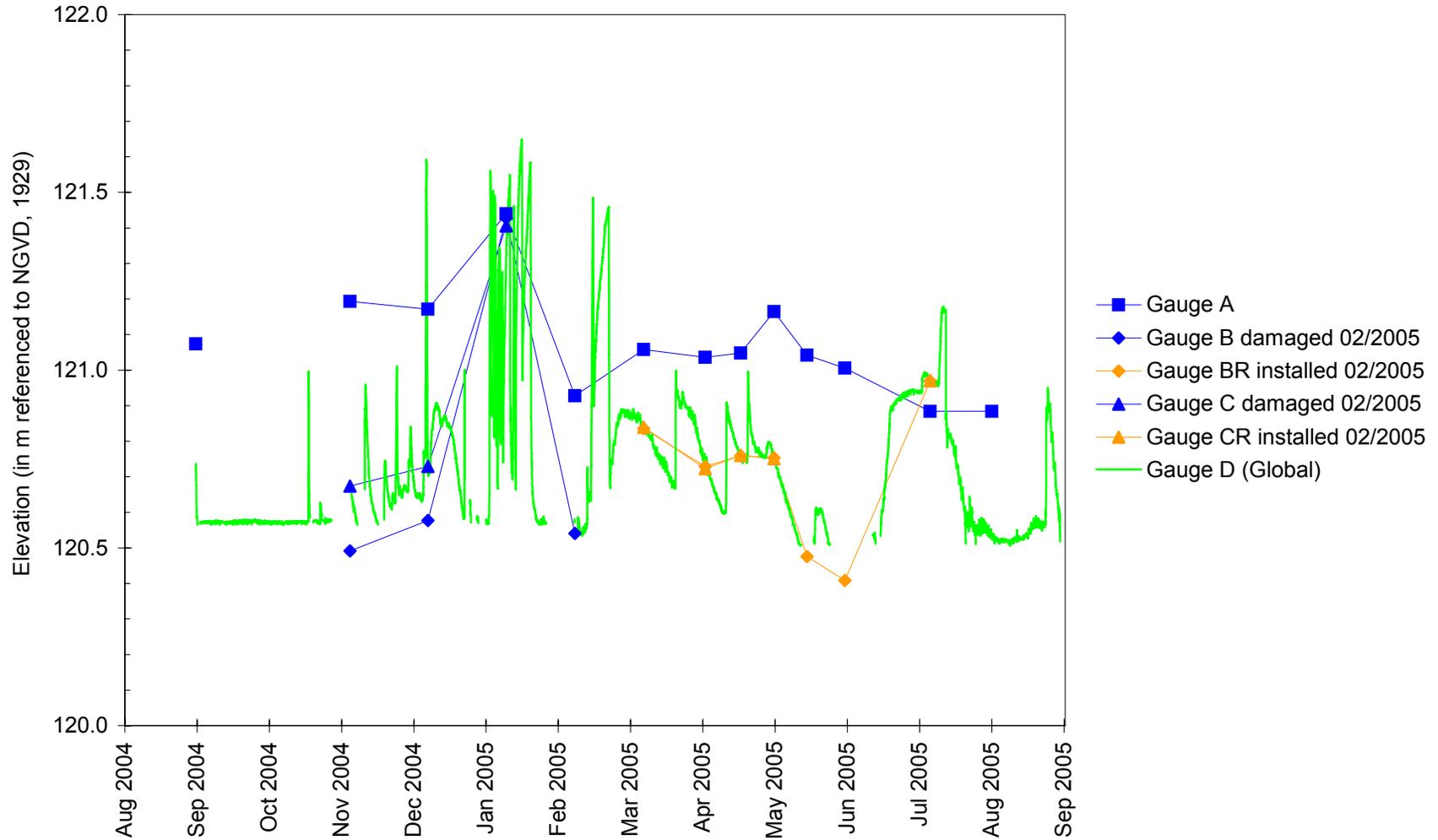
**Depth to Water**



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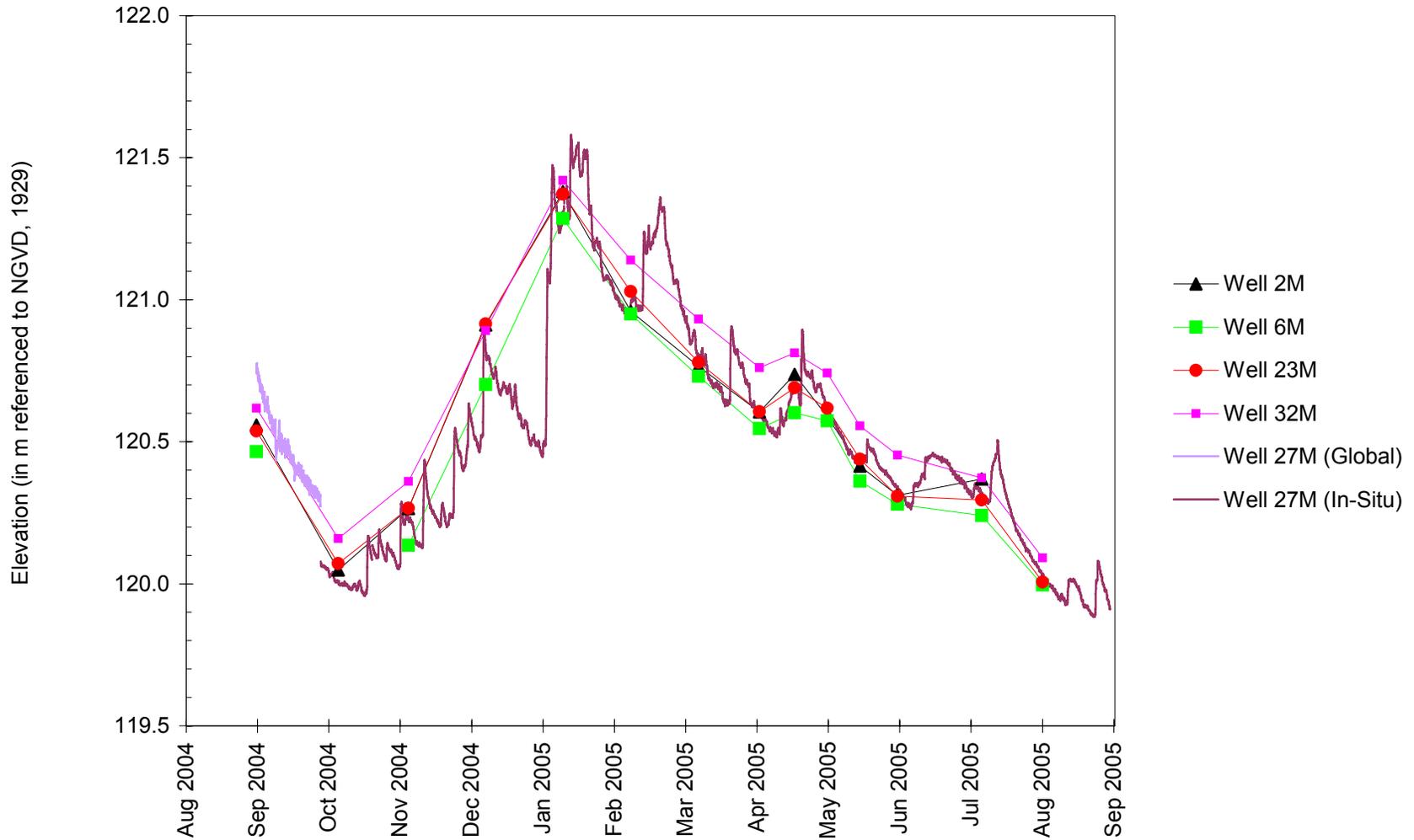
September 1, 2004 to September 1, 2005

## Water-Level Elevations



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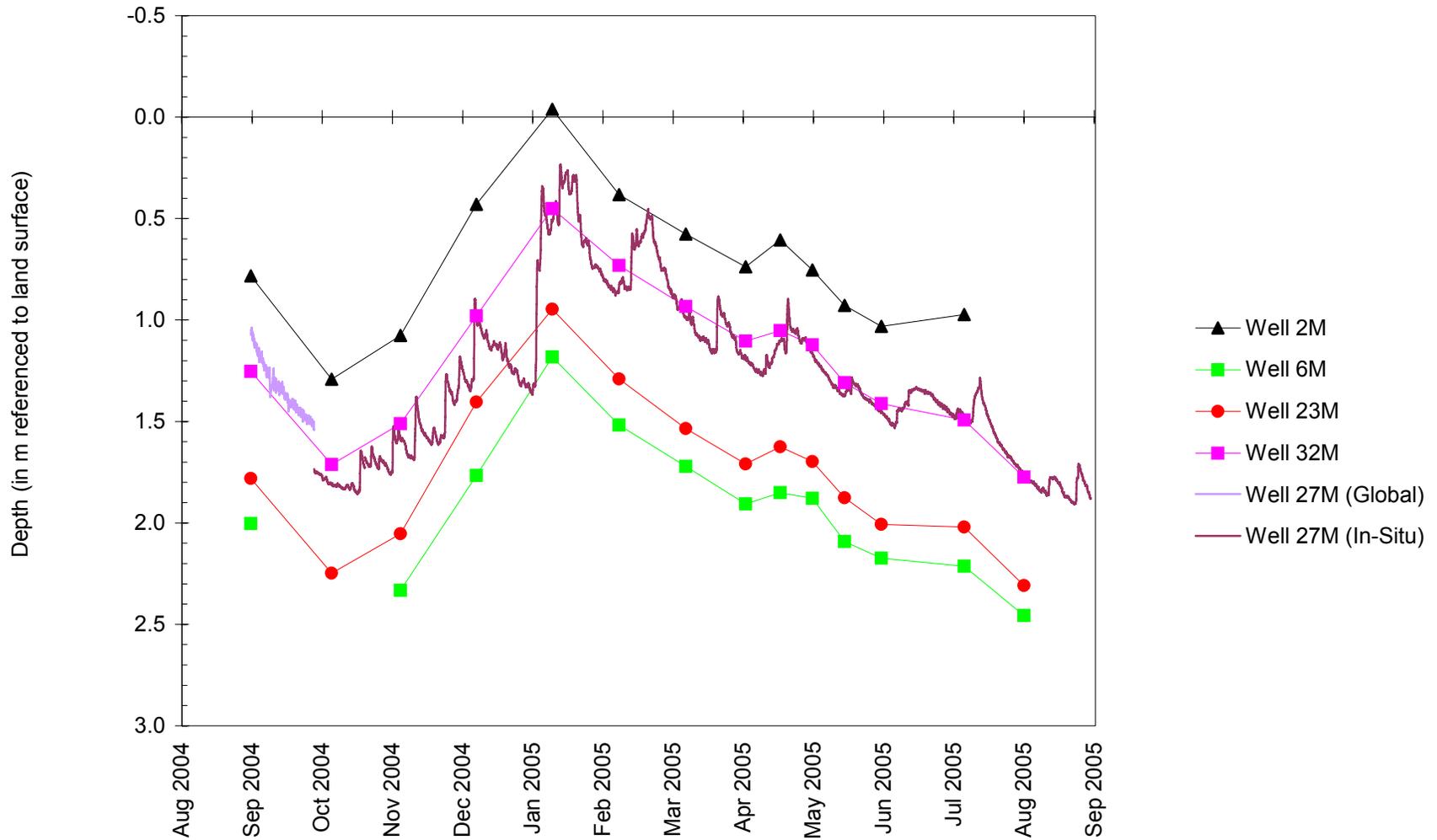
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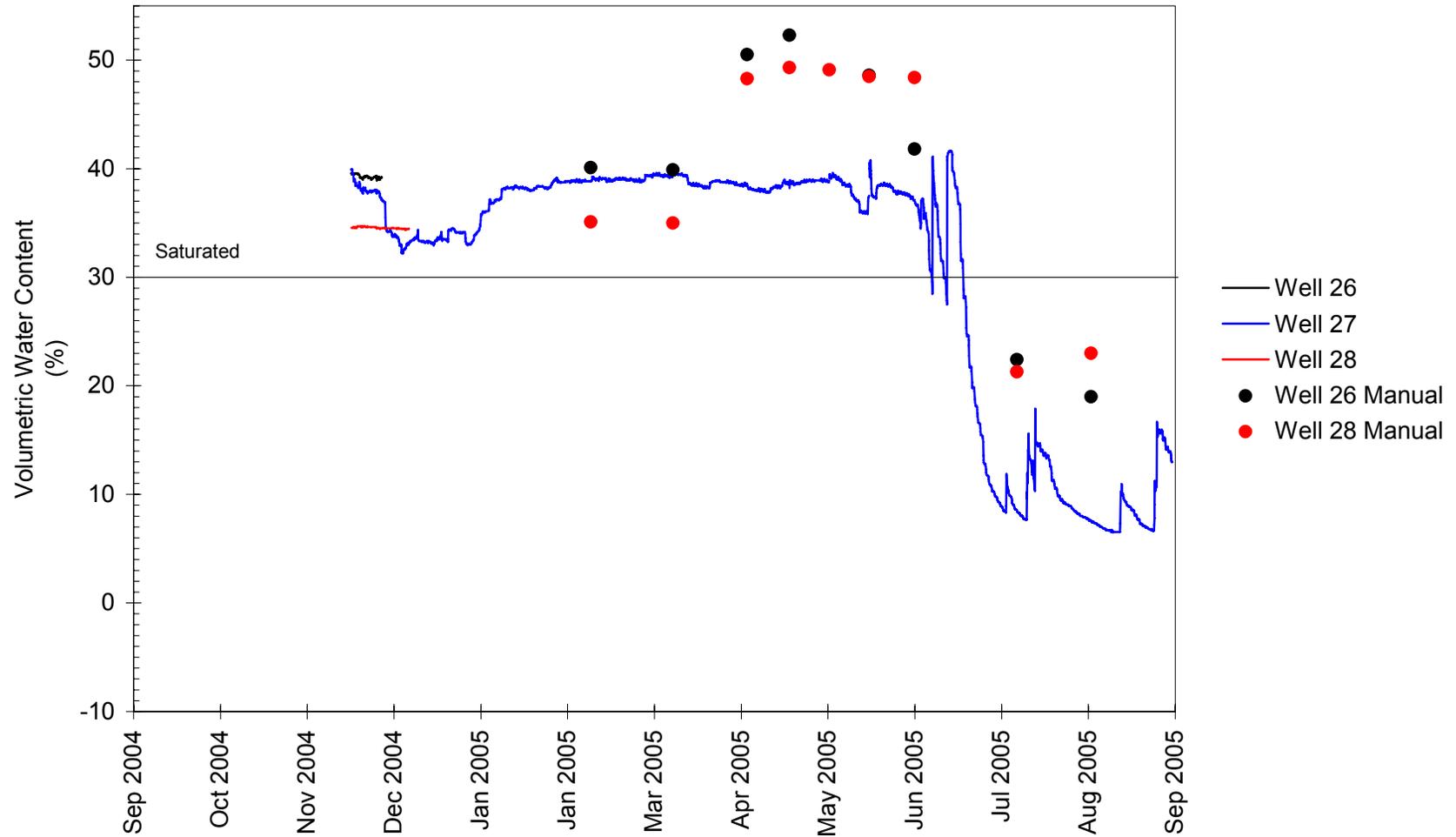
September 1, 2004 to September 1, 2005

## Depth to Water



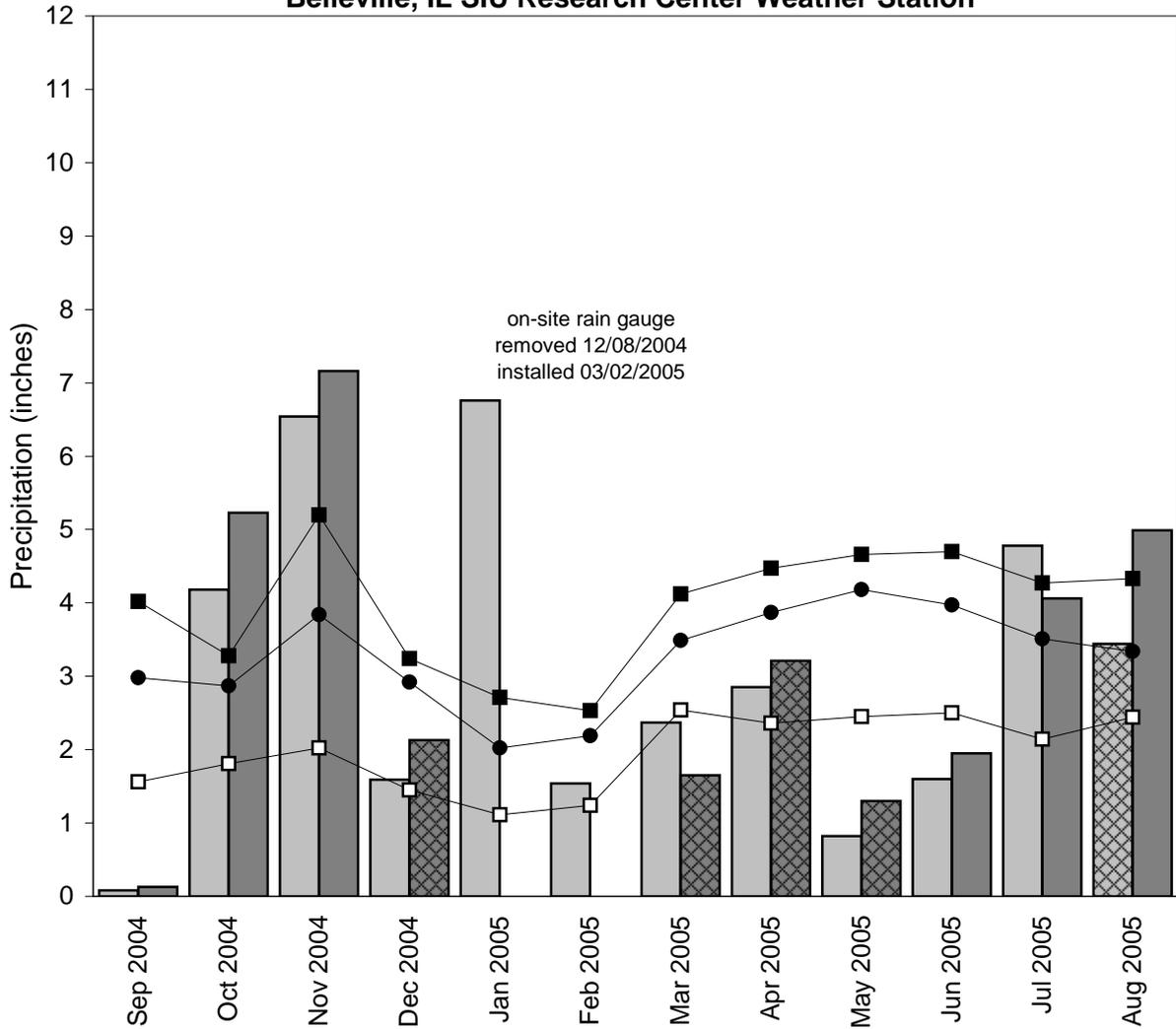
**Former Tiernan Property, New River Crossing Potential Wetland Compensation Site**  
**September 1, 2004 to September 1, 2005**

**Soil Moisture Content at Wells 26, 27 and 28**



**Former Tiernan Property, New River Crossing  
Potential Wetland Compensation Site  
September 2004 through August 2005**

**Total Monthly Precipitation Recorded On Site and at the  
Belleville, IL SIU Research Center Weather Station**



- monthly precipitation recorded at weather station (Midwestern Regional Climate Center)
- monthly precipitation recorded on site by ISGS
- 1971-2000 monthly average precipitation (National Water and Climate Center)
- 1971-2000 monthly 30% above average threshold (National Water and Climate Center)
- 1971-2000 monthly 30% below average threshold (National Water and Climate Center)
- ▨ data incomplete