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WOODFORD
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MC DONOUGH
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DOUGLAS
EDGAR
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SHELBY
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CLARK
CUMBERLAND
MONTGOMERY
CALHOUN
JERSEY
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EFFINGHAM
JASPER
CRAWFORD
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RICHLAND
LAWRENCE
MARION
CLINTON
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JEFFERSON
WASHINGTON
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WABASH
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ST. CLAIR
HAMILTON
WHITE
RANDOLPH
PERRY
FRANKLIN
JACKSON
SALINE
GALLATIN
WILLIAMSON
UNION
JOHNSON
POPE
HARDIN
ALEXANDER
PULASKI
MASSAC

FORMER TIERNAN PROPERTY, NEW RIVER CROSSING **ISGS #57**
POTENTIAL WETLAND COMPENSATION SITE
FAP 999
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–May 2001: Thirty-two S wells, ten VS 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.

- August 2001: One deep well was added to the center of the northern field to investigate deep ground-water fluctuations. Four additional deep wells were installed in November.

- April 2002: Three dielectric soil-moisture probes were added to the northern field, as well as a transducer in the channel draining the south wetland.

WETLAND HYDROLOGY CALCULATION FOR 2004

The area that satisfied the criteria for wetland hydrology for greater than 5% of the growing season was estimated to be 25.9 ac (10.5 ha), and was identical to the area that satisfied the criteria for greater than 12.5% of the growing season. The estimates for 2004 are based on the following factors.

- According to the Midwestern Climate Center, the median length of the growing season, as measured at the Belleville Weather Station, is 203 days (April 5 to October 25). Therefore, 5% of the growing season is 10 days and 12.5% of the growing season is 25 days.

- Precipitation during the monitoring period was 125% of normal. Despite above normal precipitation in September, dry conditions persisted onsite until above normal precipitation occurred in November 2003. Low evapotranspiration rates kept water levels reasonably stable throughout the winter despite precipitation values alternating between above and below normal. Below normal precipitation in April 2004 (34% of normal) caused a drop in water levels onsite. Abnormally high precipitation in May 2004 (210% of normal) resulted in water levels rebounding, then gradually falling with below normal precipitation in June. High summer evapotranspiration rates meant that the heavy rains in July only resulted in short lived increases in water levels.

- In 2004, water levels measured in wells 8S, 9S, 13S, 14S, 15S, 16S, 19S, 20S, 21S, 22S, 24S, 24VS, 25S, 25VS, 26S, 26VS, 27S, 27VS, 28S, 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 between 5% and 12.5% of the growing season. Surface-water stage data from Gauge D indicate that inundation occurred to an elevation of 120.880 m (395.588 ft) for a period sufficient to satisfy wetland

insufficient data to determine whether inundation at this elevation occurred for greater than 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 throughout May resulted in widespread flooding in the southern half of the site that gradually receded through the period of below normal precipitation in June.

- The hydrology of the northern half of the site (the former farm field) is dominated by precipitation ponding on the 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 of the soil column for nearly the entire period from mid-February to early June, confirming the water level readings in the adjacent wells.

PLANNED FUTURE ACTIVITIES

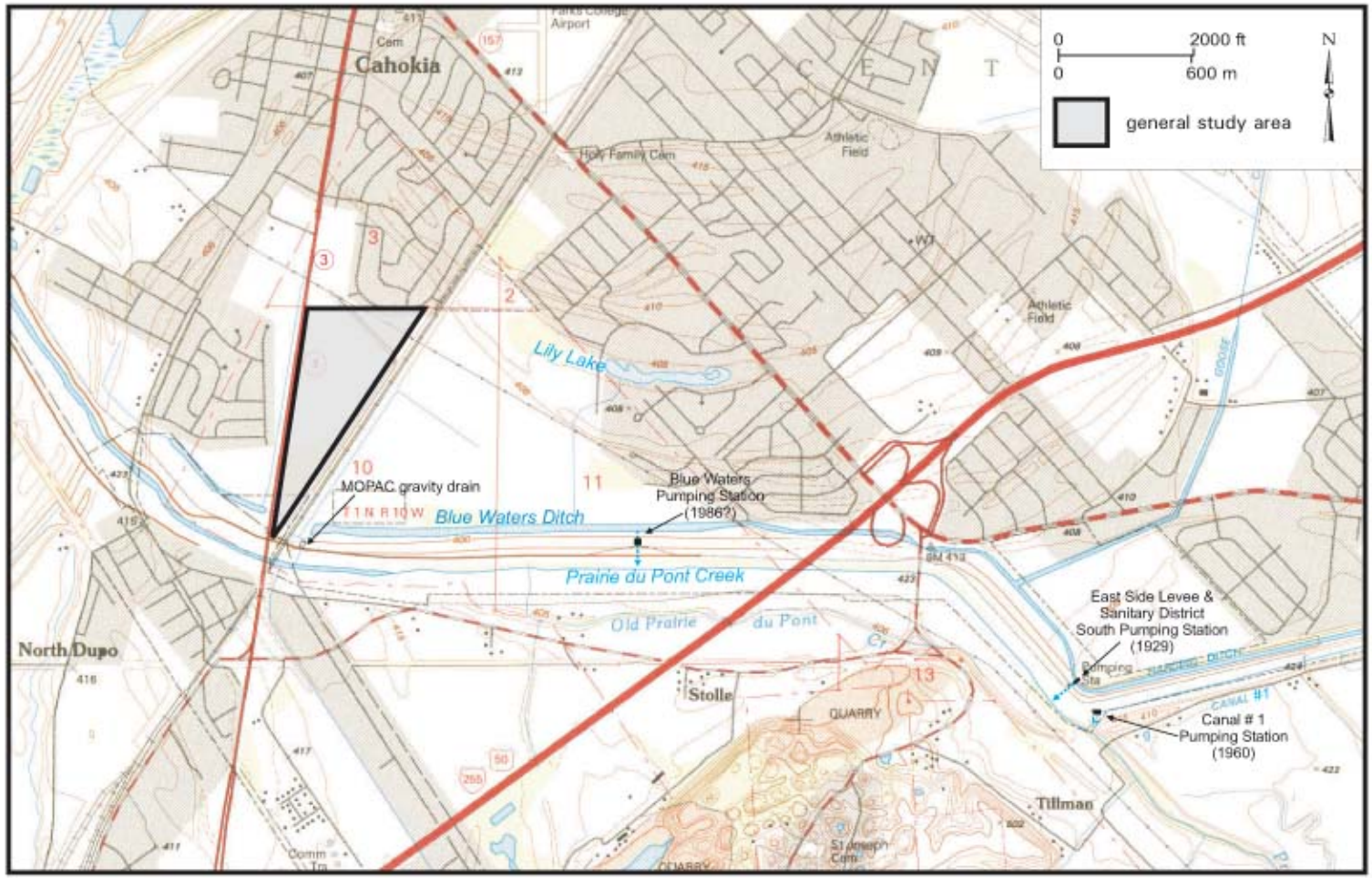
- A Level II hydrogeological characterization report is in preparation. Site suitability and recommendations regarding site design will be included.

- Monitoring will continue until no longer required by IDOT.

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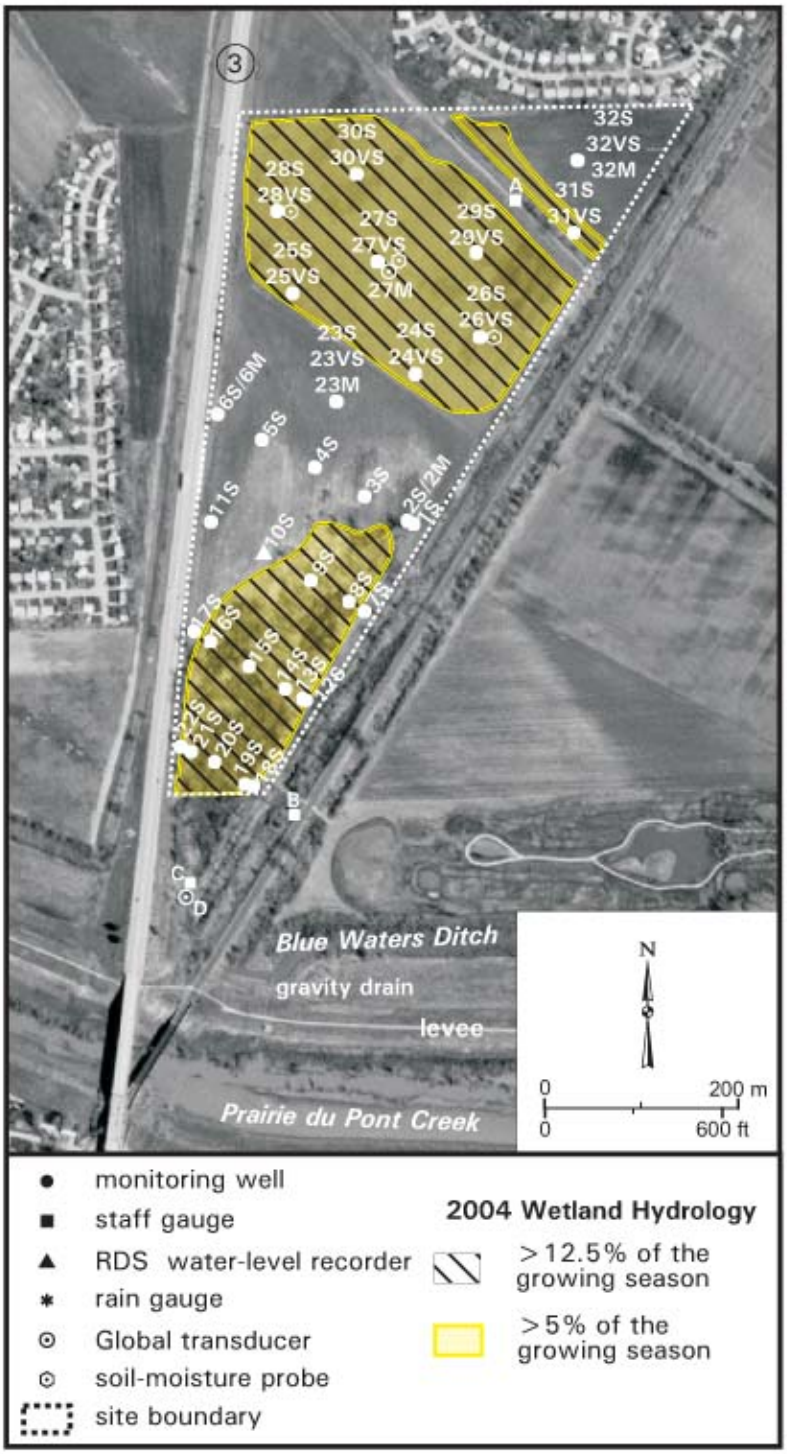
Former Tiernan Property, New River Crossing
Potential Wetland Compensation Site
(FAP 999)

Estimated Areal Extent of 2004 Wetland Hydrology

based on data collected between September 1, 2003 and September 1, 2004

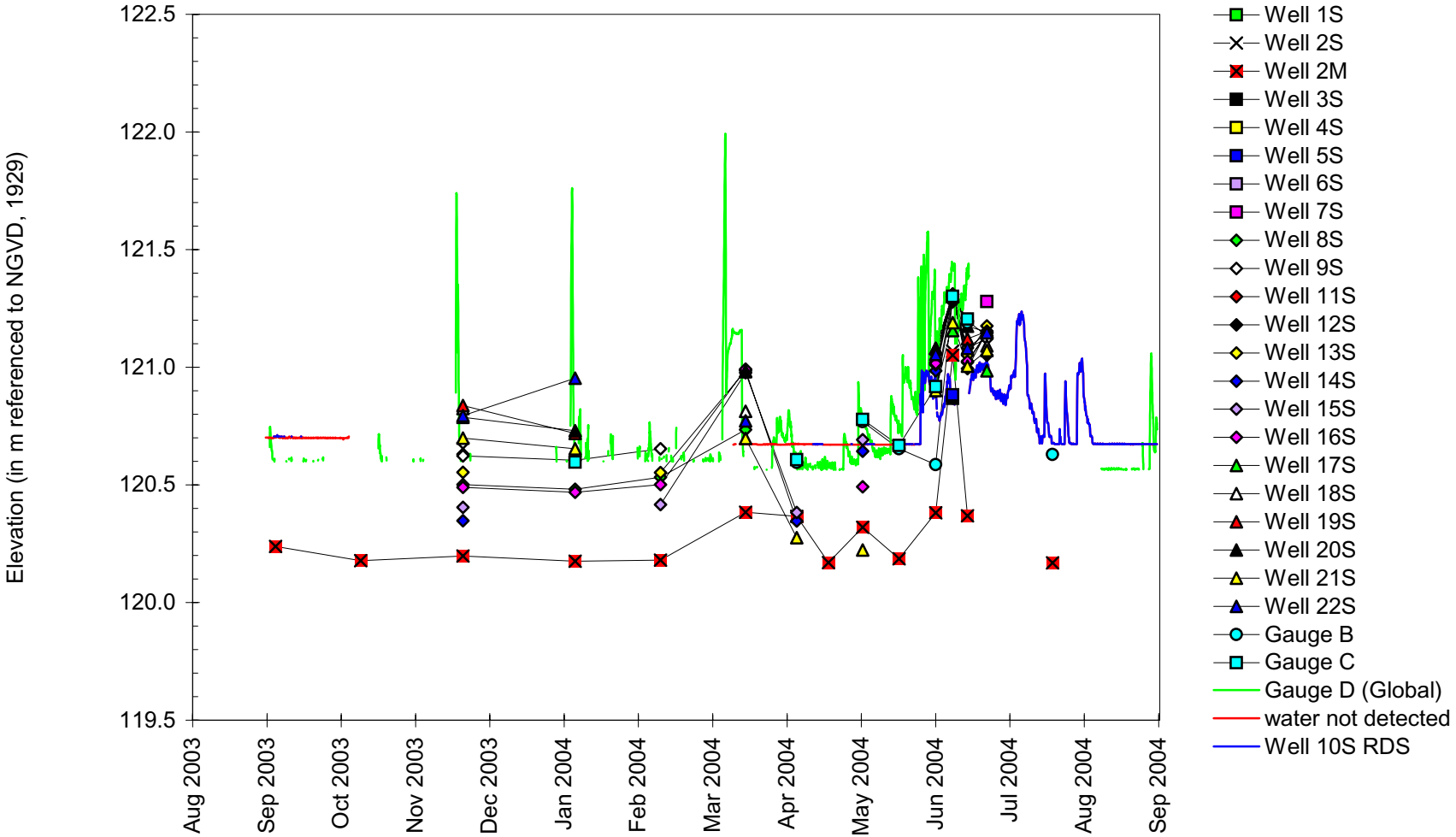
map based on USGS digital orthophotograph, Cahokia, SW quarter quadrangle
produced from 4/2/98 aerial photography (ISGS, 2000)



Former Tiernan Property, New River Crossing Potential Wetland Compensation Site

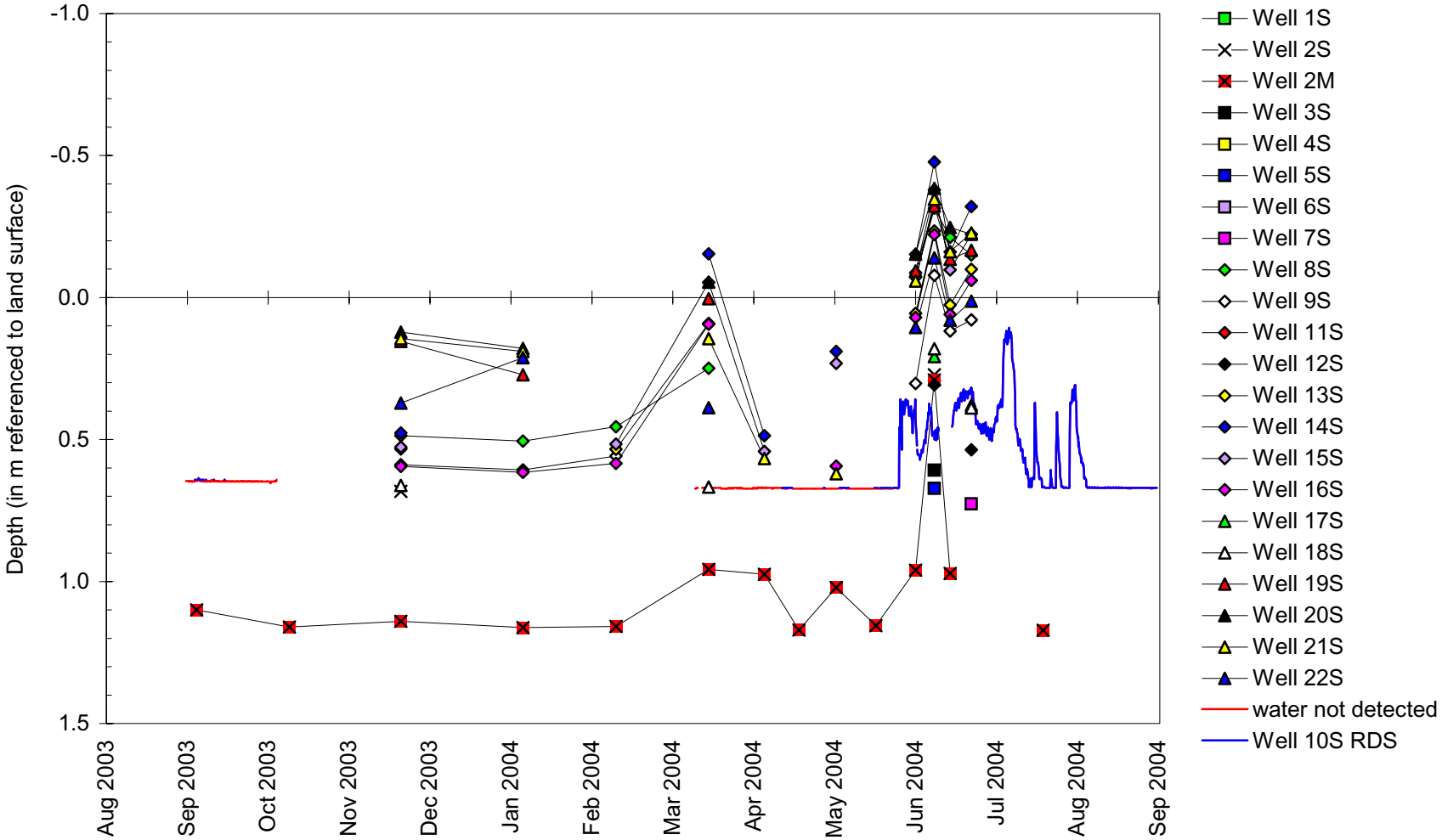
September 1, 2003 to September 1, 2004

Water-Level Elevations



Former Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2003 to September 1, 2004

Depth to Water



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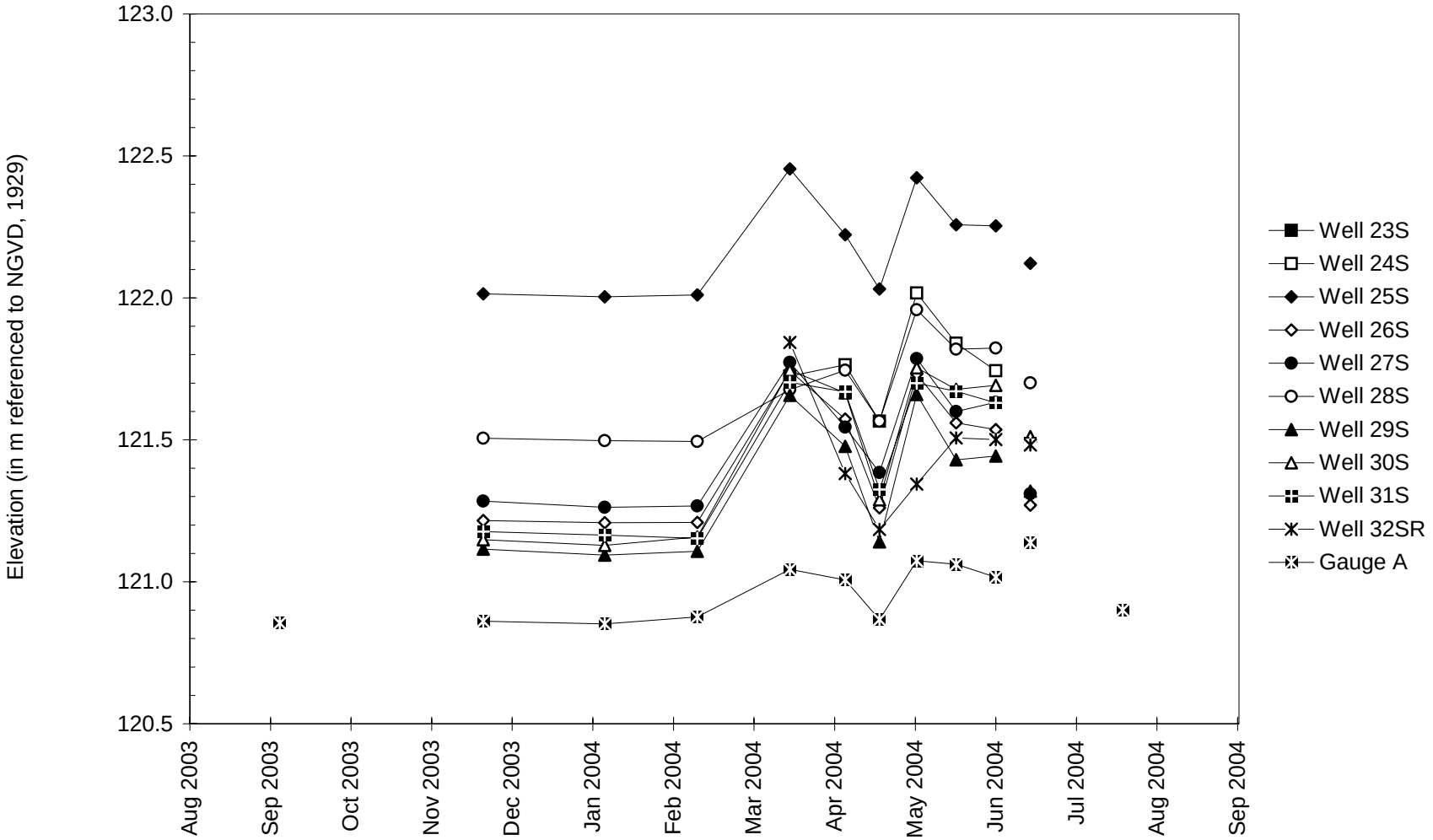
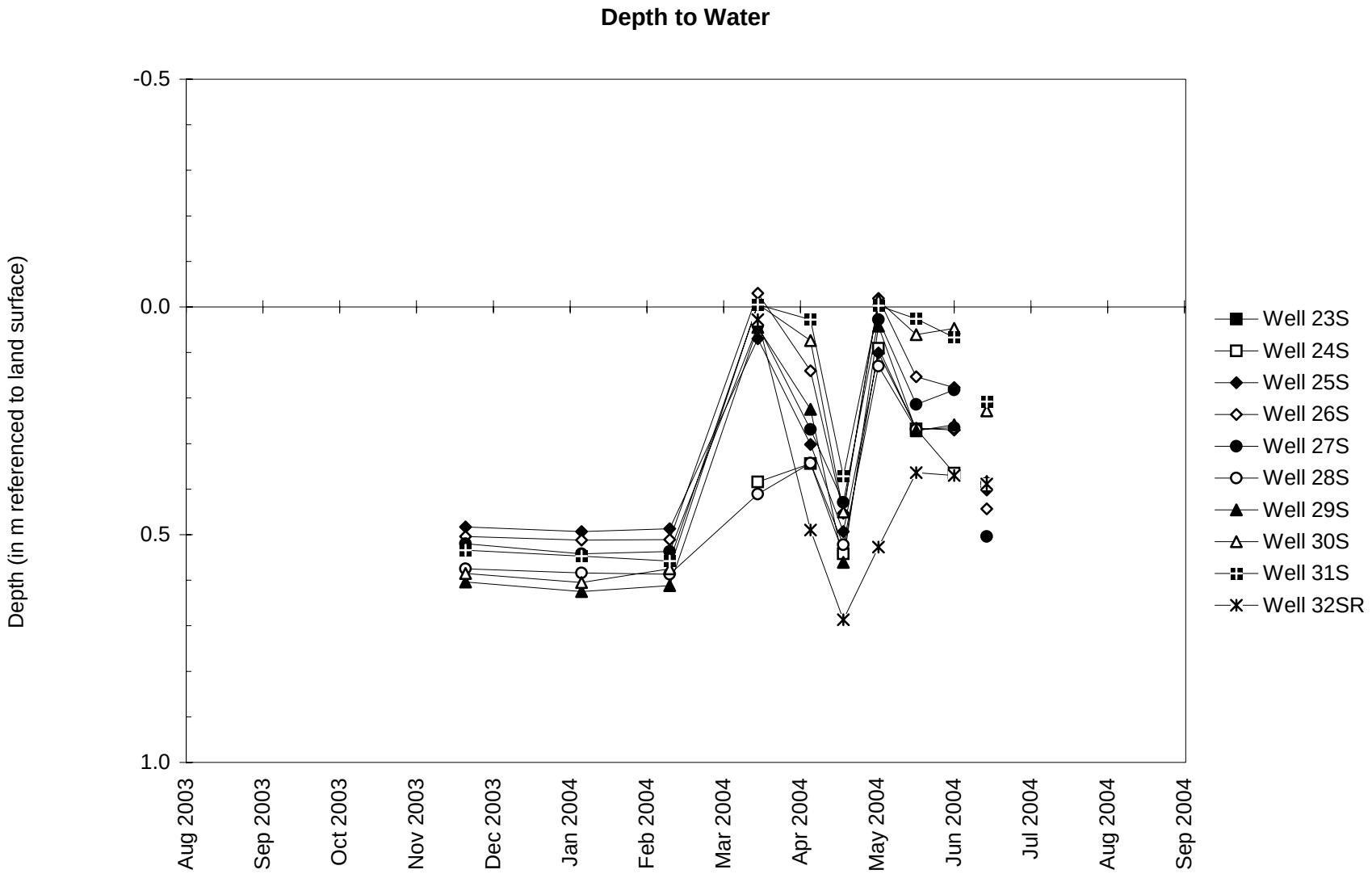
September 1, 2003 to September 1, 2004

Water-Level Elevations

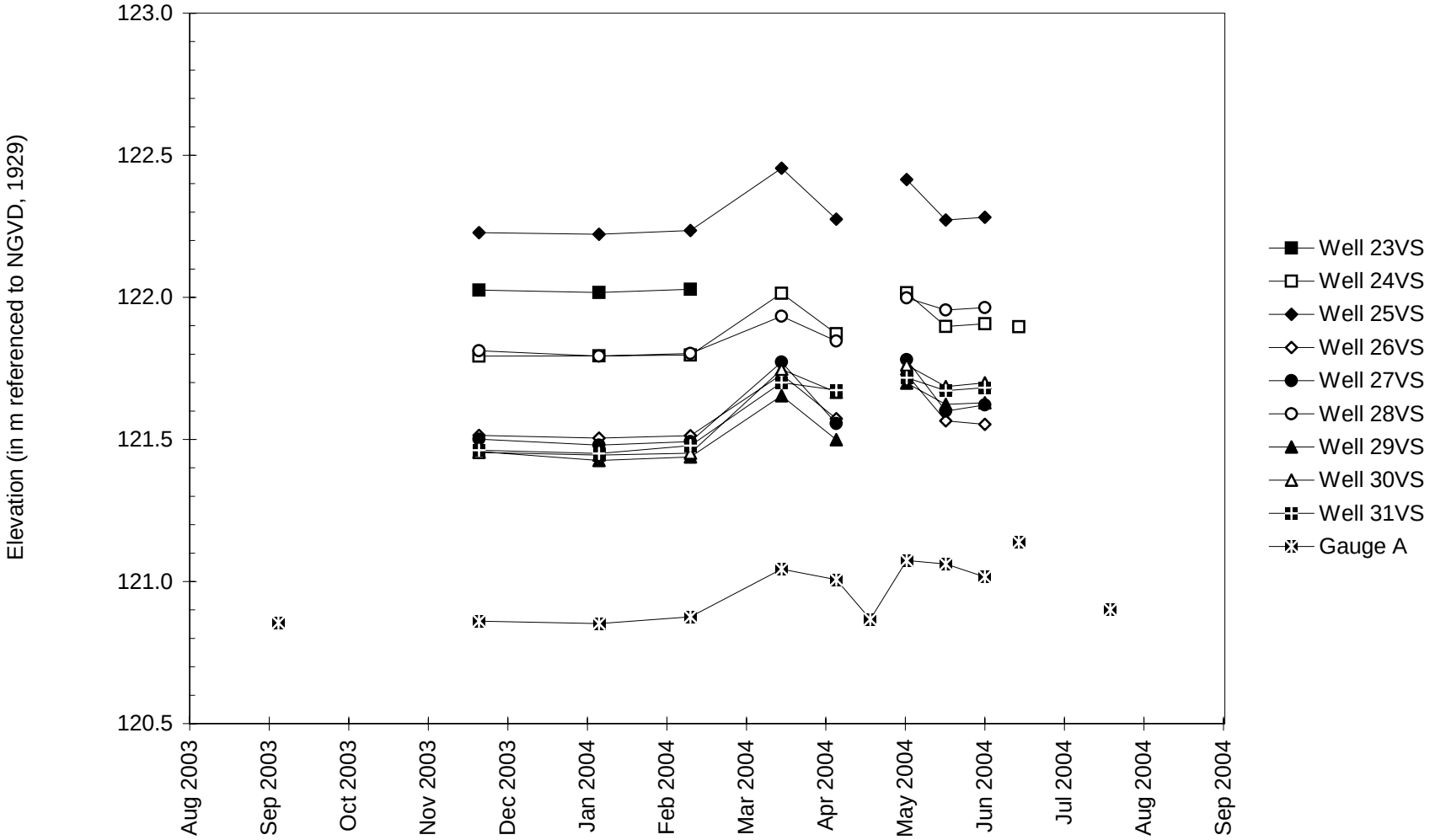


Former Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2003 to September 1, 2004

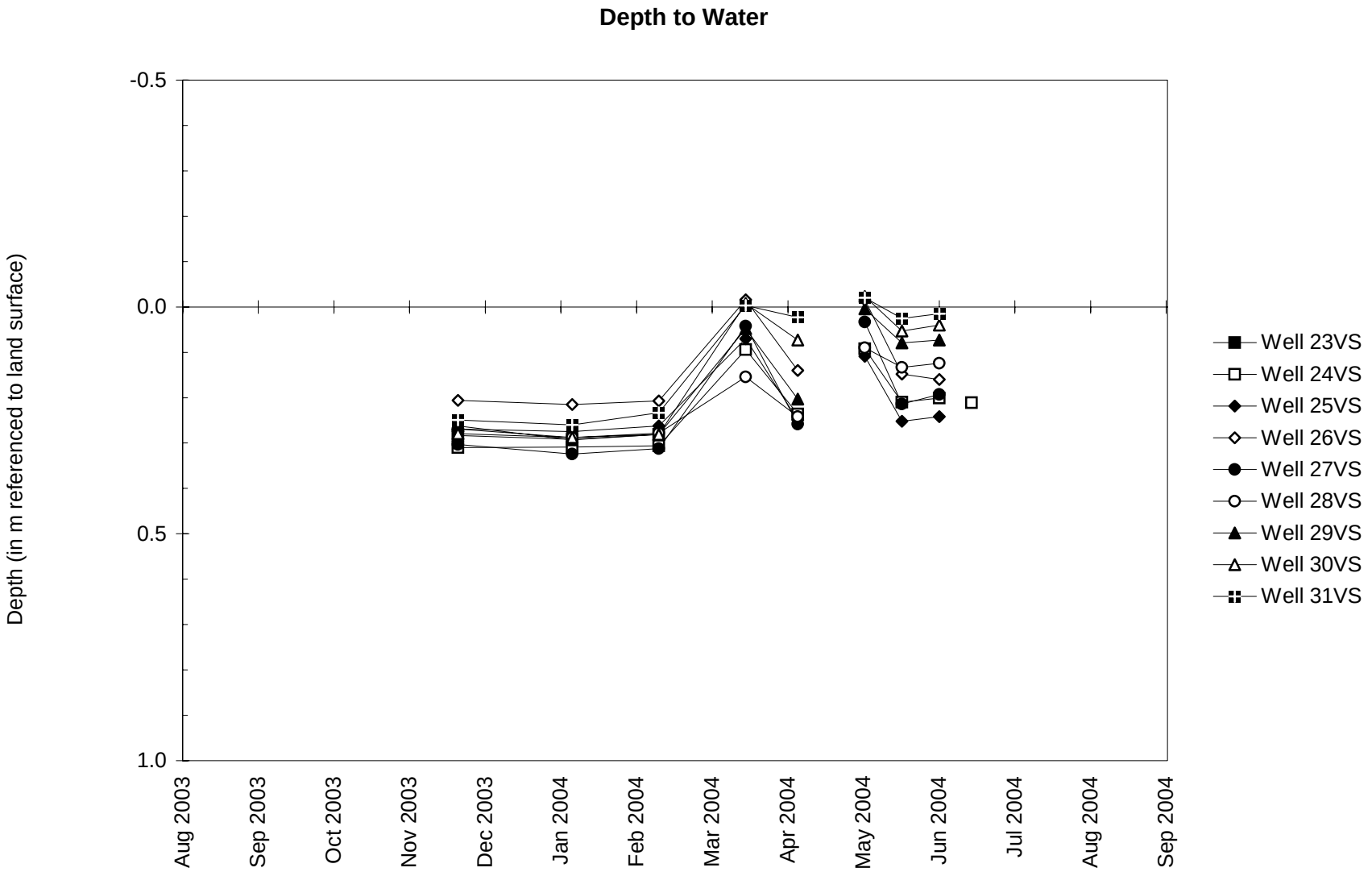


Former Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2003 to September 1, 2004

Water-Level Elevations

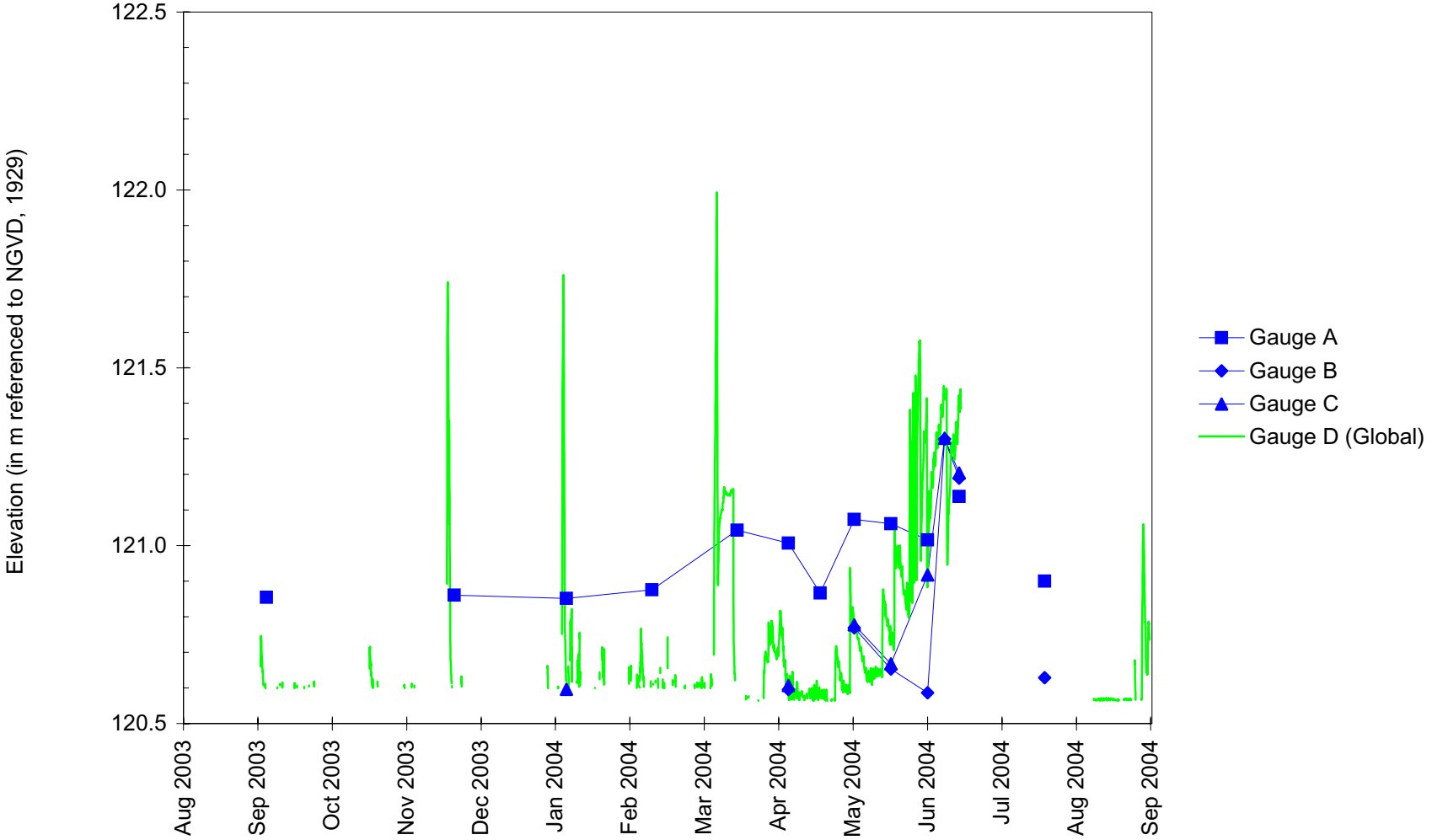


Former Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2003 to September 1, 2004



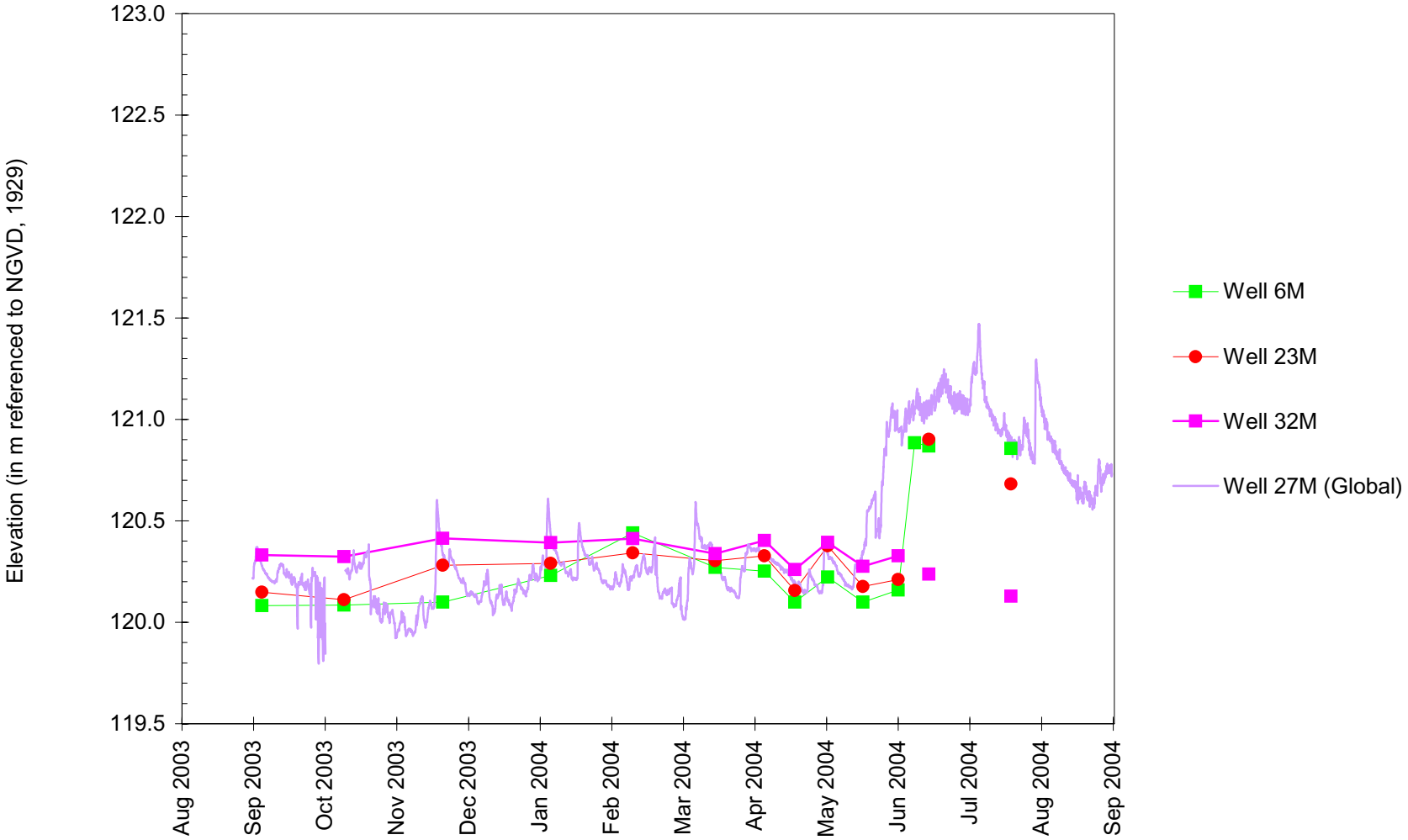
Former Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2003 to September 1, 2004

Water-Level Elevations



Former Tiernan Property, New River Crossing Potential Wetland Compensation Site
September 1, 2003 to September 1, 2004

Water-Level Elevations



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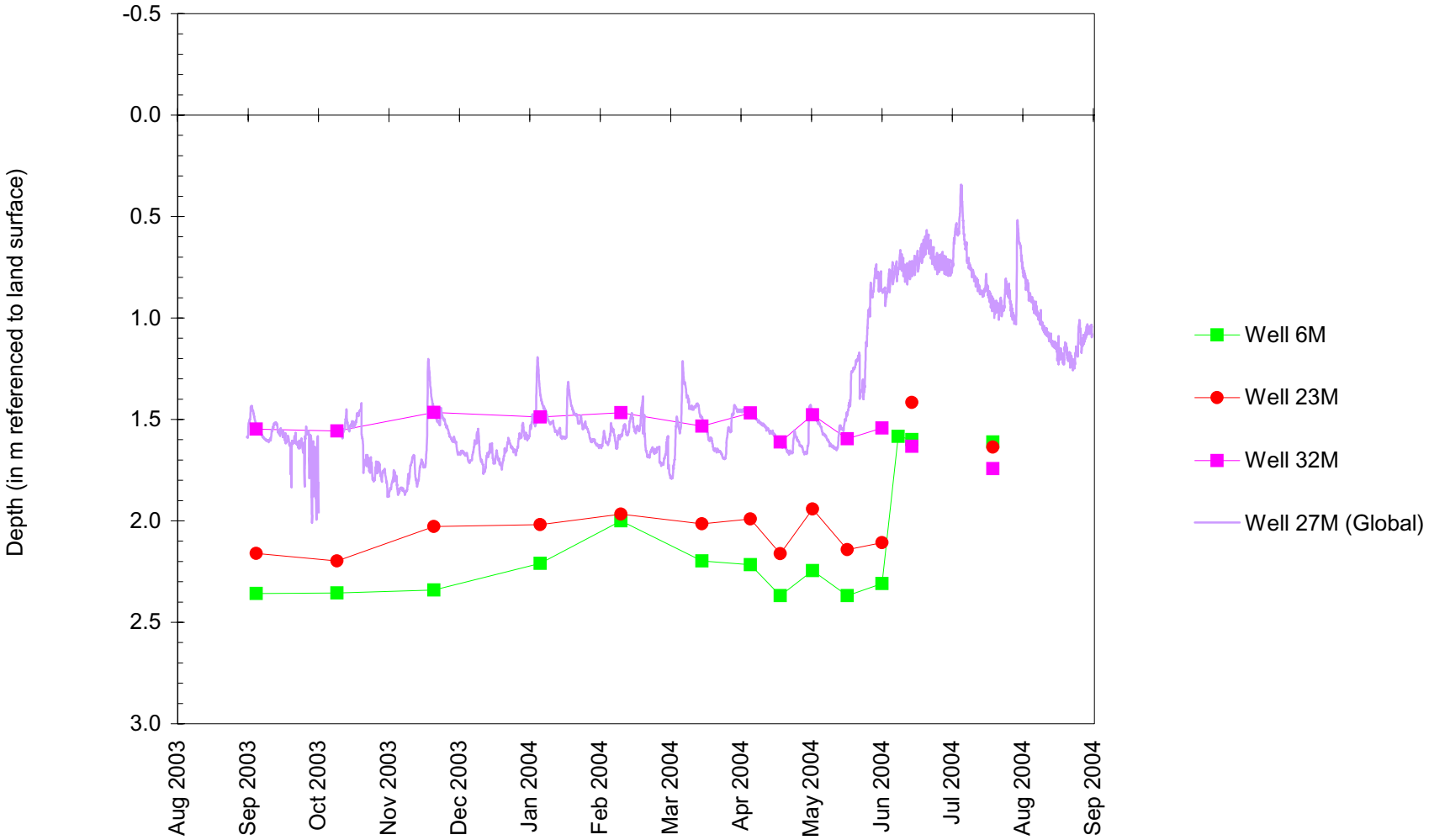
September 1, 2003 to September 1, 2004

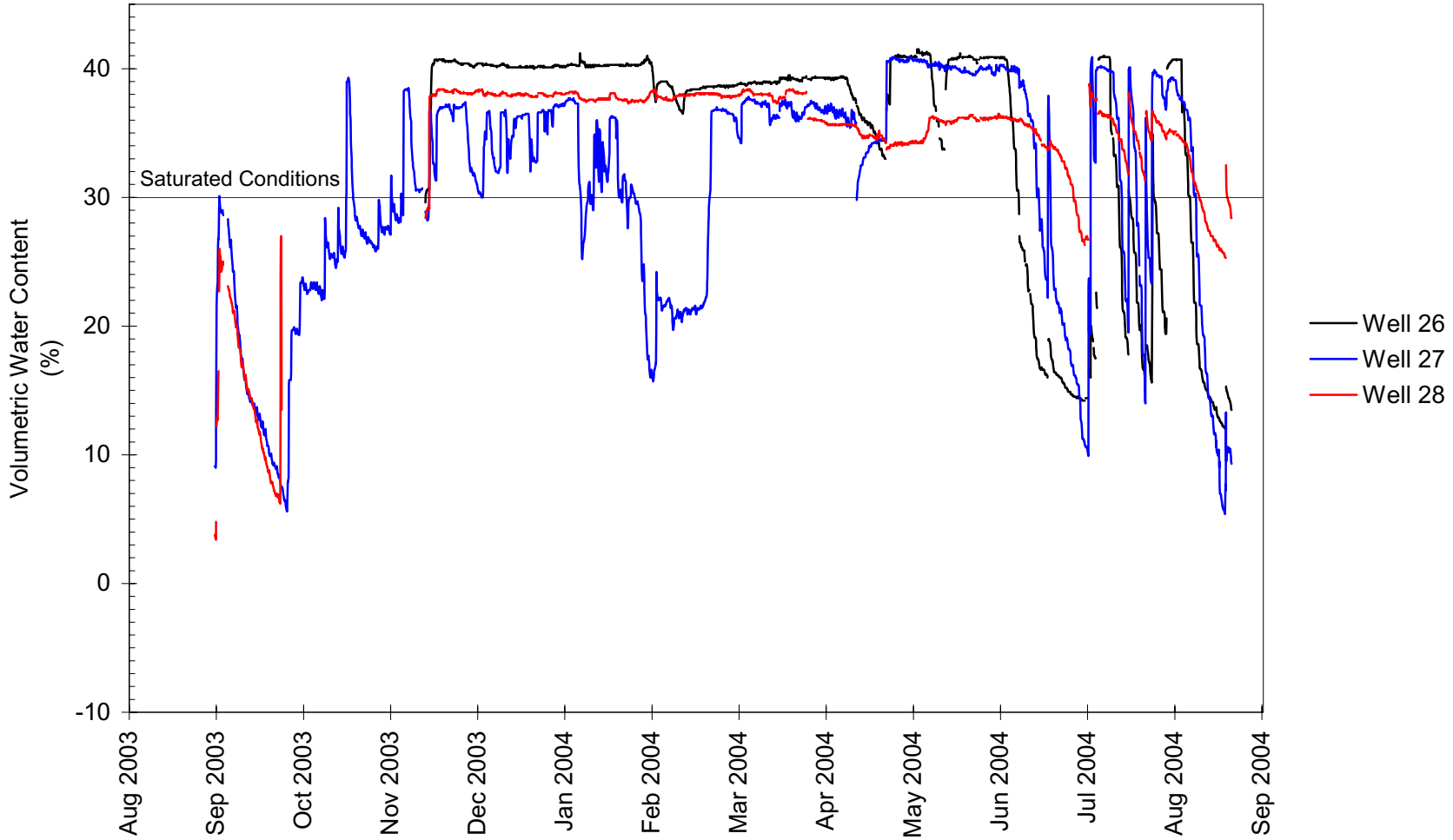
Depth to Water



Former Tiernan Property, New River Crossing Potential Wetland Compensation Site

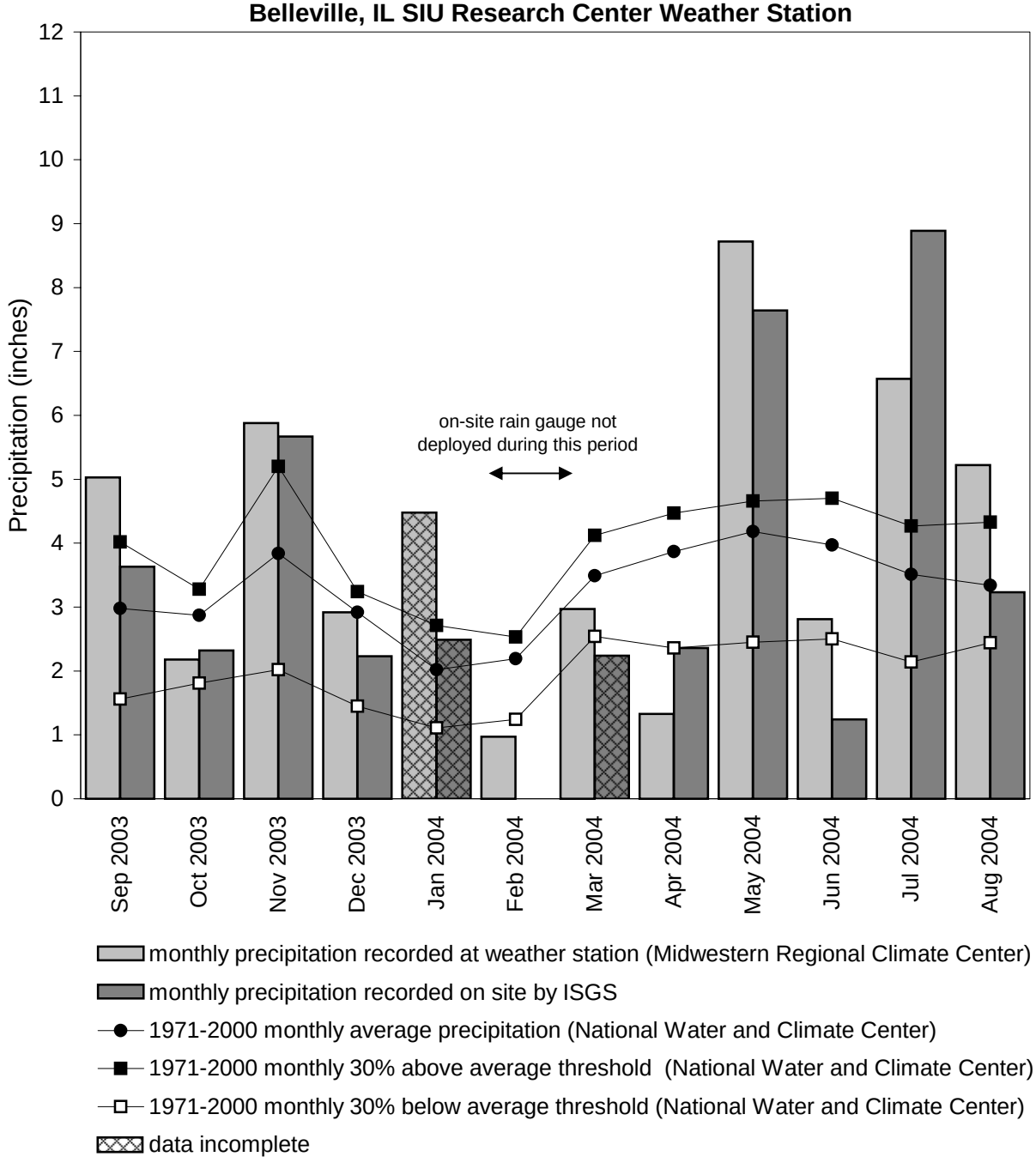
September 1, 2003 to Septermber 1, 2004

Soil Moisture Content at Wells 26, 27 and 28



Former Tiernan Property, New River Crossing
Potential Wetland Compensation Site
September 2003 through August 2004

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



Graph last updated October 1, 2004