



**FREEPORT BYPASS WEST
POTENTIAL WETLAND COMPENSATION SITE 6W**

ISGS #72

FAP 301

Stephenson County, near Freeport, Illinois

Primary Project Manager: Kelli D. Weaver

Secondary Project Manager: not assigned

SITE HISTORY

- Fall 2003: ISGS was tasked by IDOT to monitor wetland hydrology, and to perform a Level II hydrogeologic assessment of the potential wetland mitigation at this site.
- December 2003: ISGS installed 12 soil-zone monitoring wells, one deep monitoring well, a staff gauge, and two surface-water data loggers. Locations of monitoring wells and the data loggers were determined with a GPS unit by ISGS, and a topographic survey of the site was conducted by IDOT during the fall of 2003.

WETLAND HYDROLOGY CALCULATION FOR 2004

We estimate that the total area that satisfied wetland hydrology criteria (U.S. Army Corps of Engineers 1987) for greater than 5% of the growing season was 26.17 ac (10.59 ha). In addition, the area that satisfied wetland hydrology criteria for greater than 12.5% of the growing season in 2004 was 25.9 ac (10.5 ha). The site, as defined by a boundary line drawn on an IDOT air photo, is 27 ac (10.9 ha) in size. These estimates are based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Freeport, Illinois, is April 13 and the season lasts 183 days; 5% of the growing season is 9 days, and 12.5% of the growing season is 23 days.
- Total precipitation for the monitoring period of September 2003 to August 2004 was 116% of normal. Despite drier than normal conditions for the months of September and October 2003, and January, February and April 2004, the near- to above-normal precipitation in November and December 2003, and March, and May through August 2004, led to wetter than typical conditions during the 2004 growing season.
- In 2004, water levels measured in all soil-zone wells on the site (1S, 2S, 2VS, 3S, 4S, 5S, 5VS, 6S, 7S, 8S, 8VS, 9S, and 10S) satisfied wetland hydrology criteria for greater than 5% of the growing season. Water levels in all aforementioned wells, except for well 4S, also indicated saturation above or within 30 cm (1 ft) of the ground surface for a period greater than 12.5% of the growing season.
- Data from the data logger at Gauge B indicated that flooding from the Pecatonica River reached an on-site maximum elevation of 231.85 m (760.66 ft), and showed flooding at an elevation of approximately 231.40 m (759.17 ft) for a duration longer than 5% of the growing season. Water levels at Gauge B remained at an elevation of 230.450 m (756.07 ft) for a period greater than 12.5% of the growing season. Analysis of historical flood heights is pending.
- Limitations of the wetland hydrology determination are as follows:
 - The map used to determine the acreage of the site is a digital orthophoto with estimated

site boundaries.

- The area of wetland hydrology was measured planimetrically using a digitally produced topographic contour map with 0.30 m (1 ft) intervals provided by IDOT District 2. The acreage polygon generated from the topographic map was then superimposed upon the digital topographic map used for the figure in this report.

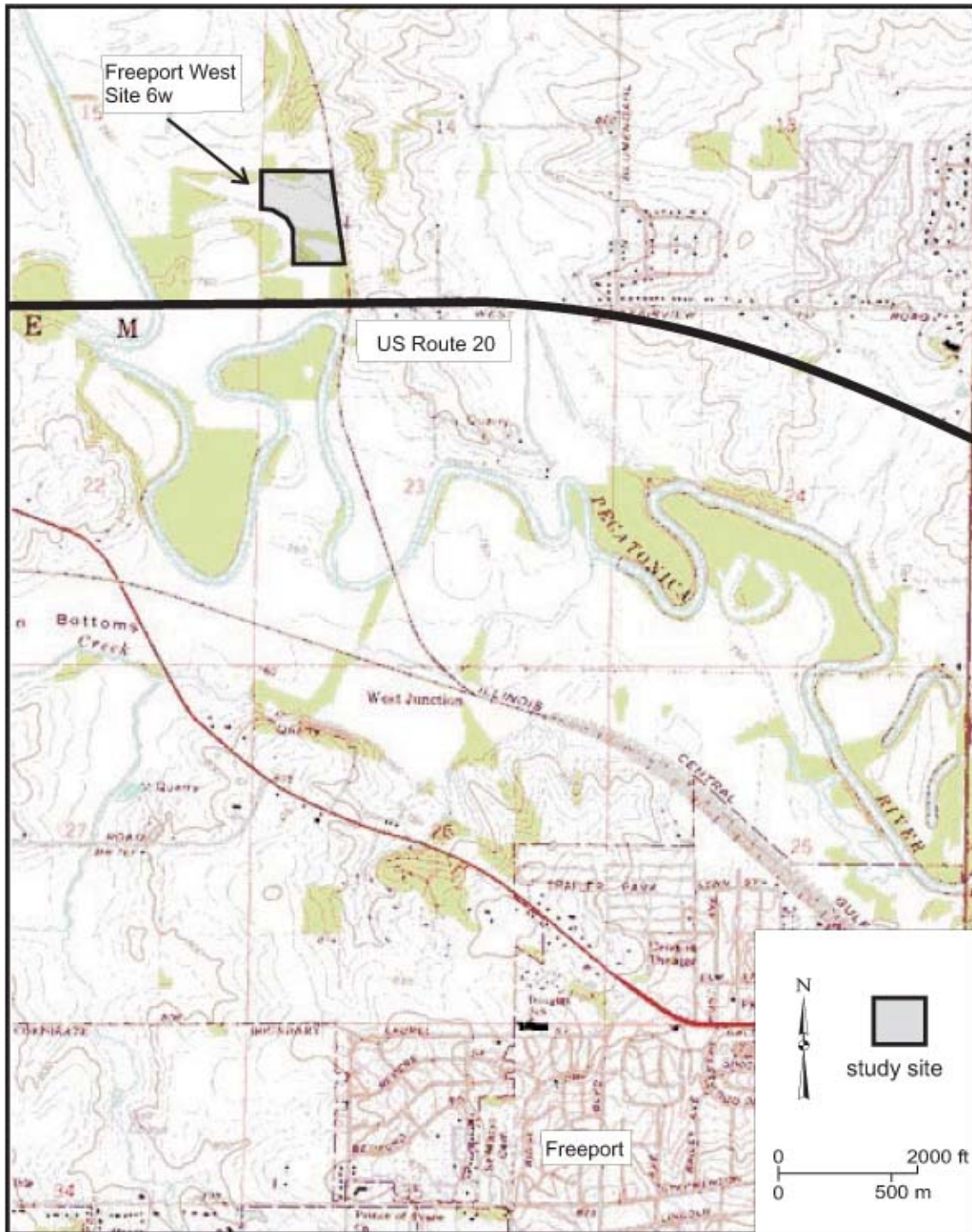
PLANNED FUTURE ACTIVITIES

- Additional shallow-water monitoring wells will be added to better delineate wetland hydrology.
- A Level II hydrogeological characterization report is in preparation.
- Monitoring is expected to continue until no longer required by IDOT.

Freeport Bypass West Wetland Compensation Site 6W (FAS 301)

General Study Area and Vicinity

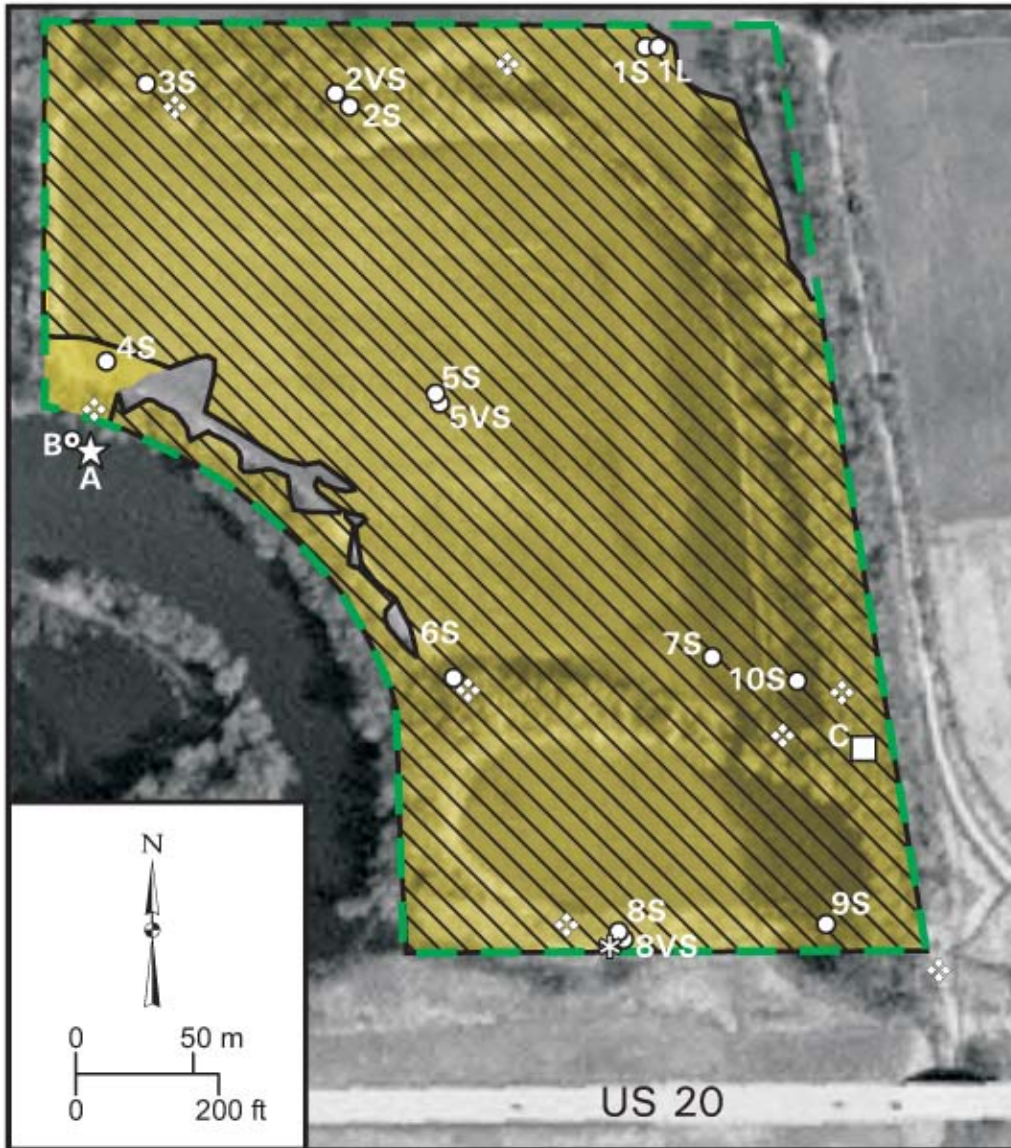
from the USGS Topographic Series, Freeport West, II 7.5 minute Quadrangle (USGS 1978)
contour interval is 10 feet.






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Estimated Areal Extent of 2004 Wetland Hydrology

based on data collected between September 1, 2003 and September 1, 2004
map based on USGS DOQ, Freeport East NW Quadrangle (1998-1999)

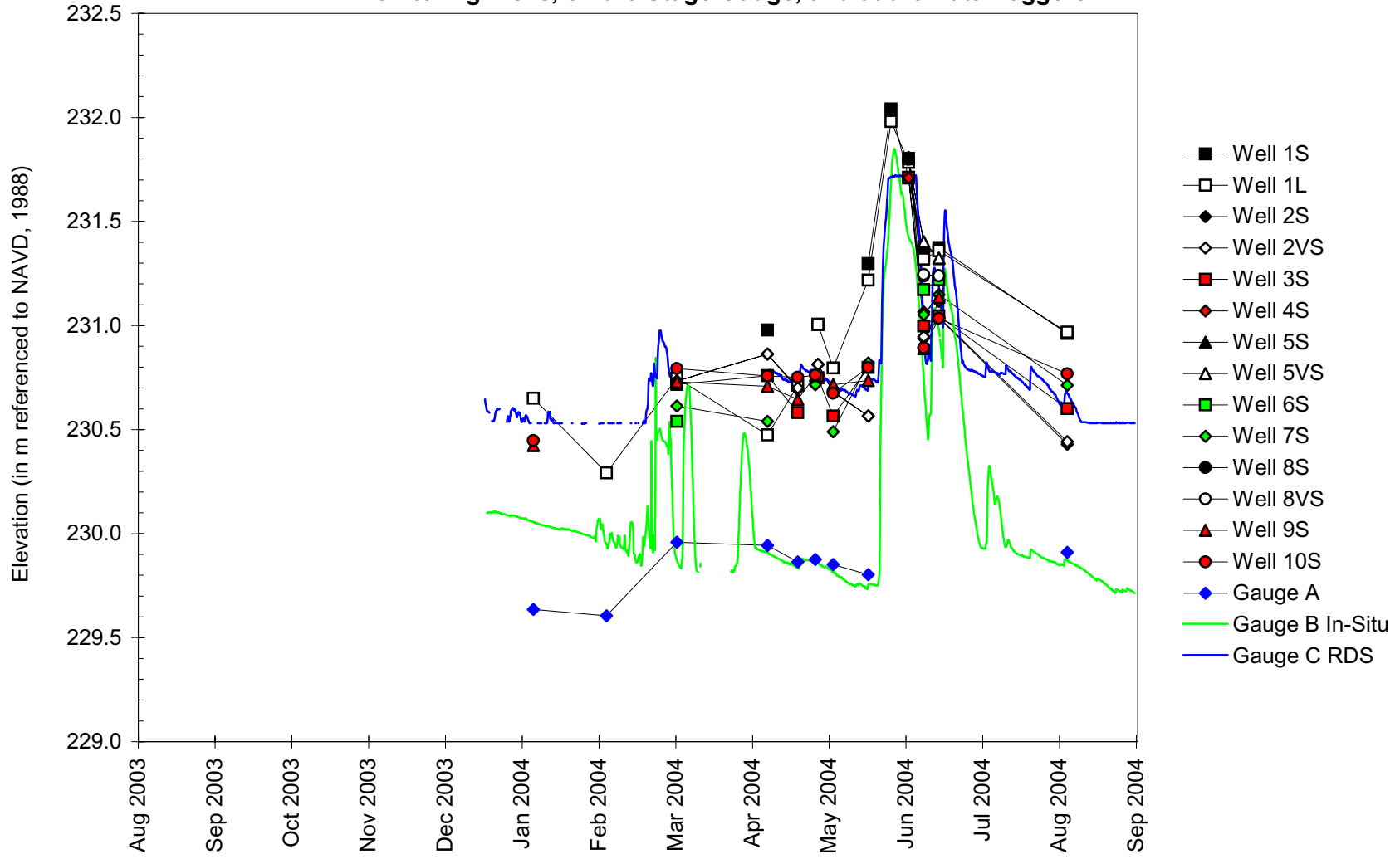


- | | |
|------------------------------|---|
| ○ ISGS monitoring well | 2004 Wetland Hydrology |
| □ Ecotone data logger |  > 12.5% of the growing season |
| ☆ Stage gauge |  > 5% of the growing season |
| ⊙ Global pressure transducer |  estimated areal extent of site boundary |
| ◇ ISGS benchmark | |

Freeport Bypass West Potential Wetland Compensation Site 6W

September 1, 2003 to September 1, 2004

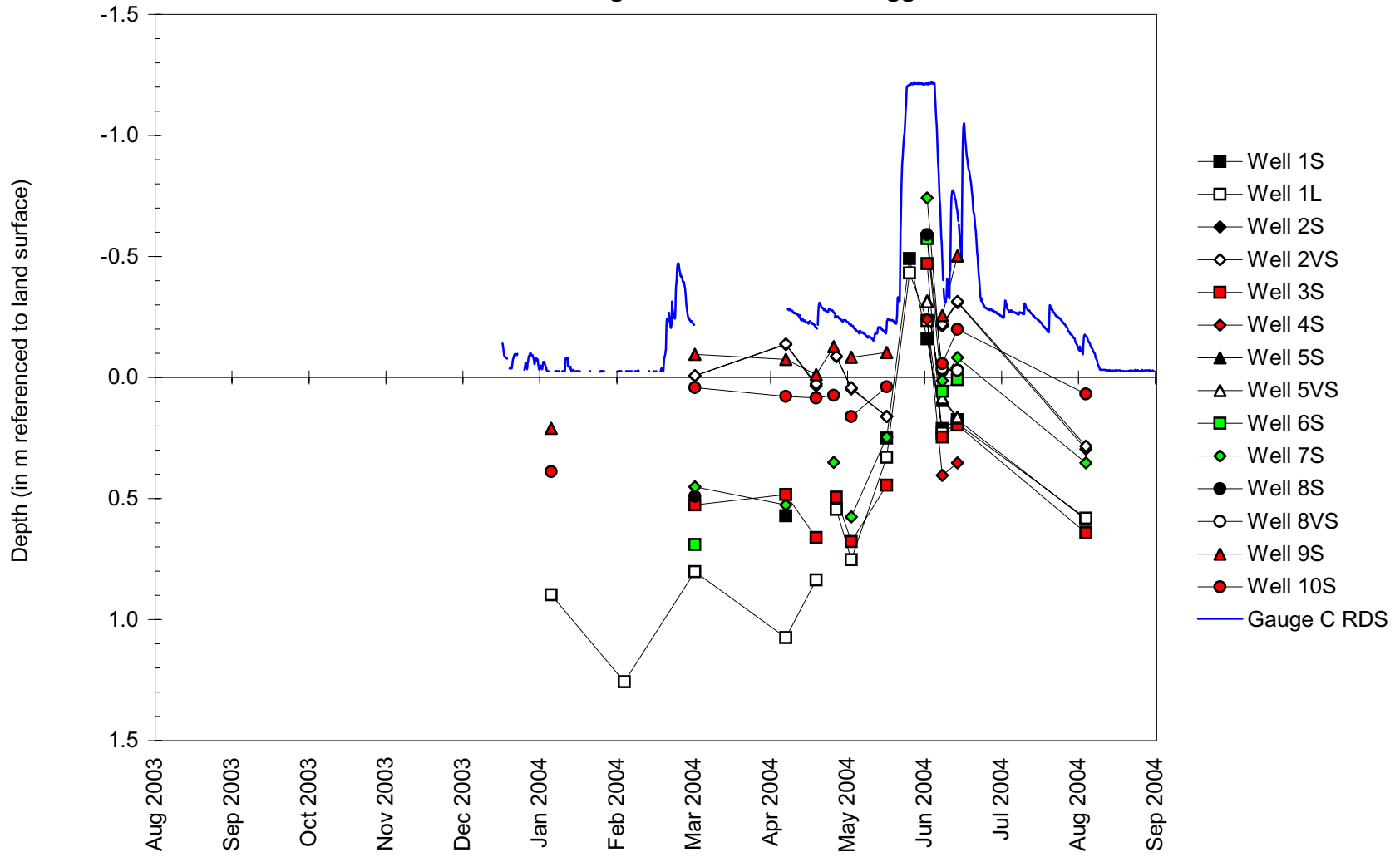
Water-Level Elevations in Monitoring Wells, on the Stage Gauge, and at the Data Loggers



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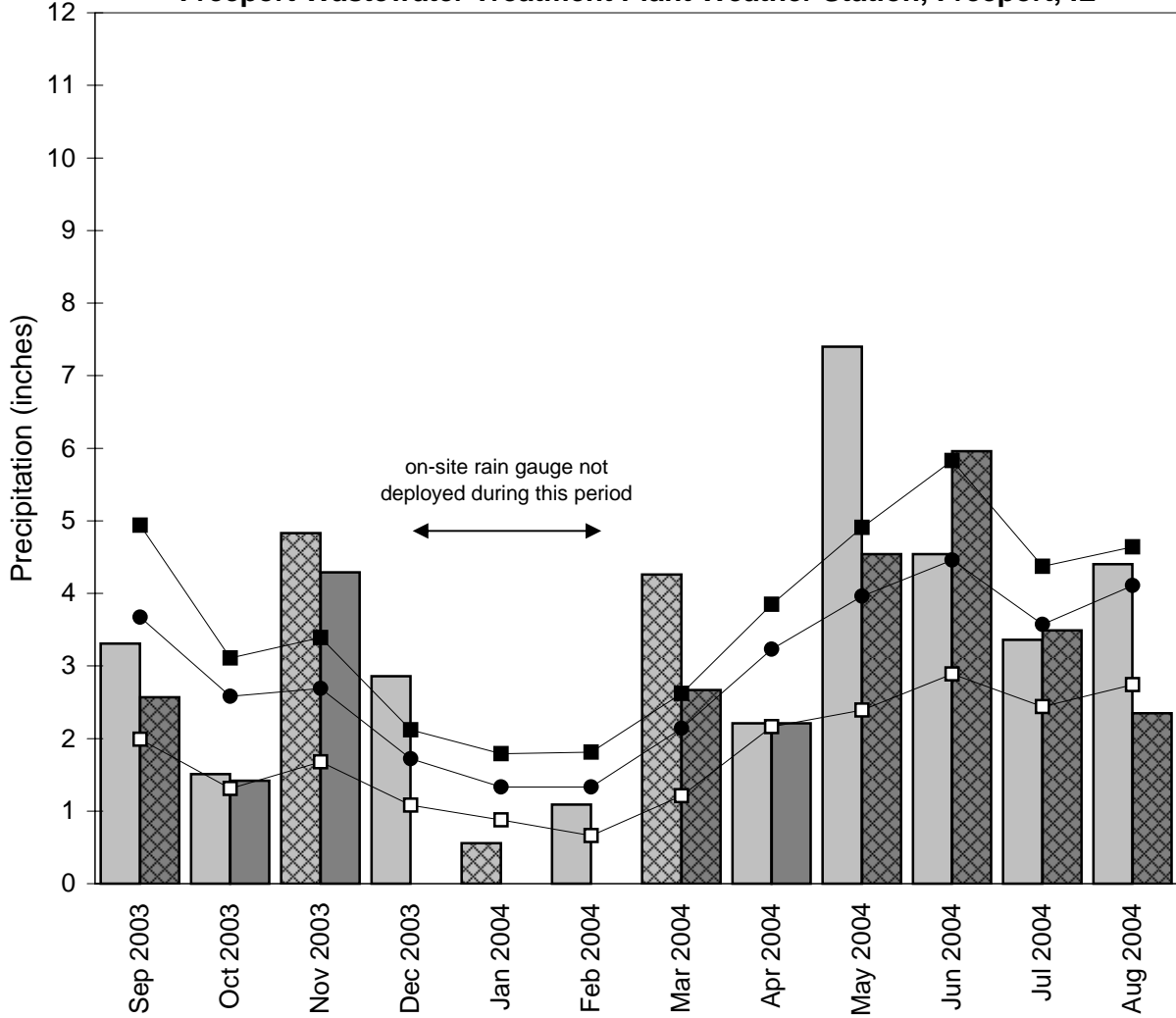
September 1, 2003 to September 1, 2004

Depth to Water in Monitoring Wells and the Data Loggers



Freeport Bypass West Potential Wetland Compensation Site 6W September 2003 through August 2004

**Total Monthly Precipitation Recorded At Site 8E and 6W and at the
Freeport Wastewater Treatment Plant Weather Station, Freeport, IL**



- monthly precipitation recorded at weather station (Midwestern Regional Climate Center)
- monthly precipitation recorded at Site 8E (Sep-Nov) and Site 6W (Mar-Aug) 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

Graph last updated October 1, 2004