

# **ANNUAL REPORT FOR ACTIVE IDOT WETLAND COMPENSATION AND HYDROLOGIC MONITORING SITES**

**September 1, 2002 to September 1, 2003**

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Illinois Department of Transportation  
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Springfield, IL 62764-0002

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**Illinois State Geological Survey  
Open File Series 2003-16**

## INTRODUCTION

This report was prepared by the Illinois State Geological Survey (ISGS) to provide the Illinois Department of Transportation (IDOT) with hydrogeologic data collected from wetland compensation sites and potential wetland compensation sites being monitored under contract IDOT SW WIP FY04. Where appropriate, this report also includes a determination of areas meeting wetland hydrology criteria listed in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual (U.S. Army Corps of Engineers 1987). Additional activities performed under this contract, such as water-quality monitoring, are not included in this report. Other site observations are included where appropriate.

Summaries of 33 sites are included in this report. Most summaries contain a location map, a site map showing field instruments and the extent of area satisfying wetland hydrology criteria, hydrographs for selected monitoring wells, and local precipitation data for the period. Site locations are shown on Figure 1 and a list of site names is presented in Table 1. All data included in this report are from September 1, 2002 to September 1, 2003 at IDOT's request, except where noted.

## METHODS

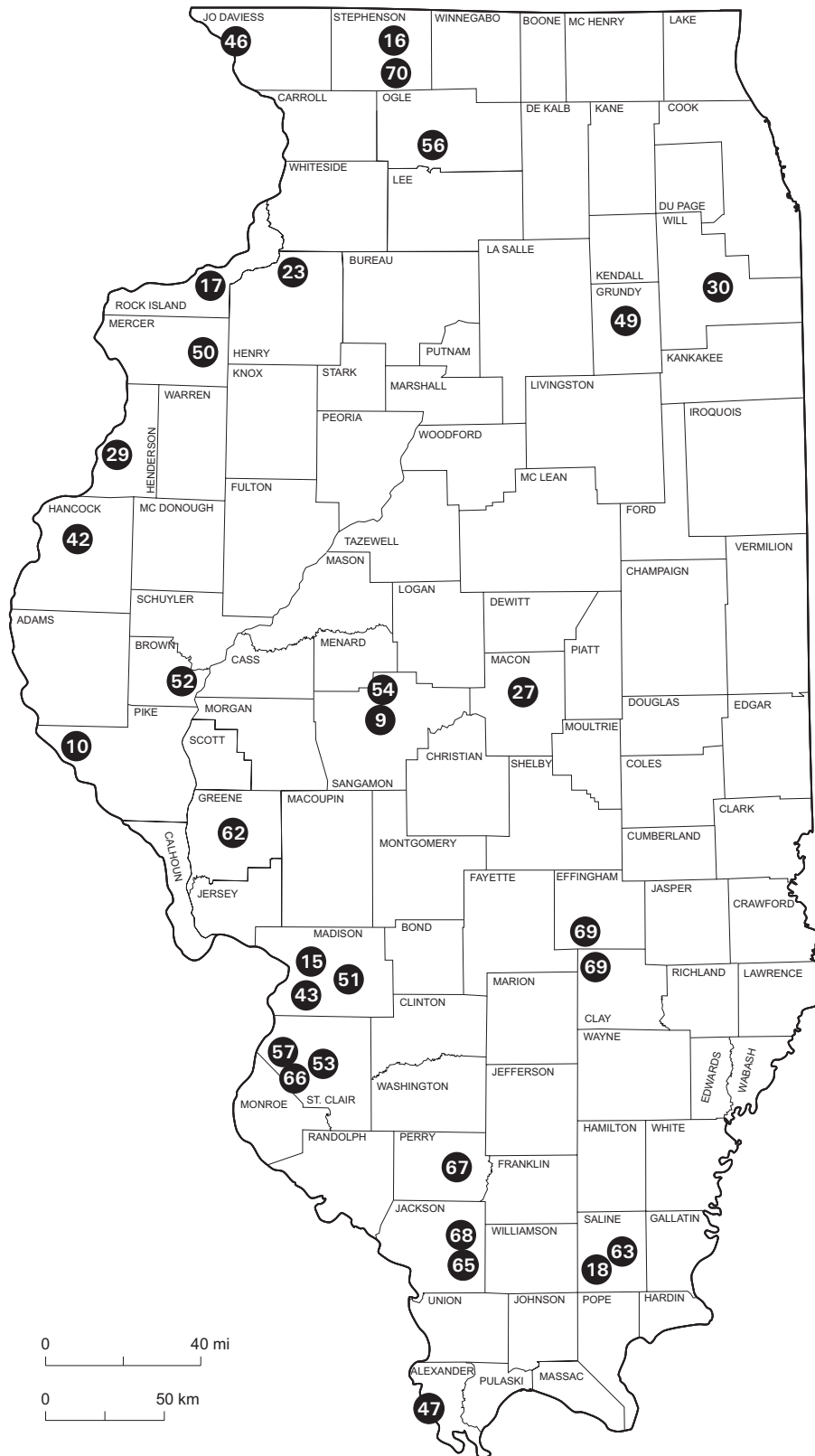
Determining the area within each wetland compensation site that satisfies the wetland hydrology criteria of the U.S. Army Corps of Engineers Wetland Delineation Manual (U.S. Army Corps of Engineers 1987) is a main focus of the work summarized in this report, and the following criteria were used. An area that conclusively satisfies wetland hydrology criteria will be inundated or saturated for no less than 12.5% of the growing season. Inundation occurs when surface water is present at depths no greater than 2 meters (m) (6.6 feet) (ft). Saturation occurs when the water table is no deeper than 30 centimeters (cm) (1 ft) below land surface. Inundation or saturation for 5% to 12.5% of the growing season may satisfy wetland hydrology criteria but is not considered conclusive. For the purposes of this report, only areas that conclusively satisfy the criteria are included in calculations and shown on maps.

The Midwestern Climate Center (MCC) provides data regarding the length and beginning date of the growing season (Midwestern Climate Center 2002). The growing season is defined as the time period between the last occurrence of 28°F air temperatures in spring to the first occurrence of 28°F air temperatures in the fall. The median beginning date and length of growing season are calculated by the MCC for individual climate observation stations throughout the state. Data from the nearest observation station with an adequate period of record are used for each site.

Wells and stage gauges where water levels satisfied wetland hydrology criteria are listed in the text for each site. Interpolation between measuring points and/or extrapolation are used to locate the boundary of the area that satisfies wetland hydrology criteria. Best professional judgement is used to refine the location of this boundary, using small-scale topographic features, vegetation, soils, and other site features. To measure the size of an area satisfying wetland hydrology criteria, the boundaries were plotted on the best available base map, then measured with a Tamaya Super Planix B digital planimeter and listed in acres (ac) and hectares (ha). If other methods were used to measure this area, they are noted in the site summaries.

The accuracy of each area measurement will vary significantly depending on the accuracy of the underlying base map, the accuracy in locating monitoring devices, and the accuracy of the planimeter at the scale of the base map. The base maps used for these determinations include as-built surveys (done both by IDOT and ISGS), construction plans, U.S. Geological Survey (USGS) 7.5-minute topographic maps, unrectified aerial photographs, and USGS digital





**Figure 1** General locations of active water-level sites monitored by ISGS for IDOT between September 1, 2002 and September 1, 2003. Numbers indicate ISGS project numbers and are explained in Table 1.

**Active IDOT Water-Level Monitoring Sites  
September 1, 2002 to September 1, 2003**

<b>ISGS #</b>	<b>Site Name Route and FAP #</b>	<b>ISGS #</b>	<b>Site Name Route and FAP #</b>
9	Veteran's Parkway, Springfield FAP 662	54	Springfield IL 29 FAP 658
10	Hannibal Bridge US 36 FAP 319	56	Grand Detour IL 2 FAP 742
15	Sand Road US 267 FAP 310	57	Former Tiernan Property New River Crossing FAP 999
16	Orangeville IL 26 FAP 316	62	Apple Creek near Belltown US 67 FAP 310
17	Milan Beltway, Airport Road FAU 5822	63	Harrisburg US 45 FAP 332
18	Saline County IL 13 FAP 331	65	Carbondale US 51 FAP 322
23	Joslin IL 92 FAP 585	66	Centreville New River Crossing FAP 999
27	Decatur US 51 FAP 322	67	Pyatts Blacktop IL 13 & 127 FAP 42
29	Gulfport US 34 FAP 313	68	De Soto US 51 FAP 322
30	Spring Creek I-355 FAP 340	69	Edgewood, Effingham County US 45 FAP 328
42	Hancock County near Carthage US 136 FAP 315 & 10	69	Larkinsburg, Clay County US 45 FAP 328
43	Former Eckmann & Bischoff Properties IL 3 FAP 14	70	Freeport Bypass East Sites 4E, 8E, 10E US 20 FAP 301
46	Galena River Bridge West Stagecoach Trail FAS 67		
47	Alexander County IL 146 FAP 312		
49	Morris, Illinois River Potential Wetland Bank		
50	Edwards River, Mercer County US 67 FAP 310		
51	Former Luehmann Property New River Crossing FAP 999		
52	Former Wessel Property, District 6 Potential Wetland Bank		
53	Fairmont City New River Crossing FAP 999		

**Table 1** ISGS project numbers and active water-level sites monitored by ISGS for IDOT between September 1, 2002 and September 1, 2003.

orthophotograph quarter quadrangles (ISGS 2002). In no case is the error of the acreage calculation expected to be less than  $\pm 1.5\%$ , and it could be much greater. Given the many potential sources of error, estimates of the amount of error are difficult to calculate and are not included. However, area measurements for each site may differ in the number of significant digits, reflecting the expected accuracy in the base map and the methods.

Water-level data were collected monthly throughout the year, and biweekly during April and May when highest water levels are generally observed. However, this year many sites required biweekly readings through June, because high water levels continued due to heavy rain in late spring.

Given that 12.5% of the growing season ranges from about 23 days to 29 days in different parts of Illinois, three consecutive biweekly measurements are generally required to conclusively satisfy wetland hydrology criteria. If only two consecutive measurements were collected that indicated wetland hydrology criteria, interpolation of the water levels is performed to determine total number of days of inundation or saturation. In no case was one measurement considered sufficient to indicate that a site satisfied wetland hydrology criteria. Flooding that prevented measurement of a site was considered sufficient evidence of inundation for that site visit. Manual water-level measurements were often supplemented with various automated data logging devices that measured daily or more frequently. These data loggers were used to determine the timing of hydrologic events that were not recorded in manual measurements.

Monitoring wells were given an alphanumeric designation based in part on their relative depths. Monitoring wells designated with an "S" or "VS" are the most shallow type and were specifically constructed for measuring wetland hydrology. Monitoring wells designated with a "U" (upper) are deeper than "S" wells, and may be used to determine wetland hydrology depending on the depth of the well screen. Other types of wells, including "M", "L", and "D", are deeper wells used to collect other hydrogeologic data and cannot be used to determine wetland hydrology. They are included only to document ISGS activities at the site and they are discussed in other ISGS contract reports to IDOT.

Graphs for each site show water-level elevations at wells and surface-water instruments, and depth-to-water below land surface at each well. Depths are shown as negative when water levels are above land surface. Elevations at most sites are shown relative to the National Geodetic Vertical Datum (NGVD) of 1929; any variations to this are labeled. The water levels recorded during the year are shown in the charts accompanying each site summary. For small sites, all measurements will be shown on the same chart. For sites with more instruments, similar types of instruments are grouped on individual charts, for example all "S" wells may be on a single chart. For the largest sites, there may be several charts for a single type of instrument.

Multiple data loggers are used to monitor water levels continuously at many sites. Three main types of instruments are being used, each made by a different manufacturer. Each type of instrument has different behaviors and default values. We have removed or labeled any false readings that result when the instrument is dry (e.g. "0" or other default values) by making observations of the readings of the instrument prior to deployment. Other spurious readings that occurred due to data logger malfunction or natural conditions that cause inaccuracies (e.g. vegetation growth or debris accumulation beneath the logger) were removed after interpretation by ISGS scientists.

On-site precipitation data were collected by ISGS using several types of tipping-bucket rain gauges. Due to inherent difficulties in maintaining rain gauges (e.g., clogging, equipment

malfunction, timing of deployments), actual precipitation for each month may be greater than the recorded value. Because all ISGS gauges are nonheated and must be removed in the winter, monthly precipitation data are also shown from climate observation stations maintained year-round by the MCC (MCC 2002). The closest weather station with an adequate period of record is used at each site. Normal (i.e. mean, average) precipitation values, and the above and below normal-range threshold values are calculated by the National Water and Climate Center (NWCC) (NWCC 2002) and are all based on a 30-year period, between either 1961 and 1990 or 1971 and 2000. Precipitation is classified as being within the normal range when the level recorded is within a 30% probability above or below the mean based on a 2-parameter gamma distribution over the 30-year period (NWCC 1995). Precipitation is classified as above or below the normal range when the recorded level is not within the normal range as defined above. "Above 30% threshold" refers to the value at which there is a 30% chance precipitation will be greater than or equal to the value shown. "Below 30% threshold" refers to the value at which there is a 30% chance precipitation will be less than or equal to the value shown. Precipitation may be described relative to "normal" values or the "normal range", depending on the intent of the project manager.

It is expected that accuracy will continue to be improved in the 2004 report. Global Positioning System (GPS) location data plotted on digital orthophotograph quadrangles (DOQ) have been included in base maps where possible, but these resources are not yet available for every site. As these tools become available, they will be incorporated, leading to more accurately located site boundaries, instruments, and other important features and producing more accurate area measurements at all sites.

This document is intended to be a summary of all data collected under this contract during the reporting period. Therefore, some details have been omitted that may be necessary for other uses of the data. The primary project manager listed for each site should be contacted for additional information.

## REFERENCES

- Illinois State Geological Survey, 2002, Illinois Natural Resources Geospatial Data Clearinghouse, Illinois Digital Orthophoto Quarter Quadrangle Data: Illinois State Geological Survey, Champaign, Illinois, available online at <http://www.isgs.uiuc.edu/nsdihome/webdocs/doqs/>.
- Midwestern Climate Center, 2002, Midwestern Climate Information System: Illinois State Water Survey, Champaign, Illinois, available online at <http://mcc.sws.uiuc.edu/>.
- National Water and Climate Center, Natural Resources Conservation Service, 2002, Climate Analysis for Wetlands by County, available online at <http://www.wcc.nrcs.usda.gov/climate/wetlands.html>.
- National Water and Climate Center, Natural Resources Conservation Service, 1995, WETS Table Documentation, available online at [http://www.wcc.nrcs.usda.gov/climate/wets\\_doc.html](http://www.wcc.nrcs.usda.gov/climate/wets_doc.html).
- U.S. Army Corps of Engineers, 1987, Corps of Engineers Wetlands Delineation Manual: U. S. Army Corps of Engineers Technical Report Y-87-1, Washington, D.C., 100 p. Available online at <http://www.saj.usace.army.mil/permit/documents/87manual.pdf>.

**VETERAN'S PARKWAY, SPRINGFIELD  
WETLAND COMPENSATION SITE**

**ISGS #09**

FAP 662

Sangamon County, near Springfield, Illinois

**Primary Project Manager: Geoffrey E. Pociask**

**Secondary Project Manager: Paula J. Sabatini**

**SITE HISTORY**

- Spring 1997: ISGS initiated water-level monitoring to determine pattern of water-level fluctuation in the ponded area. Water in the ponded area was monitored throughout most of the growing season in 1997. Water-level increases were strongly associated with storm events. Upon determining the relationship between water levels in the pond and the adjacent creek, monitoring of the pond was discontinued in Fall 1997.
- July 1999: Water-level monitoring for the purpose of determining the extent of wetland hydrology was initiated at the request of IDOT. Three "S" wells were installed in the shallow exposed shelf in the northwestern corner of the excavation. A surface-water data logger was re-installed to monitor pond water levels.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

Based on an as-built survey provided by IDOT and ground-surface elevations surveyed by ISGS, we estimate that the total area of created wetland that conclusively satisfied wetland hydrology criteria in 2003 is 5.1 ac (2.1 ha) out of an excavation of 7.1 ac (2.8 ha). This is comparable to an area of 6.0 ac (2.4 ha) in 2002, and 4.9 ac (2.0 ha) in 2001. The 2003 estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Springfield is April 6 and the season lasts 205 days; 12.5% of the growing season is 26 days.
- Total precipitation for the reporting period from September 2002 through August 2003 was 76% of normal. Drier than normal conditions prevailed in September 2002, during the period from November 2002 through May 2003, and in August 2003. Rainfall amounts were near or above normal for October 2002 and June through July 2003.
- In 2003, all shallow ground-water wells (1S, 2S, and 3S) conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. Surface-water data logger F indicated that areas below approximately 156.78 m (514.43 ft) were inundated for a duration sufficient to satisfy wetland hydrology criteria.
- Limitations of the wetland hydrology determination are as follows:
  - The area of wetland hydrology was calculated using GIS methods. The wetland-hydrology polygon was drawn from an as-built topographic map (1-foot contour interval) provided by IDOT rectified via photo-identifiable points to a digital orthophotograph.
  - Instrument locations were determined using GPS in July 2000. The positions of instruments and photo-identification points determined via GPS were superimposed on digital orthophotography.

## PLANNED FUTURE ACTIVITIES

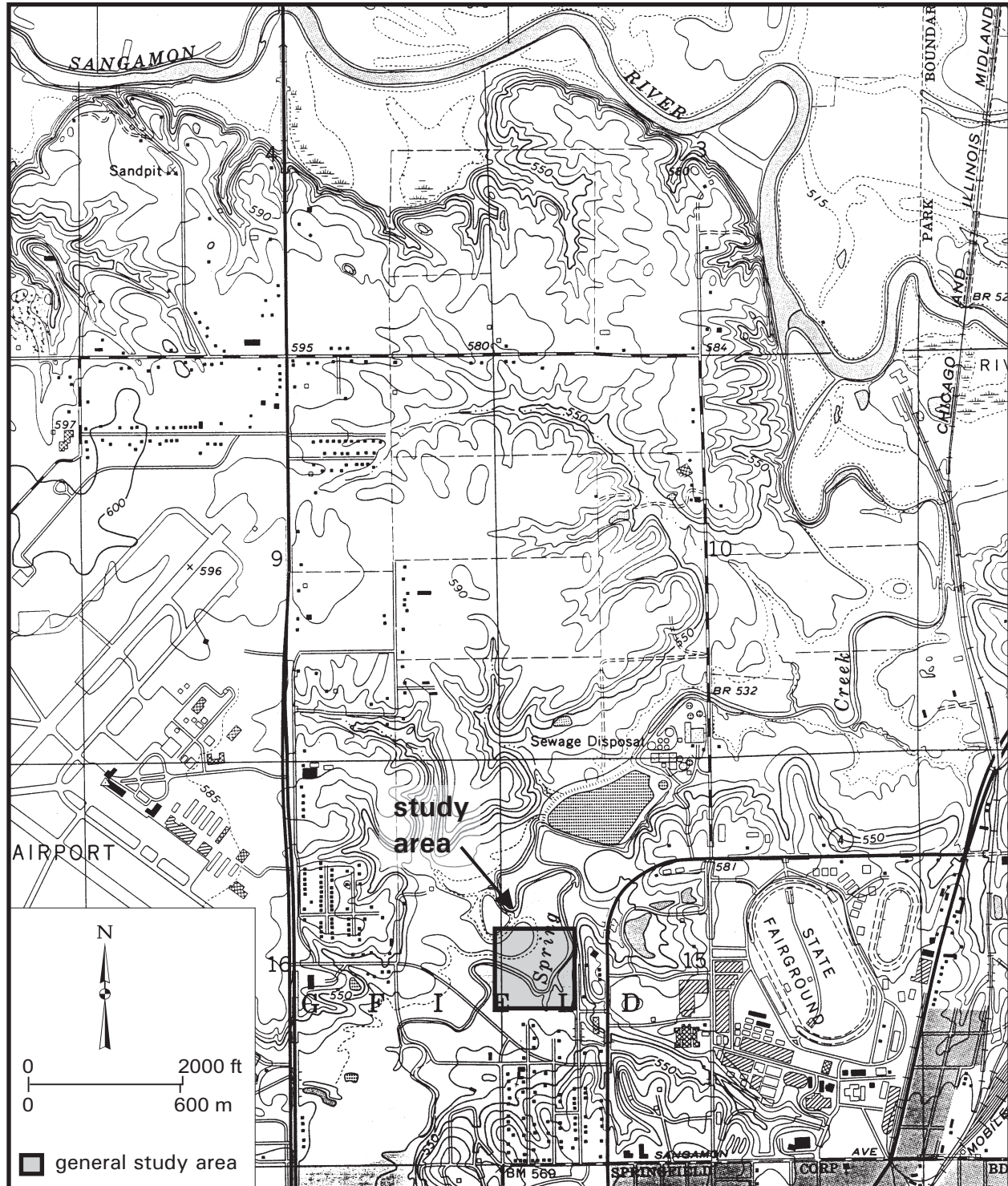
- Monitoring will continue until September 2004 or until no longer required by IDOT.

# Veteran's Parkway, Springfield Wetland Compensation Site (FAP 662)

## General Study Area and Vicinity

from the USGS Topographic Series, Springfield West, IL 7.5-minute Quadrangle (USGS 1965)

contour interval is 10 feet

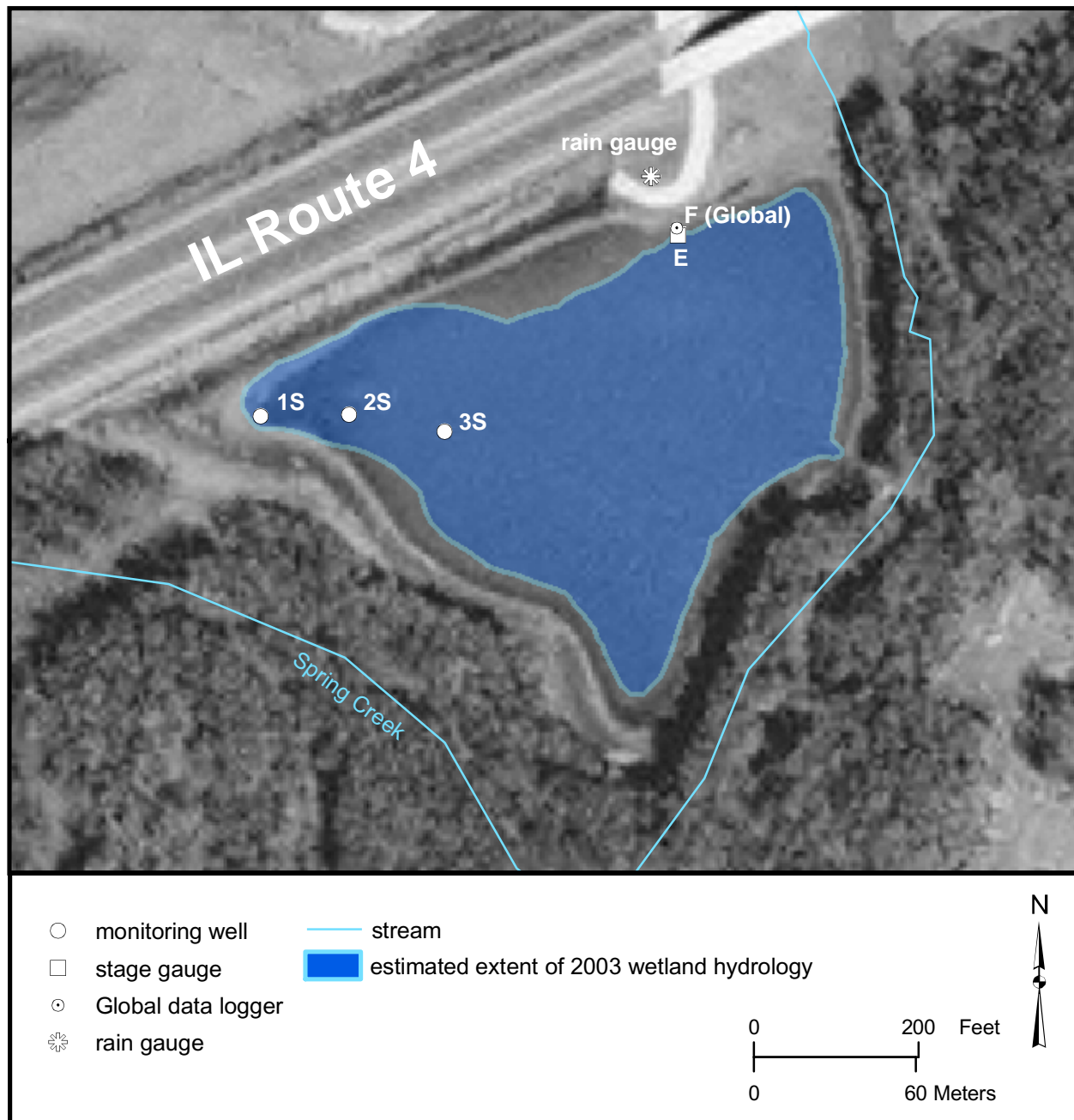




# Veterans Parkway, Springfield Wetland Compensation Site (FAP 662)

## Estimated Areal Extent of 2003 Wetland Hydrology

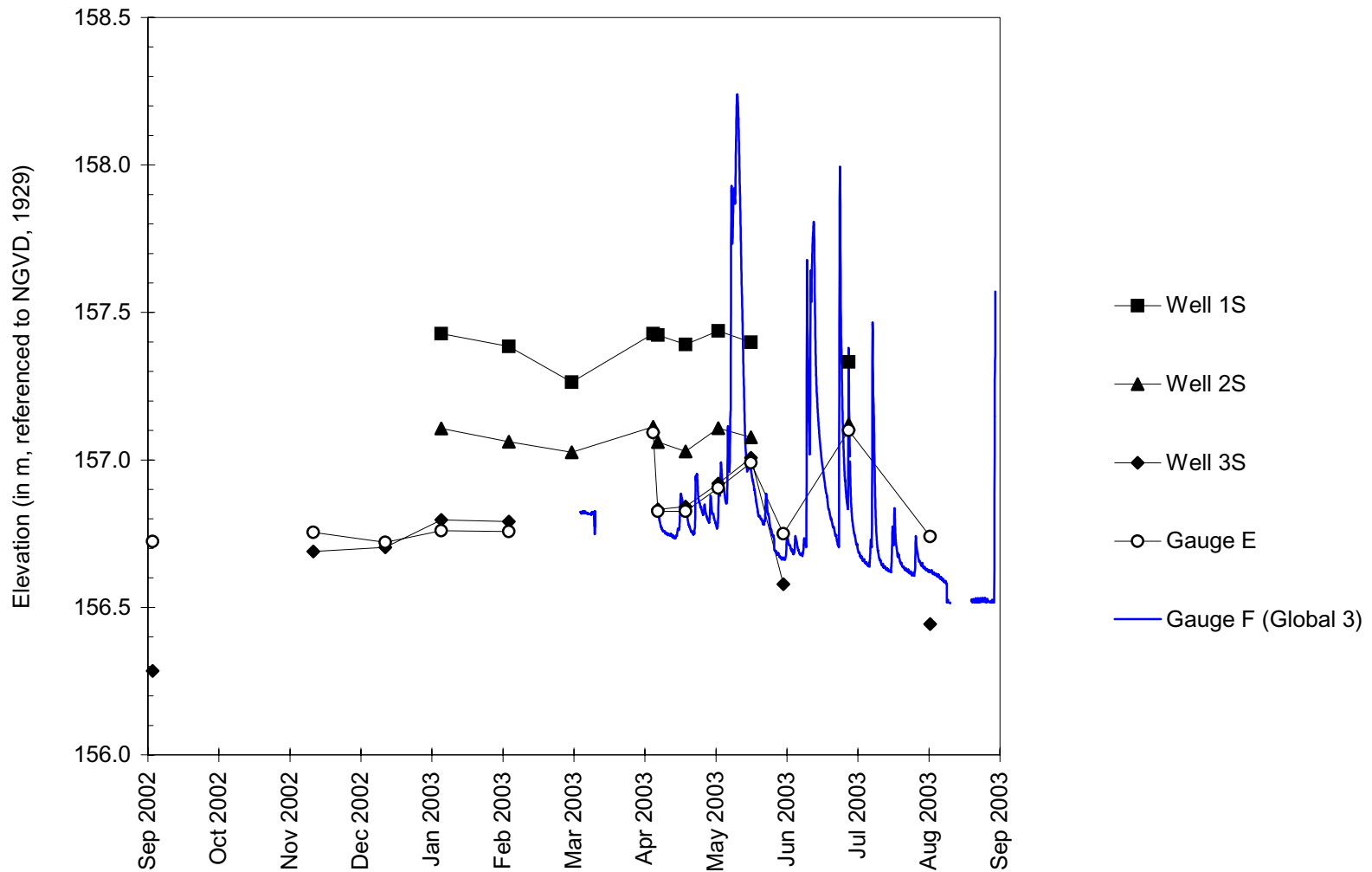
map based on USGS digital orthophotograph Springfield West, NE quarter quadrangle  
produced from 04/14/98 aerial photography (ISGS 2002)



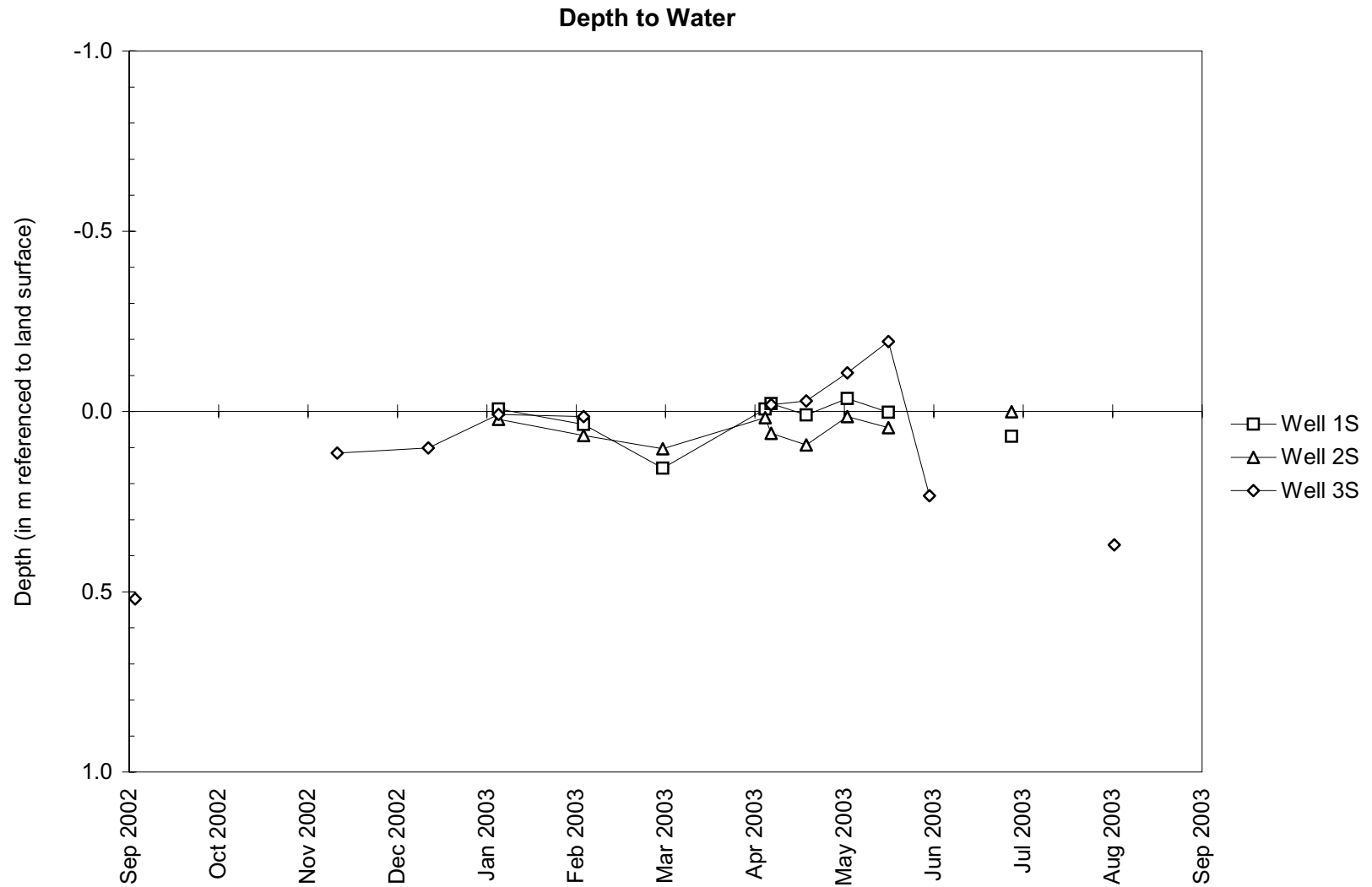


**Veteran's Parkway, Springfield Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations**

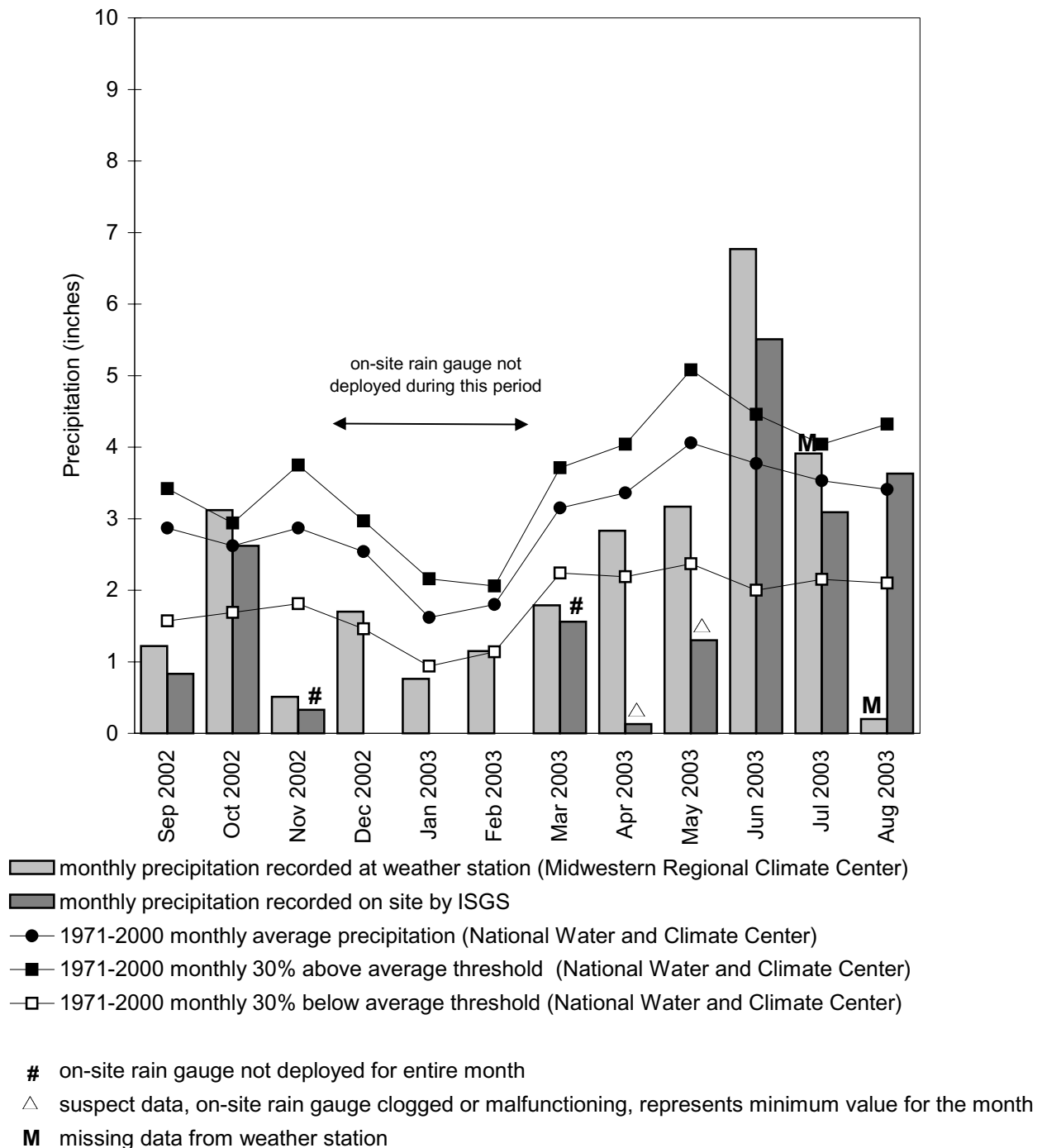


**Veteran's Parkway, Springfield Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**



# Veteran's Parkway, Springfield Wetland Compensation Site September 2002 through August 2003

## Total Monthly Precipitation Recorded On Site and at the Springfield, IL Capital Airport Weather Station



**HANNIBAL BRIDGE  
WETLAND COMPENSATION SITE**

**ISGS #10**

FAP 319

Pike County, near East Hannibal, Illinois

**Project Manager: Blaine A. Watson**

**Secondary Project Manager: Paula J. Sabatini**

**SITE HISTORY**

- October 1992: ISGS installed monitoring wells and began a hydrogeologic characterization.
- June 1995: ISGS submitted a draft final hydrogeologic characterization report to IDOT.
- July 1997: IDOT completed construction of the created wetland.
- March 1998: ISGS submitted the final hydrogeologic characterization report to IDOT (ISGS Open File Series 1998-2).

**WETLAND HYDROLOGY CALCULATION FOR 2003**

We estimate that the total area of created wetland that conclusively satisfied wetland hydrology criteria in 2003 is 16.9 ac (6.9 ha) out of an excavation of 17.4 ac (7.0 ha). This is comparable to an area of 17.4 ac (7.0 ha) in the previous year. This year's estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Hannibal, Missouri, is April 7 and the season lasts 217 days; 12.5% of the growing season is 27 days and 5% of the growing season is 11 days.
- During the period from September 2002 through August 2003, total precipitation at the Hannibal weather station was 81% of normal. Precipitation was within or above the normal range in October 2002 and between January and August 2003. Precipitation was below the normal range during September, November, and December 2002. The overall distribution and amount of precipitation resulted in relatively dry conditions prior to onset of the growing season, followed by more normal conditions during the majority of the growing season.
- In 2003, water levels measured in all "U" and "S" wells within the excavation, with the exception of wells 15U and 20S, conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. This is corroborated by water levels measured at RDS 2, where a relatively static water level of approximately 139.7 m (458.3 ft) was recorded from May through June 2003. Water levels recorded at RDS 1 exhibited similar elevations.
- Limitations of the wetland hydrology determination are as follows:
  - The calculation does not include any area attributable to the natural, pre-existing wetland along the west-central border of the site.
  - A portion of the site outside the excavated wetland's boundaries also likely met wetland hydrology during the 2002 growing season (as evidenced by readings taken at well 7S and field observations of surface inundation north of well 9U). We did not

include areas outside the boundaries of the excavation.

- Well 15U may not be representative of shallow soil zone hydrologic conditions due to well screen construction; therefore it has been excluded from the evaluation of wetland hydrology.

#### PLANNED FUTURE ACTIVITIES

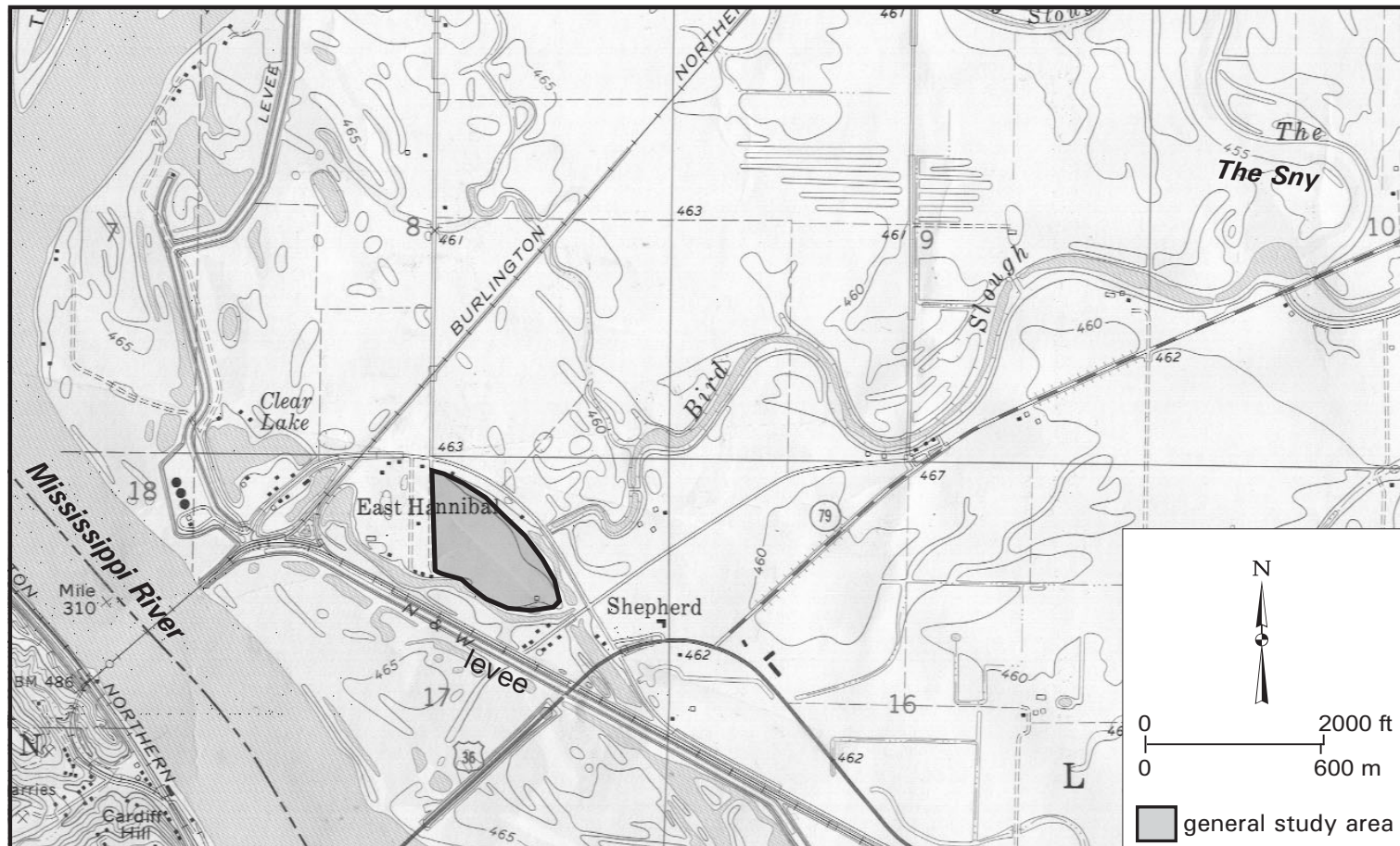
- A total of six years of post-construction hydrological monitoring data has been collected for this site. Although site closure may be requested by IDOT in the near future, our monitoring will continue until no longer required by IDOT.

# Hannibal Bridge Wetland Compensation Site (FAP 319)

## General Study Area and Vicinity

from the USGS Topographic Series, Hannibal East, IL-MO 7.5-minute Quadrangle (USGS 1971)

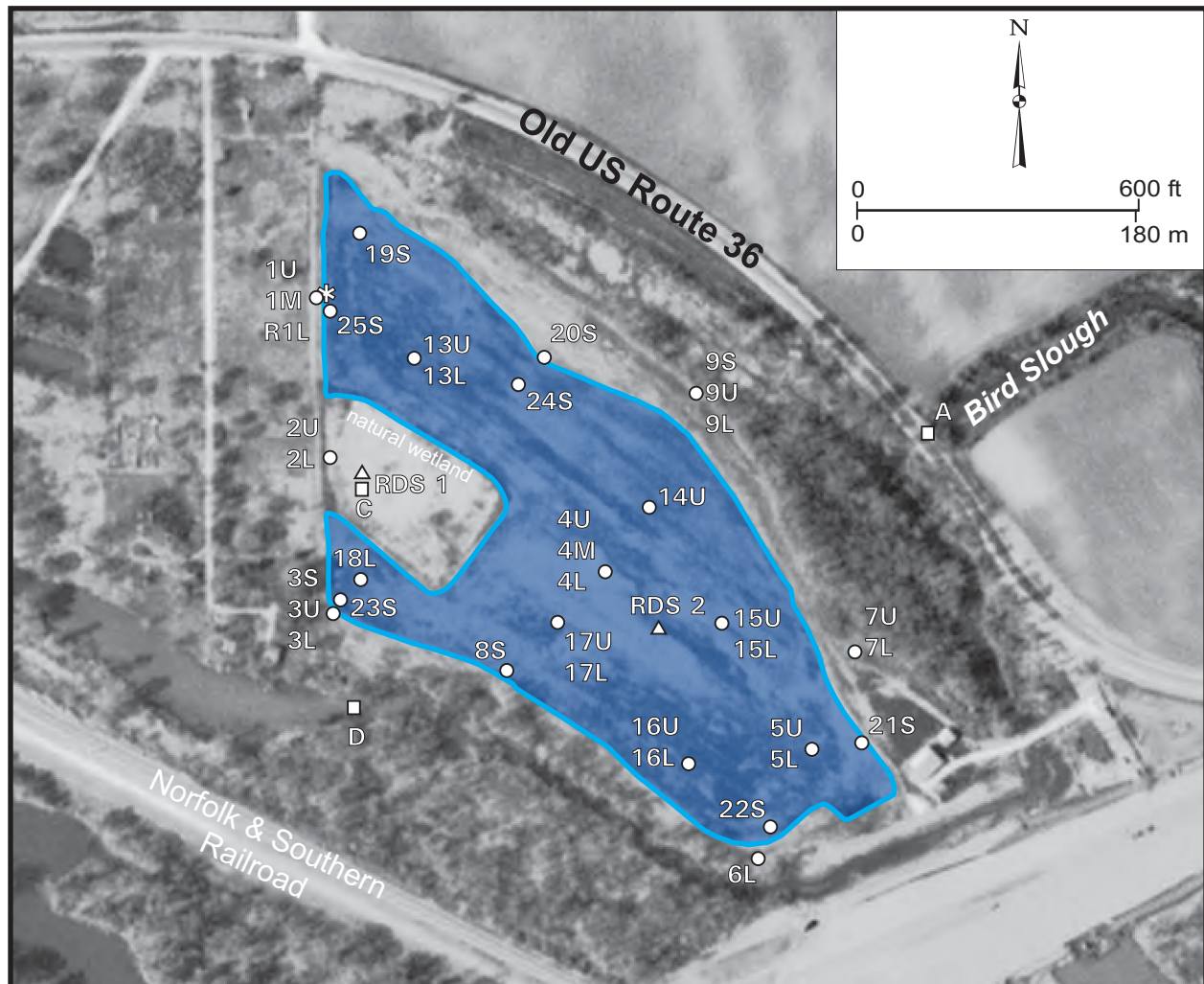
contour interval is 5 feet east of the Mississippi River and 20 feet west of the Mississippi River



# Hannibal Bridge Wetland Compensation Site (FAP 319)

## Estimated Areal Extent of 2003 Wetland Hydrology

map based on USGS digital orthophotograph Hannibal East, NW quarter quadrangle  
produced from 4/12/99 aerial photography (ISGS 2002)

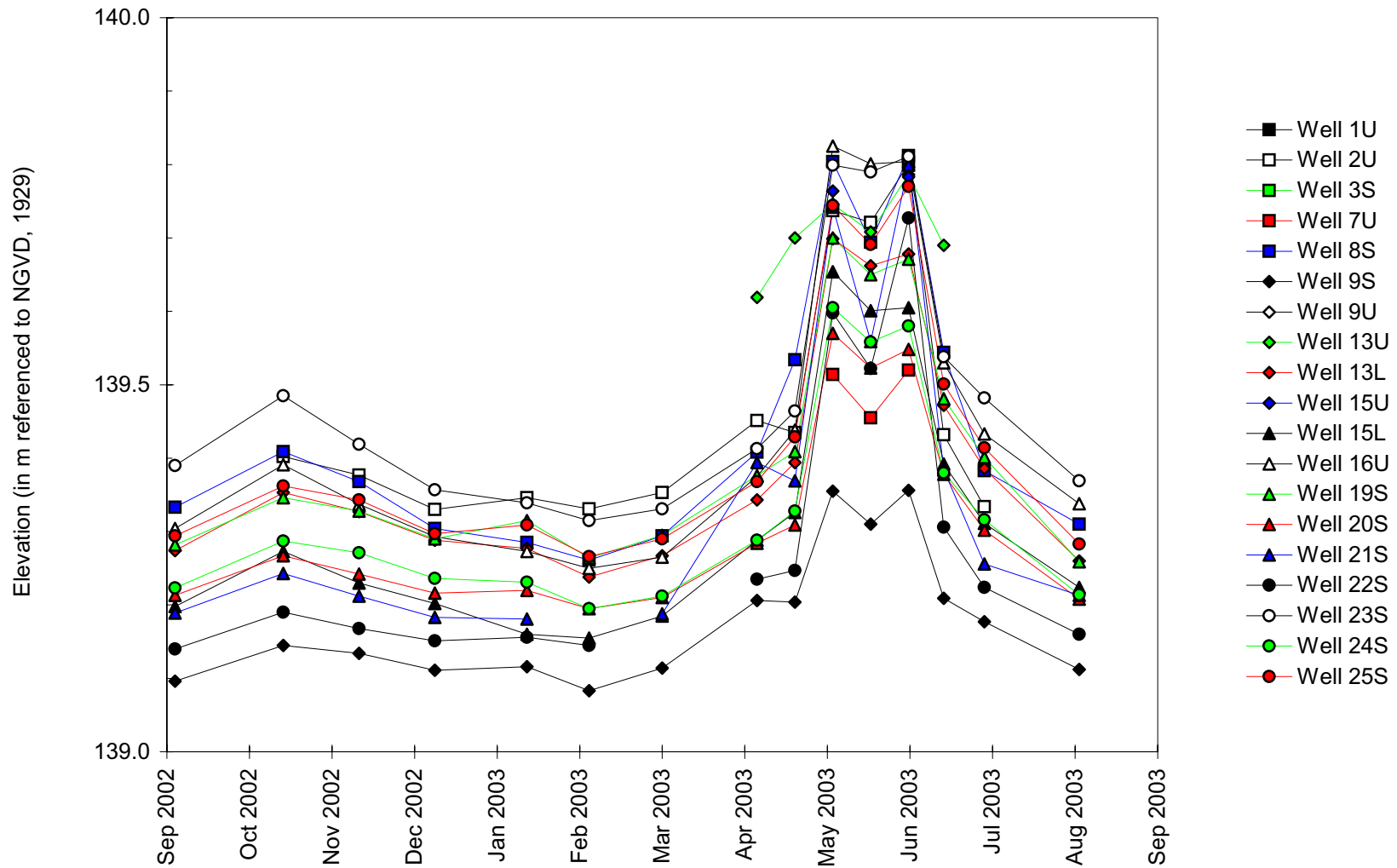


estimated areal extent of  
2003 wetland hydrology  
within excavated area

- monitoring well
- stage gauge
- △ RDS data logger
- \* rain gauge

**Hannibal Bridge Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

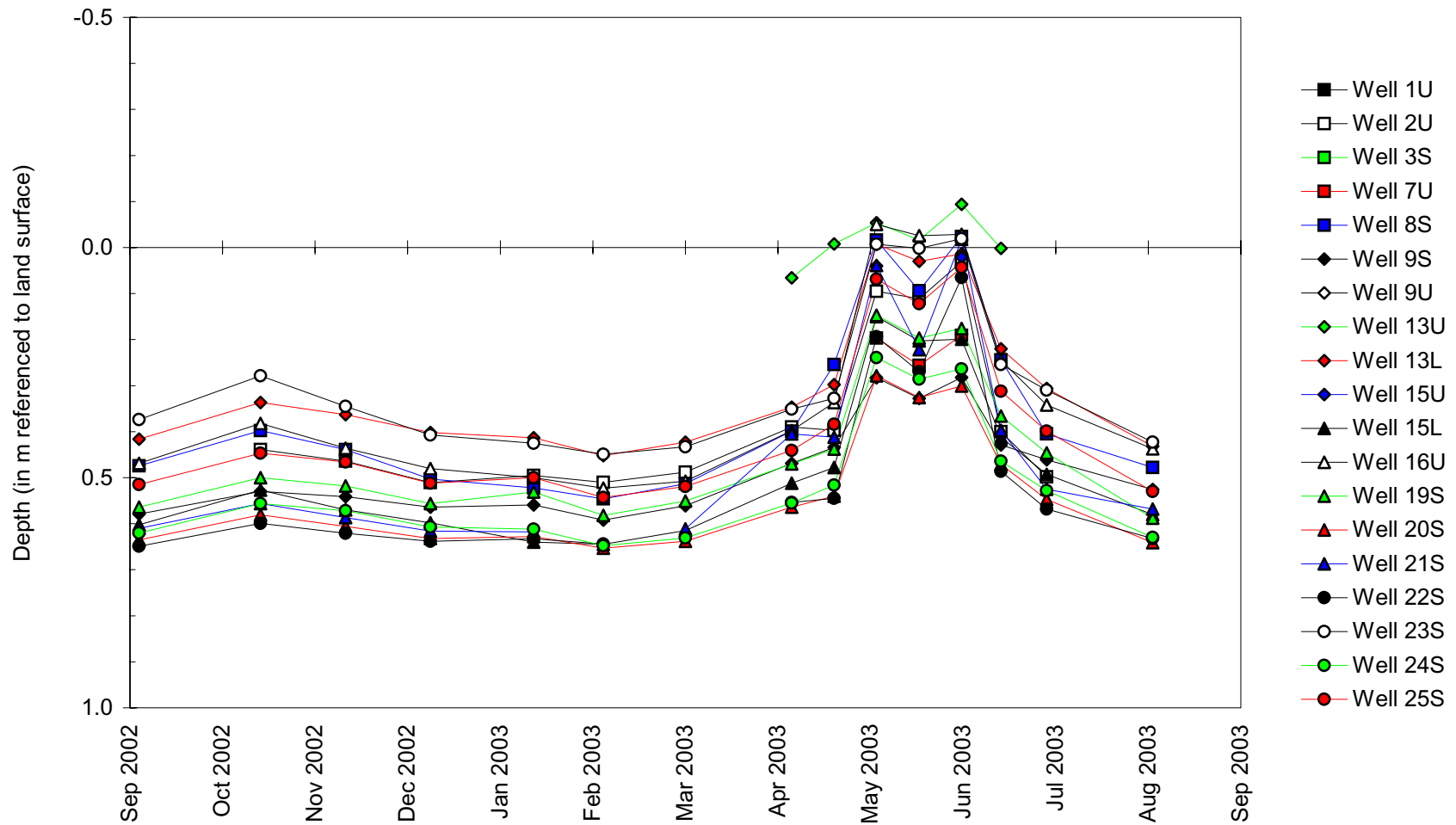
**Water-Level Elevations**  
**in Wells Used to Determine Areas Satisfying Wetland Hydrology Criteria**





**Hannibal Bridge Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

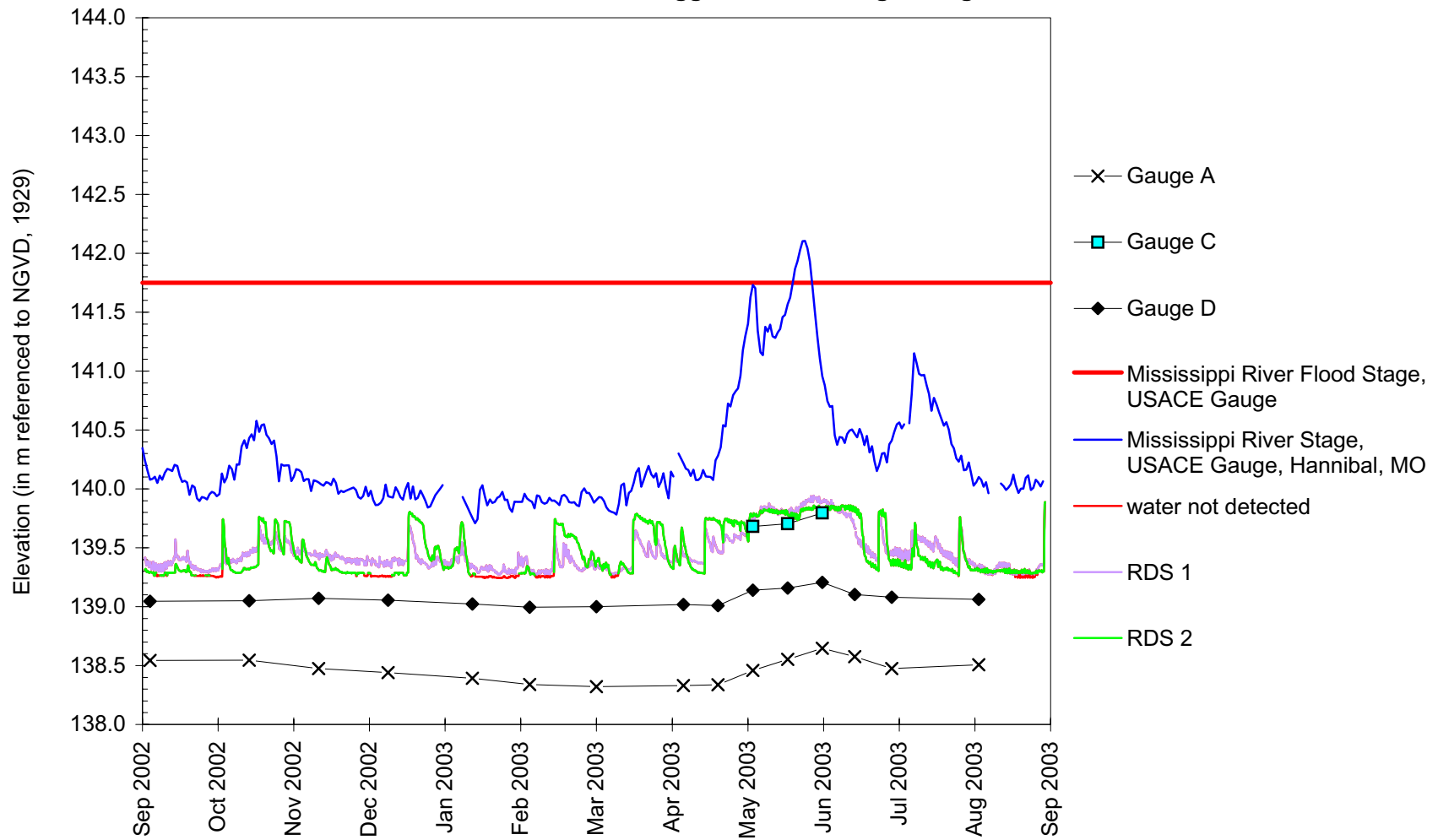
**Depth to Water**  
**in Wells Used to Determine Areas Satisfying Wetland Hydrology Criteria**



# Hannibal Bridge Wetland Compensation Site

September 1, 2002 to September 1, 2003

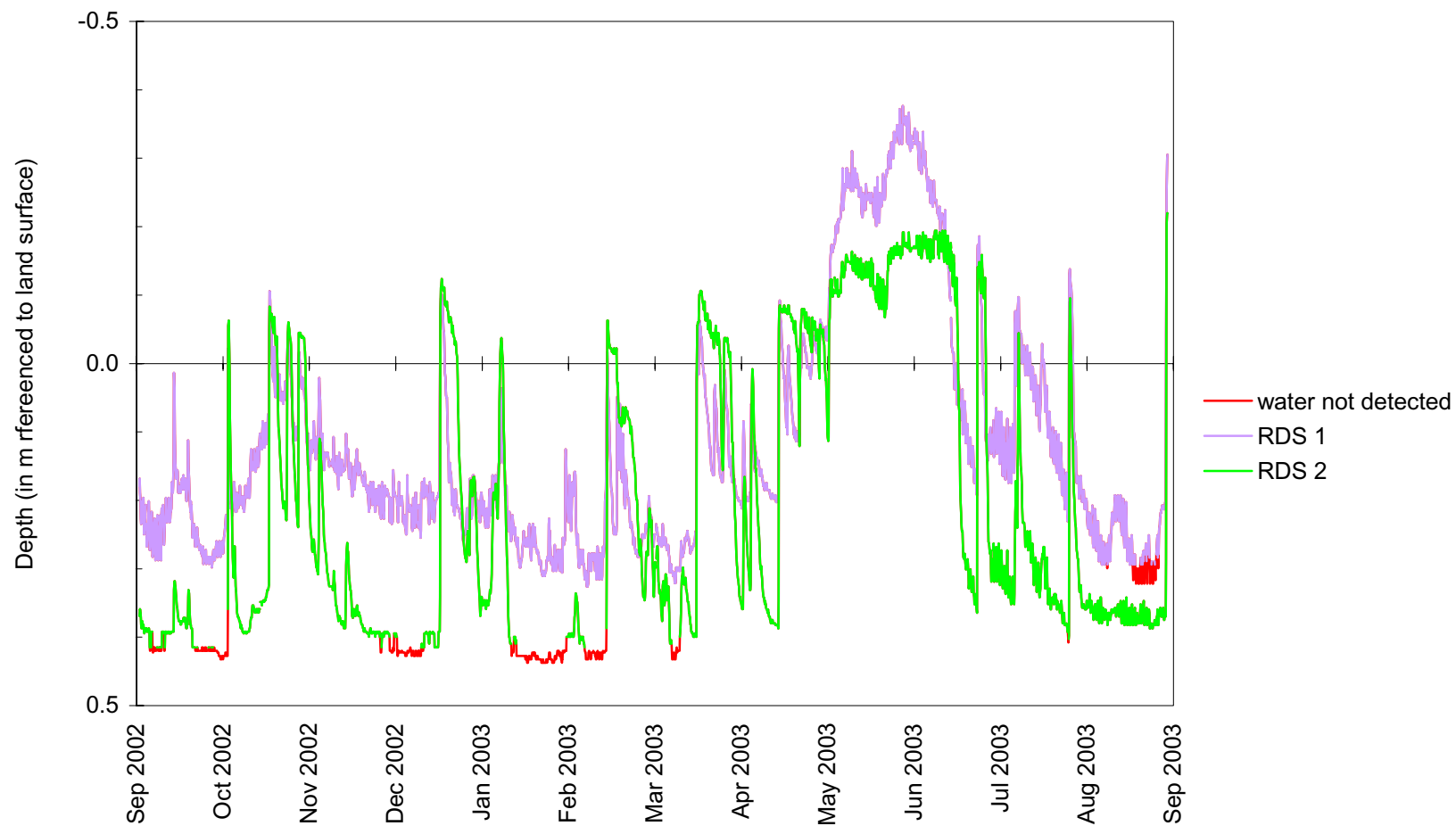
## Water-Level Elevations in RDS Data Loggers and on Stage Gauges



# Hannibal Bridge Wetland Compensation Site

September 1, 2002 to September 1, 2003

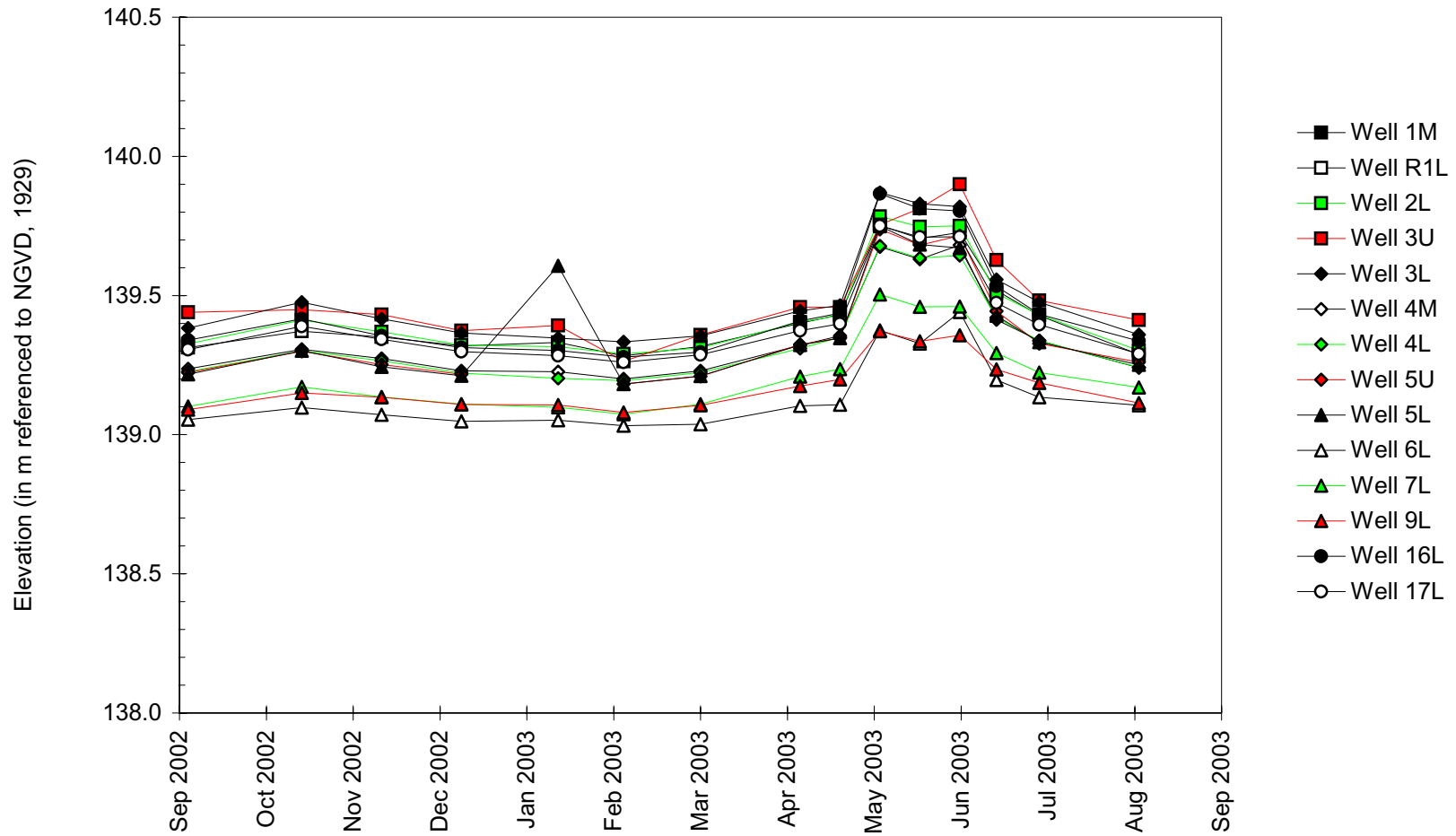
## Depth to Water in RDS Data Loggers



# Hannibal Bridge Wetland Compensation Site

September 1, 2002 to September 1, 2003

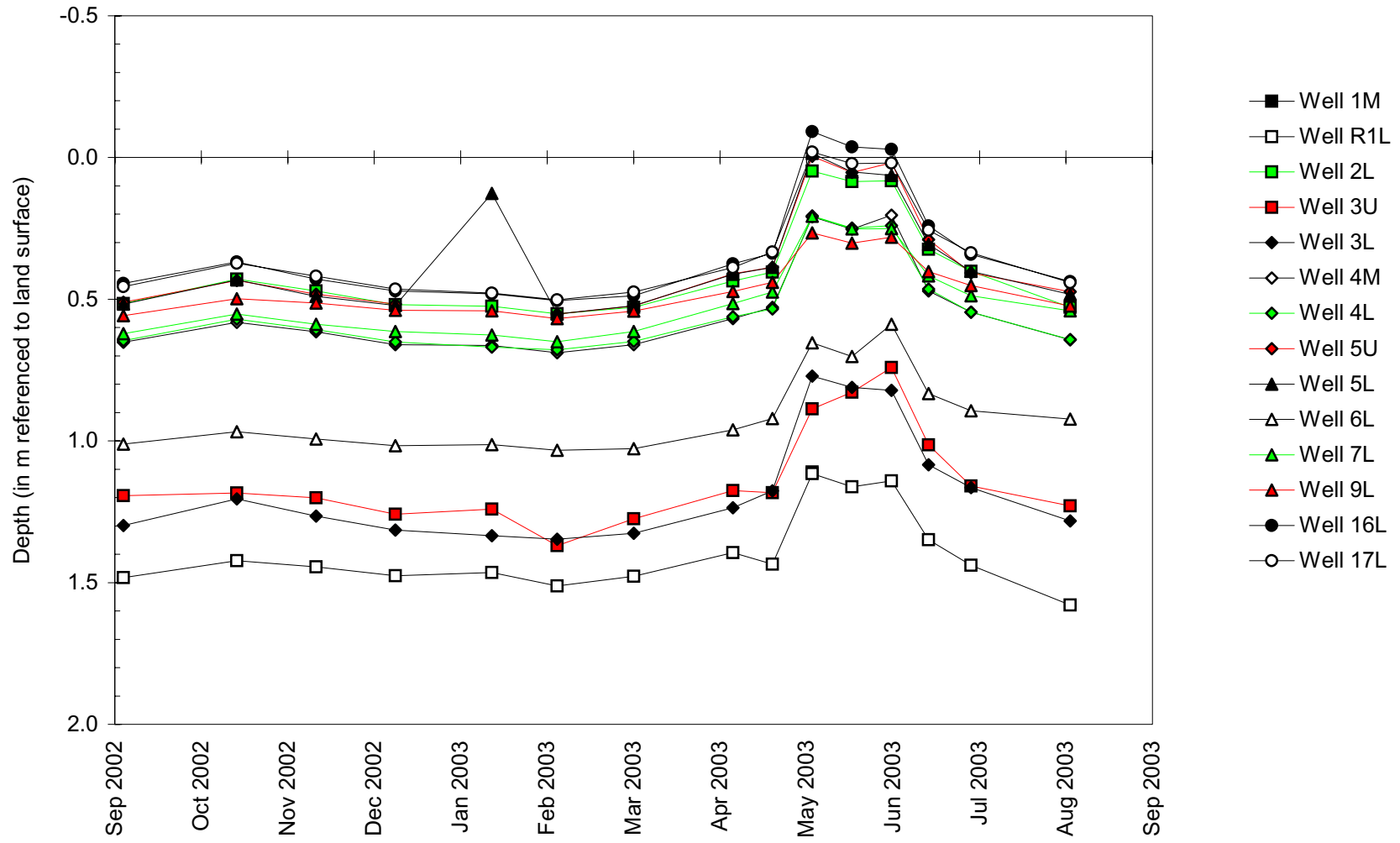
## Water-Level Elevations in Deeper Monitoring Wells



# Hannibal Bridge Wetland Compensation Site

## September 1, 2002 to September 1, 2003

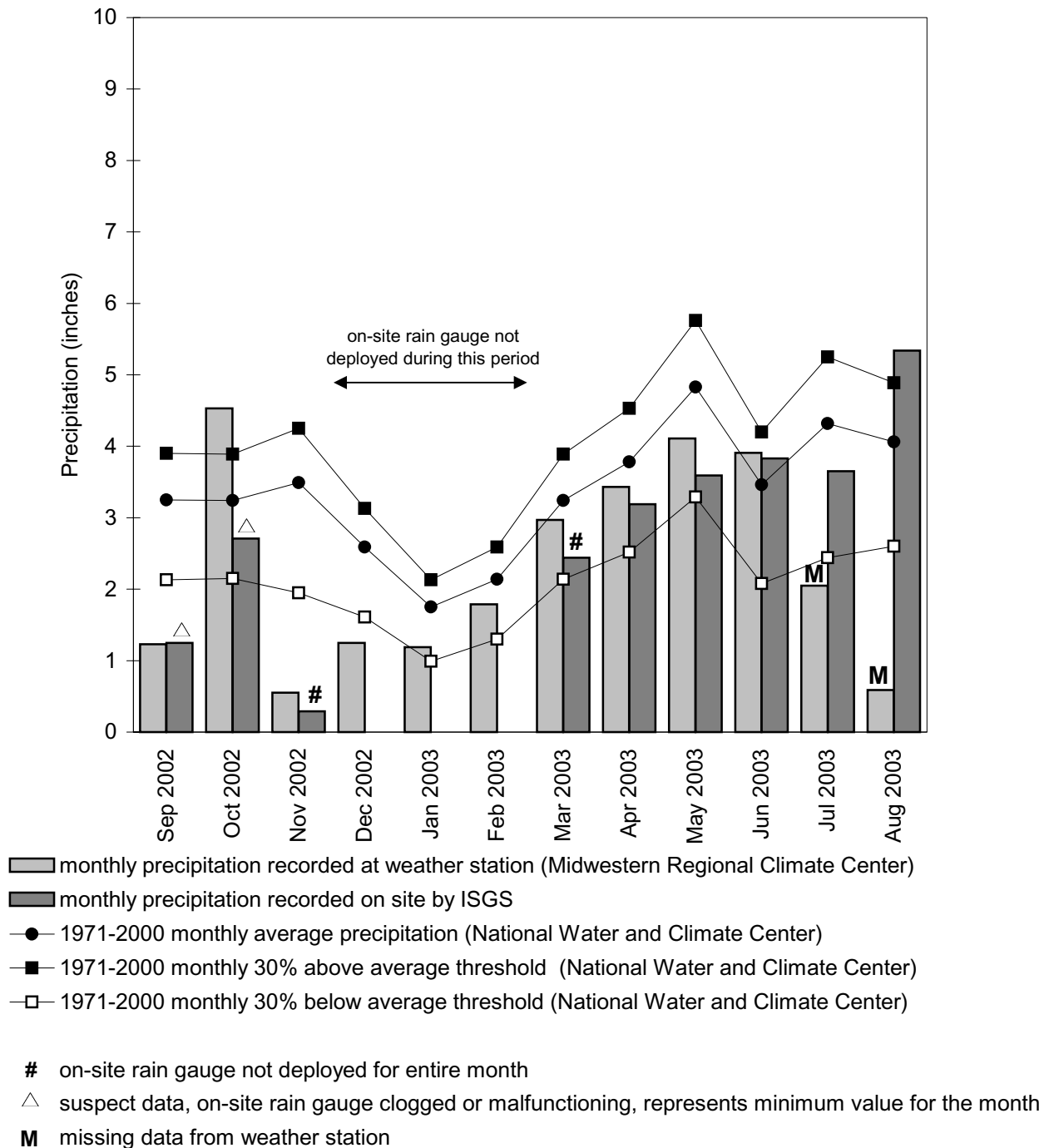
### Depth to Water in Deeper Monitoring Wells



# Hannibal Bridge Wetland Compensation Site

## September 2002 through August 2003

### Total Monthly Precipitation Recorded On Site and at the Hannibal Water Works Weather Station, Hannibal, MO



**SAND ROAD  
WETLAND COMPENSATION SITE**

**ISGS #15**

FAP 310

Madison County, near Poag, Illinois

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

**Secondary Project Manager: Steven E. Benton**

**SITE HISTORY**

- August 1996: IDOT issued a task order to the ISGS to conduct a detailed mitigation site assessment. The hydrogeologic characterization of the site was initiated with the installation of monitoring wells and staff gauges.
- July 1997: An interim hydrogeologic characterization report was submitted to IDOT.
- Fall 1998: A berm, incorporating a water control structure, was built along the south margin of the site.
- March - November 2001: Twenty-one soil-zone (S) monitoring wells were installed to better define the area of wetland hydrology and the transition zone along the slope of the sand terrace.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

The area that conclusively satisfied wetland hydrology criteria in 2003 is estimated to be 5.0 ac (2.0 ha). In 2002, 17.3 ac (7.0 ha) met the criteria for wetland. This reduction is probably due to the below normal precipitation recorded onsite. This estimate is based on the following:

- 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, 12.5% of the growing season is 25 days.
- Precipitation during the monitoring period was 87% of normal. Overall below normal precipitation from September 2002 to January 2003 (with the exception of October 2002) resulted in dry conditions throughout the winter. Normal to above normal precipitation from February to June 2003 caused ground-water levels to peak in June and subsequently to decline during the dry conditions reported thereafter.
- In 2003, only the water levels measured in well 3S conclusively satisfied the wetland hydrology criteria outlined in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual.
- Surface-water levels measured by the RDS data logger indicated that inundation occurred to an elevation of 128.19 m (420.57 ft) for a duration sufficient to conclusively satisfy wetland hydrology criteria.
- Surface-water levels were at or above the normal elevation of 128.0 m (420 ft) as specified in the IDOT Conceptual Wetland and Illinois Chorus Frog Compensation Plan for isolated periods from May 4 through June 4, 2003 and for the entire period June 10 through August 16, 2003.

- Limitations of the wetland hydrology determination are as follows:
  - The wetland acreage determination contains pre-existing wetland.
  - The topographic map used was derived from a mathematical interpolation of well coordinates and elevations obtained via GPS and elevation surveys.

#### PLANNED FUTURE ACTIVITIES

- Monitoring for wetland hydrology will continue at this site until no longer required by IDOT.

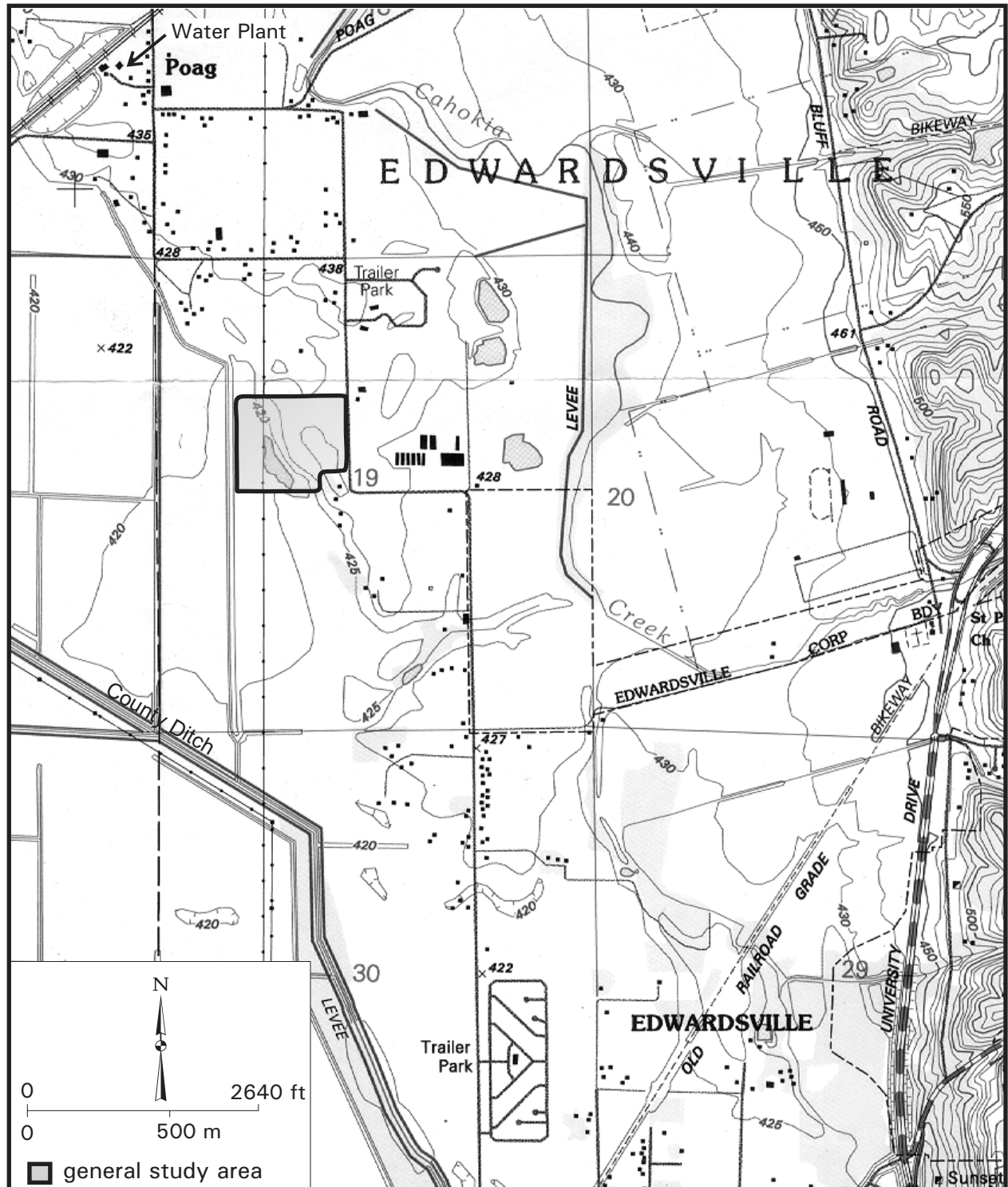


# Sand Road Wetland Compensation Site (FAP 310)

## General Study Area and Vicinity

from the USGS Topographic Series, Wood River, IL-MO 7.5-minute Quadrangle (USGS 1994)

contour interval is 10 feet

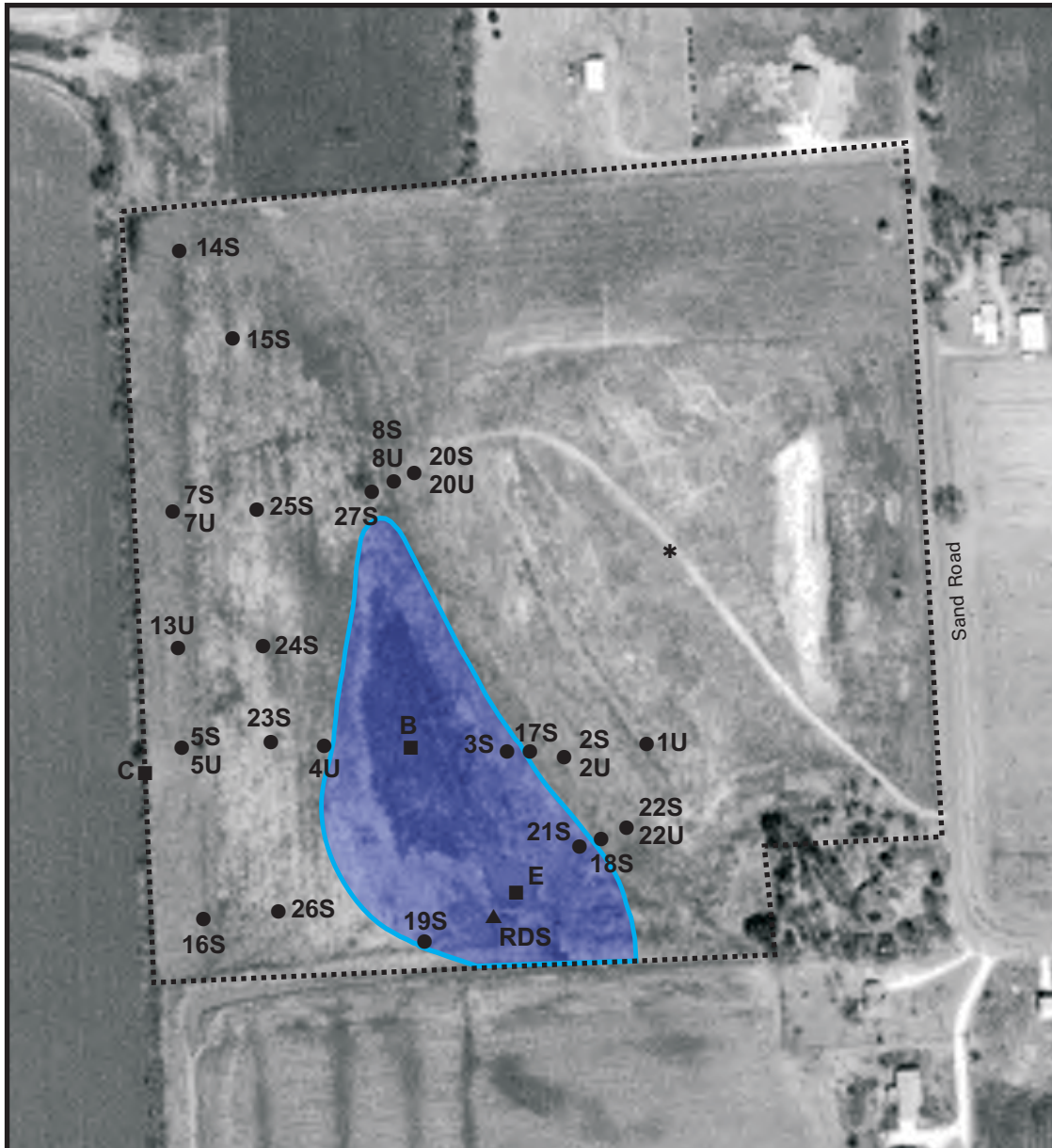


# Sand Road Wetland Compensation Site (FAP 310)

## Estimated Areal Extent of 2003 Wetland Hydrology

based on data collected between September 1, 2002 and September 1, 2003

map based on USGS digital orthophotograph, Wood River, SE quarter  
quadrangle produced from 4/2/1998 aerial photography (ISGS 2001)



- monitoring well
- stage gauge
- \* rain gauge
- ▲ RDS surface-water stage recorder



estimated extent of 2003  
wetland hydrology

site boundary

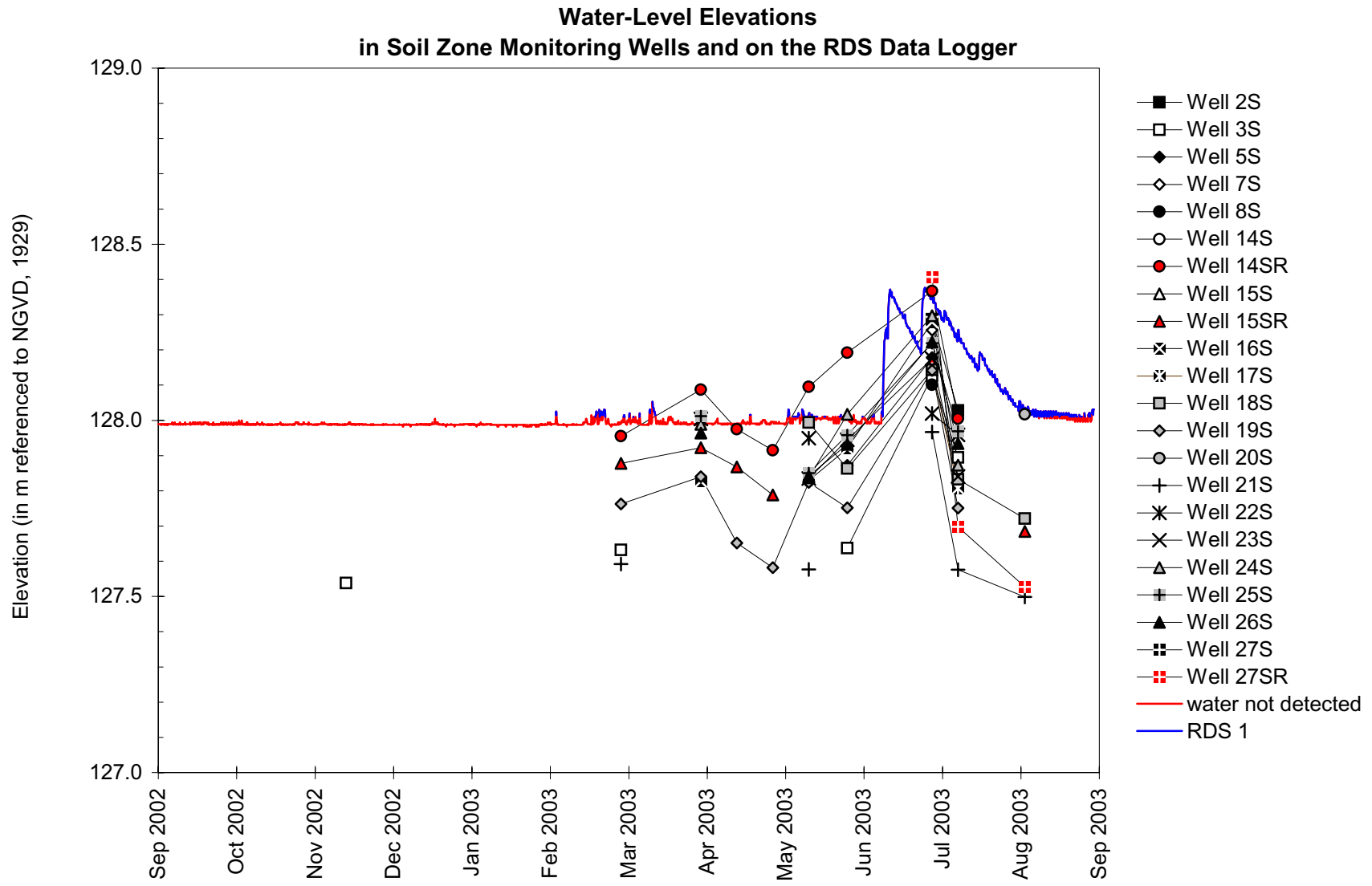
0 300 ft

100 meters



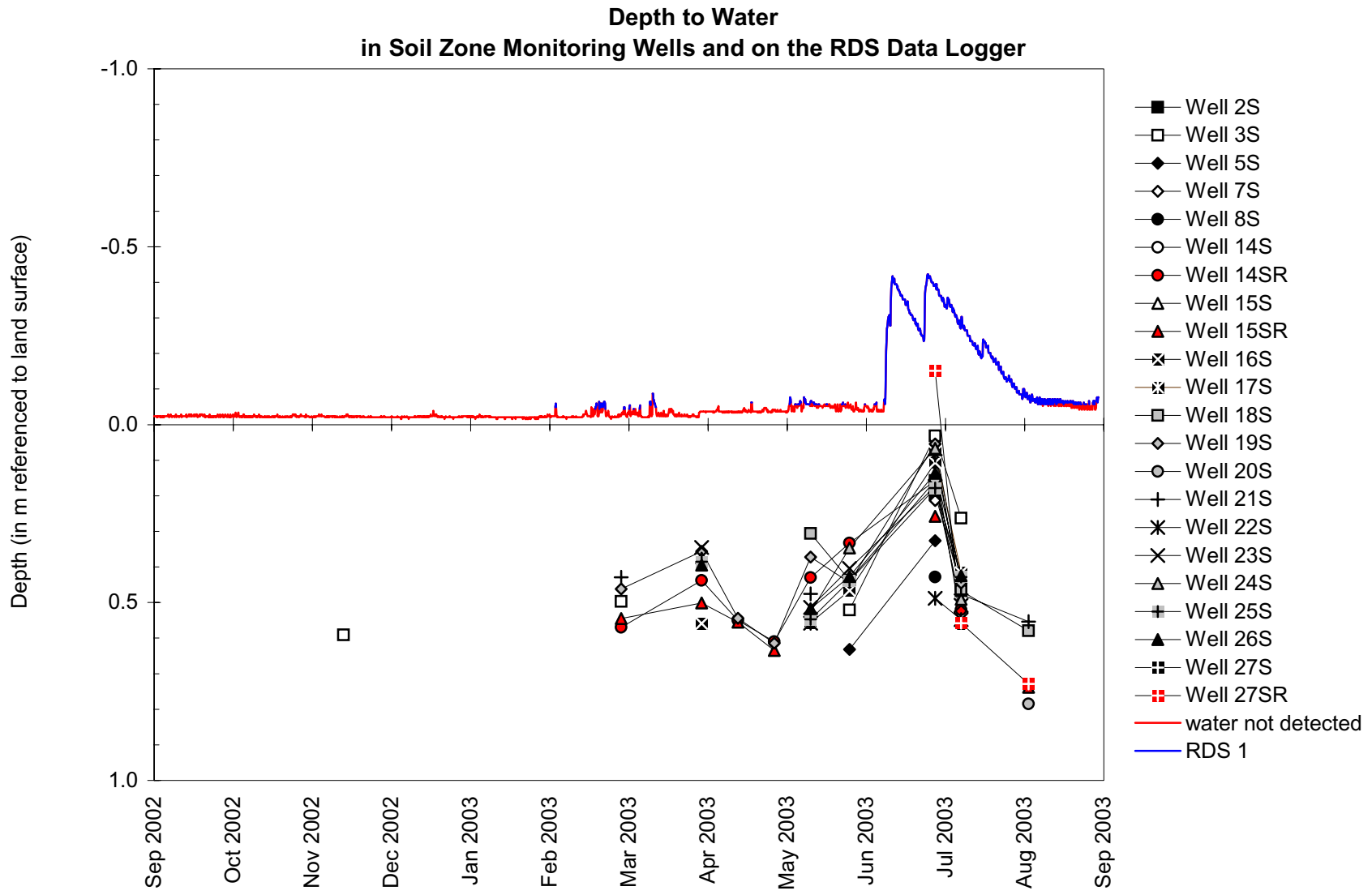
# Sand Road Wetland Compensation Site

## September 1, 2002 to September 1, 2003



# Sand Road Wetland Compensation Site

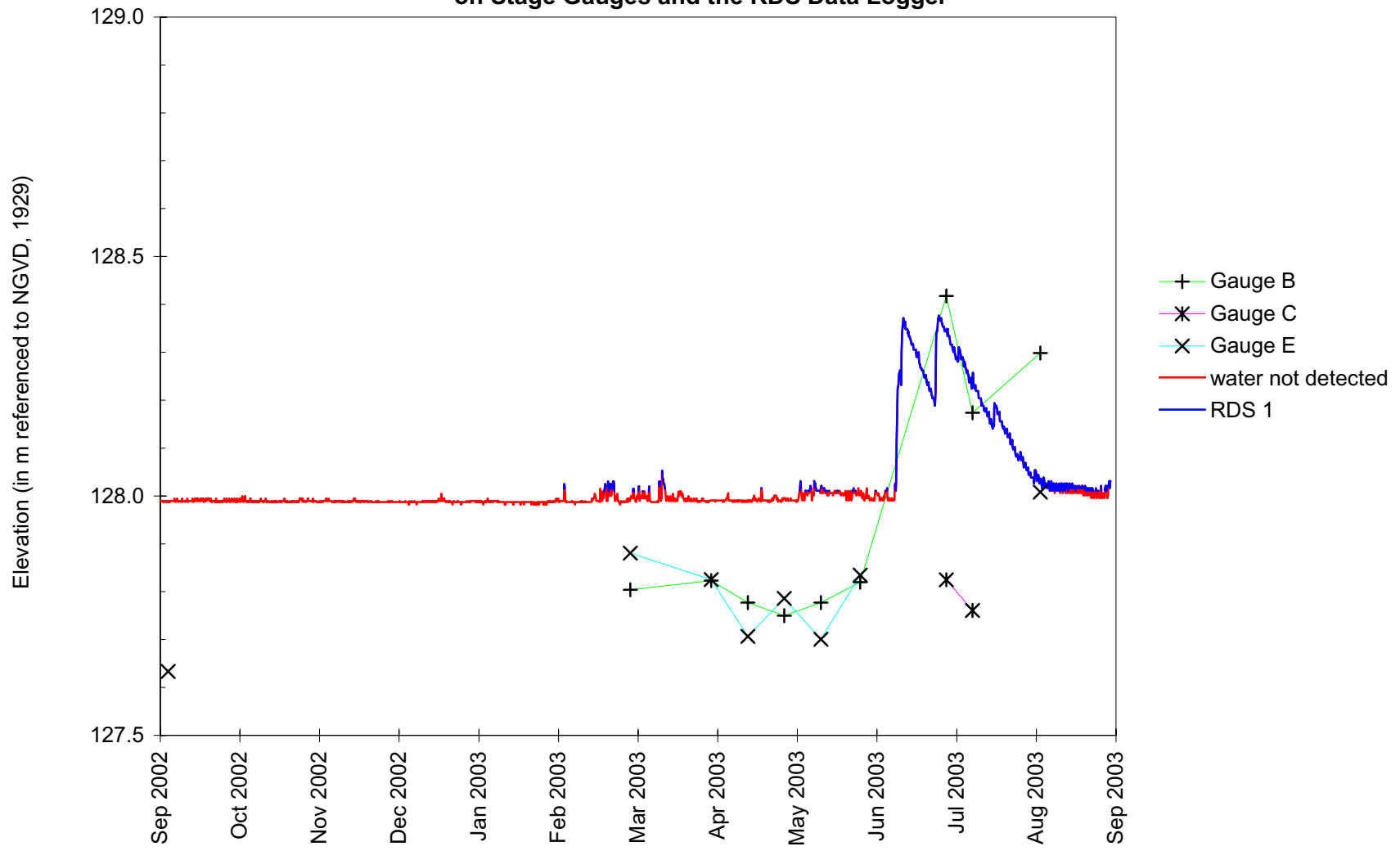
## September 1, 2002 to September 1, 2003



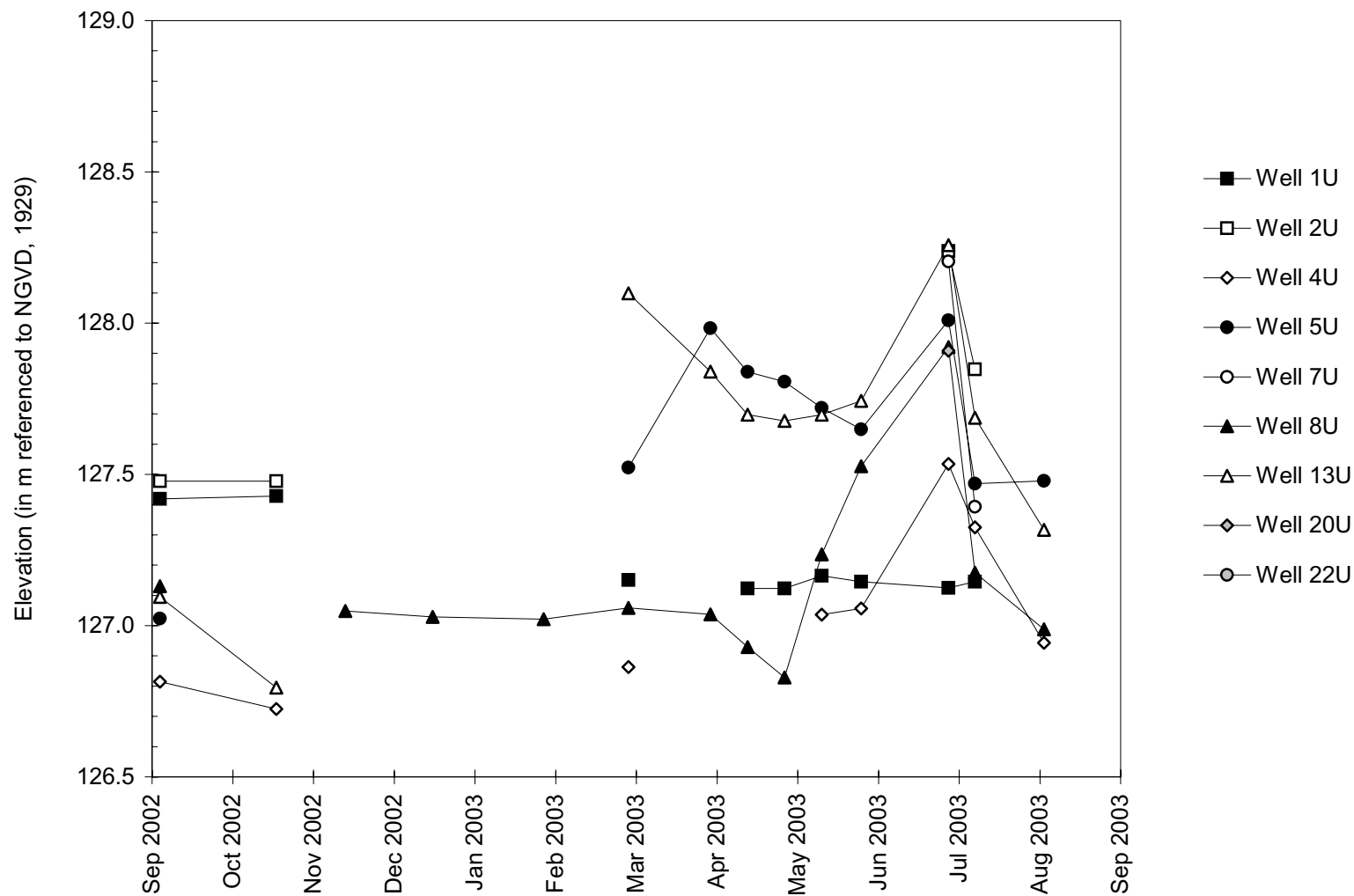
# Sand Road Wetland Compensation Site

September 1, 2002 to September 1, 2003

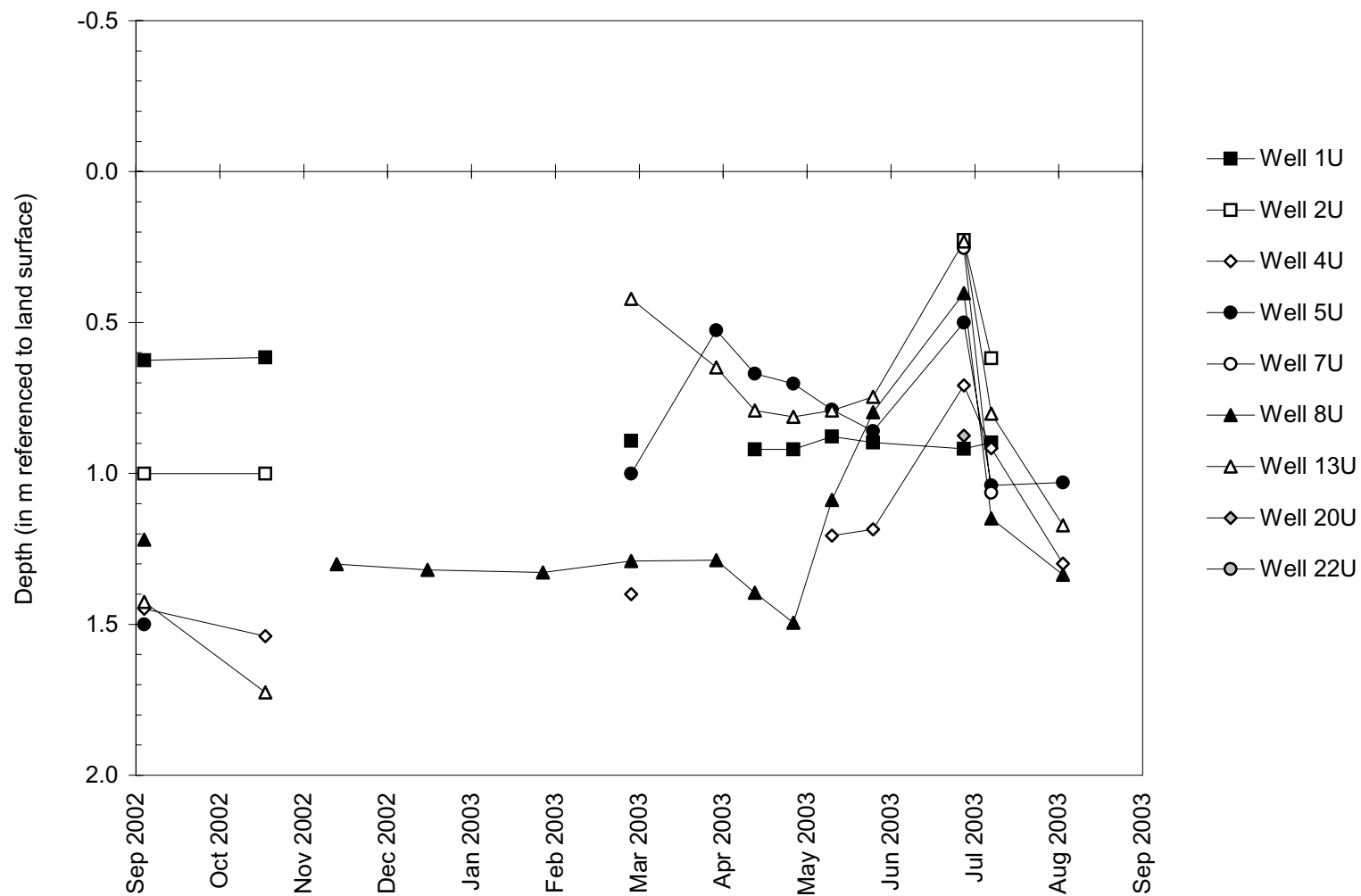
## Water-Level Elevations on Stage Gauges and the RDS Data Logger



## Water-Level Elevations in Upper Monitoring Wells

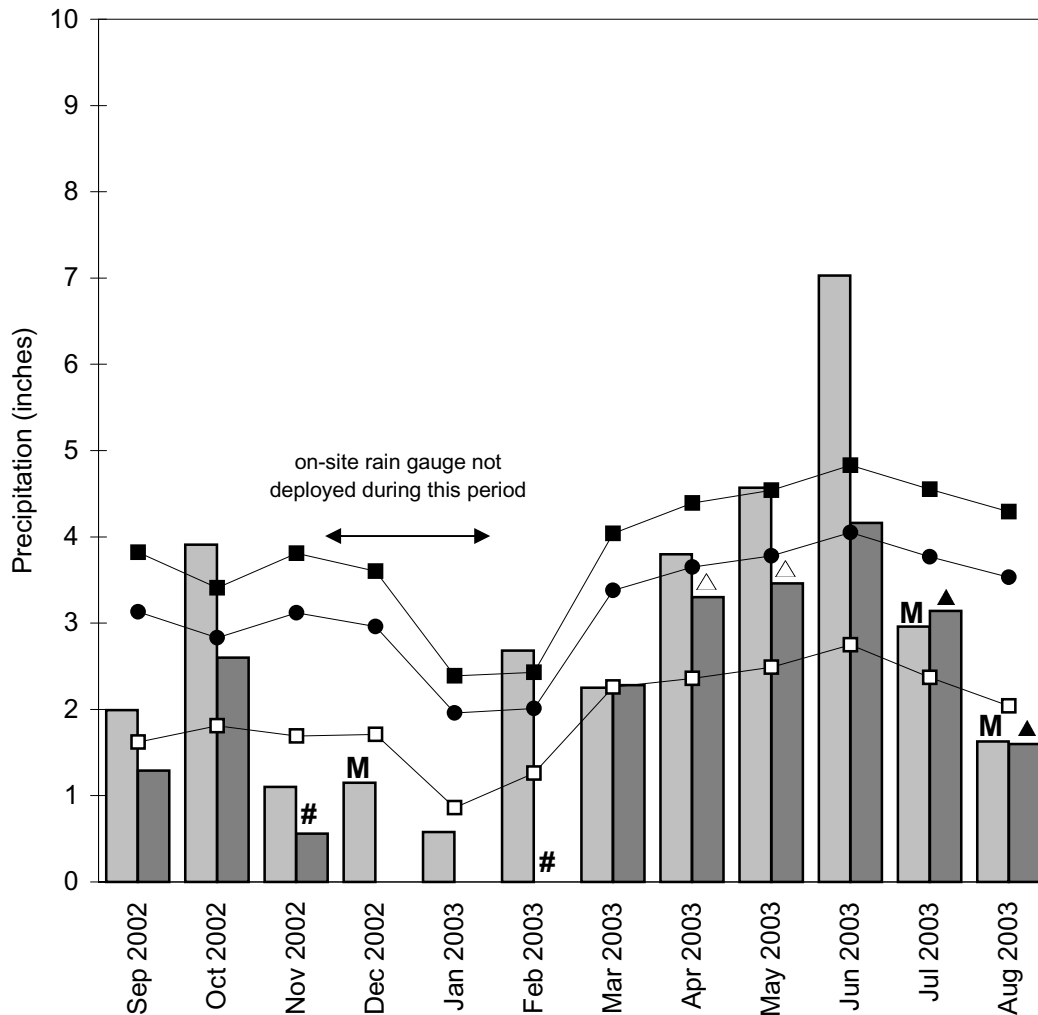


### Depth to Water in Upper Monitoring Wells



## Sand Road Wetland Compensation Site September 2002 through August 2003

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



- monthly precipitation recorded at weather station (Midwestern Regional Climate Center)
- monthly precipitation recorded on site by ISGS
- 1961-1990 monthly average precipitation (National Water and Climate Center)
- 1961-1990 monthly 30% above average threshold (National Water and Climate Center)
- 1961-1990 monthly 30% below average threshold (National Water and Climate Center)

# on-site rain gauge not deployed for entire month

△ suspect data, on-site rain gauge clogged or malfunctioning, represents minimum value for the month

M missing data from weather station

▲ on-site rain gauge clogged with 0.12 inches accumulated between 07/10/03 and 08/05/03

Graph last updated September 22, 2003



**ORANGEVILLE  
WETLAND COMPENSATION SITE**

**ISGS #16**

FAP 316

Stephenson County, near Orangeville, Illinois

**Primary Project Manager: Kelli D. Weaver**

**Secondary Project Manager: Keith W. Carr**

**SITE HISTORY**

- March 1993: IDOT tasked ISGS to determine ground-water levels on the site.
- March 1997: A final hydrogeologic characterization report was submitted to IDOT (ISGS Open File Series 1997-3).
- June 2000: IDOT requested that ISGS monitor two newly constructed wetland compensation sites. The two sites are labeled Site 1 (most northerly) and Site 2 (most southerly).
- Spring 2001: Monitoring of Site 1 and Site 2 began, and in Spring 2001, 2002, and 2003 the sites were further augmented with the installation of 27 soil-zone monitoring wells, 4 stage gauges, 2 RDS water-level data loggers, a sonic water-level logger and a rain gauge. The ISGS also produced topographic base maps of the site in 2002.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

The total area that conclusively satisfied wetland hydrology criteria in 2003 is estimated to be 12.67 ac (5.13 ha), including 7.90 ac (3.20 ha) at Site 1 and 4.78 ac (1.9 ha) at Site 2. This is in contrast to the total combined area of 12.22 ac (4.9 ha), that satisfied wetland hydrology in 2002. The estimates for 2003 wetland hydrology acreage 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; 12.5% of the growing season is 23 days.
- The total precipitation for the monitoring period from September 2002 to August 2003 was 75% of normal. Despite above-normal precipitation in October 2002, the precipitation totals from September 2002 through April 2003 were significantly below normal, leading to drier than typical conditions entering the 2003 growing season. Precipitation levels were above normal in May and July, and were below normal for June and August.
- At Site 1, water levels measured in wells 2S, 3S, 10S, 11S and 12S, conclusively satisfied the wetland hydrology criteria in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. The surface-water levels measured by logger RDS B indicated that inundation occurred to an elevation of 240.42 m (788.78 ft) for a duration sufficient to satisfy wetland hydrology criteria.
- At Site 2, water levels measured in wells 4S, 5S, 6S, 8S, 9S, 13S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 22S, 24S, 25S, and 27S conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. Also, water levels measured at stage gauge C indicated that inundation occurred to an elevation of 240.53 m

(789.14 ft) for a duration sufficient to satisfy wetland hydrology criteria.

- Surface-water levels measured by stage gauge A, sonic logger A, and logger RDS D indicated that, unlike previous years, Site 2 was not inundated by Richland Creek during the spring of 2003.

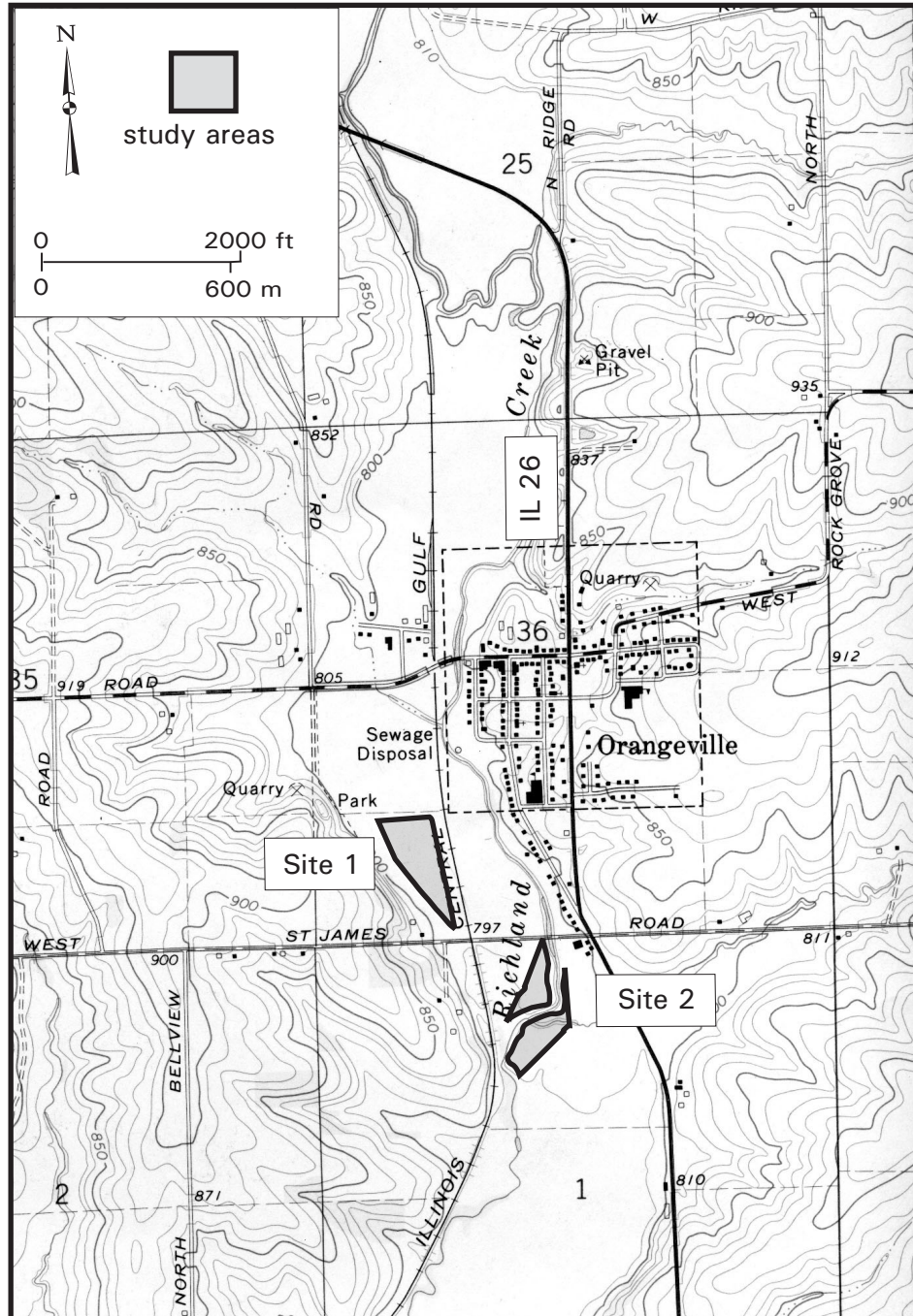
#### PLANNED FUTURE ACTIVITIES

- Additional shallow-water monitoring wells will be added to further delineate wetland hydrology.
- Monitoring for wetland hydrology will continue at this site through 2005 or until no longer required by IDOT.

# Orangeville Wetland Compensation Site (FAP 316)

## General Study Area and Vicinity

from the USGS Topographic Series, Orangeville, IL 7.5-minute Quadrangle (USGS 1971)  
contour interval is 10 feet



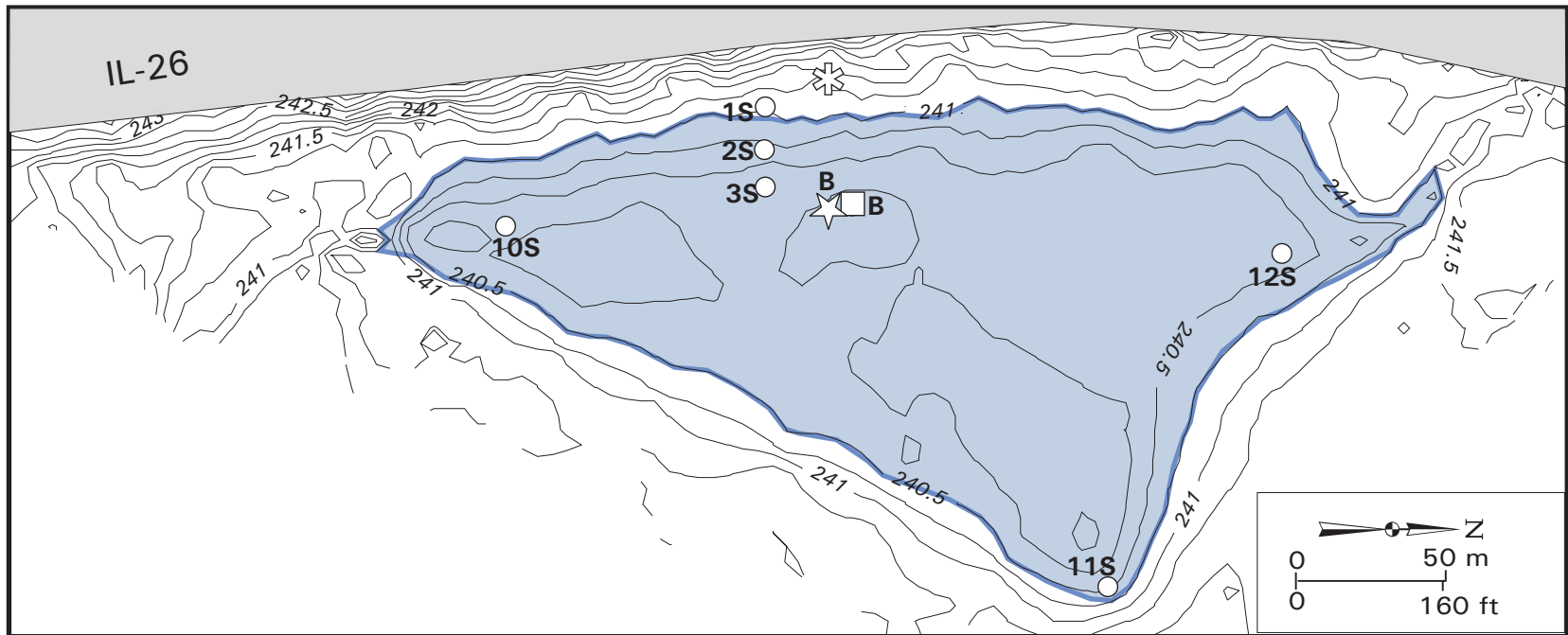
# Orangeville Wetland Compensation Site (FAP 316)

## Estimated Areal Extent of 2003 Wetland Hydrology at Site 1

based on data collected between September 1, 2002 and September 1, 2003

map based on 2002 ISGS topographic survey referenced to NGVD, 1929

contour interval is 0.25 meters



○ ISGS monitoring well

✱ rain gauge

□ RDS level logger

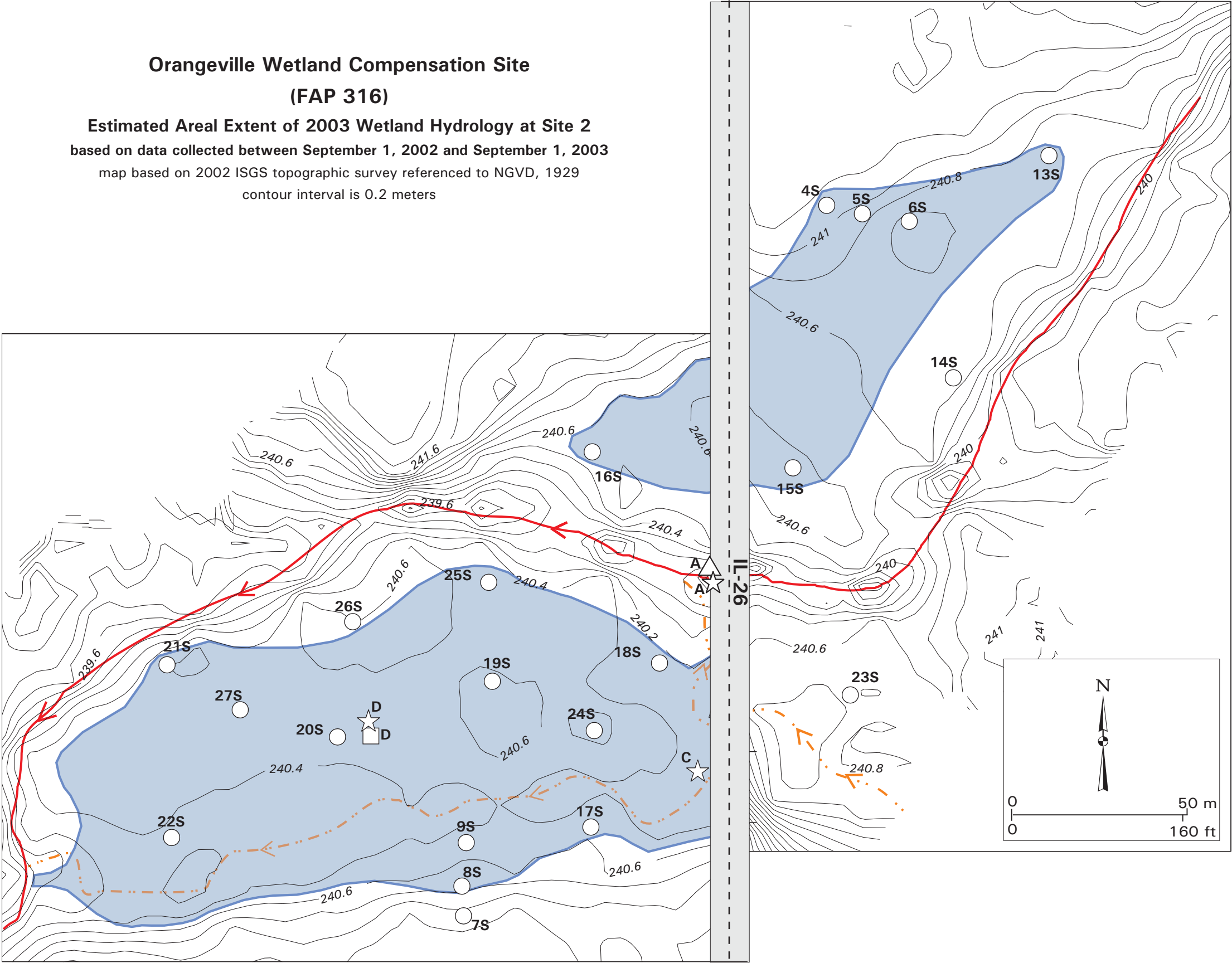
☆ stage gauge

estimated areal extent of  
2003 wetland hydrology

elevation contour  
(interval is 0.25 meters)

# Orangeville Wetland Compensation Site (FAP 316)

**Estimated Areal Extent of 2003 Wetland Hydrology at Site 2**  
 based on data collected between September 1, 2002 and September 1, 2003  
 map based on 2002 ISGS topographic survey referenced to NGVD, 1929  
 contour interval is 0.2 meters

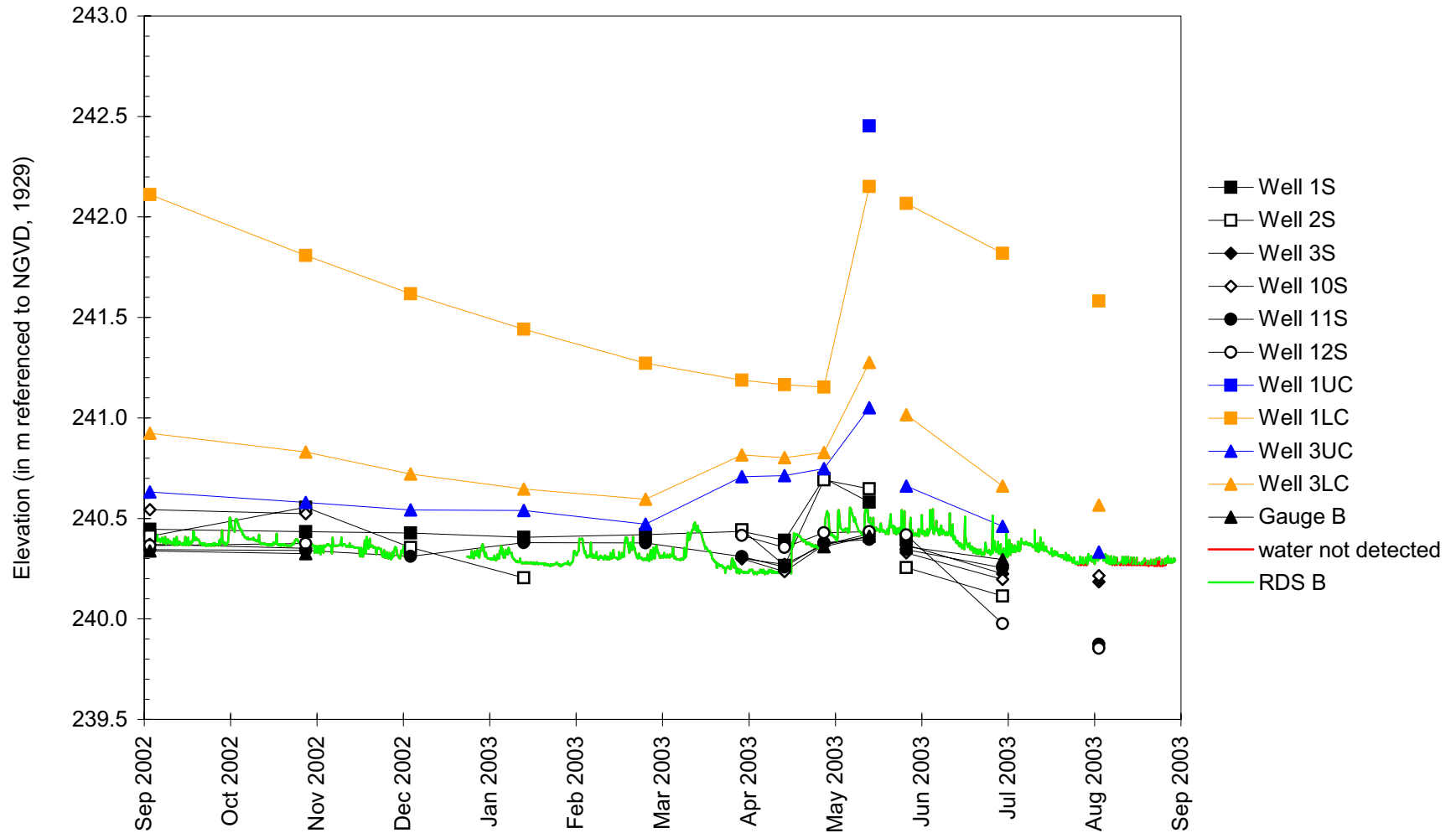


- estimated areal extent of 2003 wetland hydrology
- elevation contour (interval is 0.20 meters)
- Richland Creek
- diverted rivulet
- ISGS monitoring well
- RDS level logger
- Infinities sonic data recorder
- stage gauge

# Orangeville Wetland Compensation Site

## September 1, 2002 to September 1, 2003

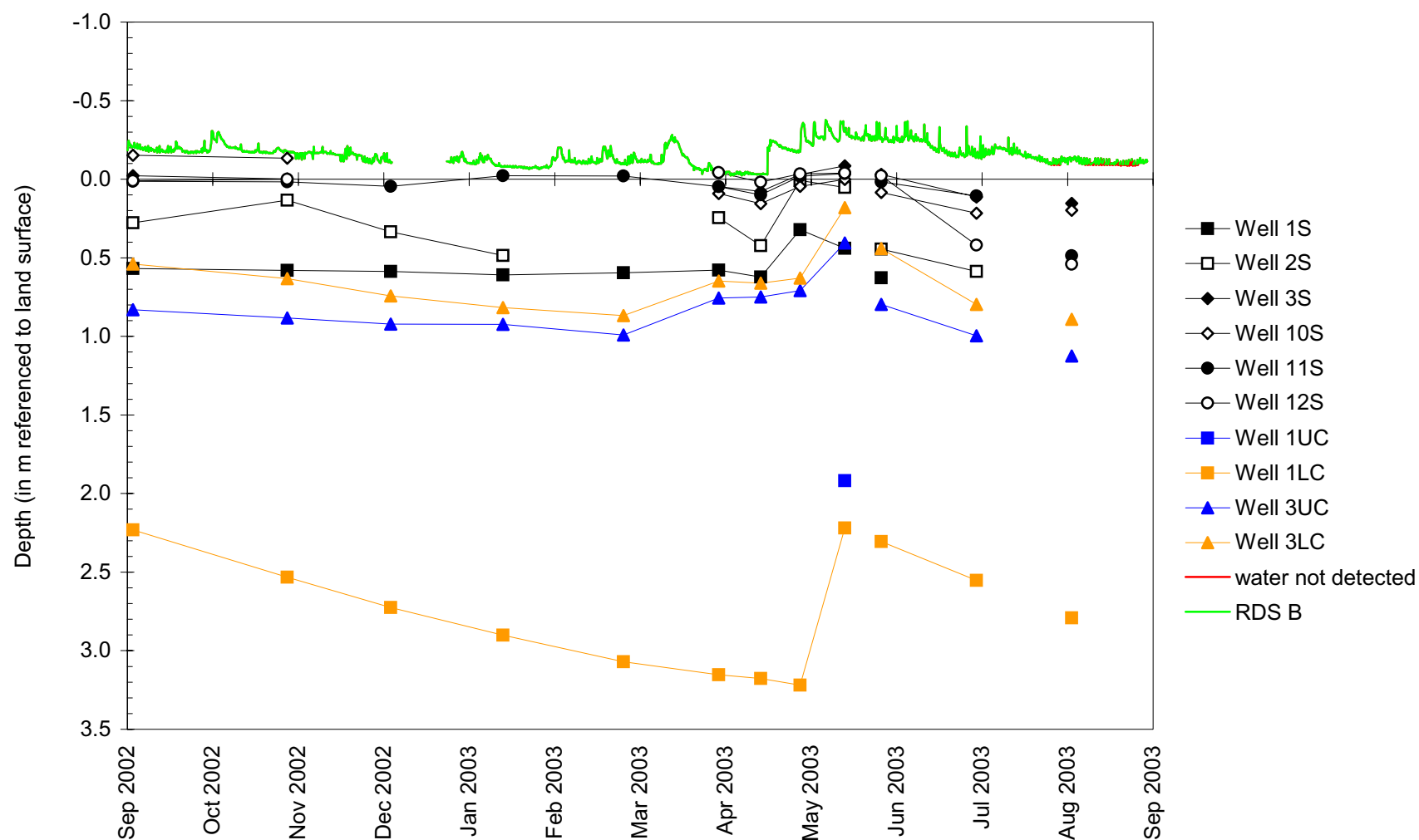
### Water-Level Elevations at Site 1



# Orangeville Wetland Compensation Site

September 1, 2002 to September 1, 2003

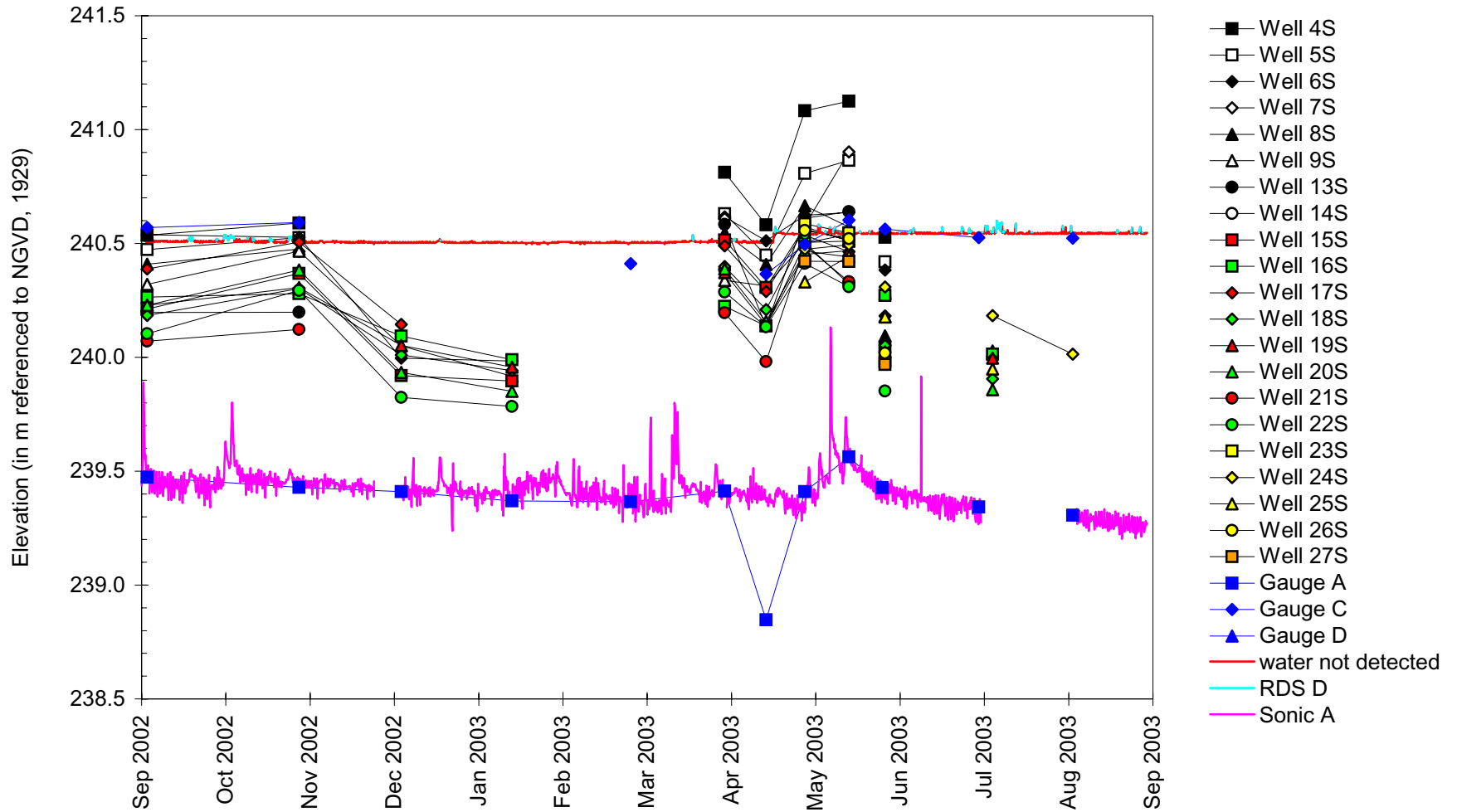
## Depth to Water at Site 1



# Orangeville Wetland Compensation Site

## September 1, 2002 to September 1, 2003

### Water-Level Elevations at Site 2

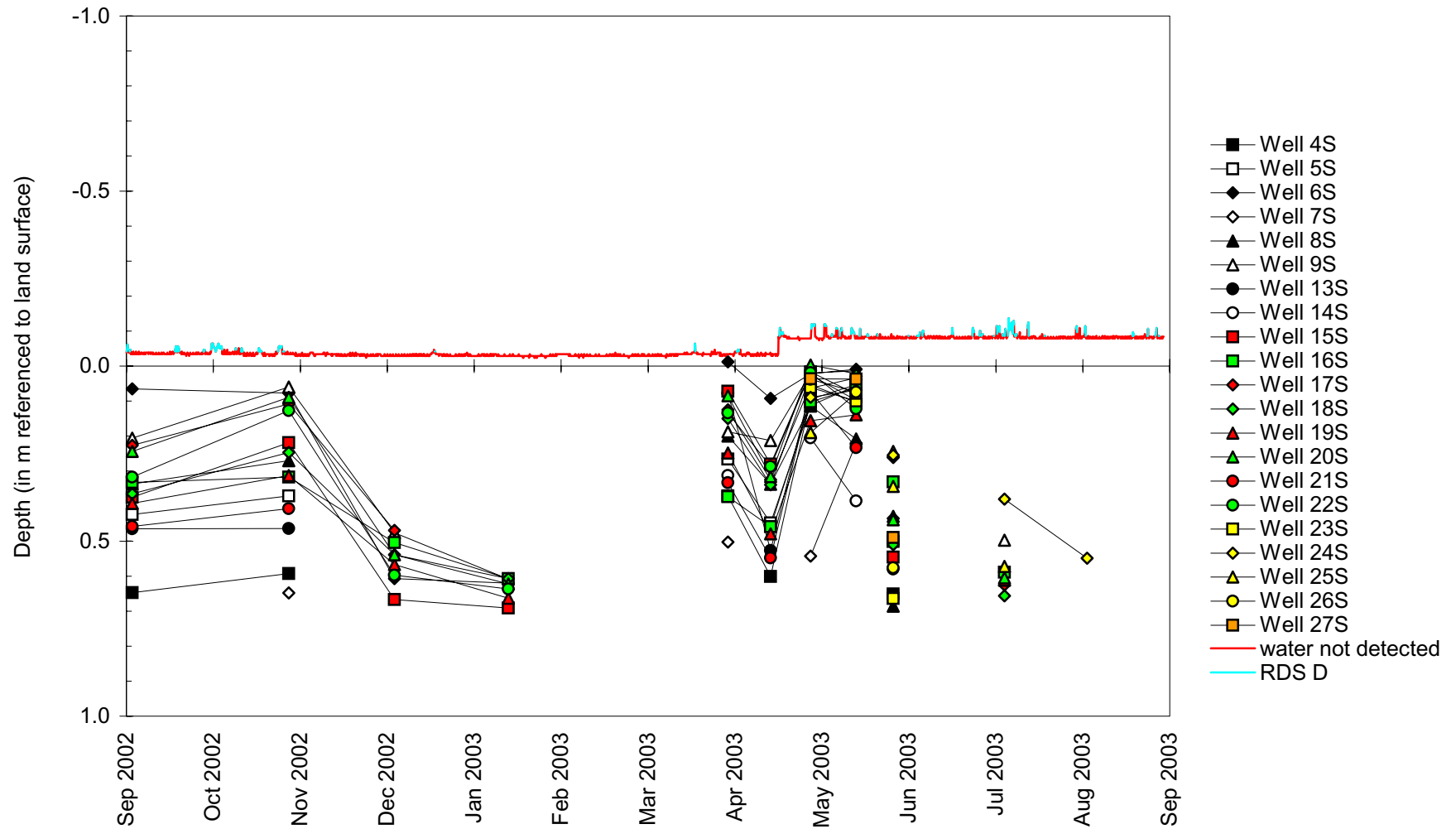




# Orangeville Wetland Compensation Site

## September 1, 2002 to September 1, 2003

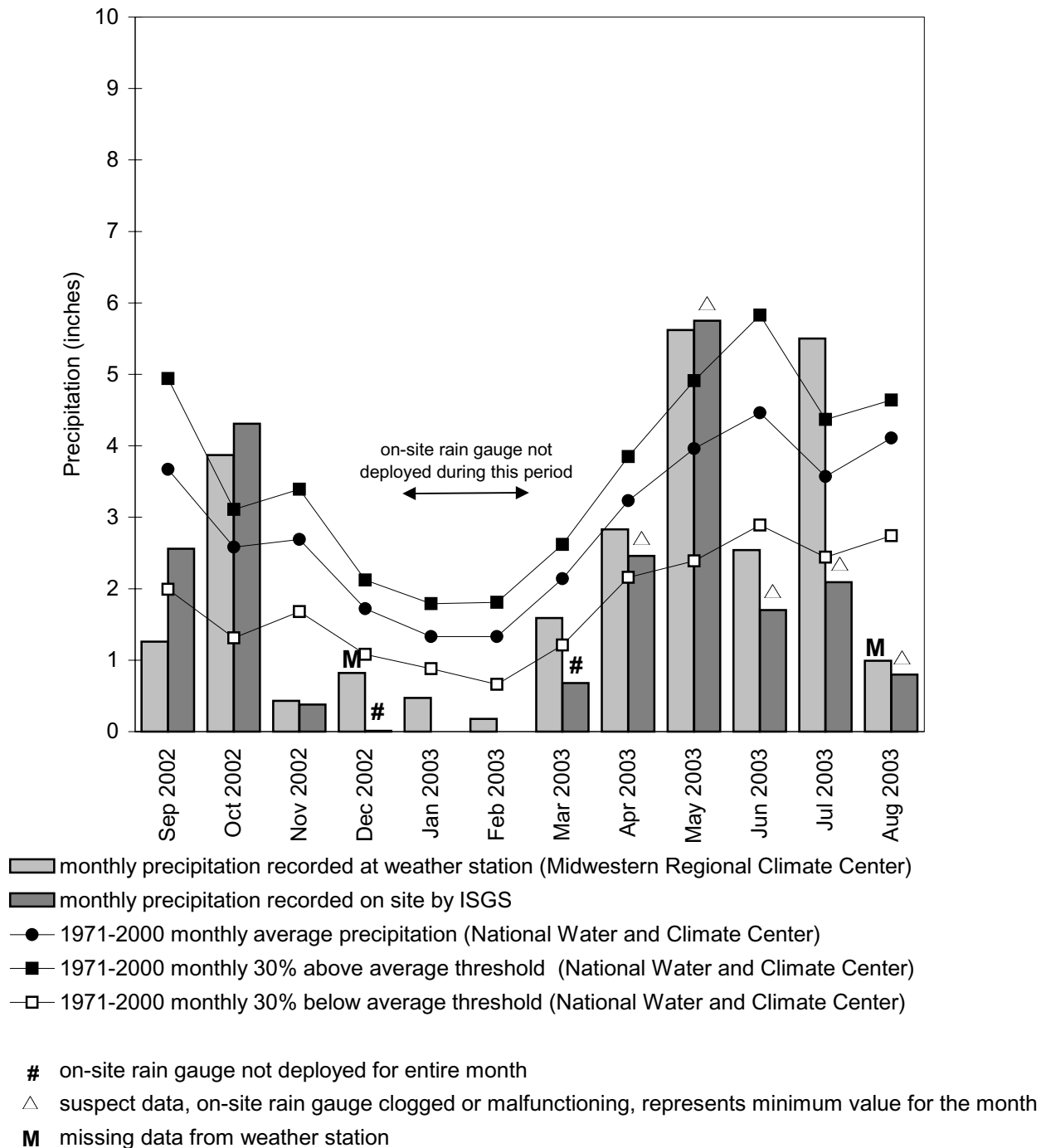
### Depth to Water at Site 2



# Orangeville Wetland Compensation Site

## September 2002 through August 2003

### Total Monthly Precipitation Recorded On Site and at the Freeport Wastewater Treatment Plant Weather Station, Freeport, IL



**MILAN BELTWAY, AIRPORT ROAD  
WETLAND COMPENSATION SITE**

**ISGS #17**

FAU 5822

Rock Island County, near Milan, Illinois

**Primary Project Manager: Keith W. Carr**

**Secondary Project Manager: Steven E. Benton**

**SITE HISTORY**

- July 1996: ISGS submitted an Initial Site Evaluation Report to IDOT.
- February 1997: IDOT issued a task order for a hydrologic characterization of the site.
- August 1997: ISGS data collection was initiated with the installation of monitoring wells and staff gauges.
- August 2000: ISGS sent a letter to IDOT recommending approximate excavation depths required to attain wetland hydrology in the southern third of the site.
- May 2001: At IDOT's request, ISGS reviewed a mitigation plan for the site.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

The area that conclusively satisfied wetland hydrology criteria in 2003 is estimated to be 12.6 ac (5.1 ha) out of a total site area of roughly 28.4 ac (11.5 ha). This is a smaller area than in 2002, during which 20.6 ac (8.3 ha) satisfied wetland hydrology criteria. This estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins at the Quad City International Airport, Moline, Illinois is April 13 and the season lasts 192 days; 12.5% of the growing season is 24 days.
- Total precipitation for the 2002-2003 monitoring period (September 2002 through August 2003) was 67% of normal. Total precipitation for the period from September 2002 through March 2003 was 39% of normal, resulting in drier than typical moisture conditions entering the growing season. In April and May, precipitation returned to slightly above normal, resulting in an expansion of the area of saturation on the site. In the April 2003 through August 2003 period as a whole, precipitation was slightly below normal (89%).
- In 2003, ground-water levels measured at wells 1S, 2S, 5S, 6S, and 7S conclusively satisfied the wetland hydrology criteria in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. Also, surface-water levels at gauge A and RDS 1 conclusively satisfied the wetland hydrology criteria at elevations of 171.72 m (563.38 ft) and 171.82 m (563.71 ft), respectively.

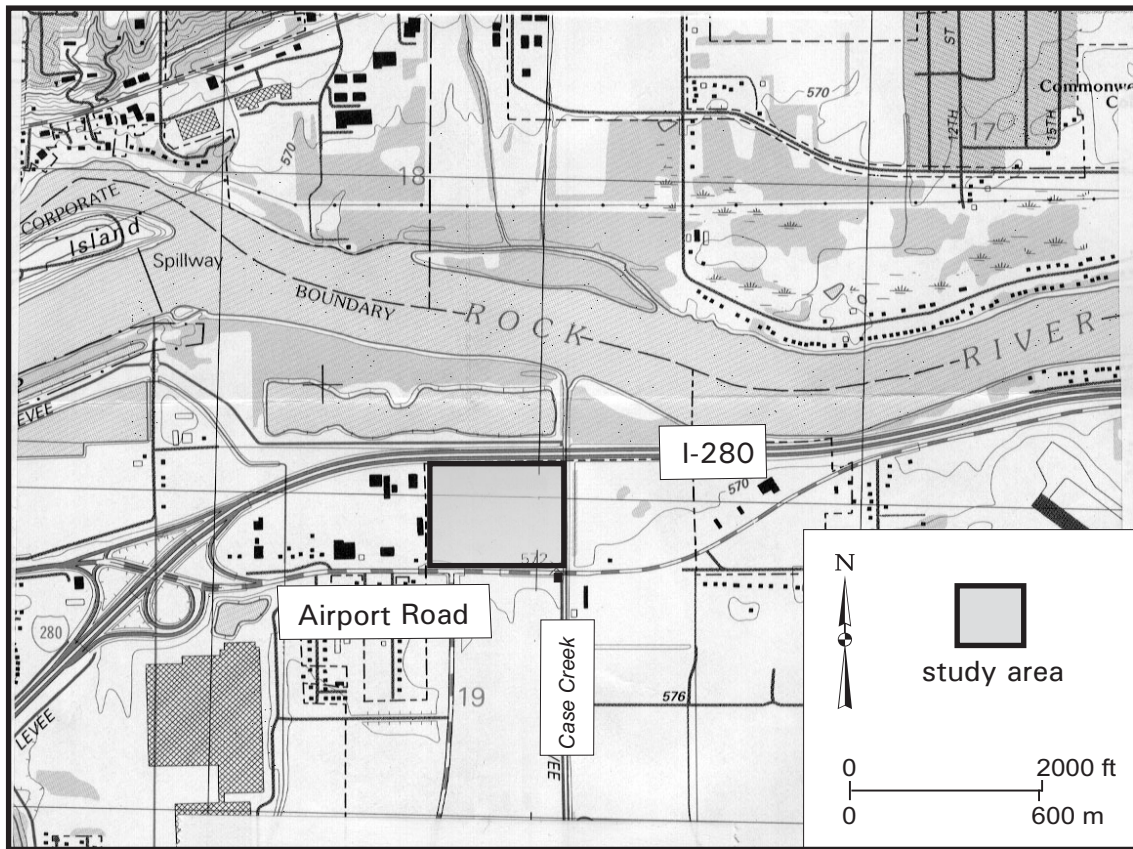
**PLANNED FUTURE ACTIVITIES**

- If the previously planned excavation on the site is undertaken, several wells and data loggers will have to be removed prior to this excavation and re-deployed afterwards.

# Milan Beltway, Airport Road Wetland Compensation Site (FAU 5822)

## General Study Area and Vicinity

from the USGS Topographic Series, Milan IL-IA 7.5-minute Quadrangle (USGS 1992)  
contour interval is 10 feet

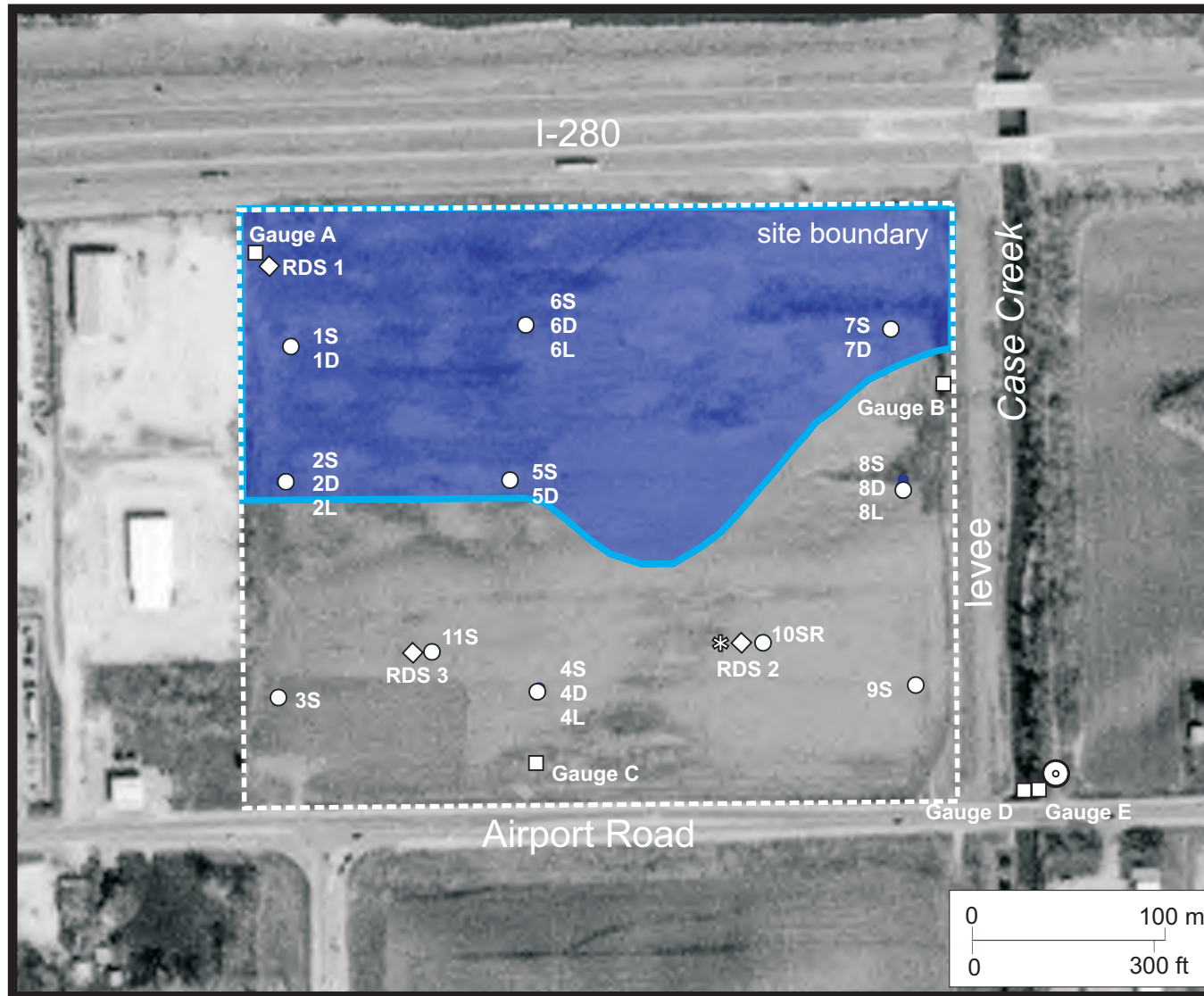


# Milan Beltway, Airport Road Wetland Compensation Site (FAU 5822)

## Estimated Areal Extent of 2003 Wetland Hydrology

based on data collected between September 1, 2002 and September 1, 2003

map based on USGS digital orthophotograph, Milan SW quarter quadrangle  
from 03/30/2000 aerial photography (ISGS 2002)



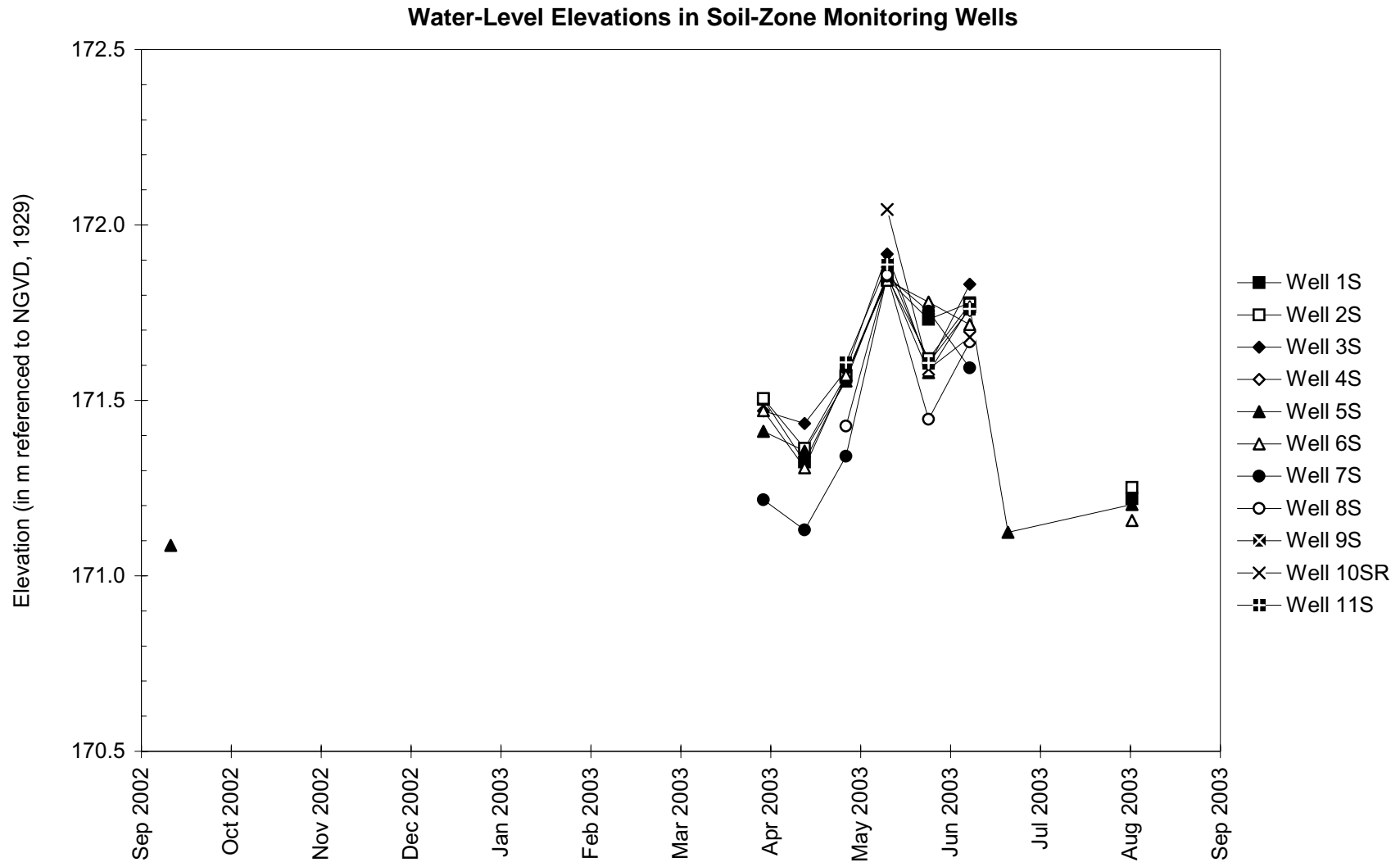
### LEGEND

- monitoring well / well nest
- stage gauge
- ◇ RDS data logger
- ⊙ Global data logger
- \* rain gauge



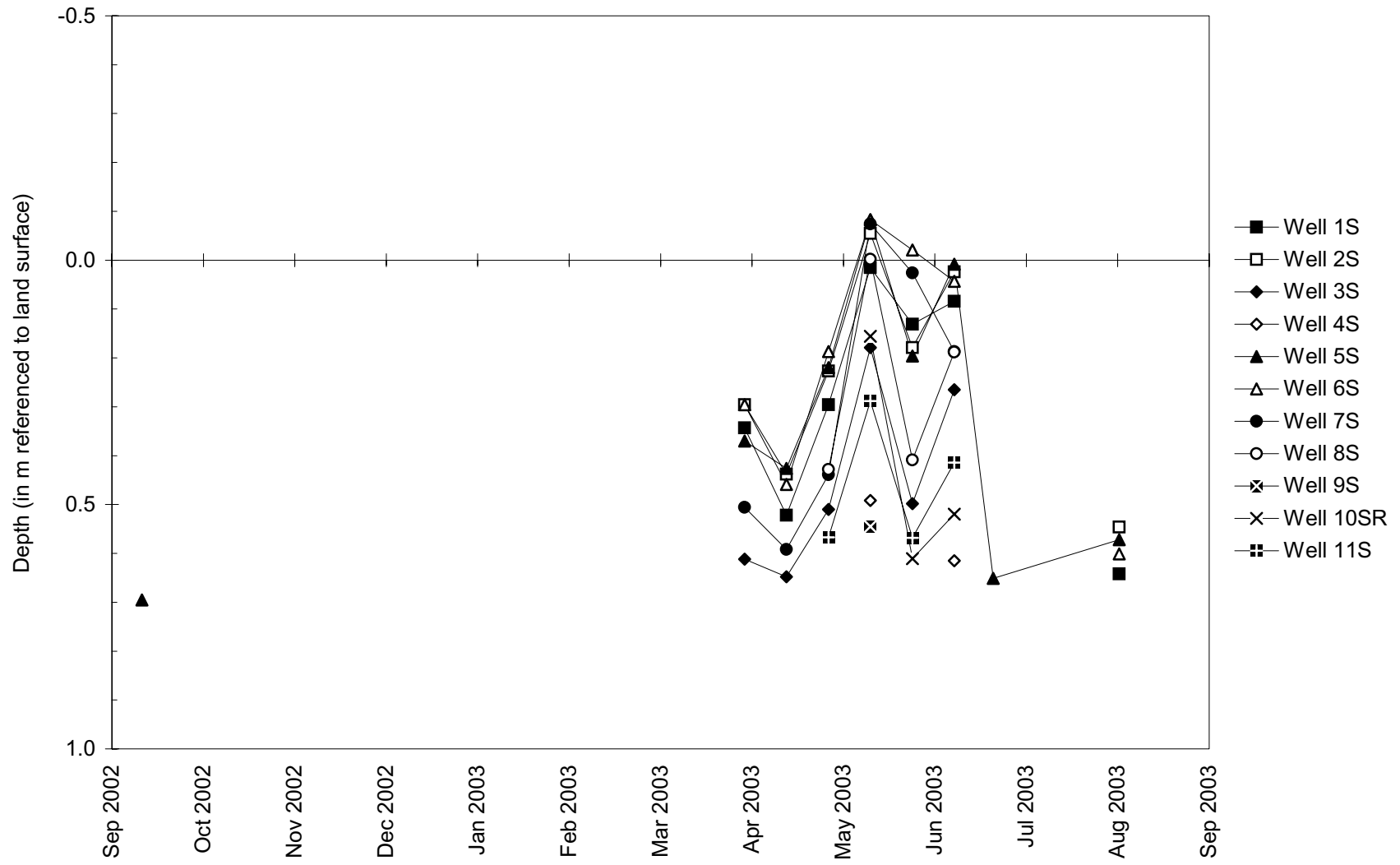
estimated areal extent of  
2003 wetland hydrology

**Milan Beltway, Airport Road Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**



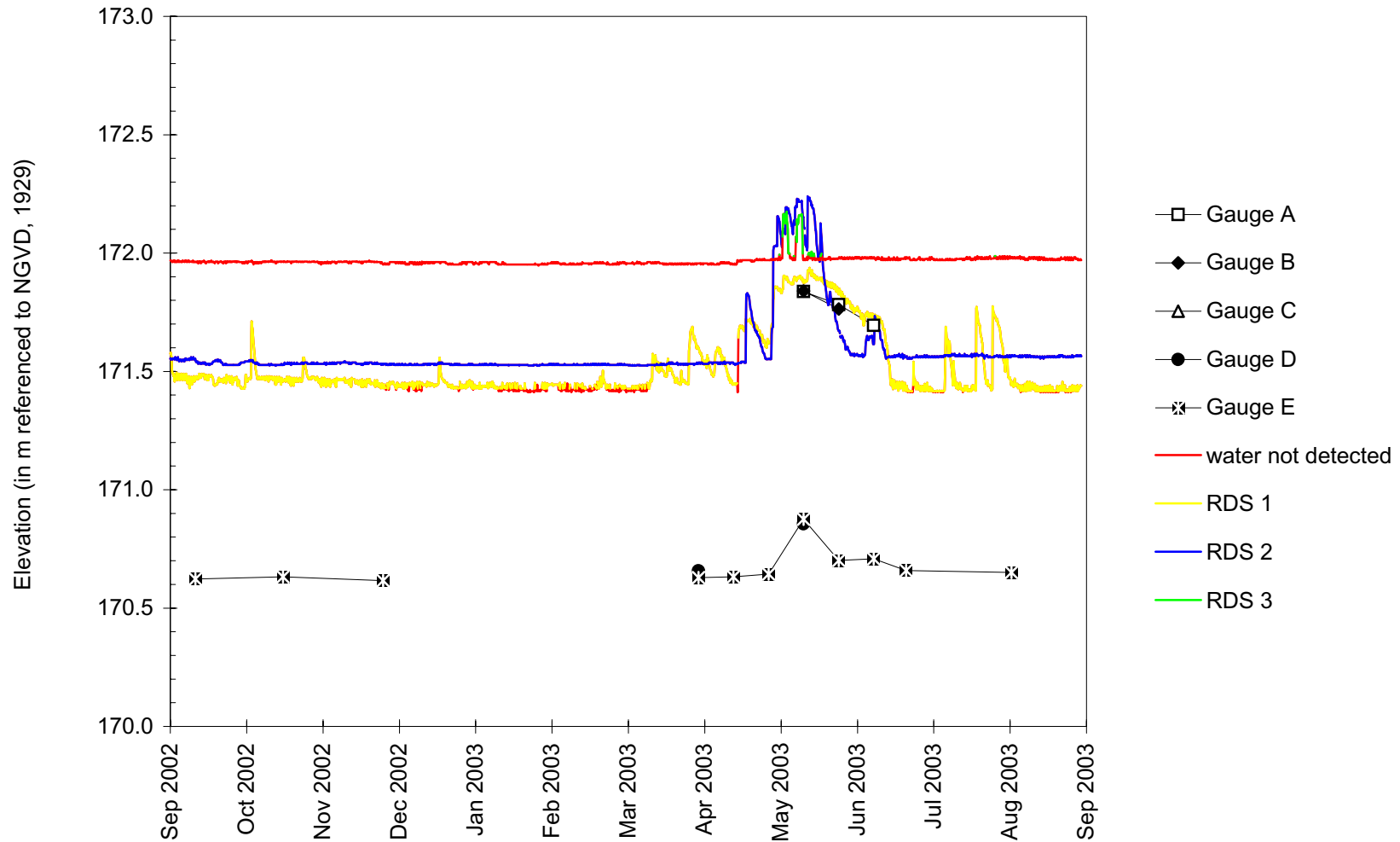
## September 1, 2002 to September 1, 2003

## Depths to Water in Soil-Zone Monitoring Wells



**Milan Beltway, Airport Road Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

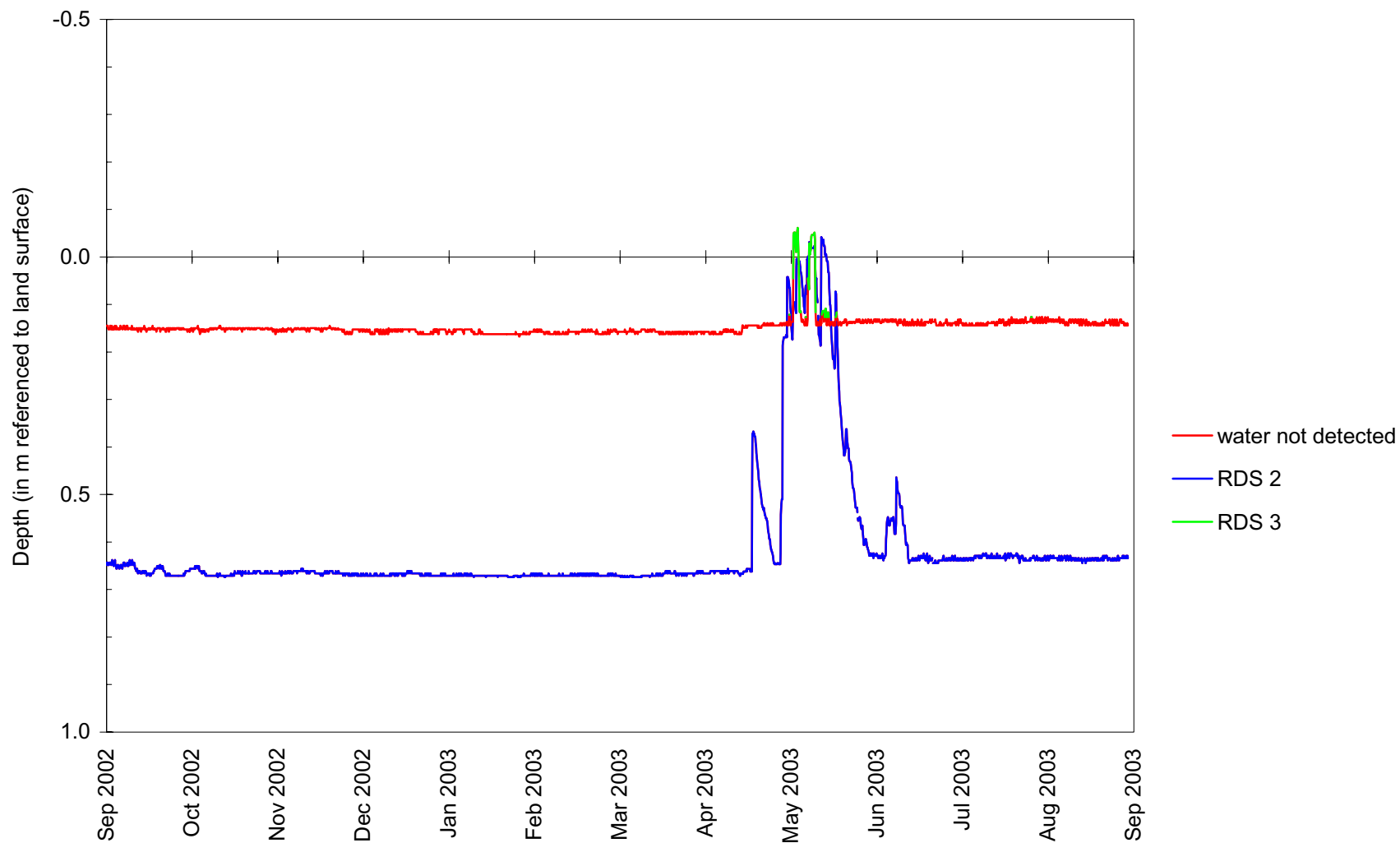
**Water-Level Elevations**  
**on Stage Gauges and RDS Data Loggers**



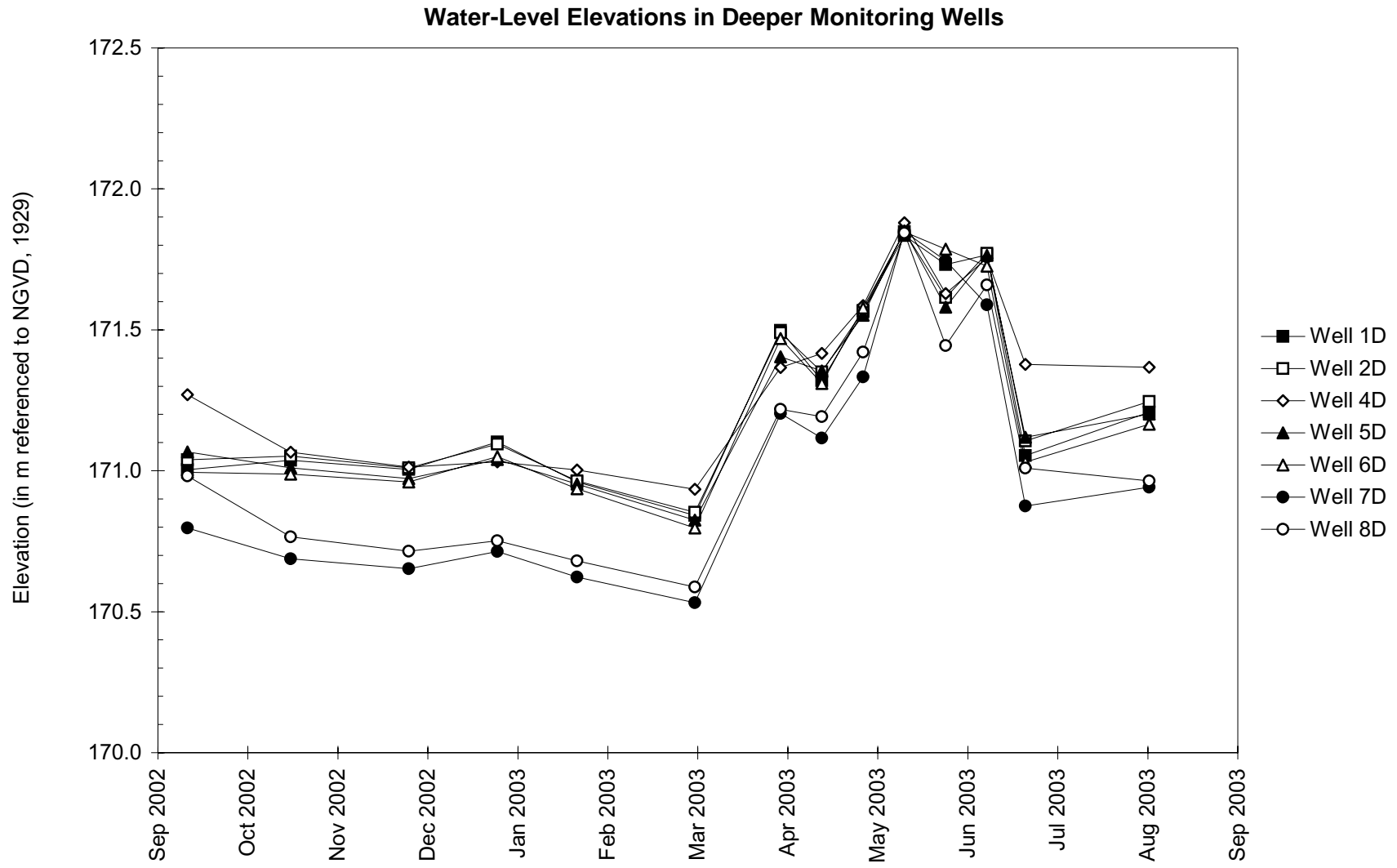


**Milan Beltway, Airport Road Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

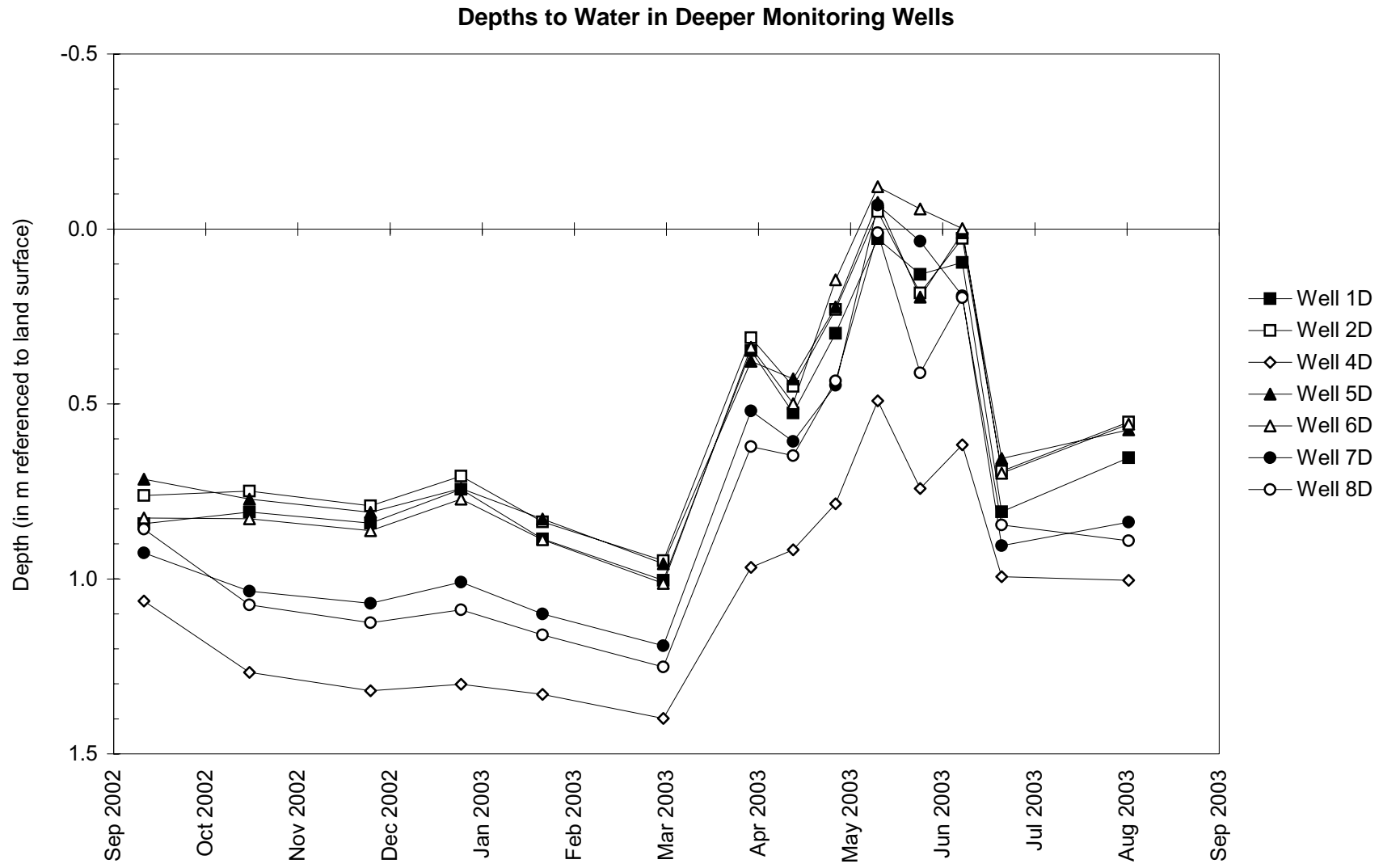
**Depths to Water in RDS Data Loggers**



**Milan Beltway, Airport Road Wetland Compensation Site**  
September 1, 2002 to September 1, 2003

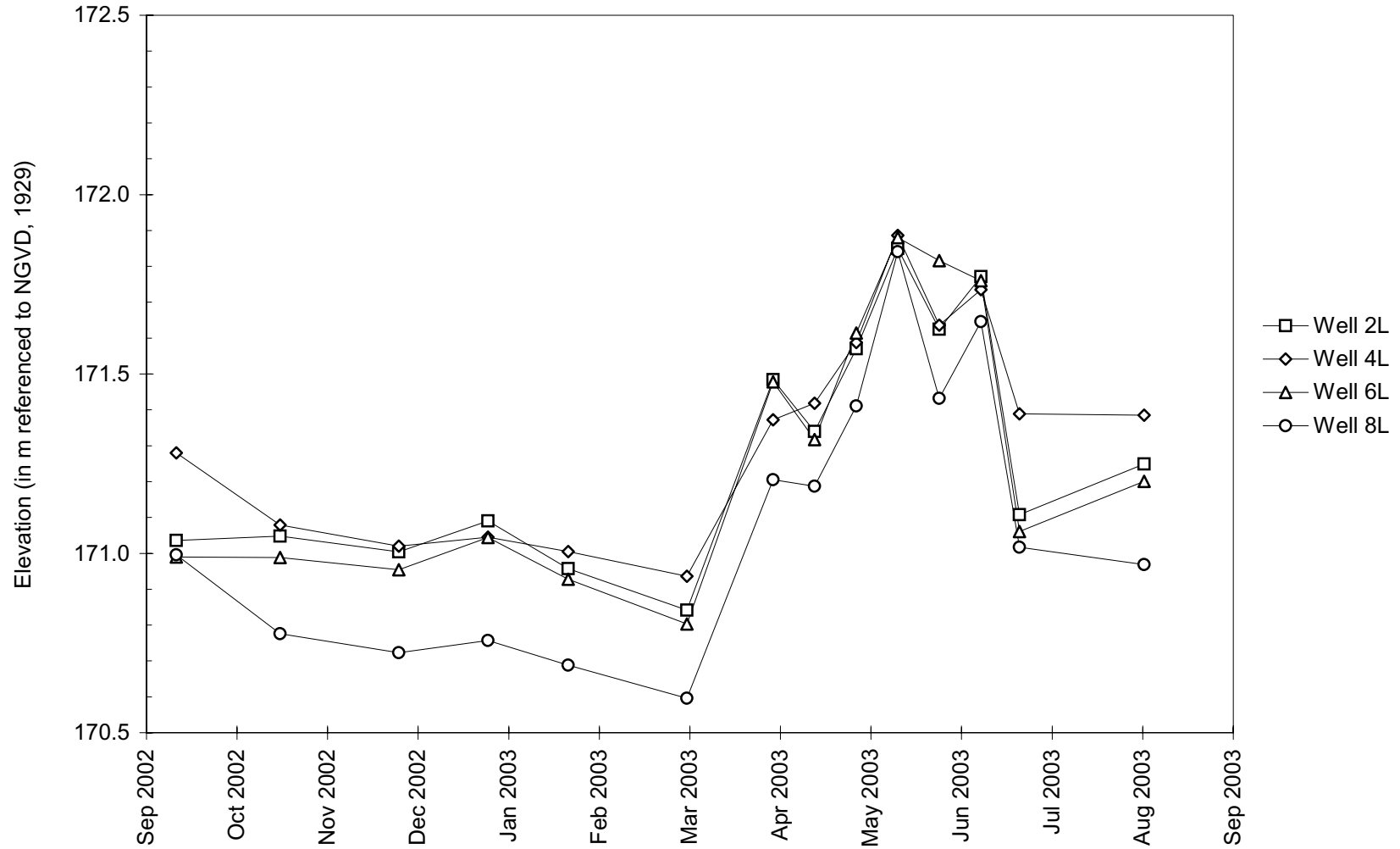


**Milan Beltway, Airport Road Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

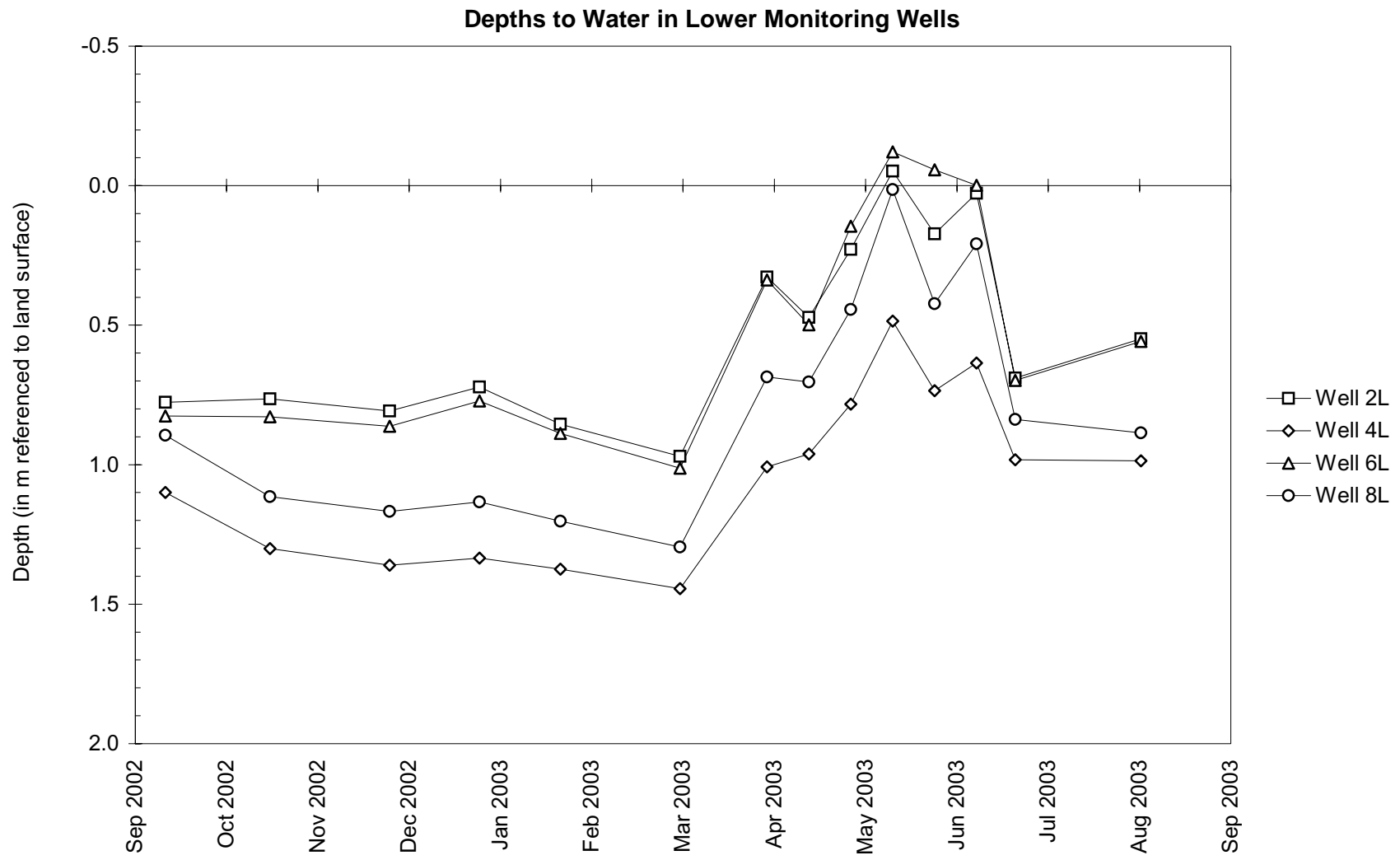


**Milan Beltway, Airport Road Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations in Lower Monitoring Wells**

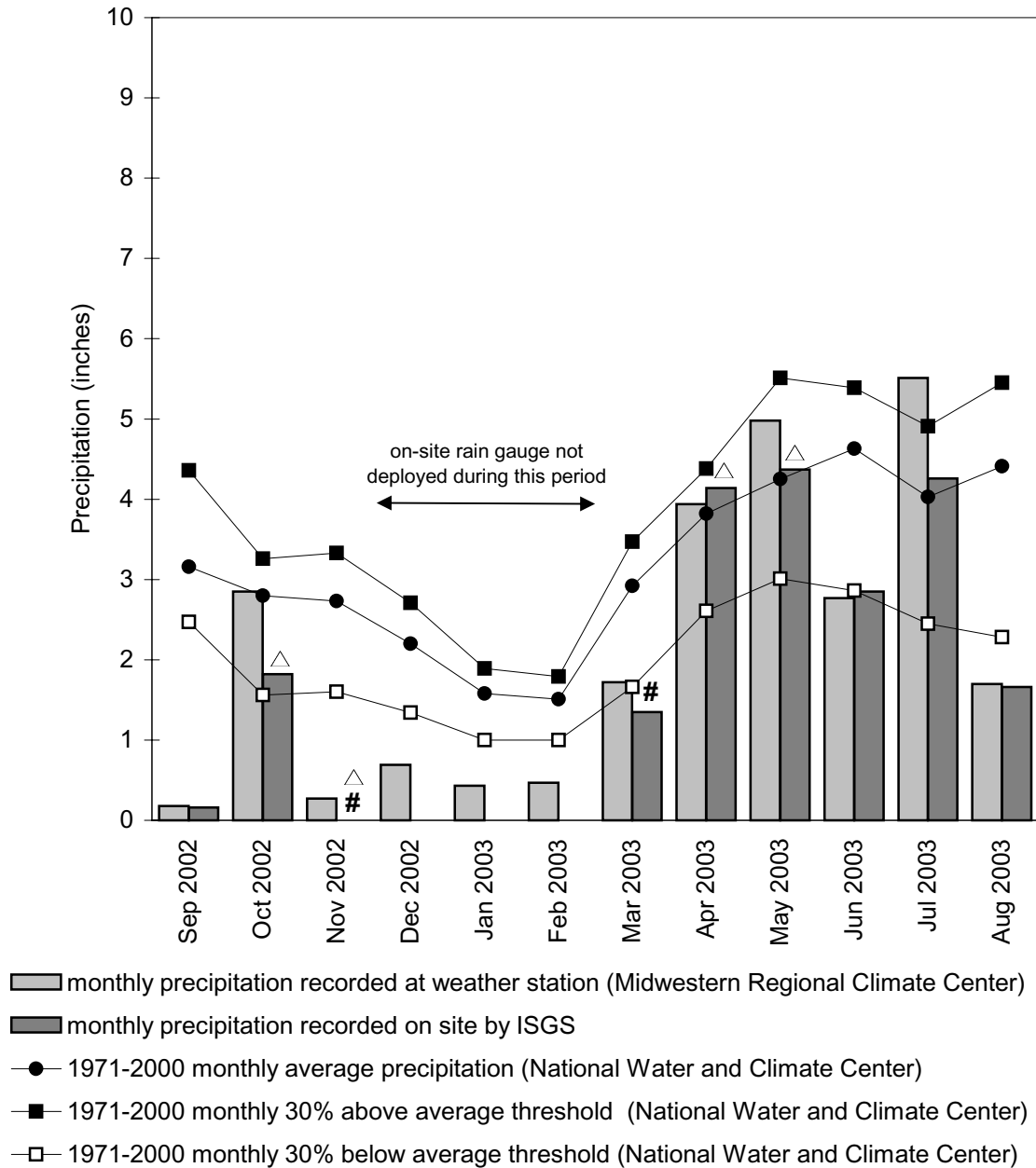


**Milan Beltway, Airport Road Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**



# Milan Beltway, Airport Road Wetland Compensation Site September 2002 through August 2003

## Total Monthly Precipitation Recorded On Site and at the Quad City International Airport Weather Station, Moline, IL



**SALINE COUNTY  
WETLAND COMPENSATION SITE**

**ISGS #18**

FAP 331

Saline County, near Harrisburg, Illinois

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

**Secondary Project Manager:** not assigned

**SITE HISTORY**

- May 1994: The ISGS began a hydrogeologic characterization of the site.
- June 1995: An interim hydrogeologic characterization report was submitted to IDOT.
- October 1996: An area of the site was excavated as part of the wetland mitigation. A berm around the new wetland was completed in August 1997.
- March 1998: Level II hydrogeological characterization report submitted to IDOT
- March 1999–April 2000: Fourteen additional soil-zone monitoring wells and one staff gauge were installed. Seven additional soil-zone wells were installed in April 2001.
- September 2001: A "close-out" meeting was held on site with representatives from the U.S. Army Corps of Engineers, IDOT, IDNR, ISGS, INHS, SIUC, and USF&W. The Corps representative indicated that the site would be accepted for mitigation and that a letter indicating such would be drafted. Additional monitoring was tasked by IDOT.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

In 2003, 18.6 ac (7.5 ha) of the compensation site satisfied the criteria for wetland hydrology, with approximately 2.0 ac (0.8 ha) classified as wetland by the INHS prior to site construction. Only portions of the berm in the southeast corner of the site did not meet the criteria. In 2002, 20.0 ac (8.1 ha) met the criteria for wetland hydrology. The figure for 2003 is based on the following factors.

- According to the Midwestern Climate Center, the median length of the growing season at Harrisburg, Illinois is 211 days, starting April 1 and ending October 29. Therefore, 12.5% of the growing season is 26 days.
- For the months that precipitation was reported at the Harrisburg weather station during the monitoring period, it was 112% of normal. Normal to above-normal precipitation in September, October, December 2002, and February and June 2003 promoted near-surface saturation throughout the winter and into early spring. Heavy rainfall reported onsite in May ensured that most of the site would meet the criteria for wetland hydrology at the beginning of the growing season.
- Water levels in all S- and U-wells, except for 2S, were observed above or within 30 cm (1 ft) of the surface for more than 12.5% of the growing season, thereby satisfying the wetland hydrology criteria outlined in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual.

#### PLANNED FUTURE ACTIVITIES

- Monitoring for wetland hydrology will continue at this site until no longer required by IDOT.

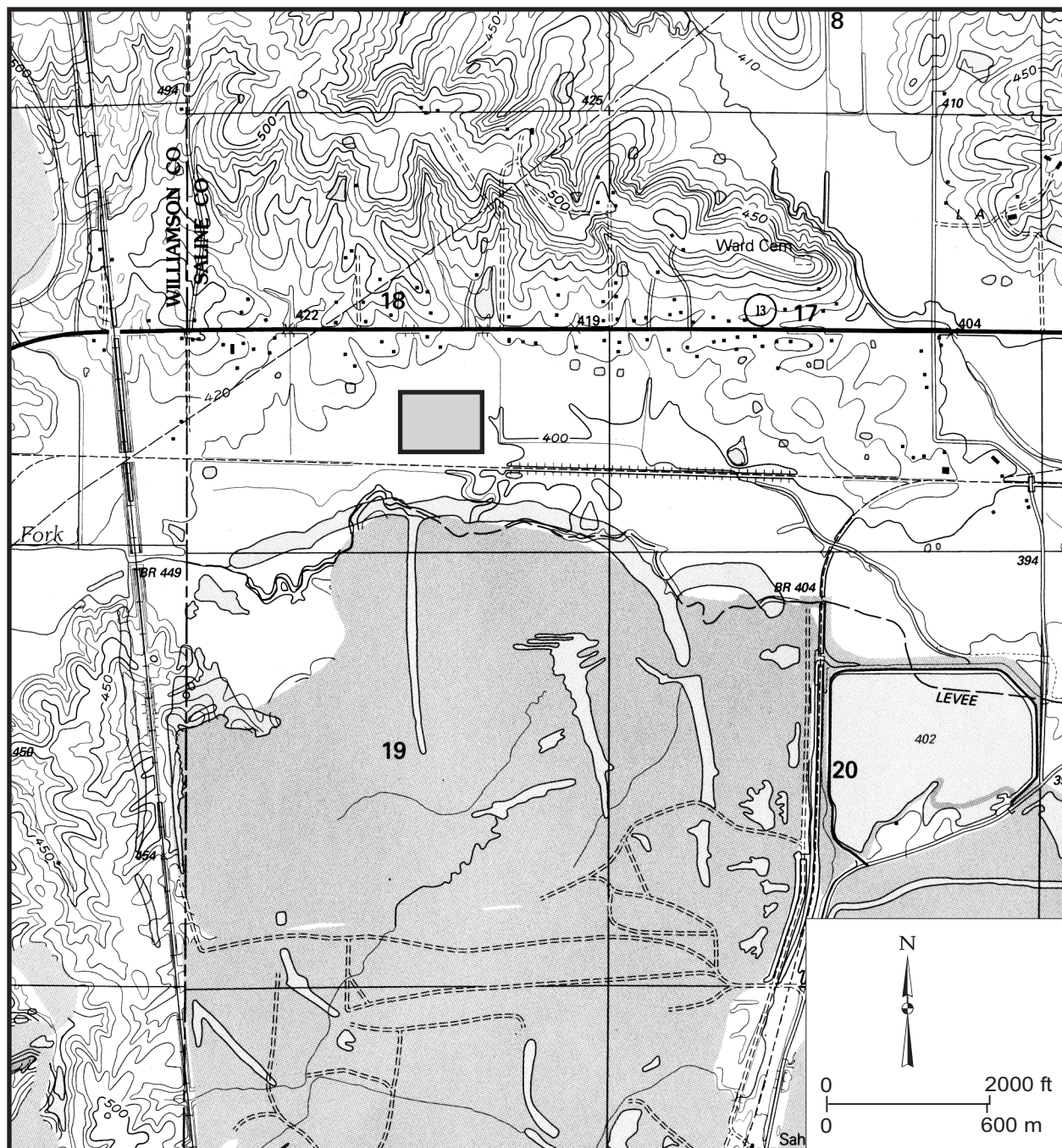


# Saline County Wetland Compensation Site (FAP 331)

## General Study Area and Vicinity

from the USGS Topographic Series, Carrier Mills, IL 7.5-minute Quadrangle (USGS 1996)

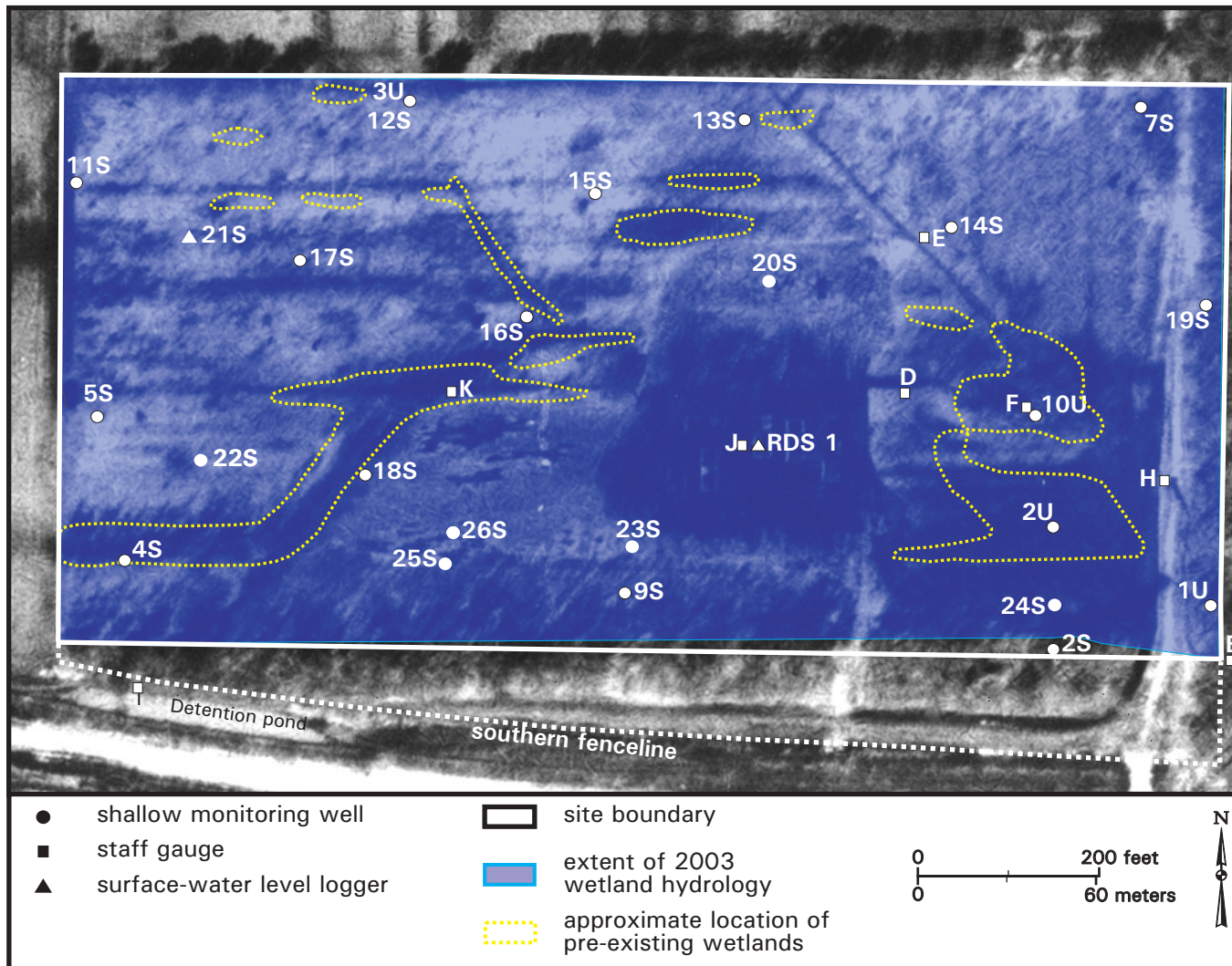
contour interval is 10 feet



■ general study area

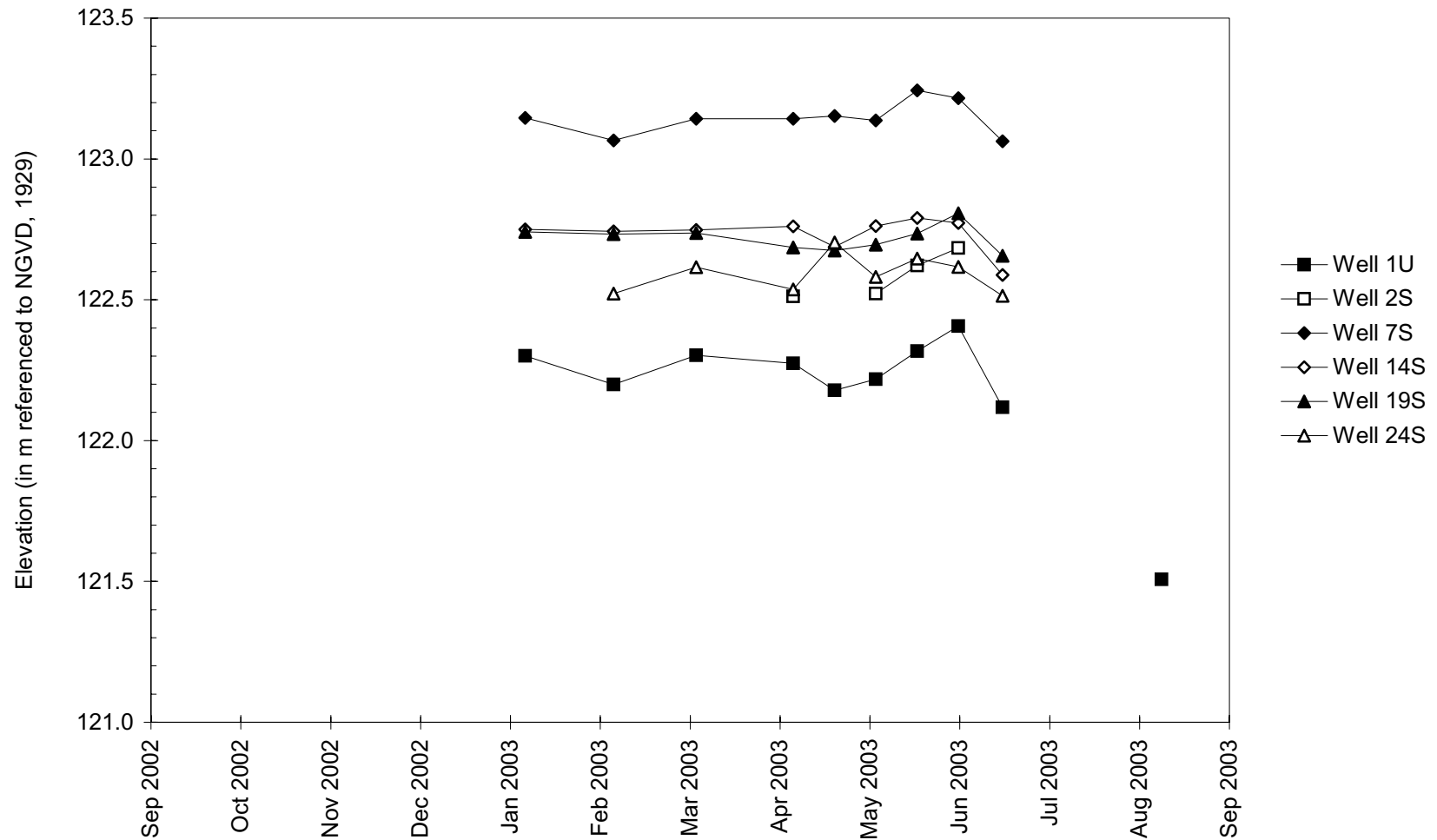
# Saline County Wetland Compensation Site (FAP 331)

Estimated Areal Extent of 2003 Wetland Hydrology  
based on data collected between September 1, 2002 and September 1, 2003  
map based on unrectified aerial photography from IDOT (1998, NAPP 22-441)



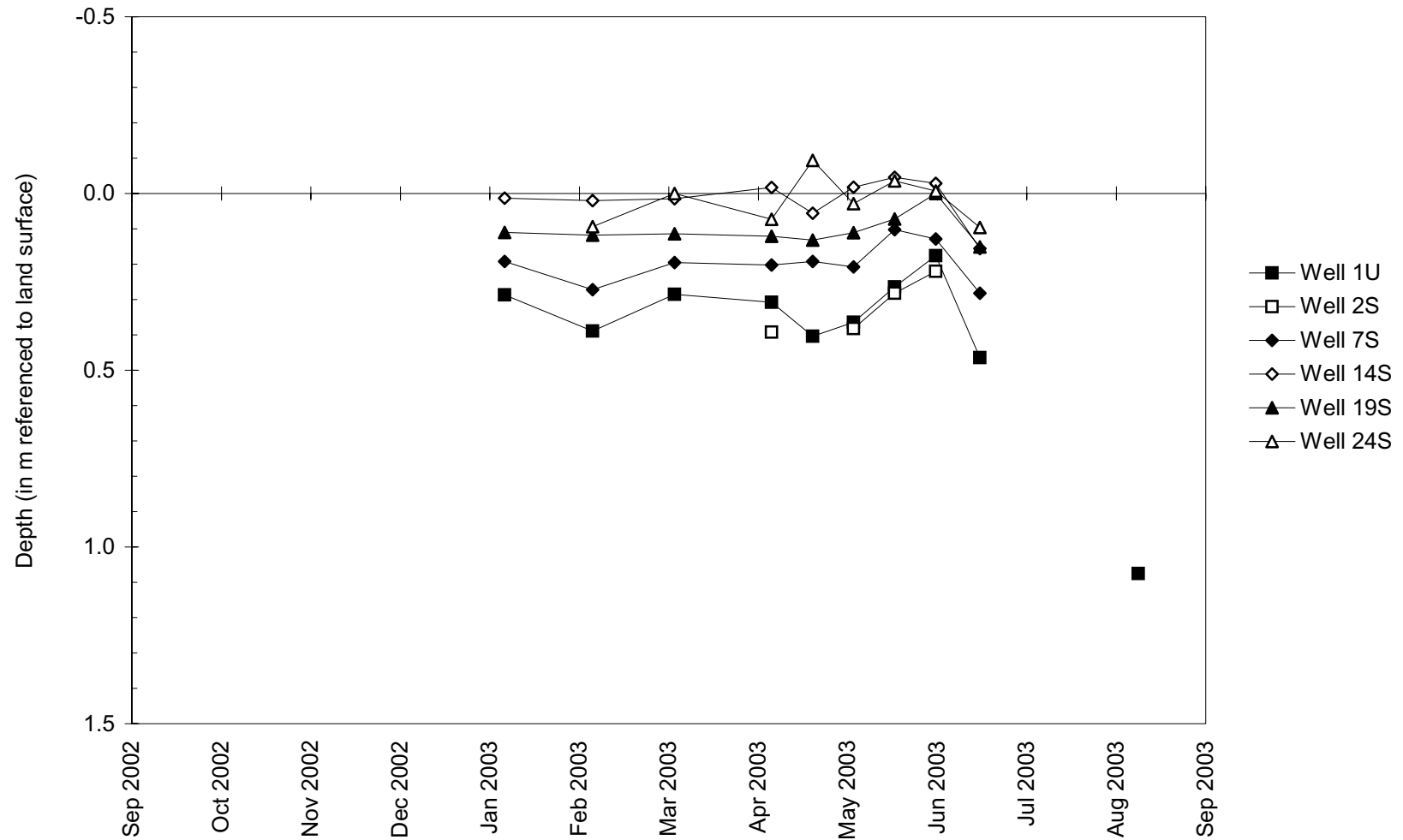
**Saline County Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations**  
**in Wells Used to Determine Areas Satisfying Wetland Hydrology Criteria**  
**in the Eastern Portion of the Site**



**Saline County Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

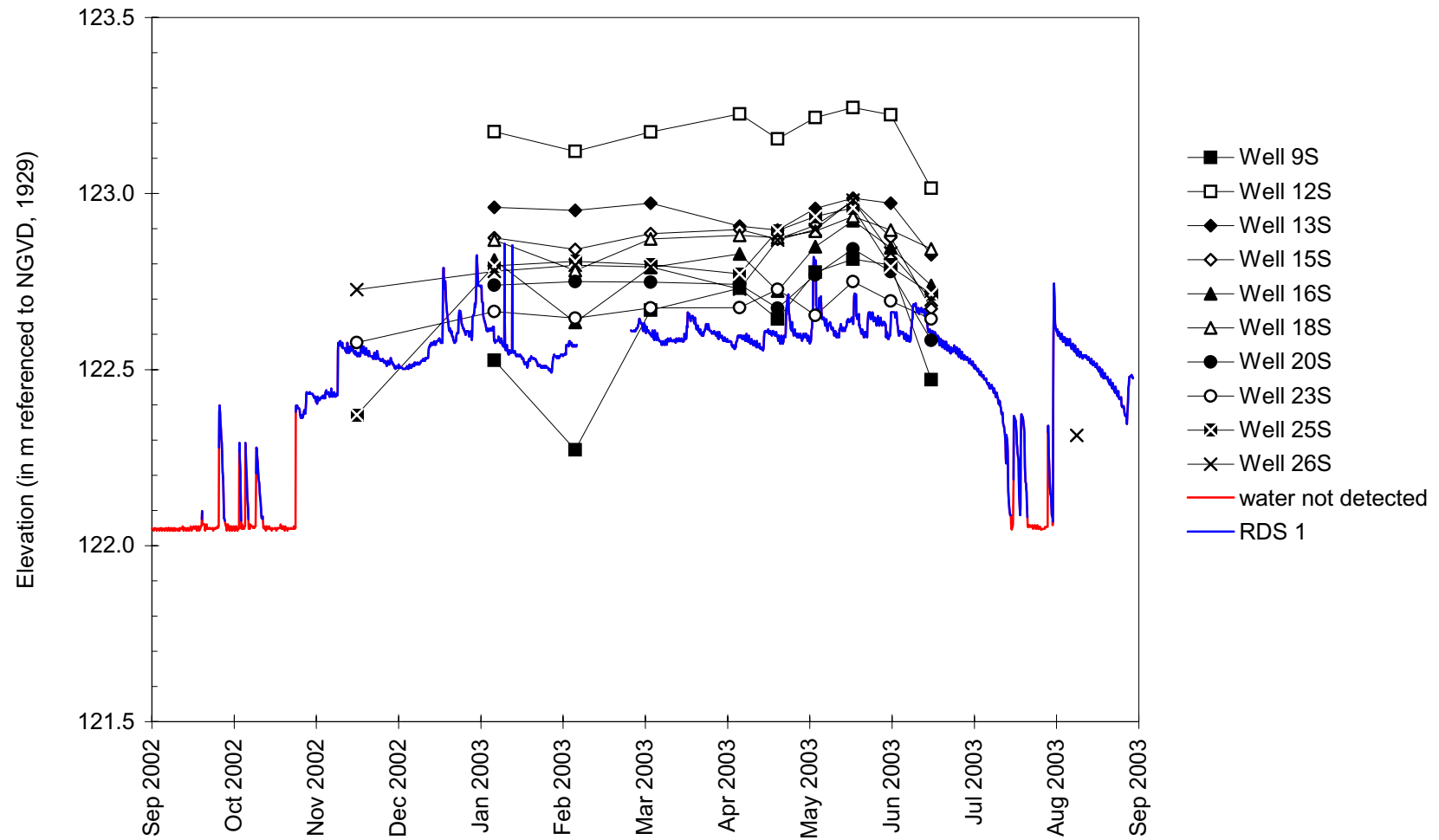
**Depth to Water**  
**in Wells Used to Determine Areas Satisfying Wetland Hydrology Criteria**  
**in the Eastern Portion of the Site**





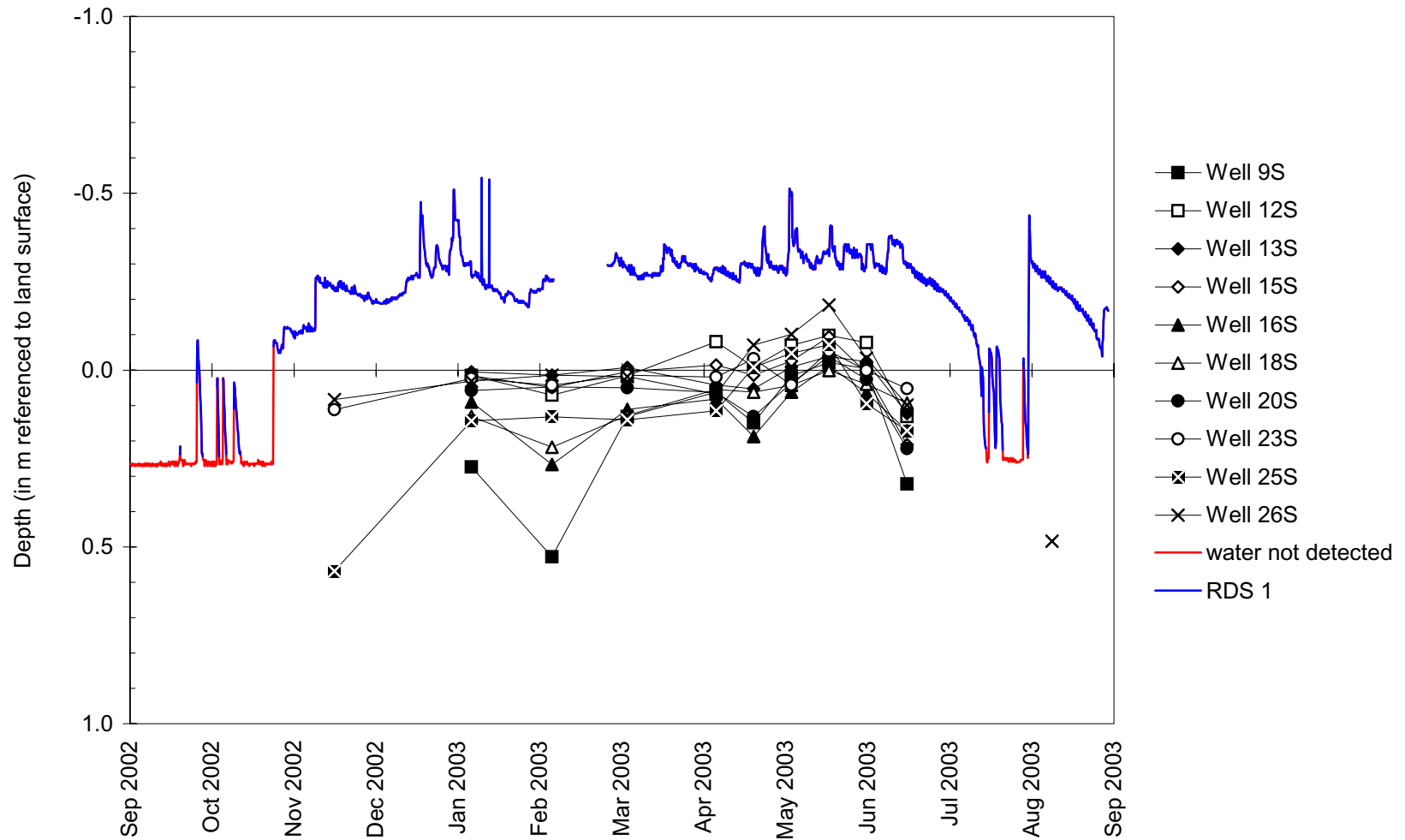
**Saline County Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations**  
**in Wells Used to Determine Areas Satisfying Wetland Hydrology Criteria**  
**in the Central Portion of the Site**



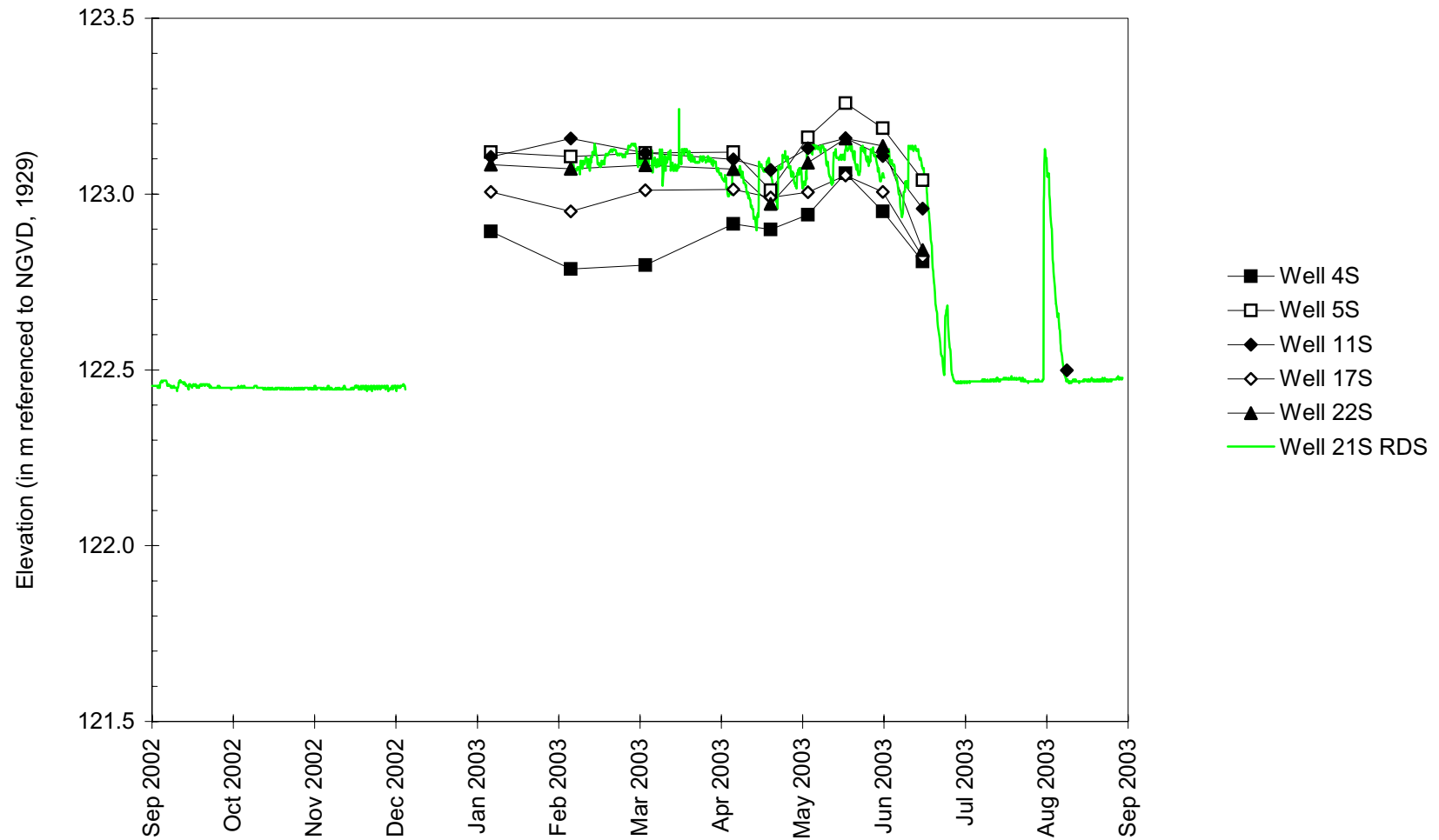
**Saline County Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Depth to Water**  
**in Wells Used to Determine Areas Satisfying Wetland Hydrology Criteria**  
**in the Central Portion of the Site**



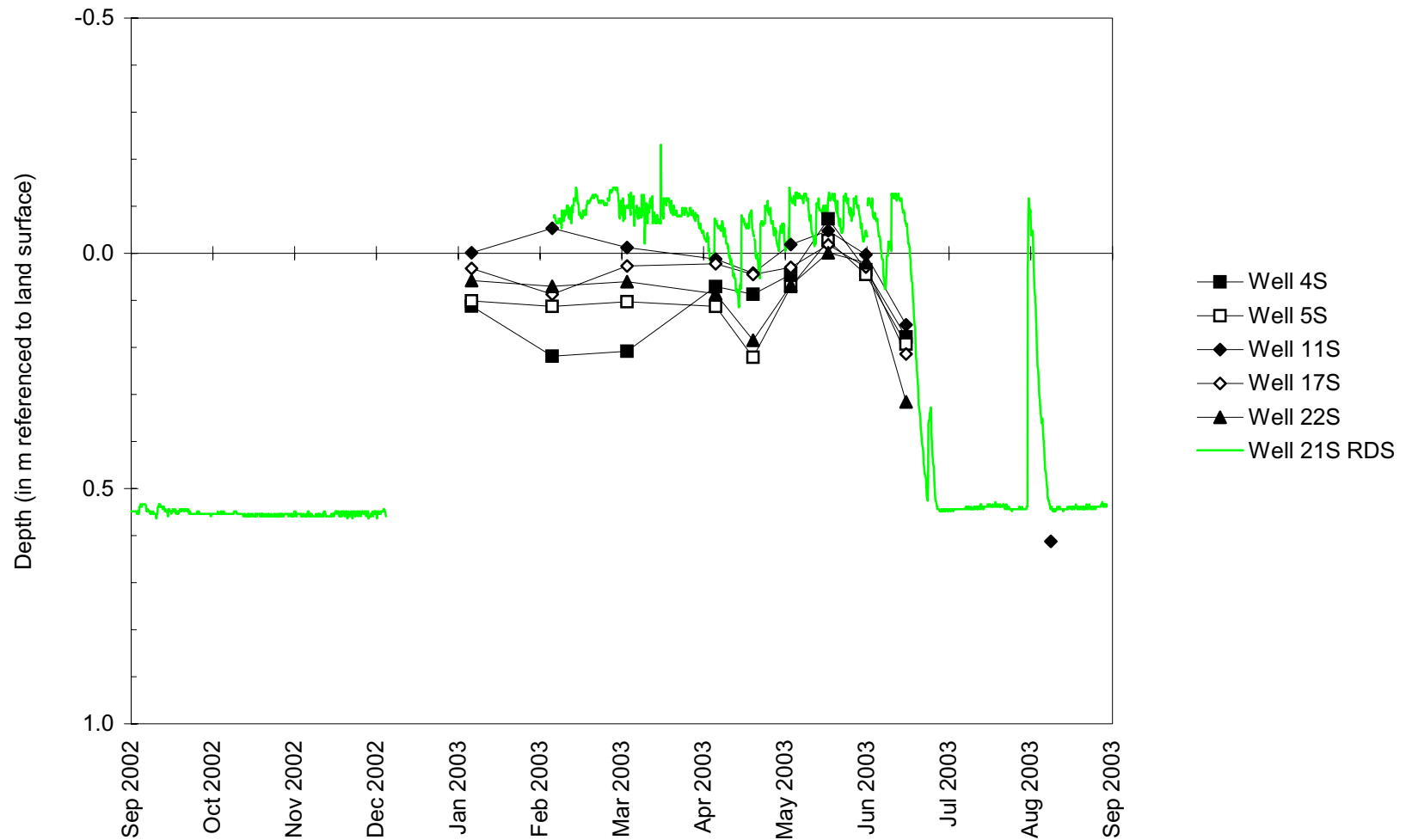
**Saline County Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations**  
**in Wells Used to Determine Areas Satisfying Wetland Hydrology Criteria**  
**in the Western Portion of the Site**



**Saline County Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Depth to Water**  
**in Wells Used to Determine Areas Satisfying Wetland Hydrology Criteria**  
**in the Western Portion of the Site**

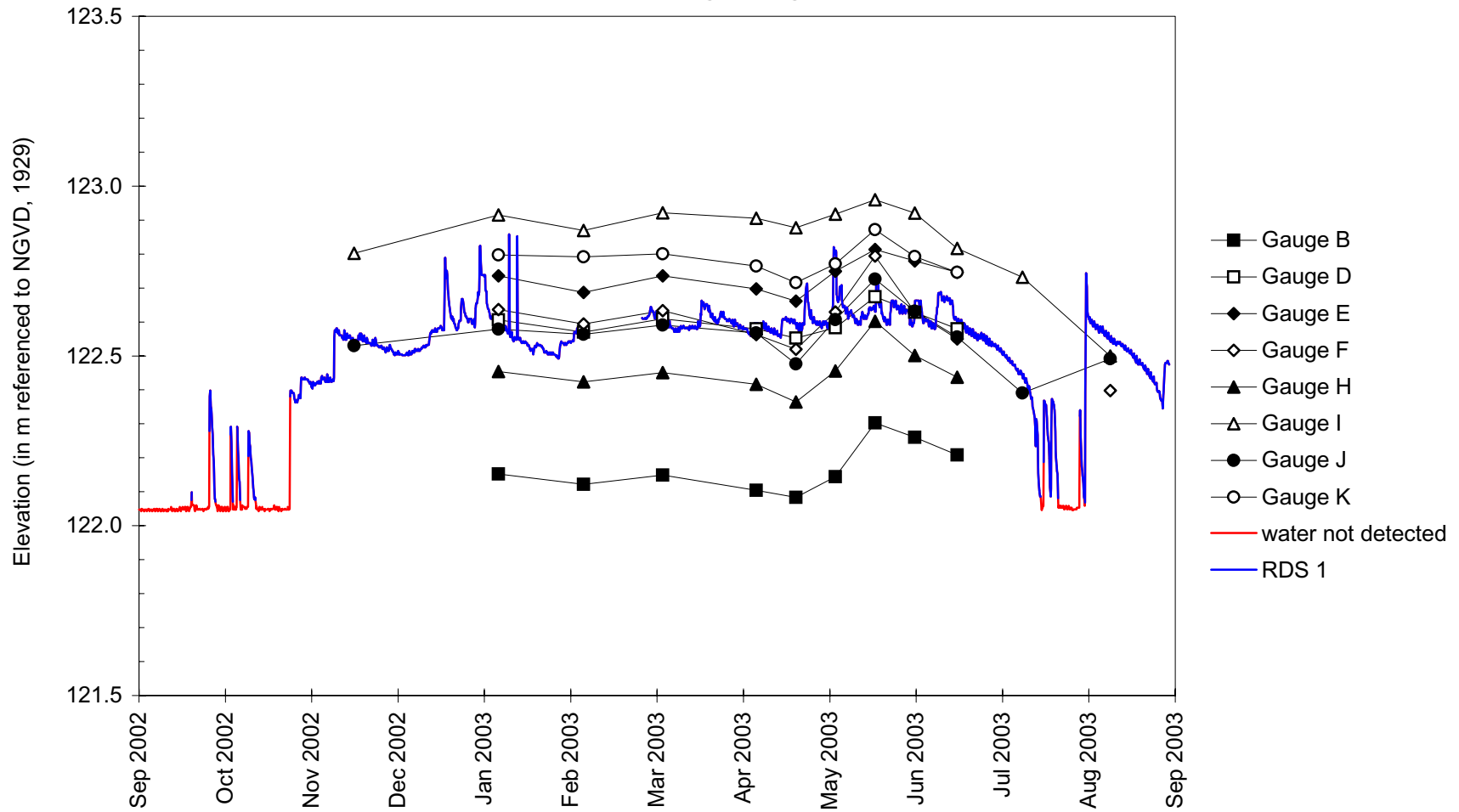




# Saline County Wetland Compensation Site

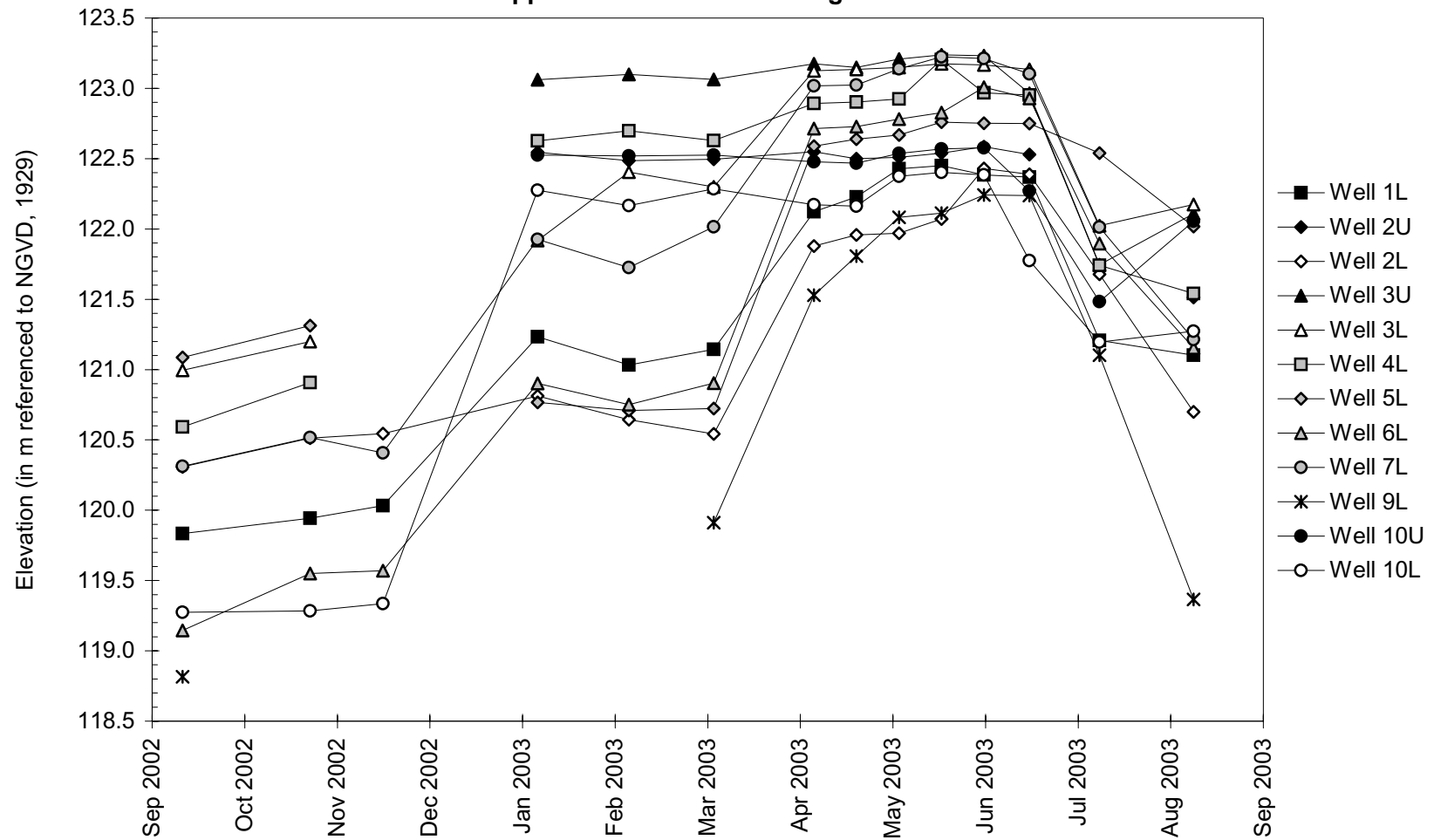
September 1, 2002 to September 1, 2003

## Water-Level Elevations on Stage Gauges

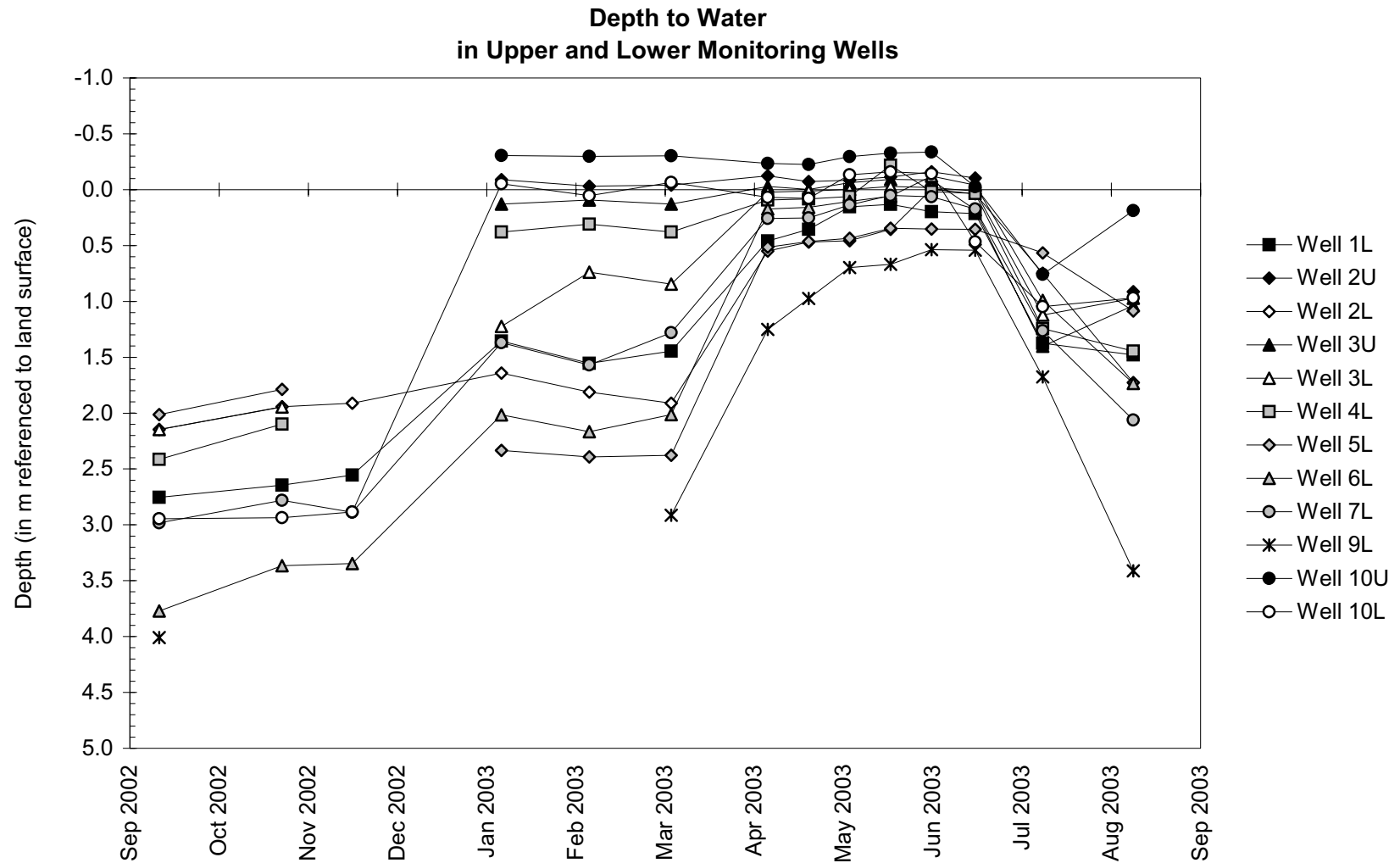


**Saline County Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations**  
**in Upper and Lower Monitoring Wells**

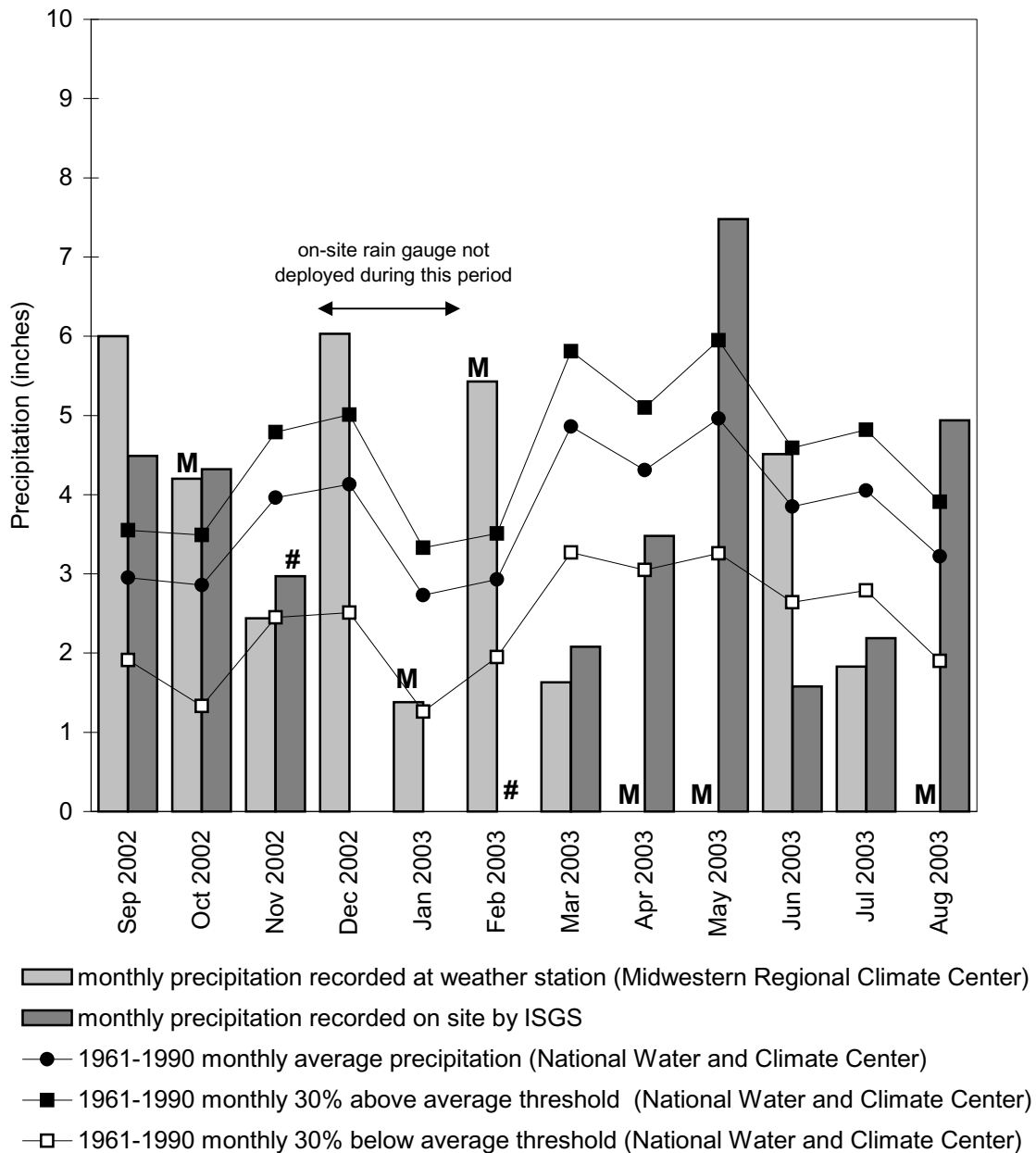


**Saline County Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**



# Saline County Wetland Compensation Site September 2002 through August 2003

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



## **JOSLIN**

**ISGS #23**

### **WETLAND COMPENSATION SITE**

FAP 585

Henry County, near Joslin, Illinois

**Primary Project Manager: Kelli D. Weaver**

**Secondary Project Manager: Keith W. Carr**

### **SITE HISTORY**

- January 1995: An initial ISGS topographic survey and hydrologic analysis were sent to IDOT.
- Summer 1998: ISGS installed 18 soil-zone monitoring wells.
- April 2001: ISGS installed an RDS data logger and a stage gauge to monitor surface water. This station monitors a backwater slough that communicates with the Rock River and parallels the eastern site margin.

### **WETLAND HYDROLOGY CALCULATION FOR 2003**

We estimate that the total area that conclusively satisfied wetland hydrology criteria in 2003 is 0.00 ac (0.00 ha). The site, as defined by a boundary line drawn on an IDOT tree-planting plan, is roughly 14.2 ac (5.75 ha) in size. In 2002, 0.00 ac (0.00 ha) satisfied wetland hydrology criteria. This estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Geneseo, Illinois is April 8 and the season lasts 203 days; 12.5% of the growing season is 25 days.
- The total precipitation for the monitoring period from September 2002 to August 2003 was 67% of normal. Despite near-normal precipitation totals for the month of October 2002, the precipitation totals from September and November 2002 through March 2003 were significantly below normal, leading to drier than typical conditions entering the 2003 growing season. Precipitation totals were generally near normal for April through August.
- In 2003, water levels measured in none of the wells conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. The primary source of water for this site is flood water from the adjacent Rock River. The Rock River flooded once in 2003, but did not rise high enough to inundate a significant portion of the site, nor was the period of inundation long enough to conclusively satisfy wetland hydrology criteria.
- Limitations of the wetland hydrology determination are as follows:
  - The base map used to determine the acreage of wetland hydrology is an IDOT mitigation site plan (dated 05/30/1996) for tree plantings on the site. The level of accuracy of the topographic contours and site boundary line are unknown.
  - Positions of instruments determined via GPS were plotted at the same approximate scale as the base map and were overlain based on best-fit visual reference to identifiable points on the topographic map. The area of wetland hydrology was then measured planimetrically using topographic contours (1-foot intervals) on the tree

planting plan. The positions of the instruments and the wetland acreage were then superimposed on an unrectified air photograph.

#### PLANNED FUTURE ACTIVITIES

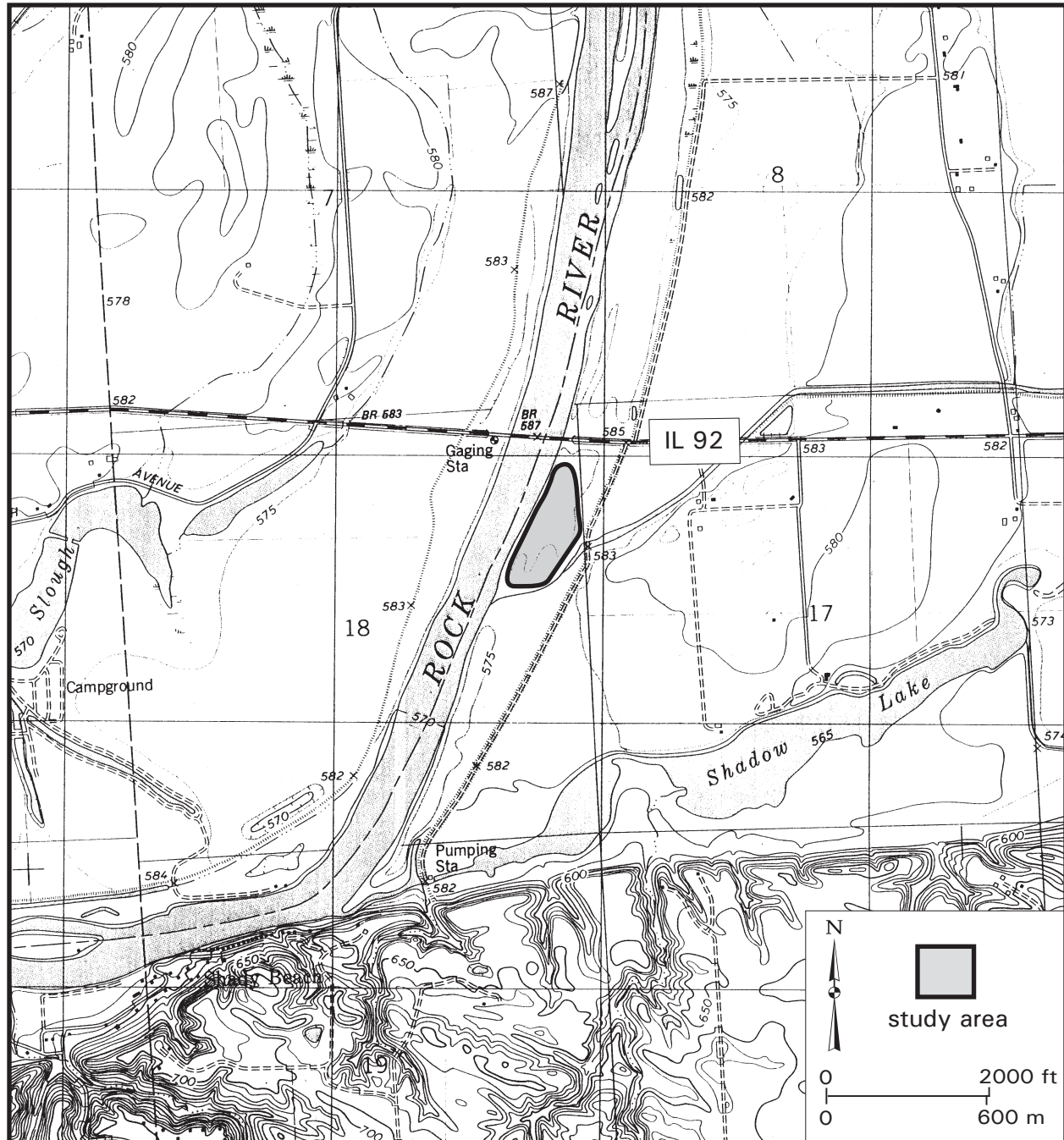
- Monitoring is expected to continue through 2003 or until no longer required by IDOT.

# Joslin Wetland Compensation Site (FAP 585)

## General Study Area and Vicinity

from the USGS Topographic Series, Hillsdale, IL 7.5-minute Quadrangle (USGS 1982)

contour interval is 10 feet

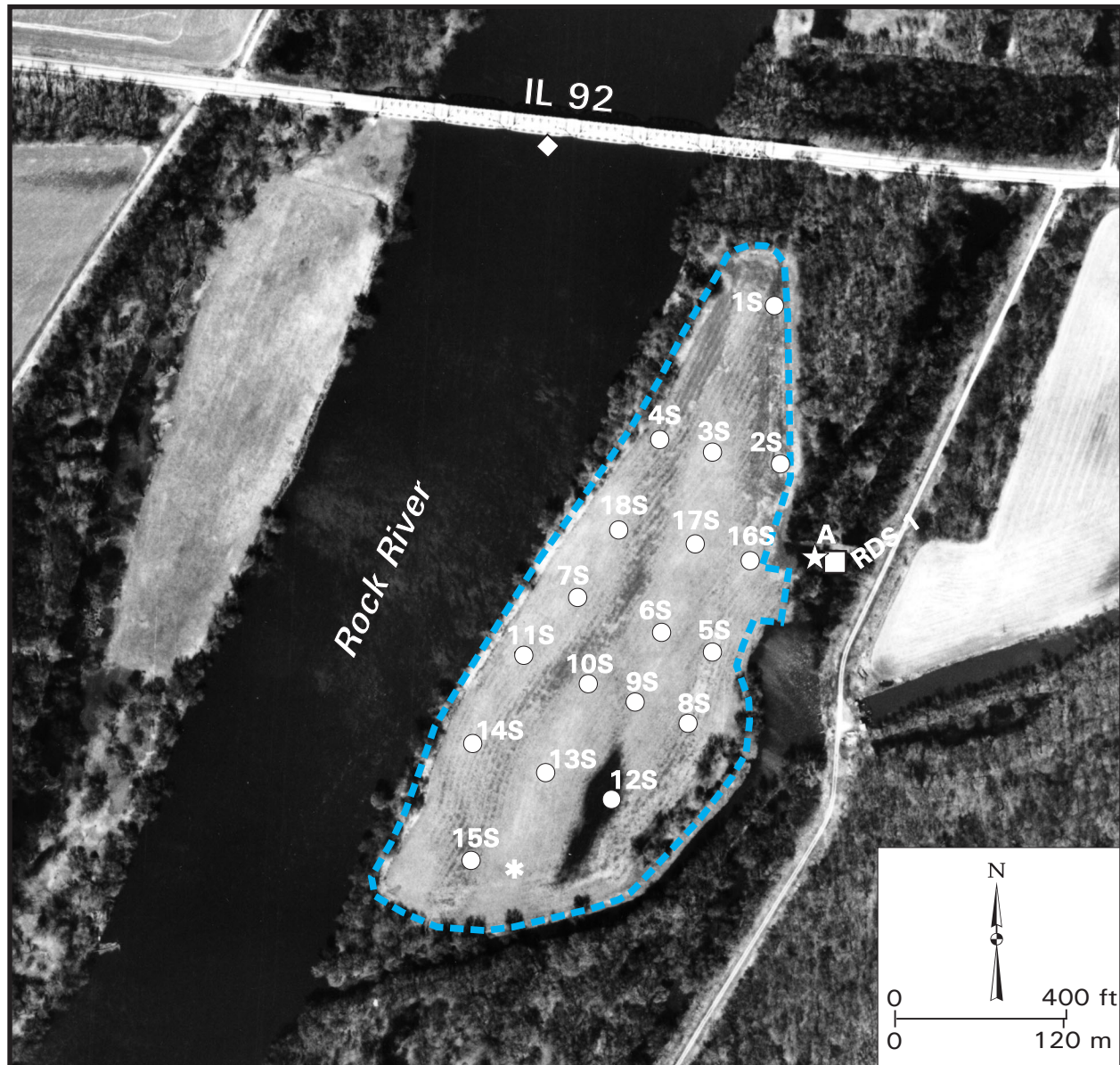



# Joslin Wetland Compensation Site (FAP 585)


## Estimated Areal Extent of 2003 Wetland Hydrology


based on data collected between September 1, 2002 and September 1, 2003


map based on unrectified aerial photography from IDOT (April 15, 1988, MH-88 45-563)



 estimated areal extent of  
2003 wetland hydrology

 estimated site boundary

 soil-zone monitoring wells

 rain gauge

 USACE gauging station

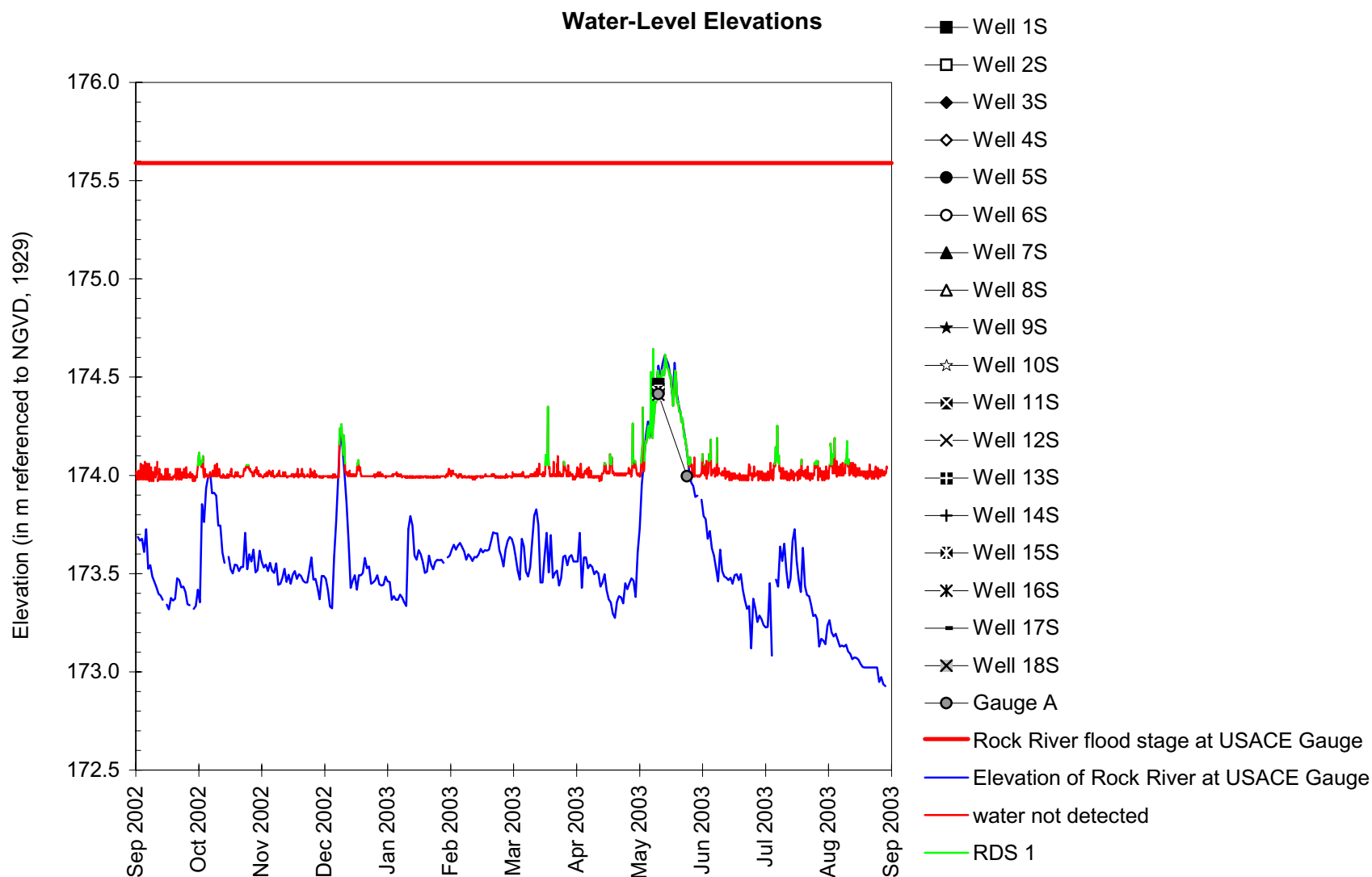
 RDS data logger

 Stage gauge



# Joslin Wetland Compensation Site

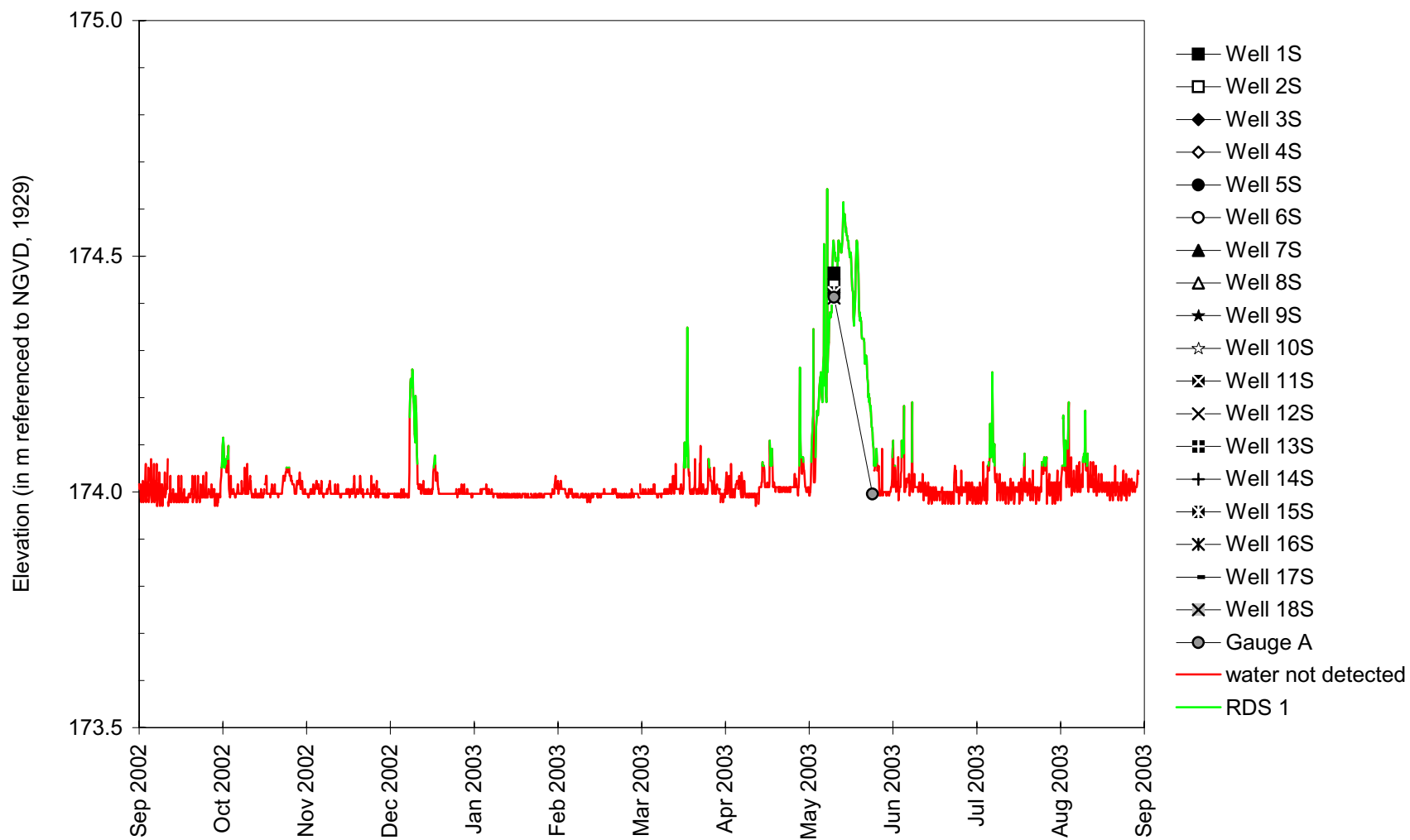
## September 1, 2002 to September 1, 2003



# Joslin Wetland Compensation Site

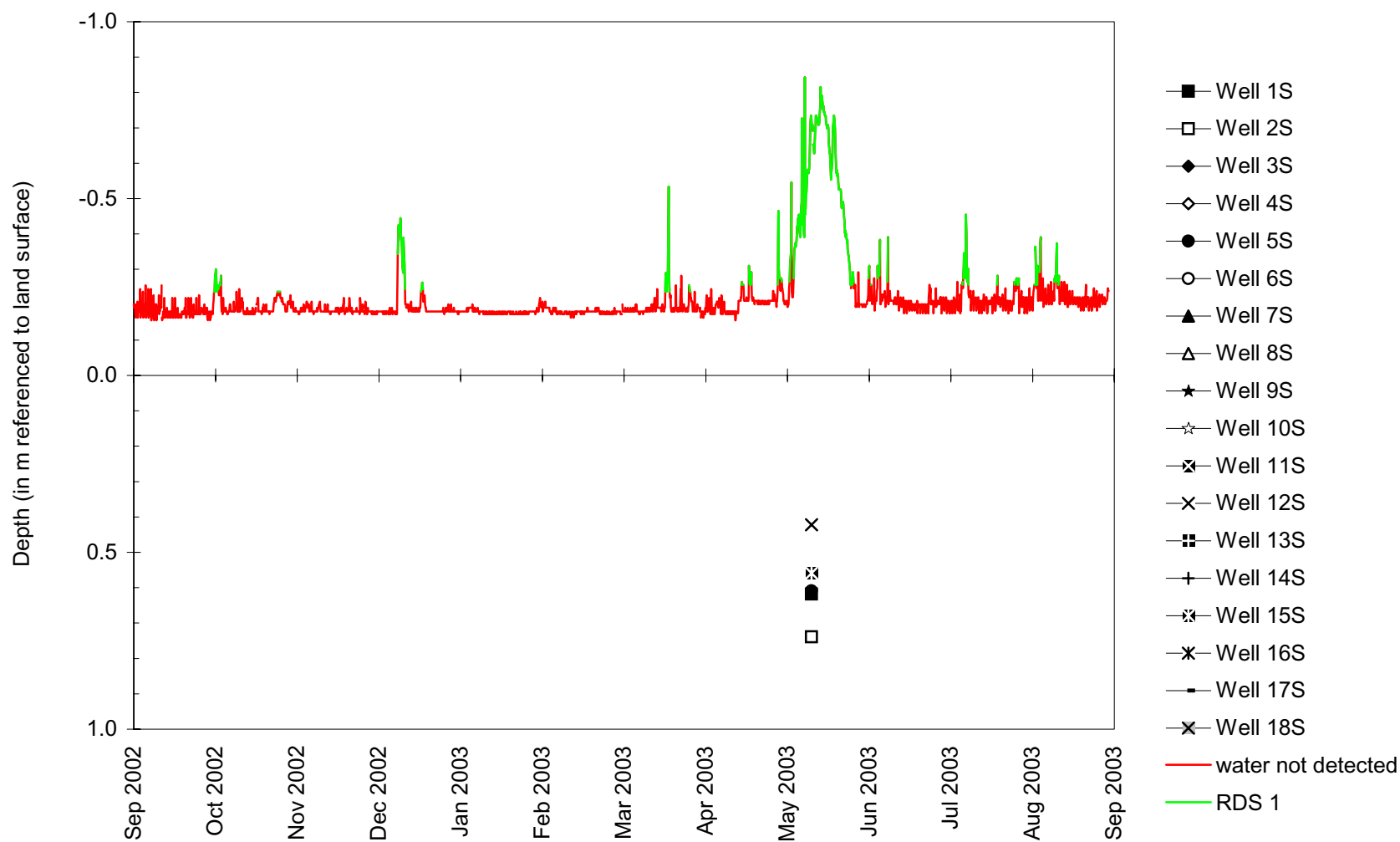
September 1, 2002 to September 1, 2003

## Water-Level Elevations



**Joslin Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

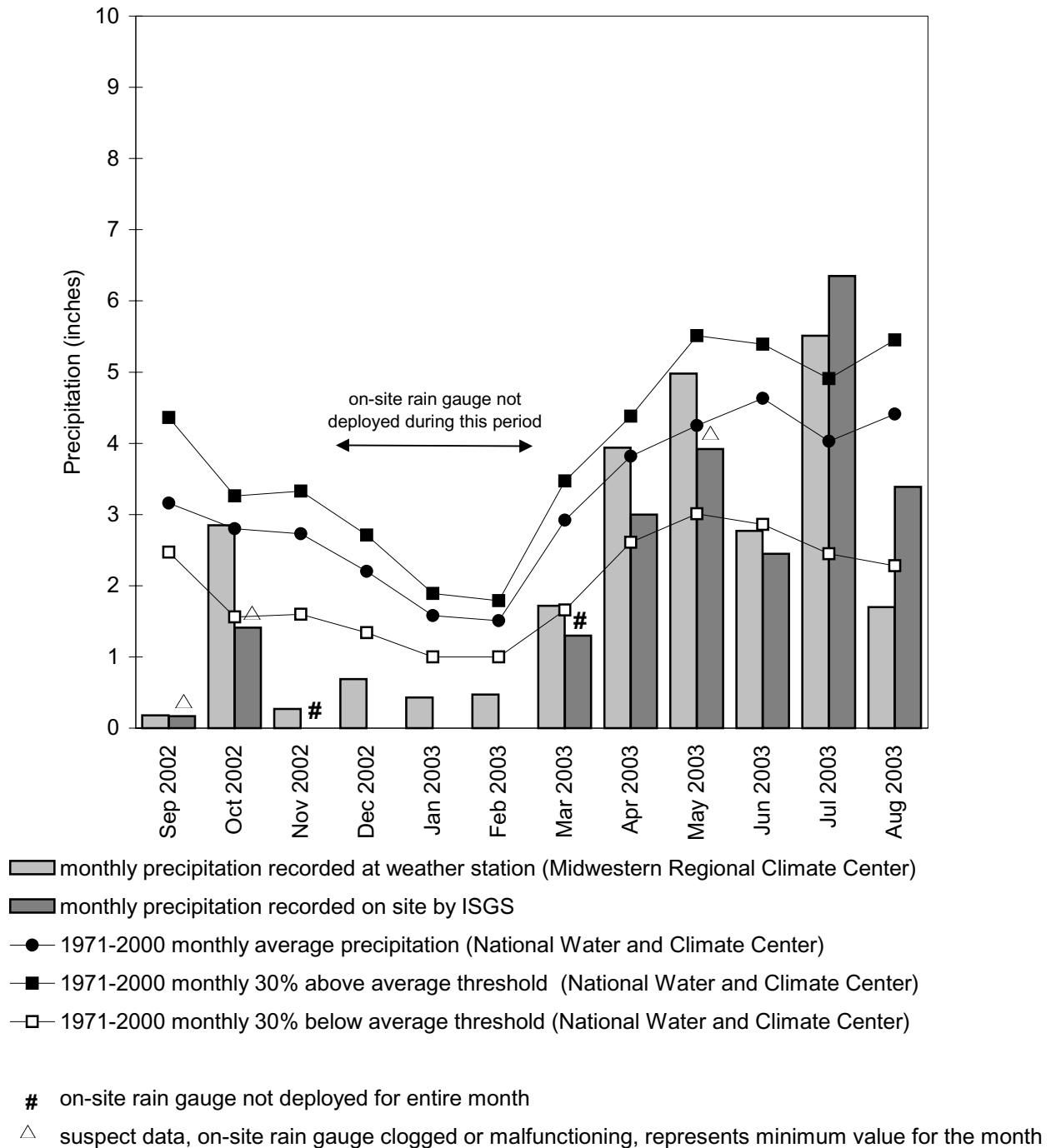
**Depth to Water**



# Joslin Wetland Compensation Site

## September 2002 through August 2003

### Total Monthly Precipitation Recorded On Site and at the Quad City International Airport Weather Station, Moline, IL



**DECATUR, U.S. ROUTE 51**  
**WETLAND COMPENSATION SITE**  
FAP 322

**ISGS #27**

Macon County, near Elwin, Illinois

**Primary Project Manager: Blaine A. Watson**

**Secondary Project Manager: Paula J. Sabatini**

**SITE HISTORY**

- May 1999: ISGS was tasked to conduct hydrologic monitoring.
- March and May 2000: ISGS installed a surface-water monitoring station (RDS 1) and a rain gauge, then later completed several shallow soil borings to investigate the presence and condition of a shallow confined aquifer across the site.
- June 2000: ISGS conducted an on-site meeting with IDOT Central Office and the District 5 engineer to present a letter report outlining the soil-boring investigation and other potential water/construction issues identified at the site.
- June 2001: Construction of the wetland was completed.
- December 2001: ISGS installed eleven "S" wells (1S-8S and 10S-12S), two surface-water staff gauges (A and B), and one additional surface-water monitoring station (RDS 2) at the site.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

We estimate that the total area of created wetland that conclusively satisfied wetland hydrology criteria in 2003 is 6.3 ac (2.6 ha) out of a total site area of approximately 11.6 ac (4.7 ha). By comparison, in 2002, the area of wetland hydrology was estimated to be 7.4 ac (3.0 ha). This year's estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Decatur is April 9 and the season lasts 193 days; 12.5% of the growing season is 24 days and 5% of the growing season is 10 days.
- During the period from September 2002 to August 2003, total precipitation at the Decatur weather station was 81% of normal. Excluding the month of October 2002, precipitation on-site or in the vicinity was below normal between September 2002 and April 2003. During the period between May and August 2003, precipitation amounts were within the normal range.
- In 2003, water levels measured in the following "S" wells conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual: 4S, 5S, 6S, 8S, 10S, 11S, and 12S. Water-level records for the loggers RDS1 and RDS2 indicated inundation for elevations below approximately 220.932 m for a duration that conclusively satisfied the wetland hydrology criteria.

- Limitations of the wetland hydrology determination are as follows:
  - The base photo represents site conditions before the wetland basin was excavated. As such, wet/dry indicators on the photo do not necessarily follow the current patterns that are present on the site.

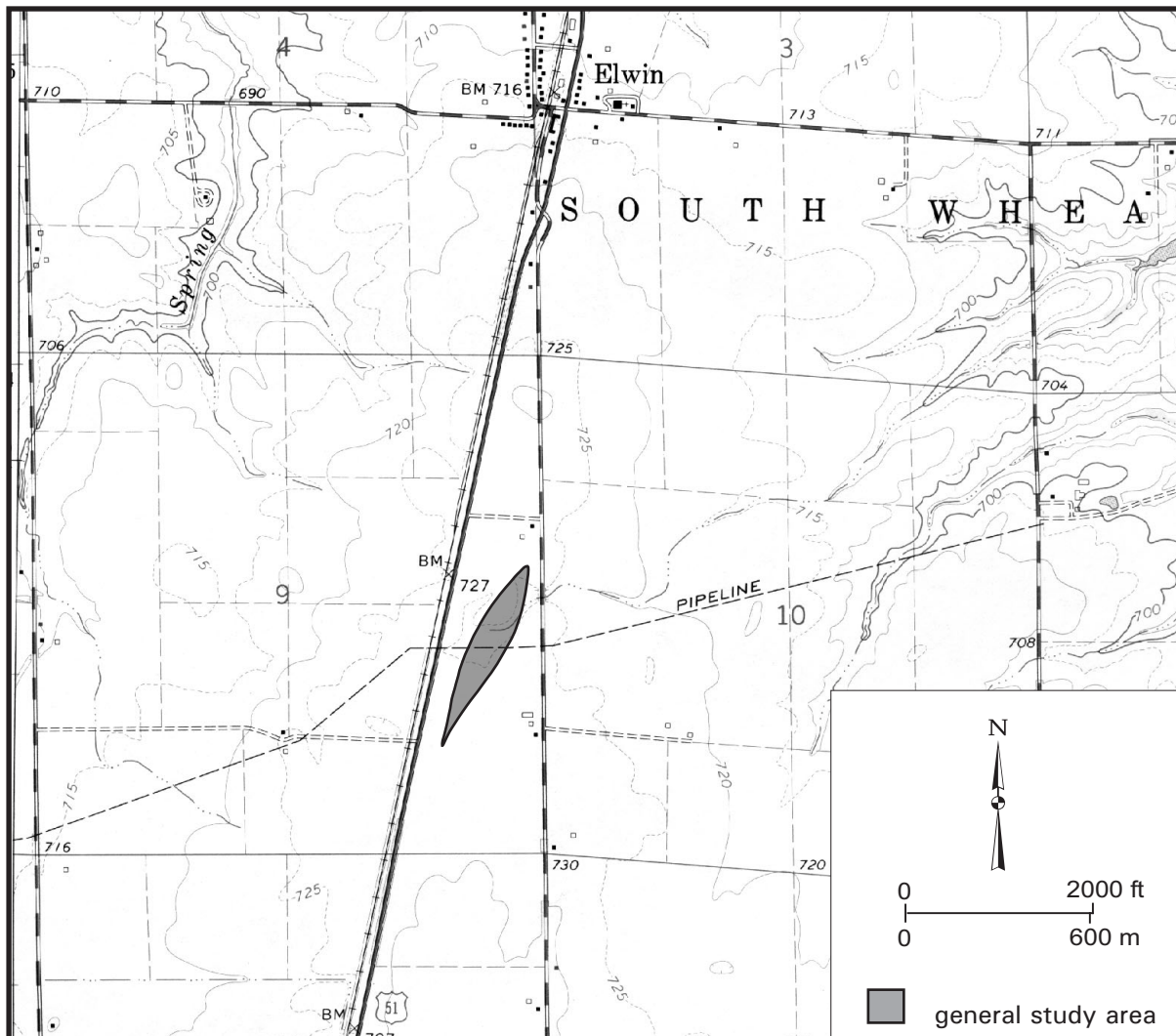
#### PLANNED FUTURE ACTIVITIES

- The current monitoring scheme will continue until July 2006, or until no longer required by IDOT.

# Decatur, U.S. Route 51 Wetland Compensation Site (FAP 322)

## General Study Area and Vicinity

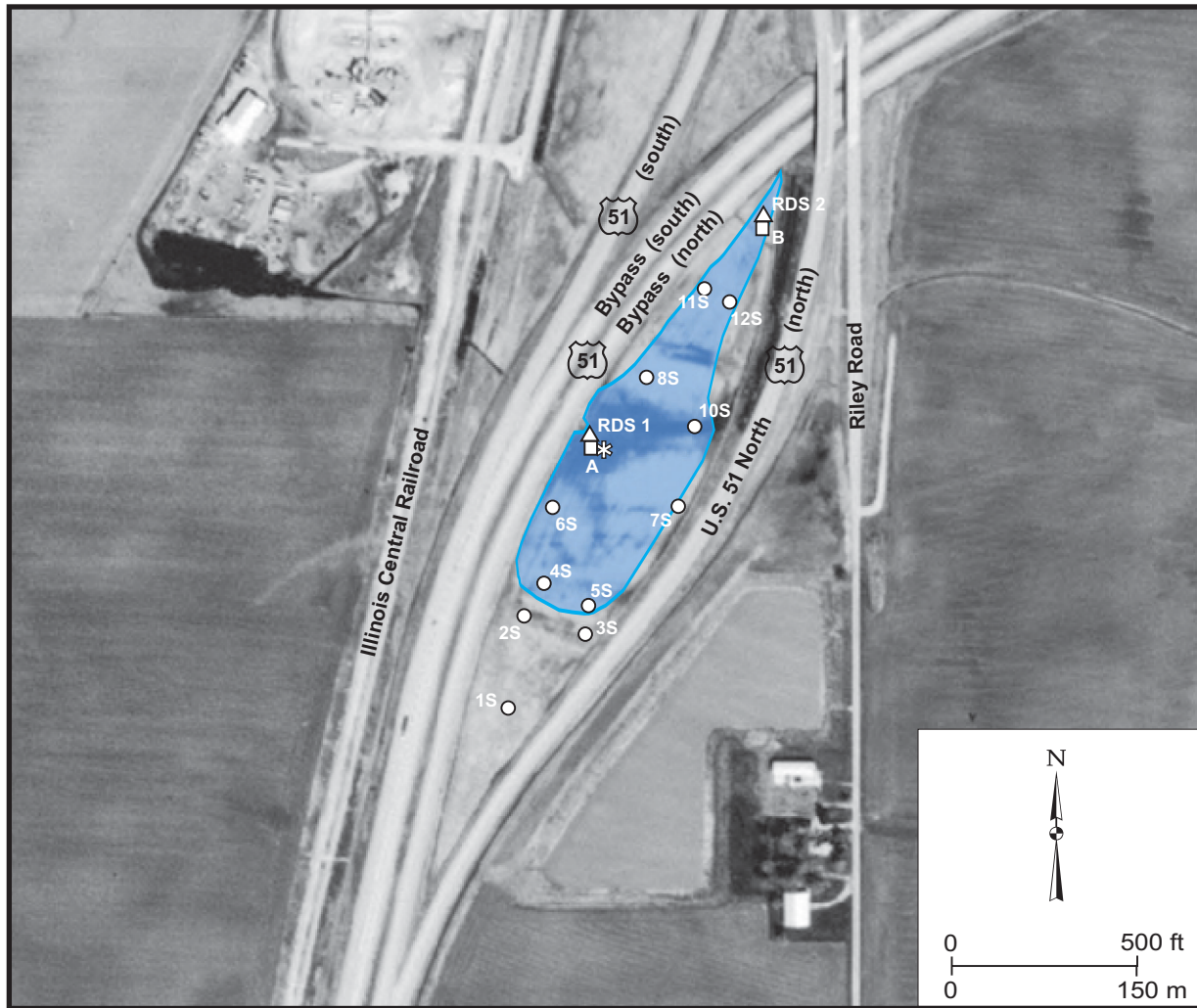
from the USGS Topographic Series, Decatur, IL 7.5-minute Quadrangle (USGS 1967; photorevised 1975)  
contour interval is 10 feet



# Decatur, U.S. Route 51 Wetland Compensation Site (FAP 322)

## Estimated Areal Extent of 2003 Wetland Hydrology

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



estimated areal extent of  
2003 wetland hydrology  
within excavated area



monitoring well



stage gauge



RDS data logger

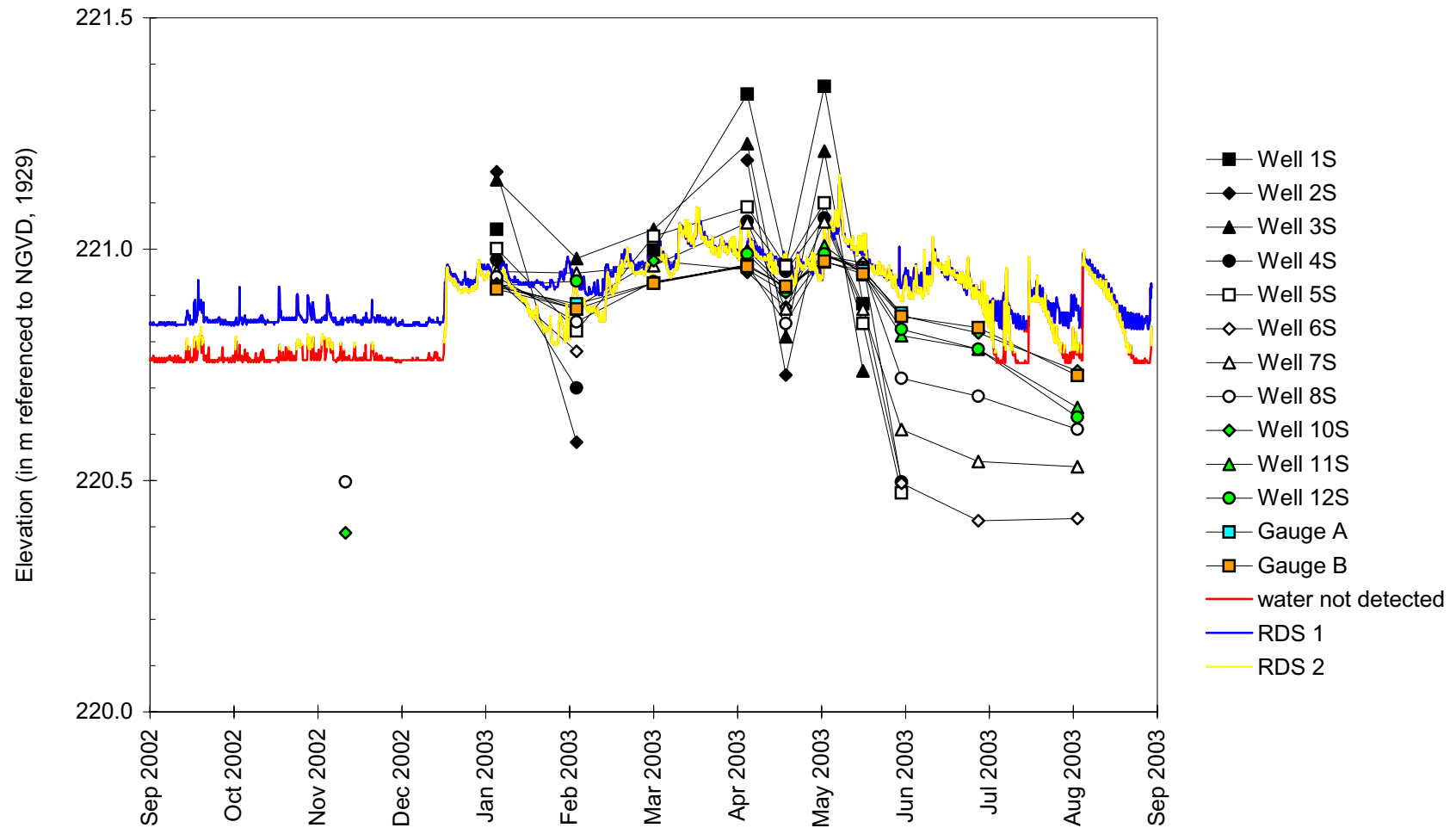


rain gauge



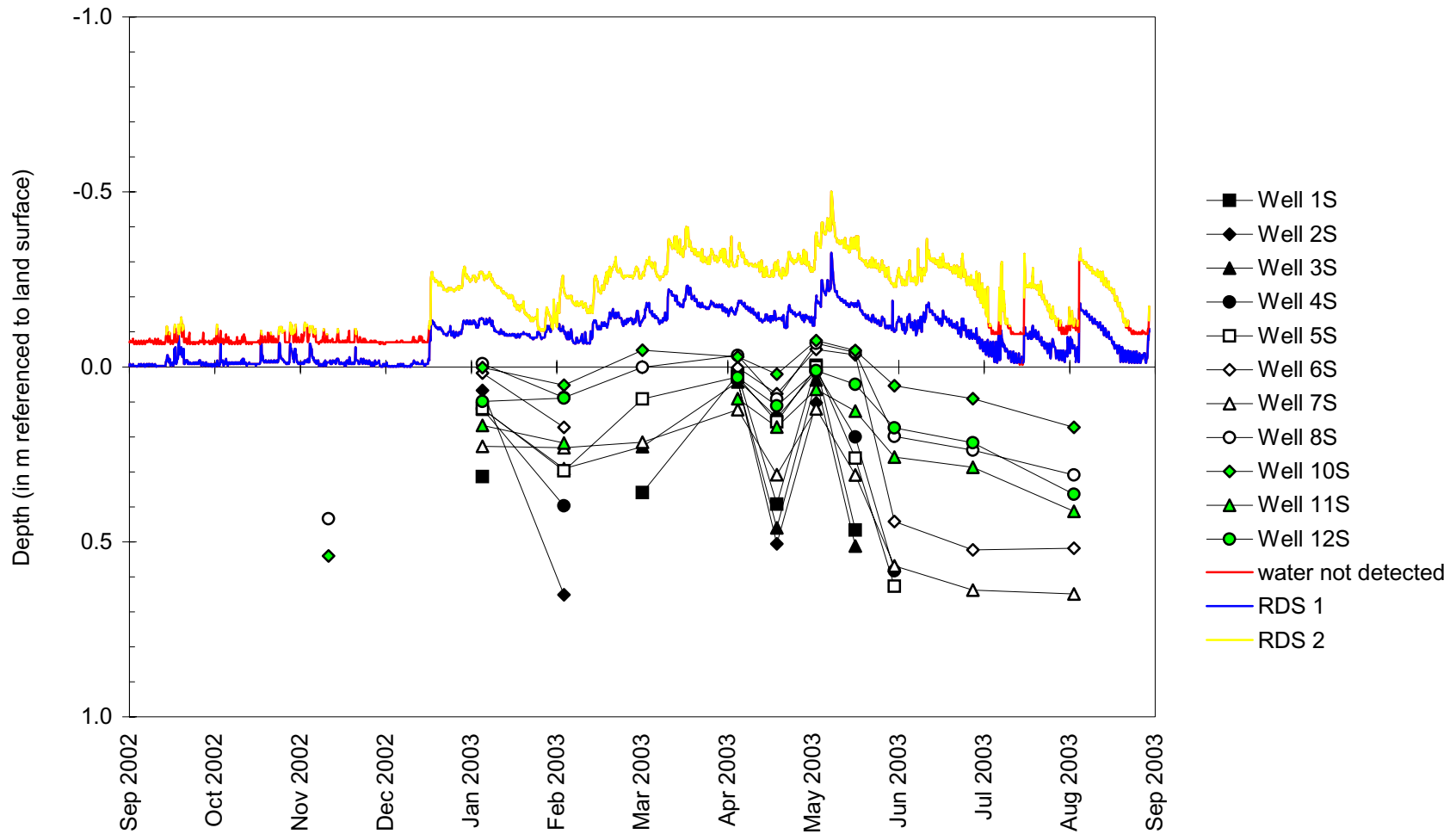
**Decatur, U.S. Route 51 Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevation**



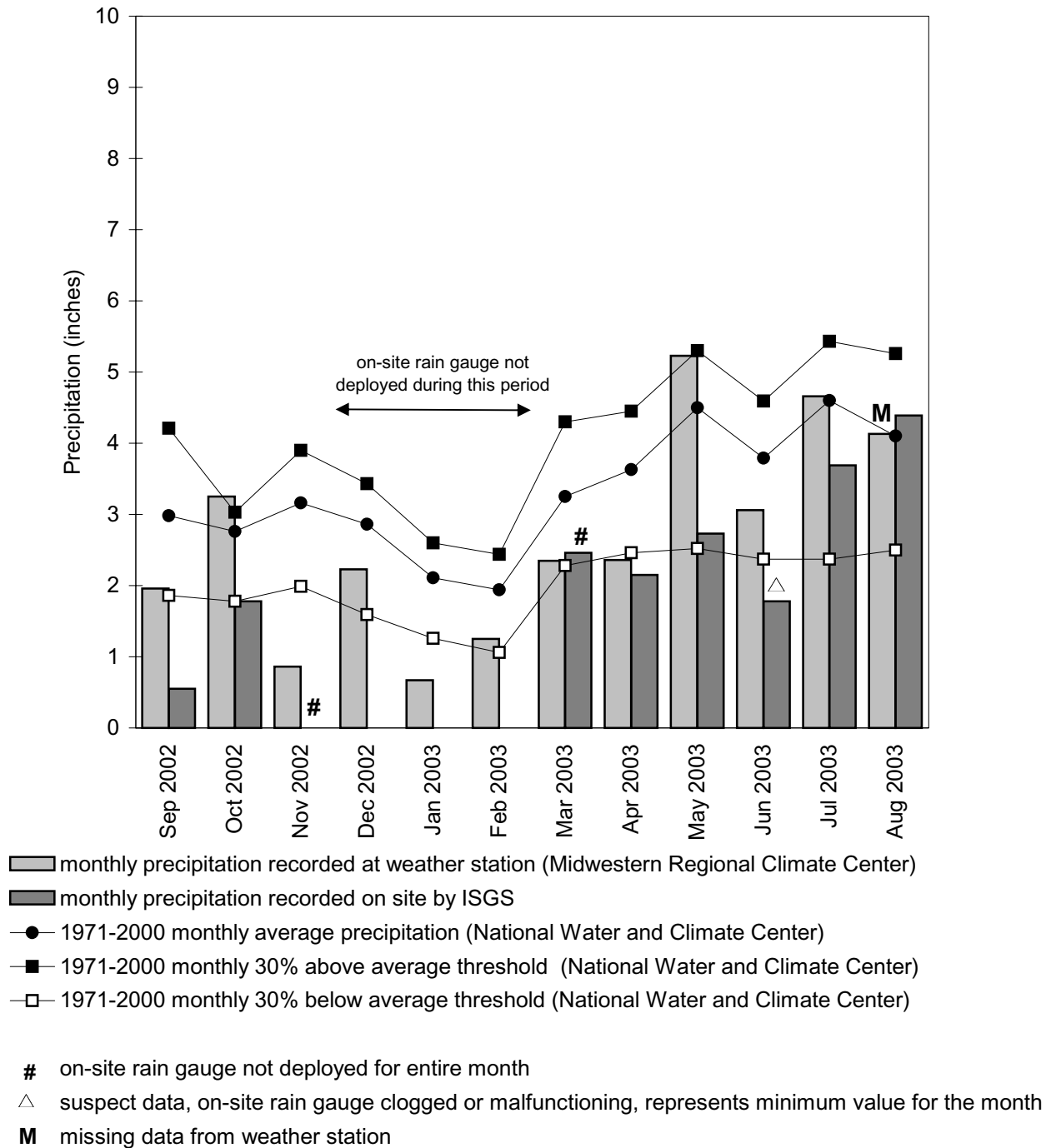
**Decatur, U.S. Route 51 Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Depth to Water**



# Decatur Wetland Compensation Site September 2002 through August 2003

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



**GULFPORT**  
**WETLAND COMPENSATION SITE**  
FAP 313  
Henderson County, near Gulfport, Illinois  
**Primary Project Manager: Kelli D. Weaver**  
**Secondary Project Manager: Keith W. Carr**

**ISGS #29**

**SITE HISTORY**

- September 1994: ISGS submitted an Initial Site Evaluation Report to IDOT.
- Fall 1997: IDOT completed excavation of the wetland basin.
- January 1998: ISGS began surface-water elevation monitoring at the site.
- April 1999: ISGS installed soil-zone wells for ground-water elevation monitoring at the site.
- April 2001: ISGS installed additional soil-zone wells for further definition of the extent of wetland hydrology.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

We estimate that the total area of created wetland that conclusively satisfied wetland hydrology criteria in 2003 is 5.72 ac (2.32 ha). The site, as defined by the area inside a line labeled "construction limits" on an IDOT site plan, is roughly 10.54 ac (4.27 ha) in size. By comparison, acreage that satisfied wetland hydrology criteria for 2002 was 7.8 ac (3.1 ha). This estimate is based on the following factors.

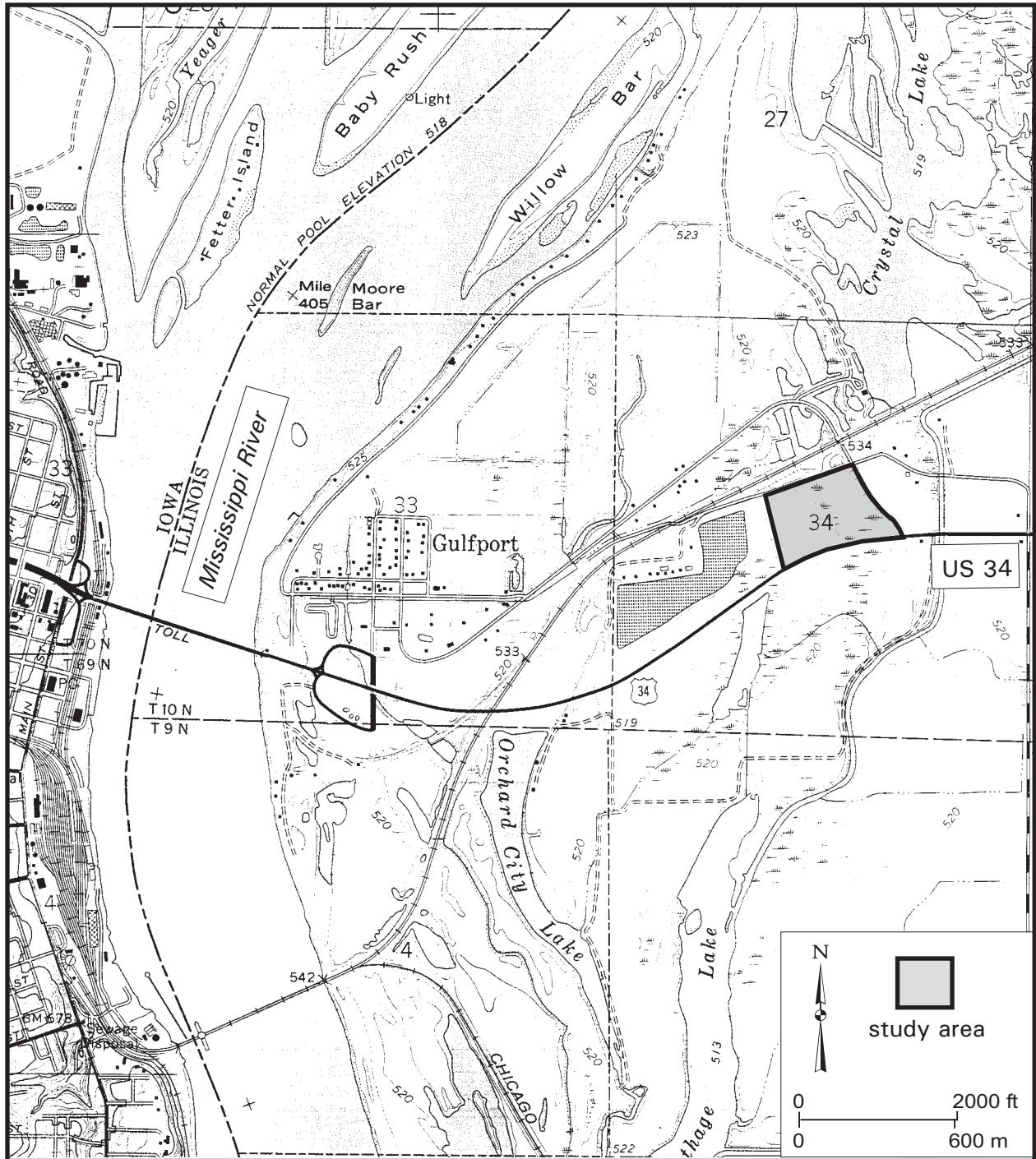
- According to the Midwestern Climate Center, the median date that the growing season begins in Burlington, Iowa, is April 7 and the season lasts 206 days; 12.5% of the growing season is 26 days.
- Total precipitation for the monitoring period from September 2002 to August 2003 was 76% of normal. Despite above-normal precipitation for October 2002, the precipitation totals from September and November 2002 through February 2003 were significantly below normal, leading to drier than typical conditions entering the 2003 growing season. Precipitation levels were within normal range for March through September. Data from September are included due to late-season precipitation.
- In 2003, water levels measured in wells 5S, 9VS, 10VS, 11VS, and 12VS conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. In addition, surface-water levels measured by the RDS 1 data logger indicated that inundation occurred to an elevation of 157.32 m (516.16 ft) for a duration sufficient to conclusively satisfy wetland hydrology criteria.
- Limitations of the wetland hydrology determination are as follows:
  - The base map used to determine the acreage of the wetland hydrology is an IDOT construction plan of the proposed wetland basin prior to construction, because no as-built topographic survey of the site was provided.
  - The area of wetland hydrology was measured planimetrically using topographic

contours (0.2-meter intervals) on the construction plan. The construction plan was adjusted to match the digital orthophotography using best-fit visual reference.

#### PLANNED FUTURE ACTIVITIES

- A total of five years of post-construction monitoring has been collected for this site. Monitoring will continue through 2003 or until no longer required by IDOT.

from the USGS Topographic Series, Burlington, IA-IL 7.5-minute Quadrangle  
(USGS 1964, photorevised 1976)  
contour interval is 10 feet



# Gulfport Wetland Compensation Site (FAP 313)

## Estimated Areal Extent of 2003 Wetland Hydrology

based on data collected between September 1, 2002 and September 1, 2003

map based on USGS digital orthophotograph, Burlington NW Quadrangle

produced from aerial photography (ISGS 1999)



○ ISGS monitoring well

◇ ISGS benchmark

\* rain gauge

□ RDS level logger

estimated areal extent of  
2003 wetland hydrology

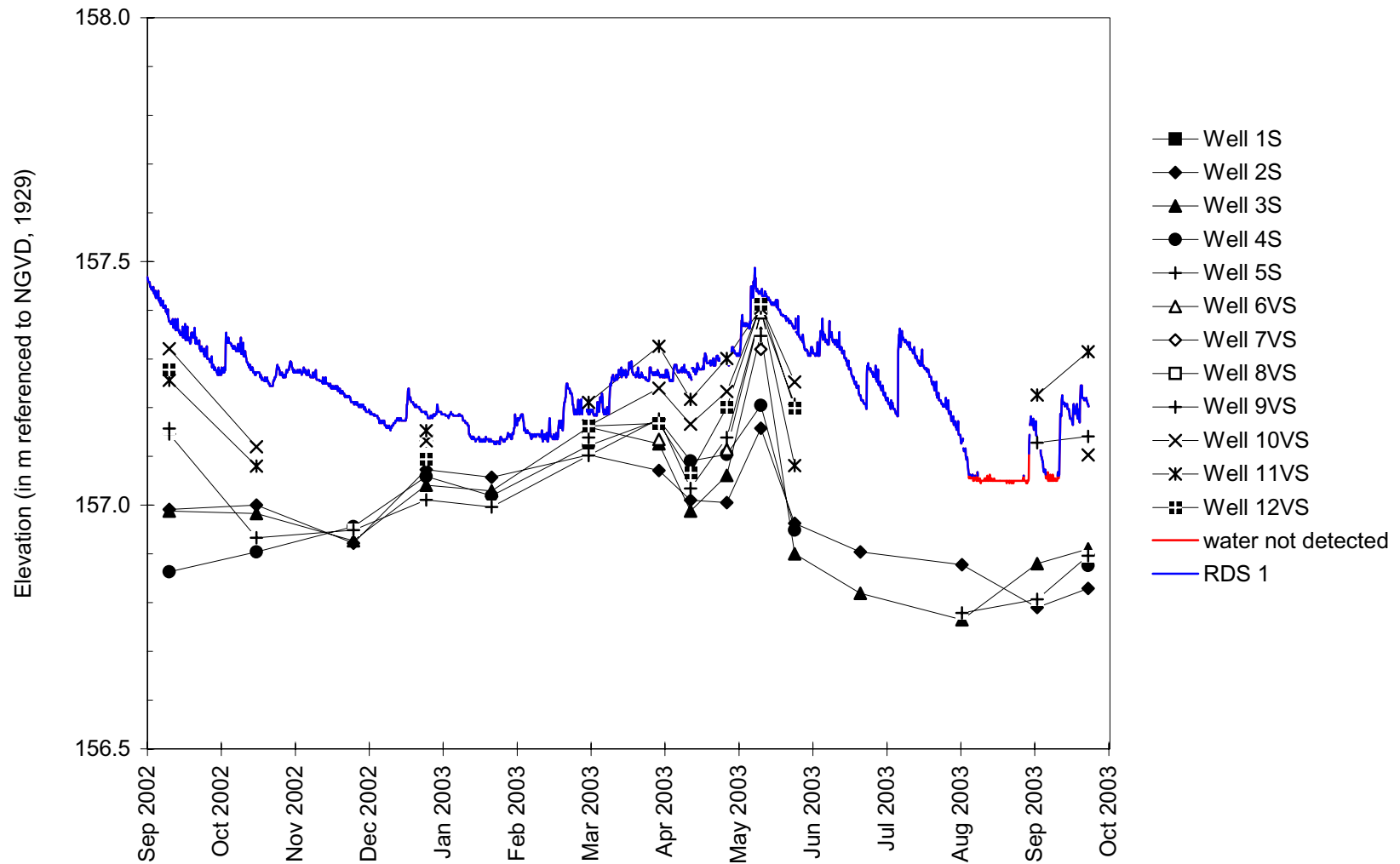
estimated areal extent  
of IDOT excavation

0 100 m  
0 300 ft



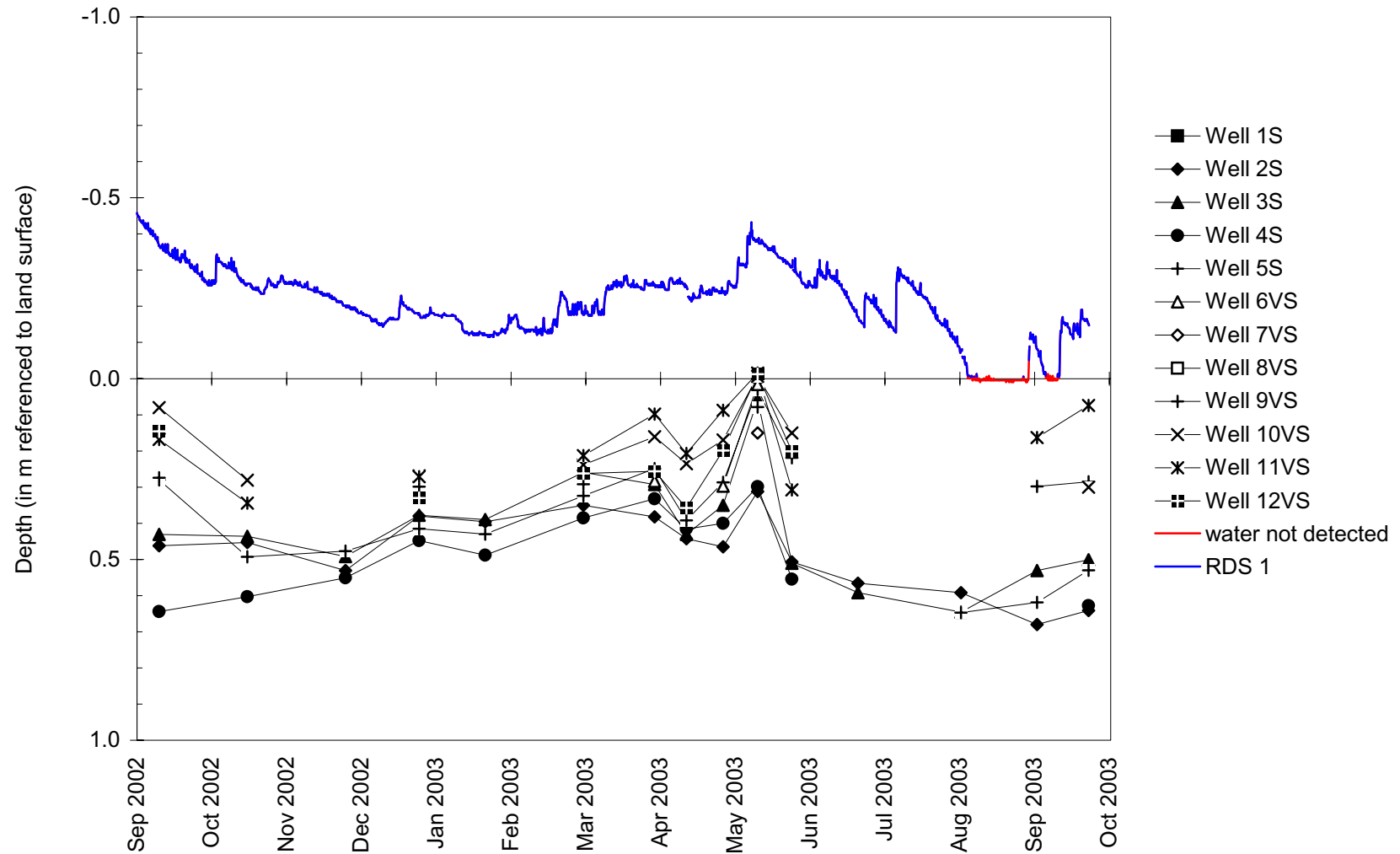
**Gulfport Wetland Compensation Site**  
**September 1, 2002 to September 25, 2003**

**Water-Level Elevations**





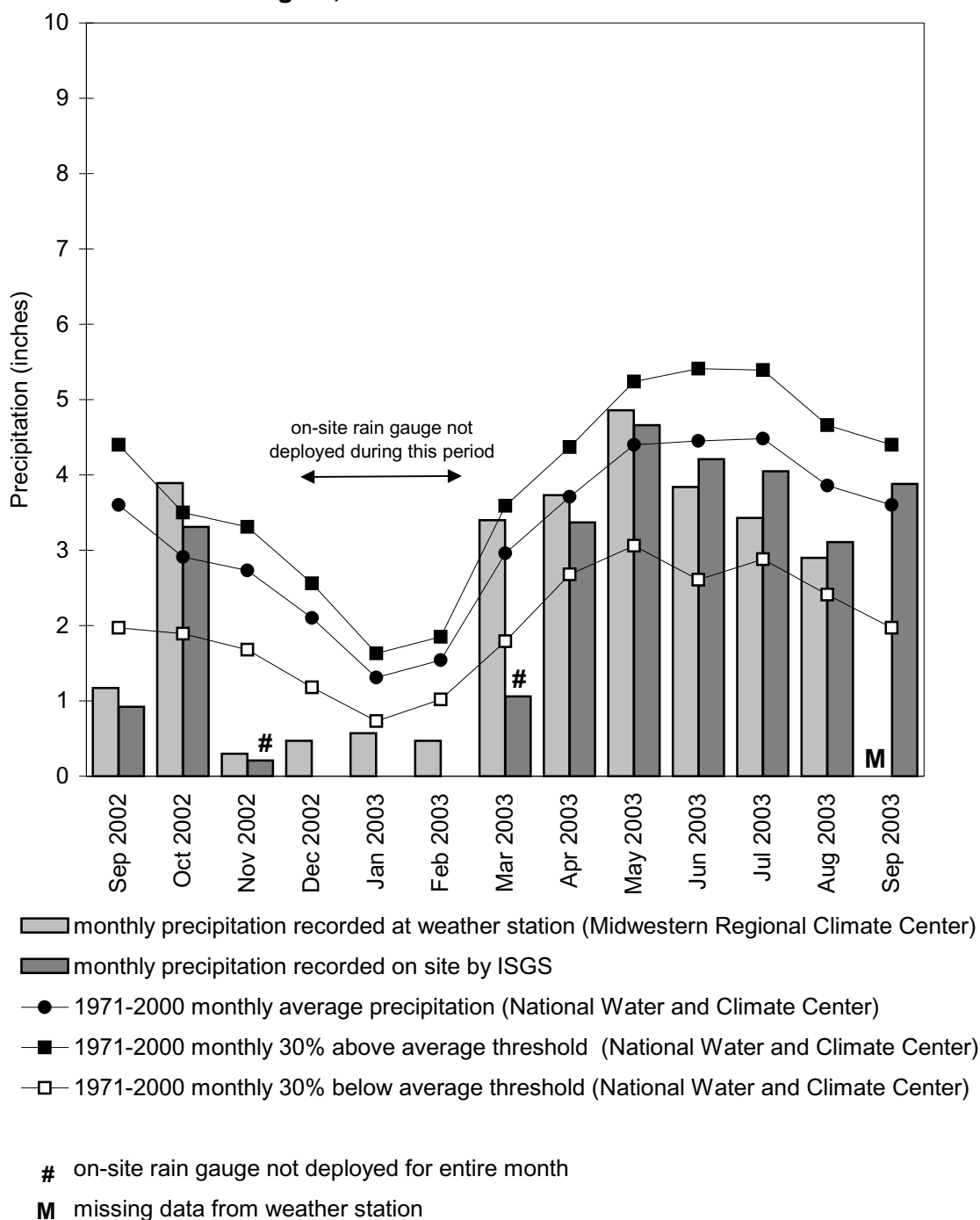
## Depth to Water



# Gulfport Wetland Compensation Site

## September 1, 2002 through September 25, 2003

### Total Monthly Precipitation Recorded On Site and at the Burlington, IA Radio Station KBUR Weather Station



**SPRING CREEK  
POTENTIAL WETLAND BANKING SITE**

**ISGS #30**

FAP 340

Will County, near New Lenox, Illinois

**Primary Project Manager: Steven E. Benton**

**Secondary Project Manager: Paula J. Sabatini**

**SITE HISTORY**

- October 1995: A Level II hydrogeologic investigation was initiated.
- January 1998: The results of the investigation were reported by letter to IDOT.
- March 2000: IDOT requested that data collection be suspended pending the outcome of a feasibility study. Water level measurements in Spring Creek were continued in anticipation of future wetland compensation activities.
- August 2003: Data collection was terminated.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

- No estimate of the area of wetland hydrology was made at this site because the data collected were limited to surface-water elevations.
- Total precipitation recorded at the Brandon Road Dam weather station in Joliet, IL during the study period was 25.80 inches, which was 72% of average. Monthly precipitation was below the normal range in September 2002, November 2002 to February 2003, and in June 2003, above the normal range in July 2003, and within the normal range for the rest of the monitoring period.
- The data logger in Spring Creek recorded several storm peaks, the highest occurring on July 27, probably the result of a 1.82-inch rainfall. The peak was high enough to inundate areas adjacent to Spring Creek, however, the flood only lasted a few hours.

**PLANNED FUTURE ACTIVITIES**

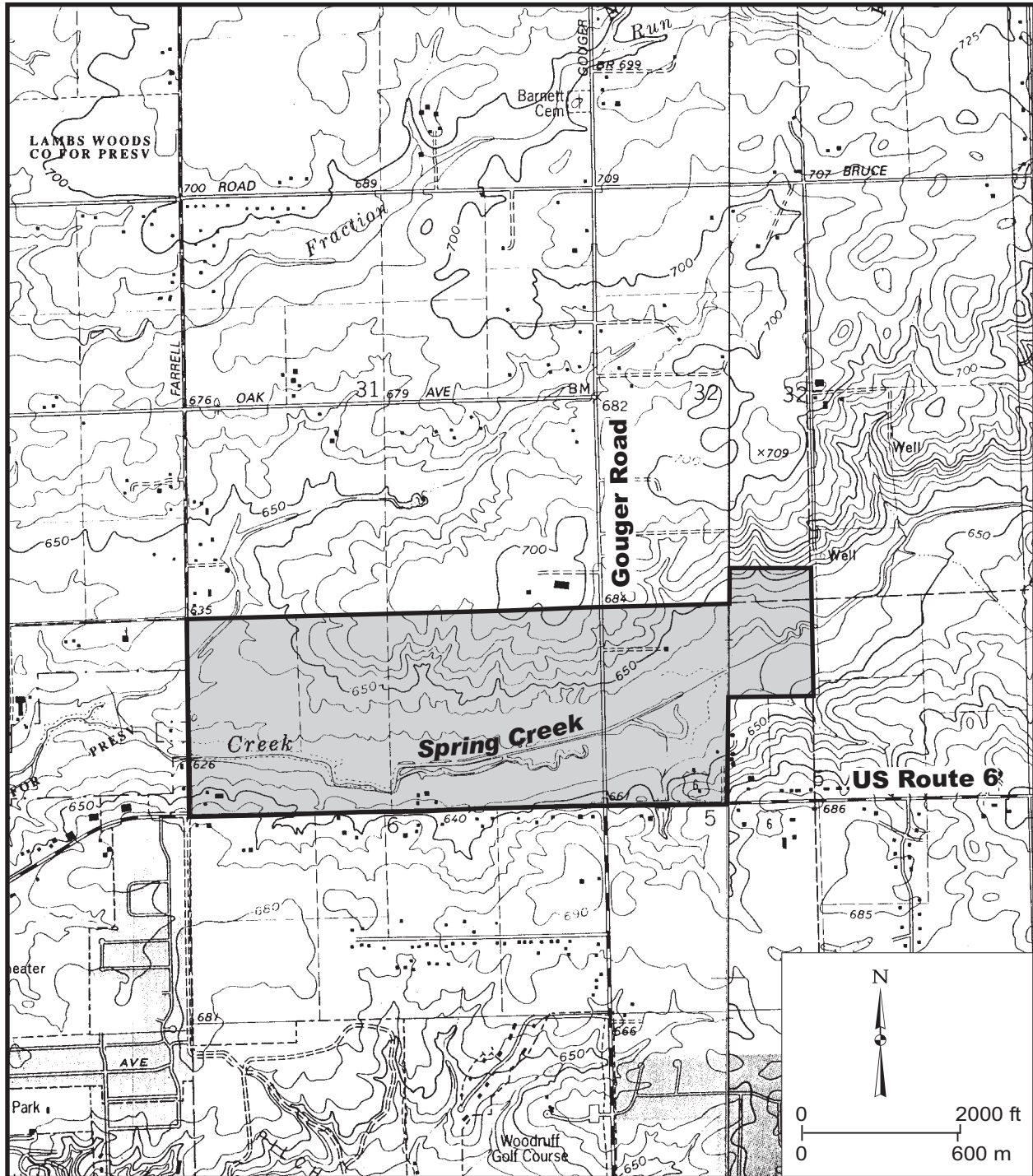
- Monitoring wells will be abandoned as time allows. No further work at this site is anticipated.

# Spring Creek Potential Wetland Banking Site (FAP 340)

## General Study Area and Vicinity

from the USGS Topographic Series, Joliet, IL 7.5-minute Quadrangle (USGS 1993)

contour interval is 10 feet

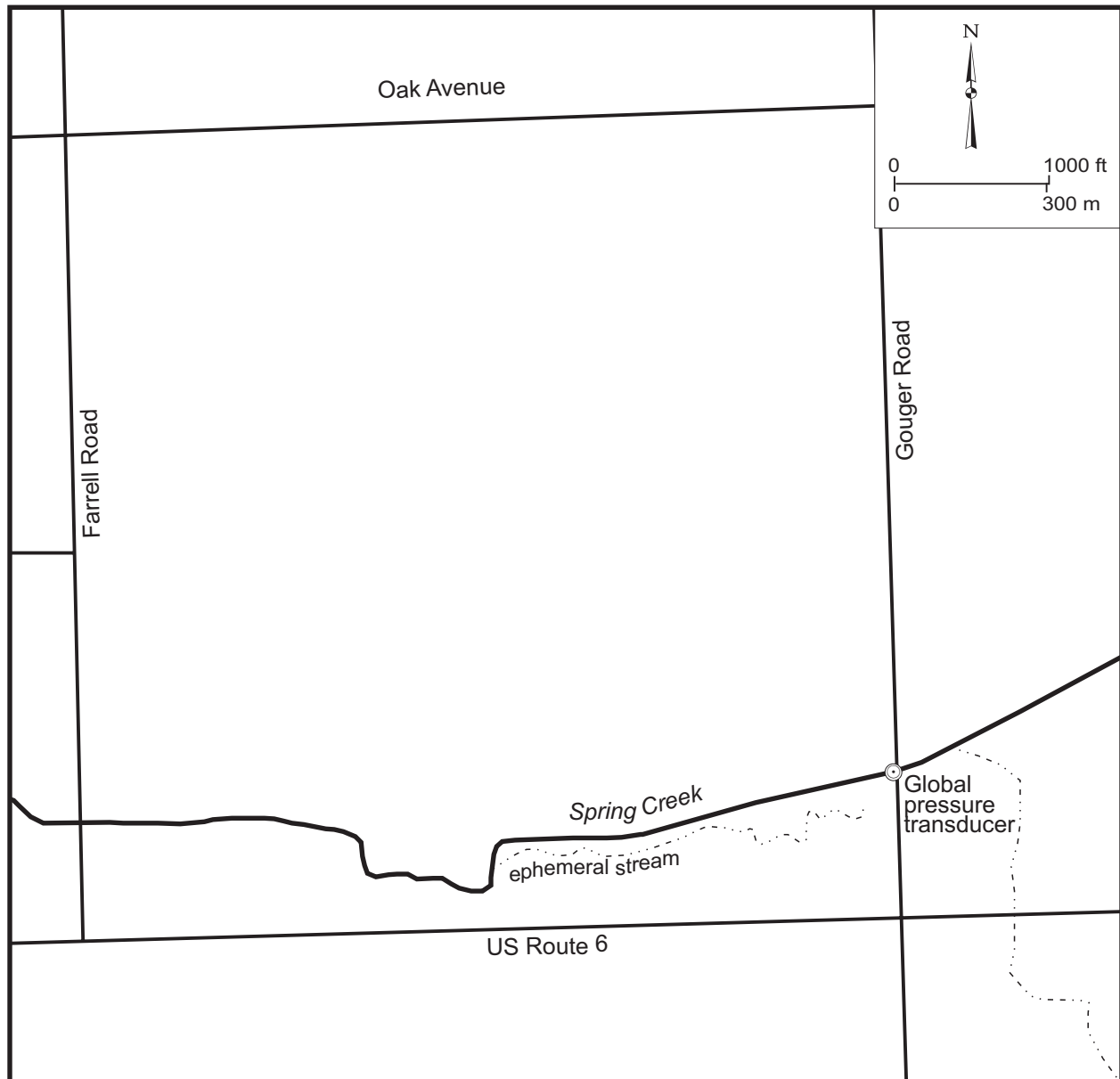


■ general study area

# Spring Creek Potential Wetland Banking Site (FAP 340)

## Approximate Location of the ISGS Global Pressure Transducer

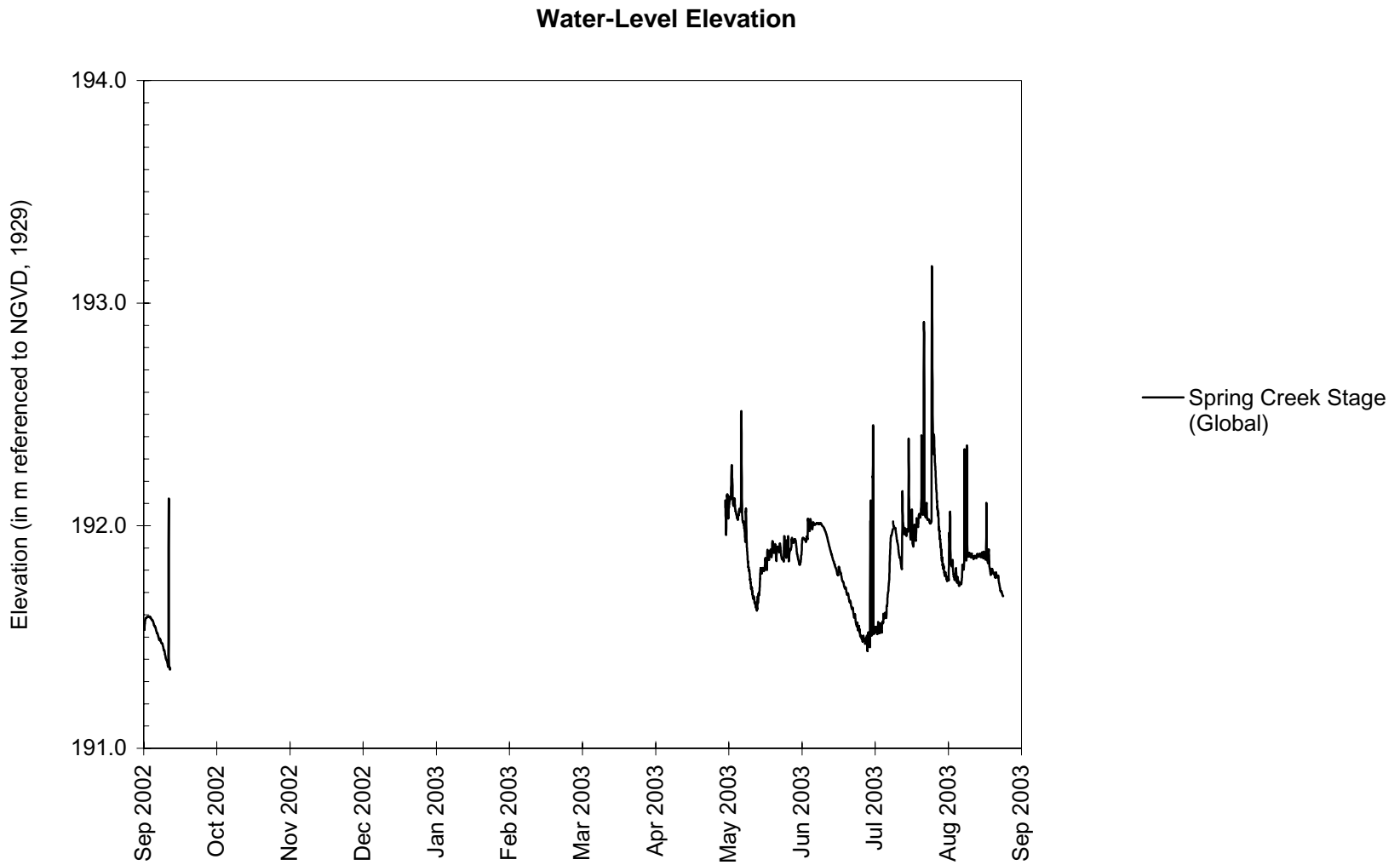
map based on Joliet, IL 7.5-minute Quadrangle (USGS 1993)



⊙ Global pressure transducer

# Spring Creek Potential Wetland Banking Site

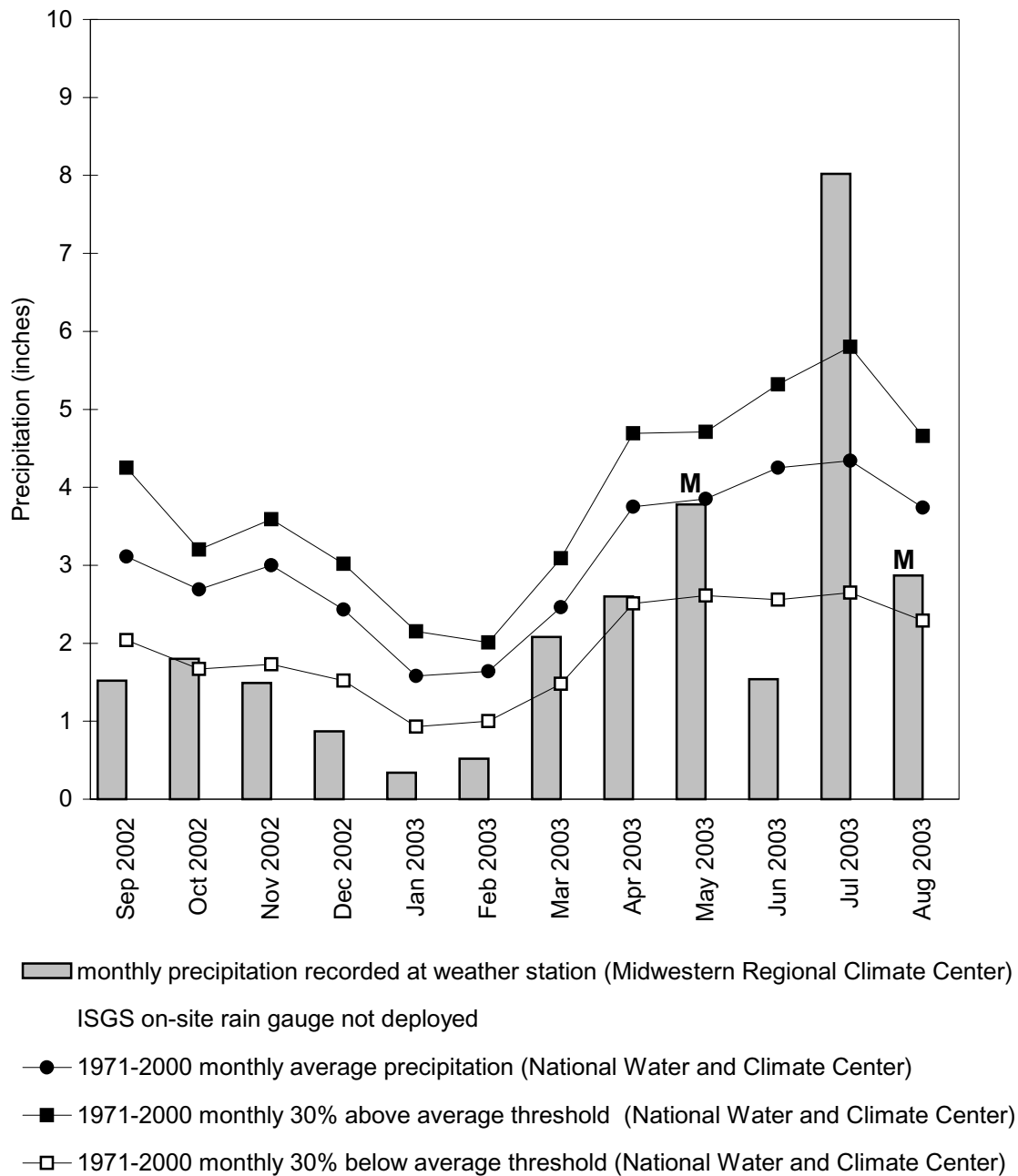
September 1, 2002 to September 1, 2003



# Spring Creek Potential Wetland Banking Site

## September 2002 through August 2003

**Total Monthly Precipitation Recorded at the  
Brandon Road Dam Weather Station, Joliet, IL**  
(no rain gauge deployed on site)



**HANCOCK COUNTY NEAR CARTHAGE  
POTENTIAL WETLAND COMPENSATION SITE**

**ISGS #42**

FAP 315 & 10

Hancock County, near Carthage, Illinois

**Primary Project Manager: Blaine A. Watson**

**Secondary Project Manager: Kara L. Hart**

**SITE HISTORY**

- March 1997: IDOT tasked ISGS to monitor site.
- October 1997: IDOT obtained landowner permission for the ISGS to begin work.
- February 1998: ISGS installed monitoring wells and began a hydrogeologic characterization of the site.
- August 2000: ISGS presented a summary of hydrologic data gathered to-date and participated in general site discussion at a planning meeting with IDOT and Christopher B. Burke Engineering, Ltd. The meeting included discussion of wetland design concerns and construction ideas for the final compensation plan at the site.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

We estimate that the total area of the site that conclusively satisfied wetland hydrology criteria in 2003 is 9.3 ac (3.8 ha) out of an area of 44.3 ac (17.9 ha). By comparison, the area of wetland hydrology in 2002 was approximately 24.8 ac (10.0 ha). This year's estimate is based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in La Harpe is April 9 and the season lasts 196 days; 12.5% of the growing season is 25 days and 5% of the growing season is 10 days.
- During the period including September 2002 through July 2003, total precipitation at the site was 67% of the normal amount for those months (August 2003 precipitation data were not available and are not included in this value). Precipitation at the site or in the vicinity was generally below the normal range between September 2002 and March 2003, leading to relatively dry conditions which may have affected the local ground-water levels. Precipitation amounts between April and July 2003 returned to levels within the normal range.
- In 2003, water levels measured in wells 1U, 2U, 4U, and 8U conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual.
- Limitations of the wetland hydrology determination are as follows:
  - Records of surface-water levels at RDS loggers RDS1 and RDS2 indicate that inundation occurred in the vicinity of these loggers for extended periods approaching the amount required to conclusively satisfy the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. At RDS 1, this occurred for a duration long enough to satisfy the wetland hydrology criteria at an elevation of



165.24 m (542.1 ft). At RDS2, this occurred for a duration long enough to satisfy the wetland hydrology criteria at an elevation of 165.5 m (543.0 ft). This information was considered in determining the extent of wetland hydrology estimated at the site this year.

- The precipitation total for this reporting period does not include data from August 2003. The data were not available from the climate station and the ISGS gauge was malfunctioning during this period. Also, April 2003 precipitation data from the ISGS gauge were substituted for climate station data in calculating the total precipitation estimate for the annual reporting period. The April 2003 data set was not available from the climate station record.

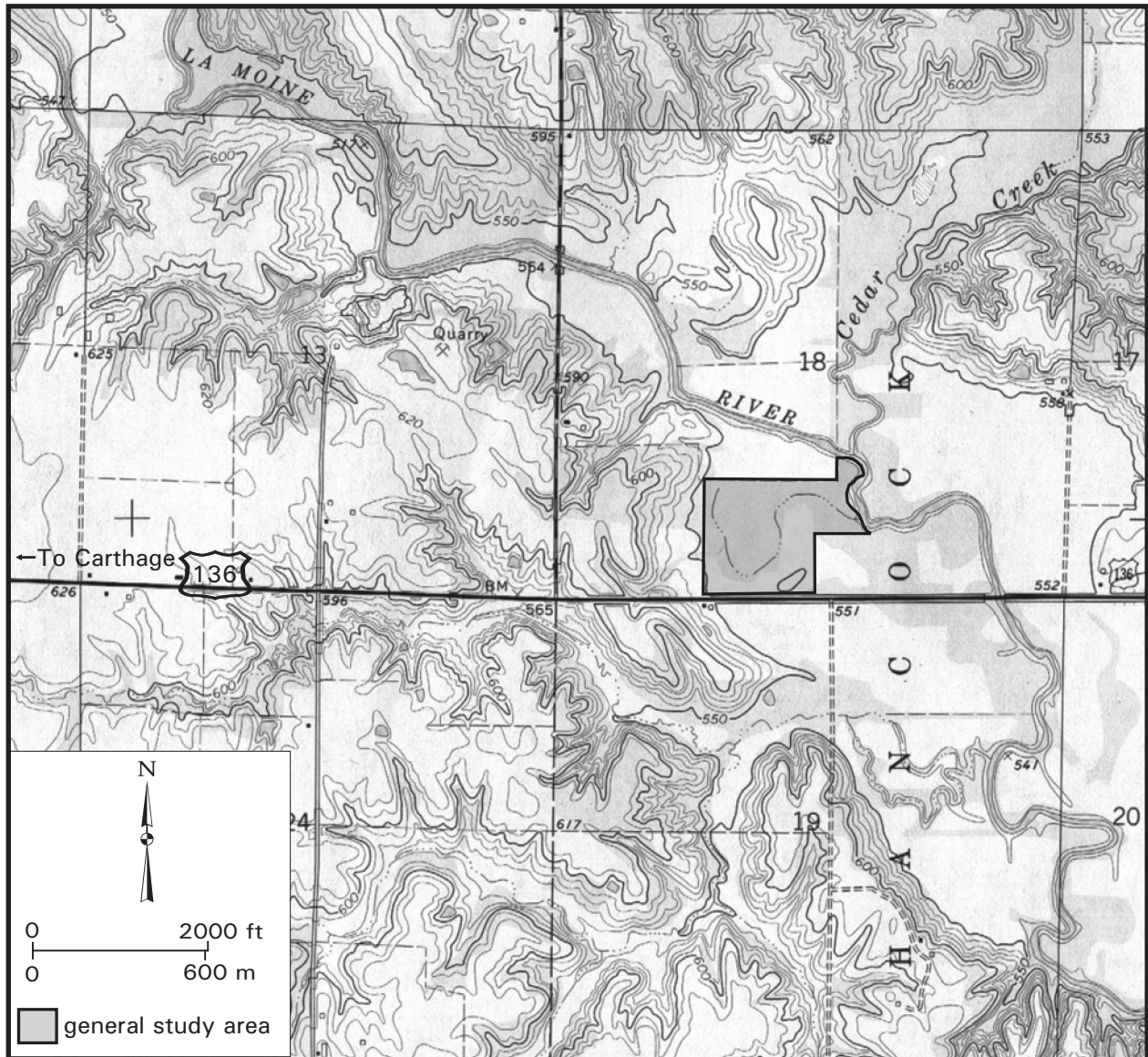
#### PLANNED FUTURE ACTIVITIES

- Monitoring of the site will continue until no longer required by IDOT.

**Hancock County near Carthage**  
**Potential Wetland Compensation Site**  
**(FAP 315 and FAP 10)**

**General Study Area and Vicinity**

from the USGS Topographic Series, Carthage East, IL 7.5-minute Quadrangle (USGS 1974)  
contour interval is 10 feet

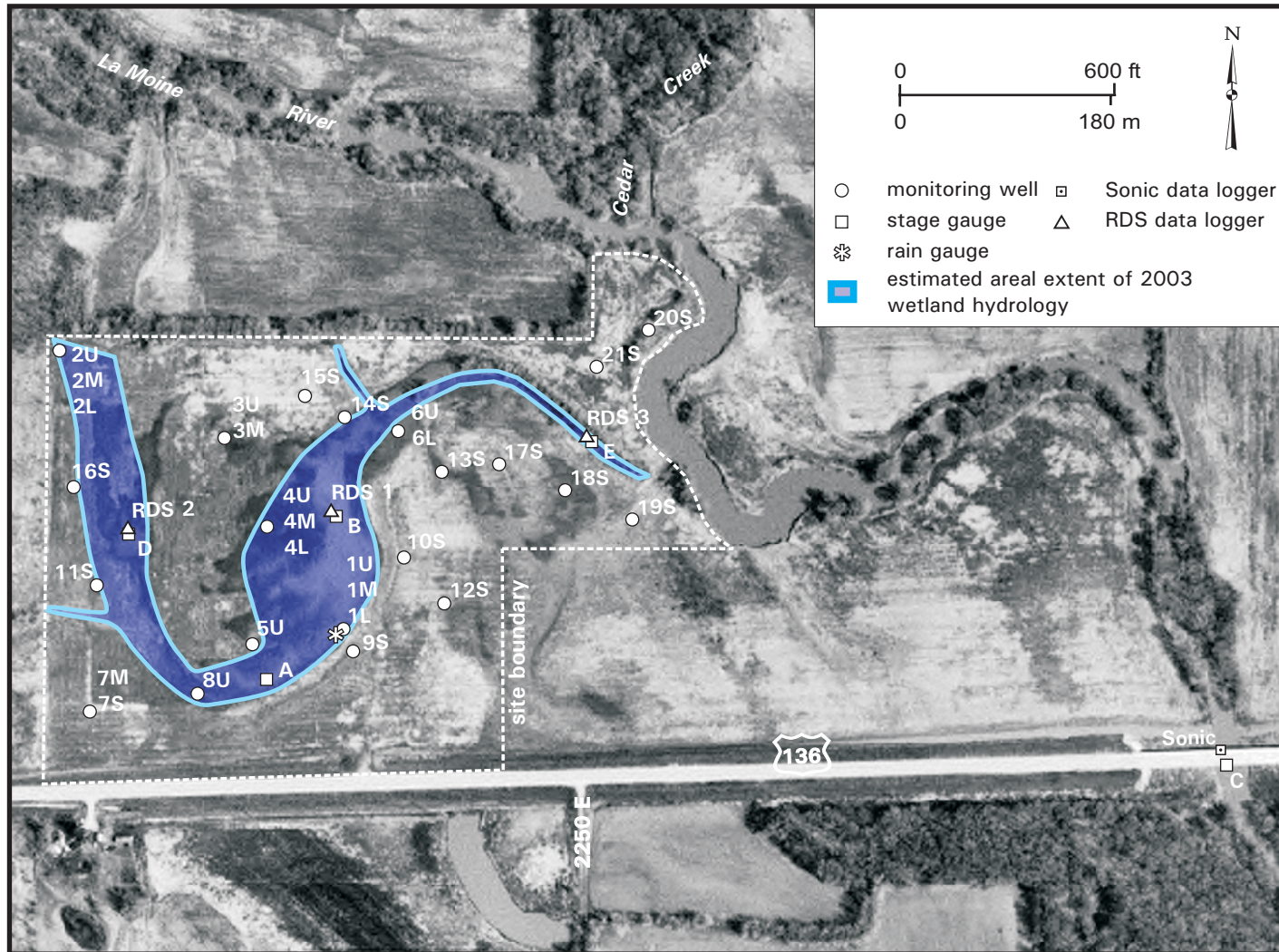




# Hancock County near Carthage Potential Wetland Compensation Site (FAP 315 and FAP 10)

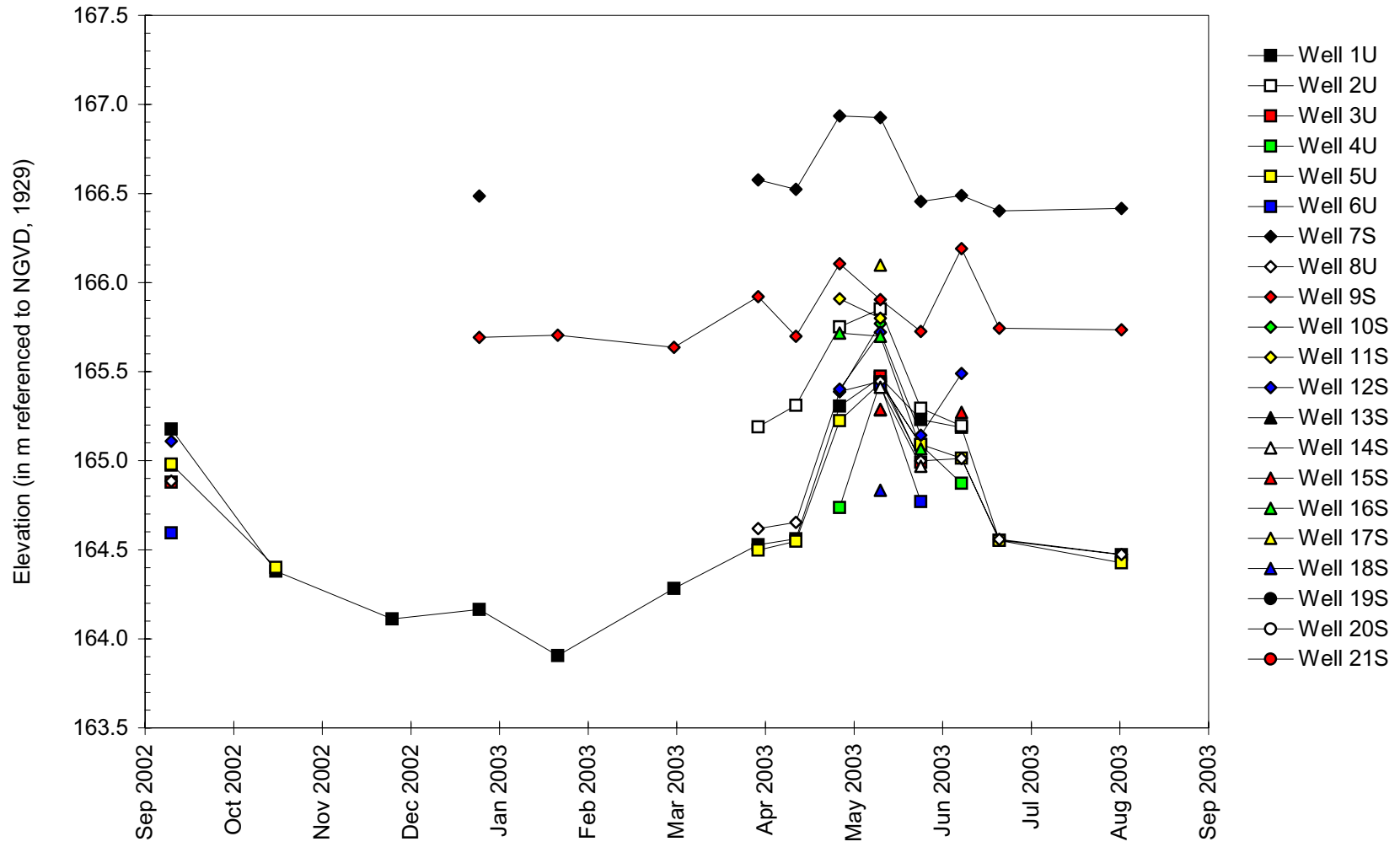
## Estimated Areal Extent of 2003 Wetland Hydrology

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



## Hancock County near Carthage Potential Wetland Compensation Site September 1, 2002 to September 1, 2003

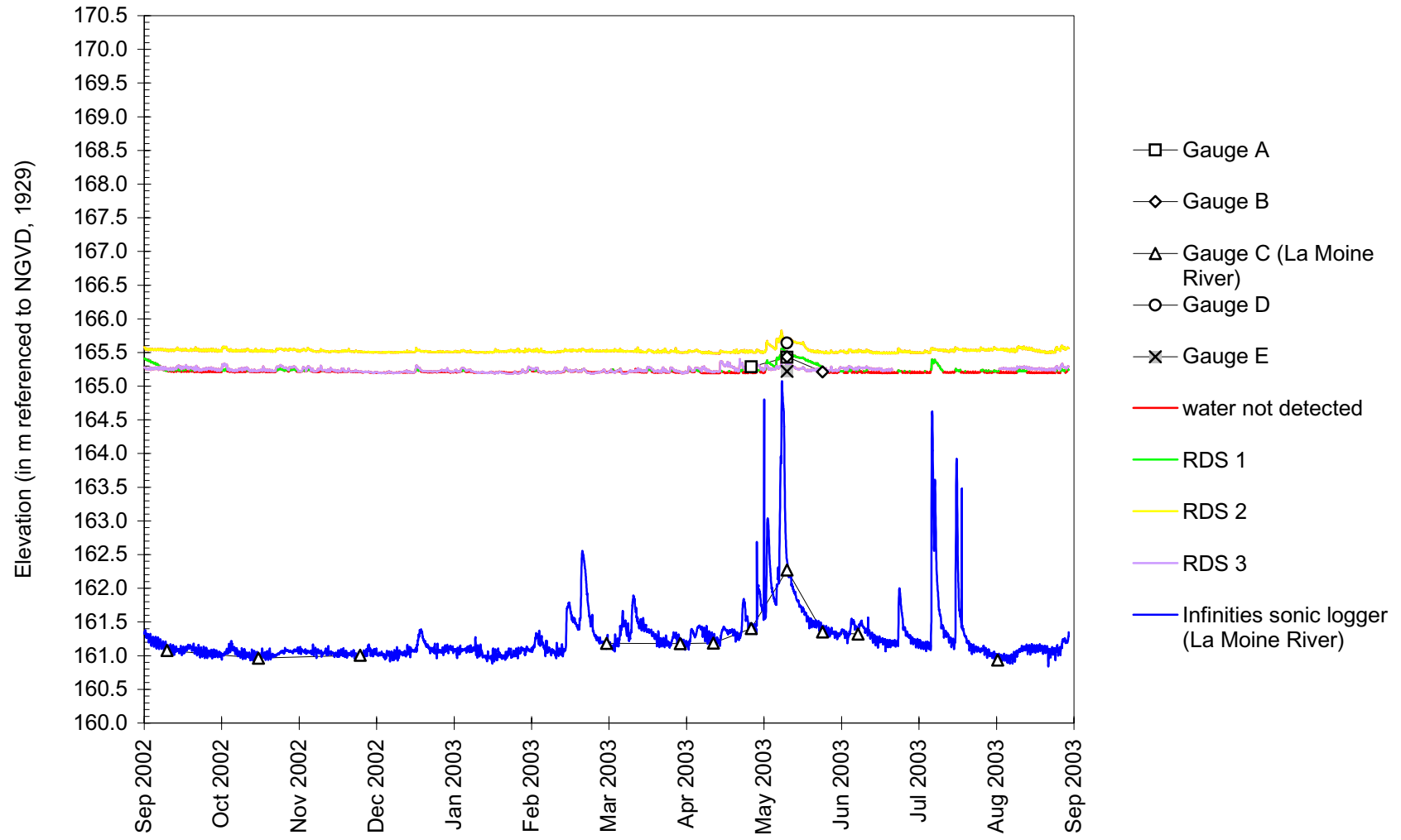
### Water-Level Elevations in Wells Used to Determine Areas Satisfying Wetland Hydrology Criteria



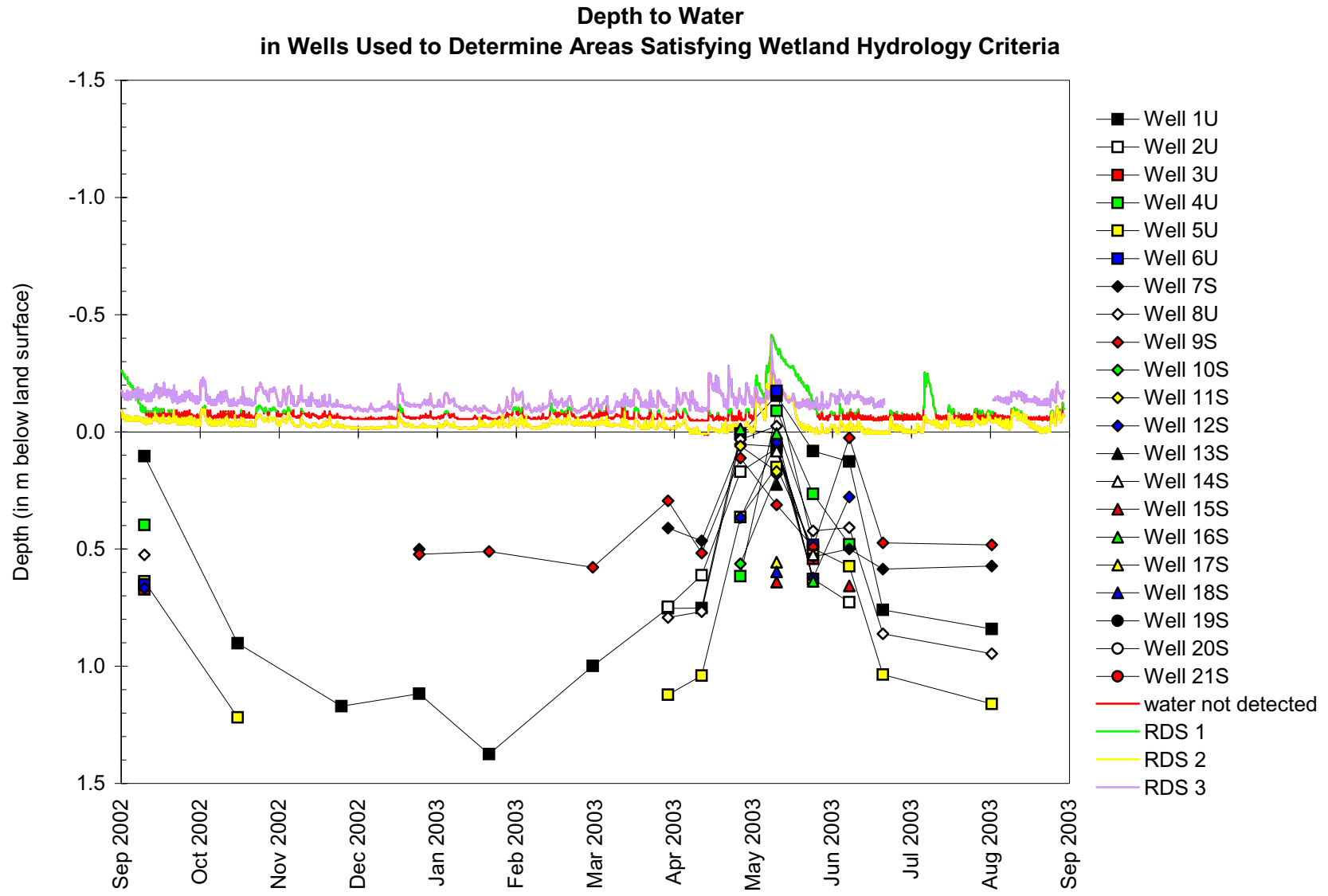
# Hancock County near Carthage Potential Wetland Compensation Site

September 1, 2002 to September 1, 2003

## Water-Level Elevations on Stage Gauges and at Data Loggers

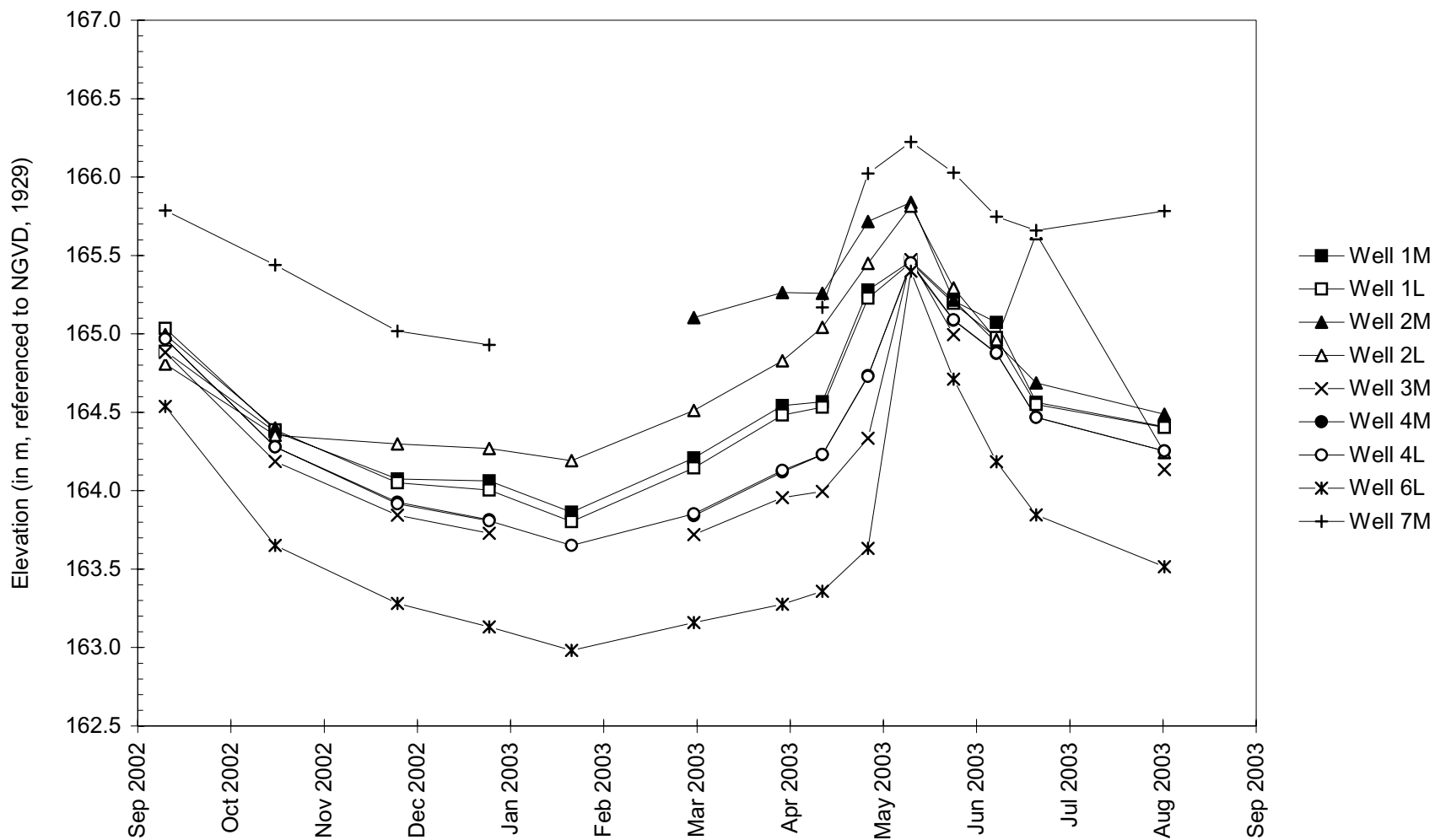


**Hancock County near Carthage Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**



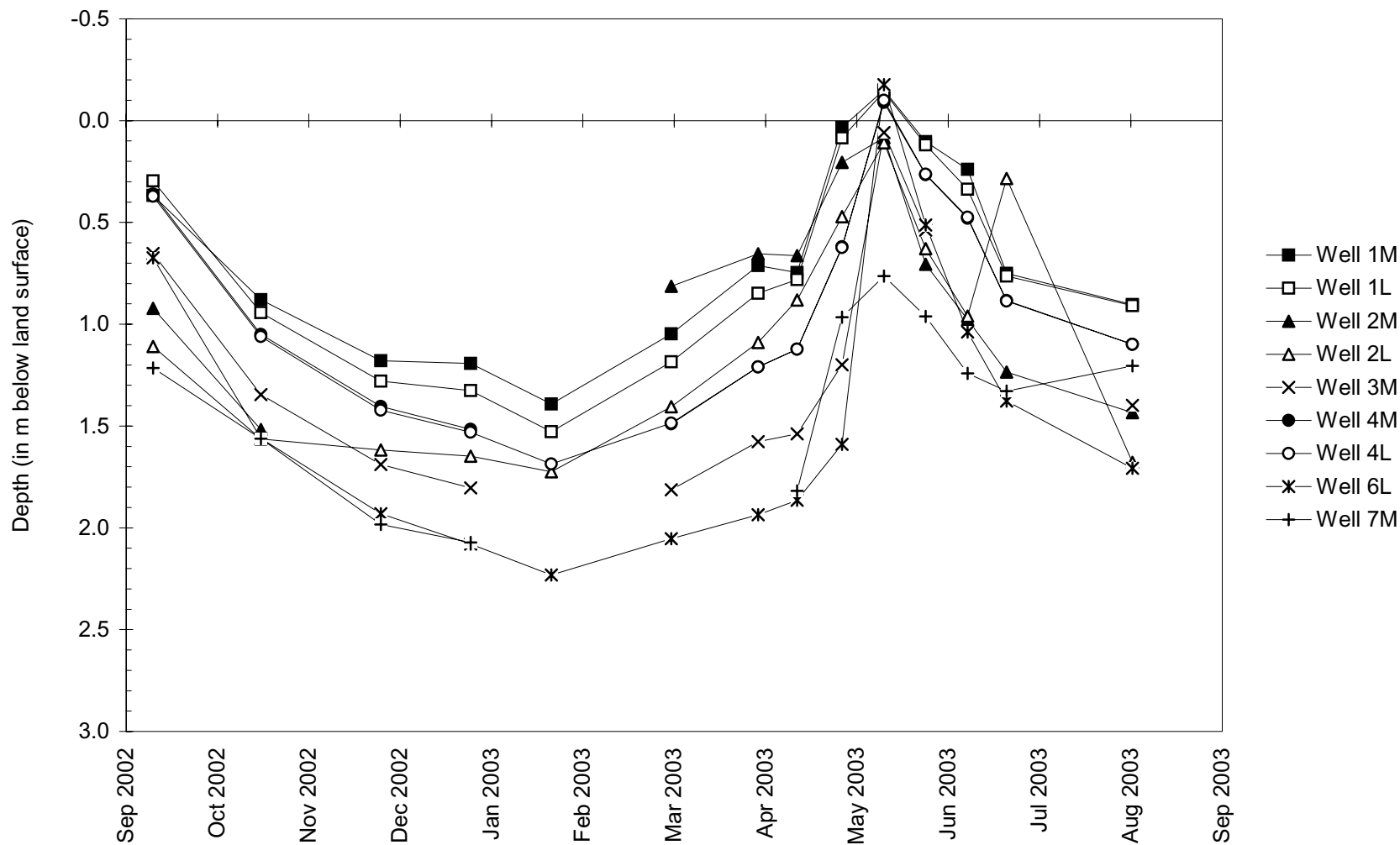
**September 1, 2002 to September 1, 2003**

## Water-Level Elevations in Deeper Monitoring Wells



**Hancock County near Carthage Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

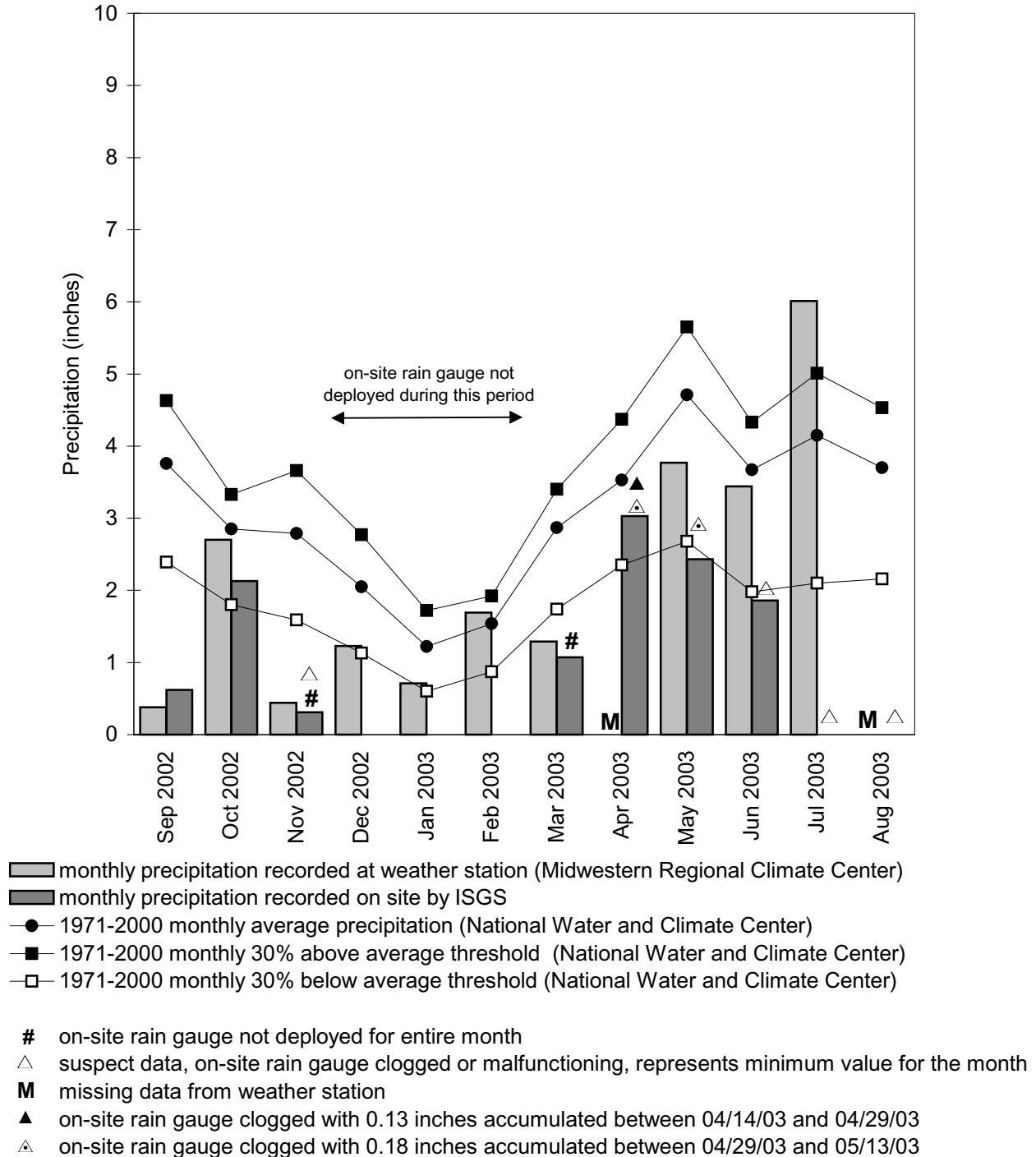
**Depth to Water**  
**in Deeper Monitoring Wells**





# Hancock County near Carthage Potential Wetland Compensation Site September 2002 through August 2003

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



**FORMER ECKMANN AND BISCHOFF PROPERTIES  
POTENTIAL WETLAND COMPENSATION SITE**

**ISGS #43**

FAP 14

Madison County, near Collinsville, Illinois

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

**Secondary Project Manager:** not assigned

**SITE HISTORY**

- November 1994: The ISGS submitted an Initial Site Evaluation Report to IDOT.
- February and March 1997: A hydrogeologic characterization of the site was initiated with the installation of monitoring wells and staff gauges.
- October 1998: A draft interim Level II hydrogeologic characterization report was submitted to IDOT.
- March, April, and July 2000: Four soil-zone monitoring wells were installed in the Eckmann property and nine soil-zone monitoring wells were installed in the former Bischoff property.
- May 2001: A site meeting was held with representatives of the IDOT and the Metro East Sanitary District to discuss replacing the gravity drain in the Cahokia Canal levee with a new culvert having a flapper valve where it opens into the canal.
- September 2003: In conjunction with the INHS, a letter was submitted to IDOT identifying the 42.6 ac (17.2 ha) of the site that have met the criteria for wetland following 6 years of monitoring.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

In 2003, 52.7 ac (21.3 ha) of the compensation site satisfied the criteria for wetland hydrology. In 2002, 53.0 ac (21.4 ha) met the criteria for wetland hydrology. The figure for 2003 is 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, 12.5% of the growing season is 25 days.
- Precipitation during the monitoring period was 96% of normal. Above normal precipitation in the fall, followed by below normal precipitation in the winter months, November 2002 through January 2003, resulted in relatively stable ground-water levels throughout the winter. Gradually rising water levels coincided with precipitation in the normal range February through April. Above normal rainfall in May and June caused ground-water levels to peak, then drop off with the dry conditions reported in July.
- All of the former Eckmann property and 70% of the former Bischoff property conclusively met the criteria for wetland hydrology as outlined in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. Only the highest areas on the eastern flank of the Cahokia Canal levee (near wells 16S, 17S and 18S) did not meet the criteria.

- Limitations of the wetland hydrology determination are as follows:
  - The area meeting wetland hydrology criteria on the former Bischoff property was derived from a mathematical interpolation of the shallow ground-water surface and well coordinates obtained via GPS.

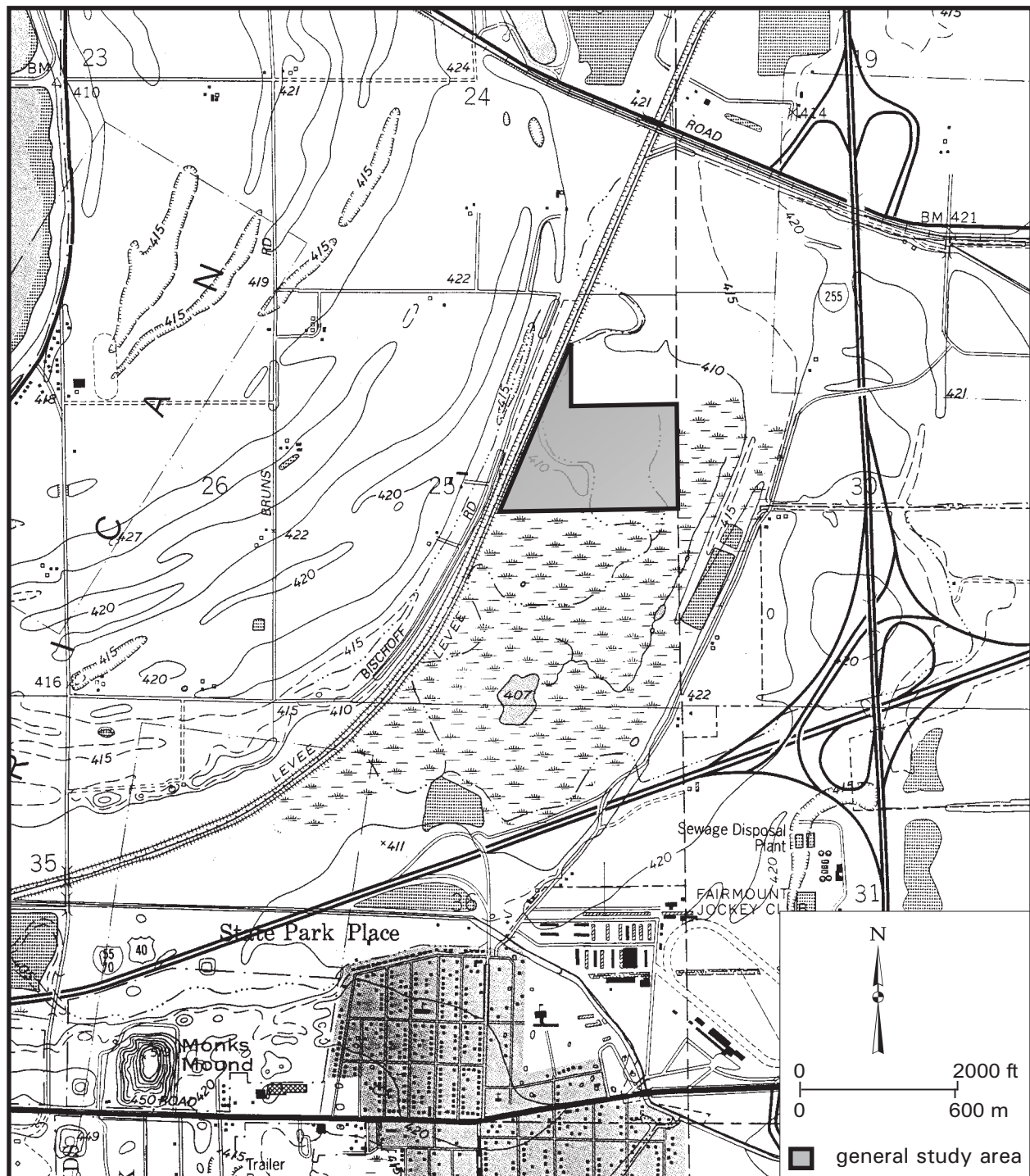
#### PLANNED FUTURE ACTIVITIES

- Monitoring for wetland hydrology will continue at this site until no longer required by IDOT.

**Former Eckmann and Bischoff Properties  
Potential Wetland Compensation Site  
(FAP 14)**

**Study Area and Vicinity**

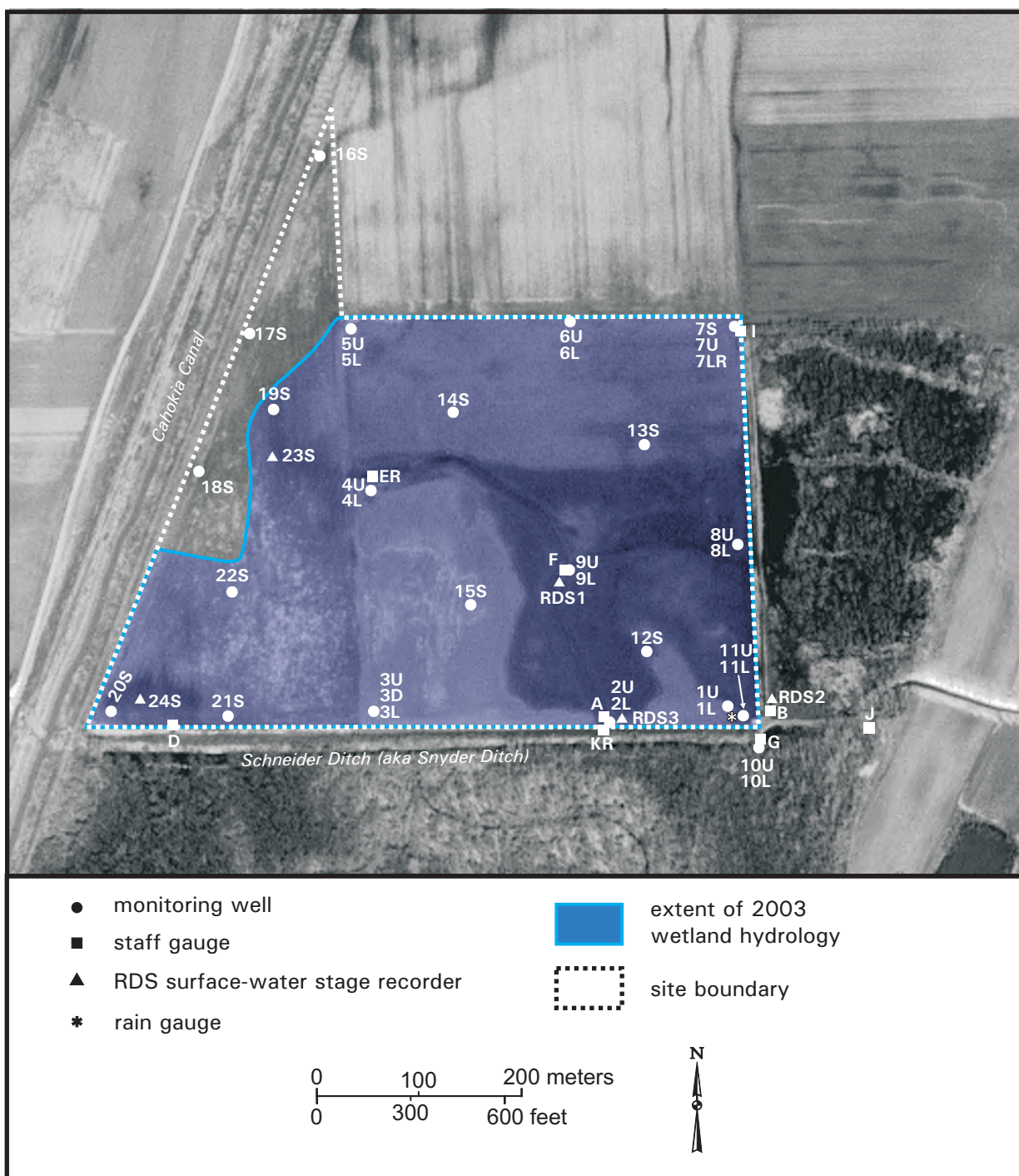
from the USGS Topographic Series, Monks Mound IL 7.5-minute Quadrangle (USGS 1954, revised 1993)  
contour interval is 10 feet



# Former Eckmann and Bischoff Properties Potential Wetland Compensation Site (FAP 14)

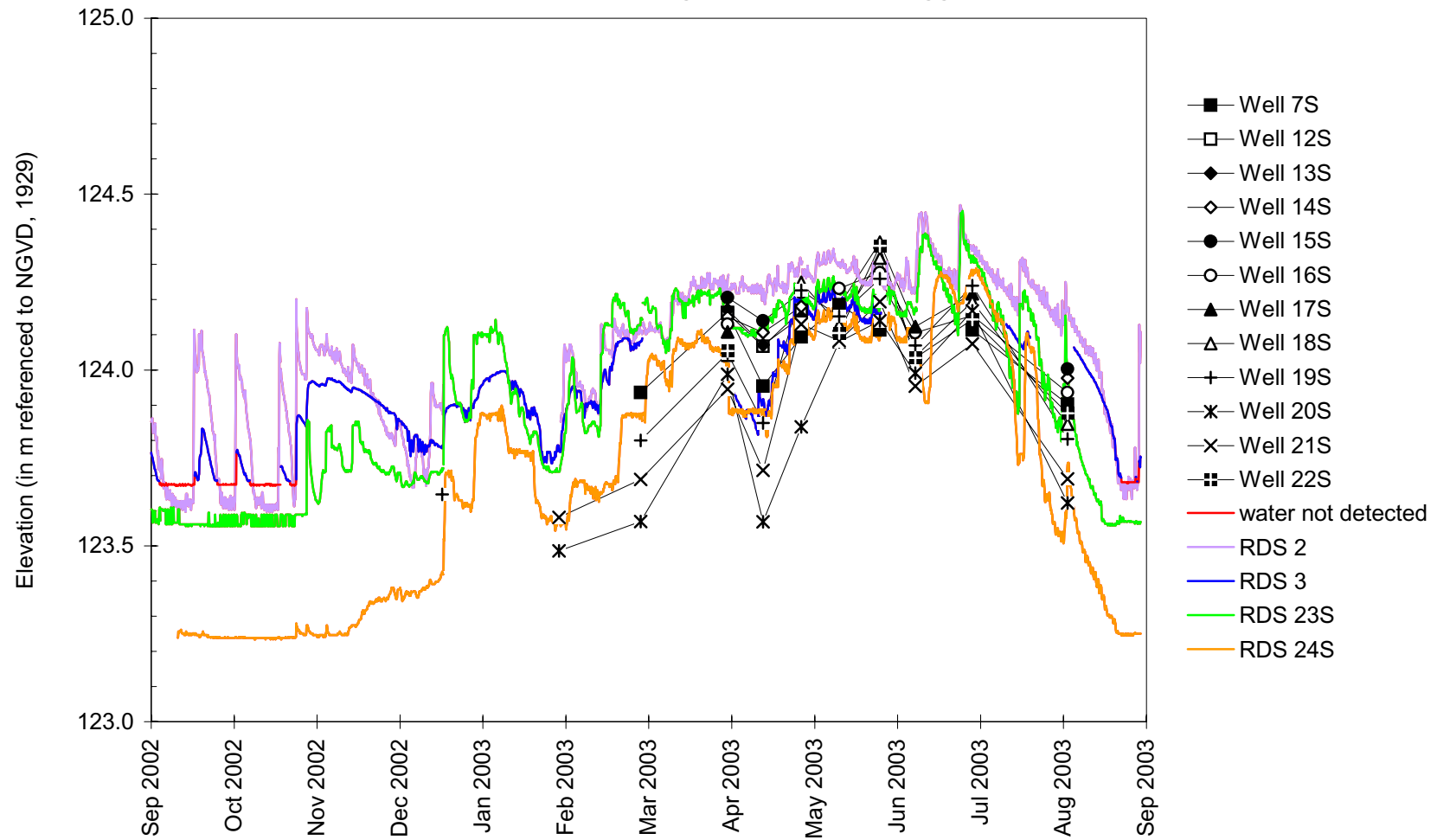
**Estimated Areal Extent of 2003 Wetland Hydrology**  
based on data collected between September 1, 2002 and September 1, 2003

map based on USGS digital orthophotograph, Monk's Mound, SE quarter quadrangle  
produced from 4/2/98 aerial photography (ISGS, 2000)



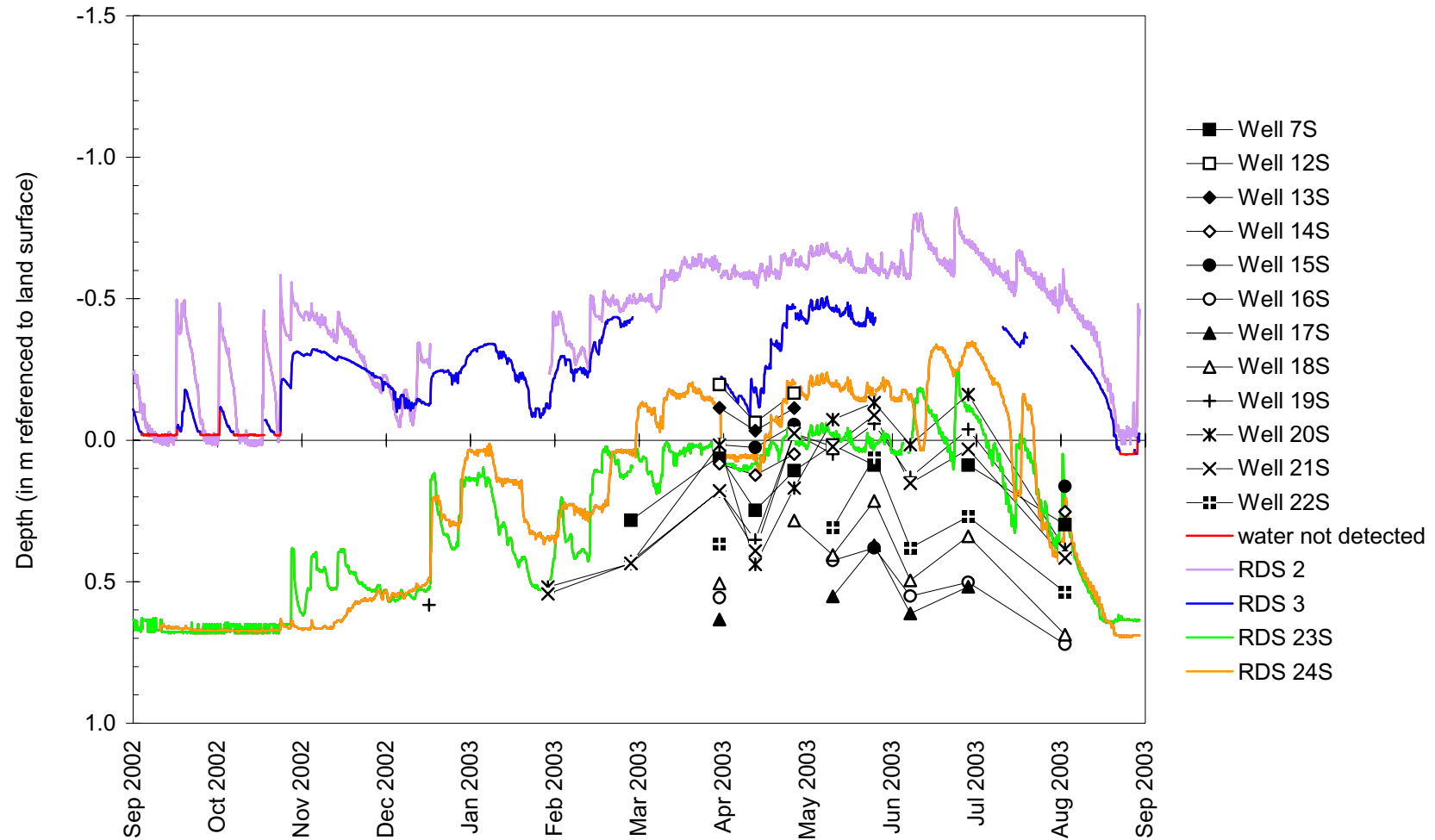
**Former Eckmann and Bischoff Properties Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations**  
**in Soil-Zone Monitoring Wells and Data Loggers**



**Former Eckmann and Bischoff Properties Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

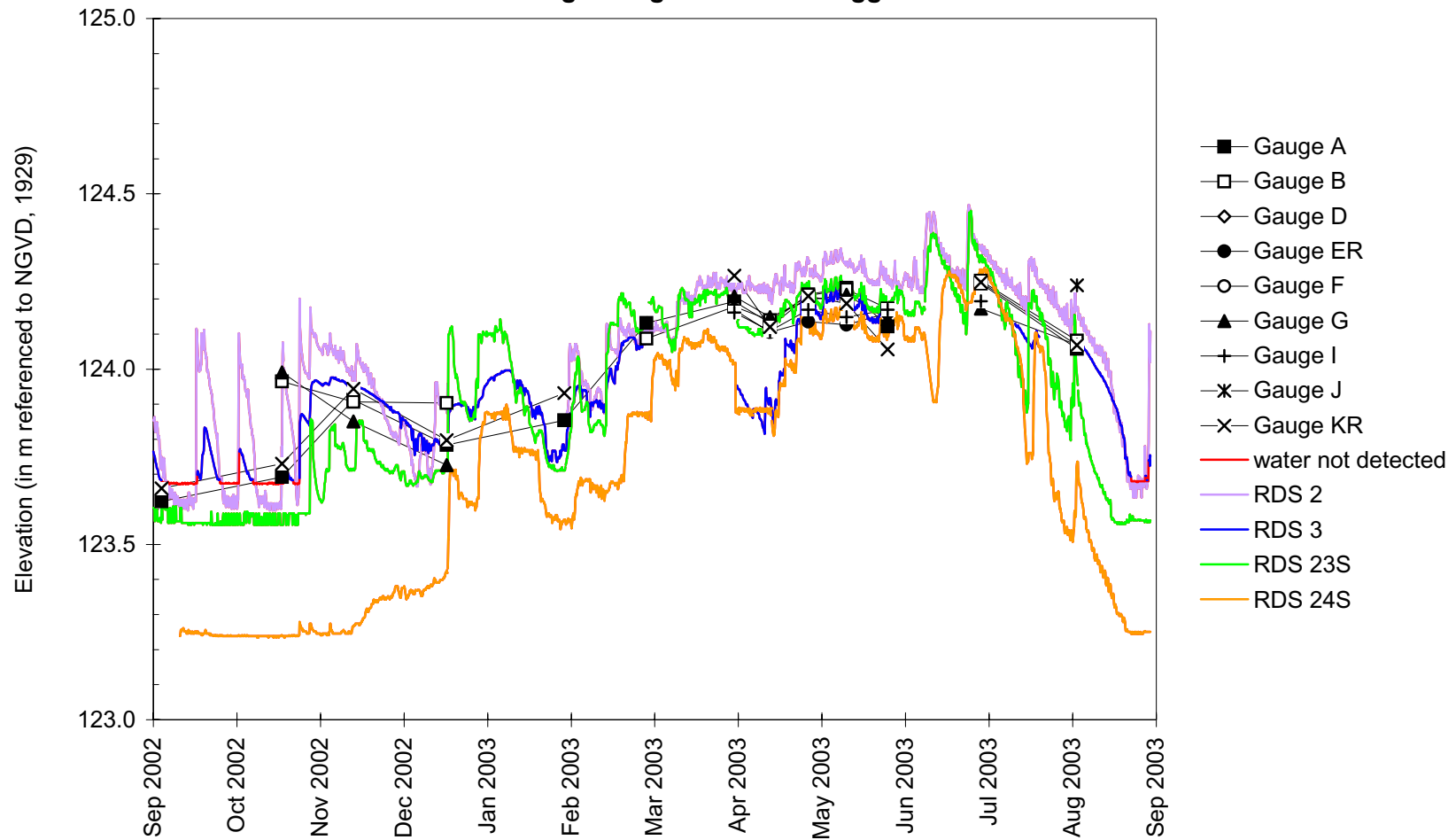
**Depth to Water**  
**in Soil-Zone Monitoring Wells and Data Loggers**





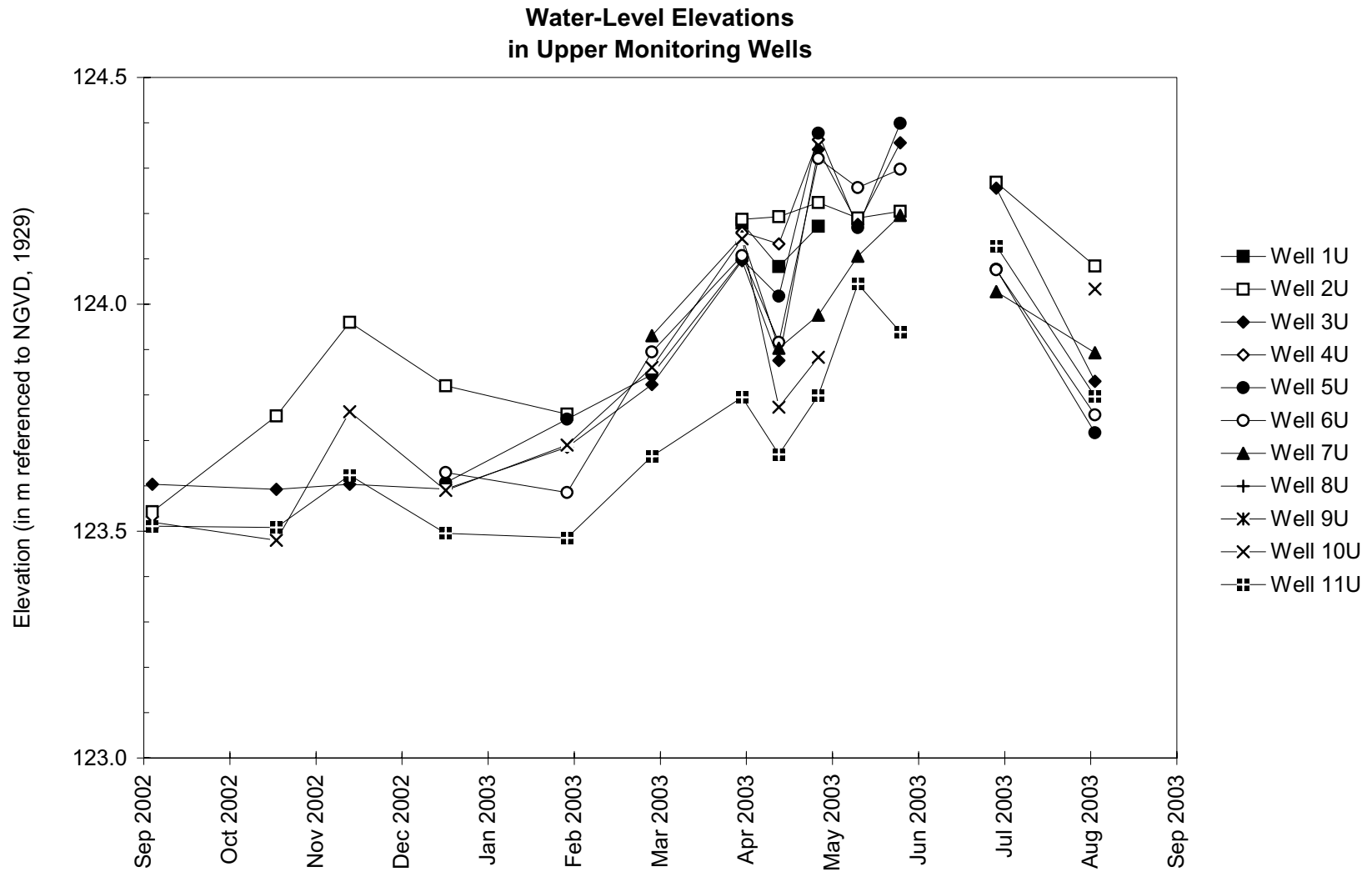
**Former Eckmann and Bischoff Properties Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations  
on Stage Gauges and Data Loggers**

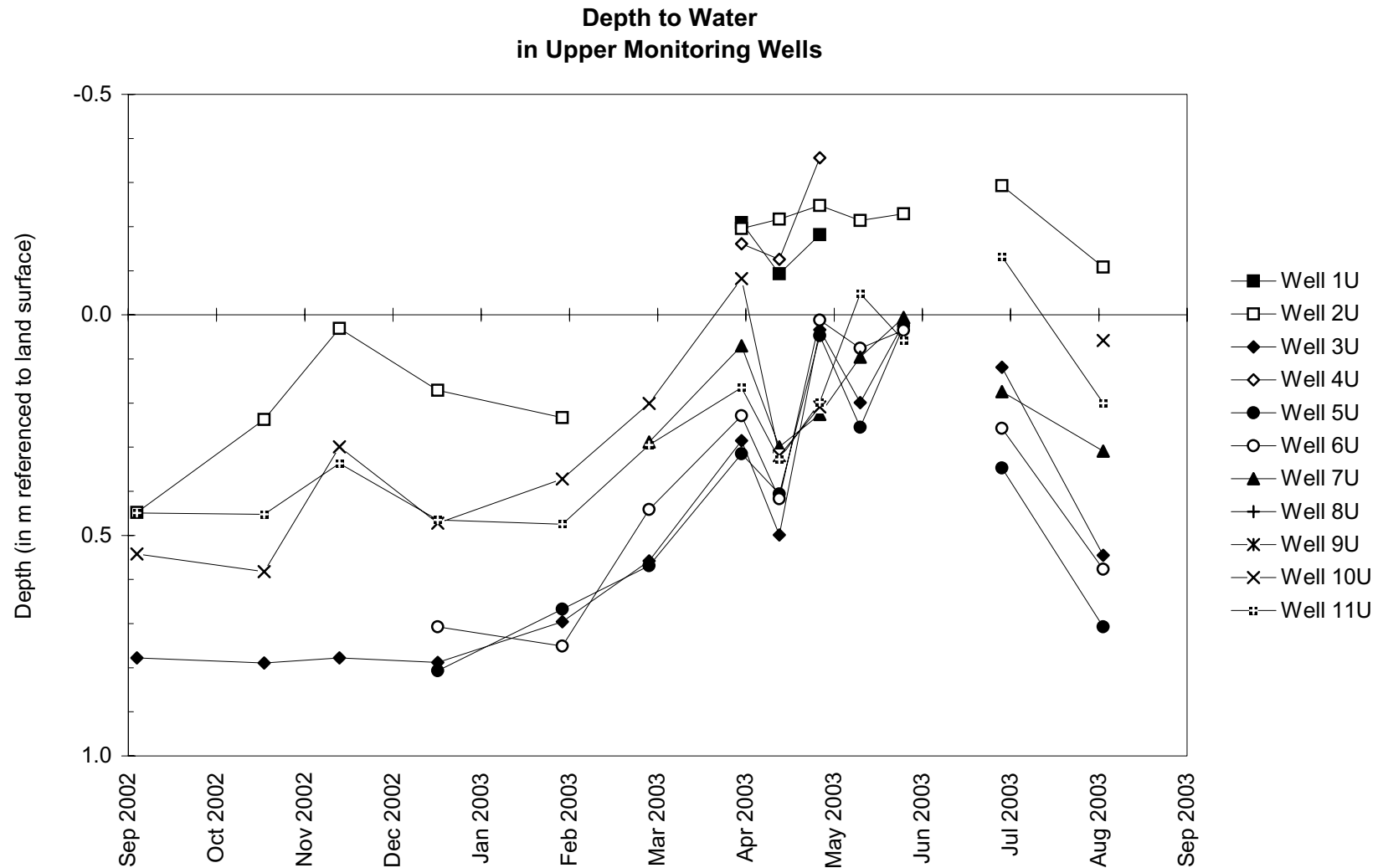




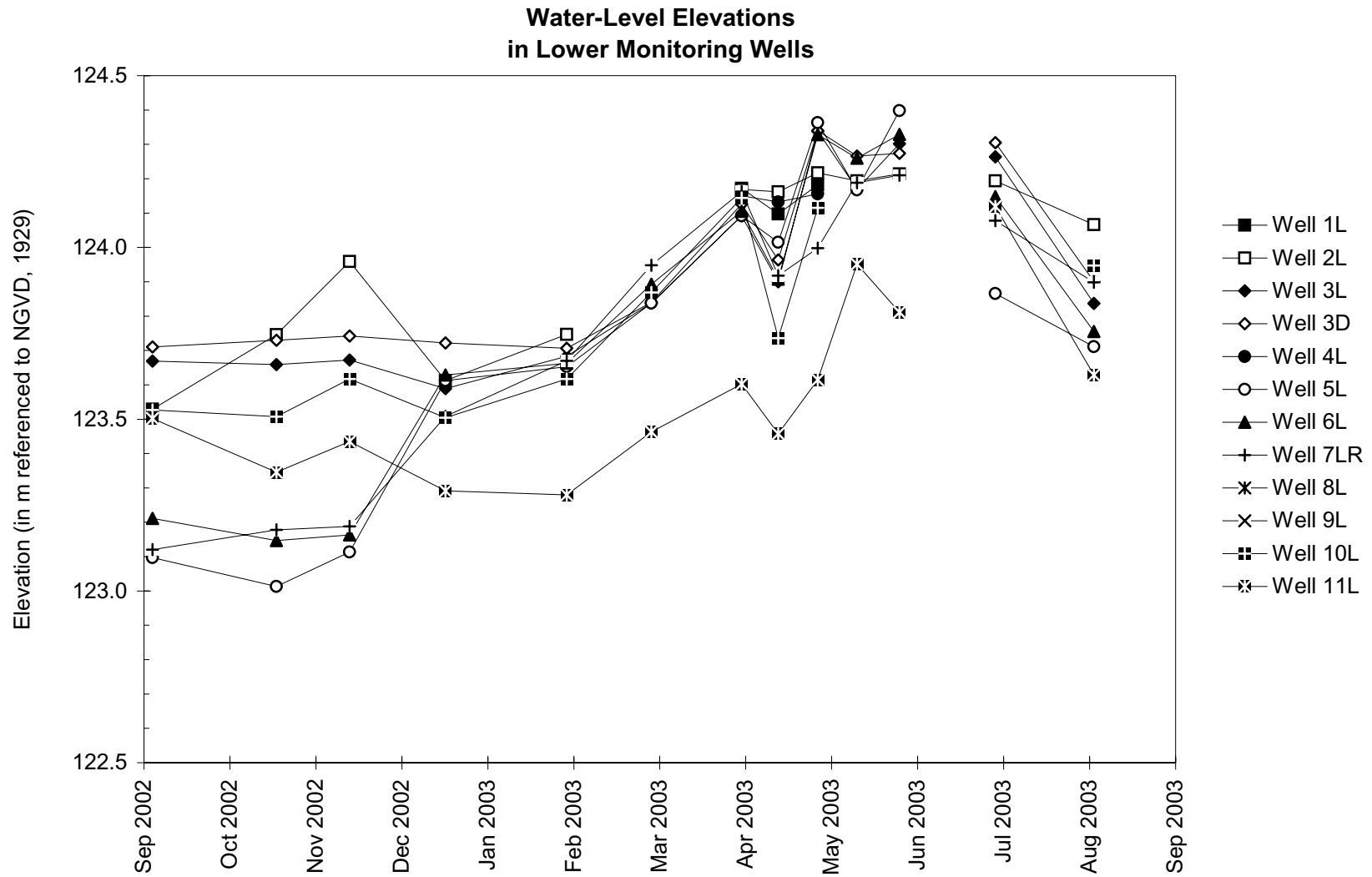
**Former Eckmann and Bischoff Properties Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**



**Former Eckmann and Bischoff Properties Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

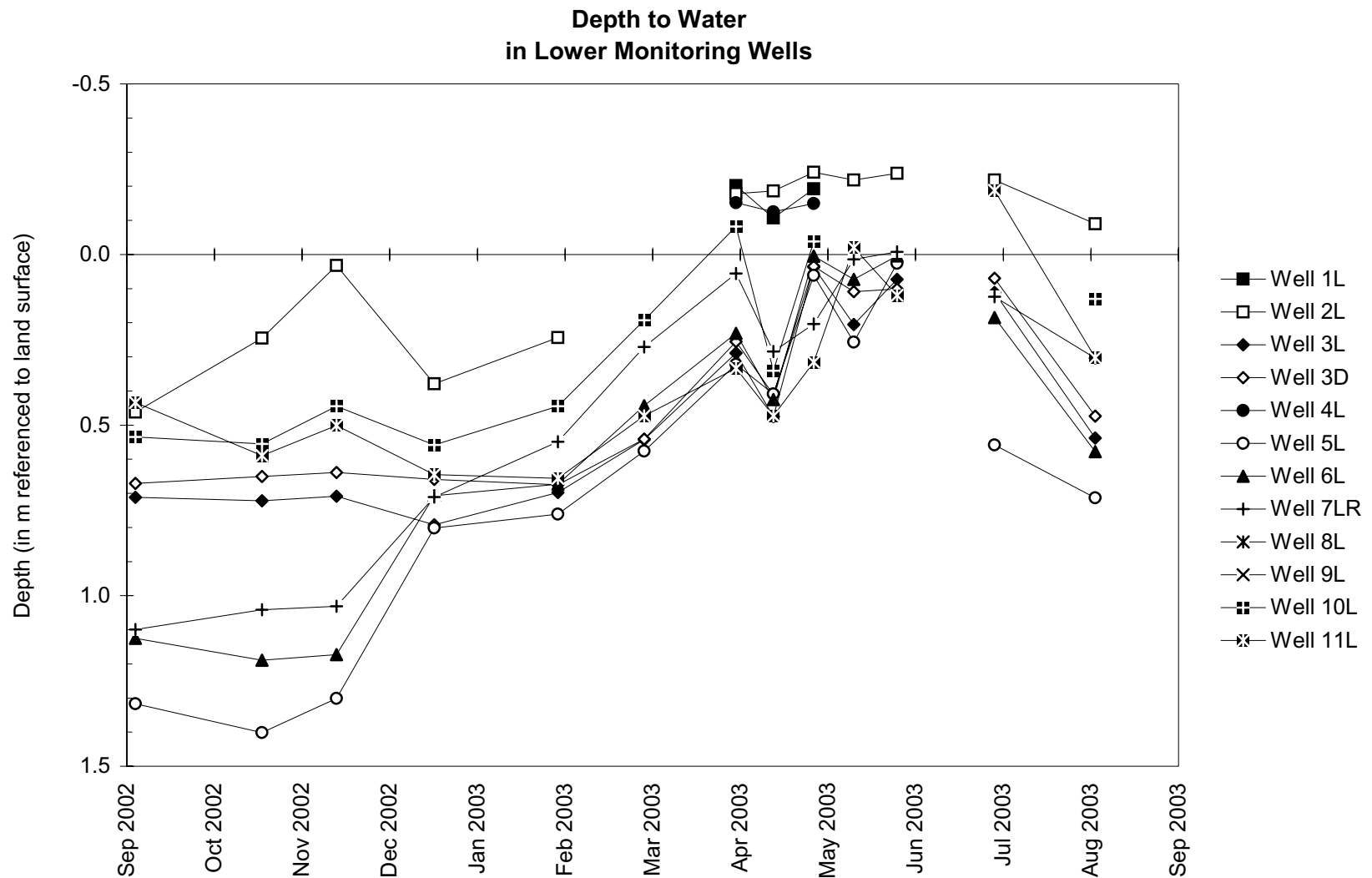


**Former Eckmann and Bischoff Properties Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**



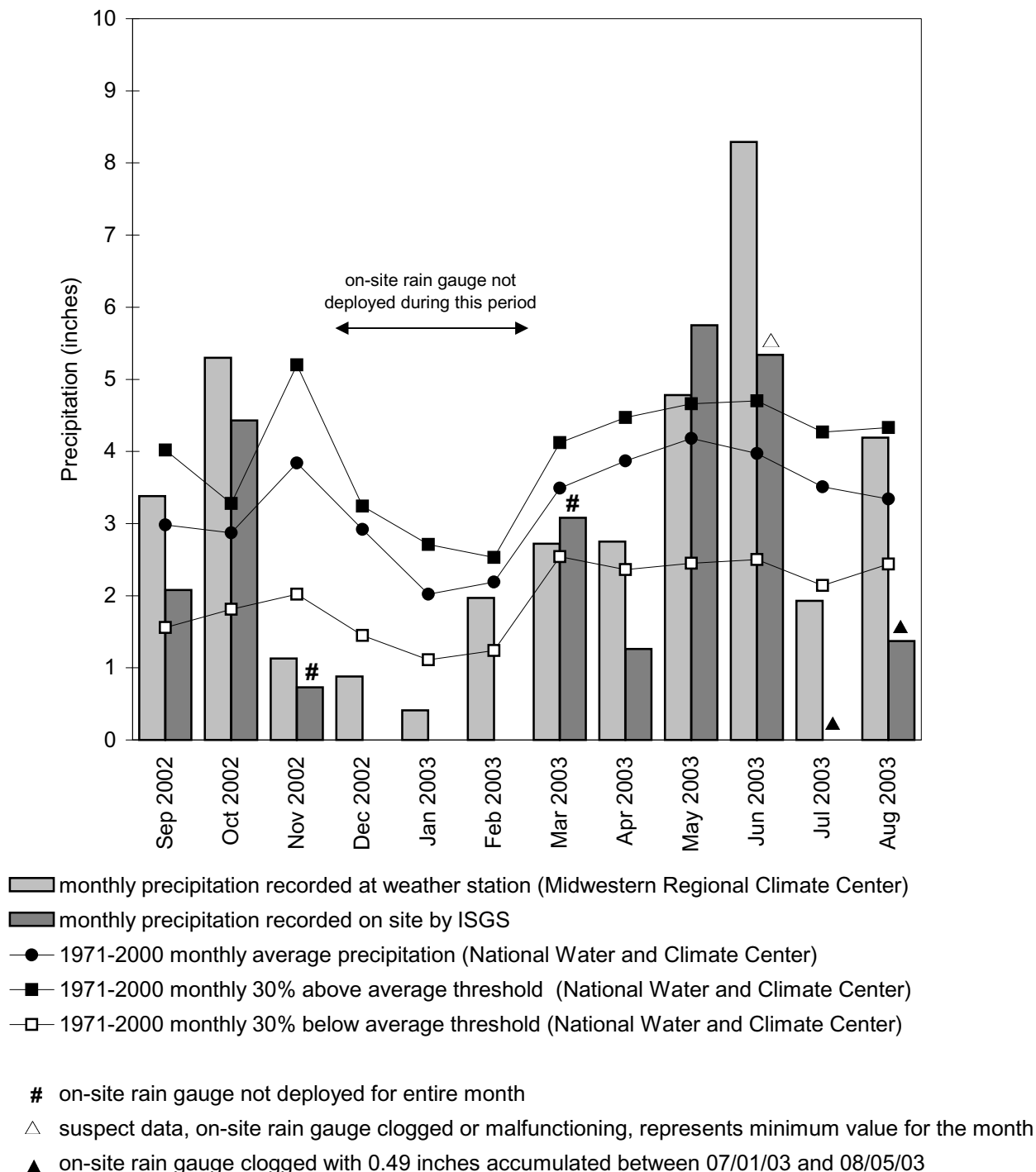
# Former Eckmann and Bischoff Properties Potential Wetland Compensation Site

September 1, 2002 to September 1, 2003



# **Former Eckmann and Bischoff Properties Potential Wetland Compensation Site September 2002 through August 2003**

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



**GALENA RIVER BRIDGE  
WETLAND COMPENSATION SITE**

**ISGS #46**

FAS Route 67

Jo Davies County, near Galena, Illinois

**Primary Project Manager: Kelli D. Weaver**

**Secondary Project Manager: Keith W. Carr**

**SITE HISTORY**

- Spring 1999: ISGS began monitoring surface- and ground-water levels at the site.
- Fall 2000: An Infinities sonic data logger was added on a telescoping mount to catch the often substantial flood peaks common to the site. A second RDS was added to the site, as were two very shallow (VS) soil-zone wells and one standard soil-zone well.
- April 2003: A telescoping global unit was installed to monitor ground-water elevations in the center of the site. Stop-logs were put into the exit weir on north side of site to see if surface water can be retained. A crest gauge was installed to monitor the stream along the south site margin.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

We estimate that the total area of created wetland that conclusively satisfied wetland hydrology criteria in 2003 is 1.06 ac (0.43 ha). The site is roughly 7.4 ac (3.0 ha) in size. This is in contrast to 2.9 ac (1.2 ha) that satisfied wetland hydrology criteria in 2002. This estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Dubuque, Iowa, is April 13 and the season lasts 188 days; 12.5% of the growing season is 24 days.
- The total precipitation for the monitoring period from September 2002 to August 2003 was 63% of normal. Despite near- to above-normal precipitation totals for the months of September and October 2002, the precipitation totals from November 2002 through April 2003 were significantly below normal, leading to drier than typical conditions entering the 2003 growing season. Precipitation levels were near normal for May and July, and were below normal for June and August.
- In 2003, ground-water levels measured at well 8S conclusively satisfied the wetland hydrology criteria as specified in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. Surface water at Gauge A suggested long-term flooding at an elevation of 182.97 m (600.29 ft). Unlike previous years, the site was not inundated by the Galena River during the spring of 2003.

**PLANNED FUTURE ACTIVITIES**

- Monitoring will continue through Spring 2004 or until no longer required by IDOT.
- One additional S-well will be installed in the southeast corner of the site so that the wetland area can be better delineated.

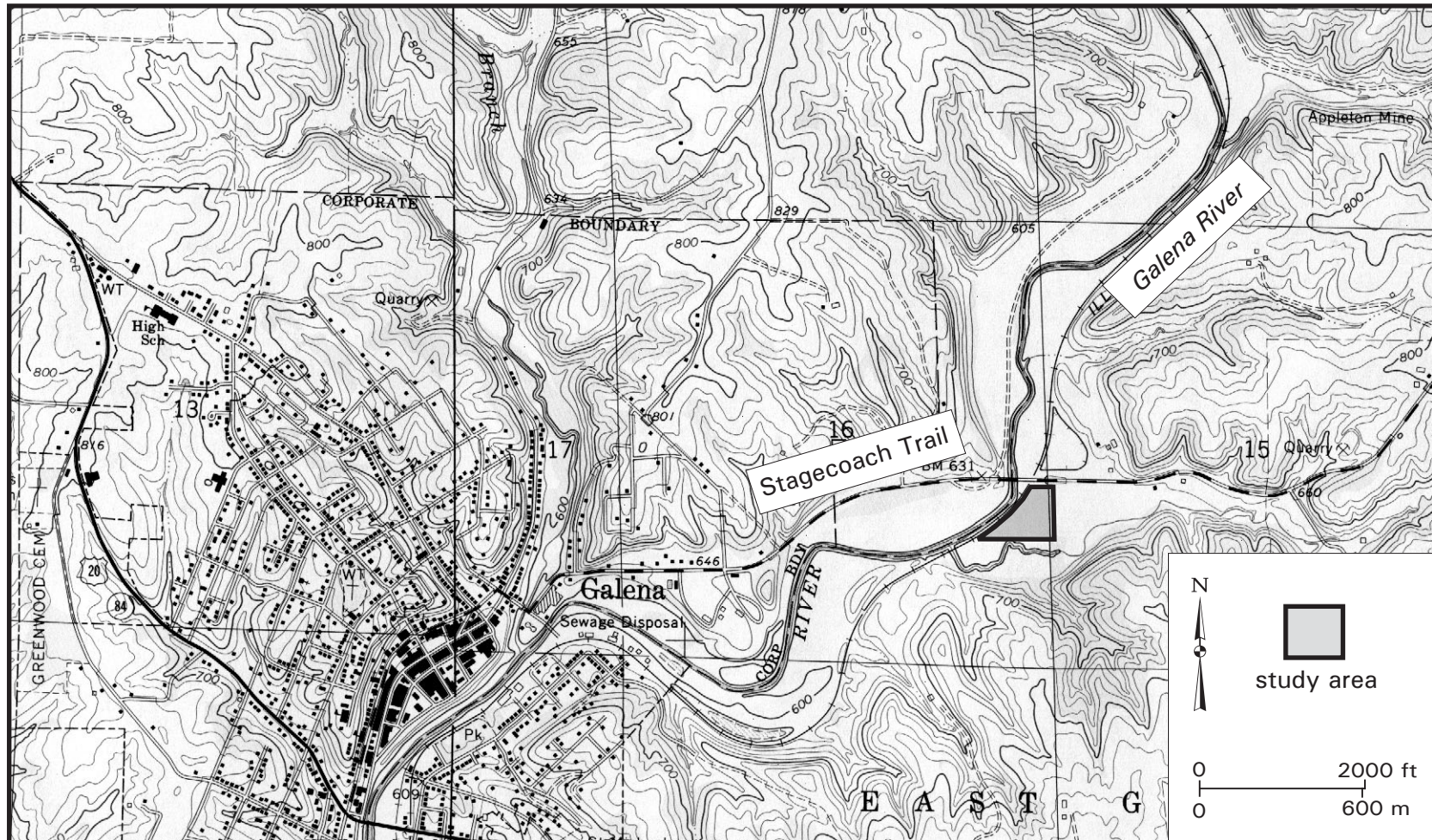
- The RDS 2 monitoring unit will be replaced with a soil-zone monitoring well, and the RDS 2 unit will be relocated to the wet area slightly north of Well 8S.
- Although stop-logs were installed in the weir this spring, no effect was noted due to below-average precipitation and leaks between the stop logs. The structure will receive maintenance in Fall 2003.

# Galena River Bridge Wetland Compensation Site (FAS Route 67)

## General Study Area and Vicinity

from the USGS Topographic Series, Galena, IL-Iowa 7.5 minute Quadrangle (USGS 1988)

contour interval is 10 feet





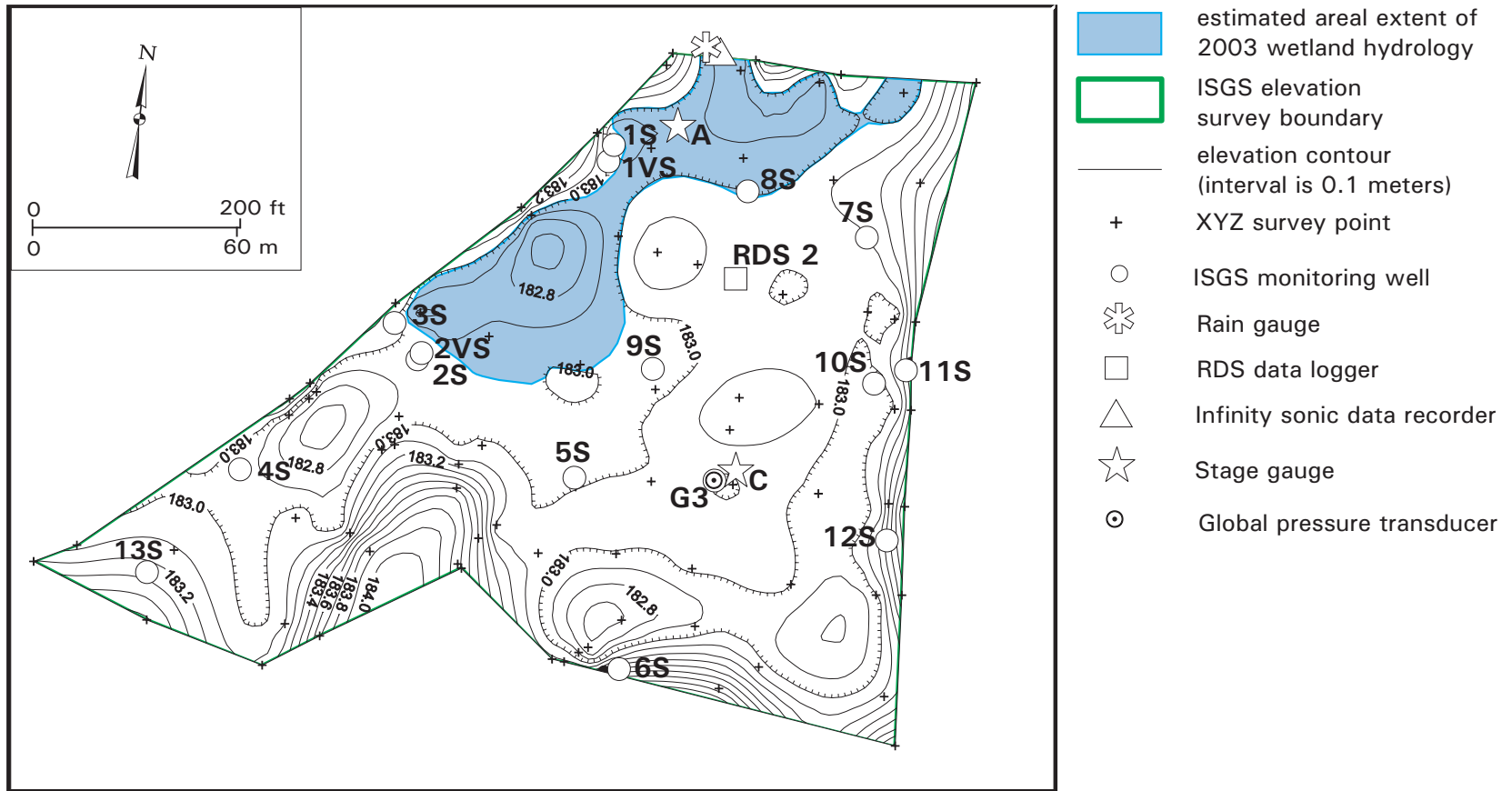
# Galena River Bridge Wetland Compensation Site (FAS Route 67)

## Estimated Areal Extent of 2003 Wetland Hydrology

based on data collected between September 1, 2002 and September 1, 2003

map based on 1999 ISGS elevation survey referenced to NGVD, 1929

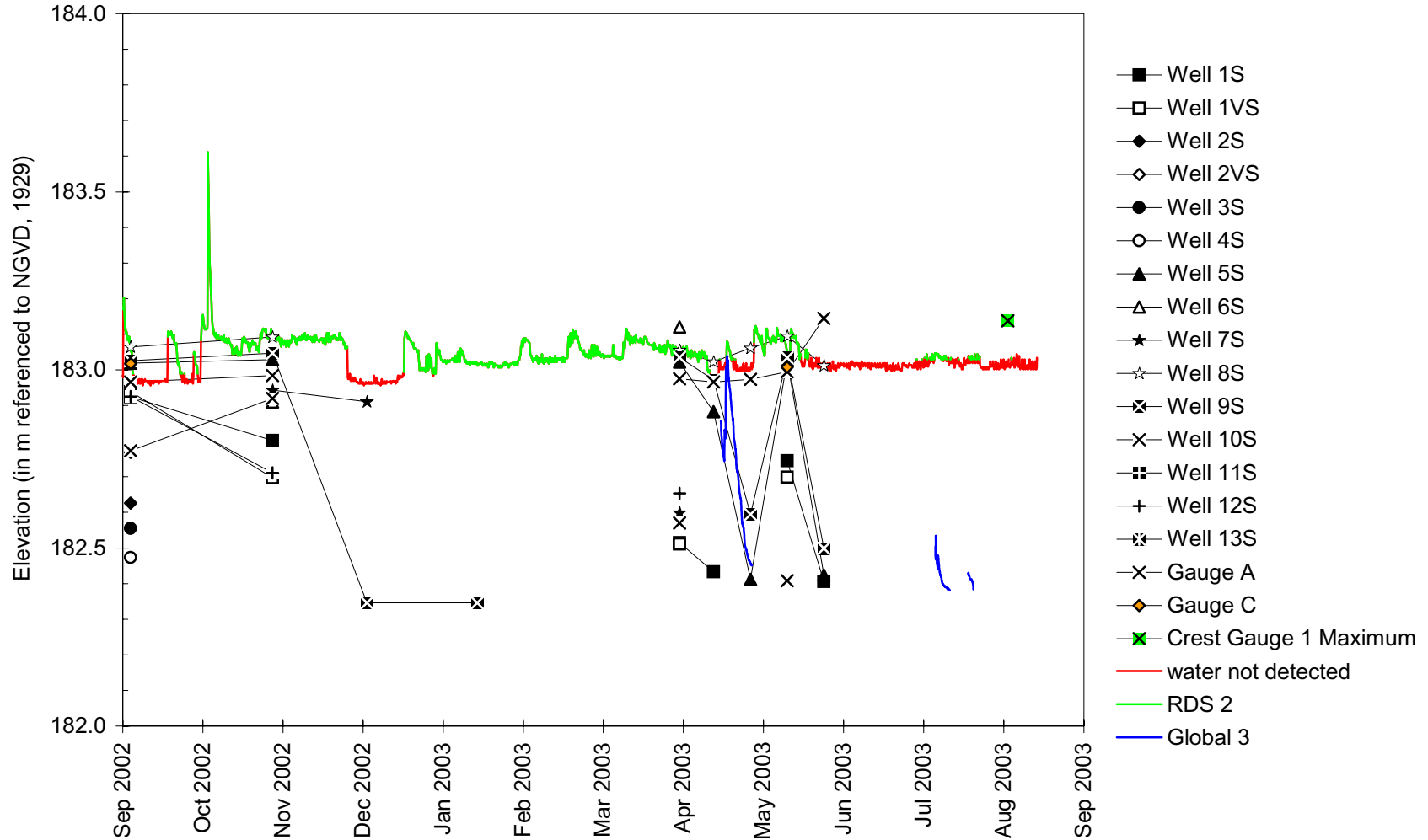
contour interval is 0.1 meters



# Galena River Bridge Wetland Compensation Site

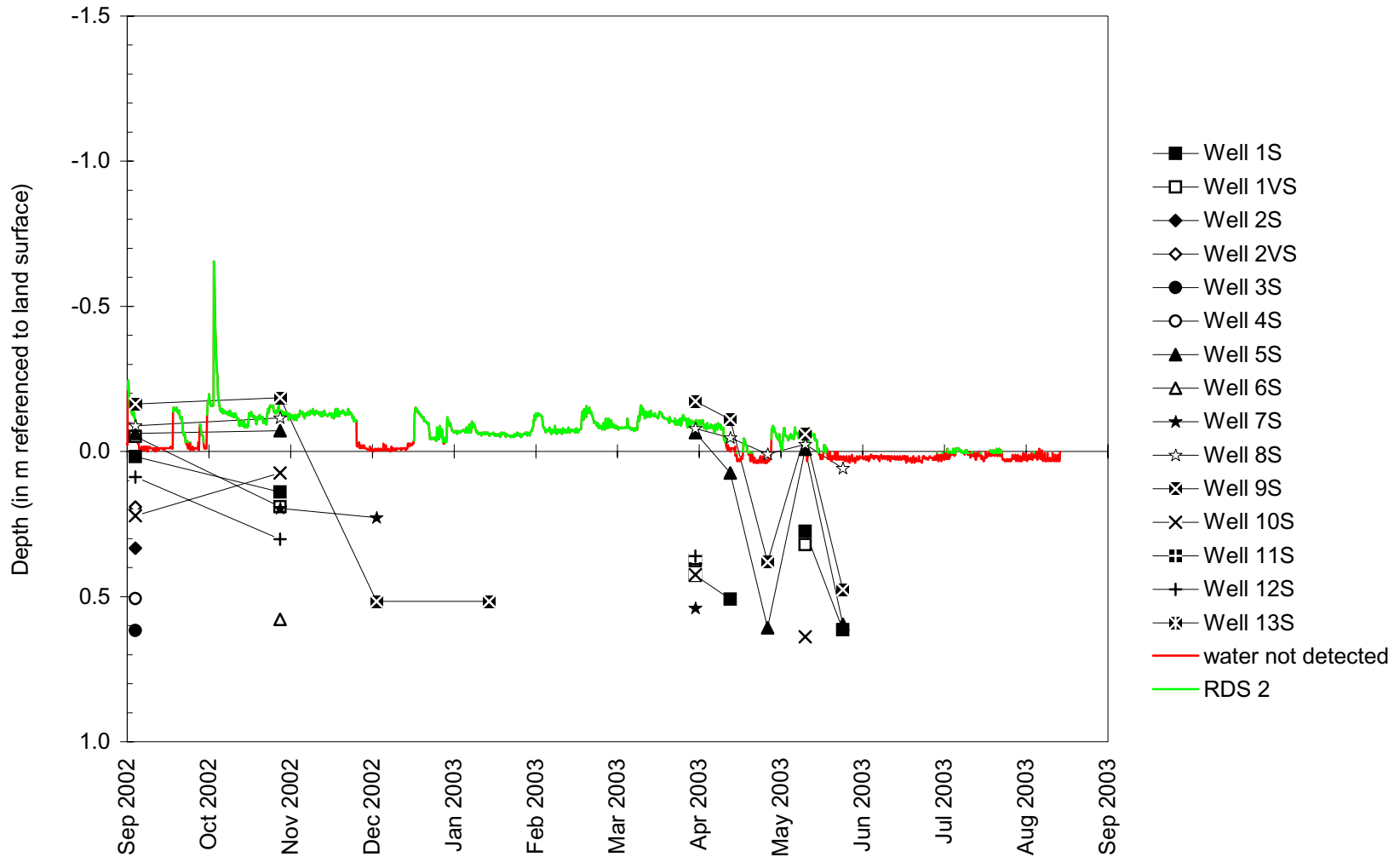
## September 1, 2002 to September 1, 2003

### Water-Level Elevations



## Galena River Bridge Wetland Compensation Site September 1, 2002 to September 1, 2003

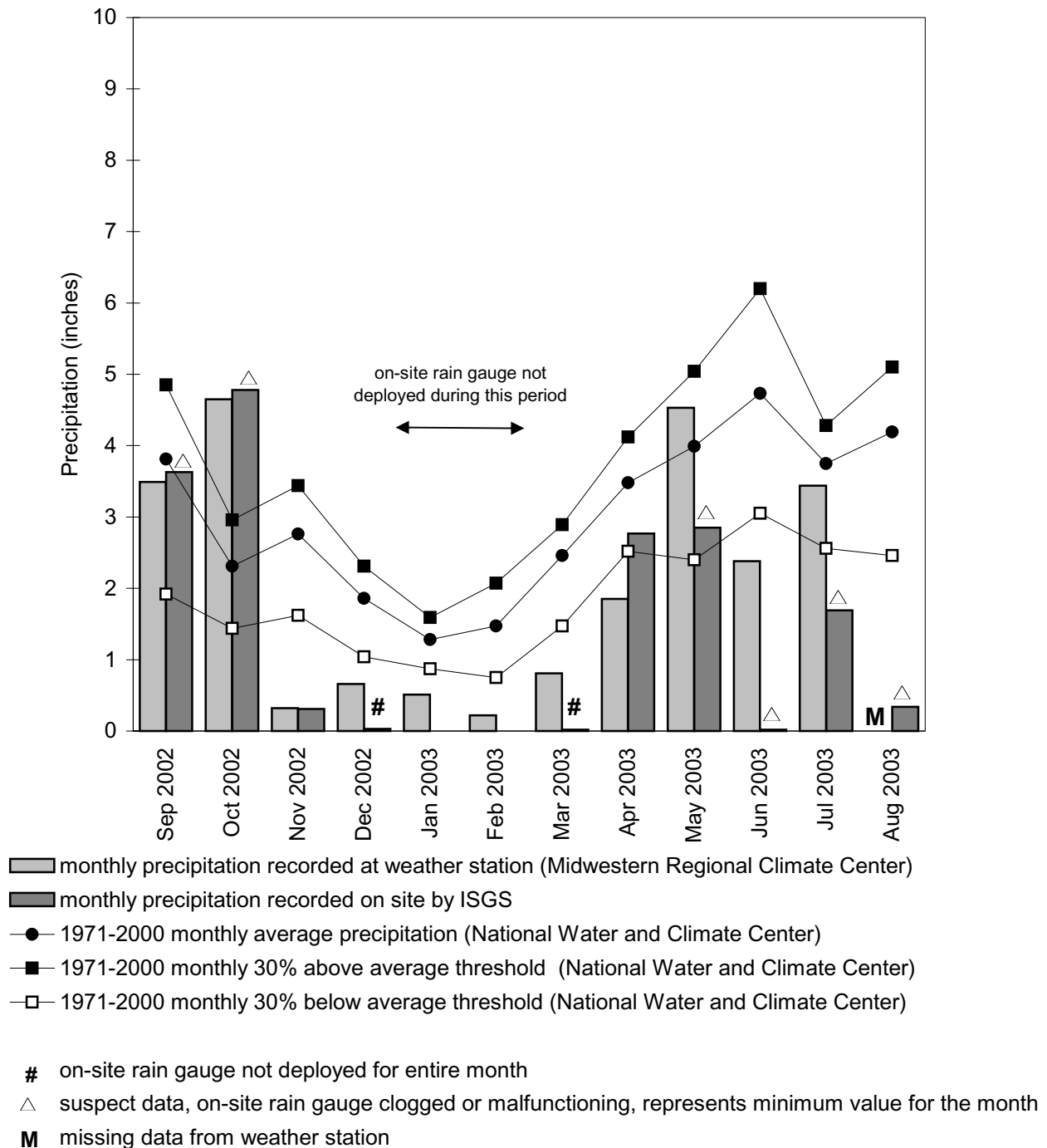
## Depth to Water



# Galena River Bridge Wetland Compensation Site

## September 2002 through August 2003

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



**ALEXANDER COUNTY, CAPE GIRARDEAU BRIDGE  
WETLAND COMPENSATION SITE**

**ISGS #47**

FAP 312

Alexander County, near East Cape Girardeau, Illinois

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

**Secondary Project Manager: Marshall A. Lake**

**SITE HISTORY**

- March 1998: IDOT issued a task order to the ISGS to conduct a detailed mitigation site assessment. Monitoring wells and staff gauges were installed in August.
- November 1999, February 2000: Wells damaged during flooding in the summer of 1999 were removed and replaced with new monitoring wells. A pressure transducer was added to the southern excavation. A rain gauge was installed on site.
- February 2001: The pressure transducer was moved to a new location in the deepest part of the site. A second transducer was deployed adjacent to it to record surface-water flooding.
- August 2002: A pressure transducer capable of withstanding extreme flooding was installed in the deepest part of the site.
- June 2003: IDOT requested suspension of site monitoring. All data loggers were removed.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

No portion of the site satisfied the criteria for wetland hydrology in 2003. In 2002, the entire 3.3 ac (1.3 ha) site met the criteria for wetland hydrology. The determination for 2003 is based on the following factors.

- According to the Midwestern Climate Center, the median length of the growing season in Cape Girardeau, Missouri is 223 days, beginning March 26 and ending November 9. Therefore, 12.5% of the growing season is 29 days.
- Total precipitation for the period from September 2002 to August 2003 was 102% of normal. The period from September 2002 to April 2003 was characterized by below normal precipitation, with the exception of December 2002 and February 2003. Above normal precipitation was recorded for most of the summer months.
- In 2003, none of the wells conclusively satisfied the wetland hydrology criteria outlined in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual.
- Based on stage data from the USACE gauge at Cape Girardeau, water levels in the river exceeded the highest elevation on the site from May 12-15. This event was of insufficient duration to conclusively satisfy wetland hydrology criteria.
- Transducer records indicate that the water level at Gauge F was within 30 cm (1 ft) of land surface from May 10 to June 5. While this was of insufficient duration to conclusively satisfy wetland hydrology criteria, the gauge exhibited wetland hydrology for 11.5% of the

growing season and therefore, may have satisfied the criteria.

- The entire site has conclusively satisfied the criteria for wetland hydrology in three out of the five years of monitoring. Because of its location in the floodplain, the site's hydrology is controlled by the Mississippi River and will only achieve wetland hydrology if there is a flooding event of sufficient magnitude.

#### PLANNED FUTURE ACTIVITIES

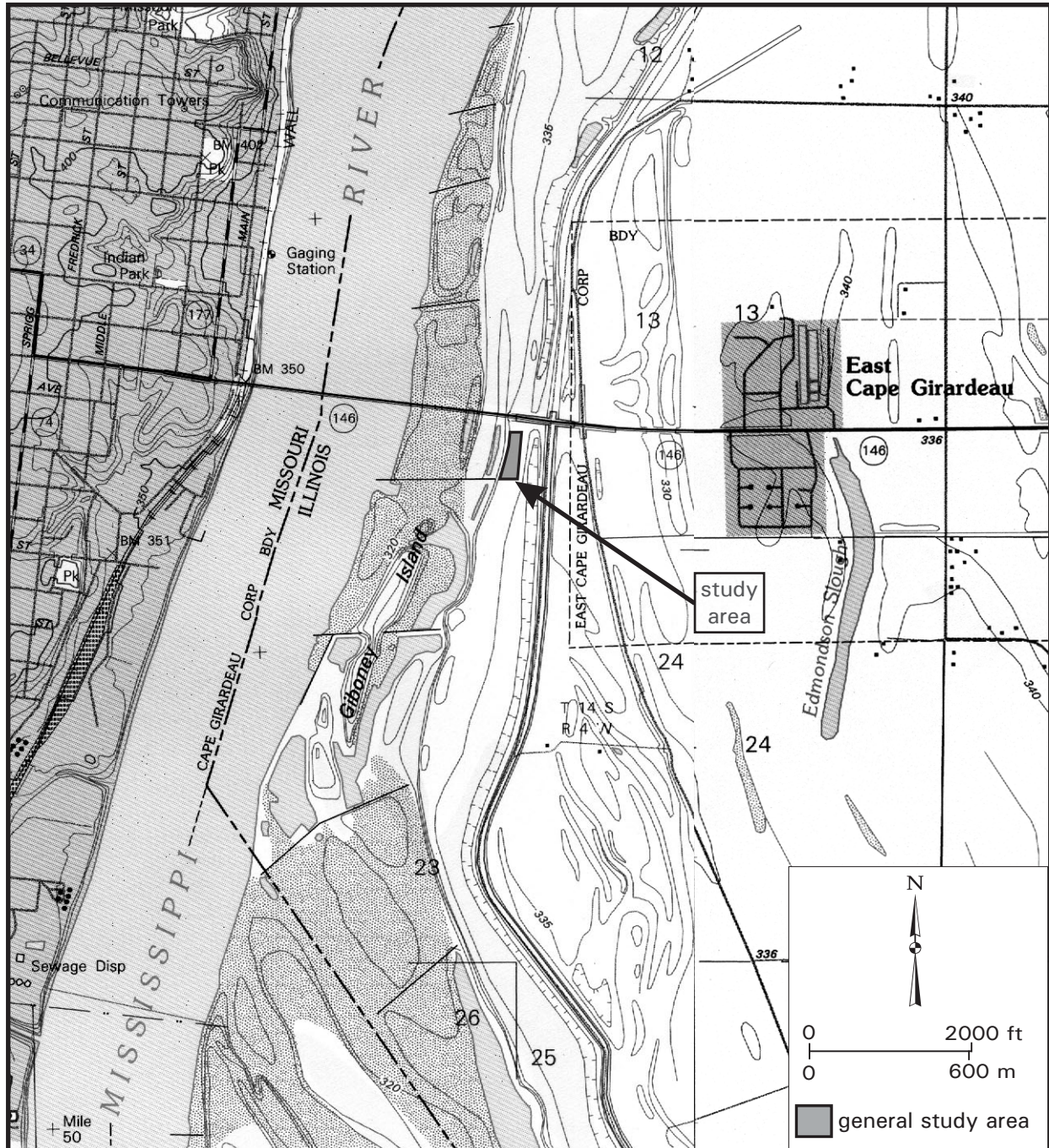
- All remaining instruments will be removed when ISGS receives notice that monitoring has been completely discontinued.

# Alexander County, Cape Girardeau Bridge Wetland Compensation Site (FAP 312)

## General Study Area and Vicinity

from the USGS Topographic Series, Cape Girardeau, MO-IL and Mc Clure, IL-MO (USGS 1993)

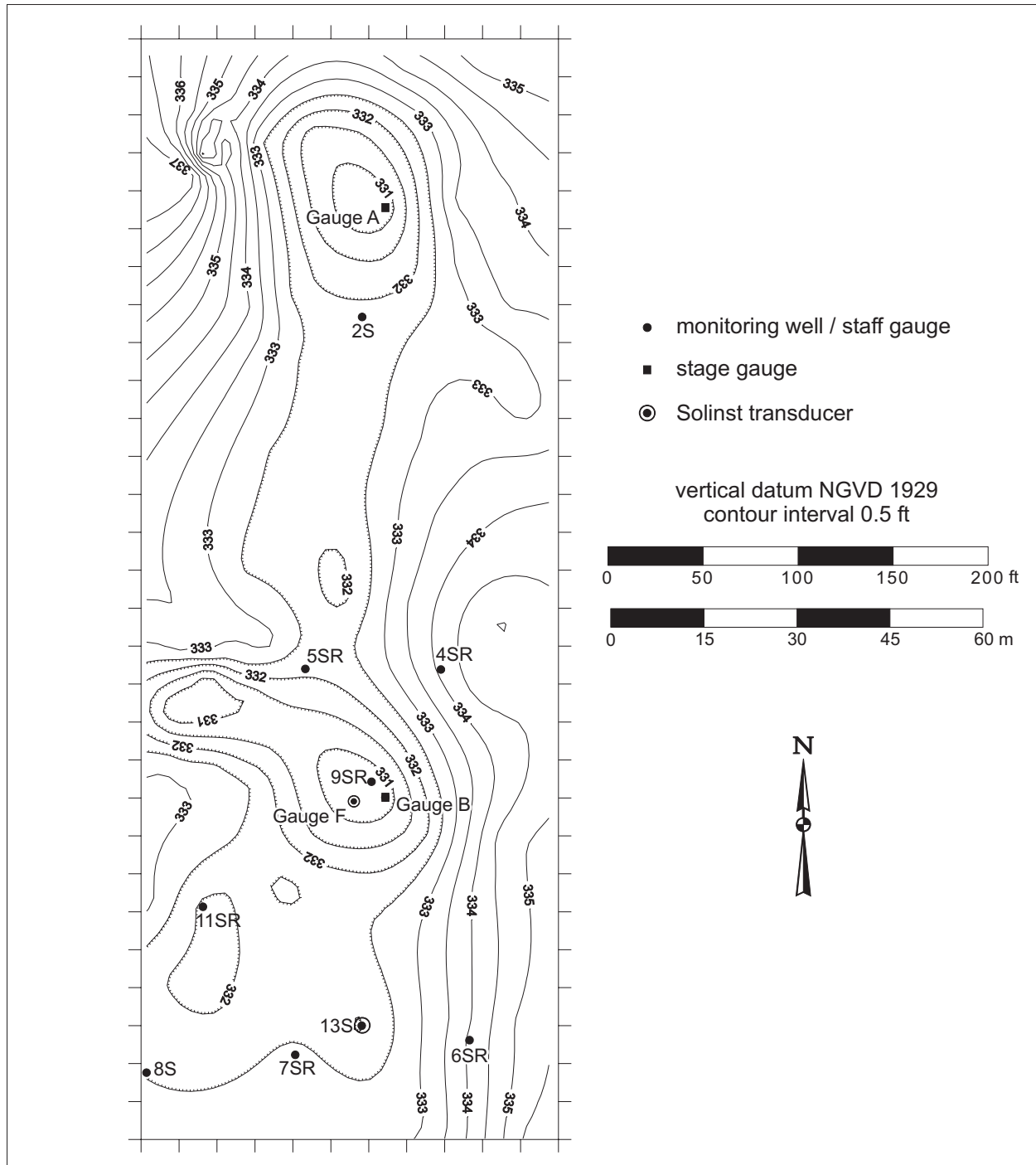
contour interval is 10 feet





# Alexander County, Cape Girardeau Bridge Wetland Compensation Site (FAP 312)

**Estimated Areal Extent of 2003 Wetland Hydrology**  
based on data collected between September 1, 2002 and September 1, 2003  
map based on a topographic survey conducted by the ISGS, August 8, 2000

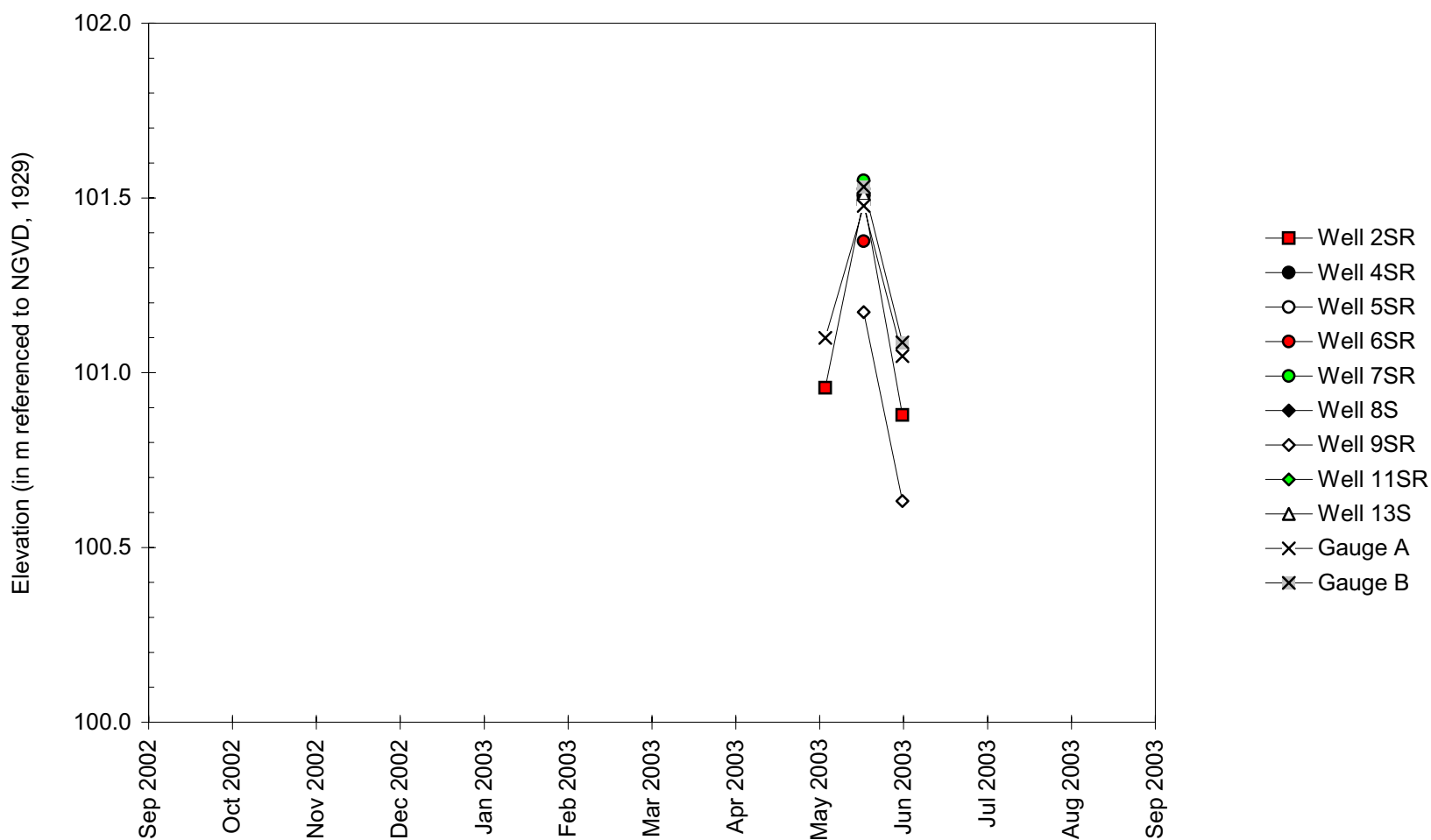


This topographic map of the Alexander County wetland compensation site was surveyed by the ISGS on 08/08/00. The contours are mapped on an arbitrary grid oriented roughly north-south.



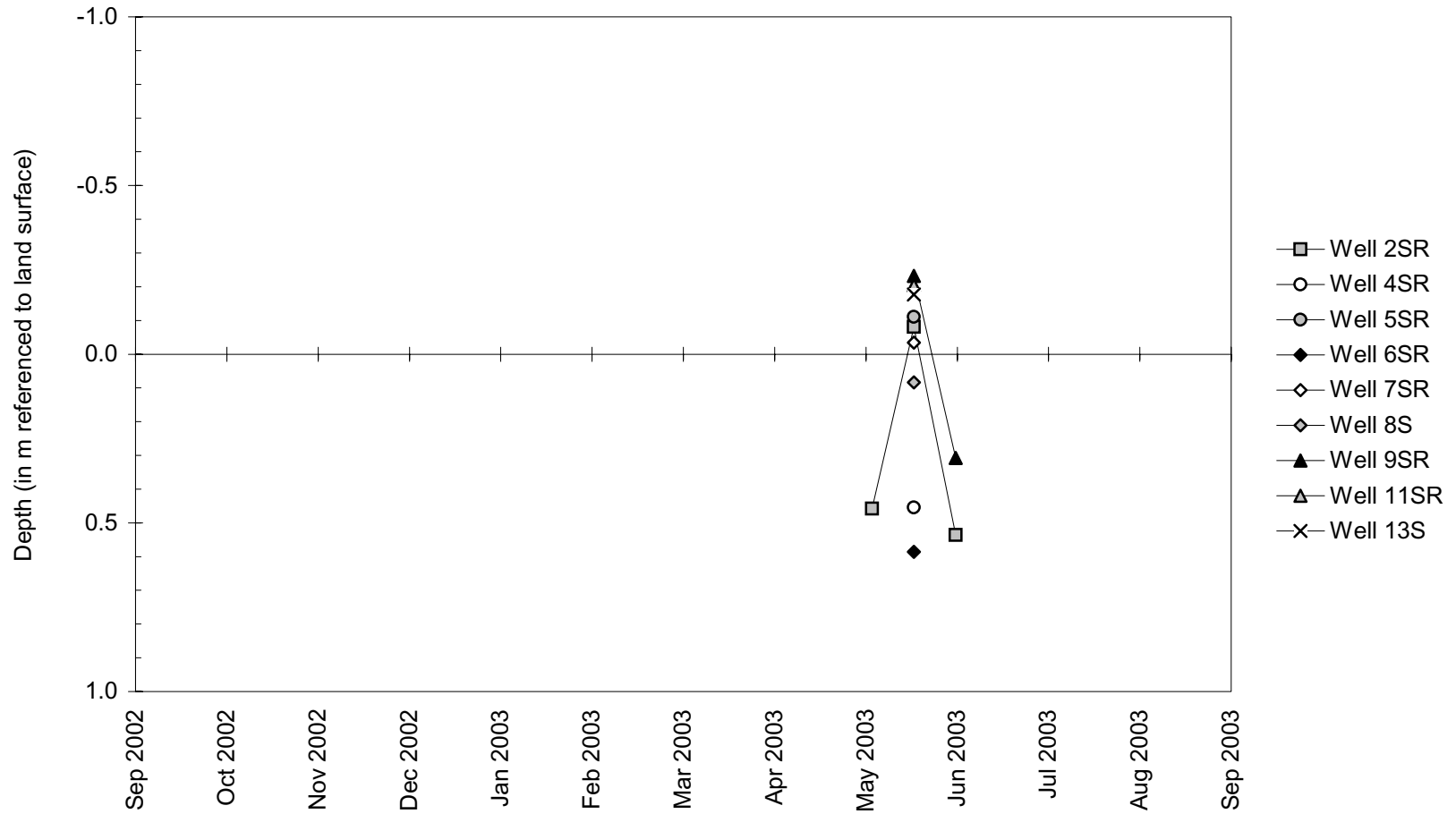
**September 1, 2002 to September 1, 2003**

### **in Soil-Zone Monitoring Wells and on Stage Gauges**

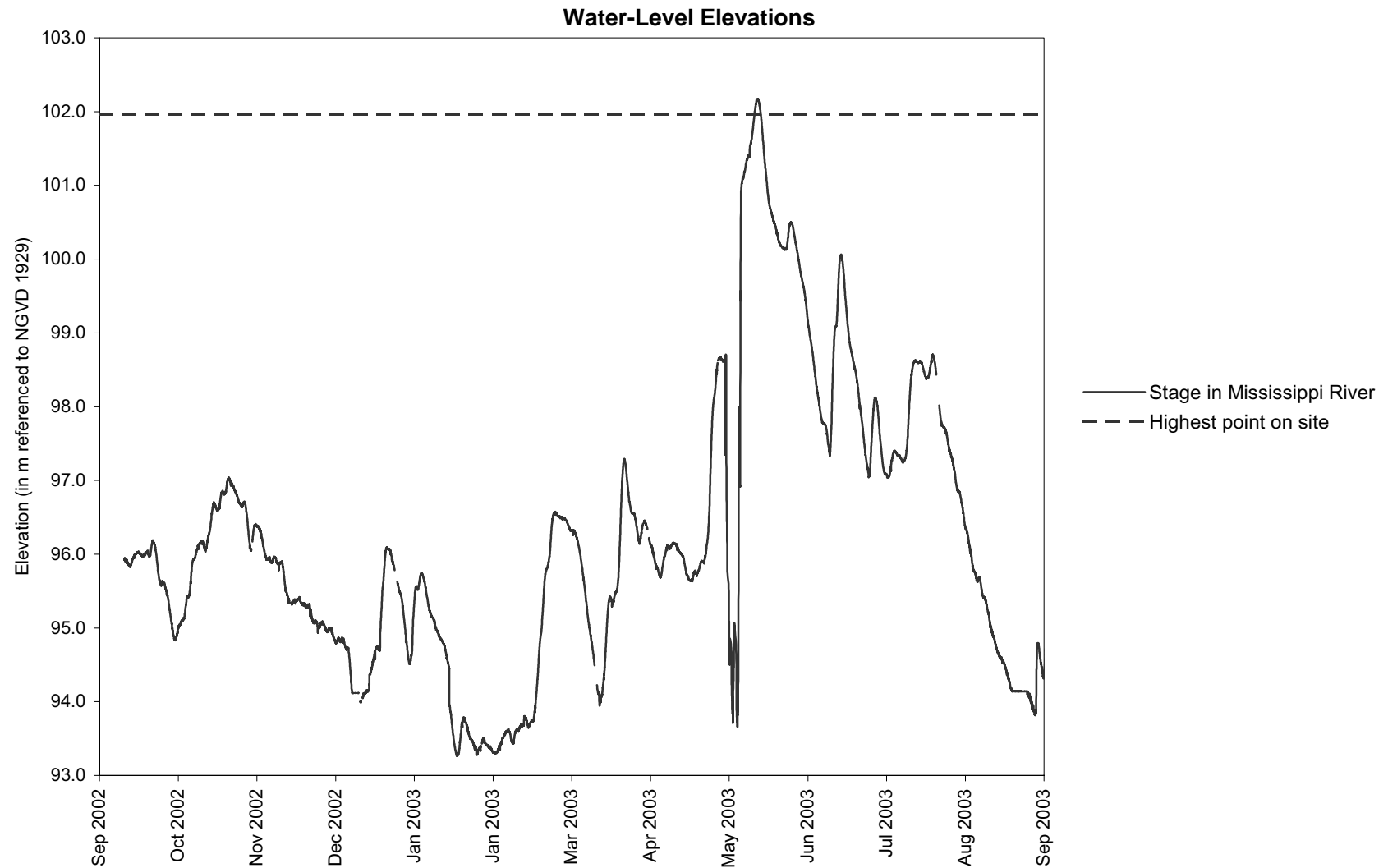


**Alexander County, Cape Girardeau Bridge Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Depth to Water  
in Soil-Zone Monitoring Wells**

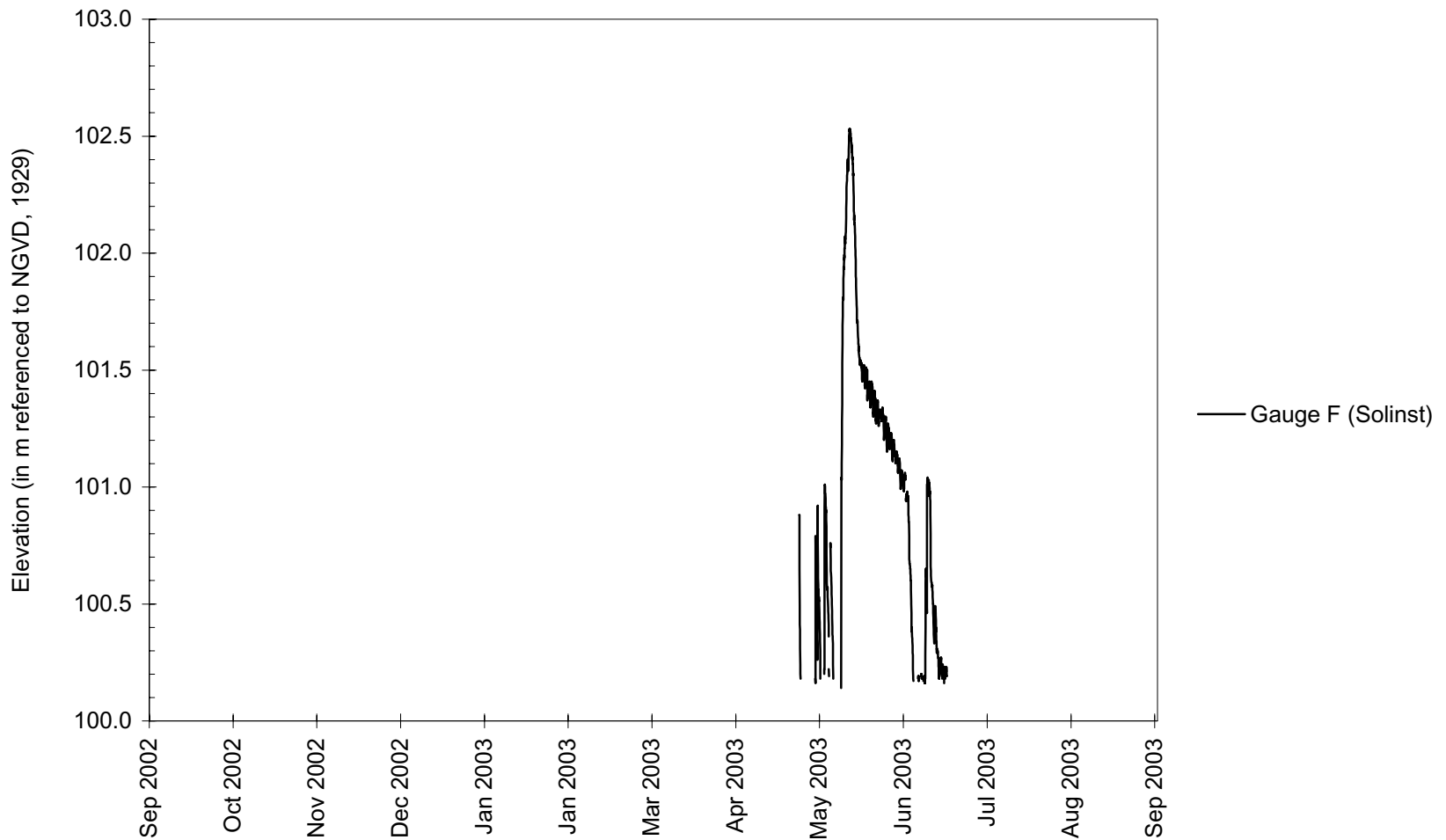


**Alexander County, Cape Girardeau Bridge Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**



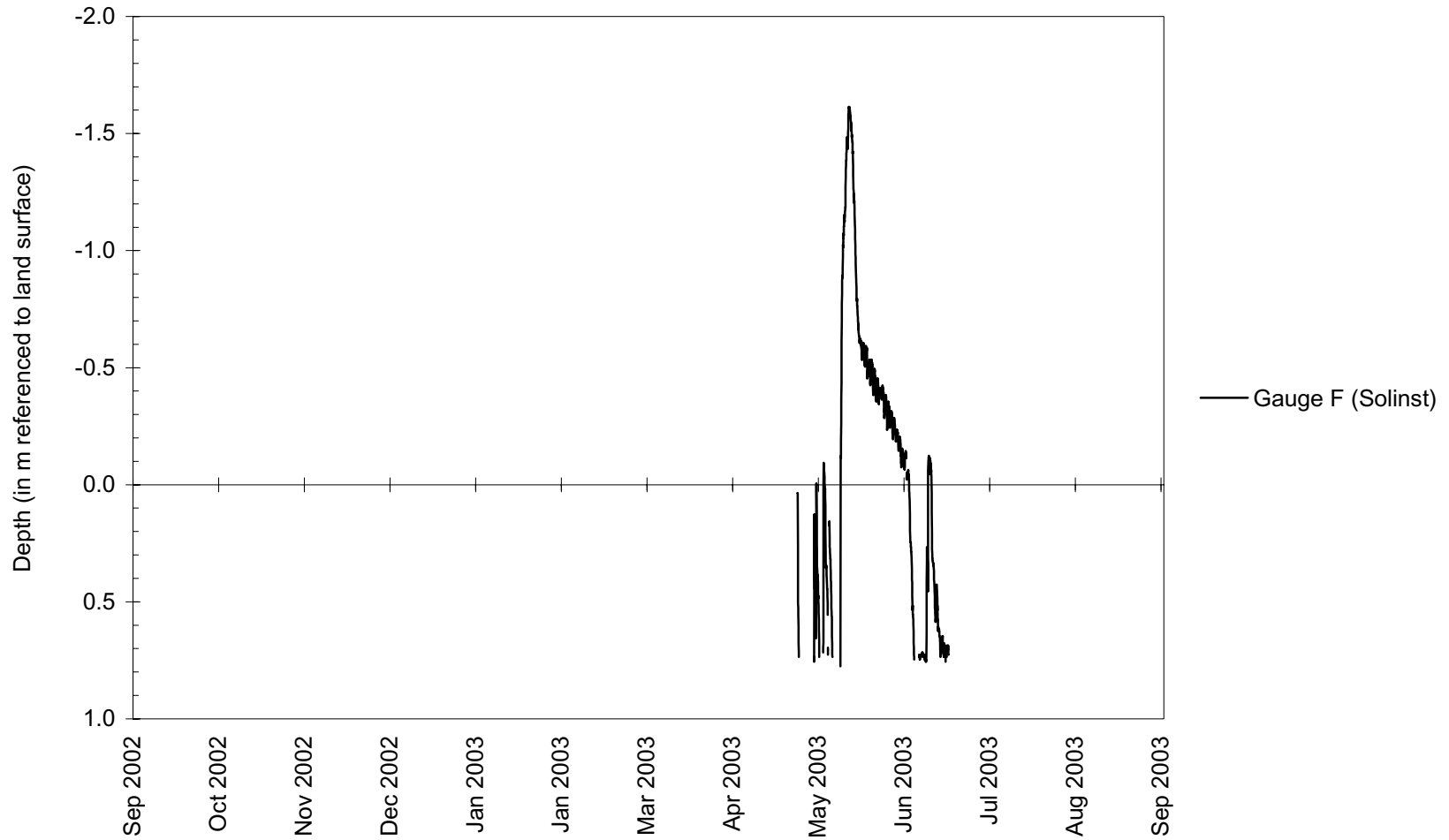
**Alexander County, Cape Girardeau Bridge Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations**  
**at the Solinst Pressure Transducer**



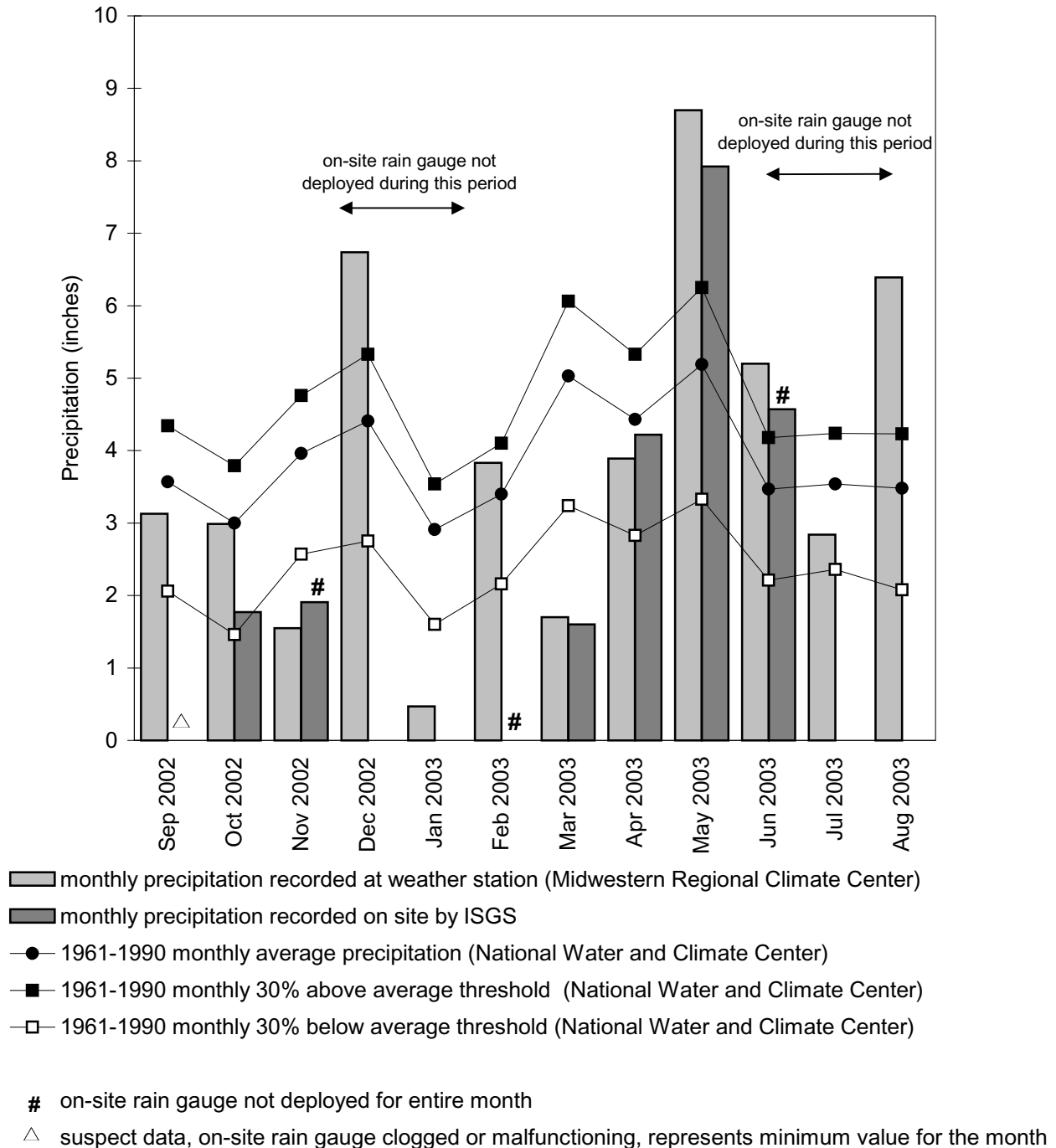
**Alexander County, Cape Girardeau Bridge Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Depth to Water  
at the Solinst Pressure Transducer**



# Alexander County, Cape Girardeau Bridge Wetland Compensation Site September 2002 through August 2003

## Total Monthly Precipitation Recorded On Site and at the Cape Girardeau, MO Regional Airport Weather Station



**MORRIS, ILLINOIS RIVER  
POTENTIAL WETLAND BANKING SITE**

**ISGS #49**

Grundy County, near Morris, Illinois

**Primary Project Manager: Keith W. Carr**

**Secondary Project Manager: Blaine A. Watson**

**SITE HISTORY**

- March 1999: ISGS was tasked by IDOT to perform a Level II hydrogeologic assessment of the potential banking site.
- August 1999: ISGS began monitoring ground- and surface-water levels at the site.
- March 2001: Two letters were sent by ISGS to IDOT Central Office. The first was a review of a wetland mitigation plan proposed by IDOT. The second provided general information regarding site hydrological conditions.
- April 2003: During this month, drainage tile removal activities began in the east field (also known as the "spider" field).

**WETLAND HYDROLOGY CALCULATION FOR 2003**

Based on ground-water level measurements, 3 of the 43 soil-zone monitoring wells satisfied wetland hydrology criteria in 2003. Based upon these three wells, plus three staff gauges and two surface-water data loggers, 4.92 ac (2.0 ha) conclusively satisfied wetland hydrology criteria in 2003. In 2002, 7.1 ac (2.9 ha) conclusively satisfied wetland hydrology criteria. This estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Morris, Illinois is April 16 and the season lasts 188 days; 12.5% of the growing season is 24 days.
- Total precipitation for the monitoring period from September 2002 to August 2003 was 80% of normal. Total precipitation for the period from September 2002 to March 2003 was 48% of normal, likely resulting in drier than typical moisture conditions entering the growing season. Above average rainfall occurred in May and July, but precipitation was only slightly above normal (110%) over the entire April to August 2003 period.
- In 2003, water levels measured in soil-zone wells 11S, 42S, and 43S conclusively satisfied wetland hydrology criteria as outlined in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. Also, surface-water levels at staff gauges SW5f and SW7Lf conclusively satisfied the wetland hydrology criteria at elevations of 149.85 m (491.63 ft) and 149.50 m (490.48 ft), respectively.
- A total of 2.15 ac (0.87 ha) conclusively satisfied wetland hydrology criteria in the "spider" field area (also known as the "east" field), an area within which drainage tile removal occurred in April of 2003. Also, two closed depressions (near SW5 and SW7) representing 2.77 ac (1.12 ha) in total exhibited surface-water elevations that conclusively satisfied wetland hydrology criteria. As in previous years, perennial water bodies such as the creek channels were not included in areas having met wetland hydrology criteria.

- In 2003, one combined Illinois and Mazon River flood occurred within the growing season that had a peak stage value sufficient to inundate areas at or below 150.27 m (493 ft). This elevation encompasses the most extensive of the areas slated for wetland restoration. The flood duration, however, was short, as was the case in previous years, amounting to only 4.4 days of inundation in the area of the "east" or "spider" field.

#### ADDITIONAL INFORMATION

- At the Morris site, significant areas of floodplain forest exhibiting predominantly hydrophytic vegetation are present at elevations above those that are inundated for 12.5% of the growing season. It is therefore possible that on this site, areas that are inundated for less than 12.5% of the growing season may exhibit characteristics of jurisdictional wetlands. As in 2002, none of the six wells in this mapped floodplain forest satisfied wetland hydrology criteria this year, even at the level of 5% of the growing season.

#### PLANNED FUTURE ACTIVITIES

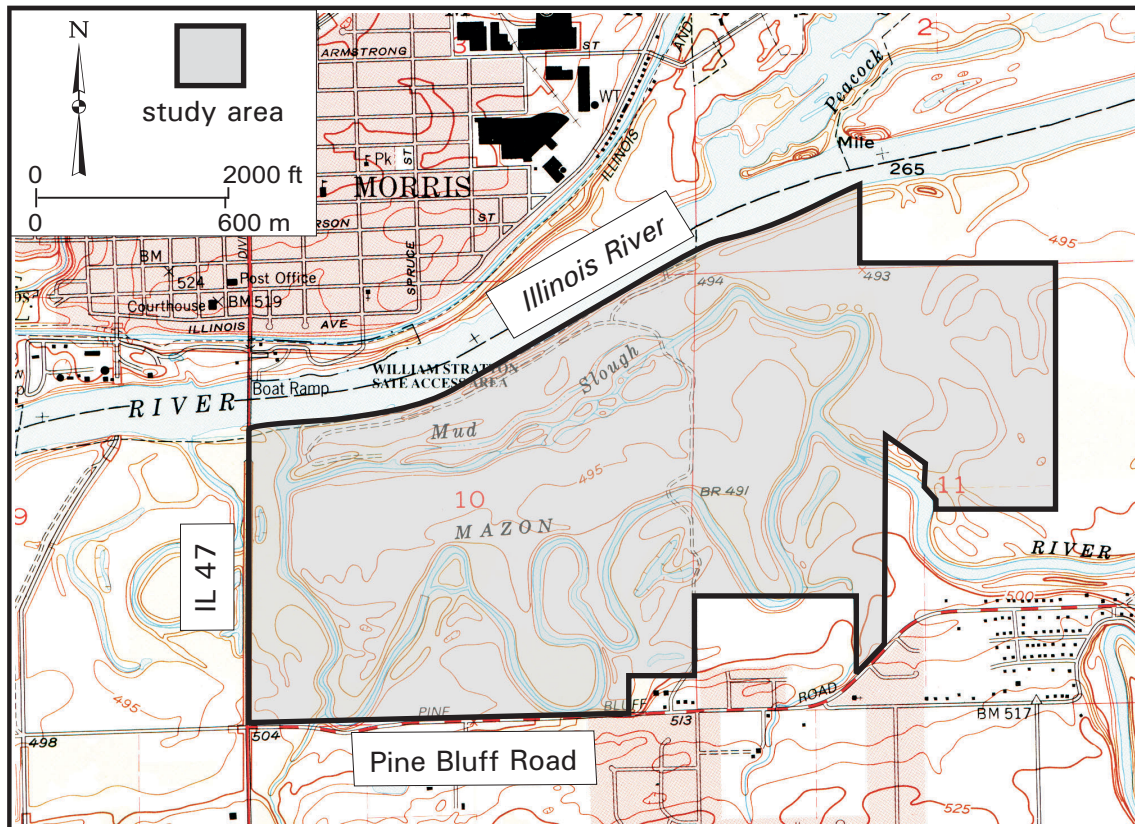
- Monitoring will continue through 2005 or until no longer required by IDOT.
- A number of new wells, several staff gauges, and two data loggers will be added to the "spider" field area to better define wetland hydrology in that area. Additional instrumentation may also be added in the area of mapped floodplain forest along IL 47 to better define ambiguous hydrological conditions there.
- A Level II hydrogeological characterization report is under preparation for submission to IDOT.



# Morris, Illinois River Potential Wetland Banking Site

## General Study Area and Vicinity

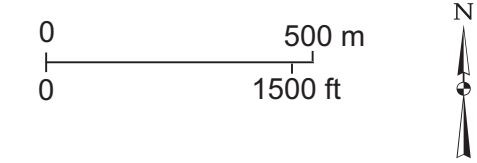
from the USGS Topographic Series, Morris, IL 7.5-minute Quadrangle (USGS 1993)  
contour interval is 5 feet





**Morris, Illinois River Potential Wetland Banking Site**  
**Estimated Areal Extent of 2003 Wetland Hydrology**  
 based on data collected between September 1, 2002 and September 1, 2003

map based on USGS digital orthophotograph, Morris NE quarter quadrangle  
 from 4/5/1998 aerial photography (ISGS 2001)



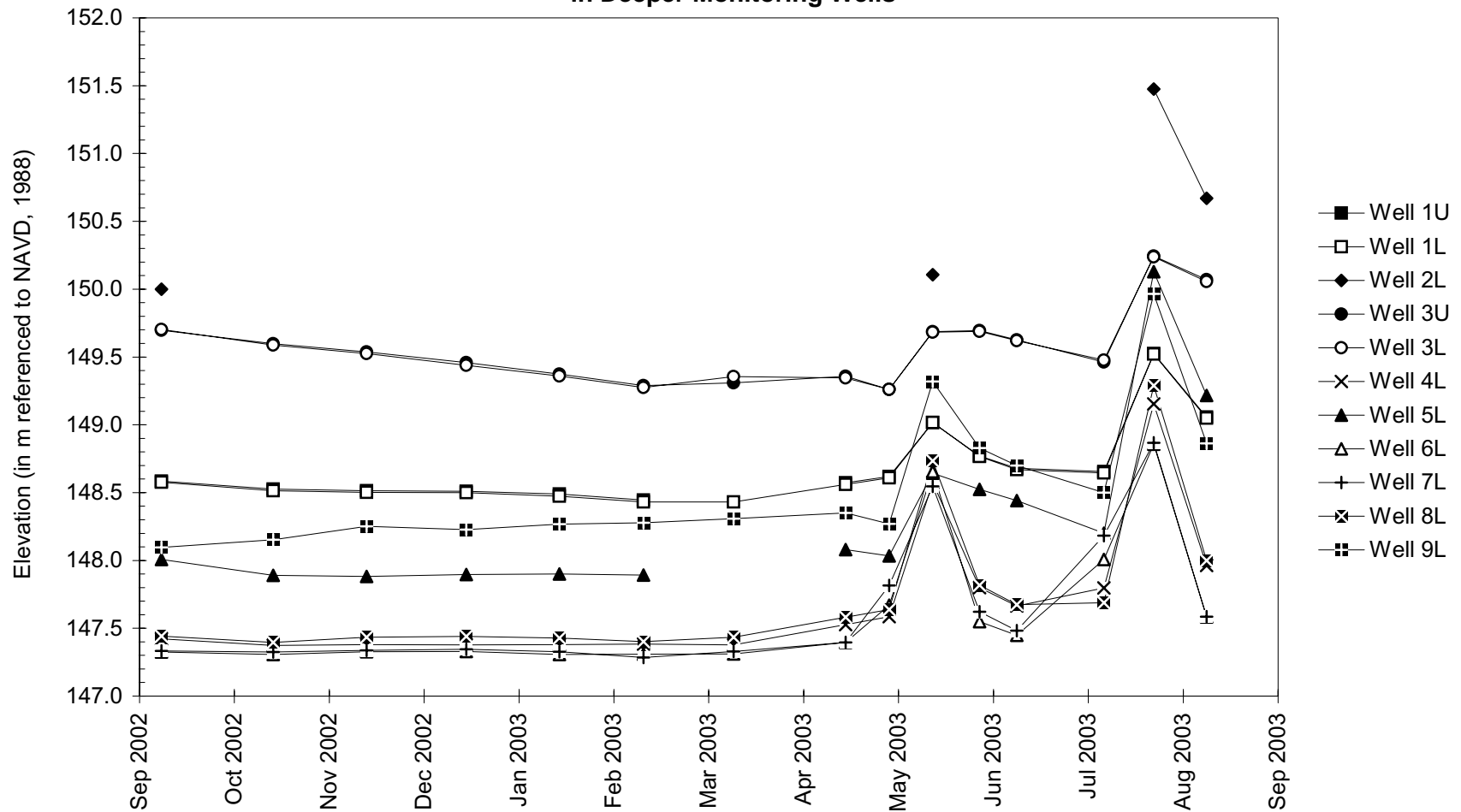
- estimated areal extent of 2003 wetland hydrology
- approximate site boundary

- soil-moisture probe
- stage gauge
- Infinities sonic data logger
- RDS data logger
- rain gauge
- ISGS monitoring well
- Global data logger

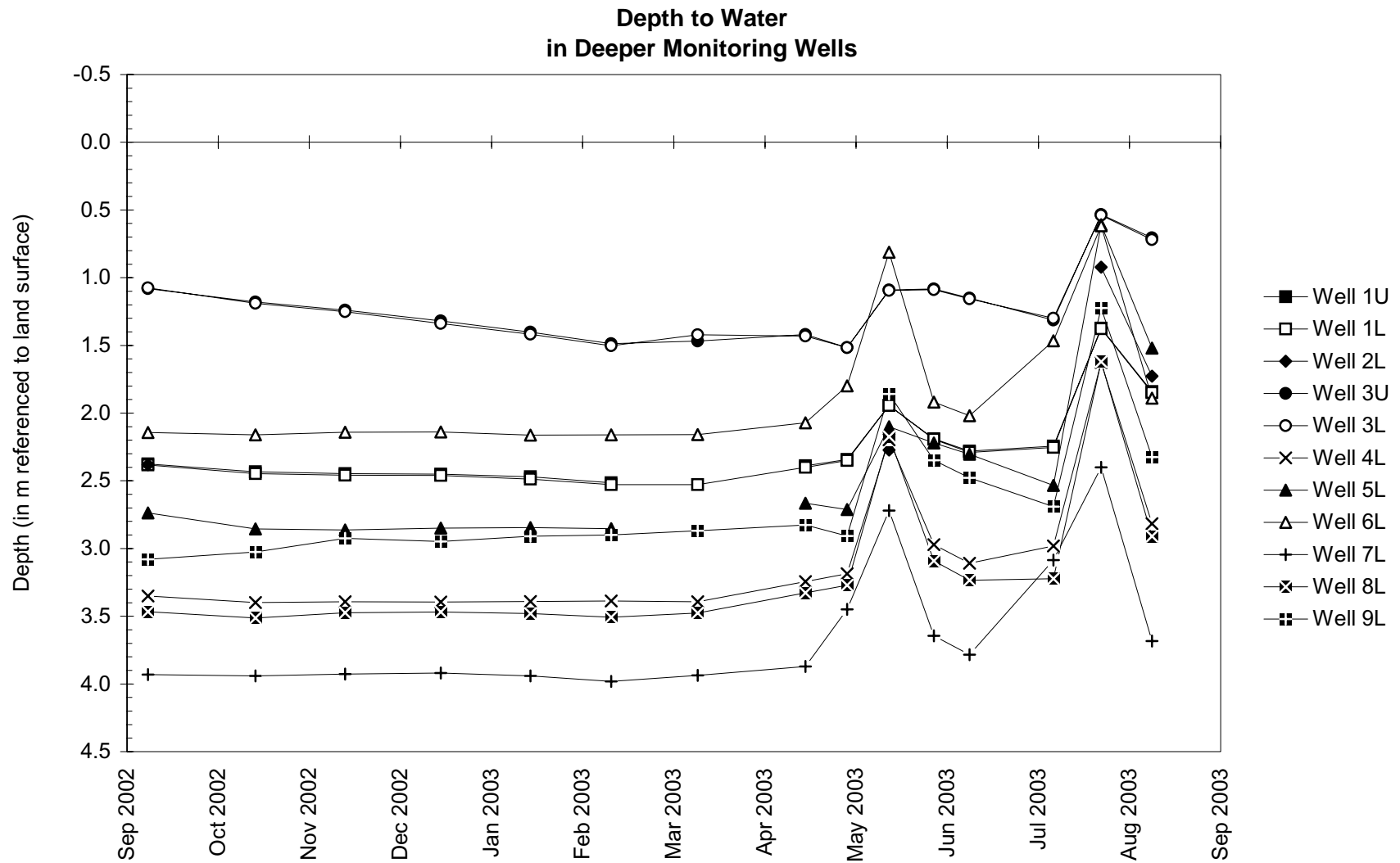


**Morris, Illinois River Potential Wetland Banking Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations  
in Deeper Monitoring Wells**

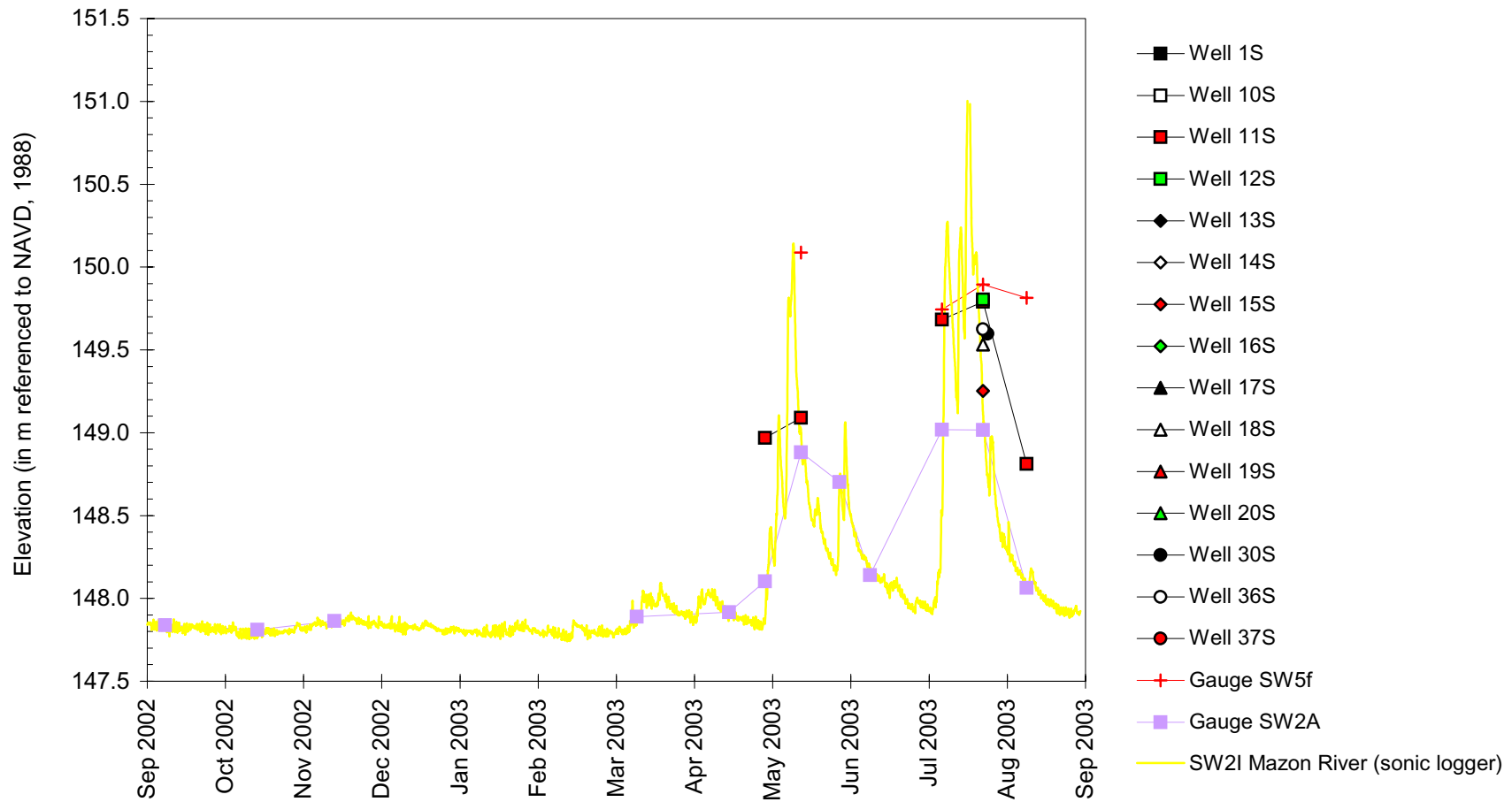


**Morris, Illinois River Potential Wetland Banking Site**  
**September 1, 2002 to September 1, 2003**



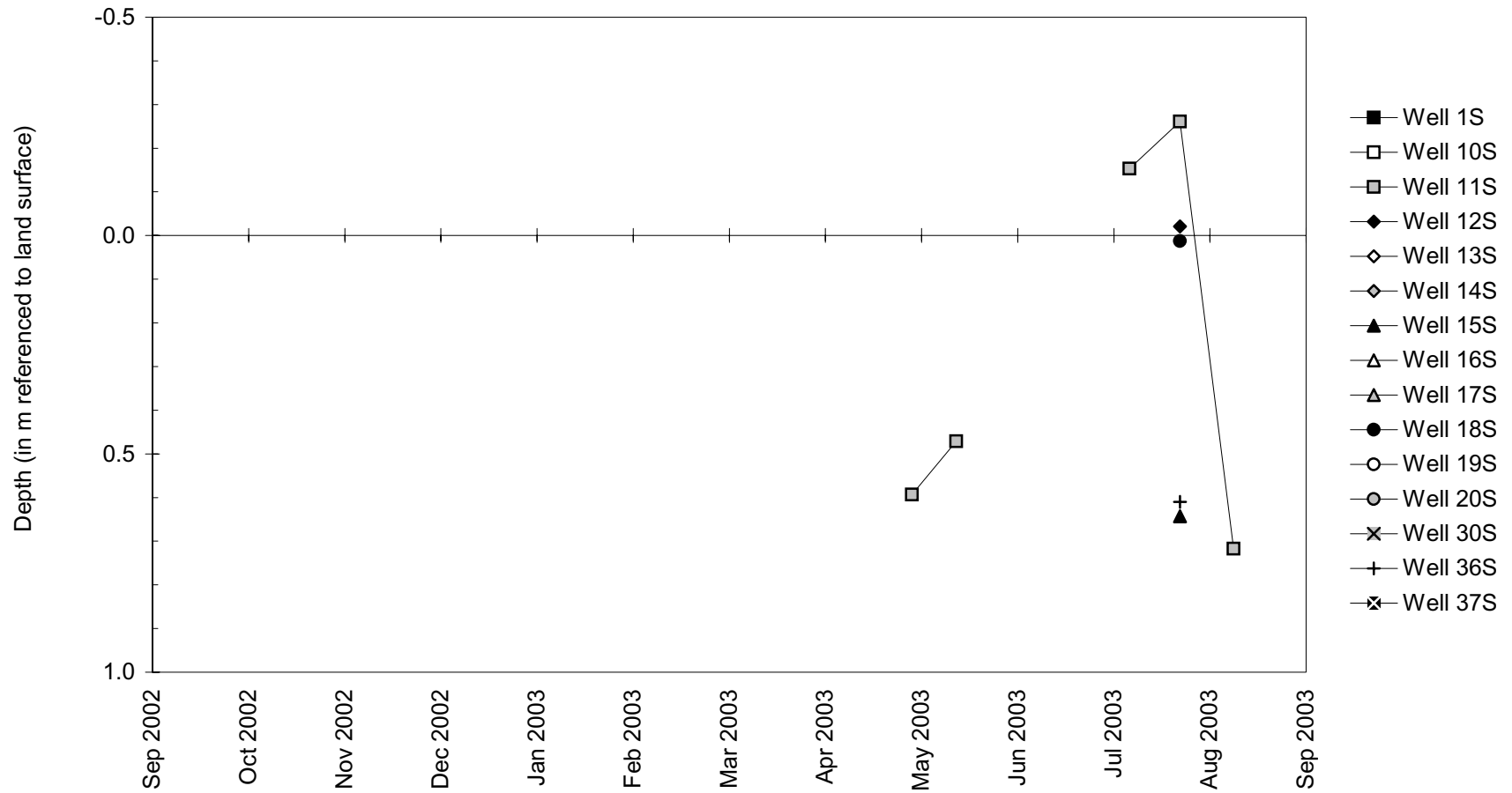
**Morris, Illinois River Potential Wetland Banking Site**  
**September 1, 2002 to September 1, 2003**

## Water-Level Elevations in Soil-Zone Monitoring Wells, Data Loggers, and Stage Gauges South of the Mazon River

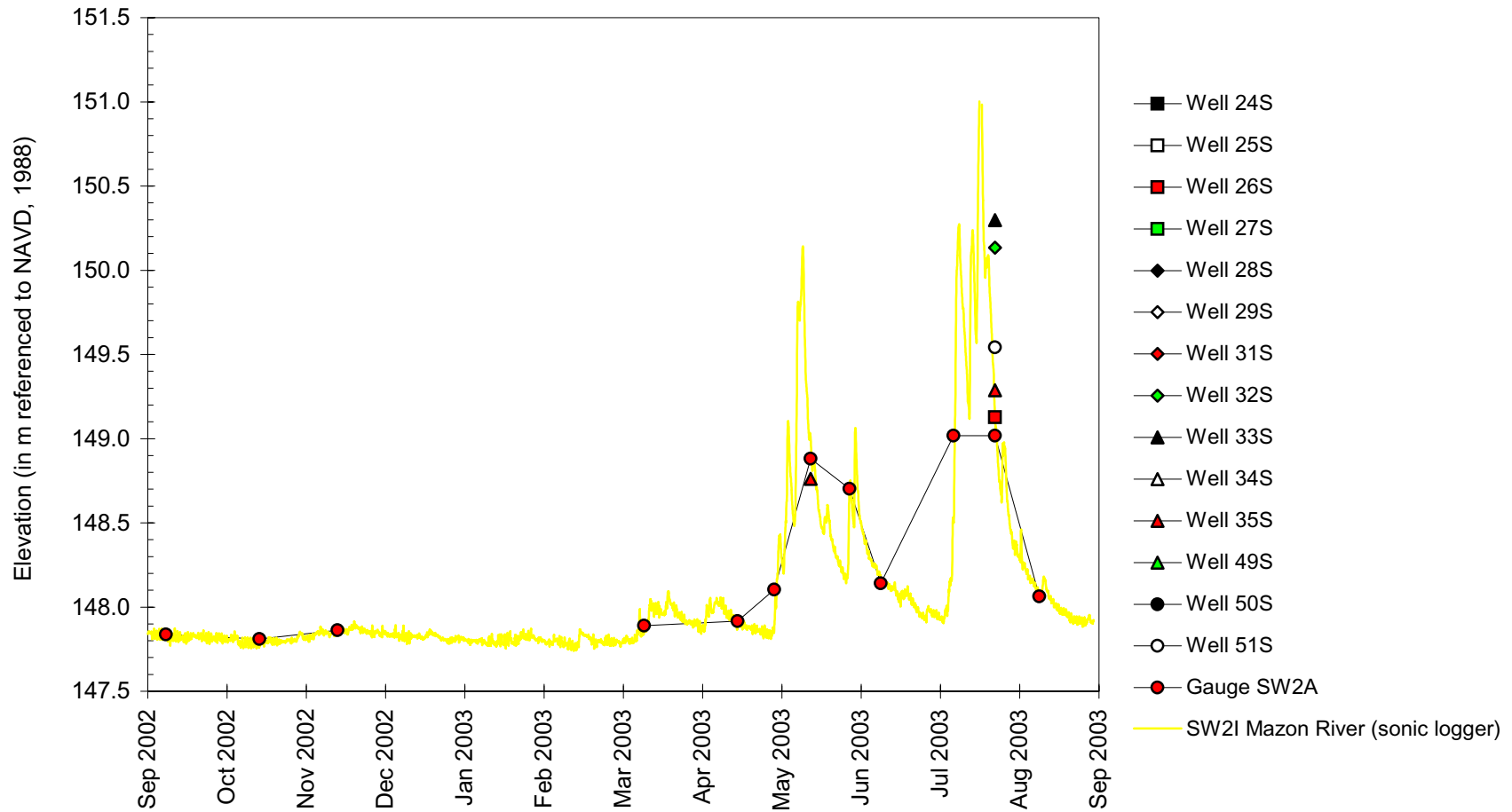


**Morris, Illinois River Potential Wetland Banking Site**  
**September 1, 2002 to September 1, 2003**

**Depth to Water  
in Soil-Zone Monitoring Wells  
South of the Mazon River**

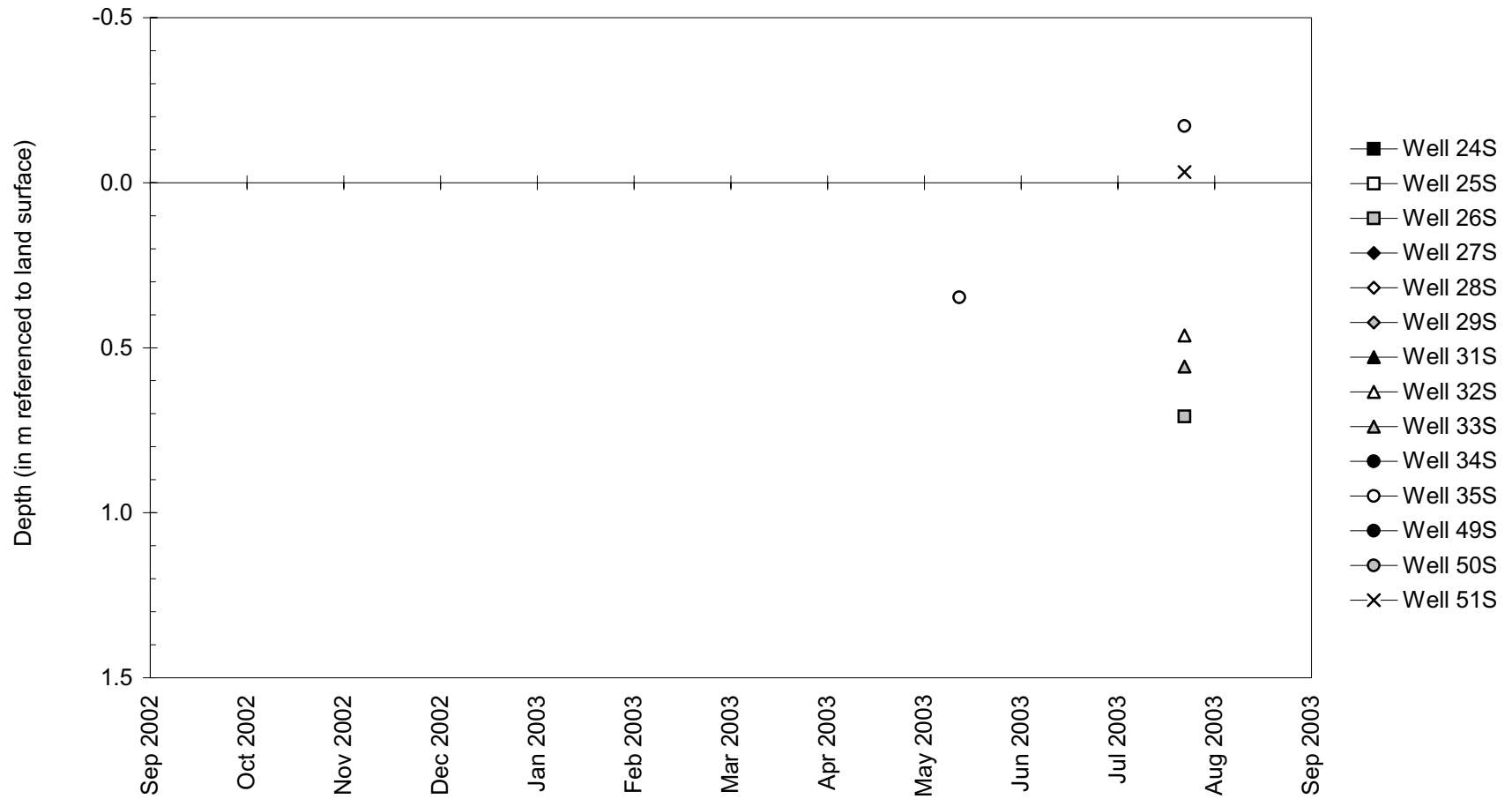


## Water-Level Elevations in Soil-Zone Monitoring Wells, Data Loggers, and Stage Gauges North of the Mazon River



**Morris, Illinois River Potential Wetland Banking Site**  
**September 1, 2002 to September 1, 2003**

**Depth to Water  
in Soil-Zone Monitoring Wells  
North of the Mazon River**

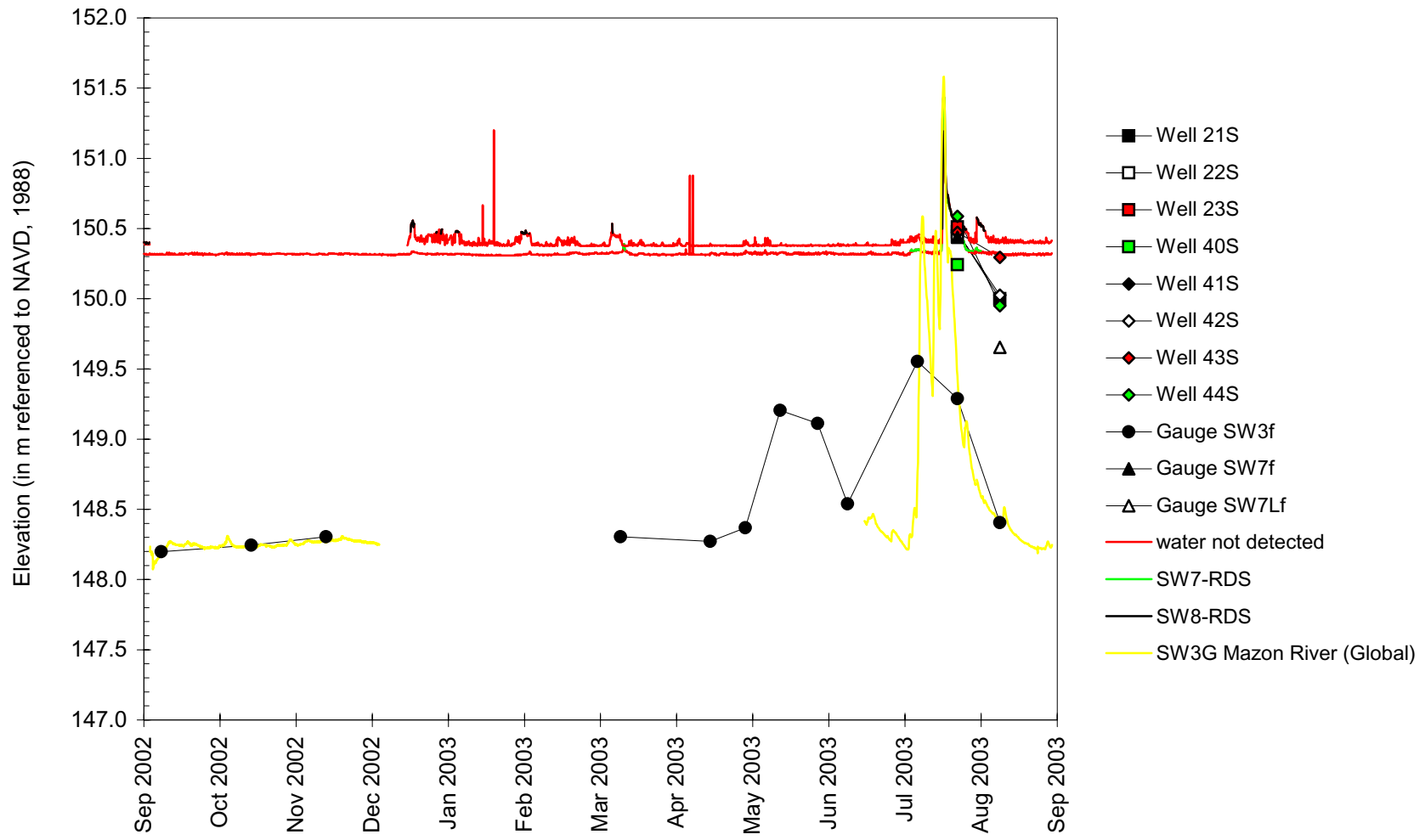




# Morris, Illinois River Potential Wetland Banking Site

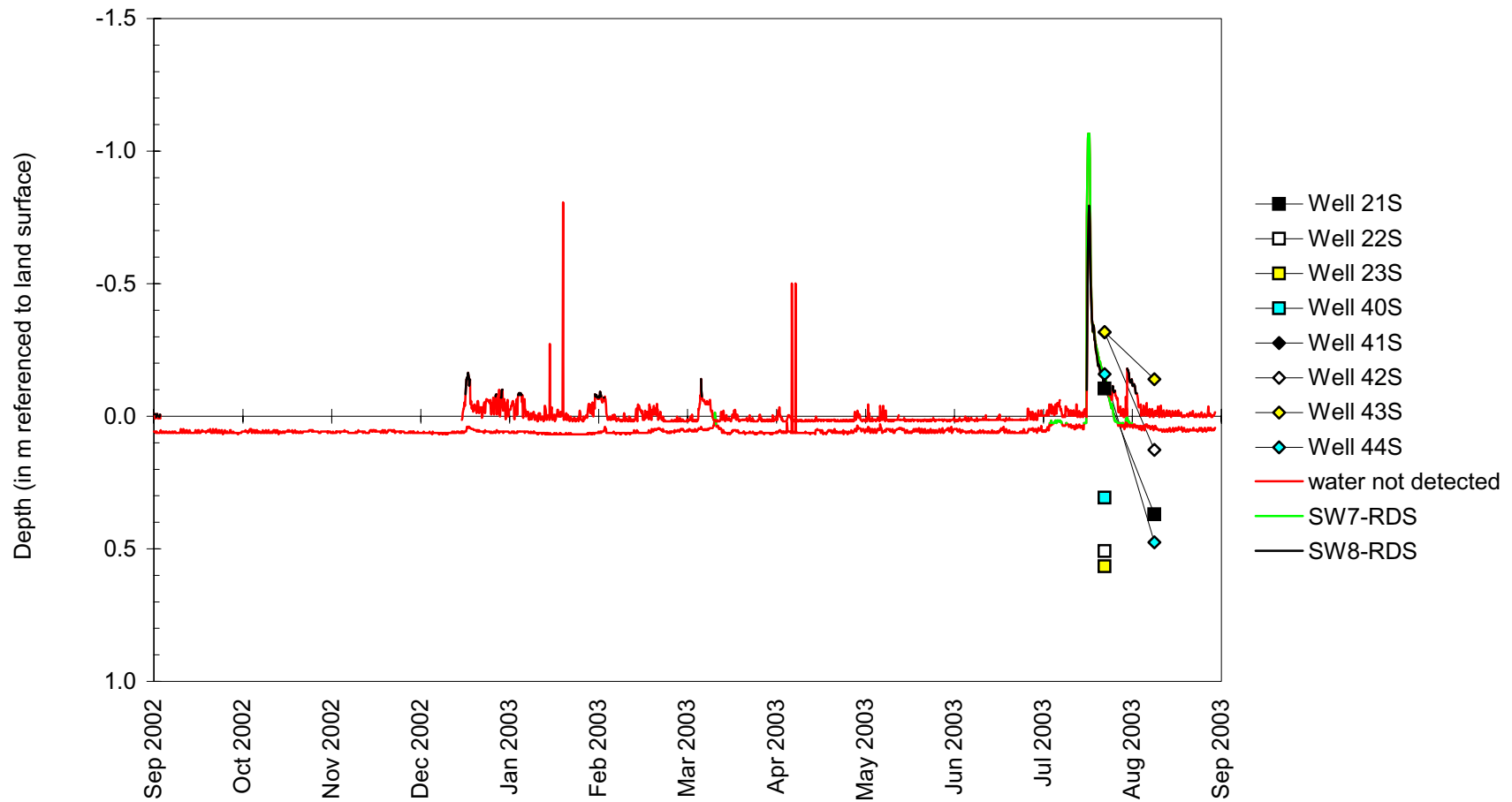
## September 1, 2002 to September 1, 2003

### Water-Level Elevations in Soil-Zone Monitoring Wells, Data Loggers, and Stage Gauges in the East Field and near the Natural Slough

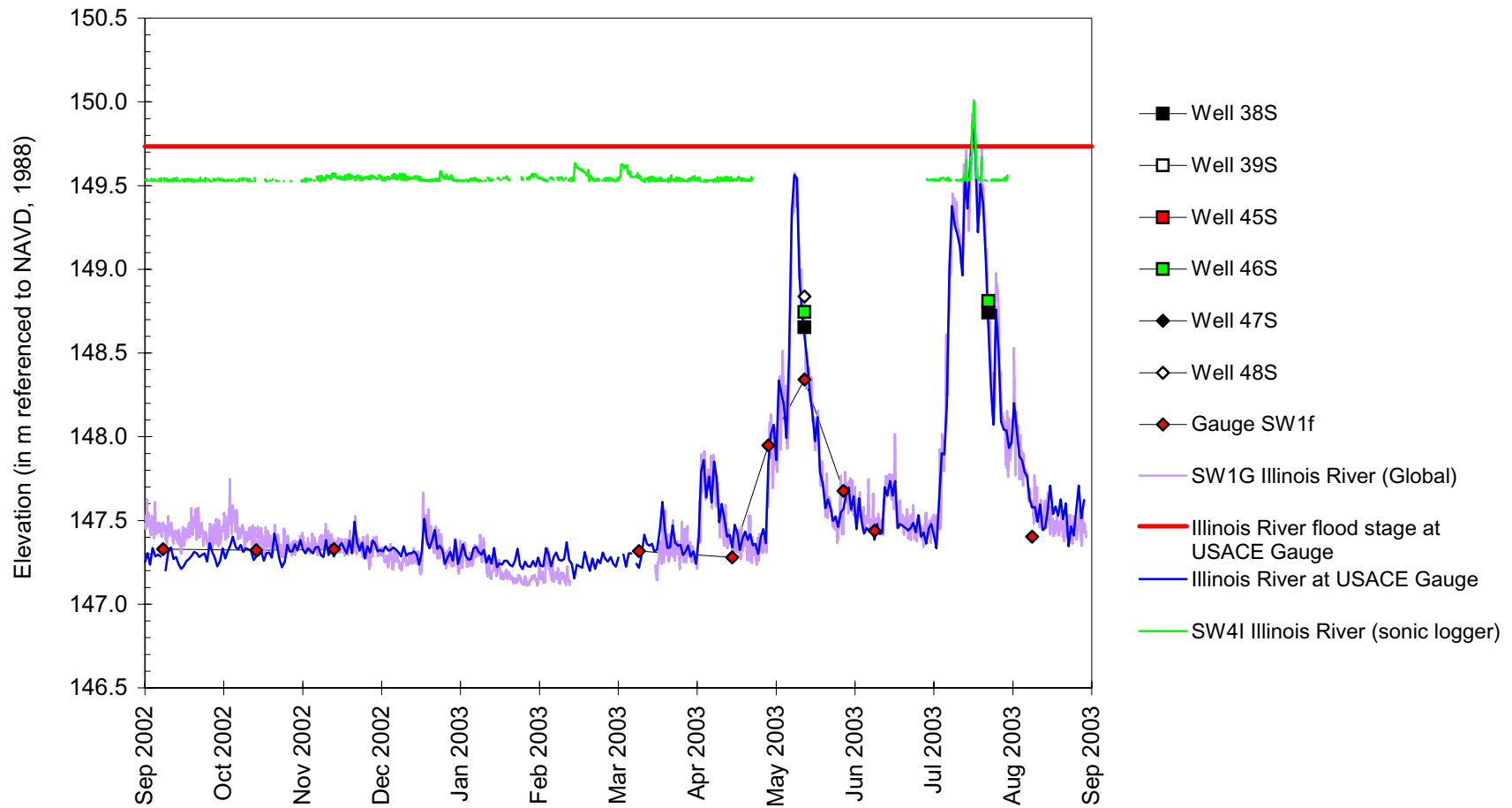


**Morris, Illinois River Potential Wetland Banking Site**  
**September 1, 2002 to September 1, 2003**

**Depth to Water**  
**in Soil-Zone Monitoring Wells and Data Loggers**  
**in the East Field and near the Natural Slough**

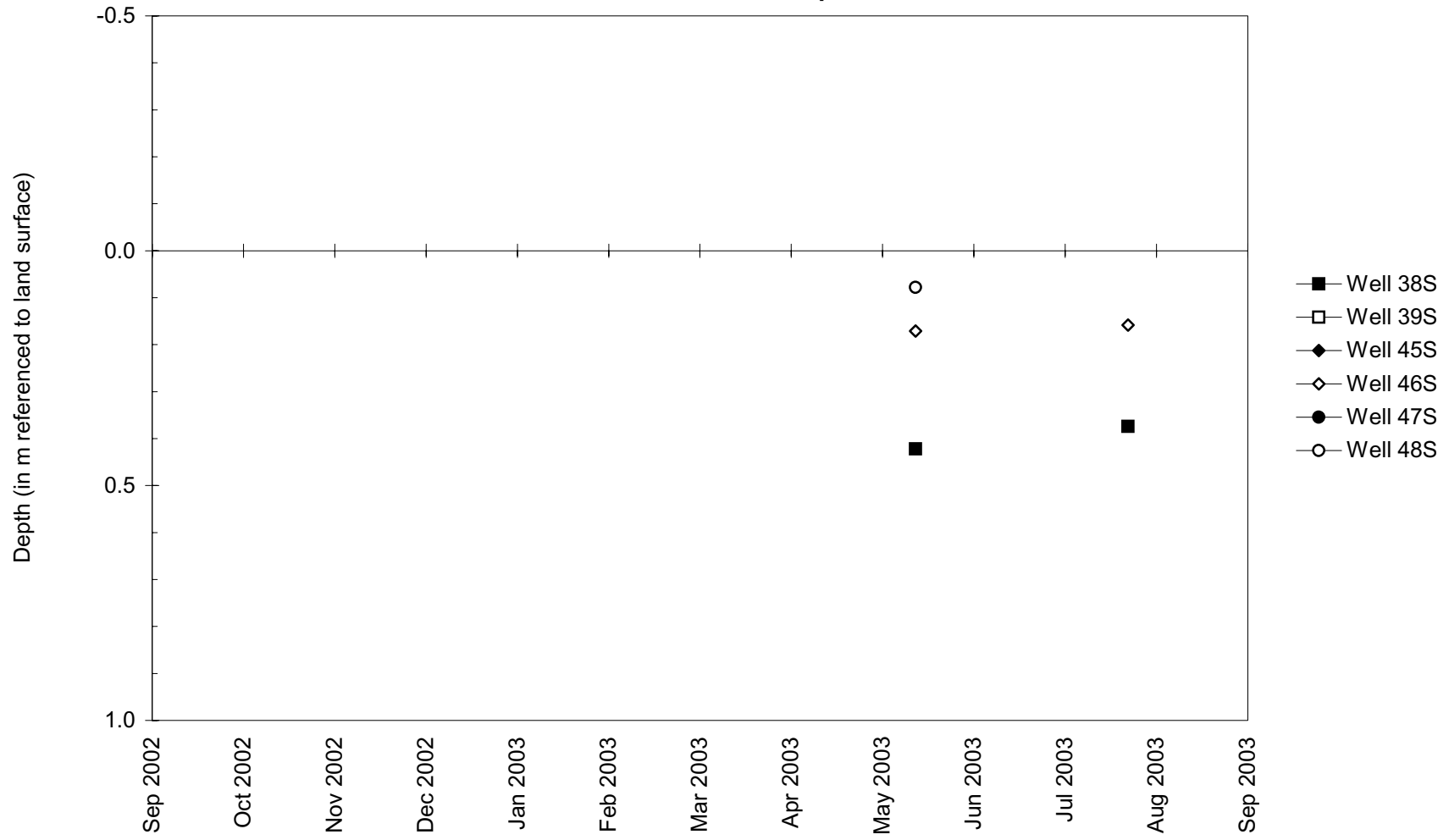


## Water-Level Elevations in Monitoring Wells, Data Loggers, and Stage Gauges near the Illinois River Floodplain Forest



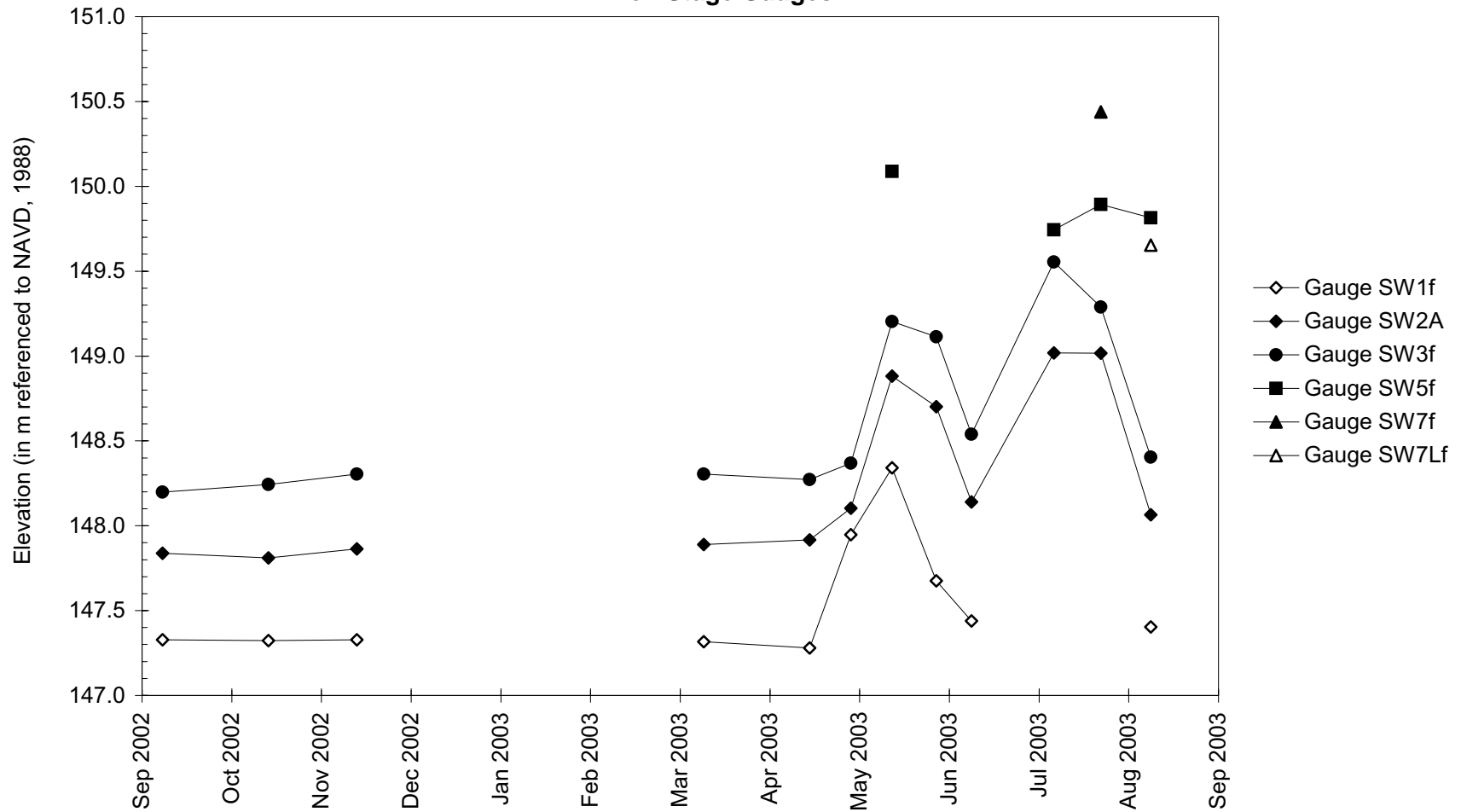
**Morris, Illinois River Potential Wetland Banking Site**  
**September 1, 2002 to September 1, 2003**

**Depth to Water  
in Monitoring Wells  
near the Illinois River Floodplain Forest**



**Morris, Illinois River Potential Wetland Banking Site**  
**September 1, 2002 to September 1, 2003**

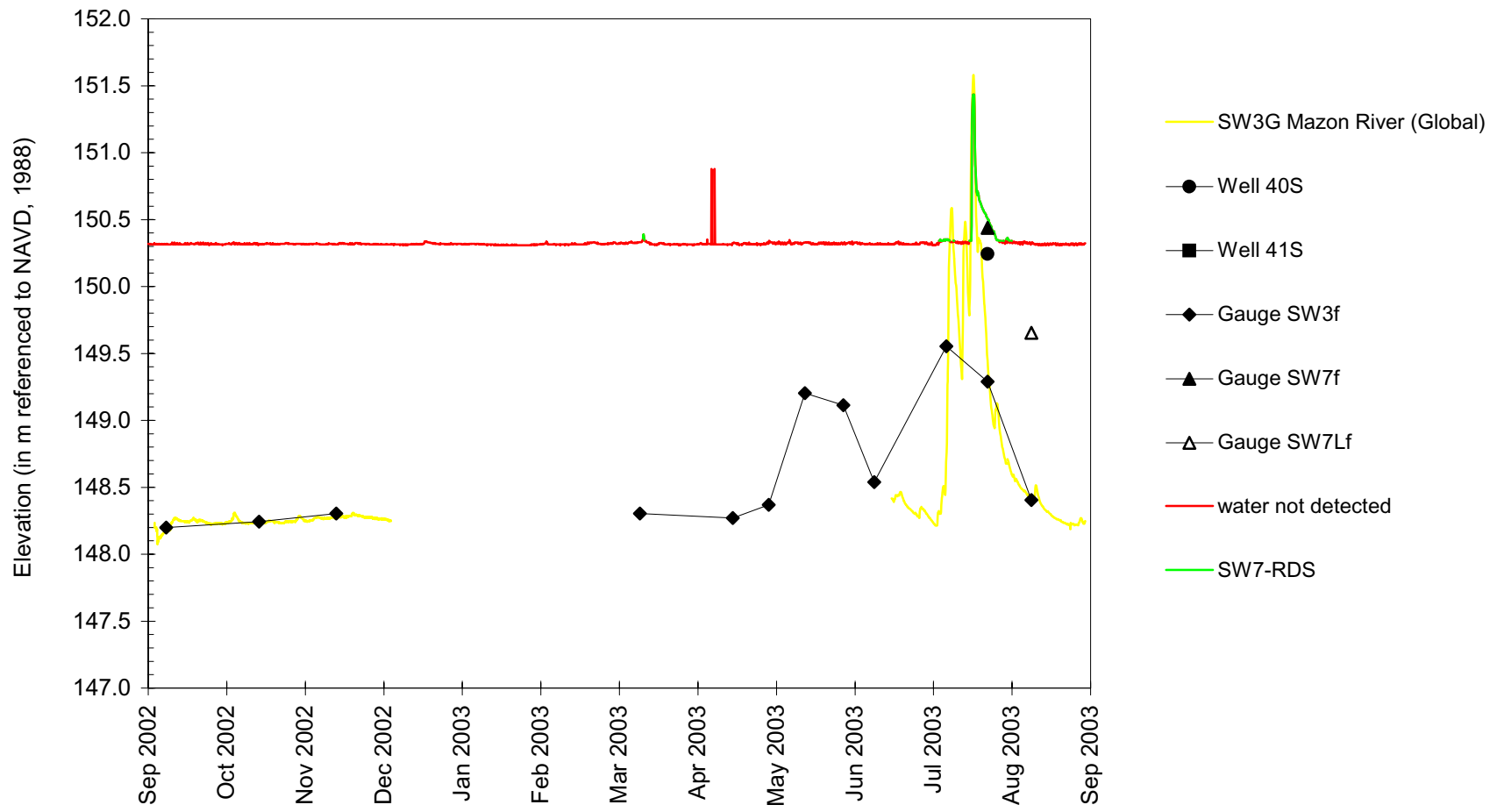
**Water-Level Elevations  
on Stage Gauges**



# Morris, Illinois River Potential Wetland Banking Site

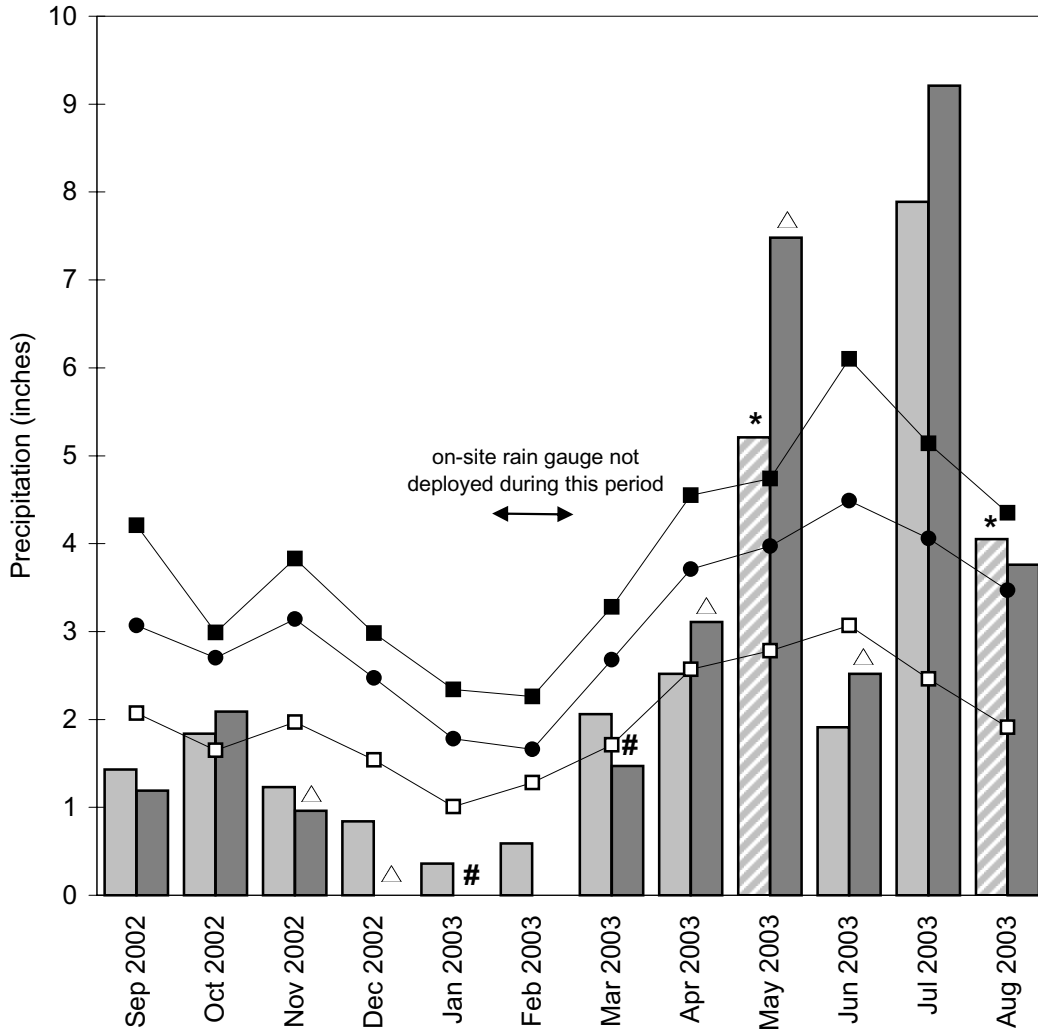
September 1, 2002 to September 1, 2003

## Water-Level Elevations in Soil-Zone Monitoring Wells, Data Loggers, and Stage Gauges near the Natural Slough



# Morris, Illinois River Potential Wetland Banking Site September 2002 through August 2003

## Total Monthly Precipitation Recorded On Site and at the Channahon, IL Dresden Island 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)

# on-site rain gauge not deployed for entire month

△ suspect data, on-site rain gauge clogged or malfunctioning, represents minimum value for the month

\* due to missing data from Channahon, May 2003 and August 2003 data are from the Morris 5N Station

Graph last updated September 9, 2003

**EDWARDS RIVER, MERCER COUNTY  
WETLAND COMPENSATION SITE**

**ISGS #50**

FAP 310

Mercer County, near Boden, Illinois

**Primary Project Manager: Kelli D. Weaver**

**Secondary Project Manager: Keith W. Carr**

**SITE HISTORY**

- May 1996: ISGS submitted an Initial Site Evaluation Report to IDOT.
- Spring 1999: ISGS began monitoring ground- and surface-water levels, and in Fall 1999 a total of 11 sediment traps were added to the site.
- Spring 2001: One RDS surface-water data logger, one stage gauge, and three very shallow (VS) soil-zone wells were added to the wetland basin.
- April 2002: Three soil-zone monitoring wells were added along the base of the US 67 embankment to better delineate wetland hydrology along the western site margin.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

No significant portion of the wetland compensation area conclusively satisfied the criteria for wetland hydrology in 2003. This is in contrast to the 0.39 ac (0.16 ha) that satisfied wetland criteria in 2002. This estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Aledo, Illinois is April 11 and the season lasts 195 days; 12.5% of the growing season is 24 days.
- The total precipitation for the monitoring period from September 2002 to August 2003 was 82% of normal. Despite above-normal precipitation totals for the month of October 2002, the precipitation totals from September and November 2002 through March 2003 were significantly below normal, leading to drier than typical conditions entering the 2003 growing season. Precipitation levels were within to above the normal range from April to July, and were below normal range for August.
- In 2003, water levels measured in only one of the wells (3S) conclusively satisfied wetland hydrology criteria as outlined in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. However, no significant area around well 3S could be included based on adjacent wells and stream gauge data.
- The elevation and duration of surface-water inundation events were recorded in the Edwards River channel and the wetland basin. Flood water in the basin was limited to three separate events with a duration of approximately six days for the longest event, a period of time insufficient to satisfy wetland hydrologic criteria. Adjacent wells did not suggest that saturation persisted after the flooding event. In all events, the hydroperiod within the excavated basin virtually mimics that of the river. As in previous years, flood waters in 2003 only stayed in the basin hours after the river stage had dropped below the site inlet.



## ADDITIONAL INFORMATION

- Once a year, the sediment is removed from the 11 sediment traps and is quantified in an ISGS laboratory. From April 17, 2002, to April 15, 2003, the traps on the site accumulated between 0.18 and 0.97 cm of sediment. The sediment traps located outside the excavated basin, T1 and T4, and on top of the natural levee, T9 and T8, accumulated the lowest amounts of sediment, 0.18 to 0.29 cm. The greatest thickness of sediment, 0.33 to 0.97 cm, was trapped within the excavated wetland basin. The maximum amount of sediment, 0.97 cm, was collected from T5, which is adjacent to the inlet/outlet of the site. According to stage records, the sediment that was collected in the traps represents an average total period of 5.7 days that the sediment traps were inundated. Calculations for sediment thickness are based on personal communication with Richard Cahill, ISGS Sediment Geochemist.
- We have determined that site is being drained too efficiently through the inlet/outlet in the northwest corner of the site. Raising the elevation of this inlet/outlet to approximately 194.0 m (636.5 ft) would cause longer-term retention of surface water in the excavated basin. This may also enhance sediment deposition due to the longer flood-water residence time.

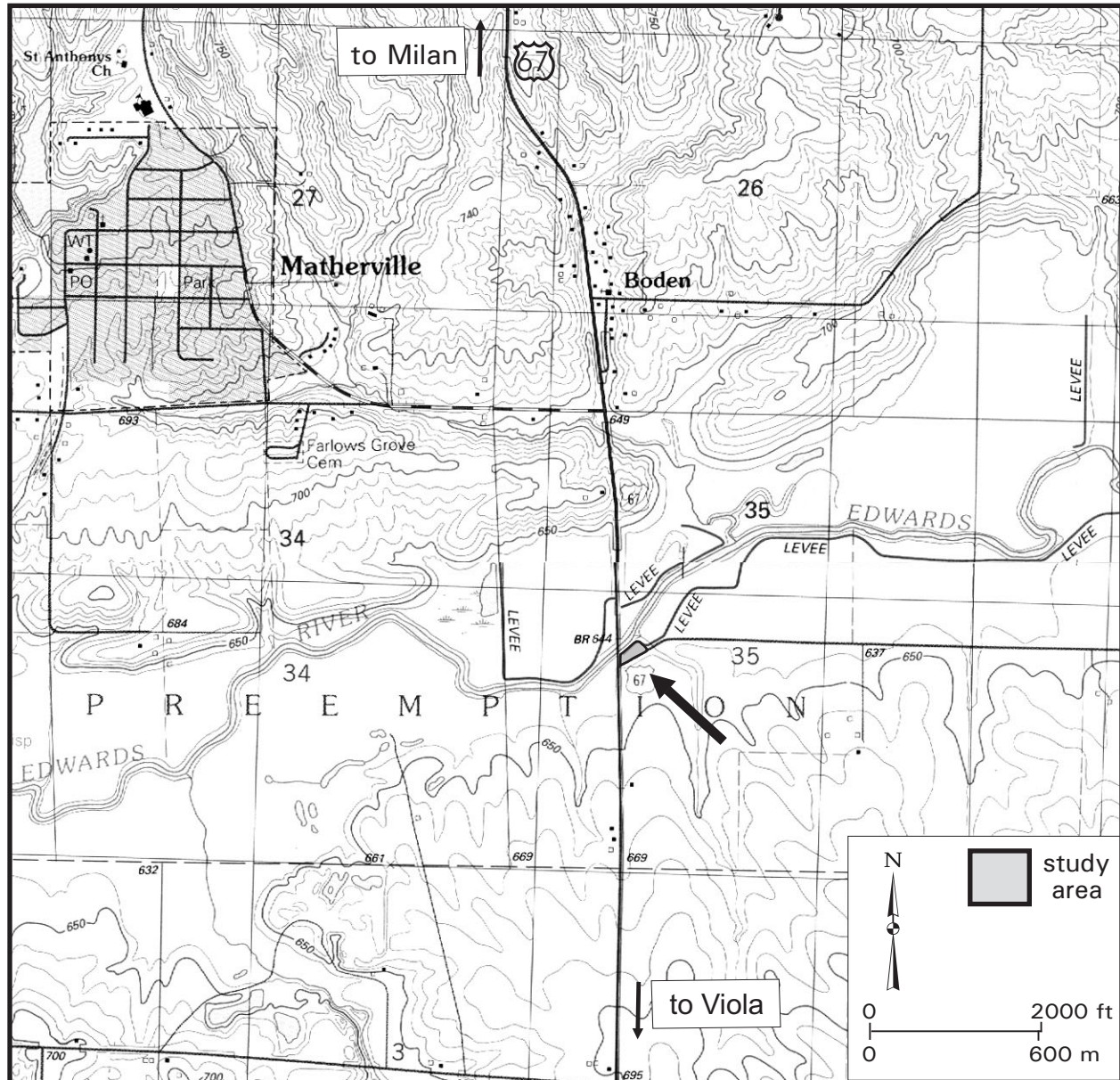
## PLANNED FUTURE ACTIVITIES

- Monitoring of hydrology and sediment deposition will continue through Spring 2004 or until no longer required by IDOT.

# Edwards River, Mercer County Wetland Compensation Site (FAP 310)

## General Study Area and Vicinity

from the USGS Topographic Series, Viola, IL (USGS 1992) and  
Matherville, IL (USGS 1991) 7.5 Minute Quadrangles  
contour interval is 10 ft



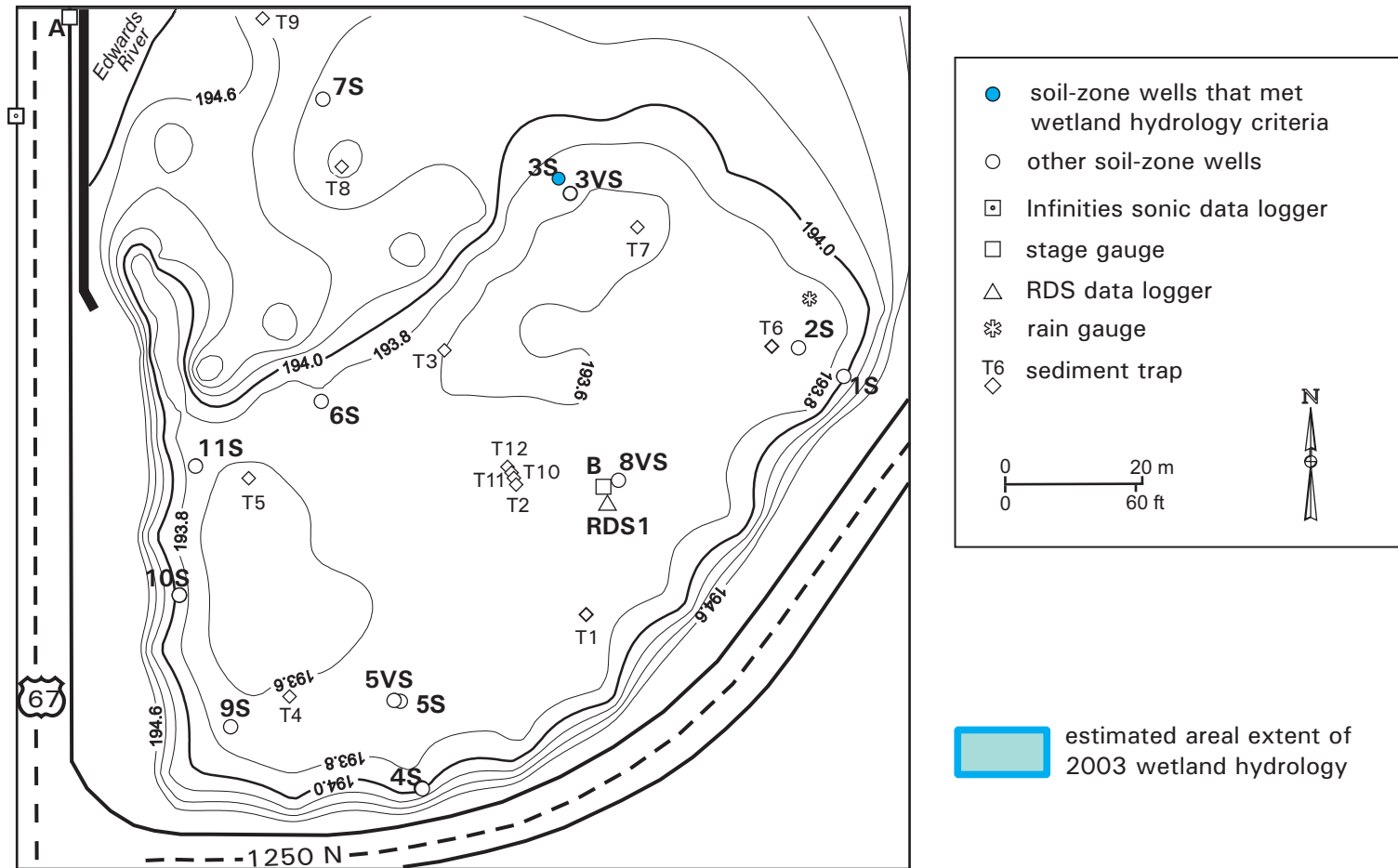
# Edwards River, Mercer County Wetland Compensation Site (FAP 310)

## Estimated Areal Extent of 2003 Wetland Hydrology

based on data collected between September 1, 2002 and September 1, 2003

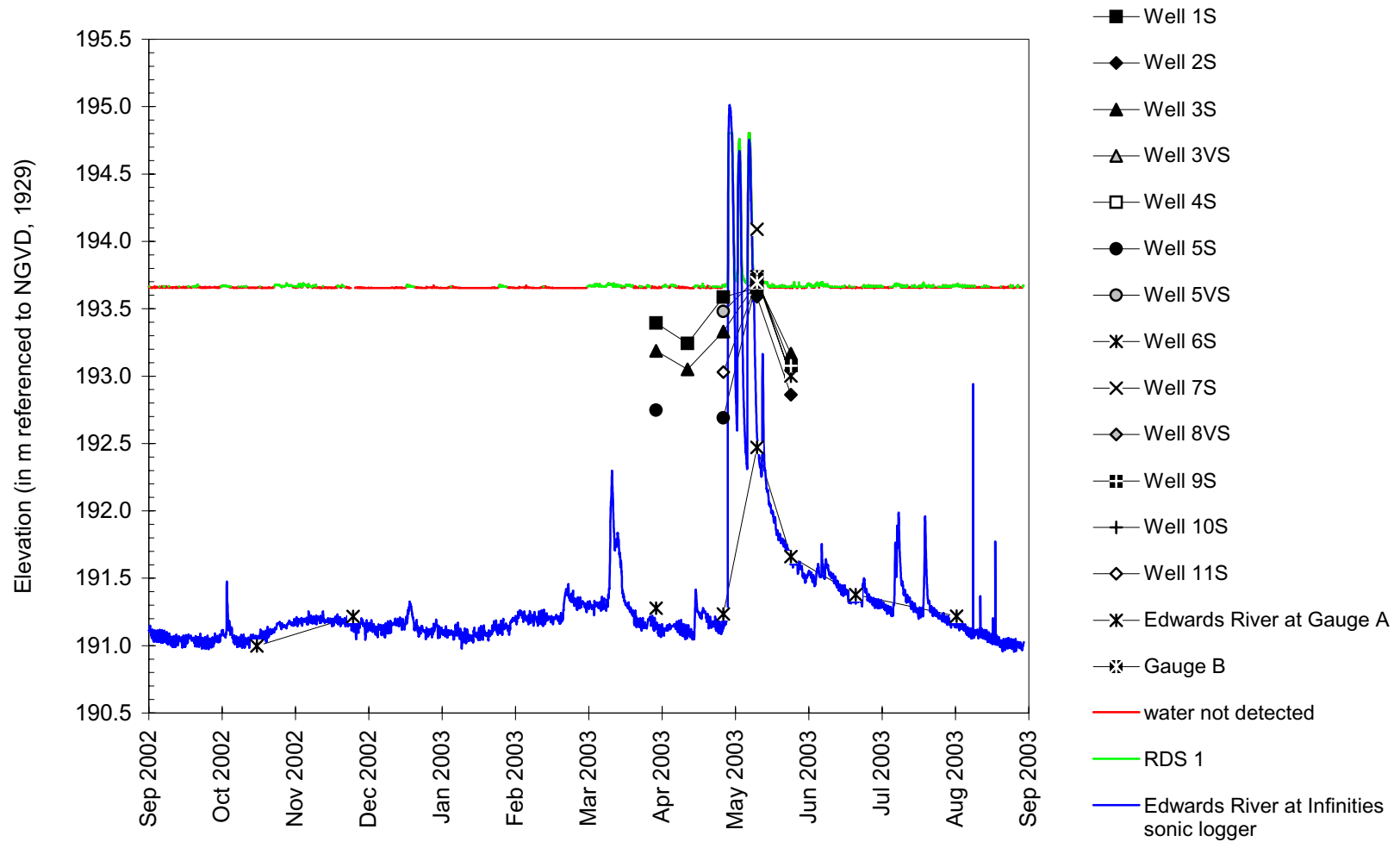
map based on 2002 ISGS elevation survey referenced to NGVD, 1929

contour interval is 0.2 meters



# Edwards River, Mercer County Wetland Compensation Site September 1, 2002 to September 1, 2003

## Water-Level Elevations



**Depth to Water**

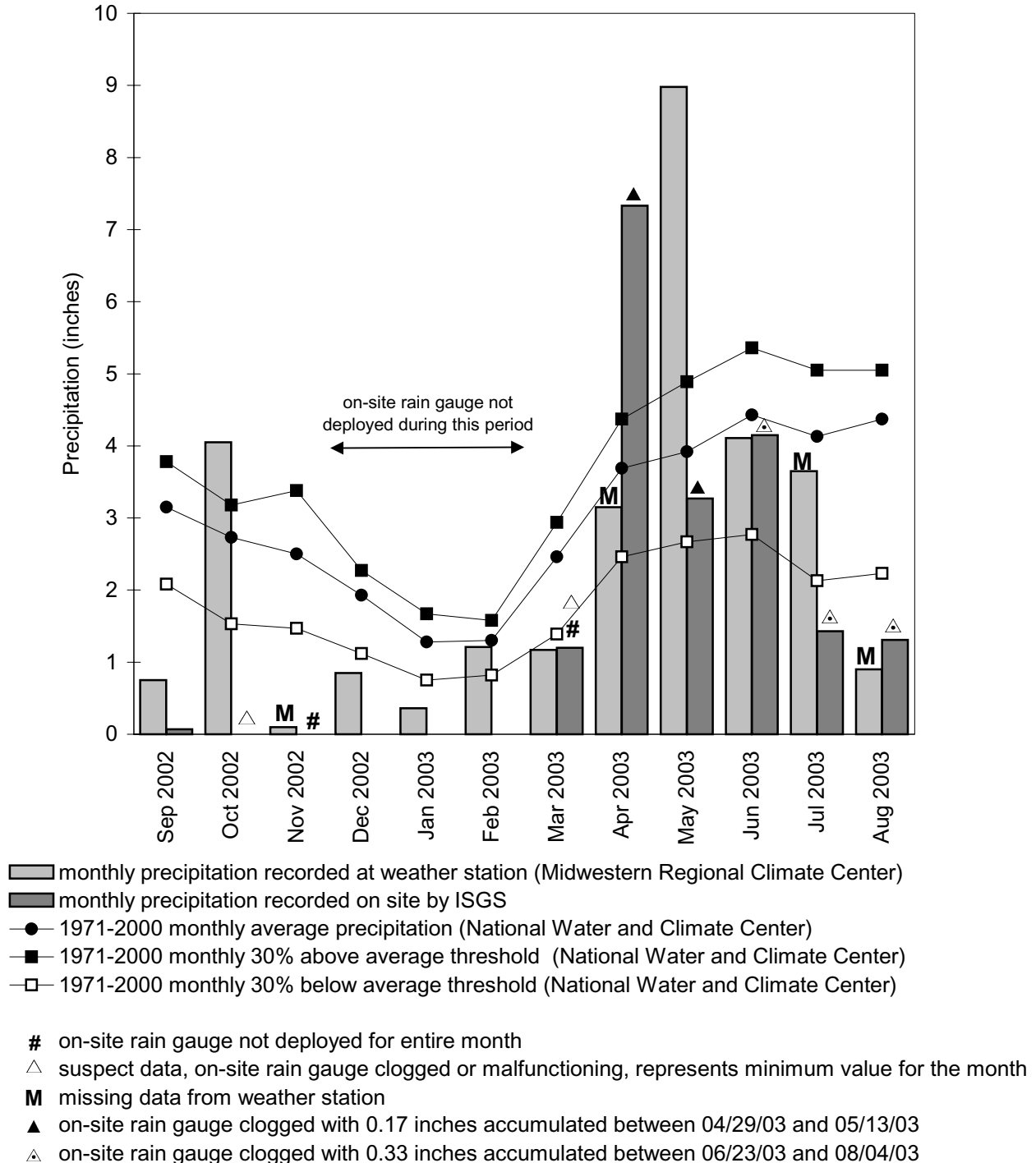
Depth (in m referenced to land surface)

Legend:

- Well 1S
- Well 2S
- Well 3S
- Well 3VS
- Well 4S
- Well 5S
- Well 5VS
- Well 6S
- Well 7S
- Well 8VS
- Well 9S
- Well 10S
- Well 11S
- water not detected
- RDS 1

# **Edwards River, Mercer County Wetland Compensation Site September 2002 through August 2003**

## **Total Monthly Precipitation Recorded On Site and at the Aledo, IL Weather Station**



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

**ISGS #51**

FAP 999

Madison County, near Stallings, Illinois

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

**Secondary Project Manager: Keith W. Carr**

**SITE HISTORY**

- February 2000: The ISGS was tasked to perform a Level II hydrogeologic assessment of the site.
- March - June 2000: Nine well clusters, one staff gauge, one rain gauge and three water-level loggers were installed on site.
- April 2002: A Sonic water-level meter was added to the IL162 bridge over Cahokia Canal to record stage.
- August 2002: All wells located outside the new site boundaries were abandoned. A Starflow flow-velocity meter was installed in the east ditch NNE of well cluster nine.
- May 2003: A Level II hydrogeological characterization report was submitted to IDOT.
- June 2003: IDOT requested the suspension of ground-water monitoring. The collection of data from surface-water instruments is ongoing.

**SUMMARY OF 2003 EVENTS**

Because this site is a potential compensation site, an estimate of the areas satisfying the criteria for wetland hydrology is not required for this report. However, for planning purposes, jurisdictional wetland hydrology was not observed in any of the on-site monitoring wells. See the Level II Report (Robinson et al 2003) for details.

- 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, 12.5% of the growing season is 25 days.
- Precipitation during the monitoring period was 87% of normal. Overall below normal precipitation from September 2002 to January 2003 (with the exception of October 2002) resulted in dry conditions throughout the winter. Normal to above normal precipitation from February to June 2003 caused ground-water levels to peak in early April and mid May and subsequently decline.
- In 2003, none of the wells conclusively satisfied the criteria for wetland hydrology outlined in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual.
- Measurements in the Cahokia Canal indicate that the water level exceeded 127.0 m NGVD, 1929 (416 ft NAVD, 1988) on two occasions during the monitoring year, May 2 and 10, 2003. This is the suggested elevation of an intake culvert described in the Level II Report (Robinson et al 2003).

## PLANNED FUTURE ACTIVITIES

- Collection of surface-water data will continue at this site until no longer required by IDOT.

## REFERENCES

Robinson, B.J., D.B. Ketterling, C.S. Fucciolo, 2003, Final Hydrogeologic Characterization Report: Stallings Wetland Compensation Site (Former Luehmann Property), Madison County, IL (FAP 999): Illinois State Geological Survey Open File Series 2003-9, Champaign, IL, 75 p.

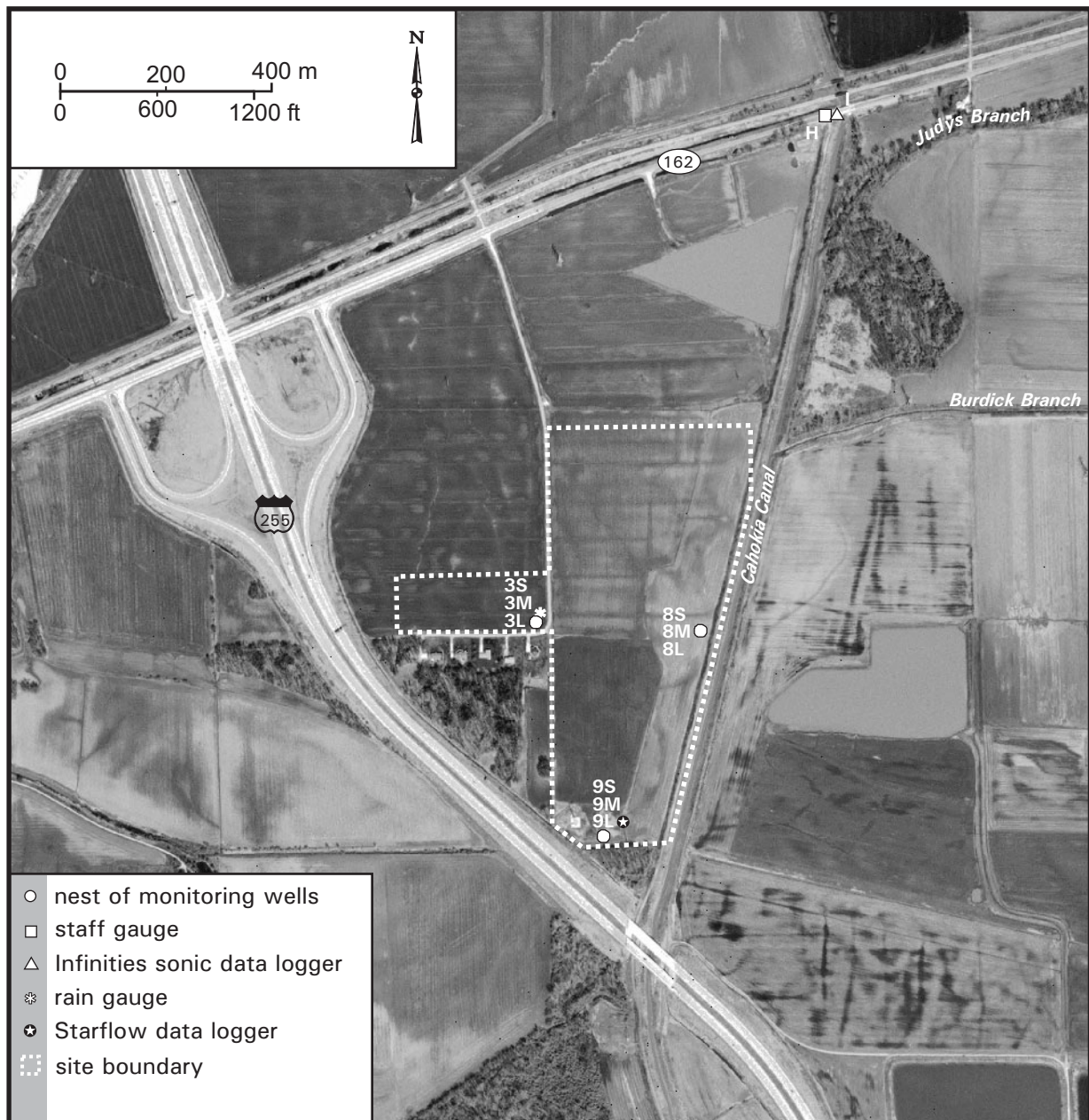


## General Study Area and Vicinity

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

## Locations of ISGS Monitoring Instruments

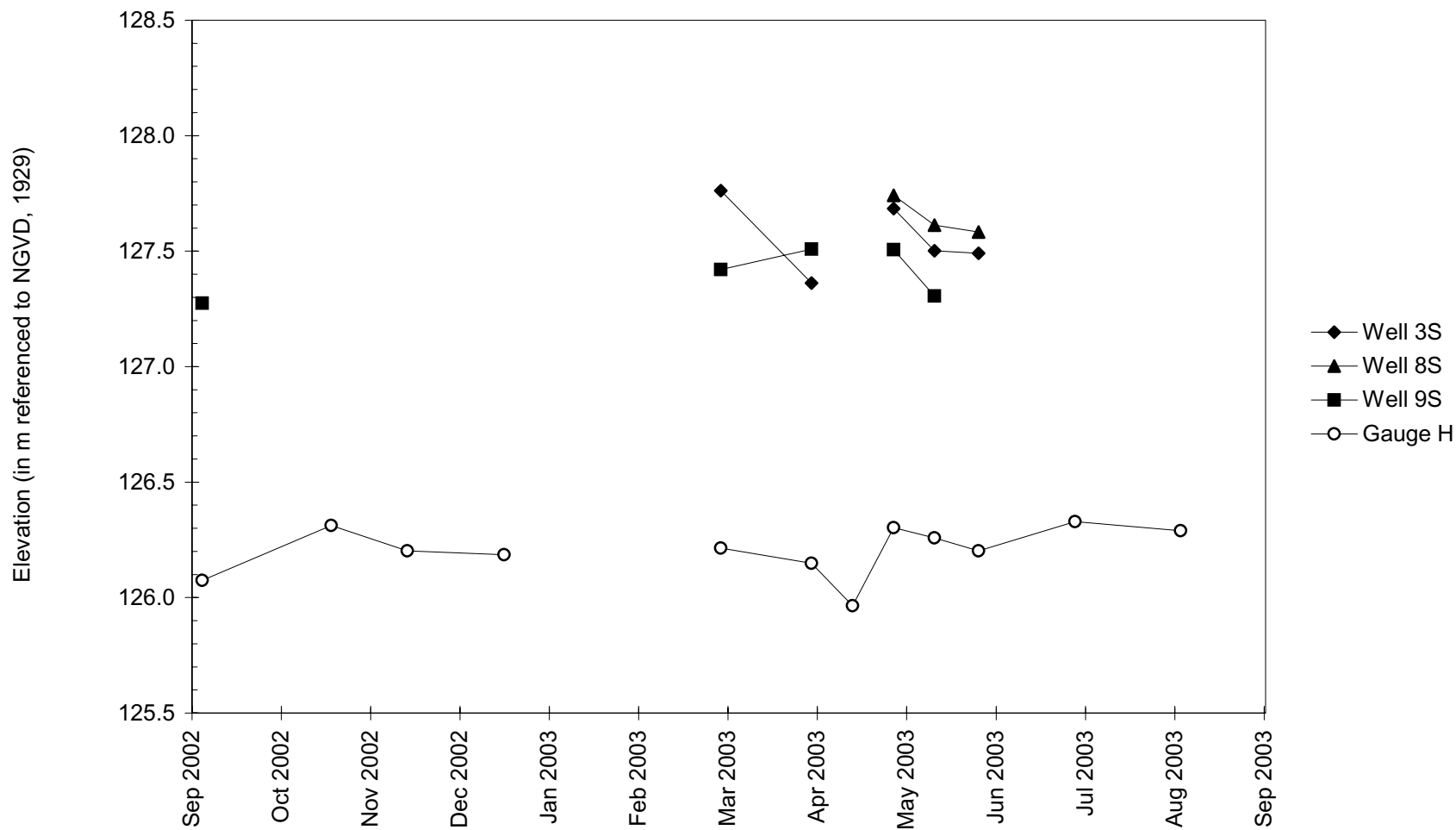
map based on USGS digital orthophotograph, Monk's Mound NE quarter quadrangle  
produced from 4/2/98 aerial photography (ISGS 2001)



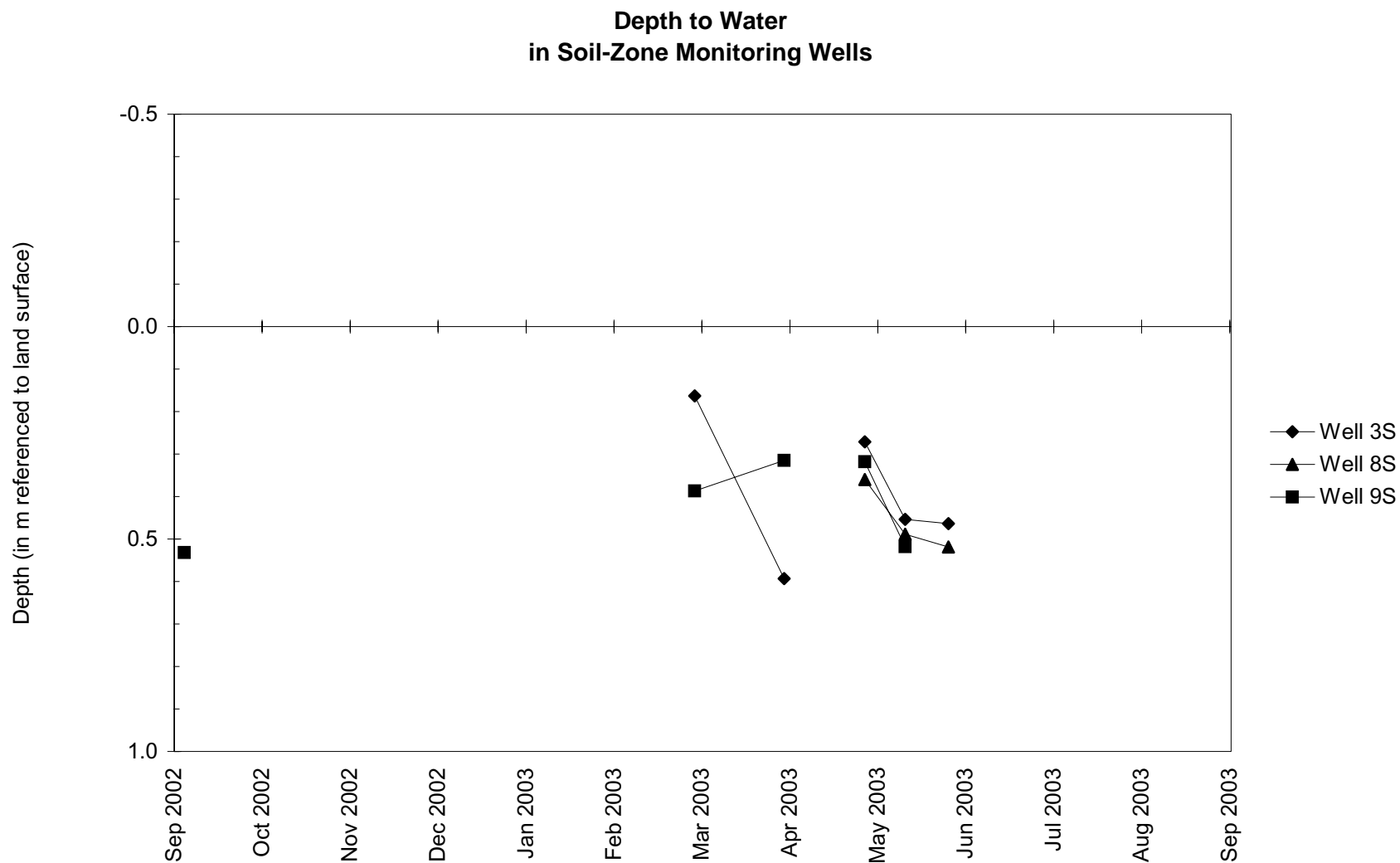
# Former Luehmann Property, New River Crossing Potential Wetland Compensation Site

September 1, 2002 to September 1, 2003

## Water-Level Elevations in Soil-Zone Monitoring Wells and on the Stage Gauge



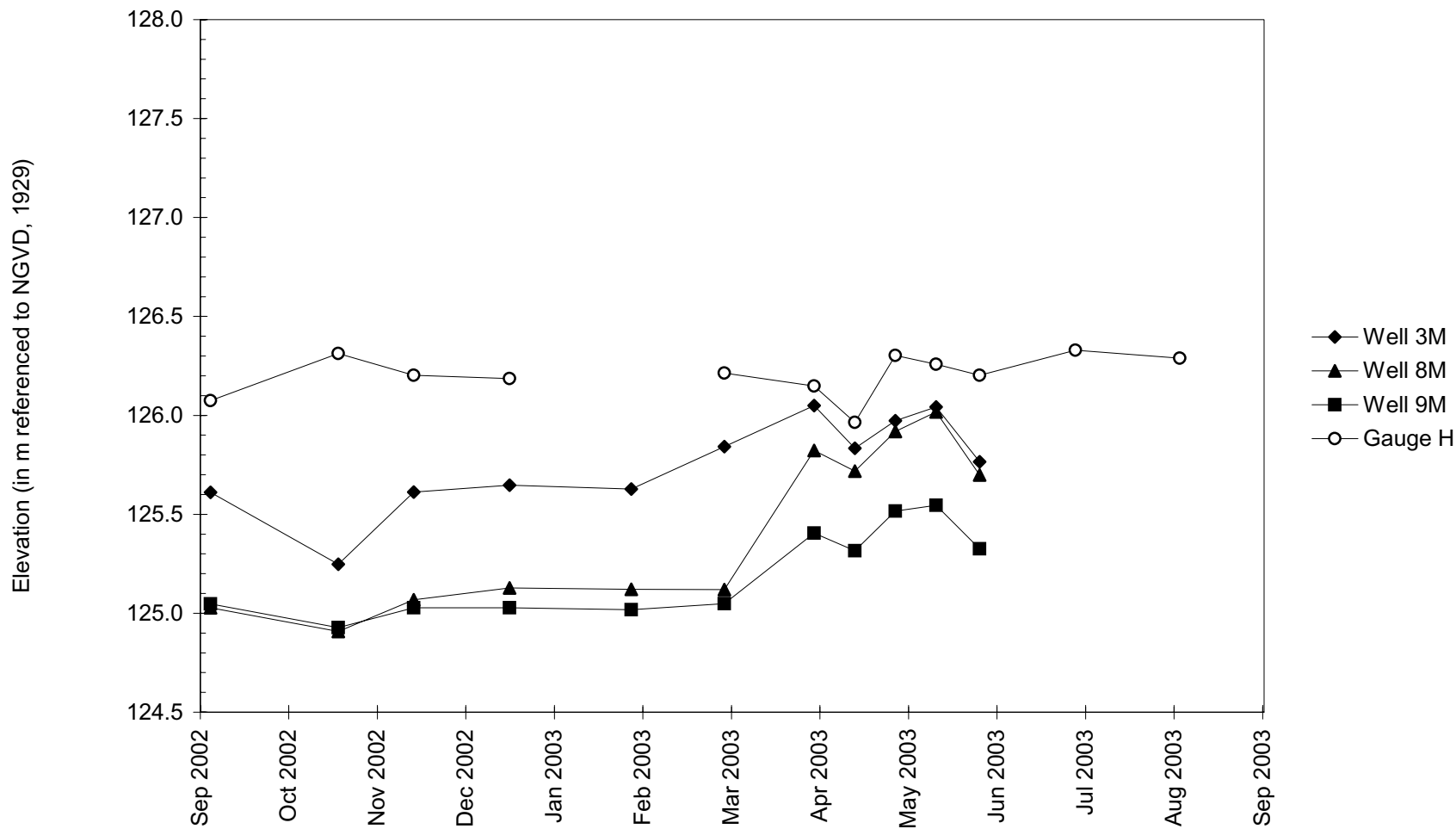
**Former Luehmann Property, New River Crossing Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**



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

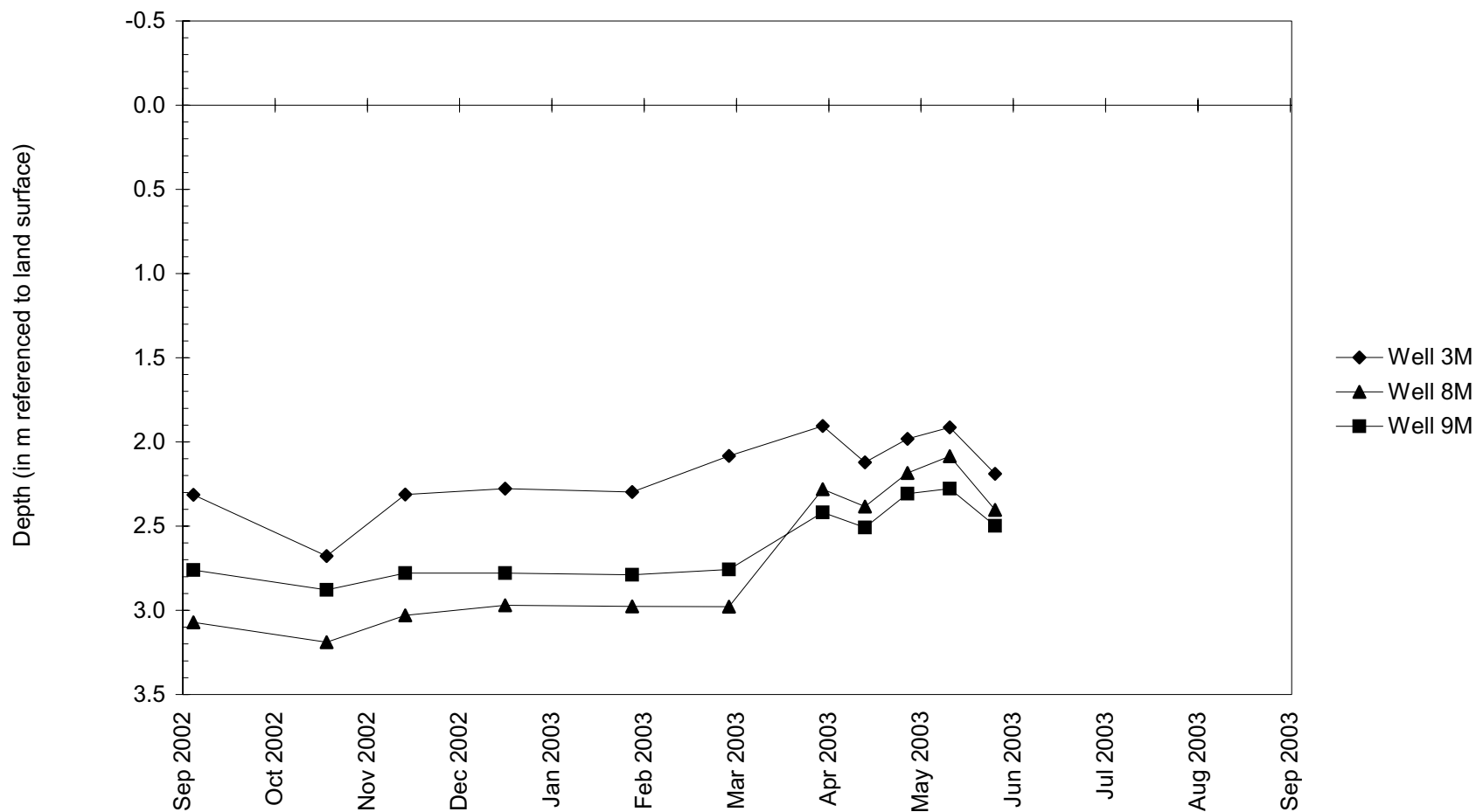
September 1, 2002 to September 1, 2003

## Water-Level Elevations in Middle Monitoring Wells and on the Stage Gauge



**Former Luehmann Property, New River Crossing Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

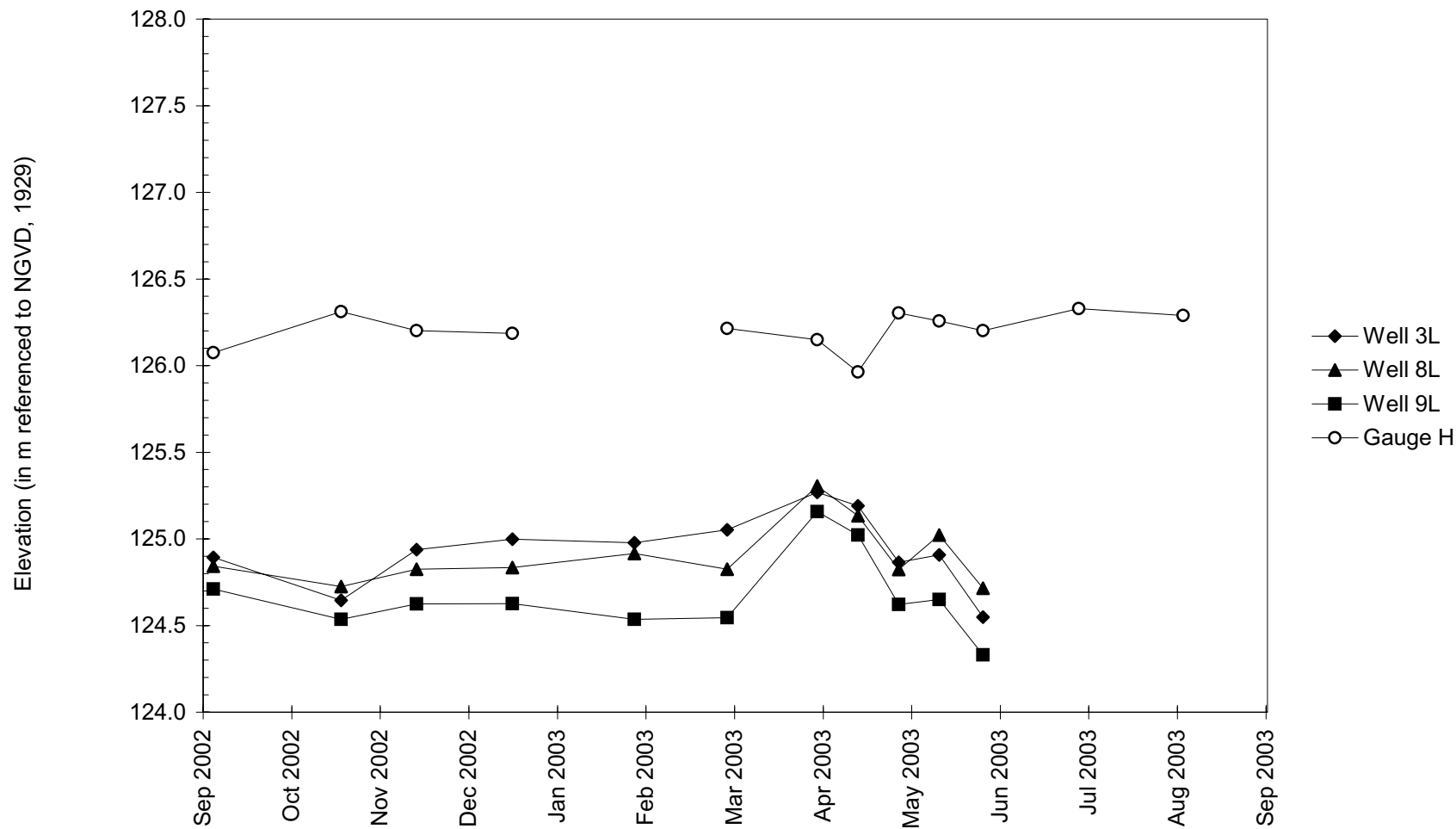
**Depth to Water  
in Middle Monitoring Wells**



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

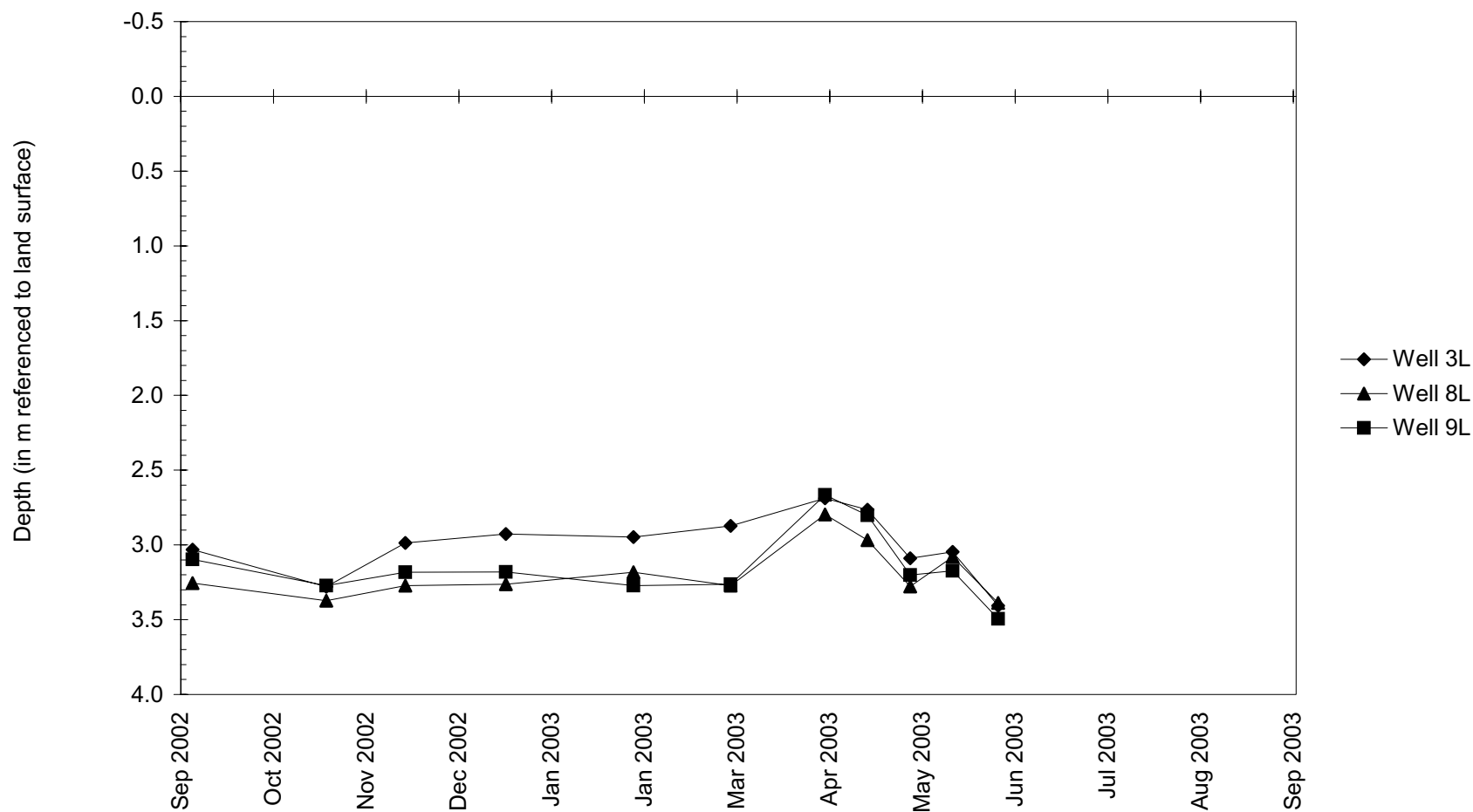
September 1, 2002 to September 1, 2003

## Water-Level Elevations in Lower Monitoring Wells and on the Stage Gauge



**Former Luehmann Property, New River Crossing Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

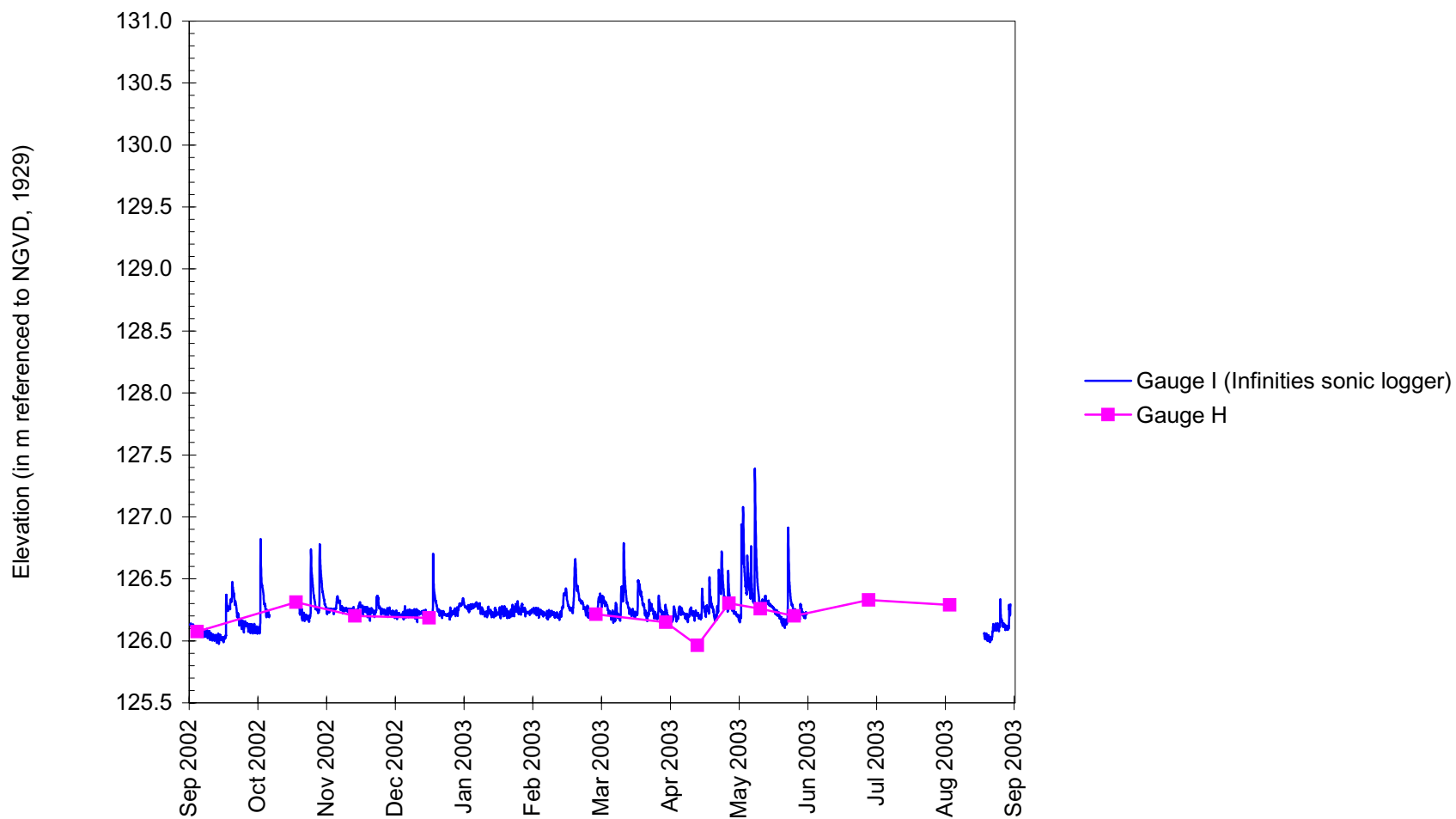
**Depth to Water  
in Lower Monitoring Wells**





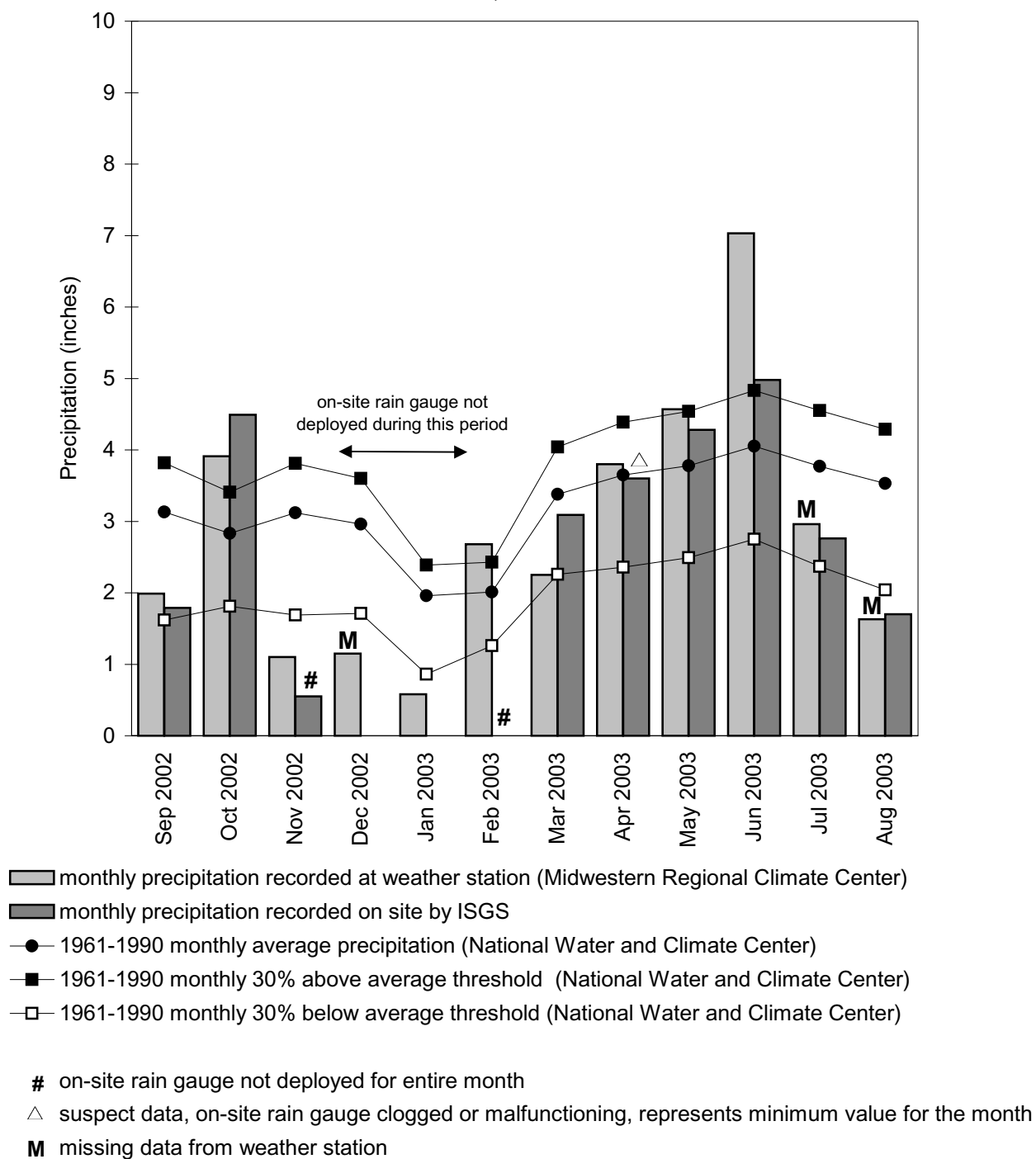
**Former Luehmann Property, New River Crossing Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations**



# **Former Luehmann Property, New River Crossing Wetland Compensation Site September 2002 through August 2003**

## **Total Monthly Precipitation Recorded On Site and at the Edwardsville, IL Weather Station**



**FORMER WESSEL PROPERTY  
DISTRICT 6 POTENTIAL WETLAND BANKING SITE**

**ISGS #52**

Brown County, near Meredosia, Illinois

**Primary Project Manager: Blaine A. Watson**

**Secondary Project Manager: Keith W. Carr**

**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.
- August 2002: IDOT tasked ISGS and INHS to prepare 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.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

We estimate that the total area of the site that conclusively satisfied wetland hydrology criteria in 2003 is 751.5 ac (304.1 ha). This compares to an estimate of 847.7 ac (343.1 ha) in 2002. This year's estimate is based on the following factors:

- According to the Midwestern Climate Center, the median date that the growing season begins in nearby Beardstown is April 6 and the season lasts 208 days; 12.5% of the growing season is 26 days and 5% of the growing season is 10 days.
- During the period from September 2002 to August 2003, total precipitation at the site was 71% of normal. Precipitation recorded at the site and in the vicinity between September 2002 and February 2003 was generally below the normal range, leading to relatively dry conditions at the start of the growing season. However, precipitation was within or above the normal range between March and August 2003.
- In 2003, water levels measured in the following wells conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual: wells 6S, 7S, 8S, 9S, 11S, 13S, 16S, 17S, 18S, 19S, 21S, and 23S.
- Loggers SW7G and SW12G recorded long-term inundation in the basin of Big Lake to an

elevation of approximately 131.08 m (430.05 ft) during the period between May 4 and June 8, 2003.

- Limitations of the wetland hydrology determination are as follows:
  - Baseline conditions of the site were changed throughout the year to optimize farming conditions. The tenant farmer periodically 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 artificially induced changes.

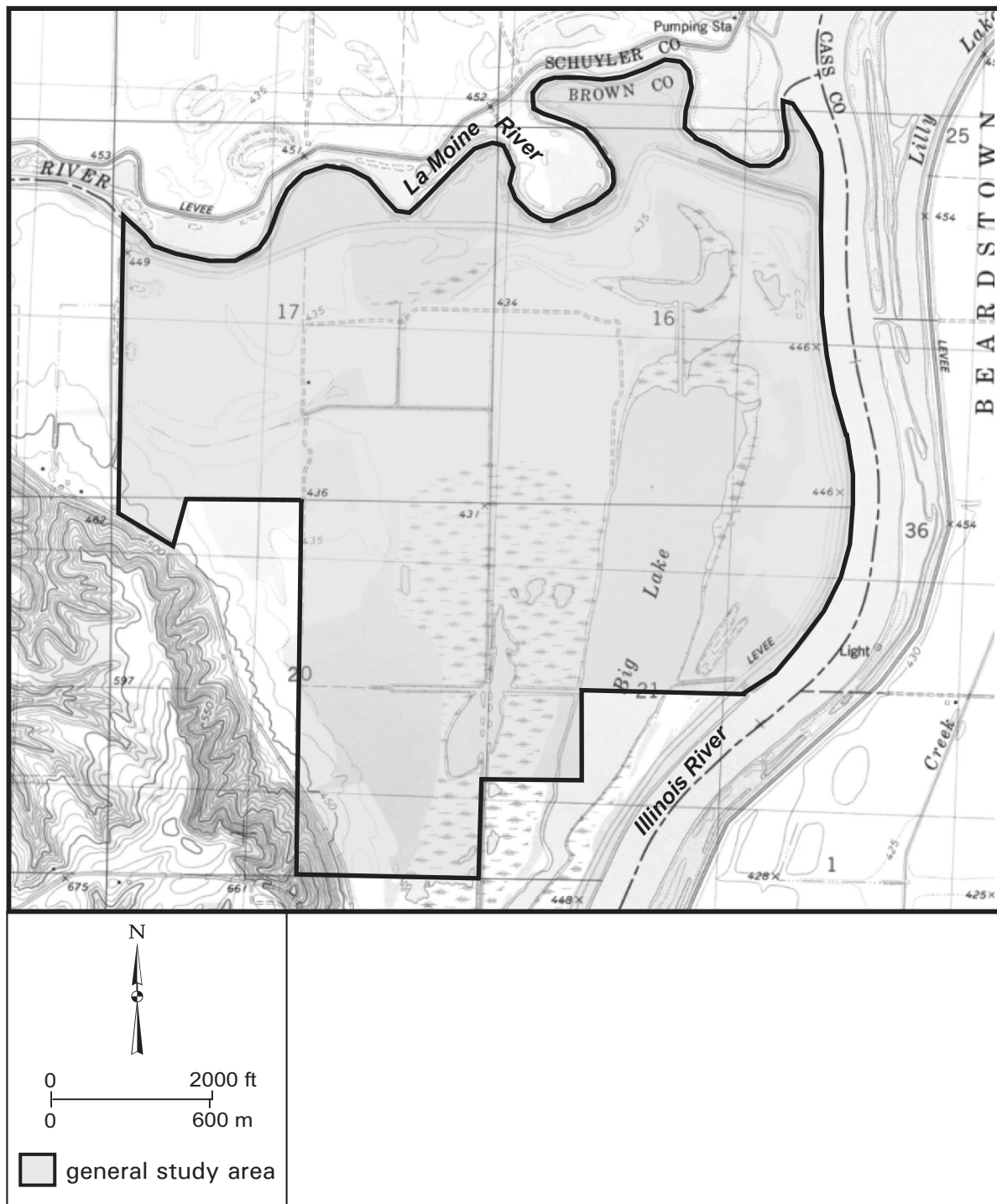
#### PLANNED FUTURE ACTIVITIES

- Monitoring of hydrology will continue until no longer required by IDOT.
- Installation of 5 to 6 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.
- A Level II Hydrogeologic Characterization Report is currently being prepared for this site.

# Former Wessel Property, District 6 Potential Wetland Banking Site

## General Study Area and Vicinity

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

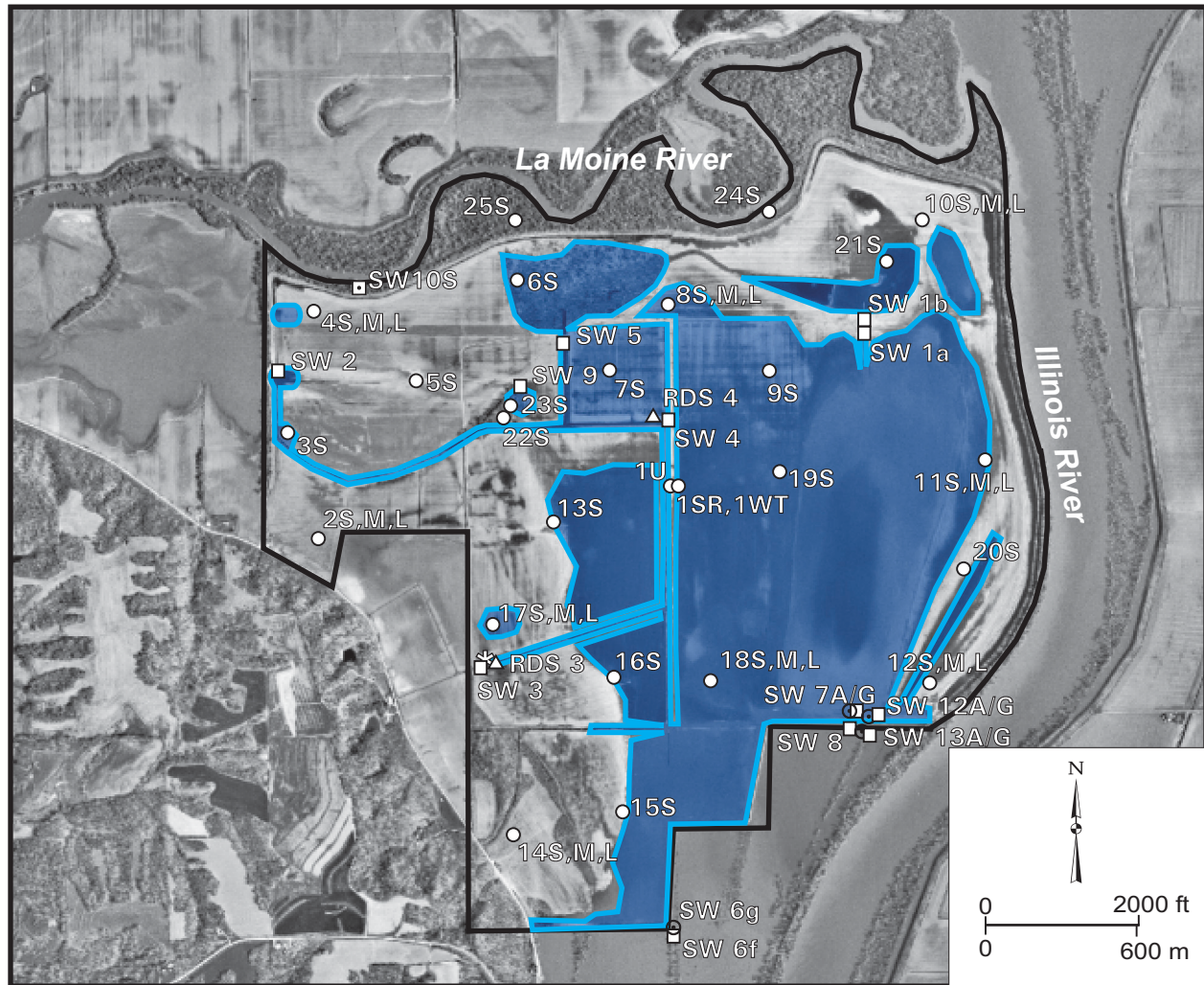









# Former Wessel Property, District 6 Potential Wetland Banking Site

## Estimated Areal Extent of 2003 Wetland Hydrology

map based on USGS digital orthophotograph Cooperstown, NE quarter quadrangle

produced from 4/14/98 aerial photography (ISGS 2002)

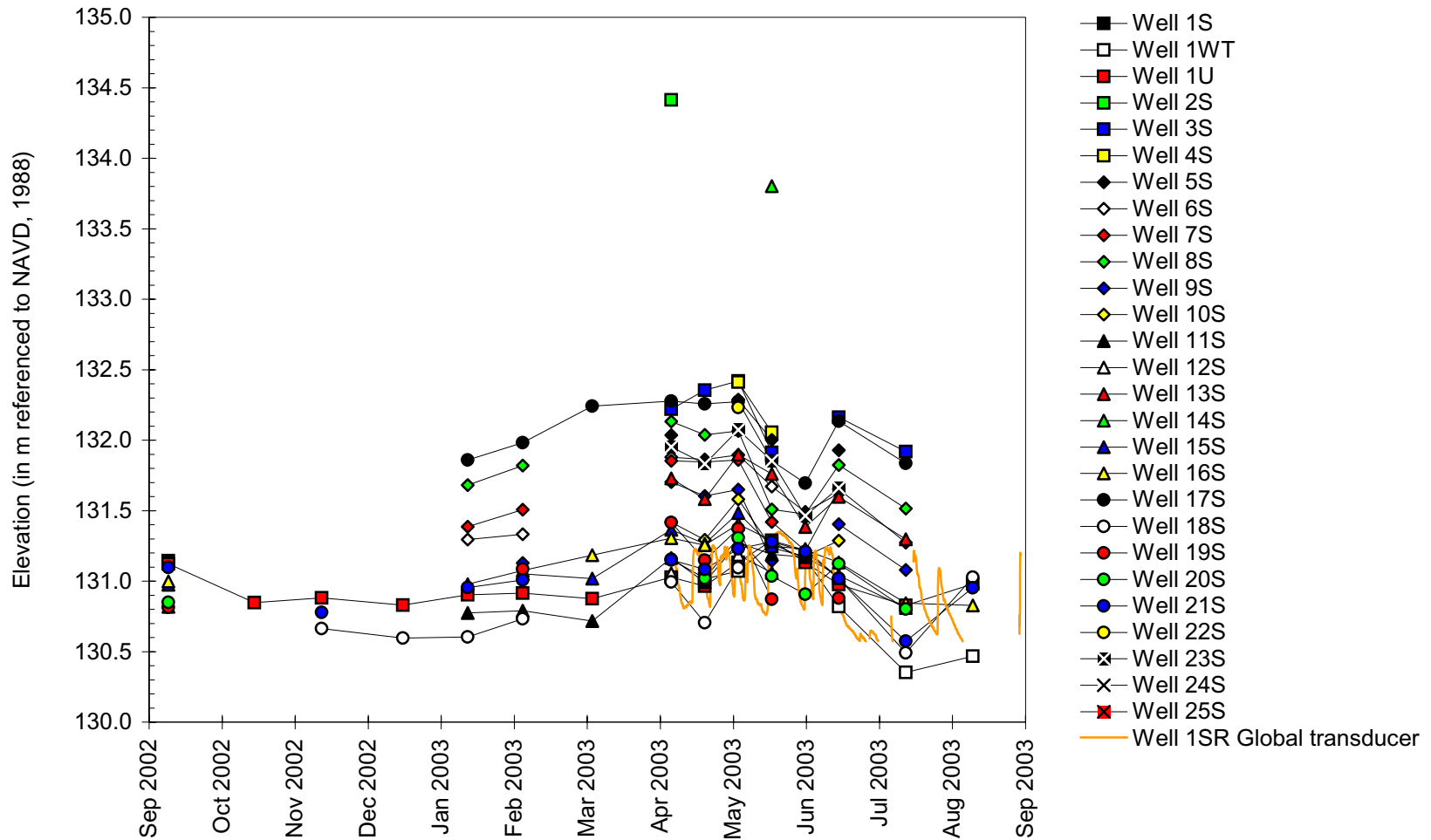


- |   |  |   |                            |
|---|--|---|----------------------------|
|  | estimated areal extent of 2003 wetland hydrology |  | Global pressure transducer |
|  | RDS data logger                                  |  | monitoring well            |
|  | rain gauge                                       |  | stage gauge                |
|   |  |  | Sonic data logger          |

# Former Wessel Property, District 6 Potential Wetland Banking Site

## September 1, 2002 to September 1, 2003

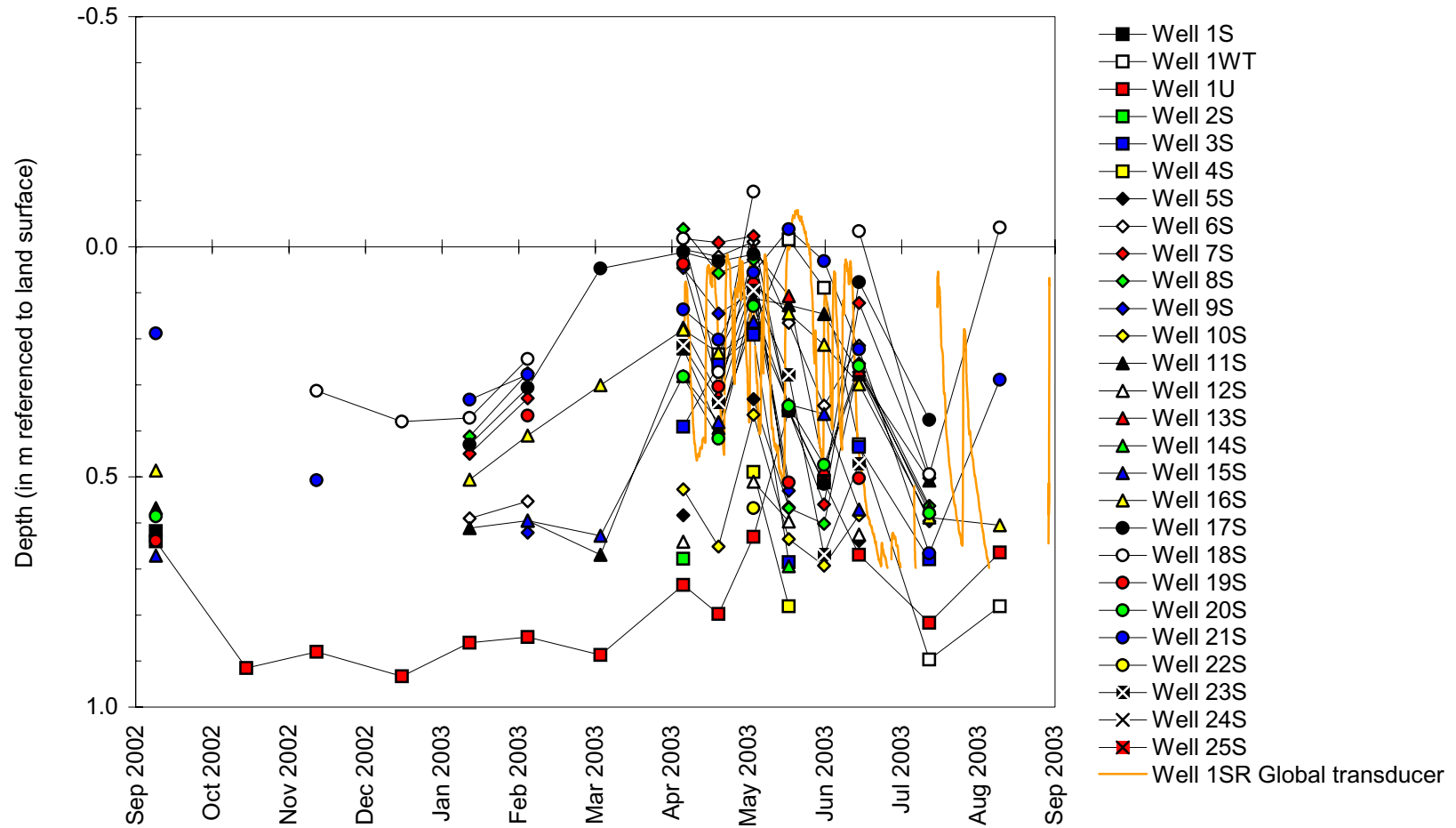
### Water-Level Elevations in Shallow Monitoring Wells



# Former Wessel Property, District 6 Potential Wetland Banking Site

## September 1, 2002 to September 1, 2003

### Depth to Water in Shallow Monitoring Wells

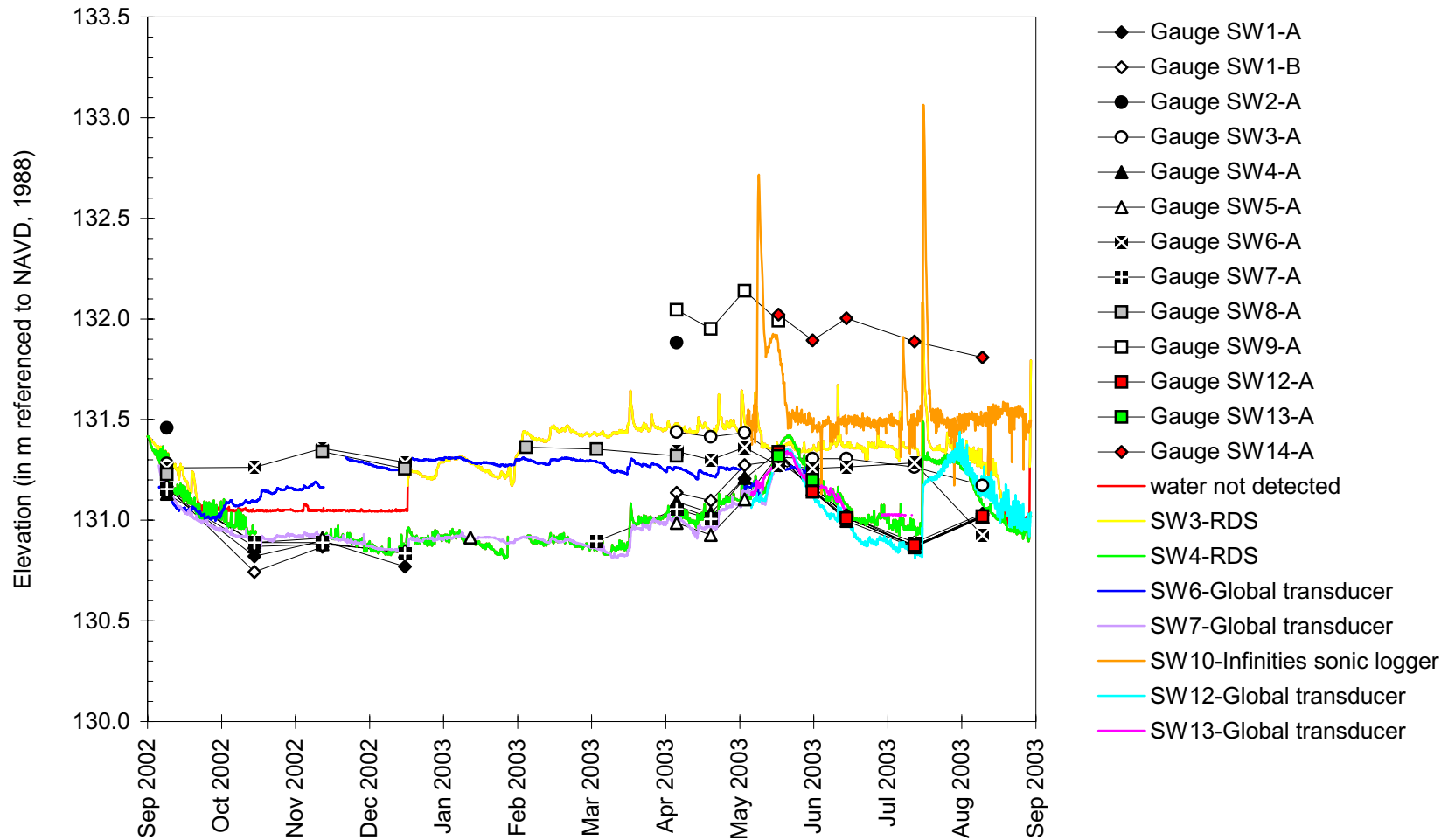




# Former Wessel Property, District 6 Potential Wetland Banking Site

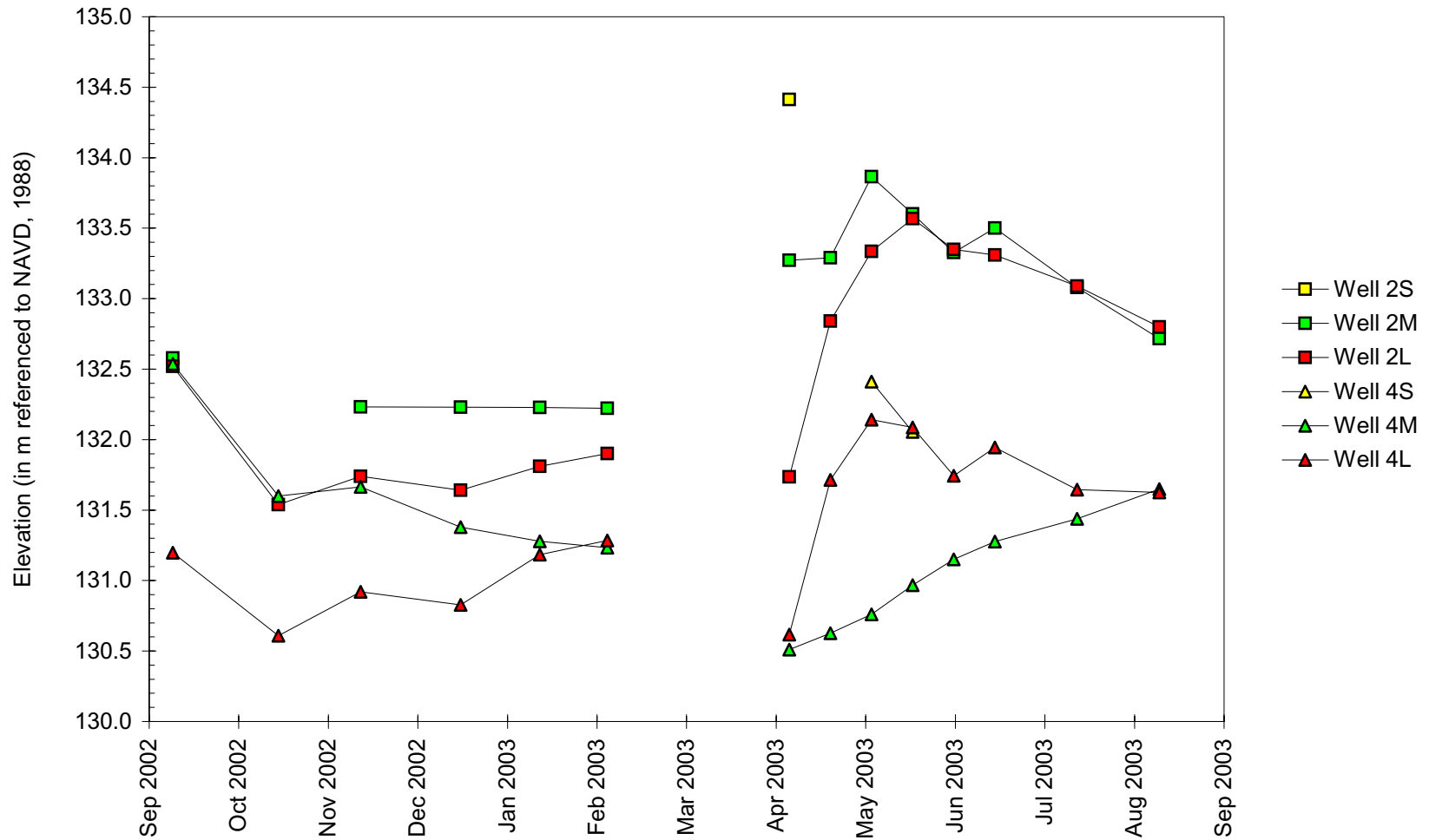
## September 1, 2002 to September 1, 2003

### Water-Level Elevations on Stage Gauges and Data Loggers



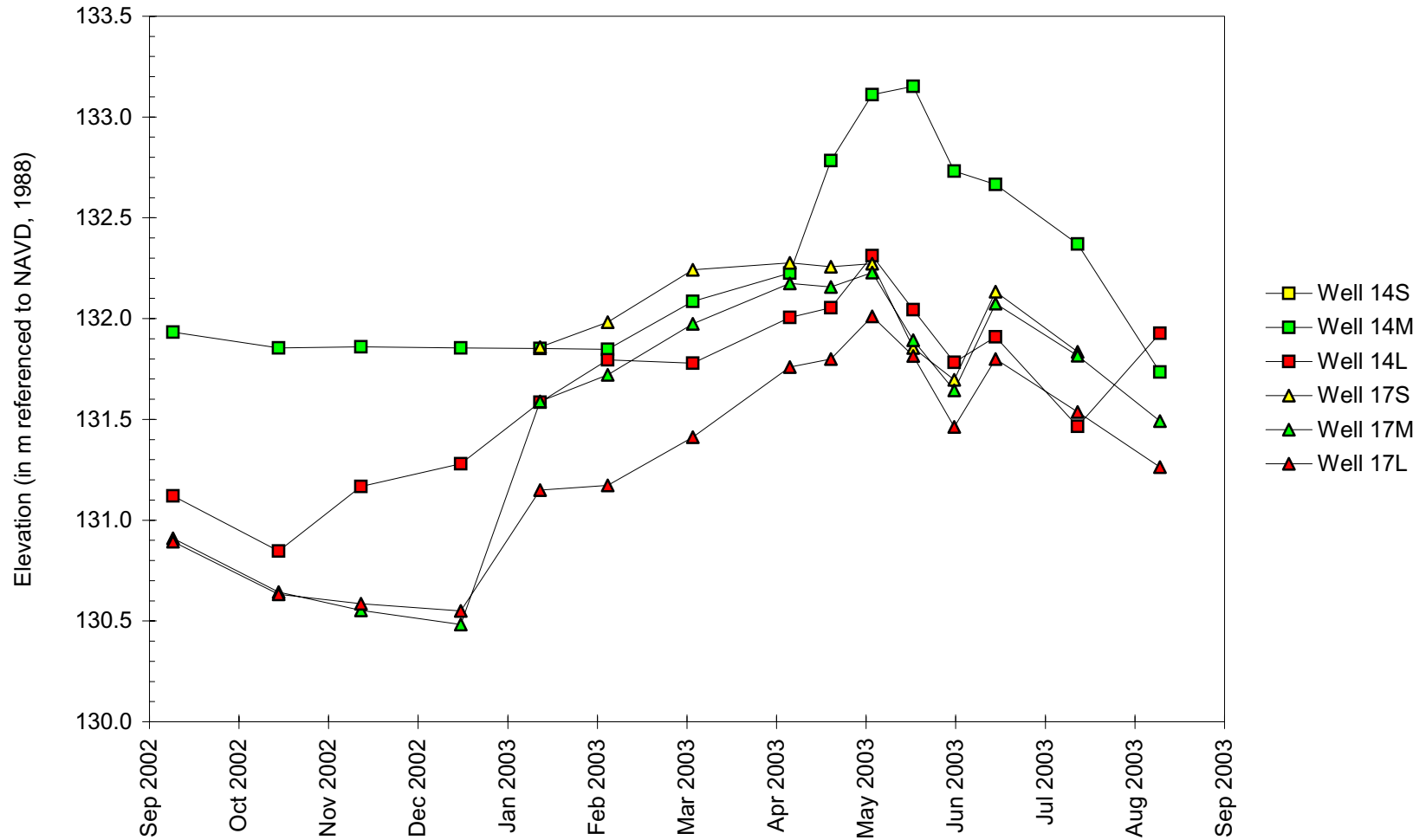
**Former Wessel Property, District 6 Potential Wetland Banking Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations**  
**in Well Nests on the Upper Terrace**



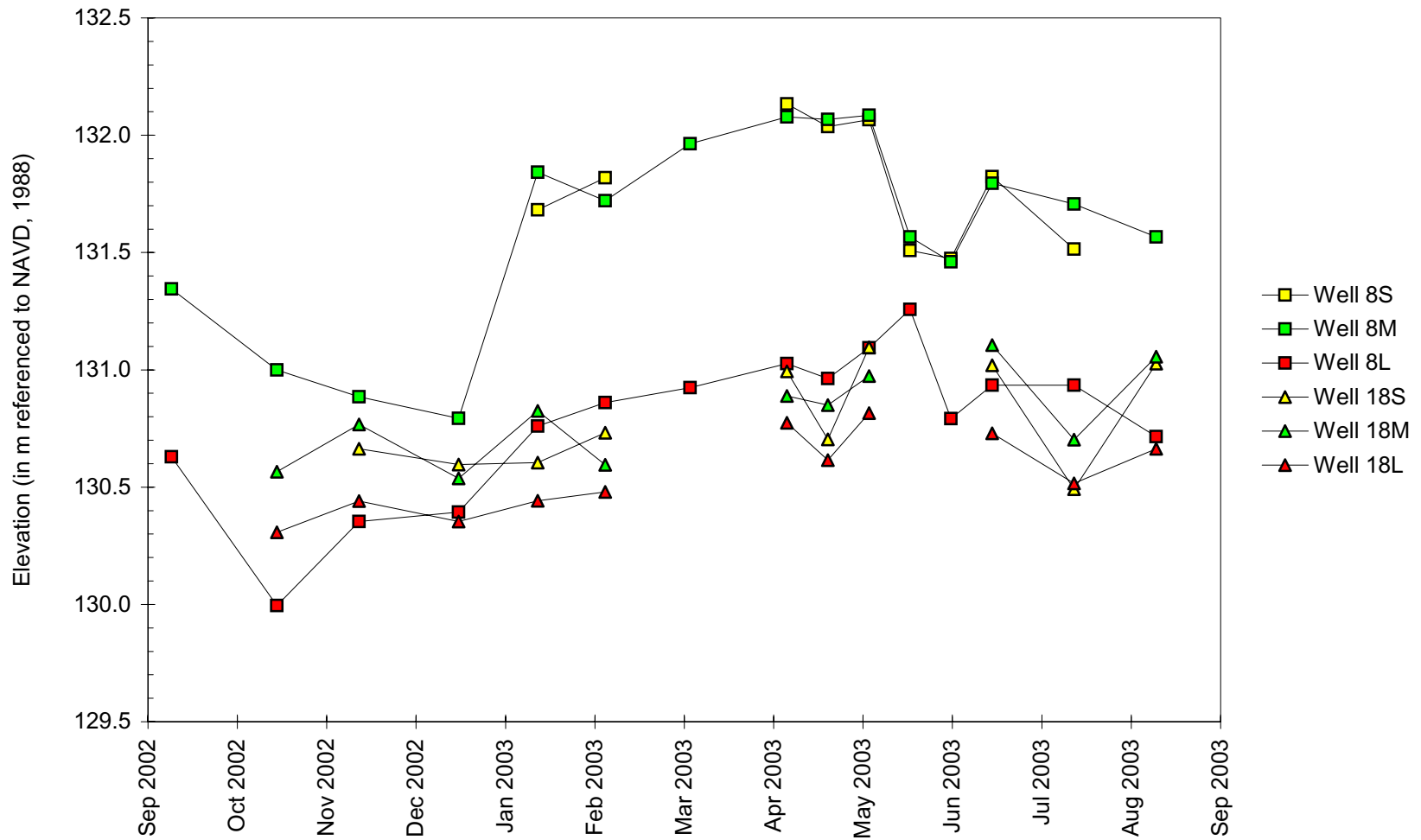
**Former Wessel Property, District 6 Potential Wetland Banking Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations**  
**in Well Nests on the Upper Terrace**



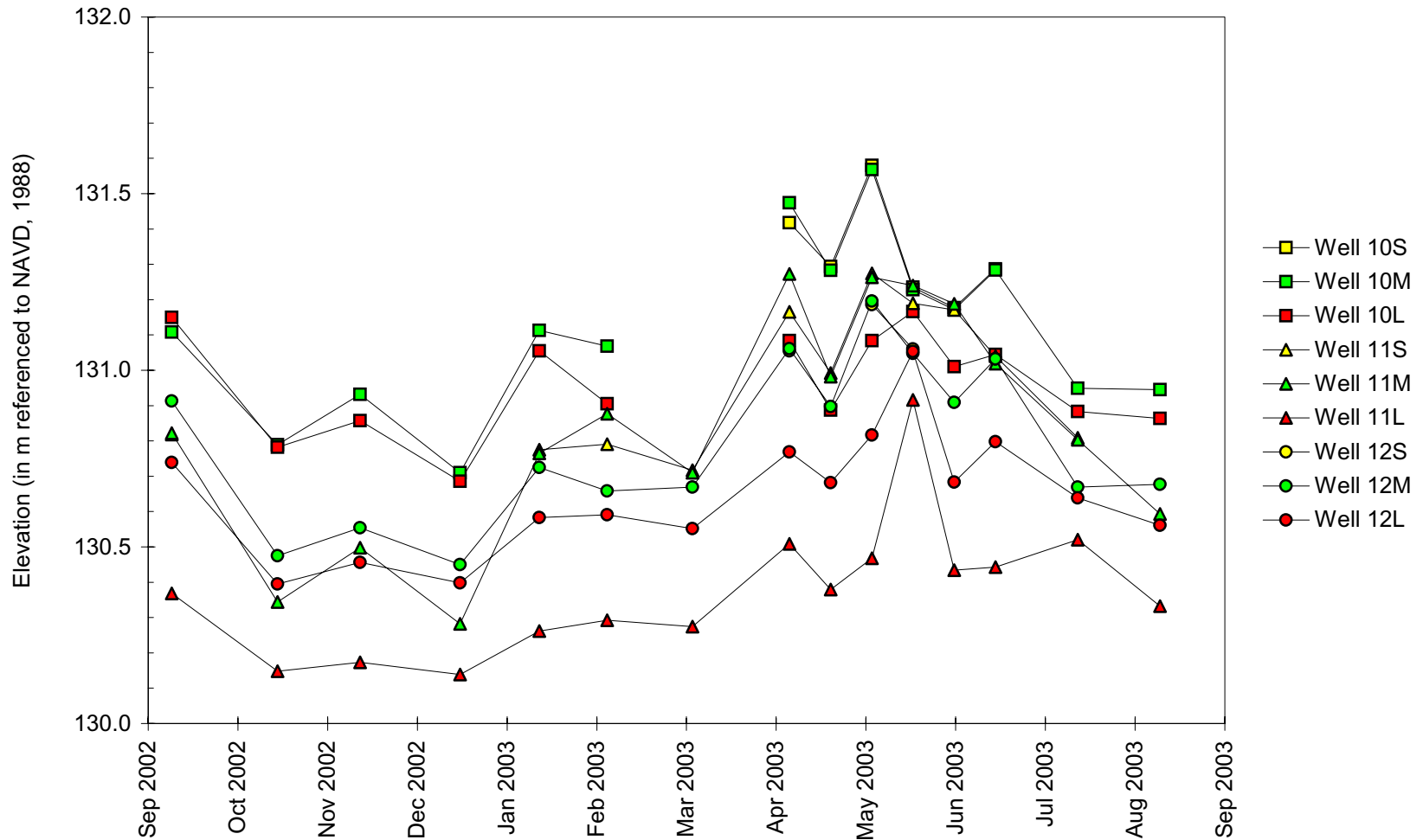
**Former Wessel Property, District 6 Potential Wetland Banking Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations**  
**in Well Nests on the Lake Plain**



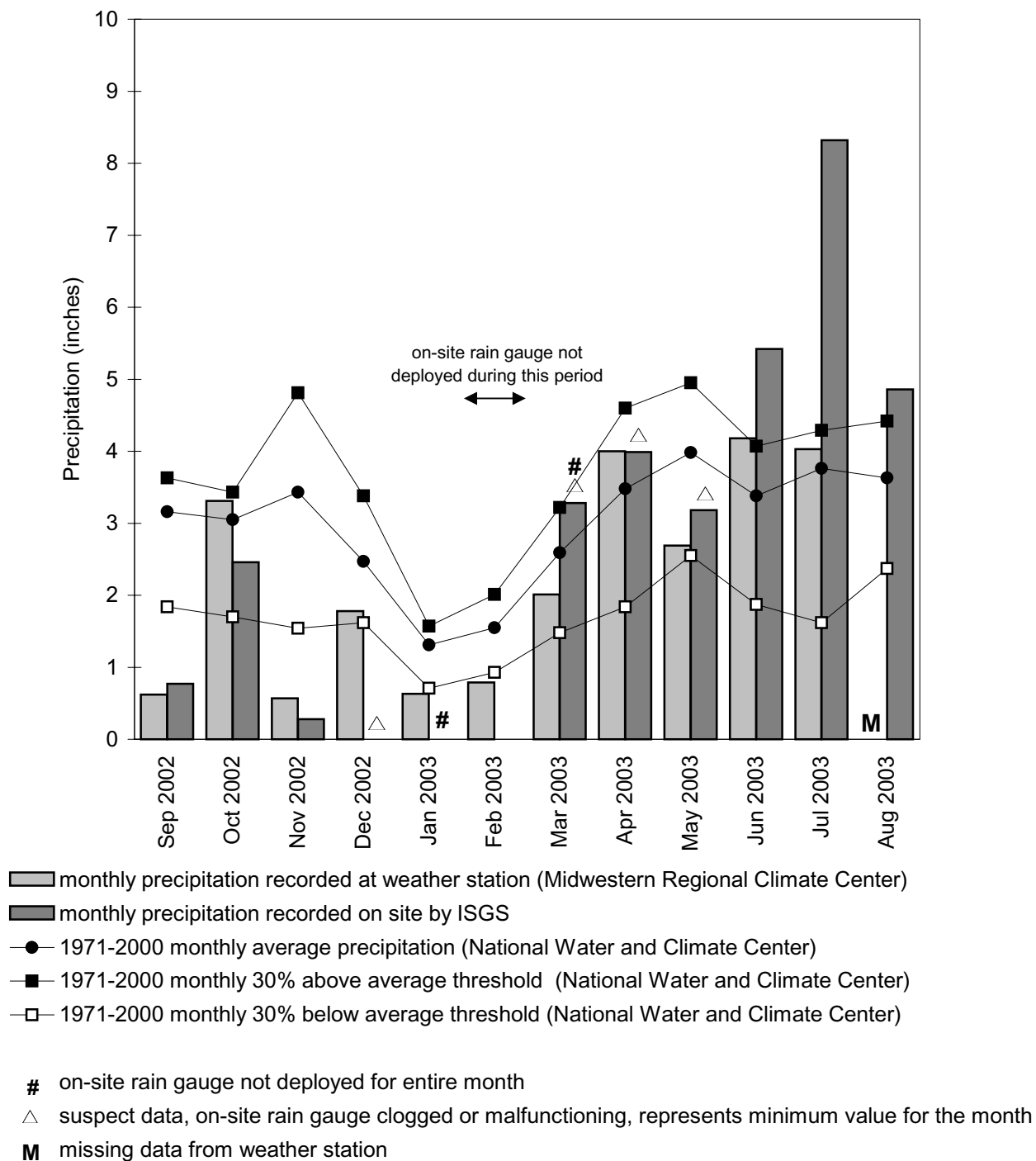
**Former Wessel Property, District 6 Potential Wetland Banking Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations  
in Well Nests near the River**



# **Former Wessel Property, District 6 Potential Wetland Banking Site September 2002 through August 2003**

## **Total Monthly Precipitation Recorded On Site and at the Beardstown, IL Weather Station**



**FAIRMONT CITY, NEW RIVER CROSSING  
POTENTIAL WETLAND COMPENSATION SITE**

**ISGS #53**

FAP 999

St. Clair County, near Fairmont City, Illinois

**Primary Project Manager: Steven E. Benton**

**Secondary Project Manager: Blaine A. Watson**

**SITE HISTORY**

- August 1999: The ISGS conducted an initial site evaluation of the proposed compensation site. The results were reported to IDOT by letter in November.
- June 2000: IDOT requested that the ISGS perform a Level II investigation of the proposed compensation site.
- September 2000: Field work commenced at the site with the installation of a ground-water and surface-water monitoring network.
- March 2003: A Level II hydrogeologic characterization report was submitted to IDOT.

**SUMMARY OF 2003 EVENTS**

The area of wetland hydrology at this site in 2003 is estimated to be 30 ac (12 ha). In 2002, the area was estimated to have been 44 ac (18 ha). The difference is apparently due to lesser amounts of precipitation during the monitoring period.

- According to the Midwestern Climate Center, the median length of the growing season at Belleville, Illinois is 203 days, starting April 5 and ending October 24. Therefore, 12.5% of the growing season is 25 days.
- Total precipitation recorded at the Belleville, Illinois weather station during the 2003 monitoring period was 35.31 inches, which was 90% of normal. Precipitation was below the normal range from November 2002 to January 2003, July 2003, and August 2003, above the normal range in October 2002, May 2003, and June 2003, and within the normal range for the rest of the monitoring period.
- In 2003, water levels in monitoring wells 1S, 2S, 3S, 4S, 5S, 8S, 12S, 13S, 15S, and 17S conclusively satisfied the criteria for wetland hydrology per the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. In addition, gauge and data logger data and visual observations reveal that those portions of the site below an elevation of 122.0 m were inundated for a period that conclusively satisfies the wetland hydrology criteria.
- In March 2003, a monitoring network consisting of three monitoring wells, three staff gauges, and two data loggers was installed on the Fairmont City 2 site. Though the purpose of the network was not to determine wetland hydrology, it was found that water levels in wells 20S, 21S, and 22S, conclusively satisfied the criteria for wetland hydrology per the 1987 U.S. Army Corp of Engineer Wetland Delineation Manual and that inundation of the portions of the site below an elevation of 122.0 m also occurred for periods sufficient to satisfy the criteria for wetland hydrology.

## PLANNED FUTURE ACTIVITIES

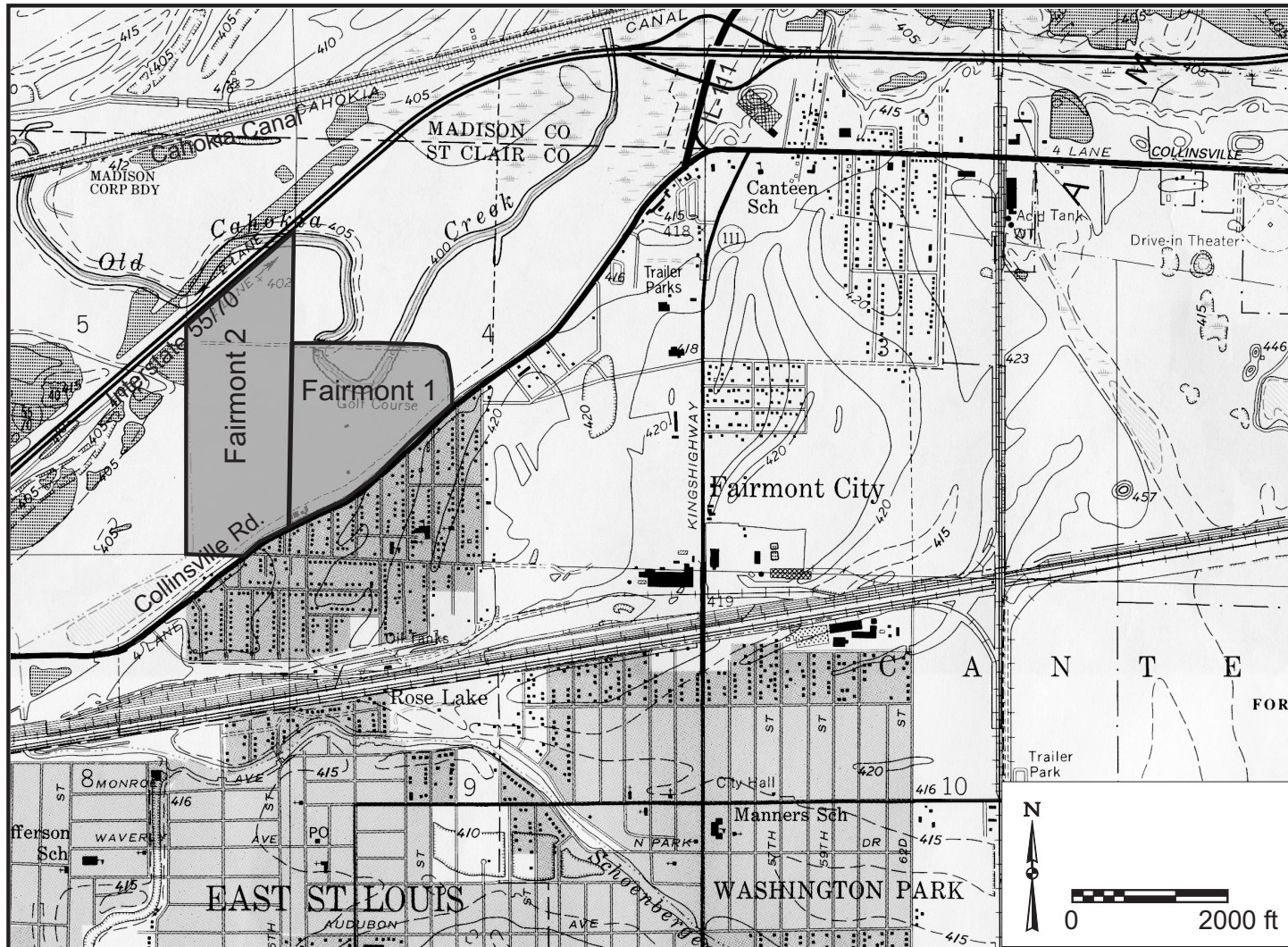
- Surface- and ground-water monitoring will continue at this site until notified otherwise by IDOT.



# Fairmont City, New River Crossing Potential Wetland Compensation Site (FAP 999)

## General Study Area and Vicinity

from the USGS Topographic Series, Monks Mound, IL 7.5-minute Quadrangle (USGS 1993)

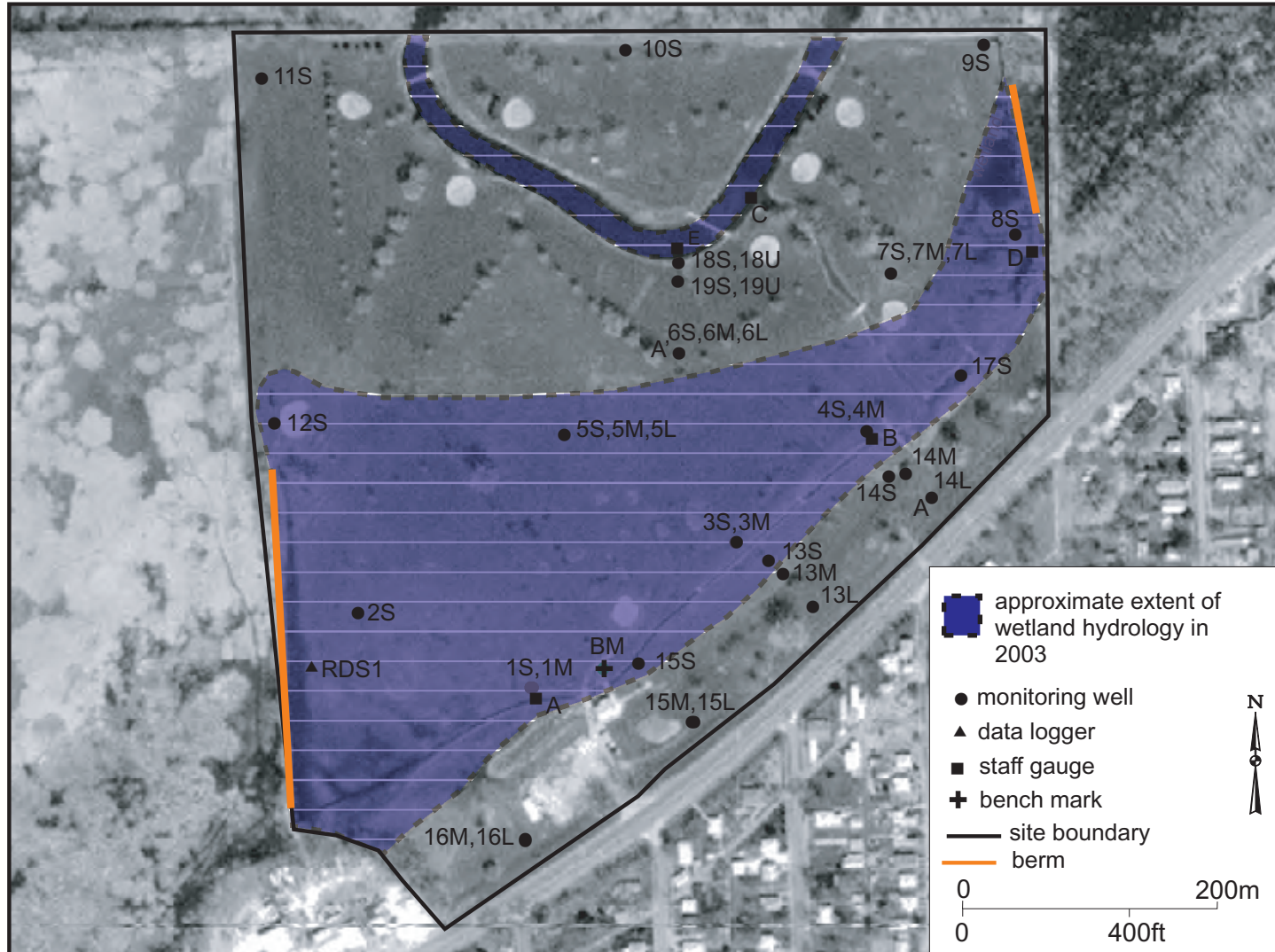


# Fairmont City, New River Crossing Potential Wetland Compensation Site (FAP 999)

## Estimated Areal Extent of 2003 Wetland Hydrology

based on data collected between September 1, 2002 and September 1, 2003

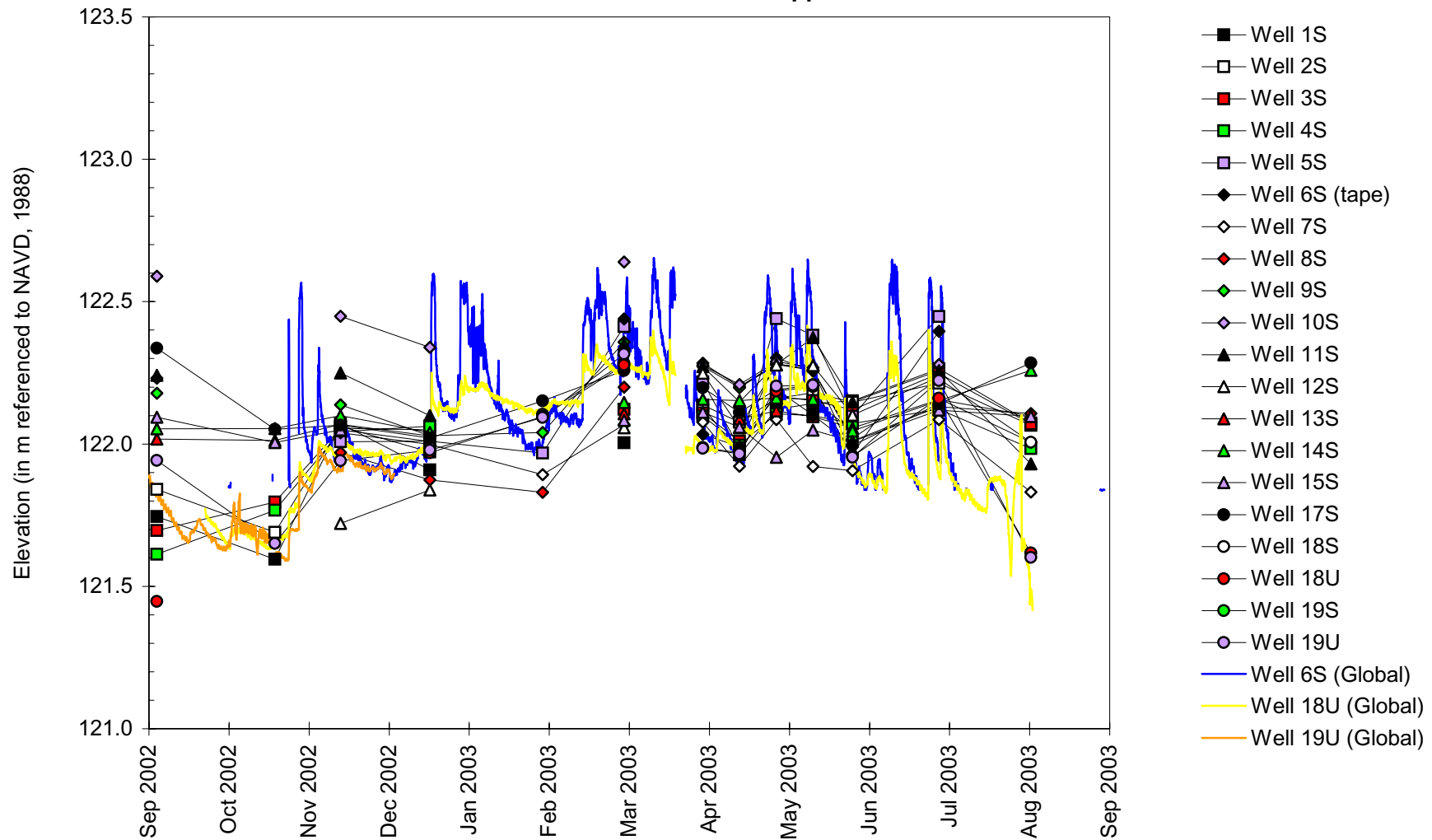
map based on USGS digital orthophotograph, Monks Mound, SW quarter quadrangle produced from 4/2/1998 aerial photography (ISGS 2001)





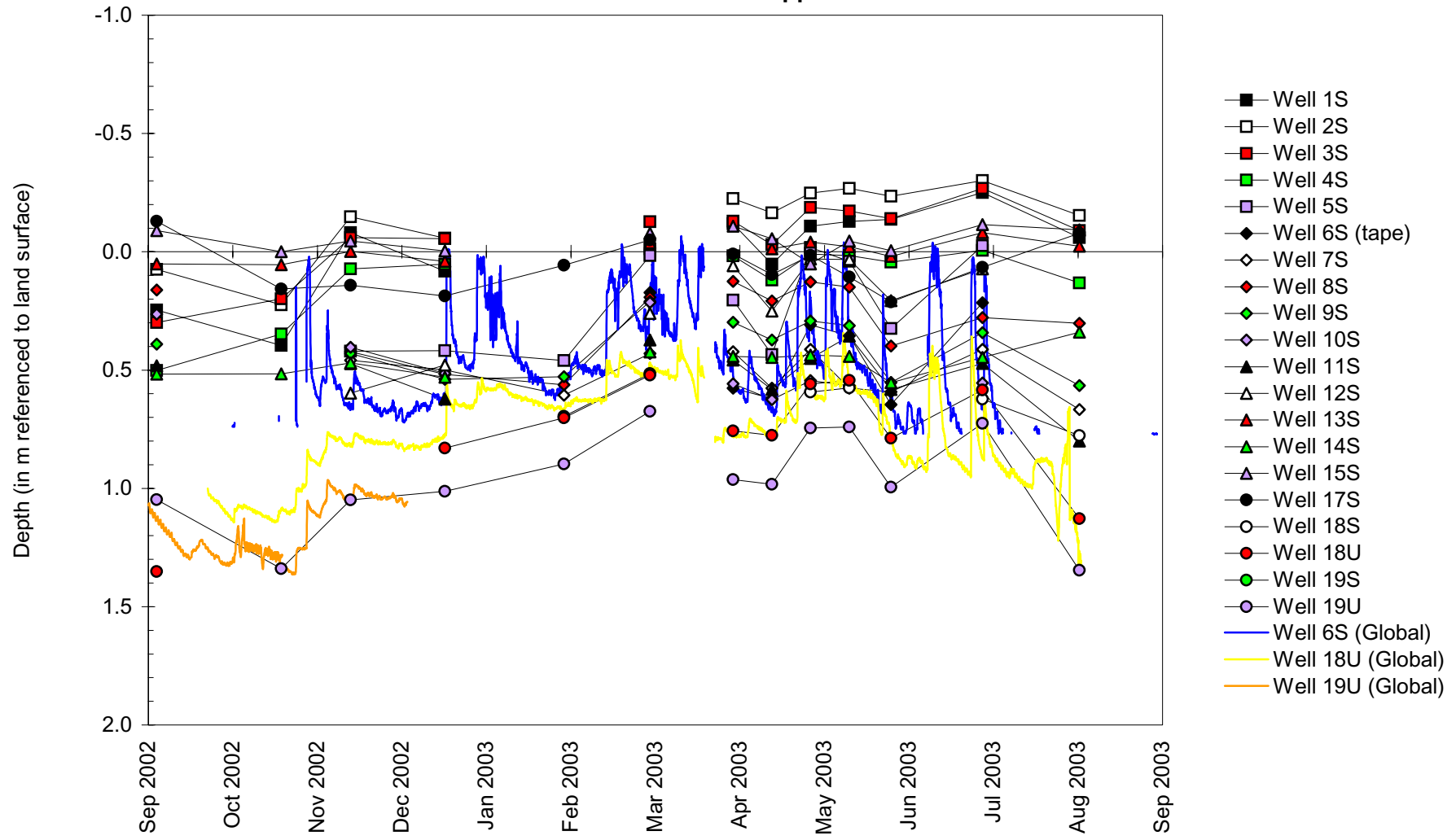
**Fairmont City, New River Crossing Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations  
in Soil-Zone and Upper Wells**



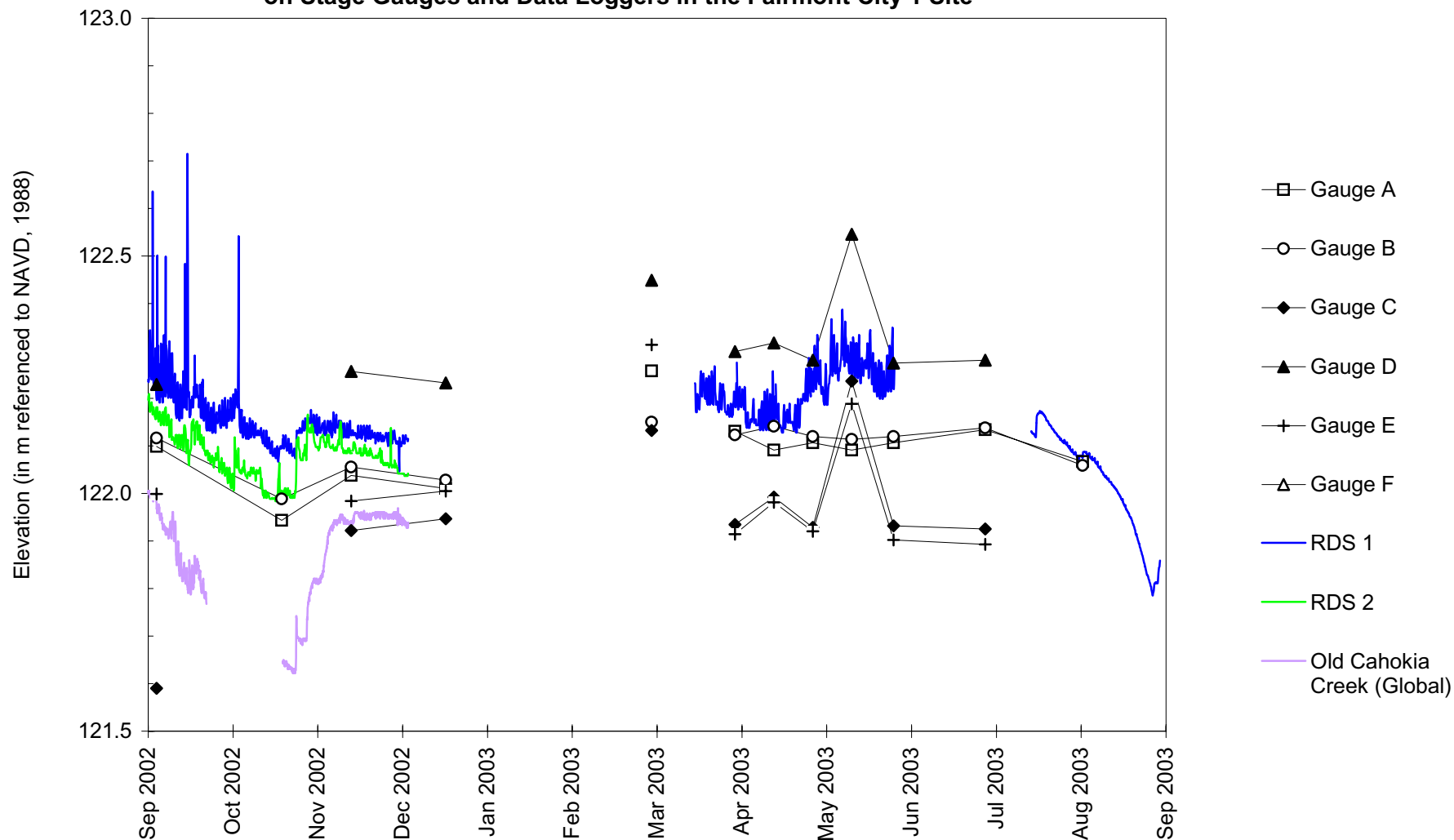
**Fairmont City, New River Crossing Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Depth to Water  
in Soil-Zone and Upper Wells**



**Fairmont City, New River Crossing Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

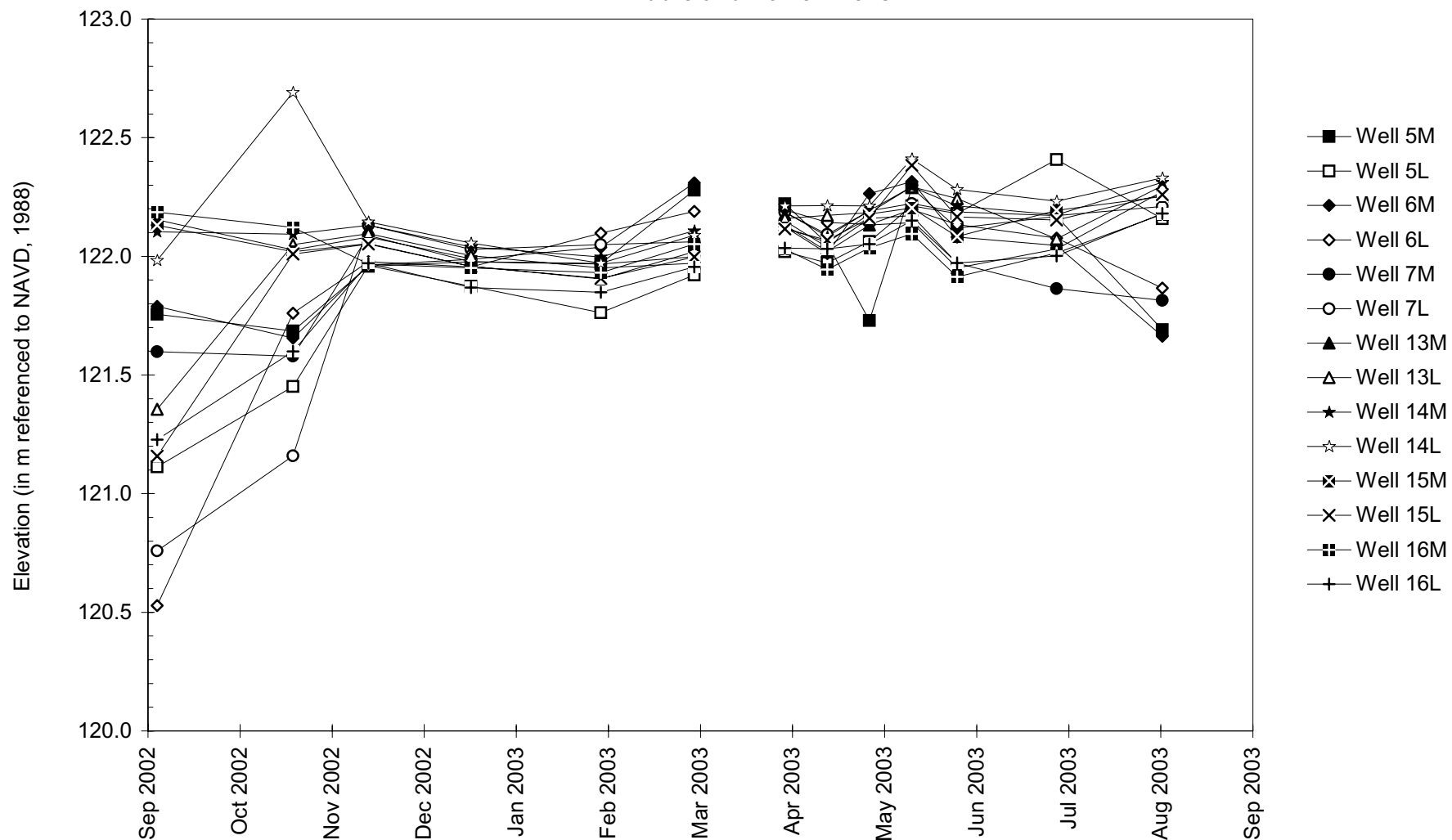
**Water-Level Elevations**  
**on Stage Gauges and Data Loggers in the Fairmont City 1 Site**



# Fairmont City, New River Crossing Potential Wetland Compensation Site

September 1, 2002 to September 1, 2003

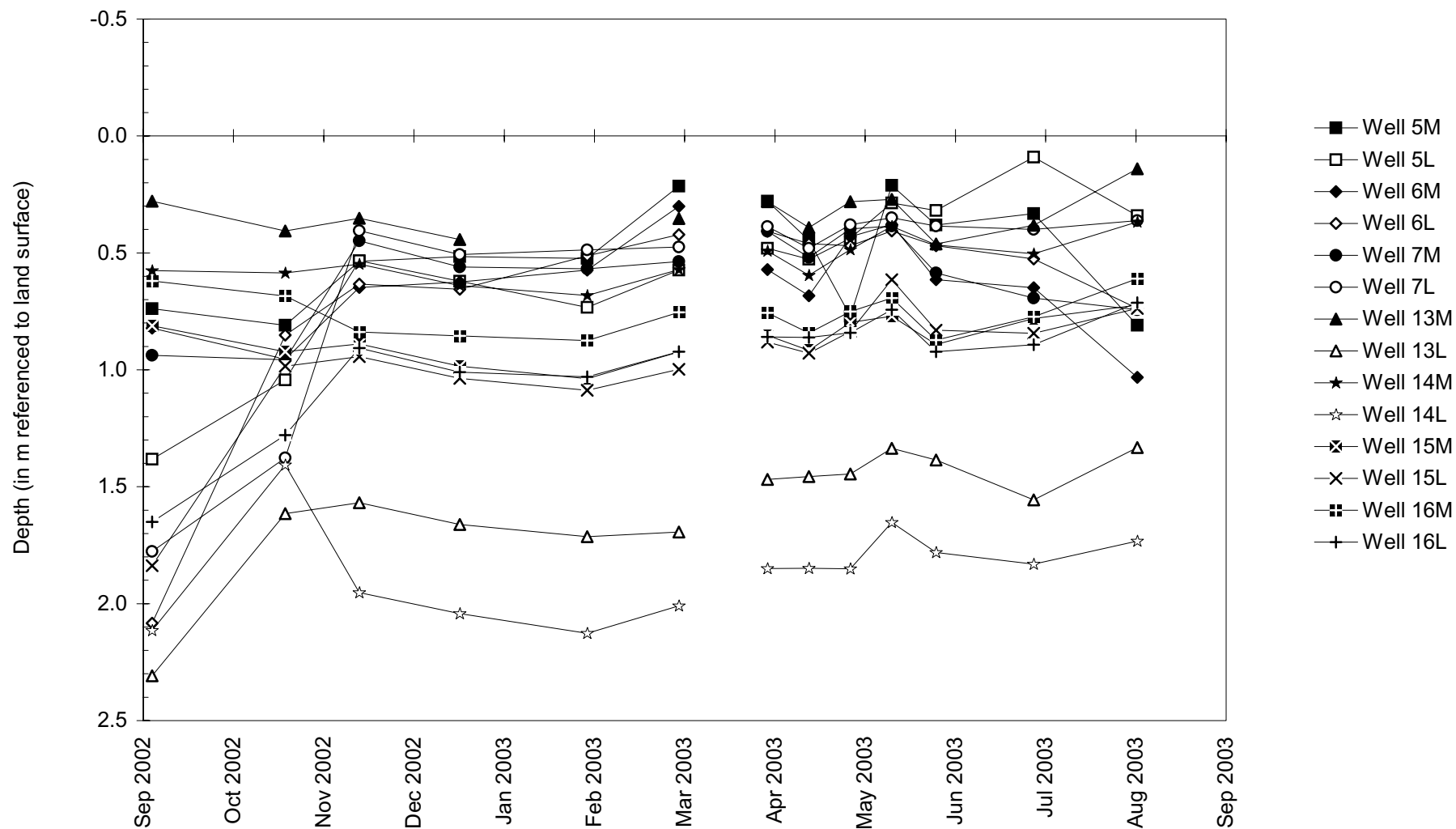
## Water-Level Elevations in Middle and Lower Wells



# Fairmont City, New River Crossing Potential Wetland Compensation Site

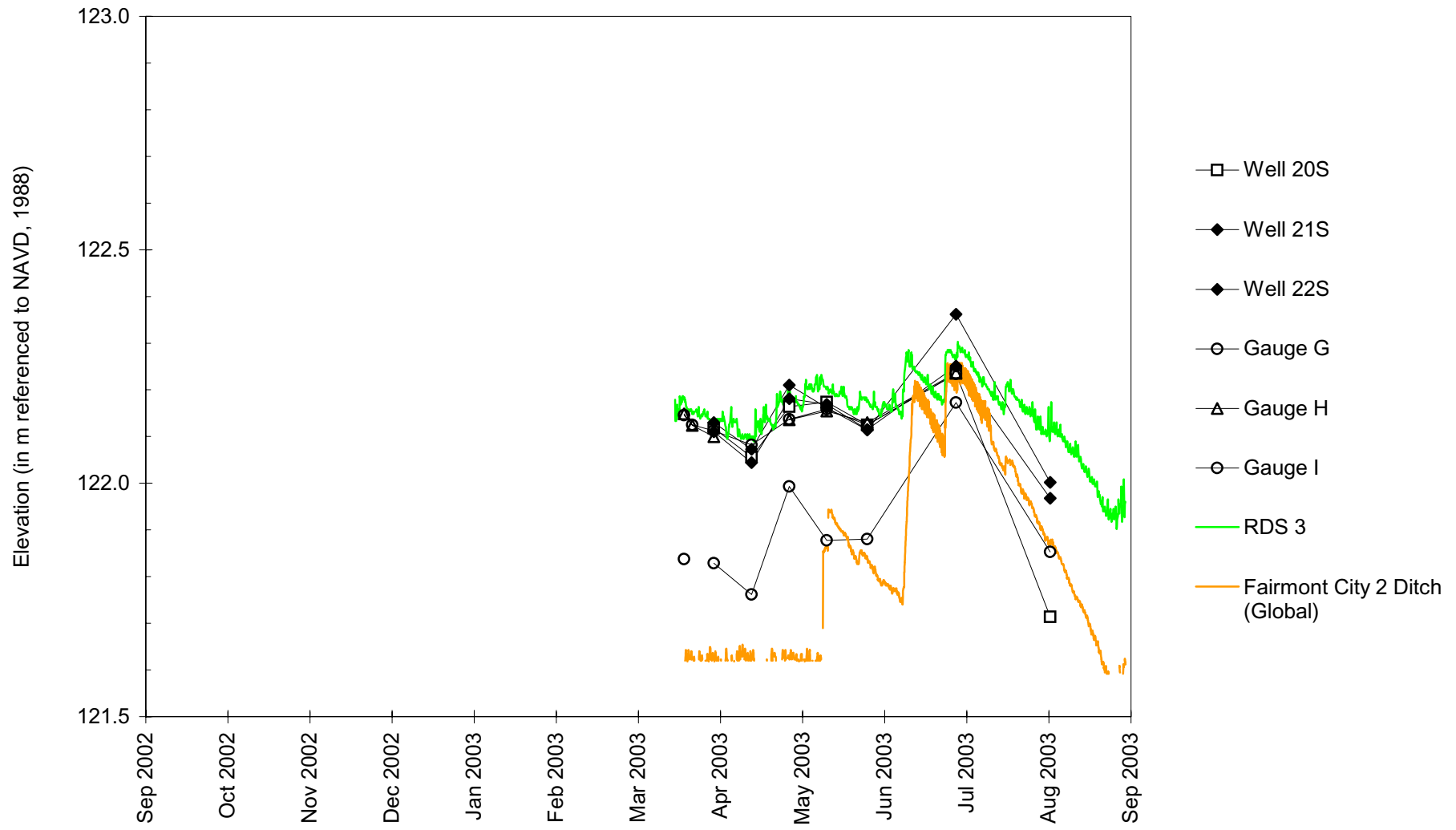
## September 1, 2002 to September 1, 2003

### Depth to Water in Middle and Lower Wells



**Fairmont City, New River Crossing Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

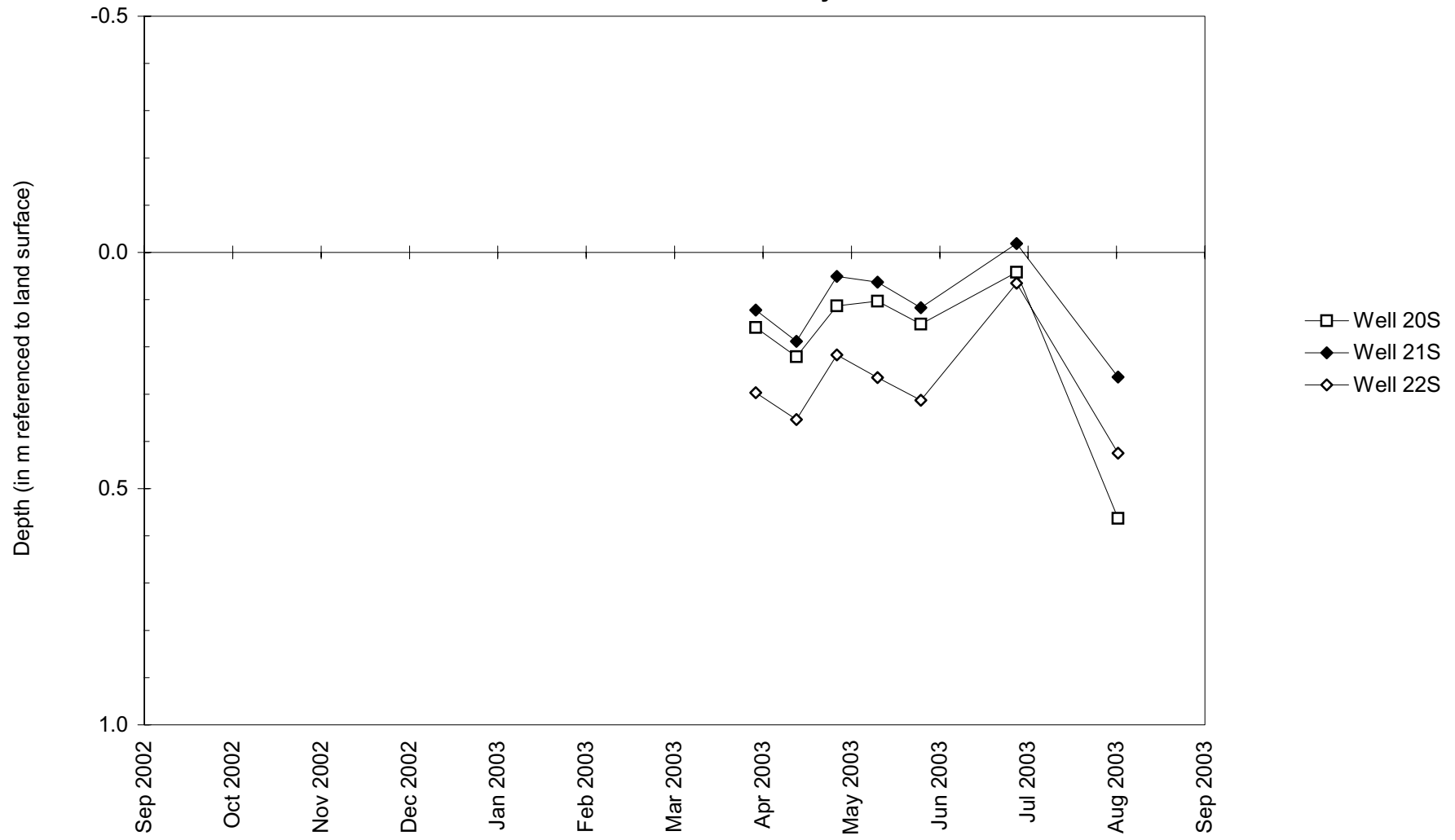
**Water-Level Elevations**  
**in Soil-Zone Wells, Stage Gauges and Data Loggers in Fairmont City 2 Site**





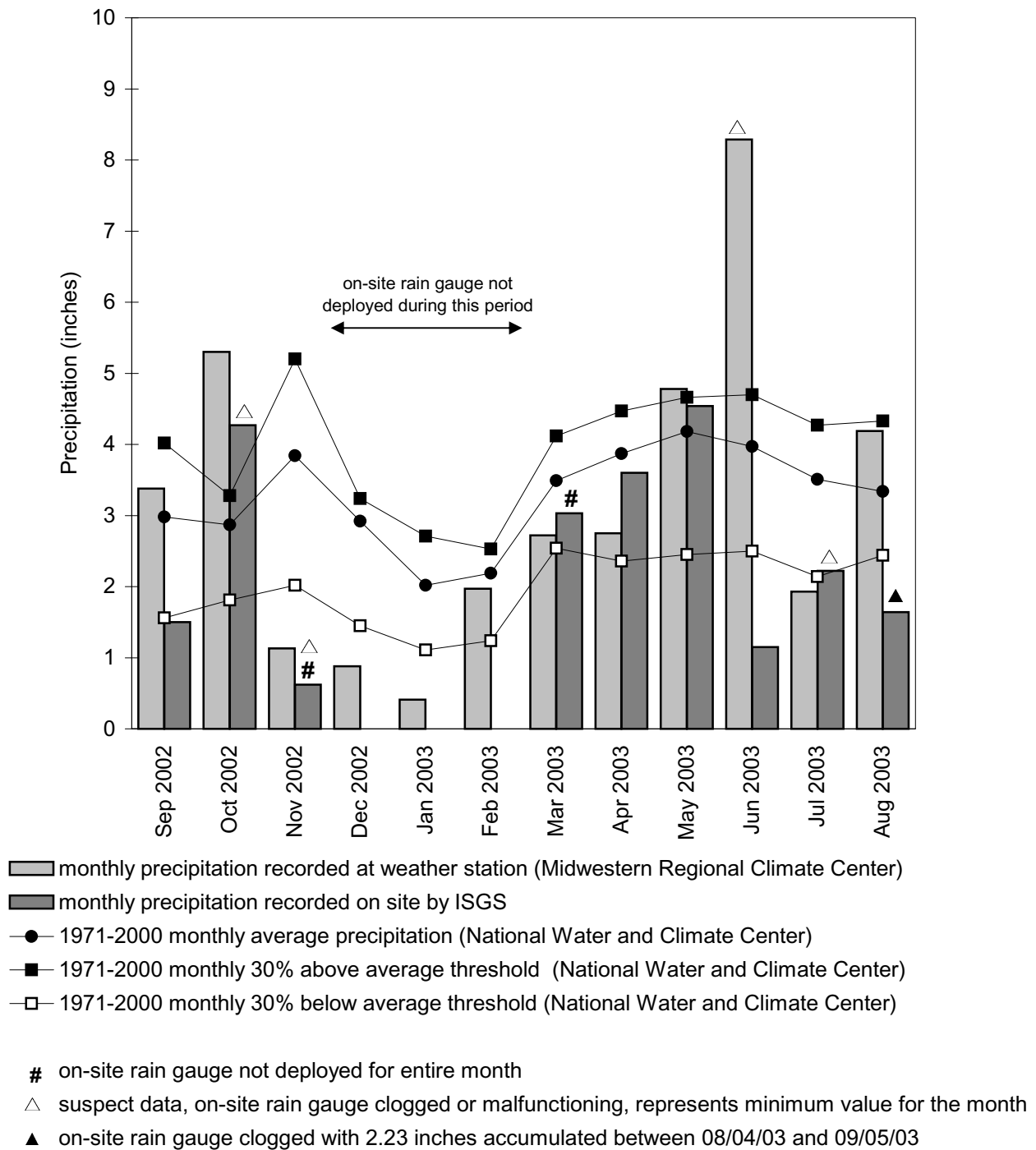
**Fairmont City, New River Crossing Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Depth to Water**  
**in Soil-Zone Wells in the Fairmont City 2 Site**



# Fairmont City, New River Crossing Potential Wetland Compensation Site September 2002 through August 2003

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



**SPRINGFIELD, IL ROUTE 29  
WETLAND COMPENSATION SITE**

**ISGS #54**

FAP 658

Sangamon County near Springfield, Illinois

**Primary Manager: Geoffrey E. Pociask**

**Secondary Manager: Paula J. Sabatini**

**SITE HISTORY**

- September 1996: ISGS conducted an initial site evaluation of the proposed compensation site and reported findings to IDOT.
- June 2000: ISGS was tasked by IDOT to monitor wetland hydrology for the north portion of the compensation site (Area B). Monitoring activities began September 2000.
- September 2001: ISGS was tasked by IDOT to monitor wetland hydrology for the south portion of the compensation site (Area A). Monitoring activities began December 2001.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

Based on topography and ground-surface elevations surveyed by ISGS, we estimate that 0.3 ac (0.1 ha) out of an excavation of 5.4 ac (2.2 ha) conclusively satisfied wetland hydrology criteria in 2003. This contrasts with the 2002 estimate of 5.4 ac (2.2 ha). The 2003 estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Springfield is April 6 and the season lasts 205 days; 12.5% of the growing season is 26 days.
- Total precipitation for the reporting period from September 2002 through August 2003 was 76% of normal. Drier than normal conditions prevailed in September 2002, during the period from November 2002 through May 2003, and in August 2003. Rainfall amounts were near or above normal for October 2002 and June through July 2003.
- Only well10S conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual.
- Limitations of the wetland hydrology determination are as follows:
  - GPS coordinates of the water-level instruments were determined during July 2002.
  - The wetland hydrology acreage calculation was generated by rectifying ISGS topography to GPS locations. The area of wetland hydrology was then calculated based on the rectified polygons for mitigation areas 'A' and 'B'.

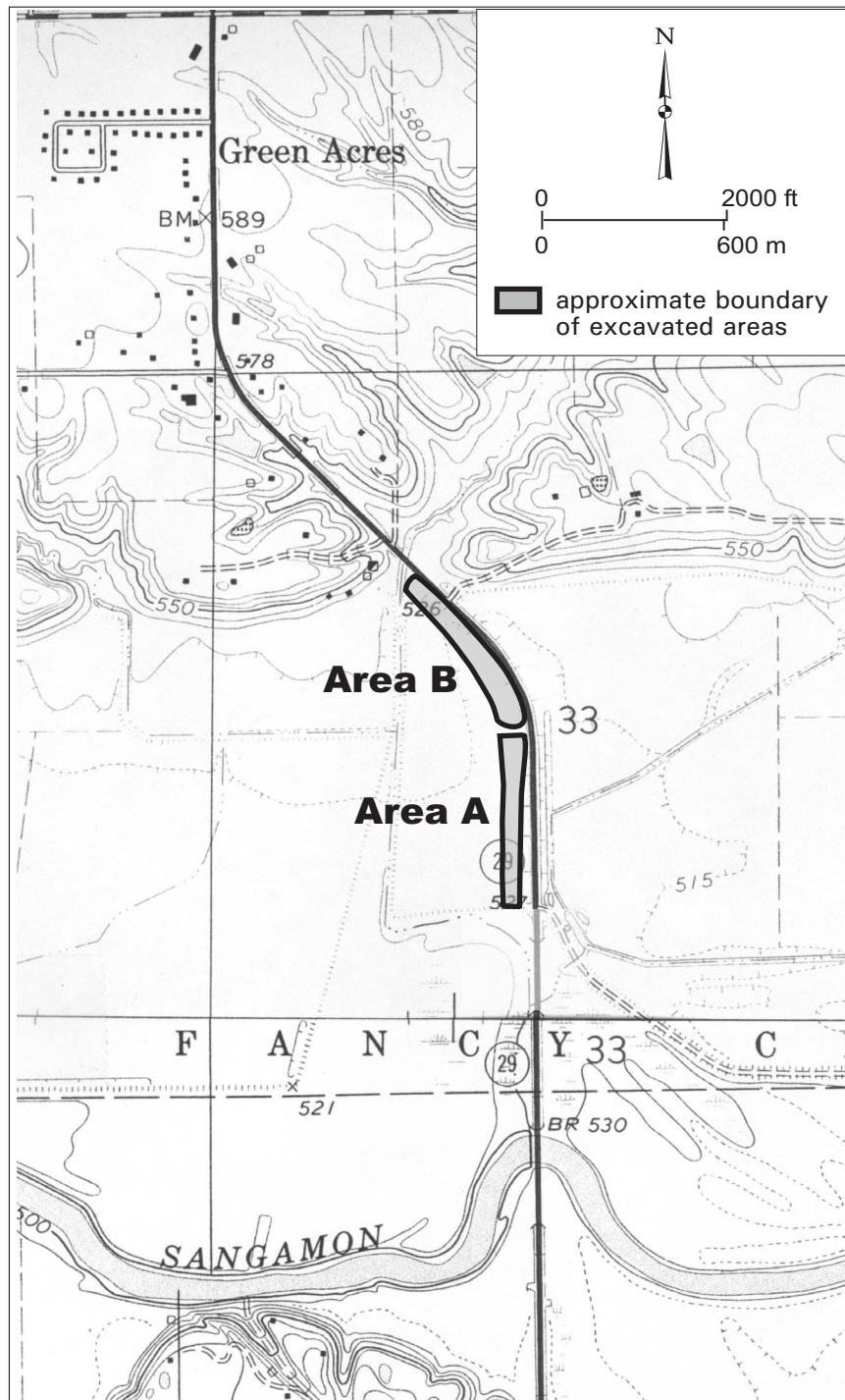
**PLANNED FUTURE ACTIVITIES**

- Monitoring will continue until September 2005 or until no longer required by IDOT.

# Springfield, IL Route 29 Wetland Compensation Site (FAP 658)

## General Study Area and Vicinity

from the USGS Topographic Series, Athens, IL (USGS 1966; photorevised 1971 and 1976) and  
Springfield West, IL (USGS 1965; photorevised 1971 and 1976) 7.5-minute Quadrangles  
contour interval is 10 feet

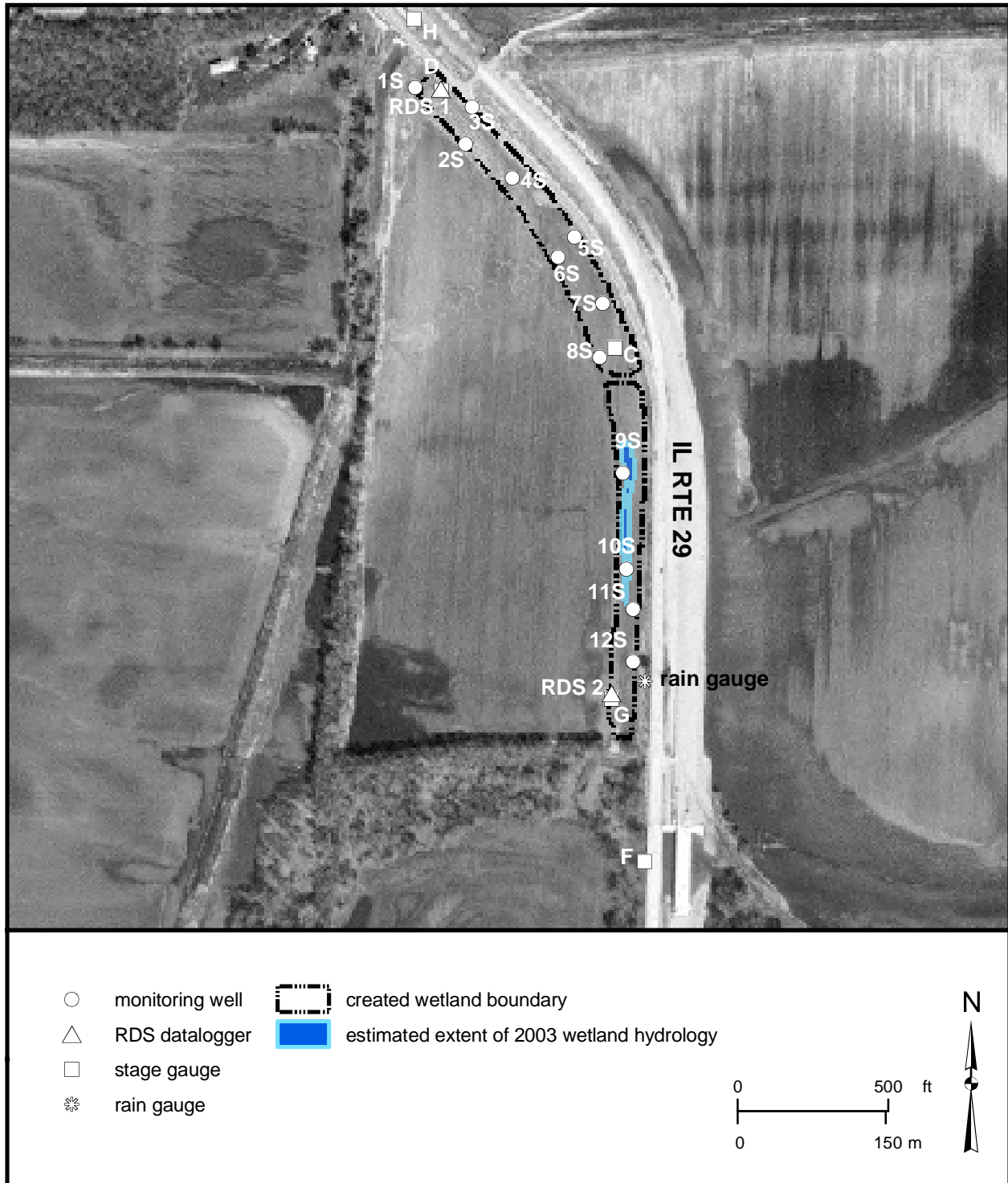


# Springfield, IL Route 29 Wetland Compensation Site (FAP 658)

## Estimated Areal Extent of 2003 Wetland Hydrology

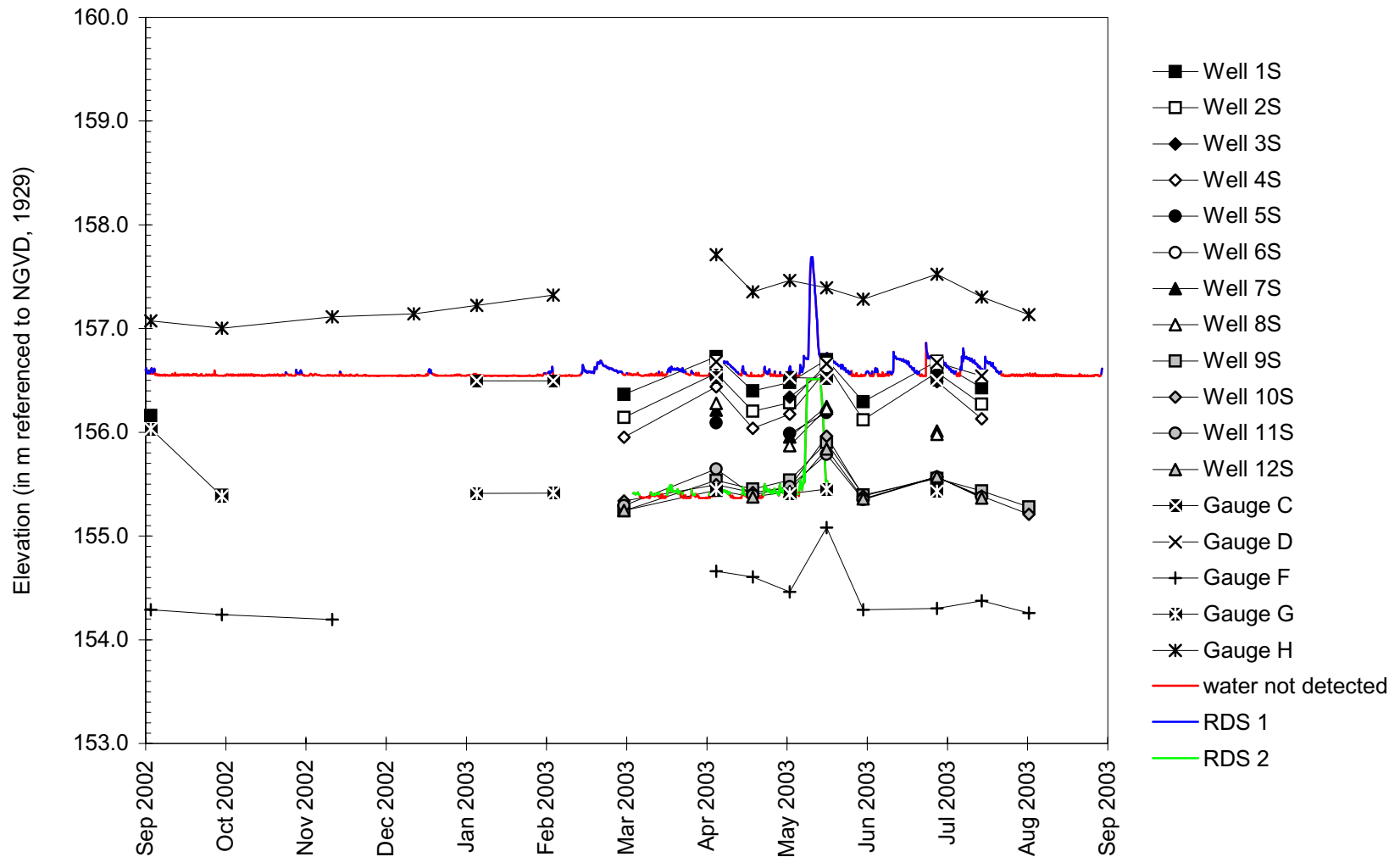
based on data collected between September 1, 2002 and September 1, 2003

map based on IDOT design plans rectified to USGS digital orthophotograph Athens SW quarter quadrangle  
produced from 03/29/1998 aerial photography (ISGS 2001)



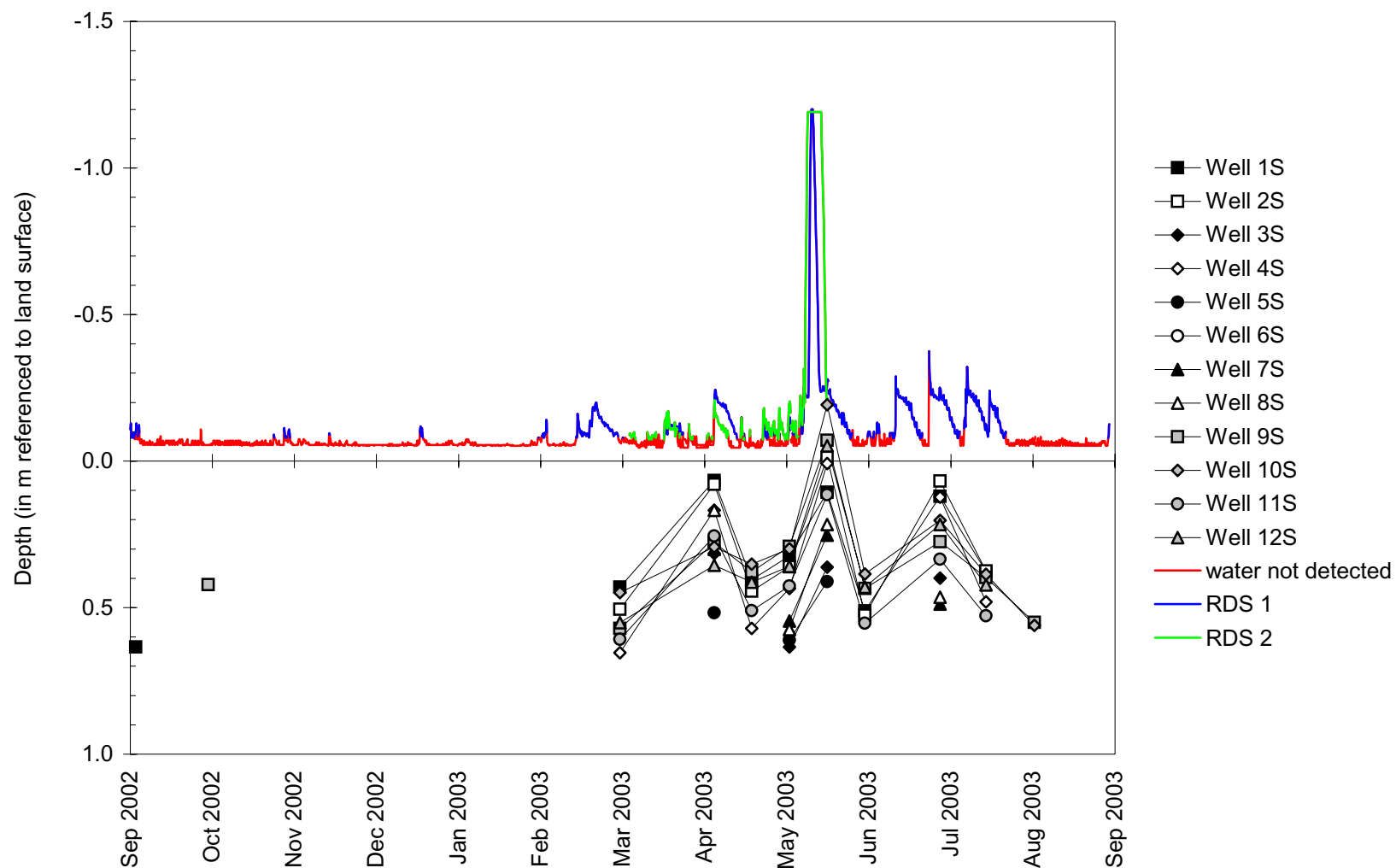
**Springfield, IL Route 29 Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations**



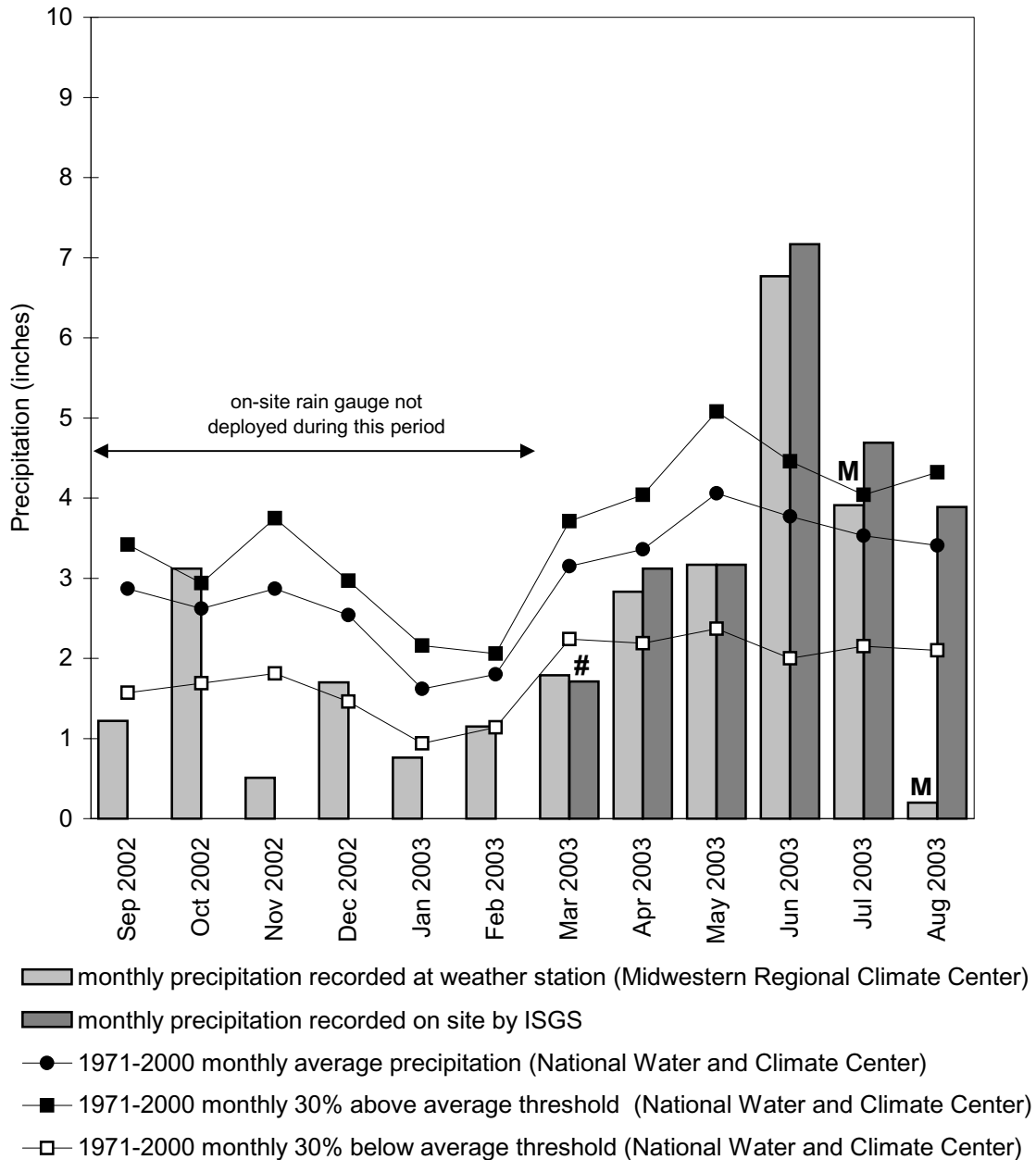
**Springfield, IL Route 29 Wetland Compensation Site**  
September 1, 2002 to September 1, 2003

**Depth to Water**



# Springfield, IL Route 29 Wetland Compensation Site September 2002 through August 2003

## Total Monthly Precipitation Recorded On Site and at the Springfield, IL Capital Airport Weather Station



# on-site rain gauge not deployed for entire month

M missing data from weather station



**GRAND DETOUR  
POTENTIAL WETLAND COMPENSATION SITE**

**ISGS #56**

FAP 742

Ogle County, near Grand Detour, Illinois

**Primary Project Manager: Steven E. Benton**

**Secondary Project Manager: Kelli D. Weaver**

**SITE HISTORY**

- March 2000: The ISGS conducted an Initial Site Evaluation.
- June 2000: The ISGS was tasked to perform a Level II hydrogeologic assessment of the site.
- August–October 2000: Four S-wells, four M-wells and two staff gauges were installed on the site.
- 2001: A data logger was installed in the Rock River in order to monitor river stage. Five monitoring wells were installed in areas adjacent to the site. The purpose of these wells was to determine if wetland hydrology occurs in areas lower in elevation than the study site.
- June 2003: Level II hydrogeologic characterization report was submitted to IDOT.
- August 2003: IDOT requested that site monitoring be terminated.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

Because this site is a potential compensation site, an estimate of the areas satisfying the criteria for wetland hydrology is not needed. However, for planning purposes, jurisdictional wetland hydrology was not observed in any of the on-site monitoring wells.

- According to the National Water and Climate Center, the median length of the growing season at Dixon, IL is 183 days, starting on April 19 and ending on October 19. Therefore, 12.5% of the growing season is 23 days.
- Ground-water levels in the on-site monitoring wells were deeper than 30 cm throughout the monitoring period. The site also was not flooded during the monitoring period. Therefore, wetland hydrology due to saturation and/or inundation, per the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual, did not occur at this site.
- Total precipitation for the monitoring period as recorded at the Dixon, IL weather station was 23.96 inches or 64% of average. Monthly precipitation during the monitoring period was below the normal range in September 2002, November 2002 to February 2003, June 2003, and August 2003, above the normal range in October 2002, May 2003, and July 2003, and within the normal range for the rest of the monitoring period.

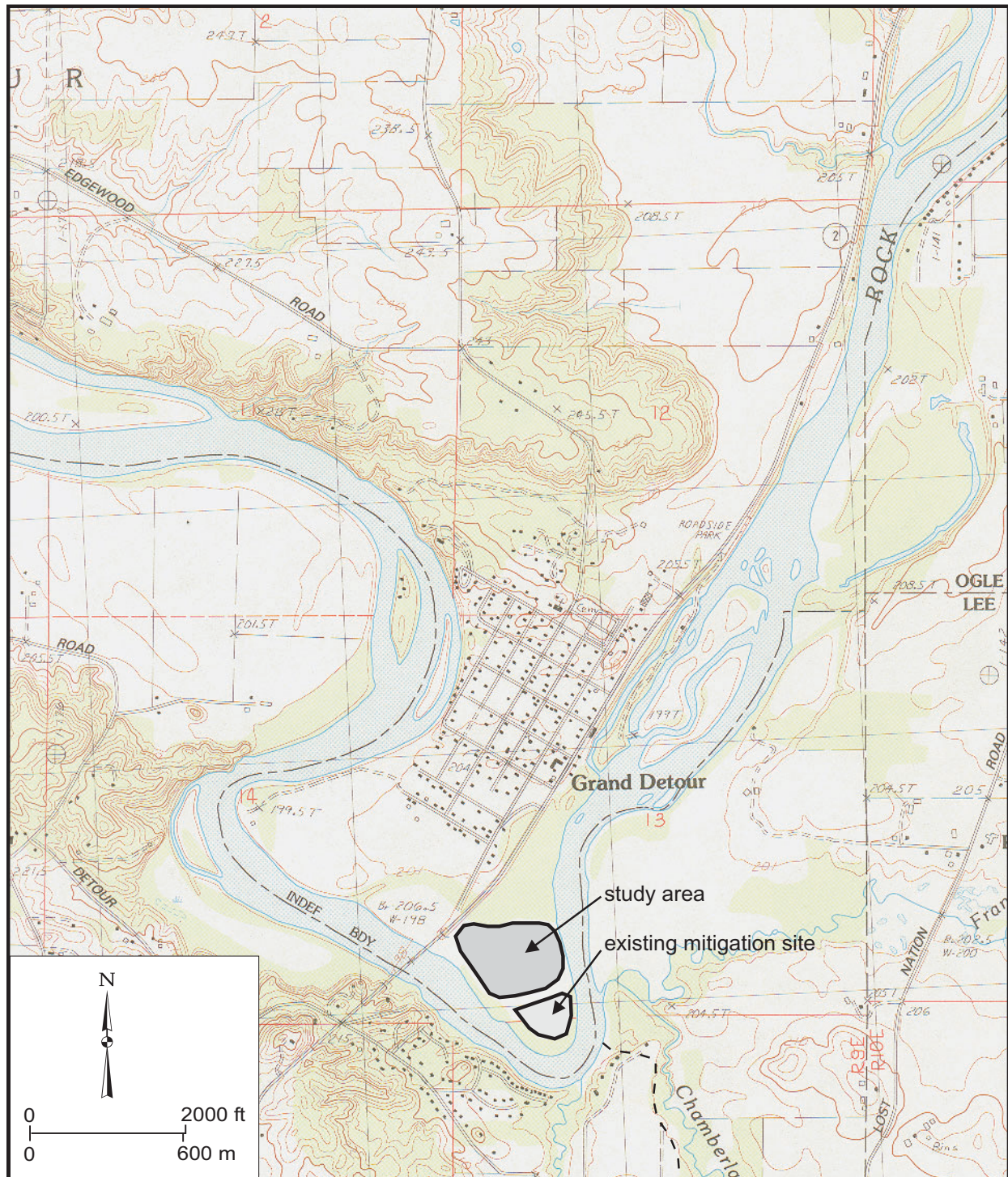
**PLANNED FUTURE ACTIVITIES**

- The monitoring network will be abandoned at the earliest opportunity.

# Grand Detour Potential Wetland Compensation Site (FAP 742)

## General Study Area and Vicinity

from the USGS Topographic Series, Grand Detour, IL 7.5-minute Quadrangle (USGS 1994)  
contour interval: 3 meters





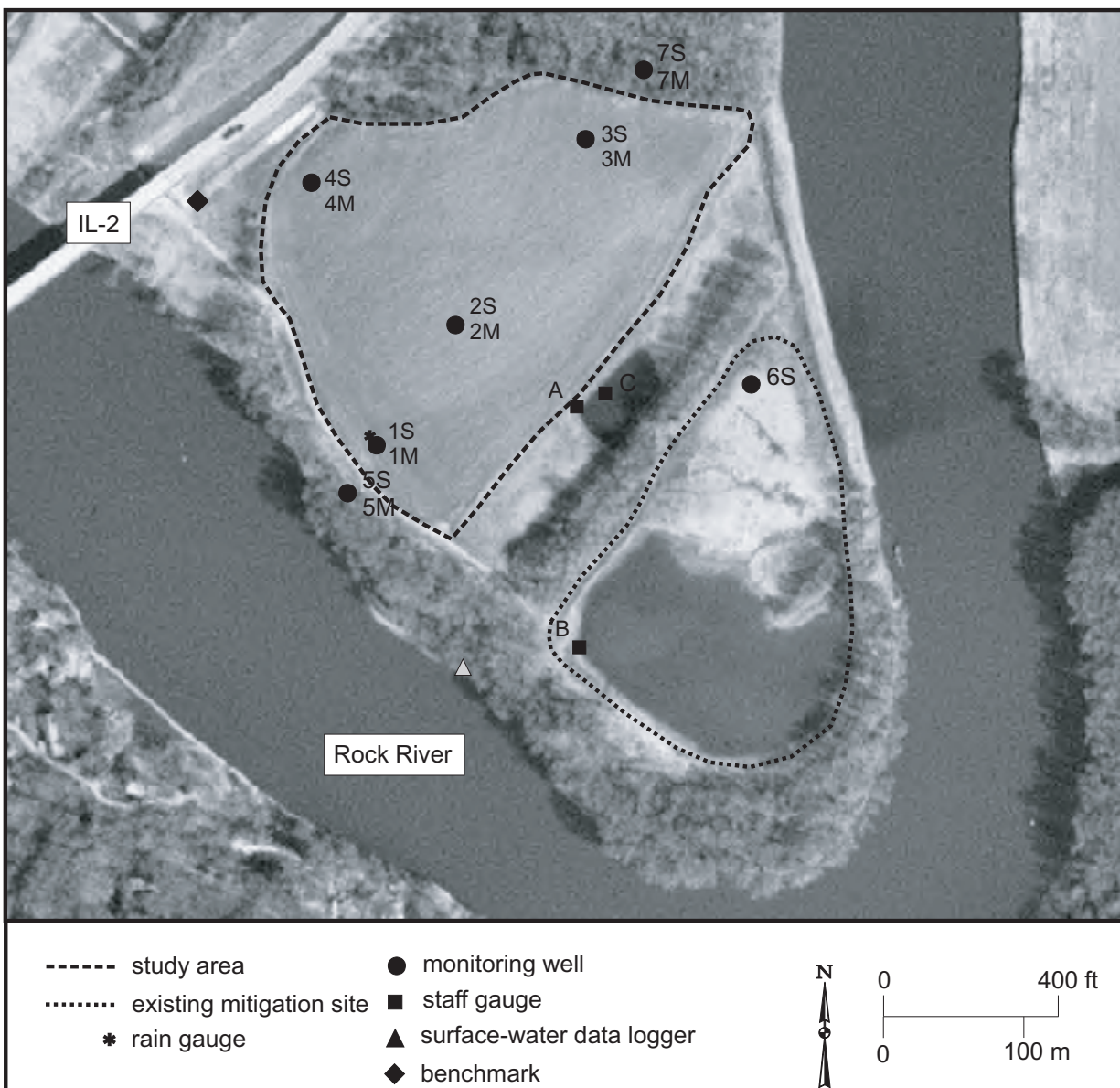
# Grand Detour Potential Wetland Compensation Site (FAP 742)

## Estimated Areal Extent of 2003 Wetland Hydrology

based on data collected between September 1, 2002 and September 1, 2003

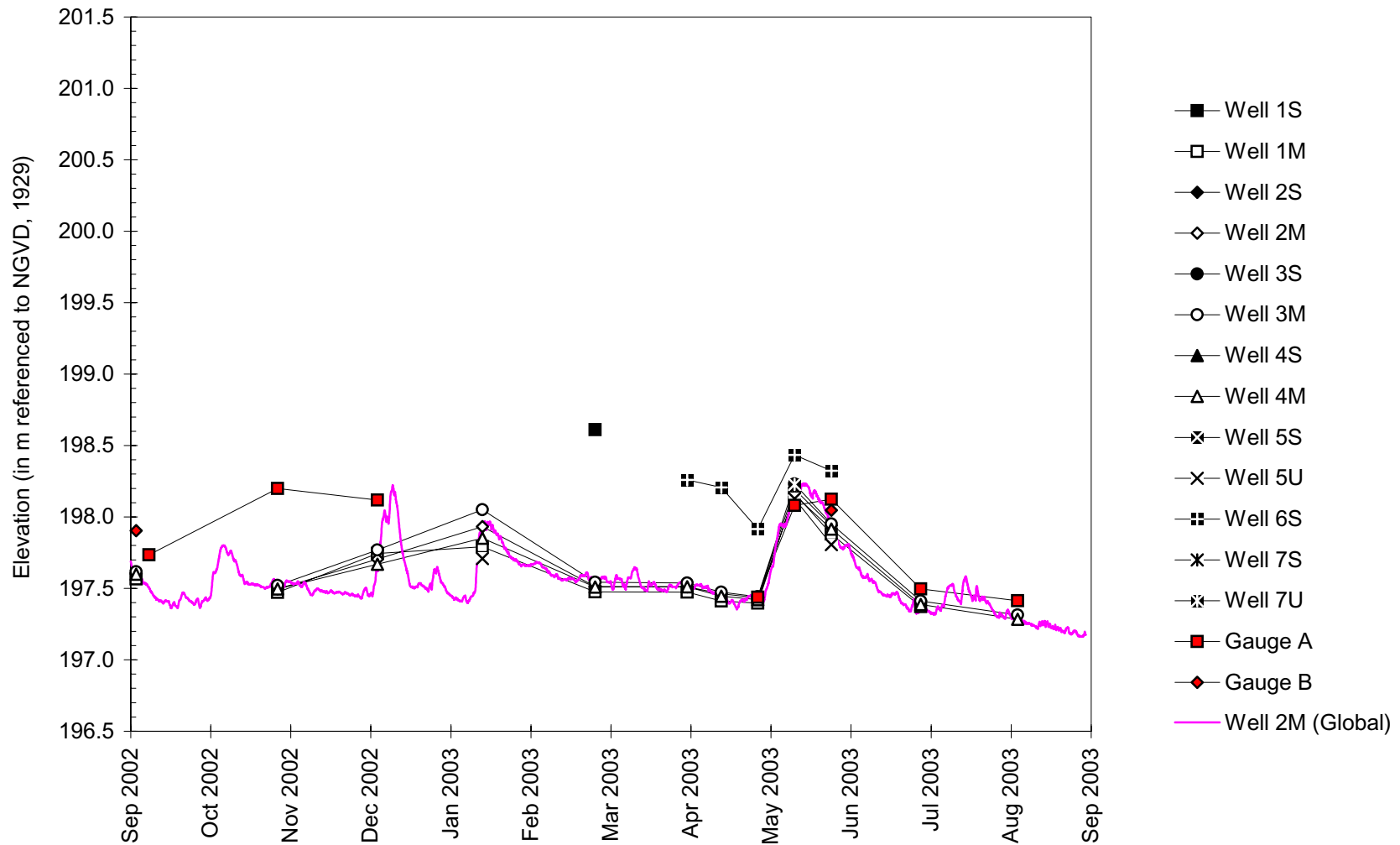
map based on USGS digital orthophotograph, Grand Detour SE quarter quadrangle produced from  
4/8/1999 aerial photography (ISGS 2001)

Monitoring well, staff gauge and data logger locations from GPS survey

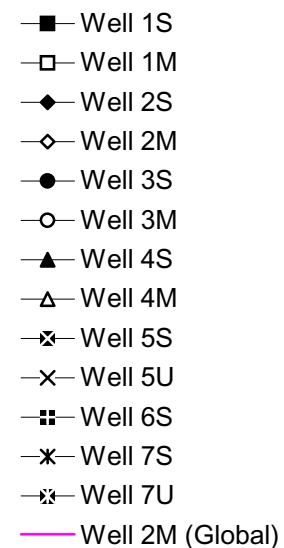


## September 1, 2002 to September 1, 2003

## Water-Level Elevations



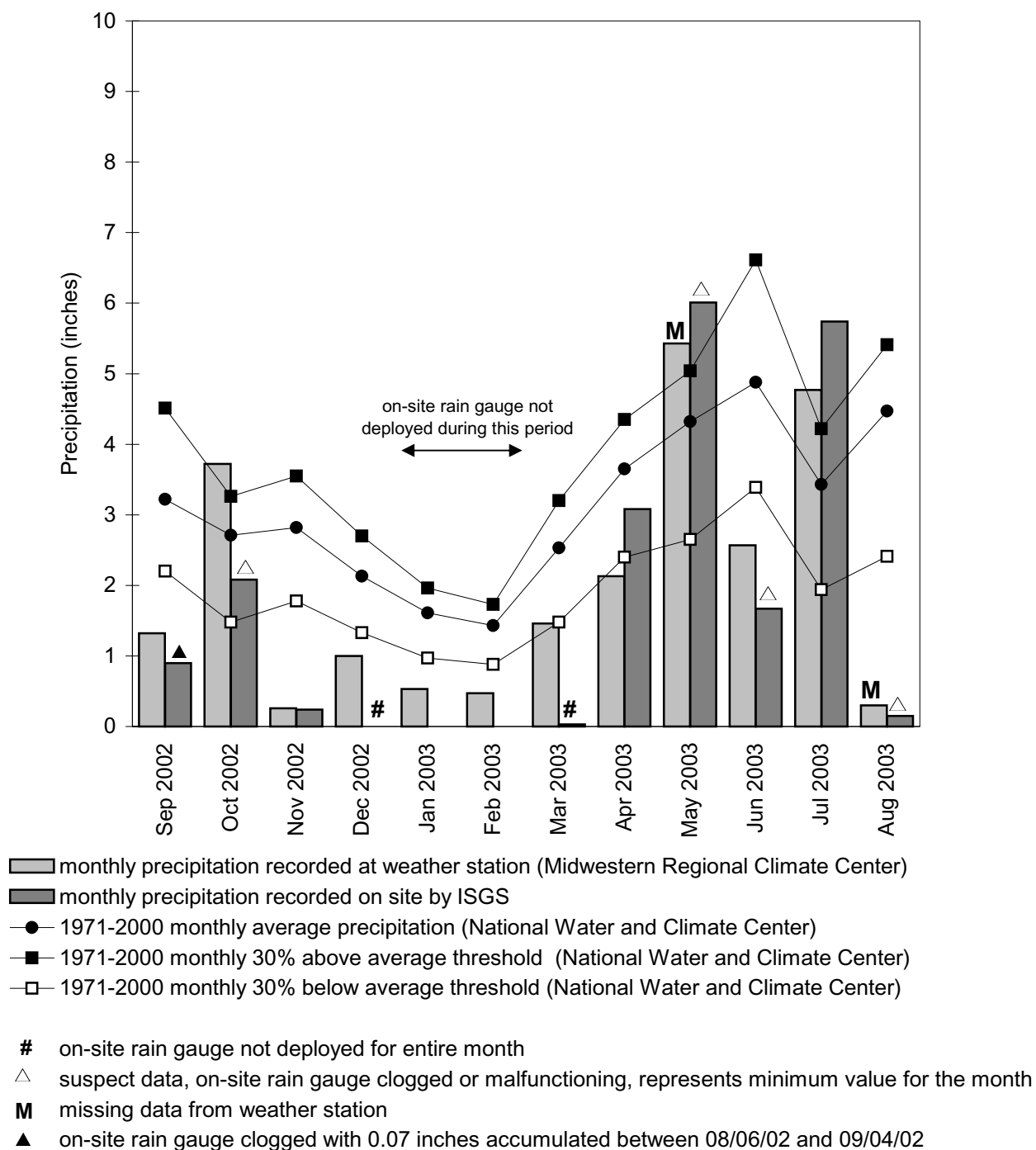
**September 1, 2002 to September 1, 2003**



# Grand Detour Potential Wetland Compensation Site

## September 2002 through August 2003

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



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

**ISGS #57**

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: Forty-two S- and 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, and the geologic borings were described for each.
- 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.
- March 2003: Two permanent benchmarks were installed and surveyed.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

The former Tiernan Property is a potential wetland compensation site. No calculation of the area satisfying wetland hydrology criteria is needed, but was carried out for planning purposes. The total area that satisfied wetland criteria in 2003 was approximately 18.2 ac (7.3 ha). In 2002, 33.2 ac (13.4 ha) met the criteria for wetland hydrology. The figure for 2003 is 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, 12.5% of the growing season is 25 days.
- Precipitation during the monitoring period was 96% of normal. Below normal precipitation from November 2002 to April 2003, resulted in low ground-water levels throughout the winter. Above normal rainfall in May and June caused ground-water levels to peak in June then to decline during dry conditions reported in July.
- In 2003, water levels measured in wells 14S, 21S, 24VS, 25VS, 26S, 26VS, 27S, 27VS, 28VS, 29VS, 30S, 30VS, 31S and 31VS conclusively satisfied the wetland hydrology criteria outlined in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. Surface-water stage data from Gauge D indicate that surface inundation occurred to an elevation of 121.850 m (399.770 ft) for a period sufficient to conclusively satisfy wetland hydrology criteria.

- 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. Despite above normal precipitation on site April through June 2003, flood waters from Blue Waters Ditch were insufficient to cause widespread flooding in the southern half of the site (former borrow pit).
- The hydrology of the northern half of the site (the former farm field) is dominated by precipitation ponding on the surface. The extent of wetland hydrology 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 0.40 m of the soil column for nearly the entire period from mid-February to late June.

#### PLANNED FUTURE ACTIVITIES

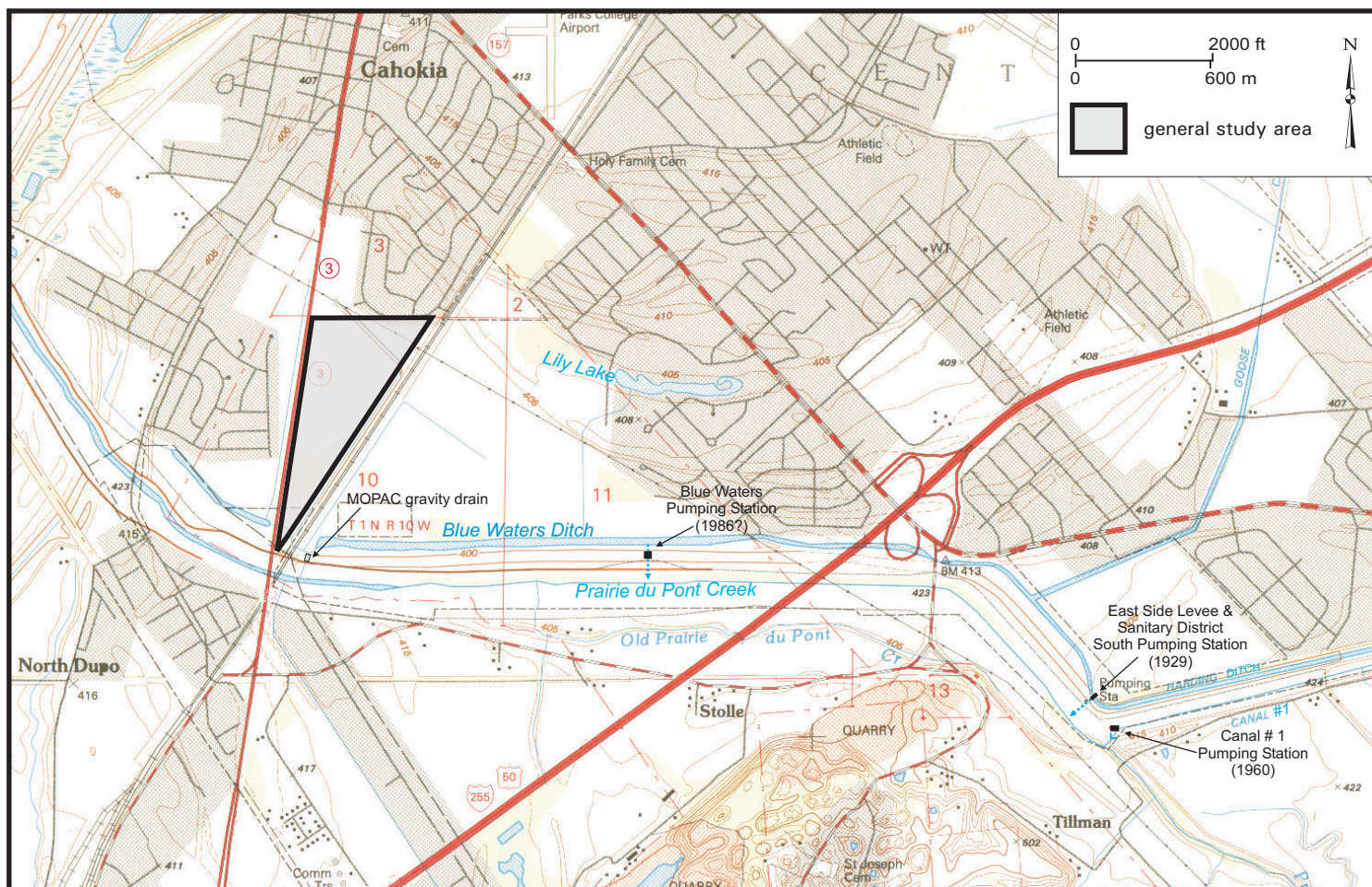
- A Level II hydrogeological characterization report is in preparation. Site suitability and recommendations regarding site design will be included.



# Tiernan Property (Cahokia) Potential Wetland Compensation Site (FAP 999)

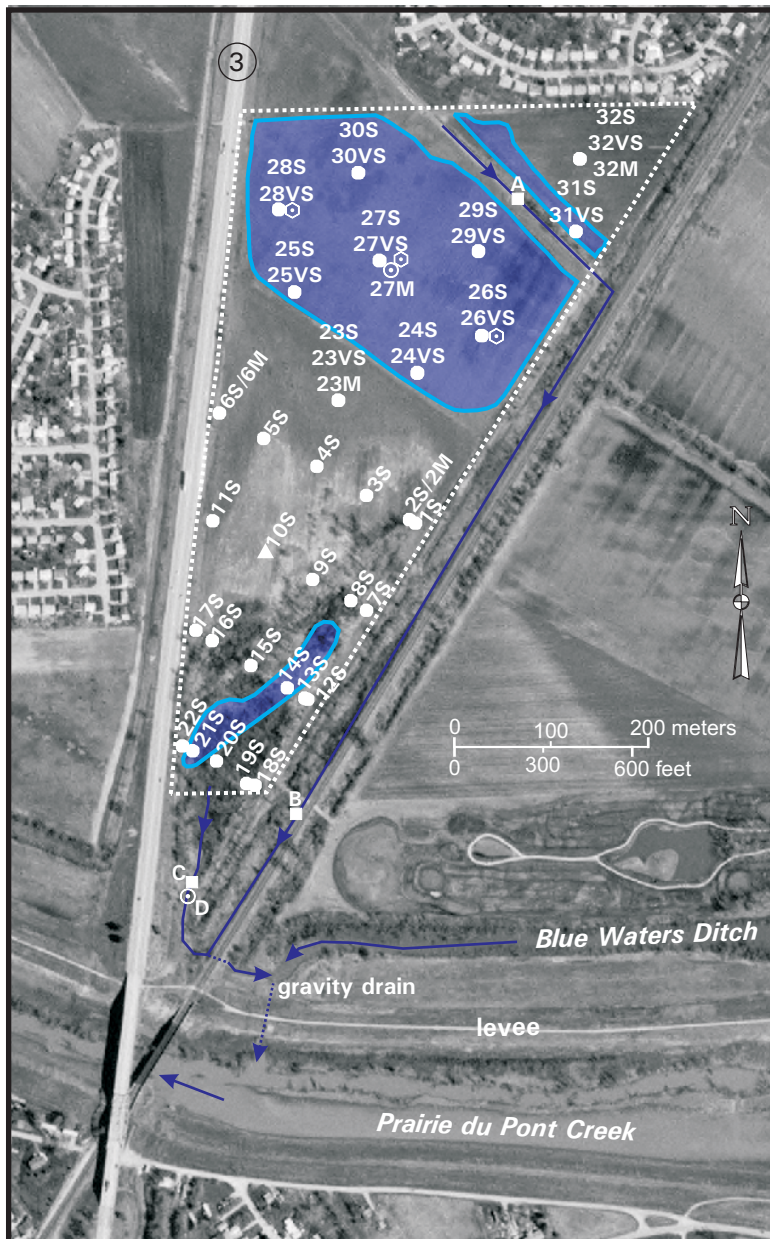
## General Study Area and Vicinity

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



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

**Estimated Areal Extent of 2003 Wetland Hydrology**  
based on data collected between September 1, 2002 and September 1, 2003  
map based on USGS digital orthophotograph, Cahokia, SW quarter quadrangle  
produced from 4/2/98 aerial photography (ISGS, 2000)



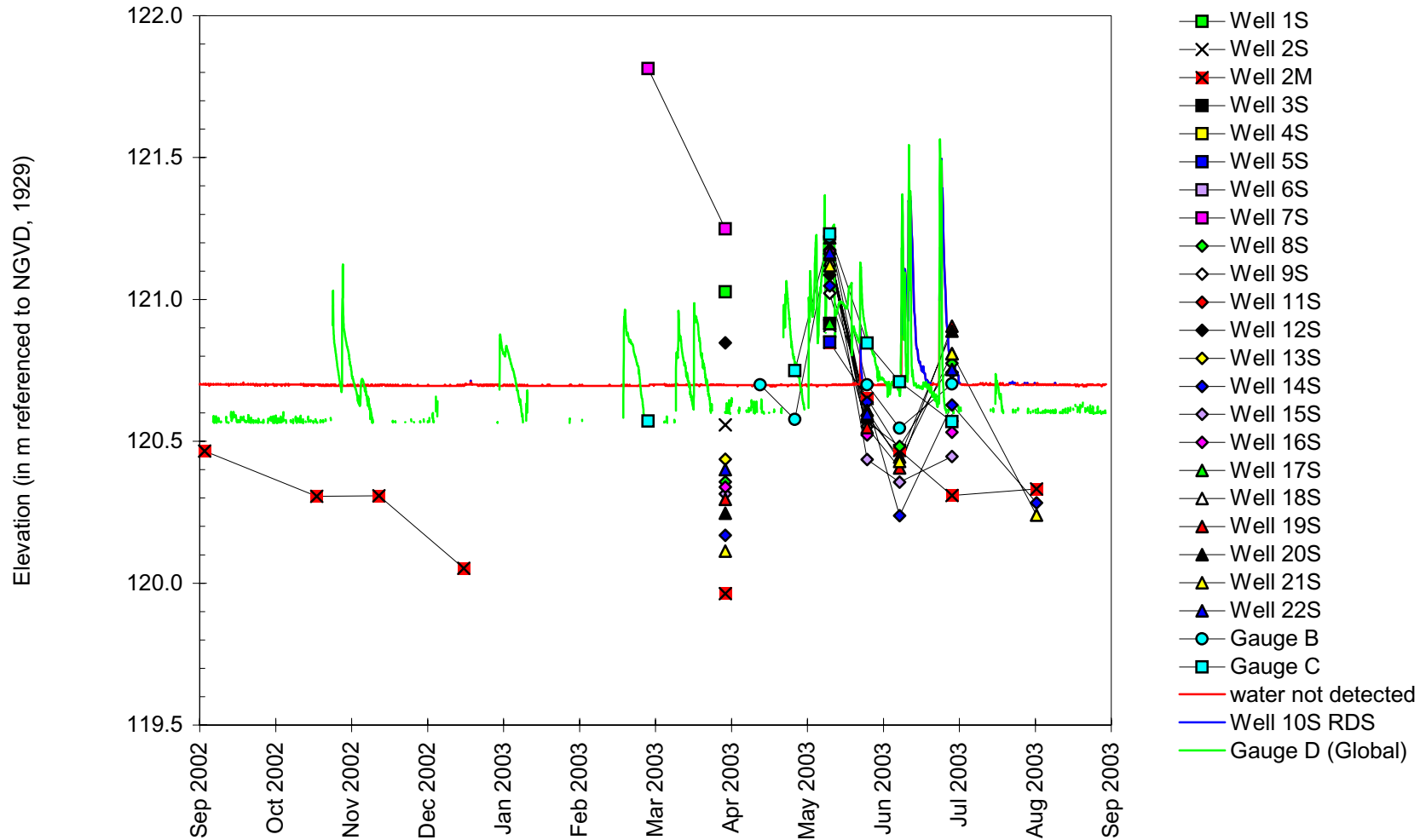
- monitoring well
- staff gauge
- ▲ RDS water-level recorder
- \* rain gauge
- ⊙ Global transducer
- ⊗ soil-moisture probe
- site boundary
- extent of 2003 wetland hydrology
- ← flow direction



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

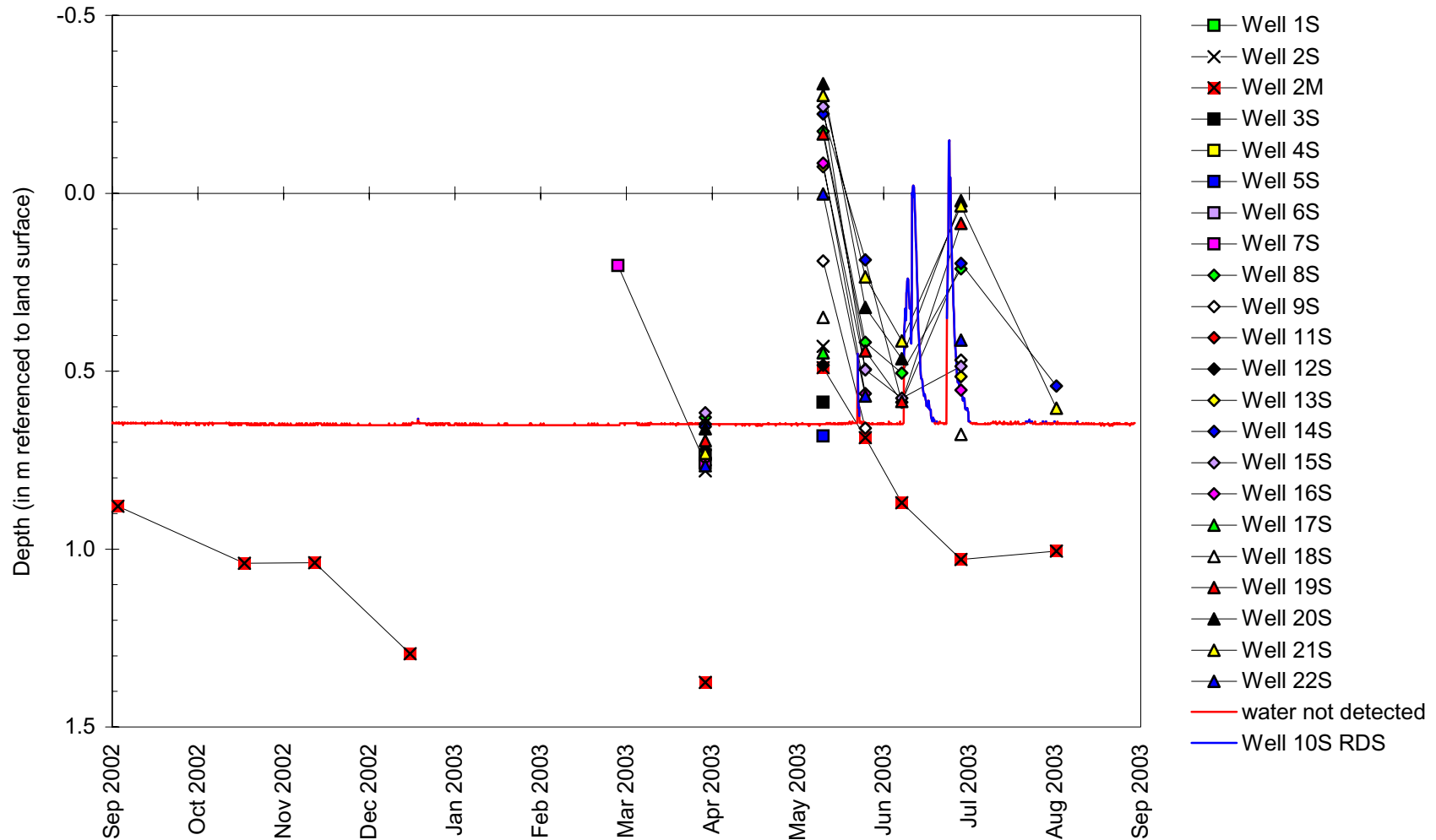
September 1, 2002 to September 1, 2003

## Water-Level Elevations



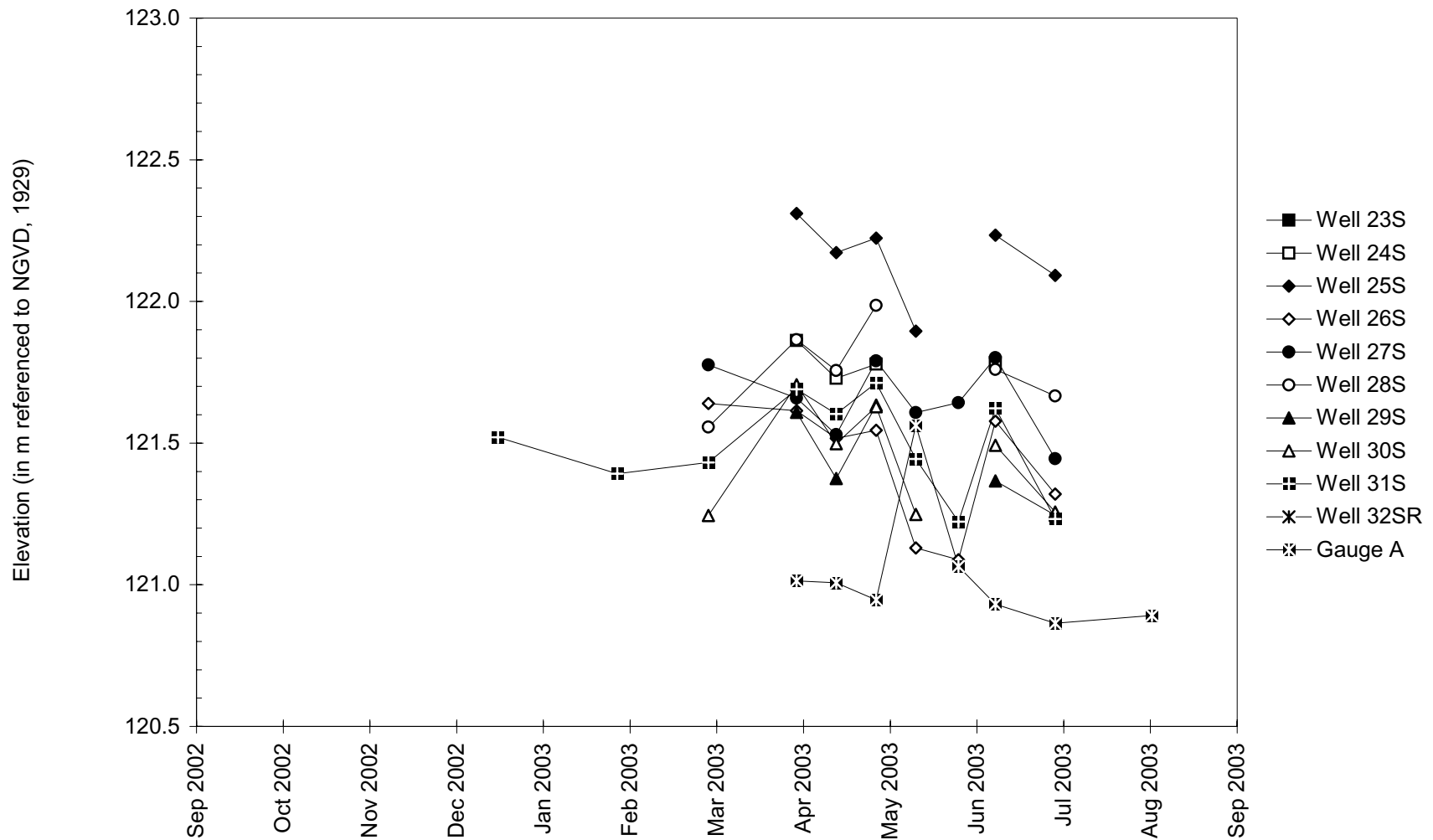
**Former Tiernan Property, New River Crossing Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Depth to Water**



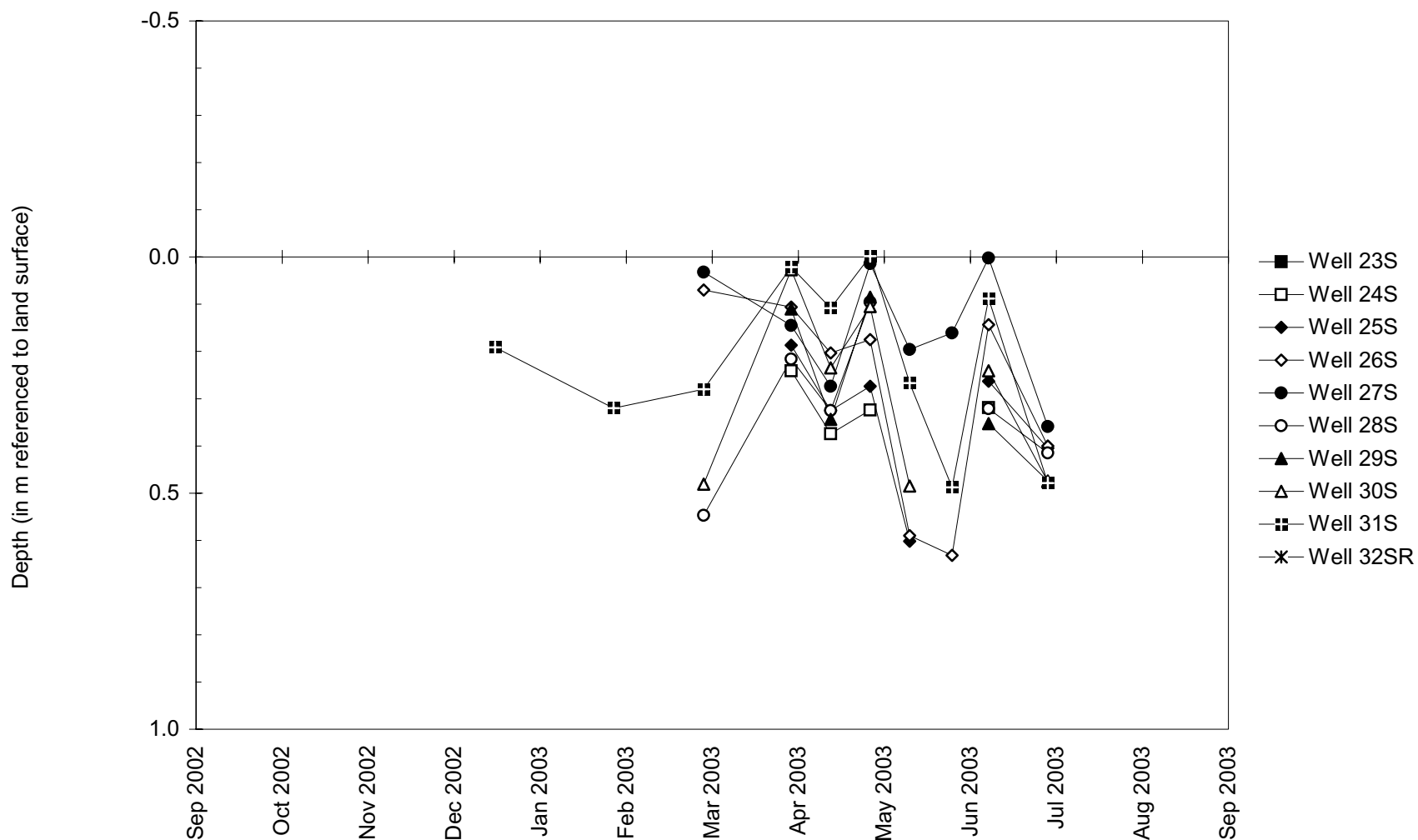
**Former Tiernan Property, New River Crossing Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations**



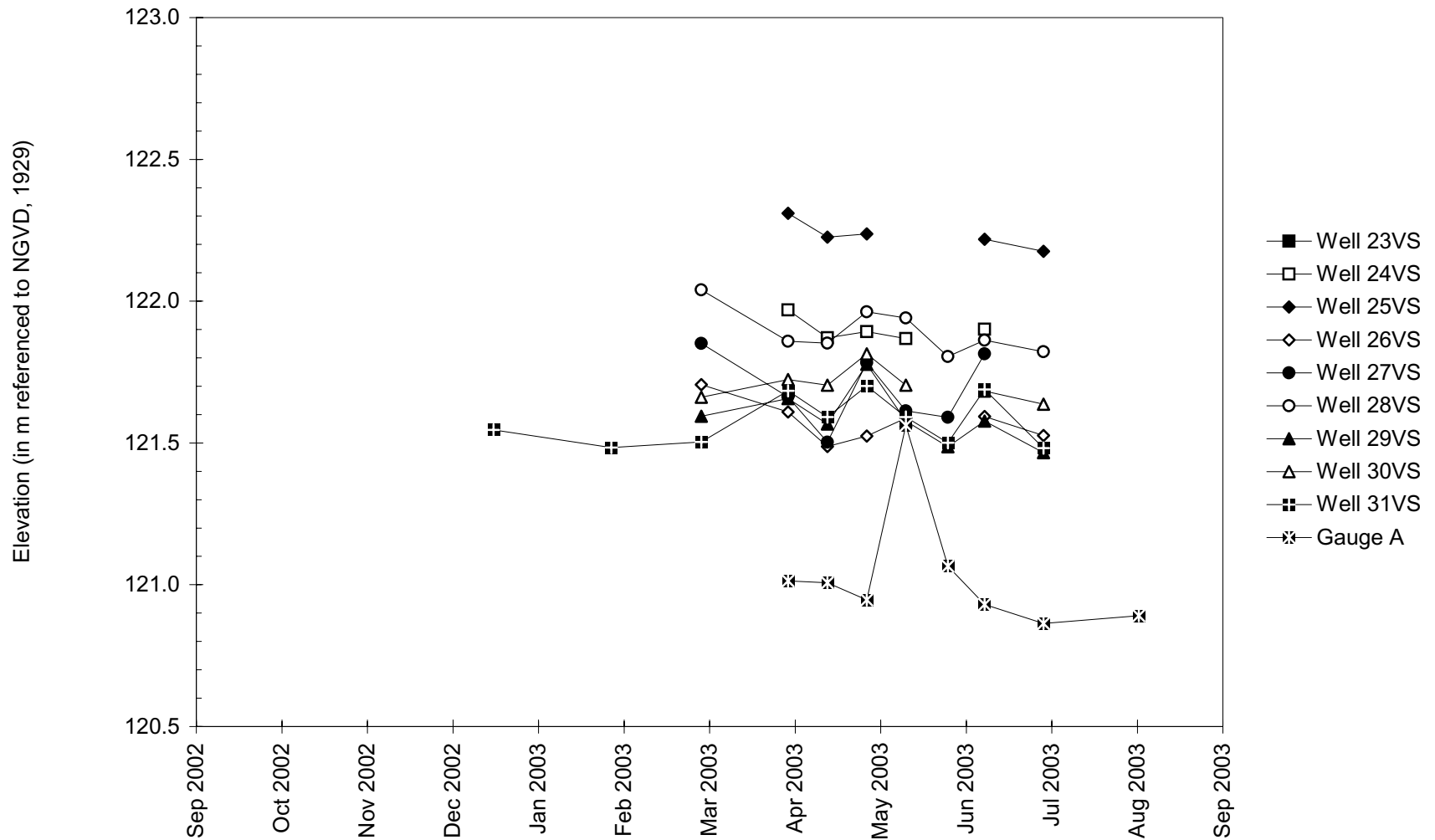
**September 1, 2002 to September 1, 2003**

## Depth to Water

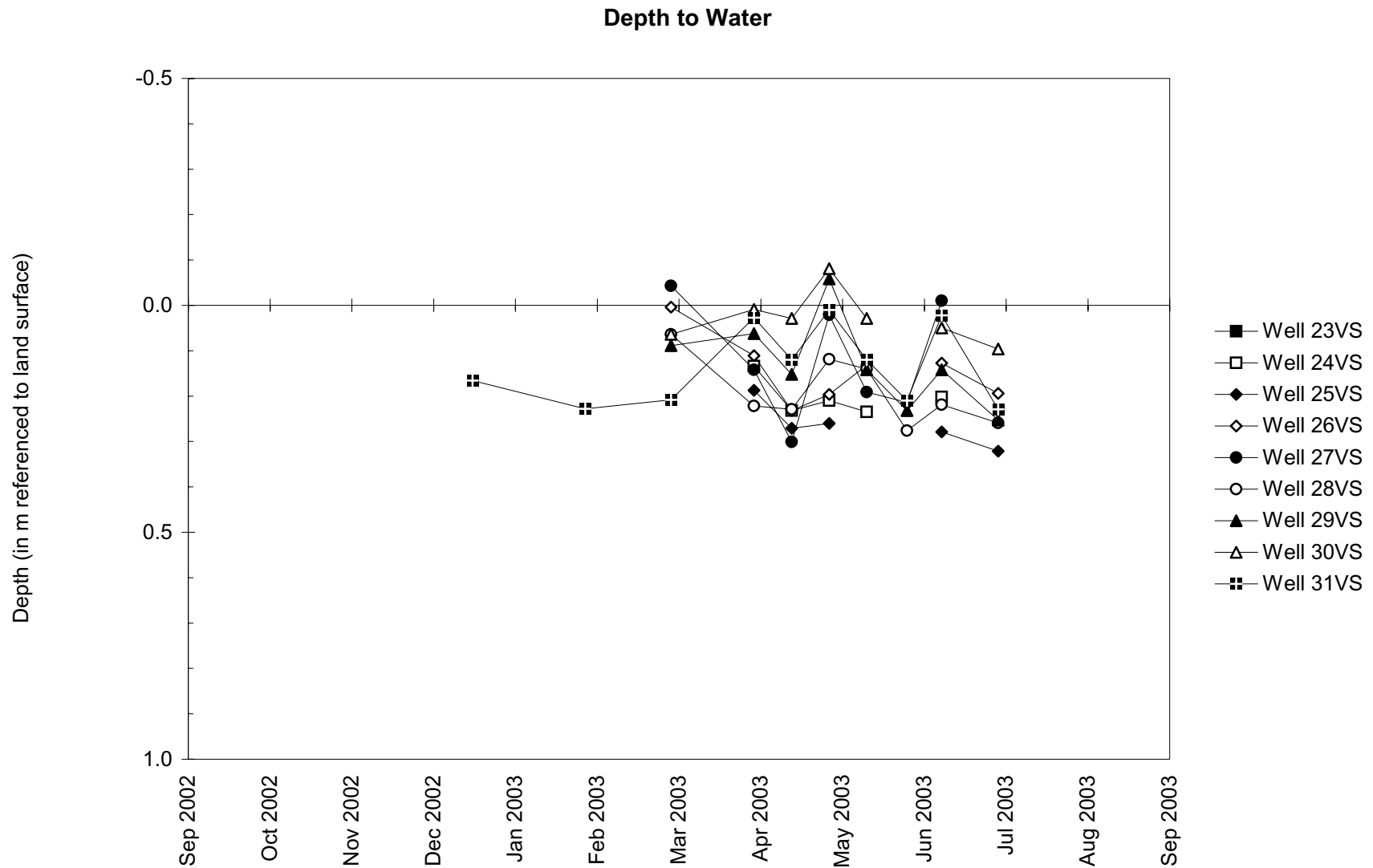


**Former Tiernan Property, New River Crossing Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations**



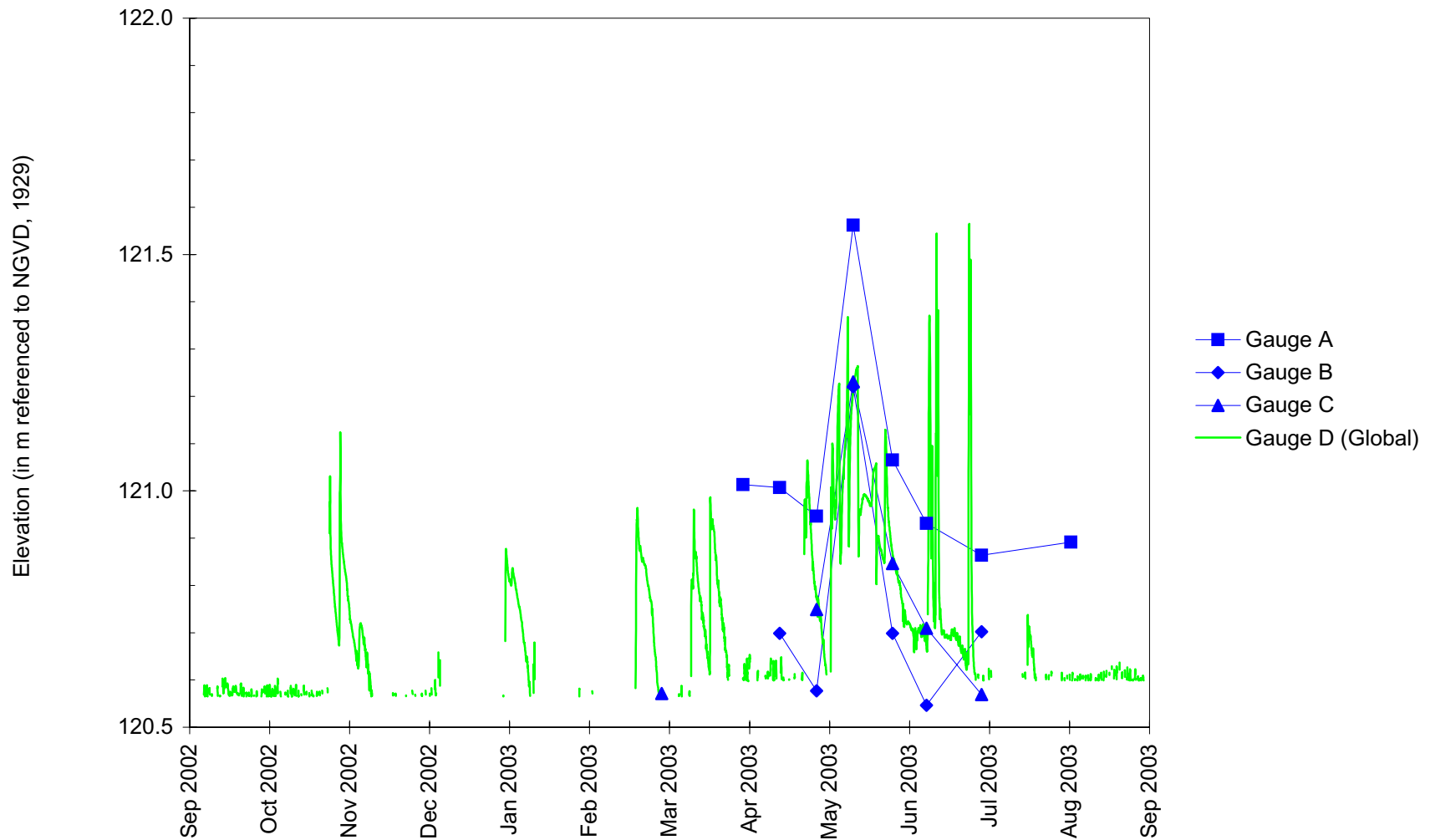
**Former Tiernan Property, New River Crossing Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**





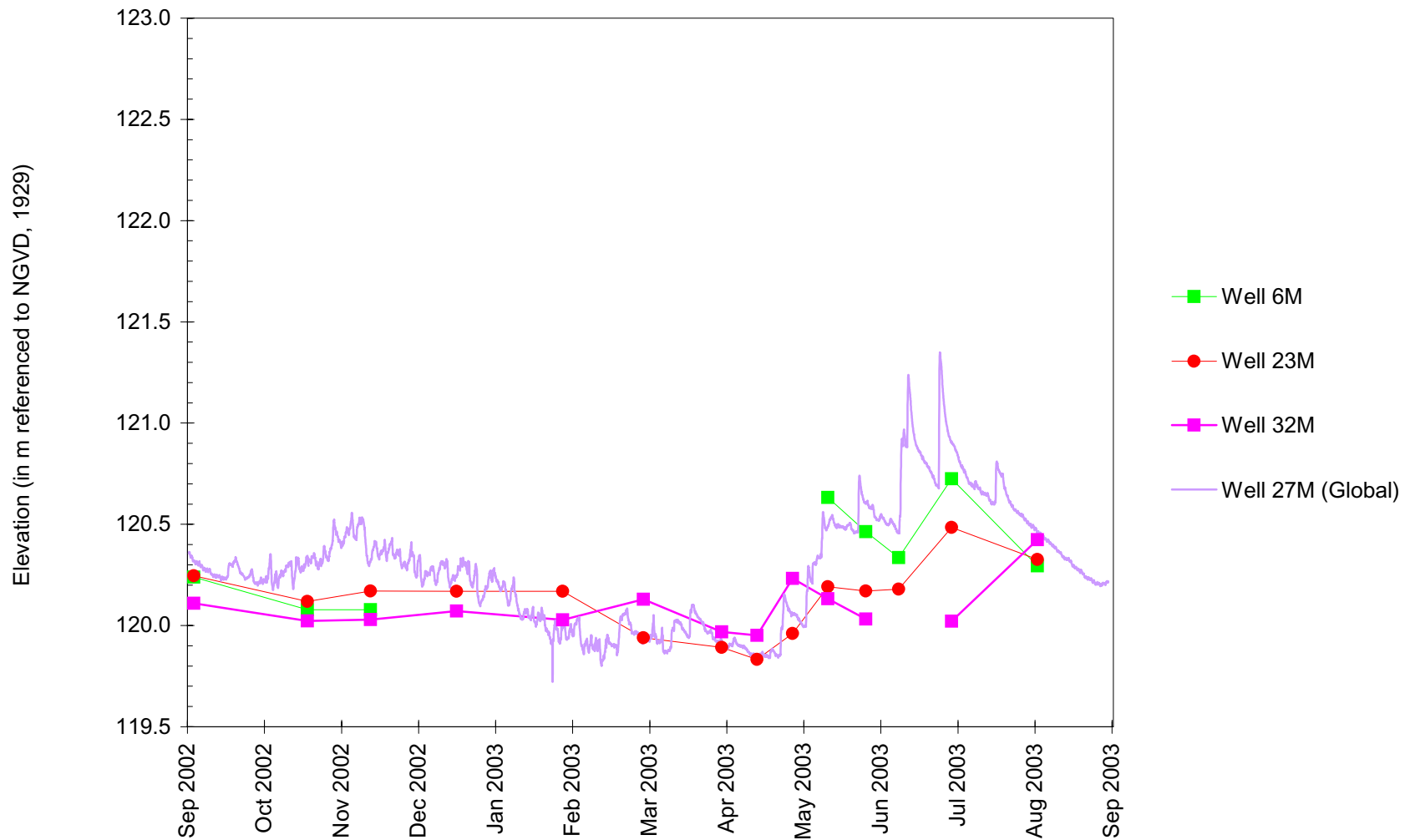
**Former Tiernan Property, New River Crossing Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations**



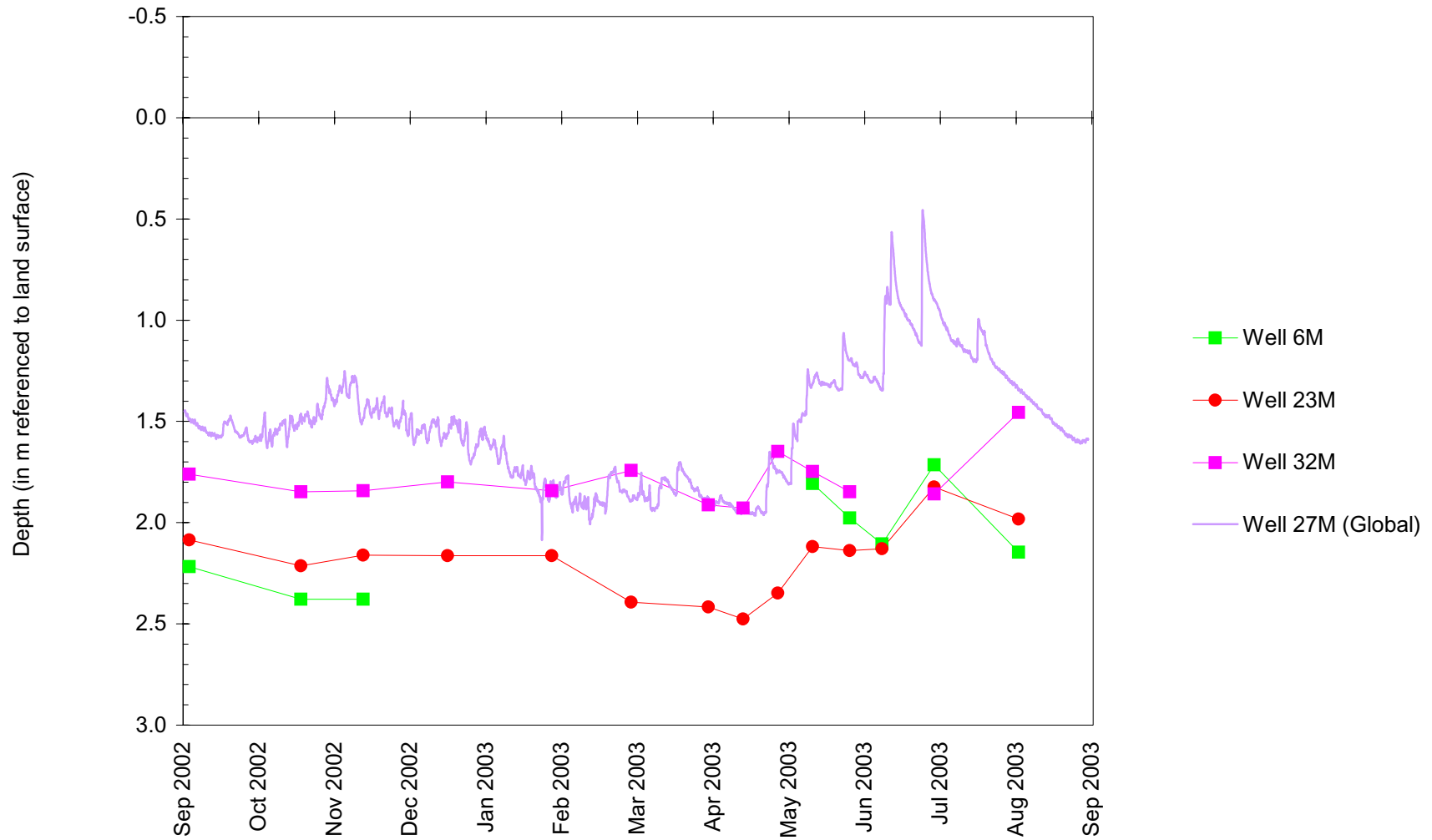
**Former Tiernan Property, New River Crossing Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Water-Level Elevations**



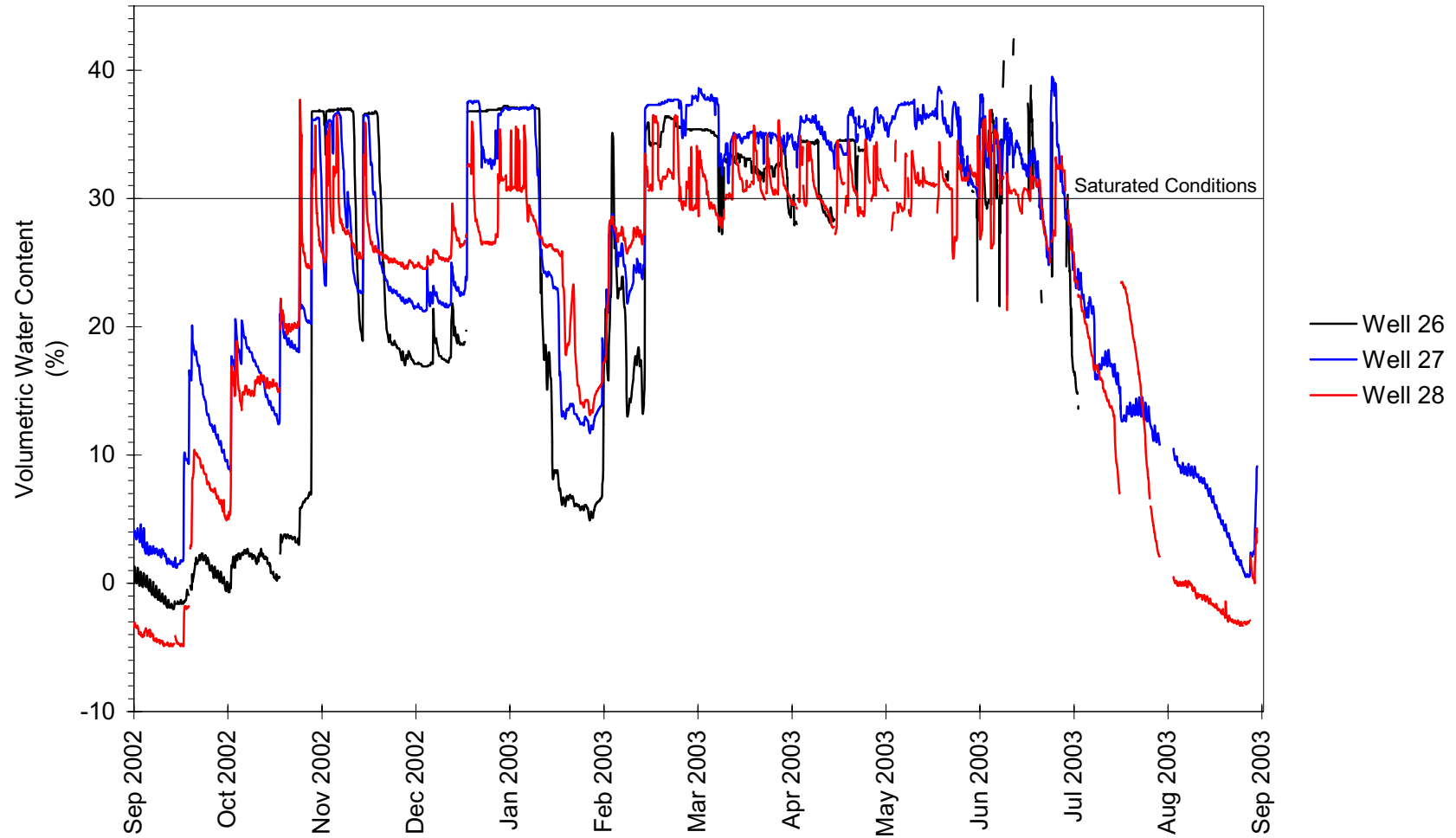
**Former Tiernan Property, New River Crossing Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

**Depth to Water**



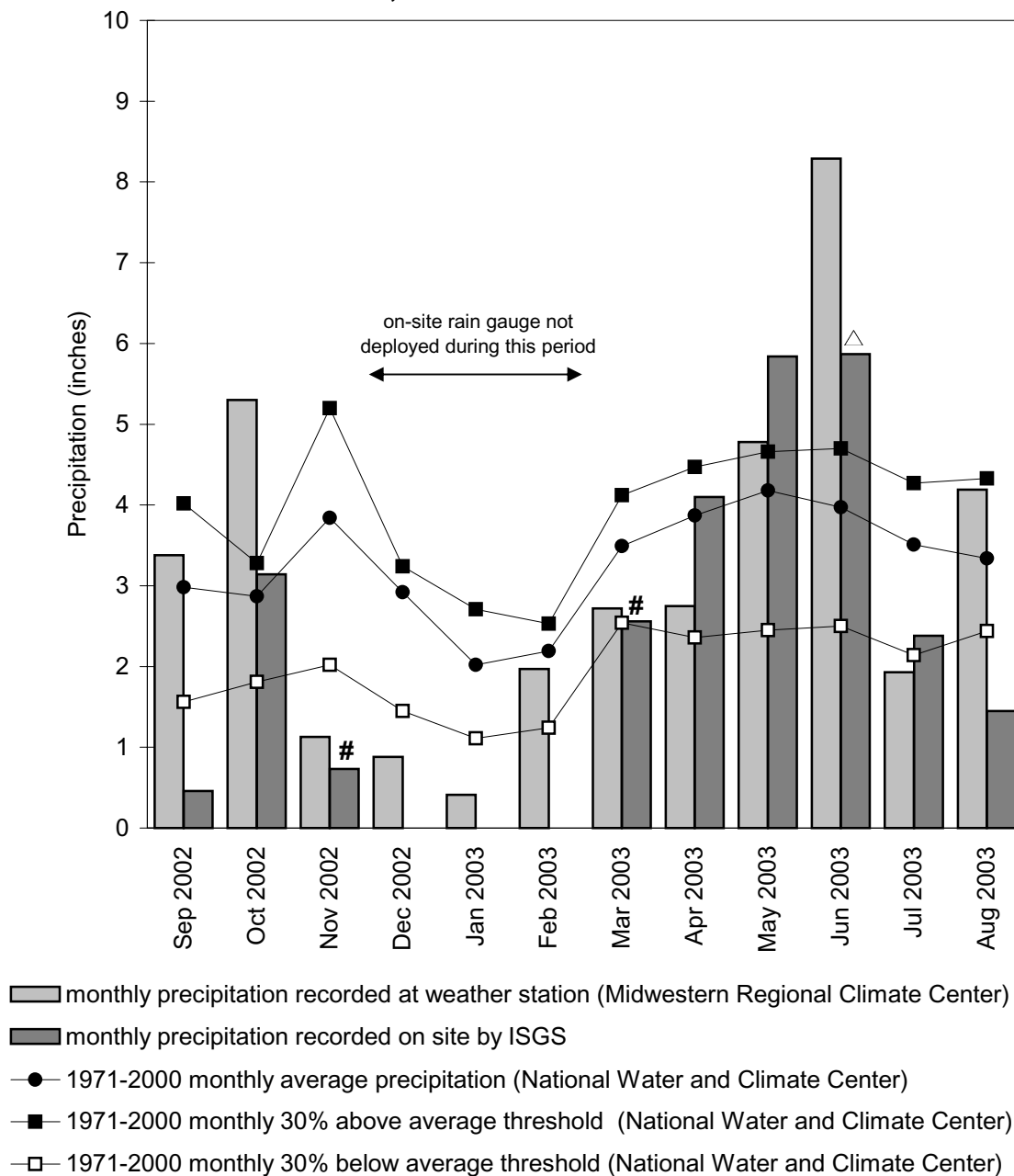
**Former Tiernan Property, New River Crossing Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

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



# **Former Tiernan Property, New River Crossing Potential Wetland Compensation Site September 2002 through August 2003**

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



# on-site rain gauge not deployed for entire month

△ suspect data, on-site rain gauge clogged or malfunctioning, represents minimum value for the month

Graph last updated September 23, 2003

**APPLE CREEK**  
**POTENTIAL WETLAND COMPENSATION SITE**  
FAP 310  
Greene County, near Belltown, Illinois  
**Primary Project Manager: Bonnie J. Robinson**  
**Secondary Project Manager: Kelli D. Weaver**

**ISGS #62**

**SITE HISTORY**

- October 2001: ISGS submitted an Initial Site Evaluation report.
- December 2001: ISGS was tasked by IDOT to conduct a Level II hydrogeologic assessment of the site.
- April-August 2002: Eighteen shallow wells, two surface-water level loggers, two staff gauges and one rain gauge were installed on site.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

The Apple Creek site is a potential wetland compensation site. No calculation of the area satisfying wetland hydrology criteria is needed, but was carried out for planning purposes. The total area that satisfied wetland hydrology criteria in 2003 was determined to be approximately 21.7 ac (8.8 ha). In 2002, the entire 52 ac (21.2 ha) site met the criteria for wetland hydrology. The figure for 2003 is based on the following factors.

- According to the Midwestern Climate Center, the median length of the growing season, as measured at the White Hall climate station, is 210 days (April 6 to November 2); 12.5% of the growing season is 26 days.
- Total precipitation during the monitoring period was 92% of normal. Below normal precipitation from September 2002 to January 2003 (with the exception of October 2002) resulted in dry conditions throughout the winter. Normal to above normal precipitation from February through August 2003 caused ground-water levels to peak in May 2003.
- In 2003, water levels measured in wells 1S, 2S, 3S, 6S, 8S, 10S, 12S, 13S, 14S, and 15S conclusively satisfied the wetland hydrology criteria in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. Surface-water levels at Gauge A and RDS1 indicate that surface inundation occurred for a duration sufficient to conclusively satisfy wetland hydrology criteria, with levels at Gauge A in Apple Creek at an elevation of 135.500 m (444.554 ft), and inside the levee at RDS1 at an elevation of 136.301 m (447.182 ft). This information was considered in estimating the extent of wetland hydrology at the site this year.
- The water level in Apple Creek did not reach an elevation sufficient to overtop the levee during the monitoring period. Measurements in the creek indicate that the water level exceeded 138.0 m (452.8 ft) on one occasion, May 10 through 13. This is the suggested elevation of the southern levee after restoration as proposed in the upcoming Level II report.

- Limitations of the wetland hydrology determination are as follows:
  - The area meeting wetland hydrology criteria was derived from a mathematical interpolation of the shallow ground-water surface, well coordinates obtained via GPS, and topographic data provided by IDOT.

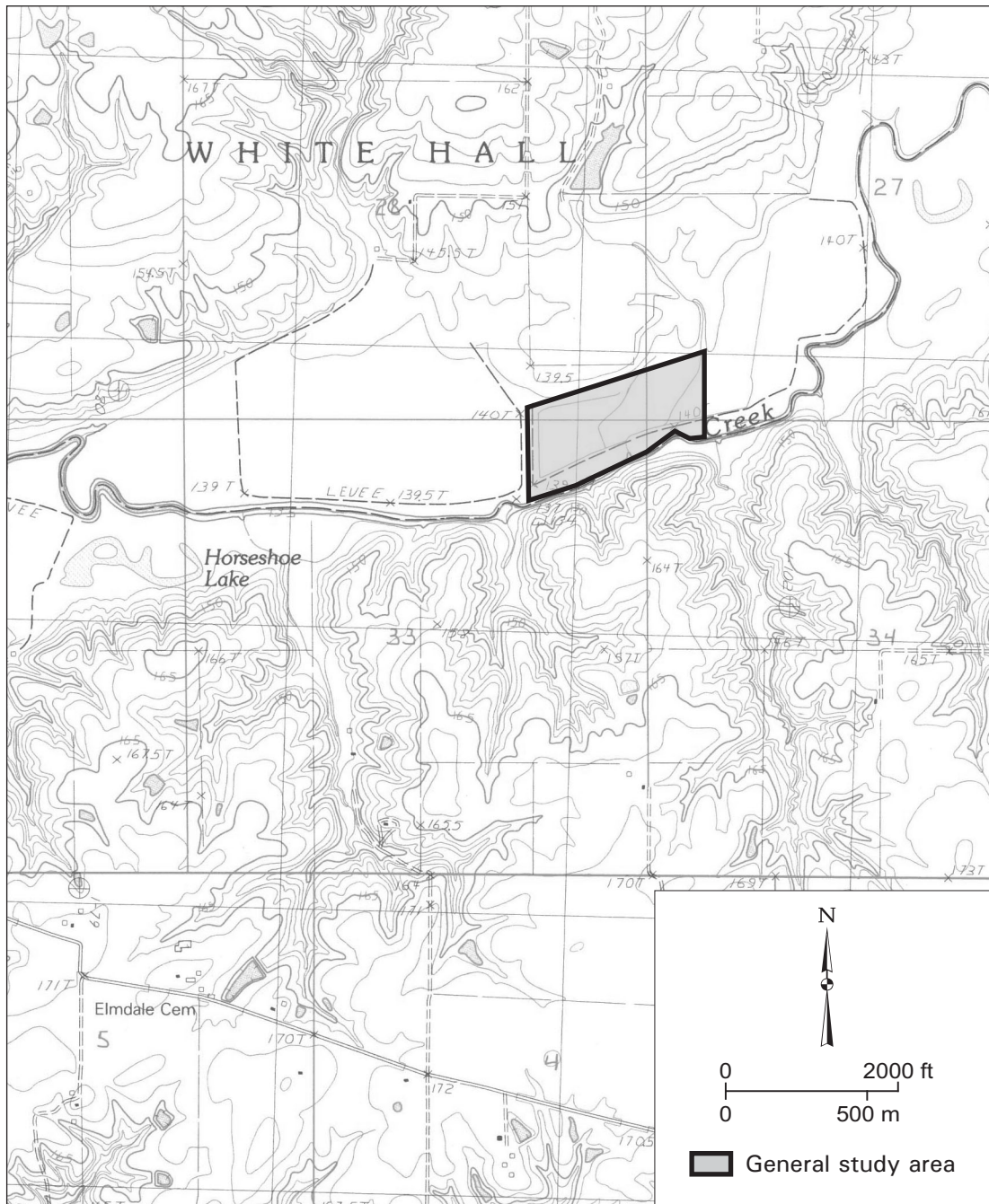
#### ADDITIONAL INFORMATION

- In 2003, only half the wells located in the floodplain forest, an area mapped as wetland on the National Wetlands Inventory, conclusively satisfied the criteria for wetland hydrology. It is therefore possible that on this site, areas that demonstrate wetland hydrology for less than 12.5% of the growing season may exhibit characteristics of jurisdictional wetlands.
- A final hydrogeologic characterization report is undergoing ISGS internal review and will be submitted in the near future. Recommendations regarding the size and configuration of the mitigation site will be included.

# Apple Creek Potential Wetland Compensation Site (US 67, FAP 310)

## General Study Area and Vicinity

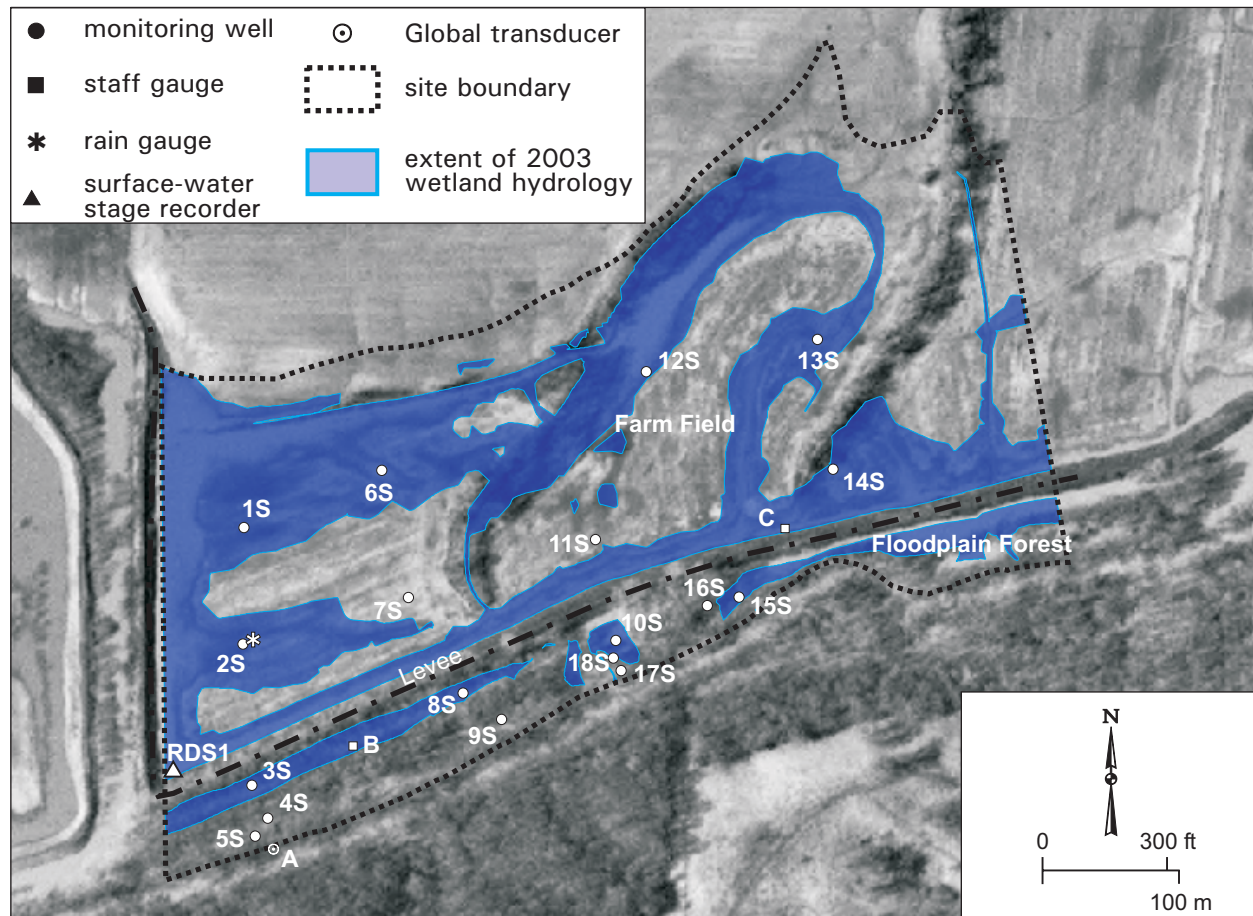
from the USGS Topographic Series, Carrollton, IL 7.5-minute Quadrangle (USGS 1983)  
contour interval is 10 feet



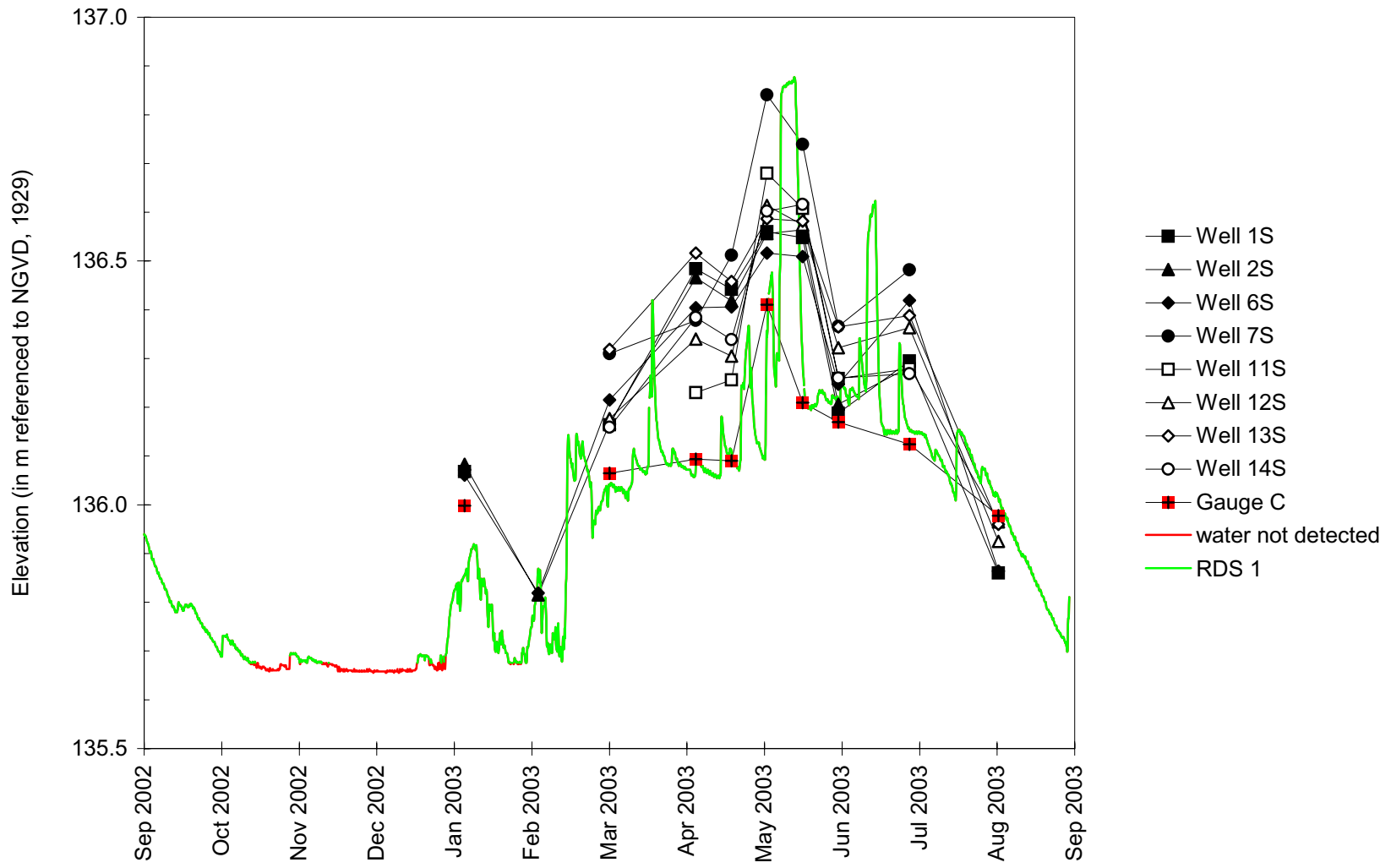


# Apple Creek Potential Wetland Compensation Site (US 67, FAP 310)

**Estimated Areal Extent of 2003 Wetland Hydrology**  
based on data collected between September 1, 2002 and September 1, 2003  
map based on USGS digital orthophotograph, Carrollton, NE quarter quadrangle  
quadrangle produced from 4/5/1998 aerial photography (ISGS 2001)



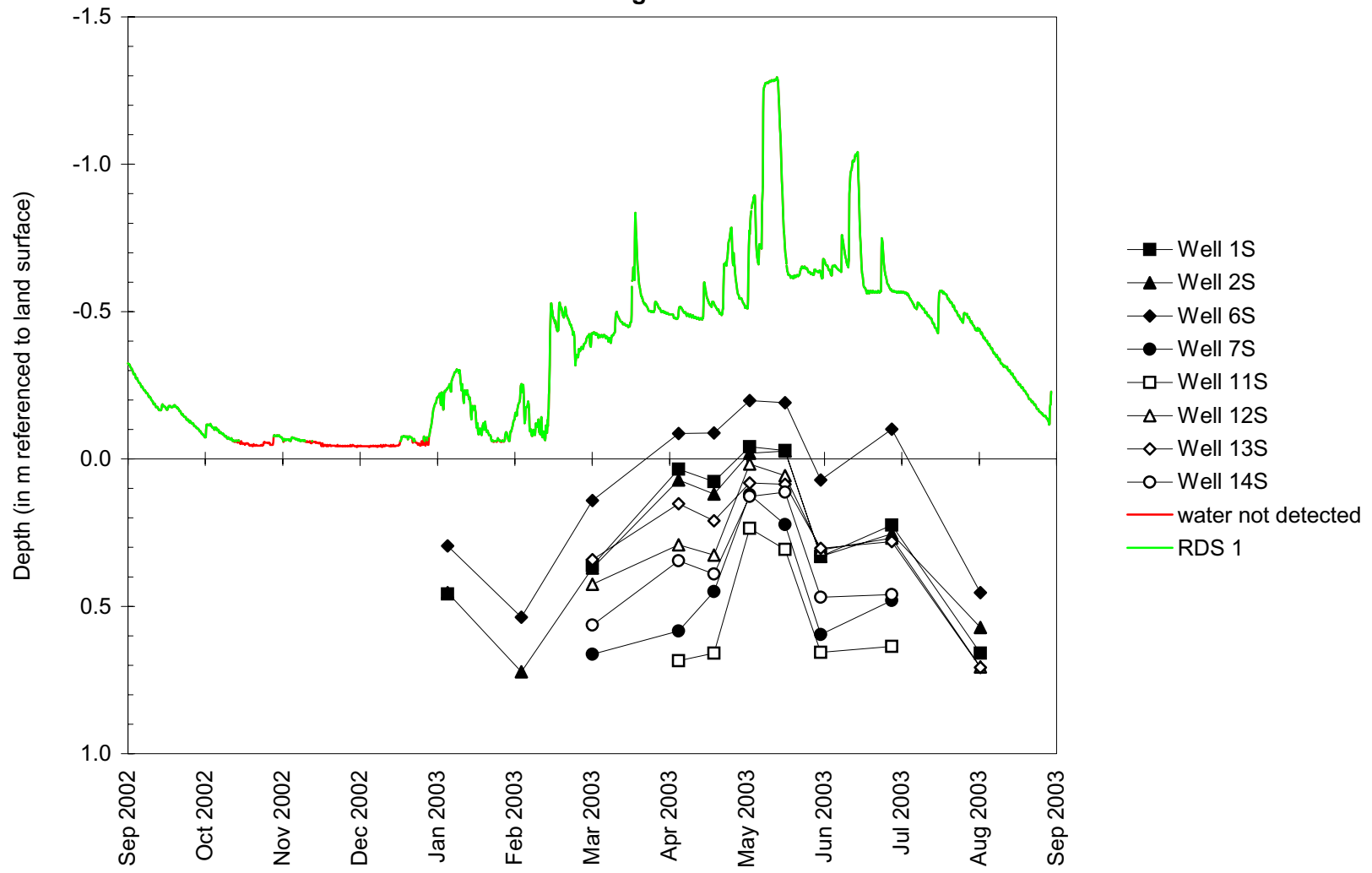
## Water-Level Elevations in Selected Monitoring Wells in the Farm Field



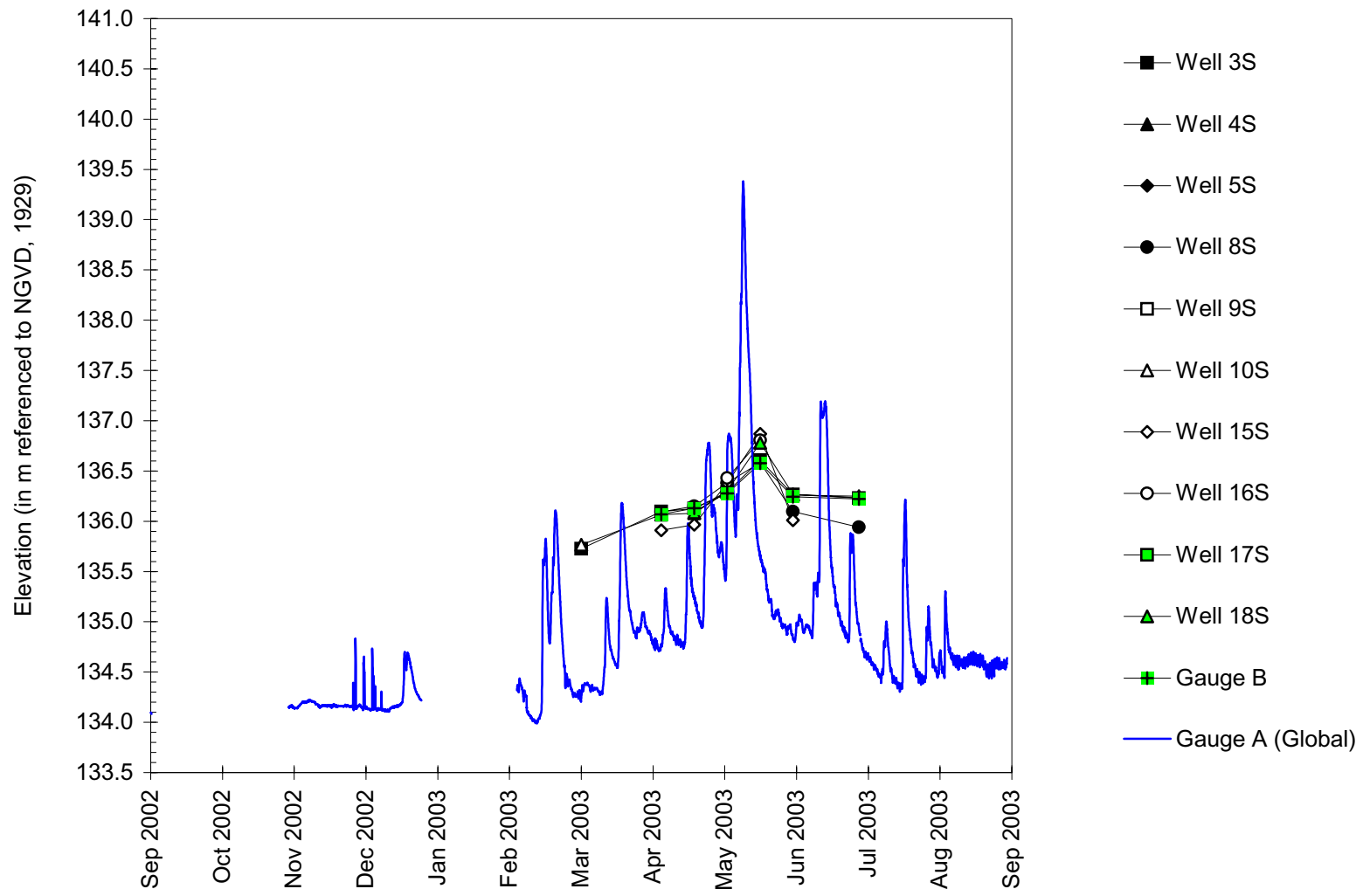
## Apple Creek Potential Wetland Compensation Site

September 1, 2002 to September 1, 2003

## Depth to Water in Selected Monitoring Wells in the Farm Field

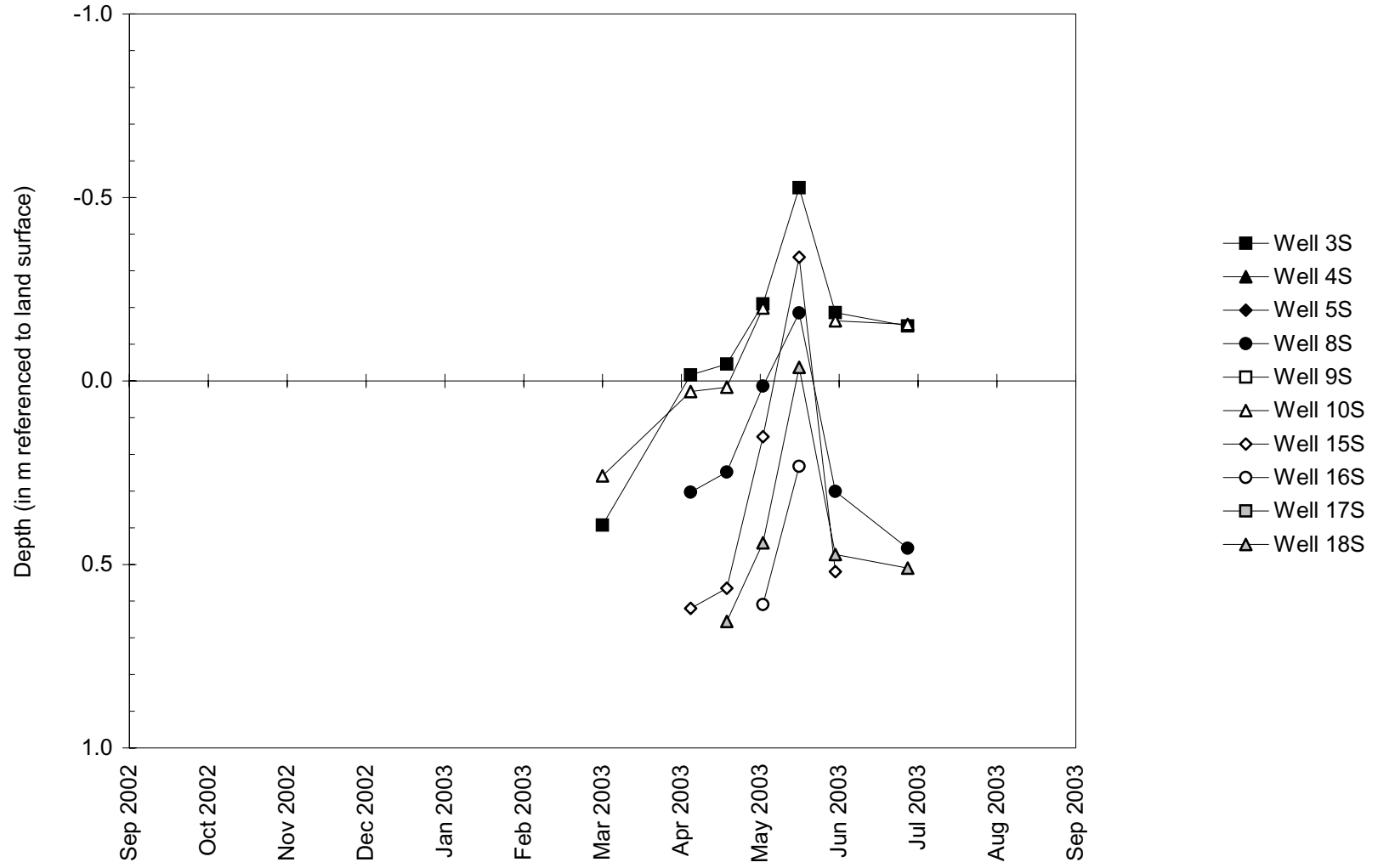


## Water-Level Elevations in Selected Monitoring Wells in the Floodplain Forest



**Apple Creek Potential Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**

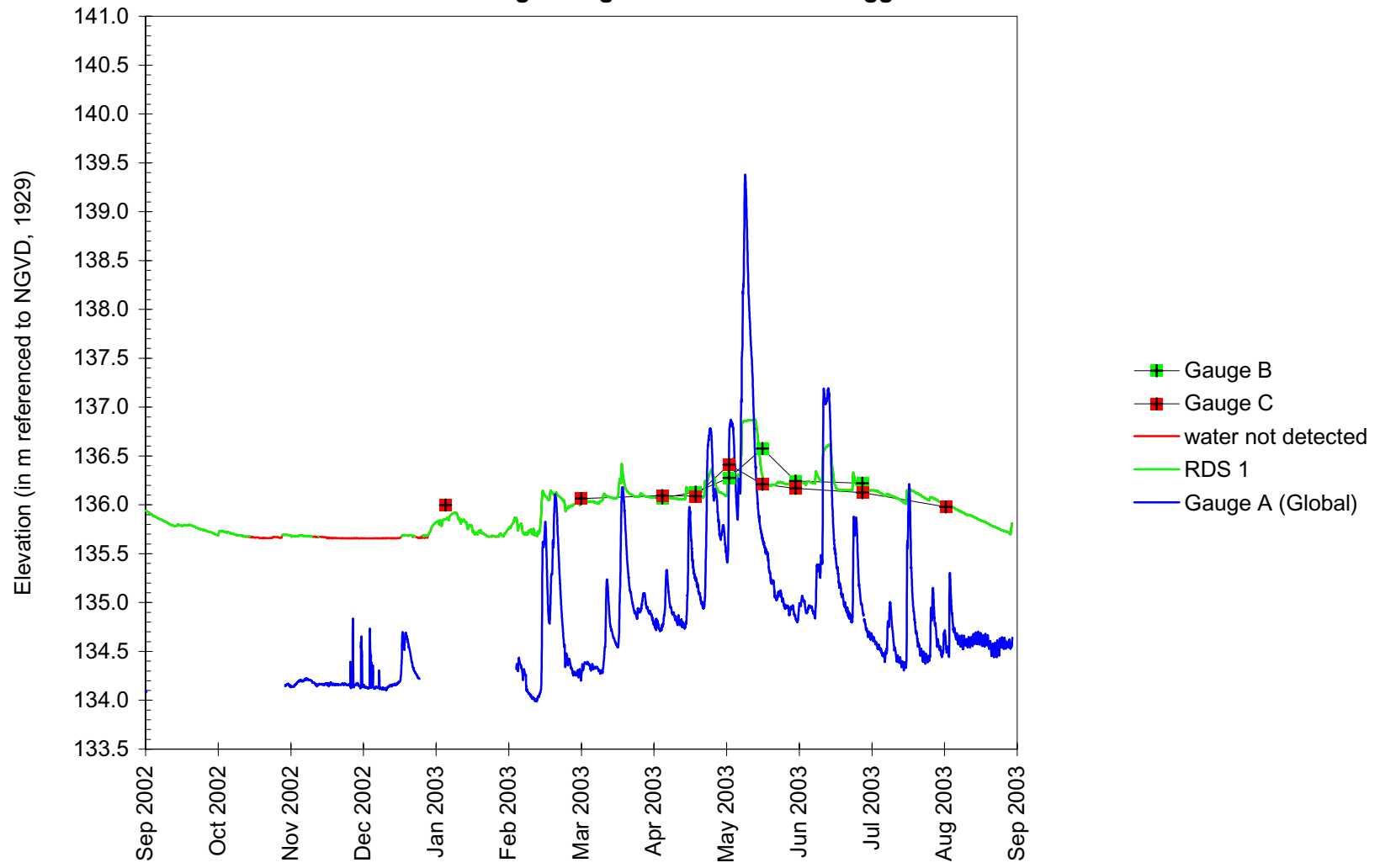
**Depth to Water**  
**in Selected Monitoring Wells in the Floodplain Forest**



# Apple Creek Potential Wetland Compensation Site

September 1, 2002 to September 1, 2003

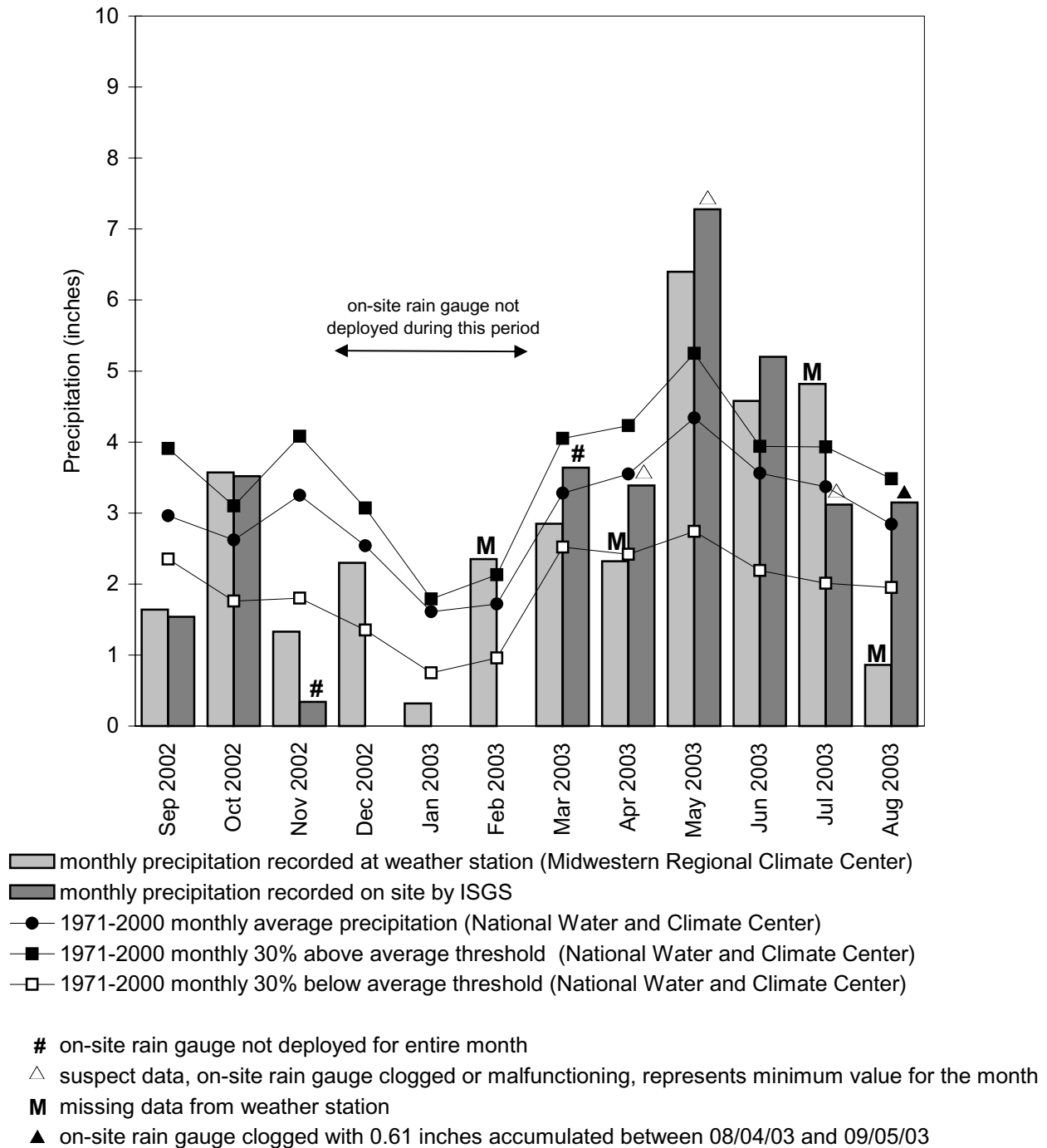
## Water-Level Elevations on the Stage Gauges and at the Data Loggers



# Apple Creek Potential Wetland Compensation Site

## September 2002 through August 2003

### Total Monthly Precipitation Recorded On Site and at the White Hall, IL Weather Station



## **HARRISBURG**

**ISGS #63**

### **POTENTIAL WETLAND COMPENSATION SITE**

FAP 332

Saline County, near Harrisburg, Illinois

**Primary Project Manager: Geoffrey E. Pociask**

**Secondary Project Manager: Marshall A. Lake**

### **SITE HISTORY**

- January 2000: ISGS was tasked by IDOT to conduct an Initial Site Evaluation of the site.
- April 2000: ISGS submitted an Initial Site Evaluation report identifying the site as having low-moderate potential for wetland restoration.
- December 2001: ISGS was tasked by IDOT to conduct a Level II hydrogeologic characterization of the site.
- March 2002: ISGS initiated monitoring activities at the site.

### **WETLAND HYDROLOGY CALCULATION FOR 2003**

Because this site is a potential compensation site, an estimate of the areas satisfying the criteria for wetland hydrology is not required for this report, although it is noteworthy for design purposes. Based on a topographic map and ground-surface elevations surveyed by ISGS, we estimate that the total area of created wetland that conclusively satisfied wetland hydrology criteria in 2003 is 11.5 ac (4.6 ha) out of an excavation of 20.0 ac (8.1 ha). This compares to 8.3 ac (3.3 ha) for the previous year. This estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Harrisburg is April 1 and the season lasts 211 days; 12.5% of the growing season is 26 days.
- Total precipitation for the period from September 2002 through August 2003 was 105% of normal. Monthly precipitation totals varied widely though the reporting period. Precipitation exceeded the normal range in September, October and December 2002 and in February, May and August 2003. Conditions were much drier than normal during March through April and in July 2003.
- In 2003, monitoring wells 1S, 2S, 3S, 5S and 6S conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual.
- The RDS data logger, located at the confluence of the drainage ditches at the east end of the site, indicated that surface-water inundation occurred below 111.03 m (364.27 ft) for a duration sufficient to conclusively satisfy wetland hydrology criteria.
- Limitations of the wetland hydrology determination are as follows:
  - The area of wetland hydrology was calculated using GIS methods. The wetland-hydrology polygon was drawn from an ISGS topographic map (0.1-meter contour interval) rectified to GPS locations of water-level instruments.



## PLANNED FUTURE ACTIVITIES

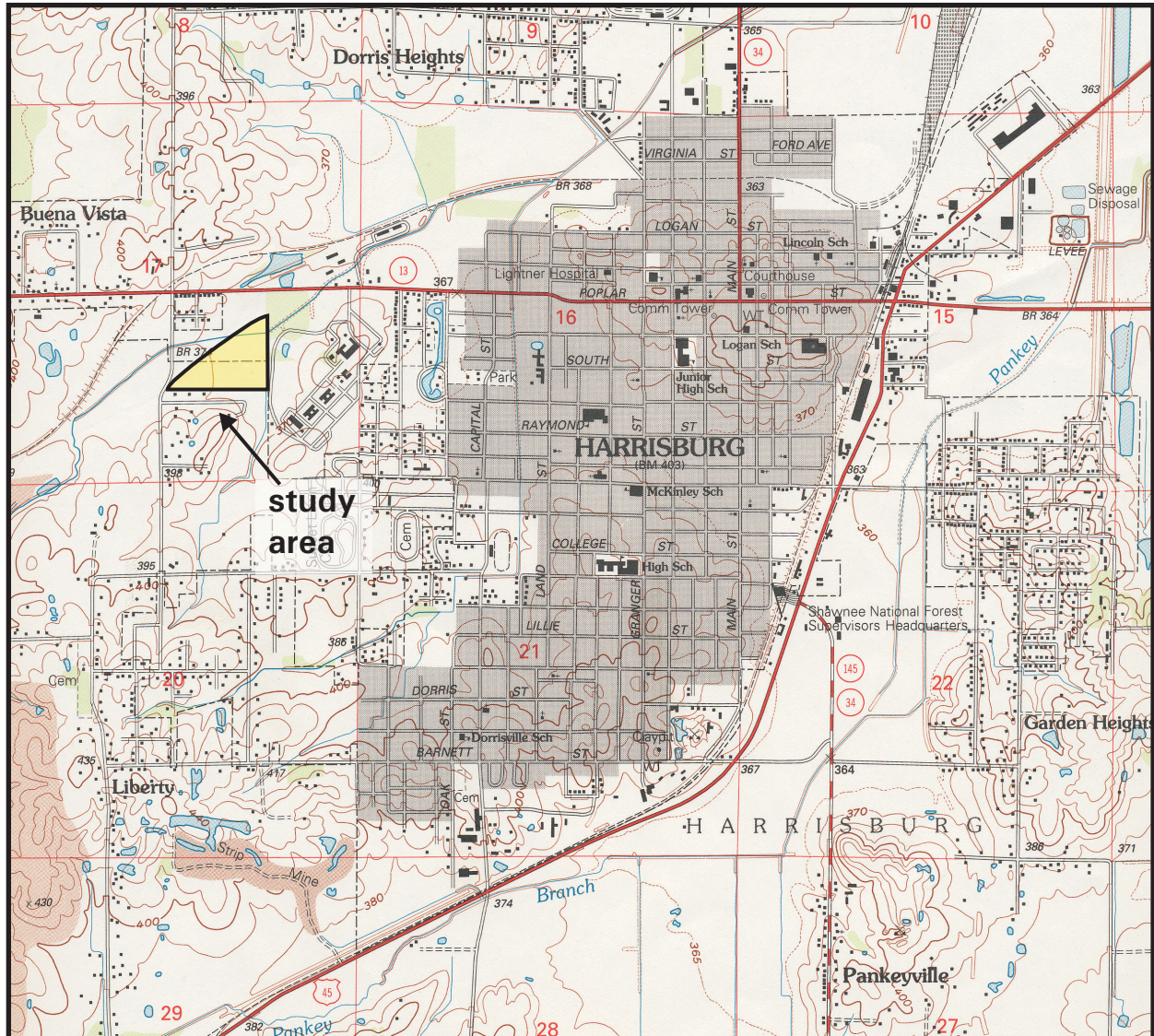
- Monitoring will continue until no longer required by IDOT.


# Harrisburg Potential Wetland Compensation Site (FAP 332)

## General Study Area and Vicinity

from the USGS Topographic Series, Harrisburg, IL 7.5-minute Quadrangle (USGS 1996)

contour interval is 5 feet



 general study area

0 2000 ft  
0 600 m





# Harrisburg Potential Wetland Compensation Site (FAP 332)

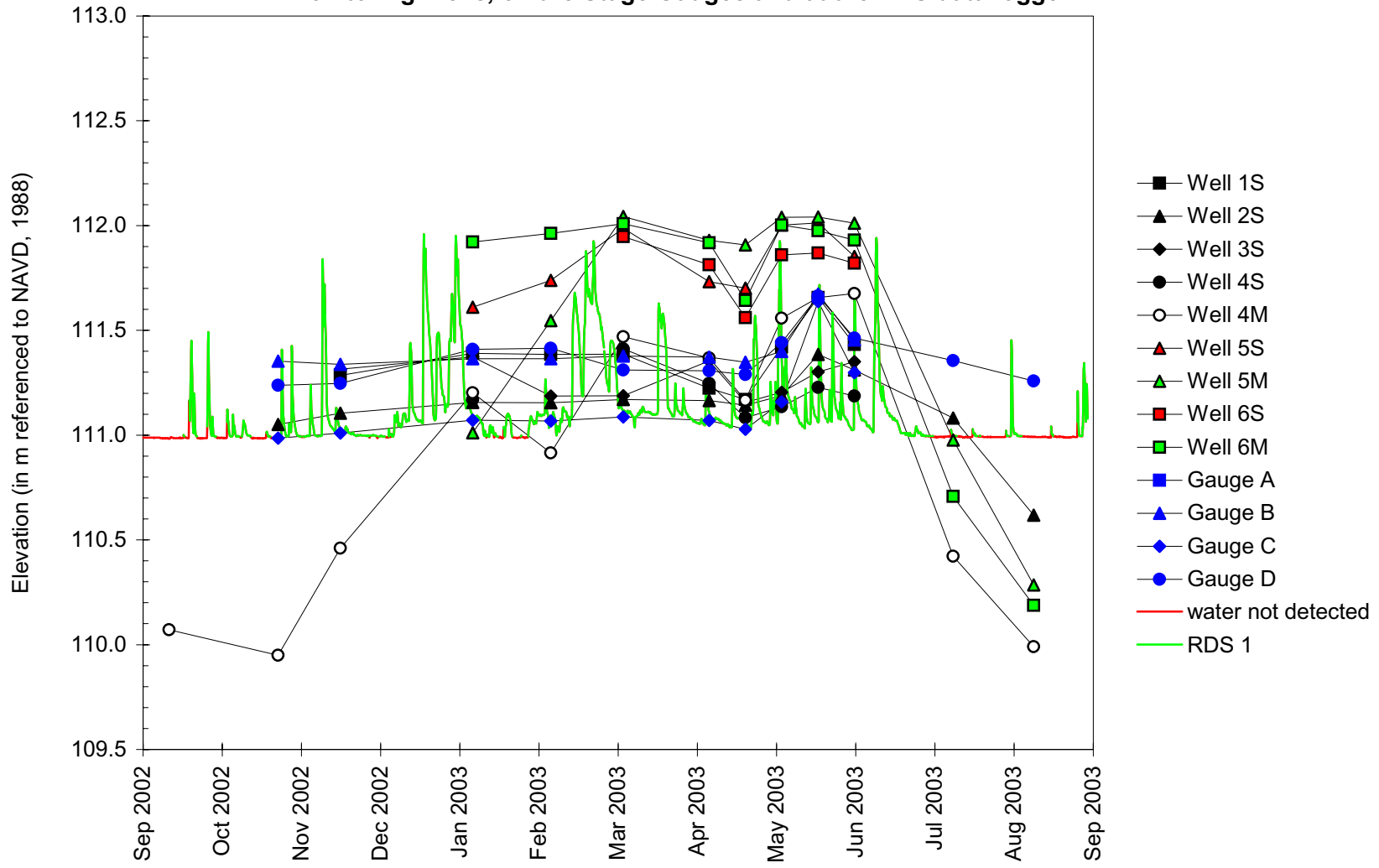
## Estimated Extent of 2003 Wetland Hydrology

based on data collected between September 1, 2002 and September 1, 2003

base map generated from IDOT aerial photography rectified to USGS digital orthophotograph  
Harrisburg, NW quarter quadrangle (ISGS 2002)

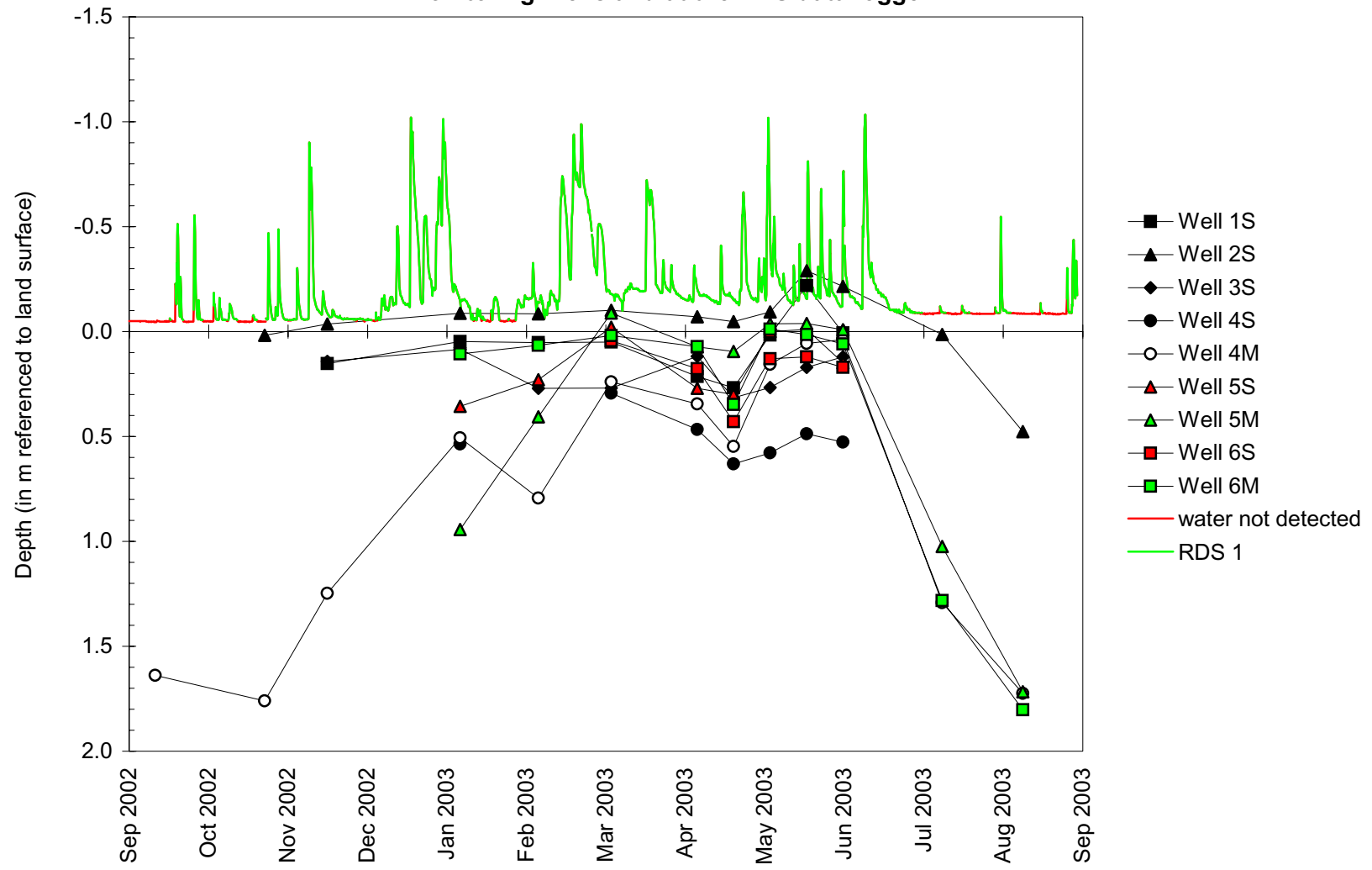


**Water-Level Elevations**  
**in Monitoring Wells, on the Stage Gauges and at the RDS data logger**



**September 1, 2002 to September 1, 2003**

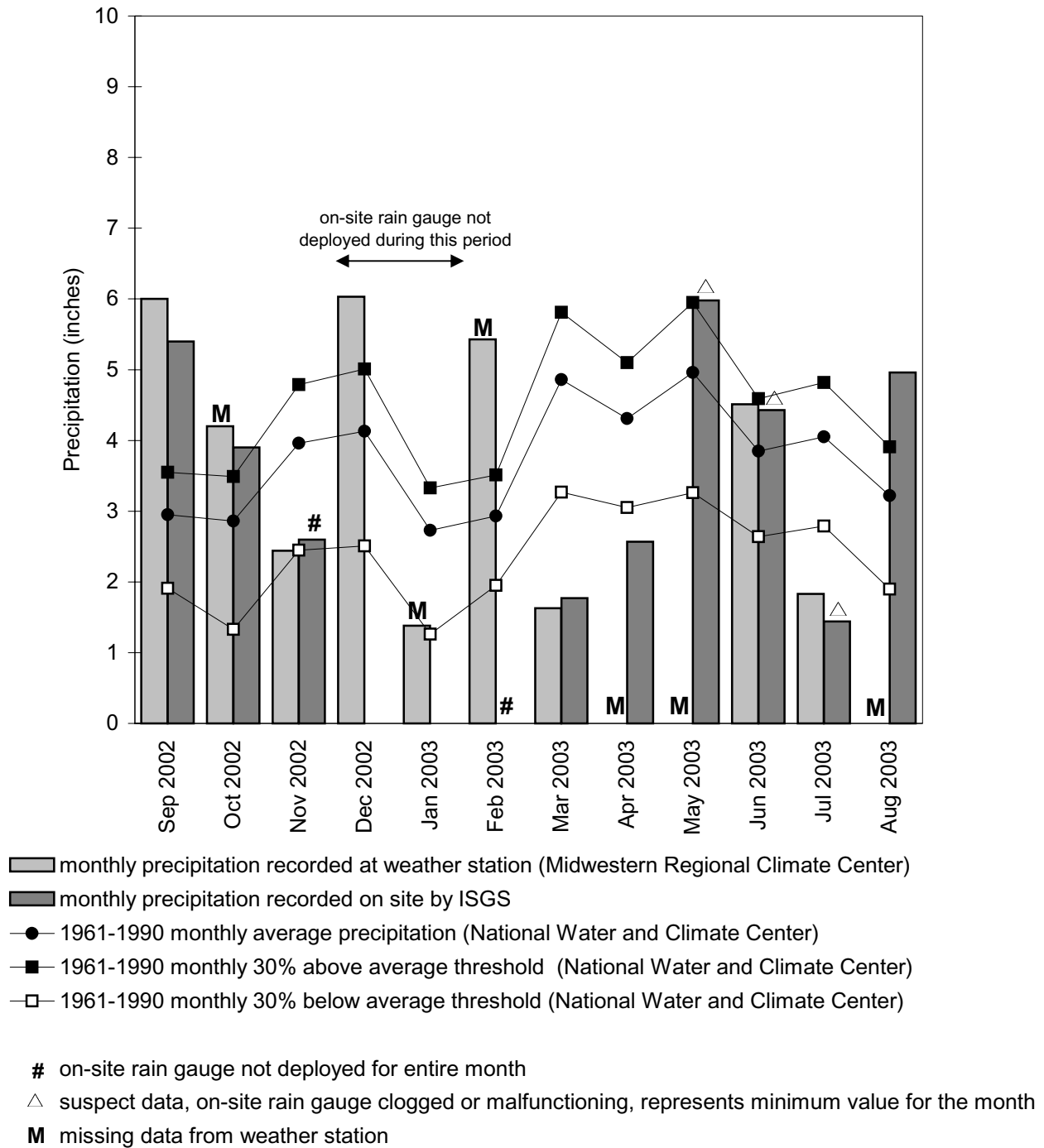
## Depth to Water



# Harrisburg Potential Wetland Compensation Site

## September 2002 through August 2003

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



**CARBONDALE  
WETLAND COMPENSATION SITE**

**ISGS #65**

FAP 322

Jackson County, near Carbondale, Illinois

**Primary Project Manager: Geoffrey E. Pociask**

**Secondary Project Manager: Marshall A. Lake**

**SITE HISTORY**

- March 2002: ISGS was tasked by IDOT to monitor wetland hydrology for this compensation site.
- April 2002: ISGS initiated water-level monitoring activities.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

Based on an ISGS topographic contour map and ground-surface elevations surveyed by ISGS, we estimate that the total area that conclusively satisfied wetland hydrology criteria in 2003 is 0.9 ac (0.4 ha) out of a total of 9.9 ac (4.0 ha). No wetland hydrology acreage was reported for the previous year. The 2003 estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Carbondale is April 4 and the season lasts 203 days; 12.5% of the growing season is 25 days.
- Total precipitation for the reporting period from September 2002 through August 2003 was 97% of normal. Near-normal conditions prevailed through the reporting period. Precipitation exceeded the normal range in October and December 2002 and February 2003. Conditions were much drier than normal in January and March 2003.
- In 2003, monitoring wells 2S, 4S, 5S, 6S, 8S, and 12S conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. The water levels recorded at RDS1 and Gauge A show that flood events from Piles Fork supply surface water to wetland compensation areas. Data from RDS1 indicate areas below approximately 123.1 m (403.9 ft) elevation conclusively satisfied wetland hydrology criteria.
- Limitations of the wetland hydrology determination are as follows:
  - The wetland hydrology estimate includes the entire IDOT parcel. Preservation and enhancement areas are included in the wetland hydrology acreage estimate.
  - The area of wetland hydrology was calculated using GIS methods. The wetland-hydrology polygon was drawn from an ISGS topographic map (0.2-meter contour interval) rectified to GPS positions of water-level instruments and point features identifiable from digital orthophotography.
  - Instrument locations were determined using GPS in November 2002 and March 2003. The GPS positions of instruments were superimposed on digital orthophotography.

## PLANNED FUTURE ACTIVITIES

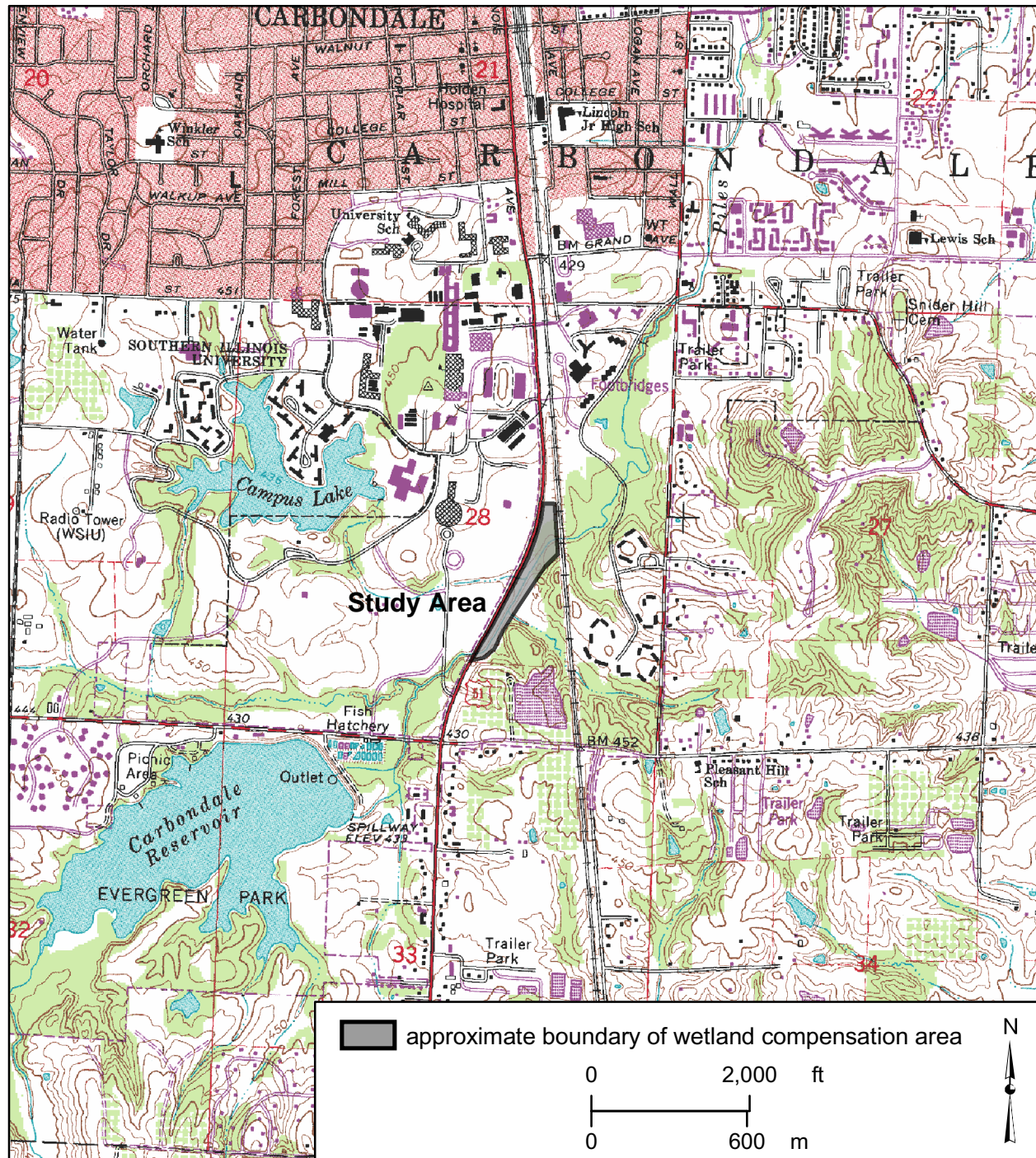
- Water-level monitoring activities will continue through 2007 or until no longer required by IDOT.



# Carbondale Wetland Compensation Site (FAP 322)

## General Study Area and Vicinity

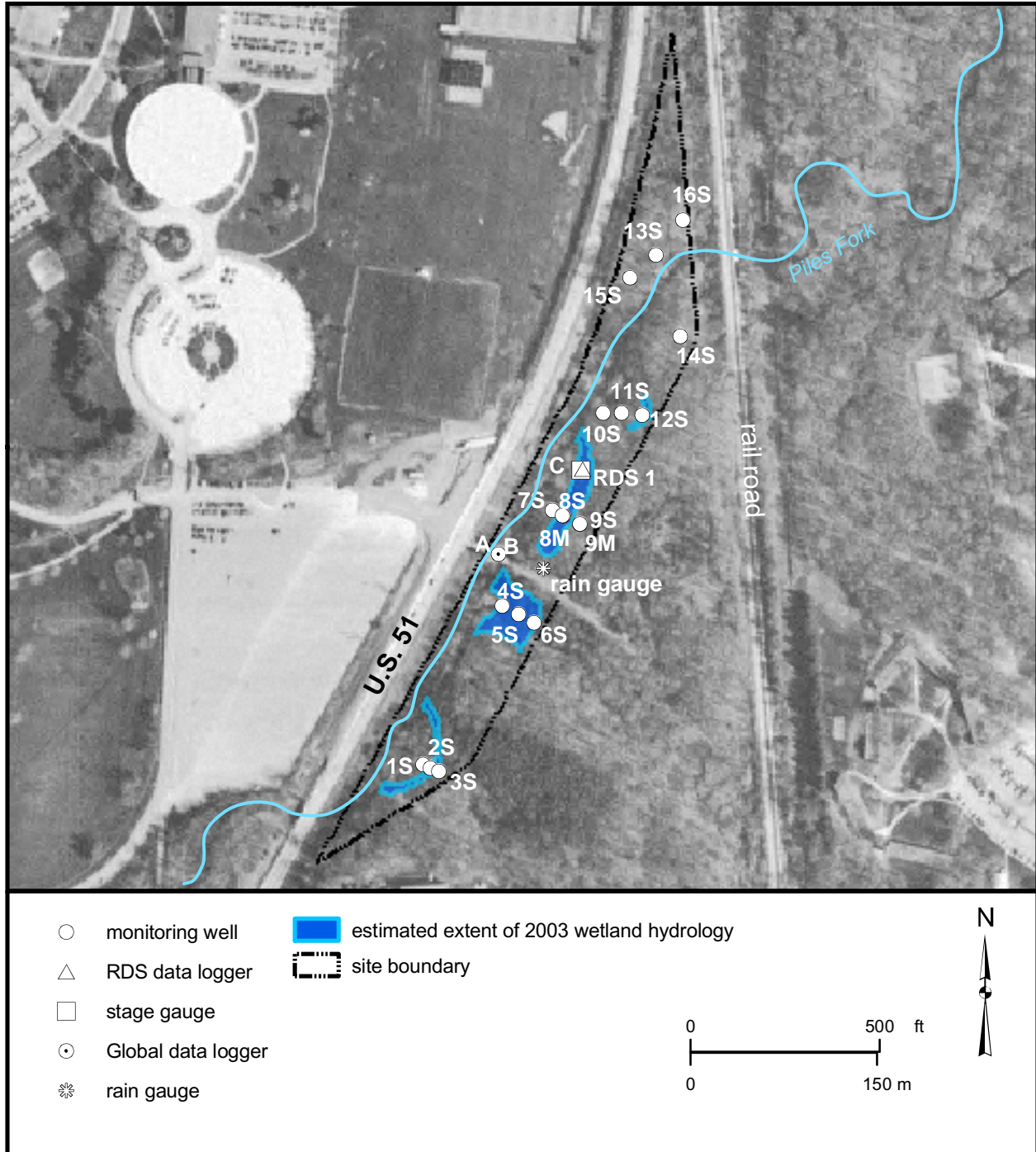
from the USGS Topographic Series, Carbondale, IL 7.5-minute Quadrangle (USGS 1966; photorevised 1990)  
contour interval is 10 feet



# Carbondale Wetland Compensation Site (FAP 322)

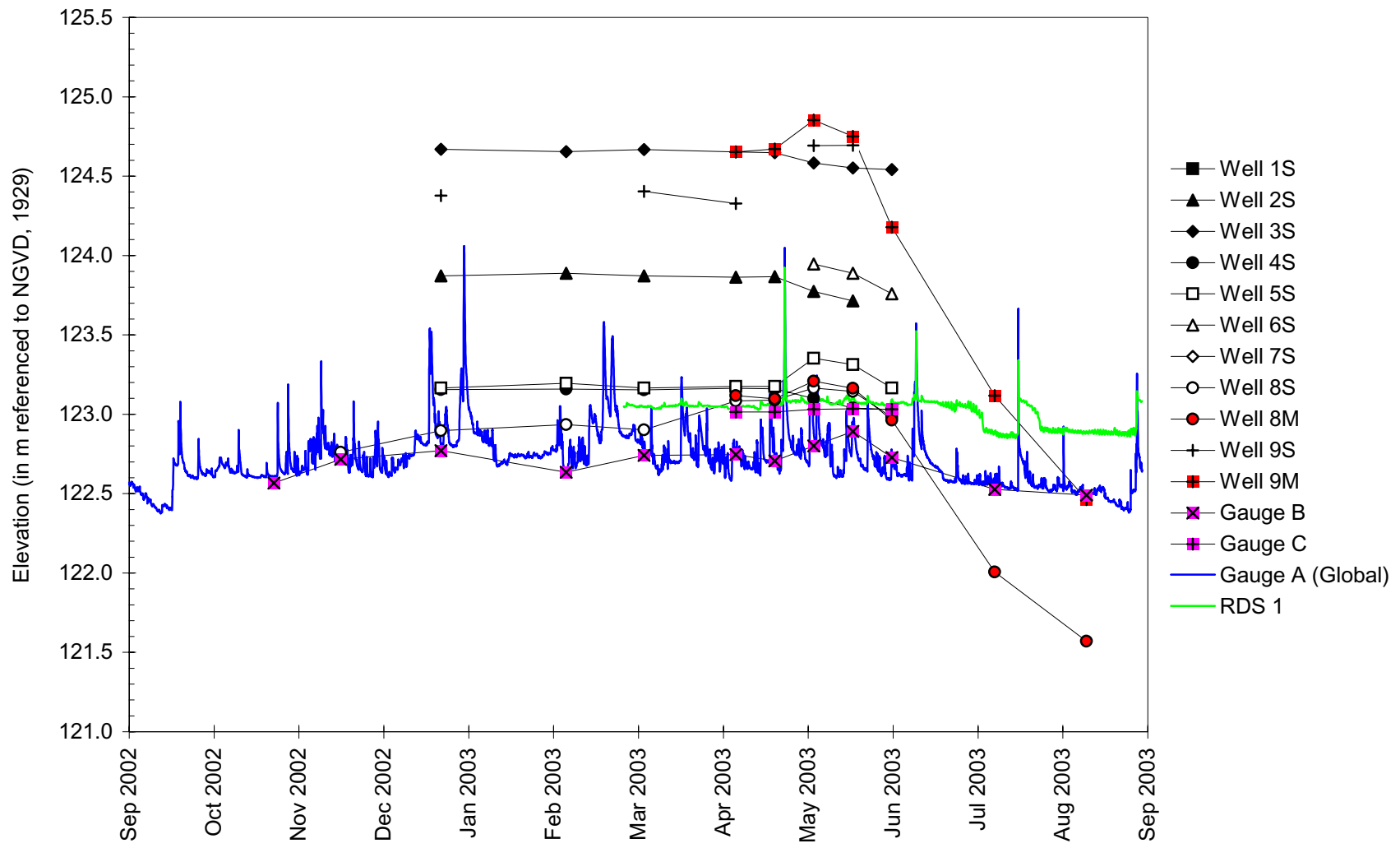
## Estimated Areal Extent of 2003 Wetland Hydrology

map based on IDOT mitigation design plan rectified to USGS digital orthophotograph  
Carbondale NW quarter quadrangle (ISGS 2002)



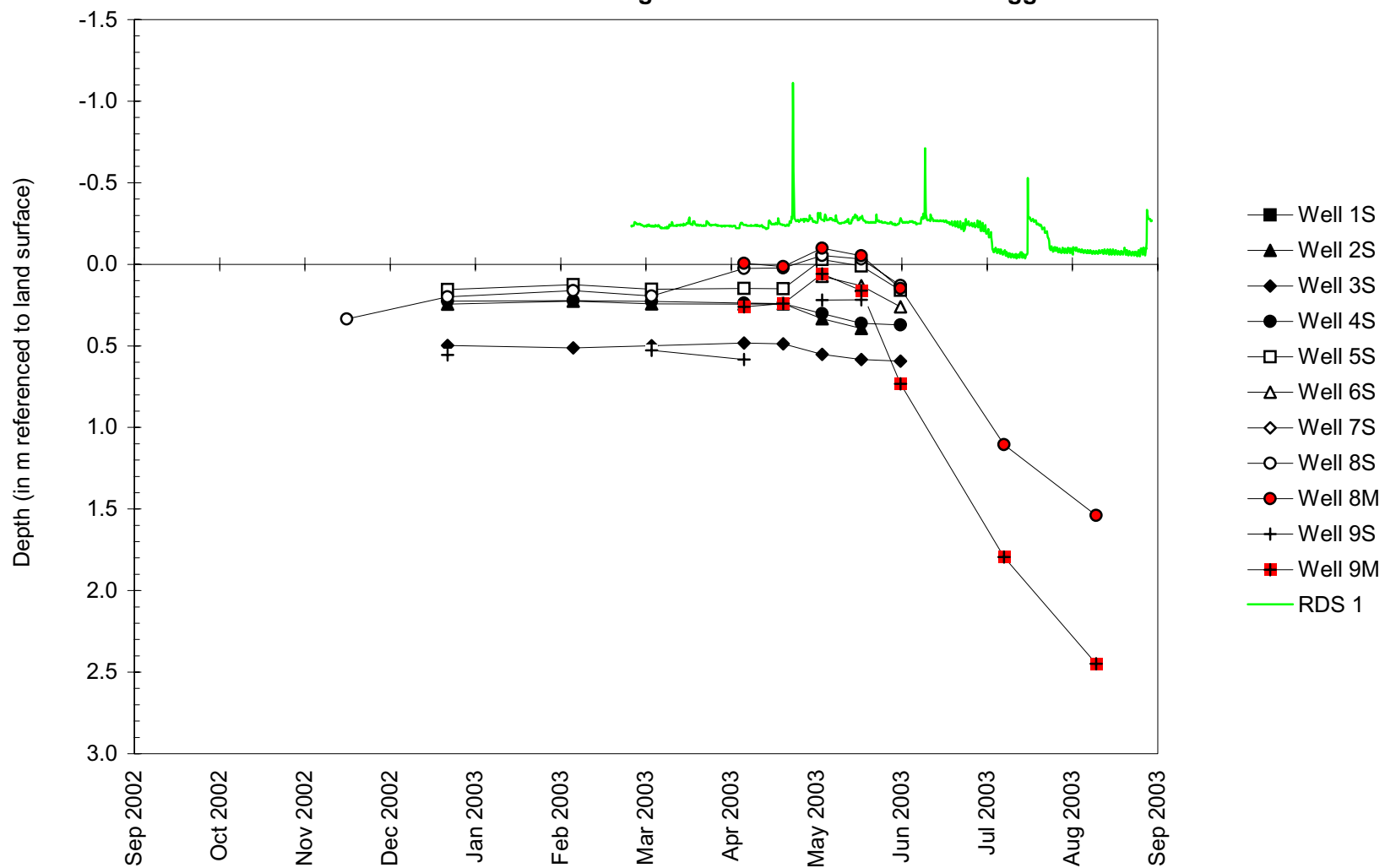
# **Carbondale Wetland Compensation Site** **September 1, 2002 to September 1, 2003**

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



**September 1, 2002 to September 1, 2003**

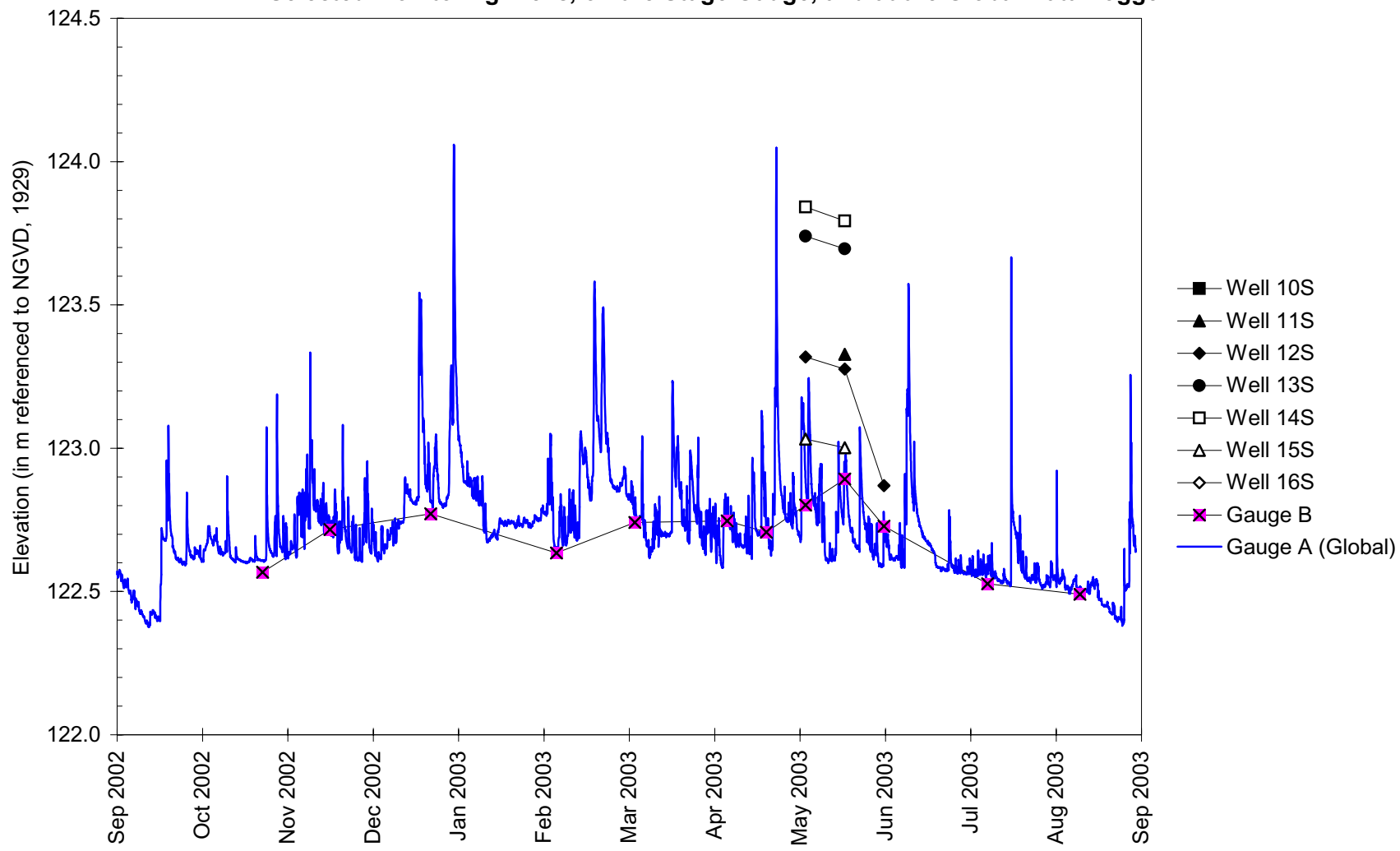
## Depth to Water



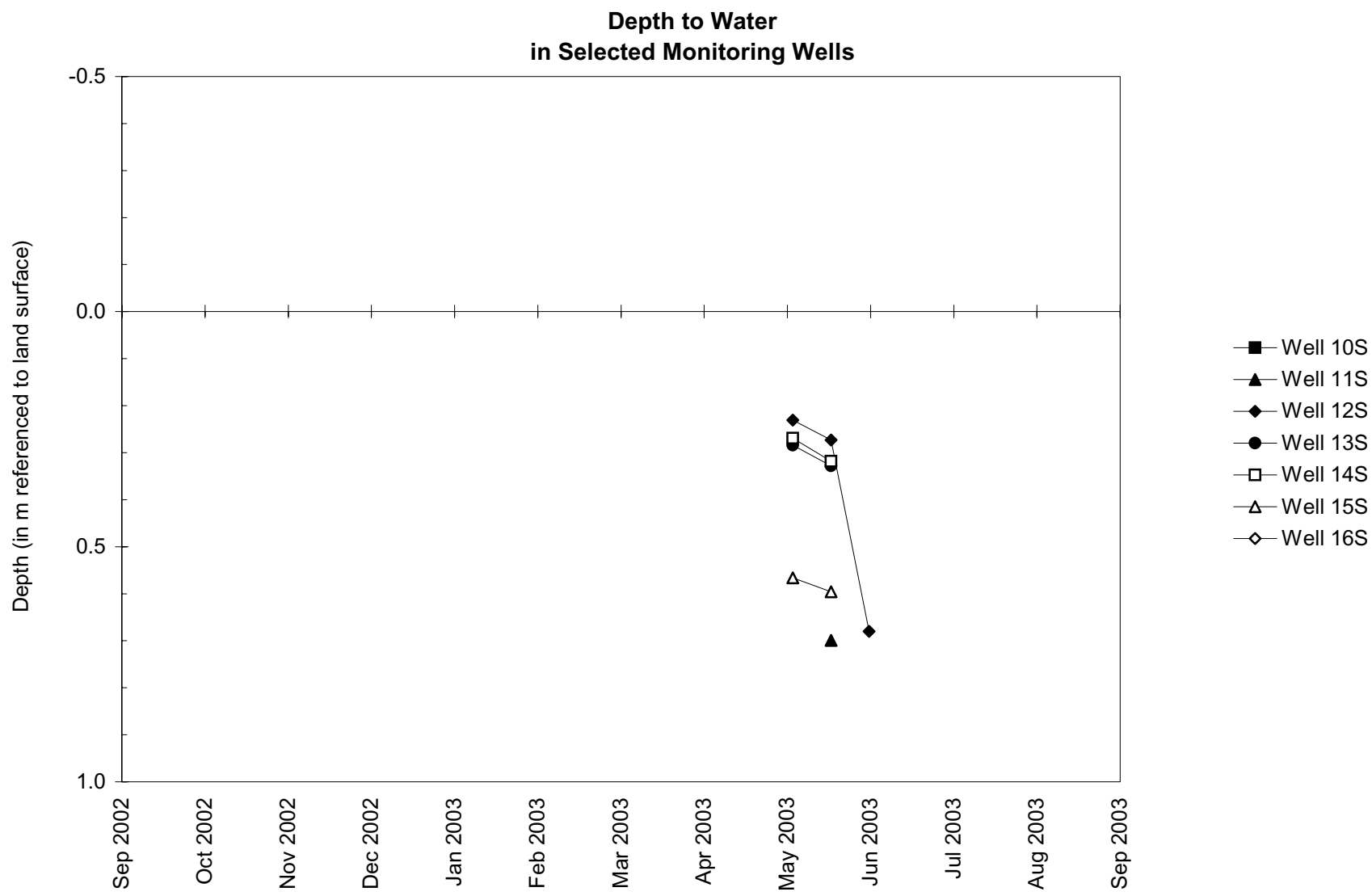


**September 1, 2002 to September 1, 2003**

## Water-Level Elevations

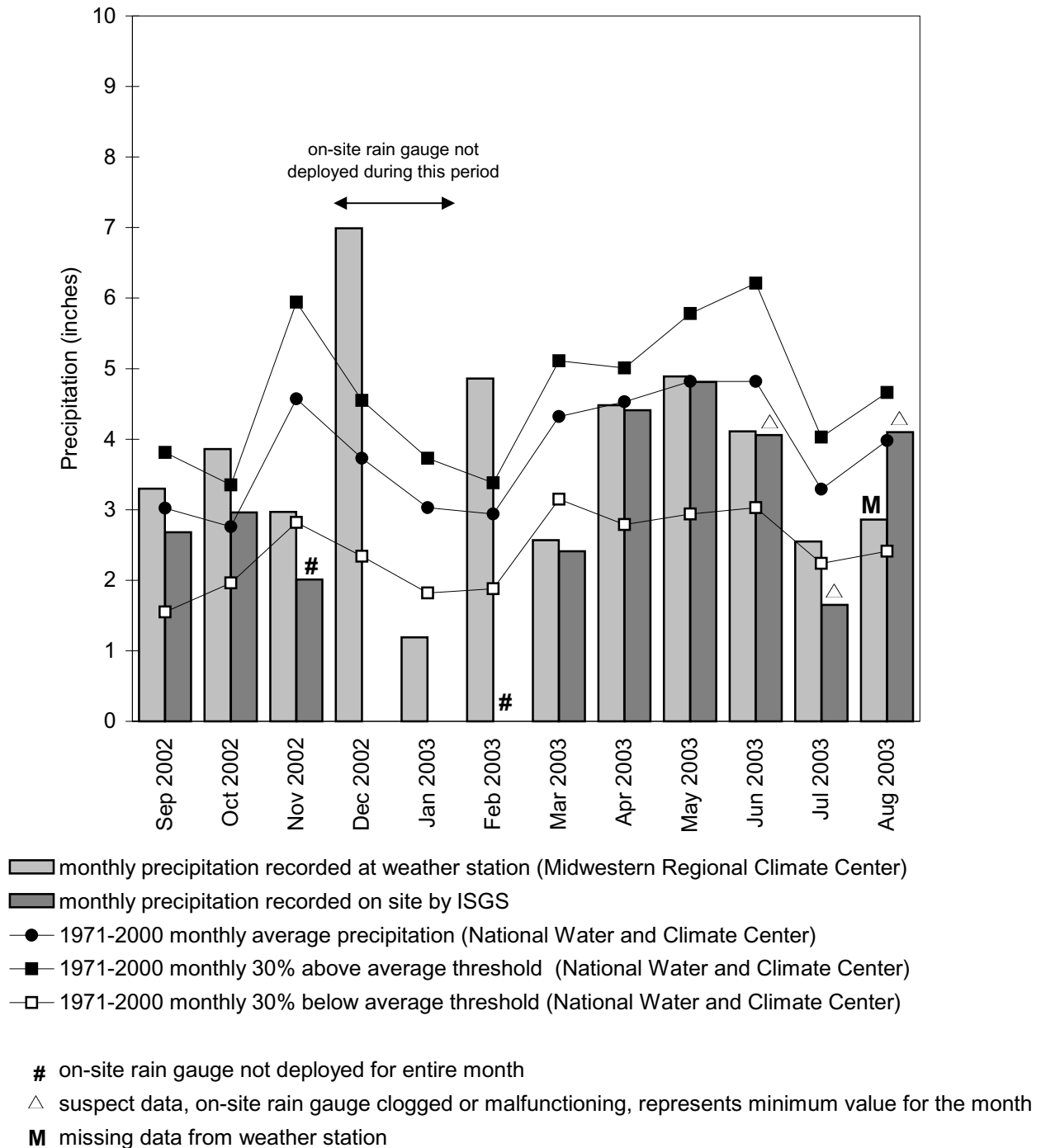


**Carbondale Wetland Compensation Site**  
**September 1, 2002 to September 1, 2003**



## Carbondale Wetland Compensation Site September 2002 through August 2003

### Total Monthly Precipitation Recorded On Site and at the Carbondale Sewage Plant Weather Station, Carbondale, IL



**CENTREVILLE, NEW RIVER CROSSING  
POTENTIAL WETLAND COMPENSATION SITE**

**ISGS #66**

FAP 999

St. Clair County, near Centreville, Illinois

**Primary Project Manager: Steven E. Benton**

**Secondary Project Manager:** not assigned

**SITE HISTORY**

- December 2001: An Initial Site Evaluation was performed.
- March 13, 2002: A Level II hydrogeologic assessment was requested by IDOT.
- July 2002: A monitoring network consisting of 28 monitoring wells in 14 well clusters, and a staff gauge and data logger in the main drainage ditch was installed.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

The area that conclusively satisfied the wetland hydrology criteria in 2003 is estimated to be 11.0 ac (4.4 ha), which is about 20% of the site. This estimate is based on the following factors.

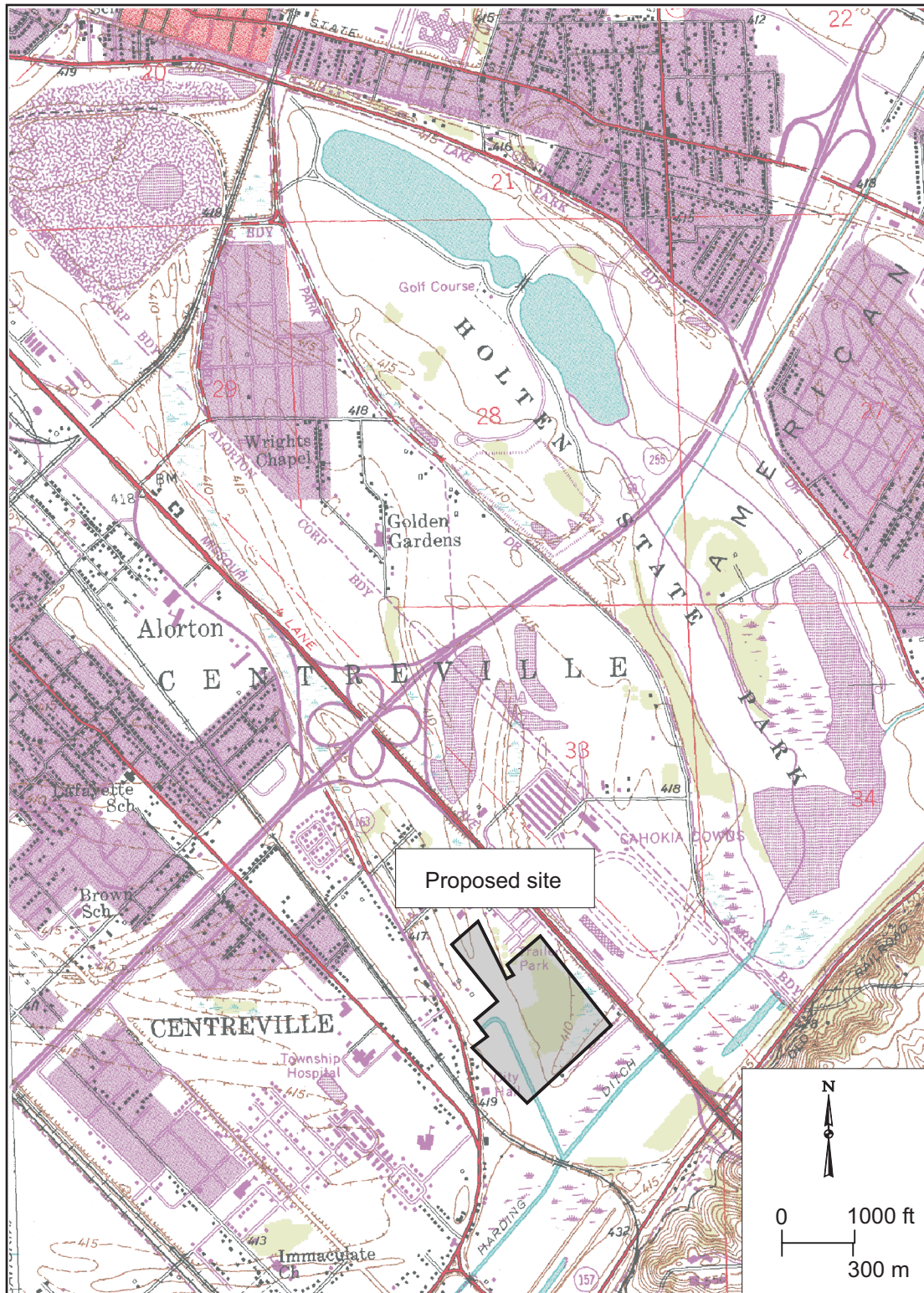
- According to the Midwest Climate Center, the median length of the growing season, as measured at the Belleville SIU Research station, is 203 days (April 5 to October 24); 12.5% of the growing season is 25 days.
- Total precipitation during the monitoring period, as recorded at the SIU Belleville, IL Research station, was 35.31 inches (90% of average). Precipitation was below the normal range from November 2002 to January 2003, and in July 2003 and August 2003, above the normal range in October 2002, May 2003, and June 2003, and within the normal range for the rest of the monitoring period.
- In 2003, water levels measured in the following wells conclusively satisfied the wetland hydrology criteria per the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual: 2S, 3S, 5S, and 10S.
- Gauge and data logger data and visual observations reveal that water was present in the main drainage ditch throughout the monitoring period. Visual observations also reveal that water was present in the subsidiary drainage ditch during the months of May and June.

**PLANNED FUTURE ACTIVITIES**

- Data collection will continue until notified otherwise by IDOT.
- Analysis of the data already collected has been completed and preparation of a Level II report is in progress.



base map from the French Village 7.5-minute Quadrangle (USGS 1998)



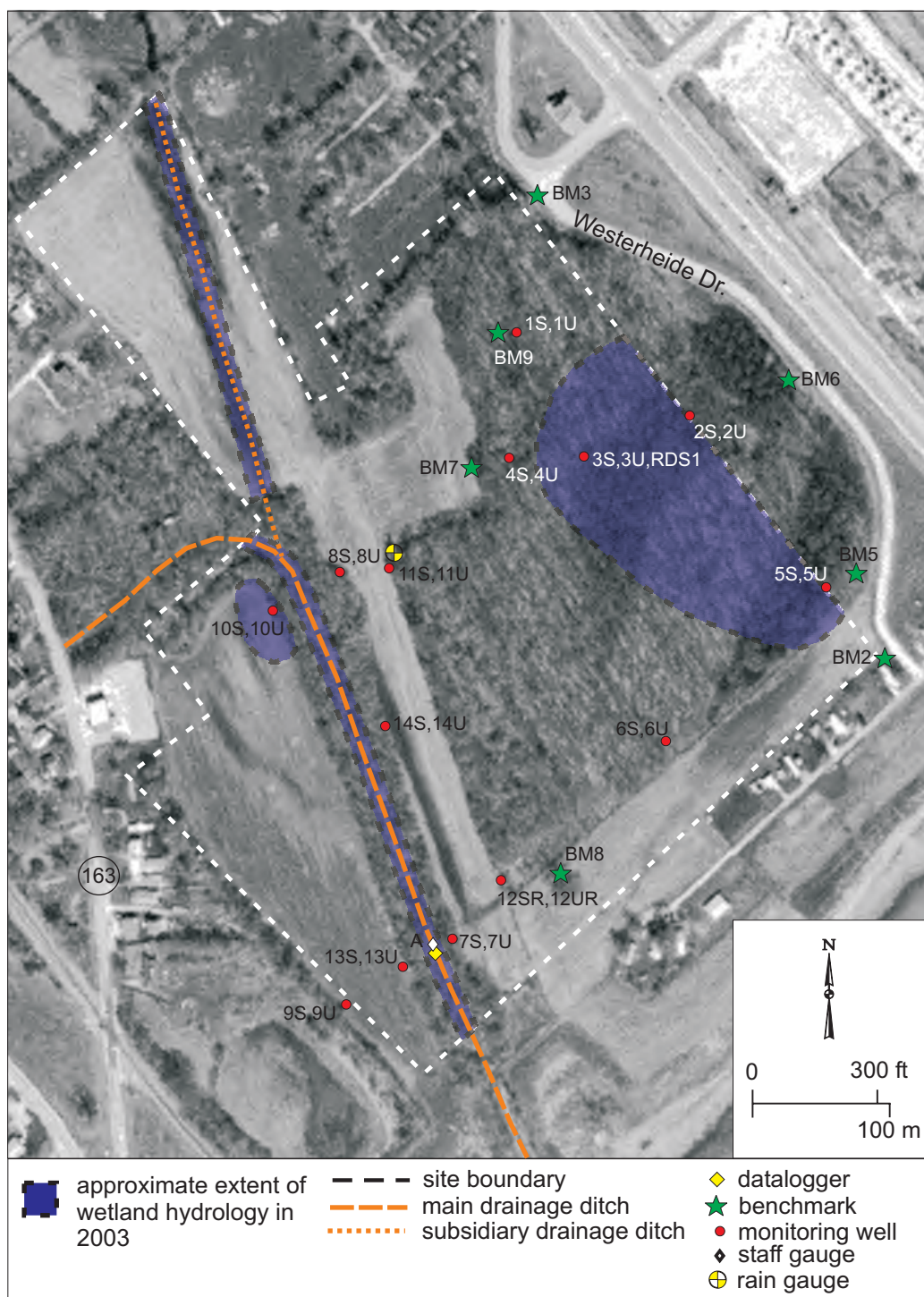


# Centreville, New River Crossing Potential Wetland Compension Site (FAP 999)

## Estimated Areal Extent of 2003 Wetland Hydrology

based on data collected between September 1, 2002 and September 1, 2003

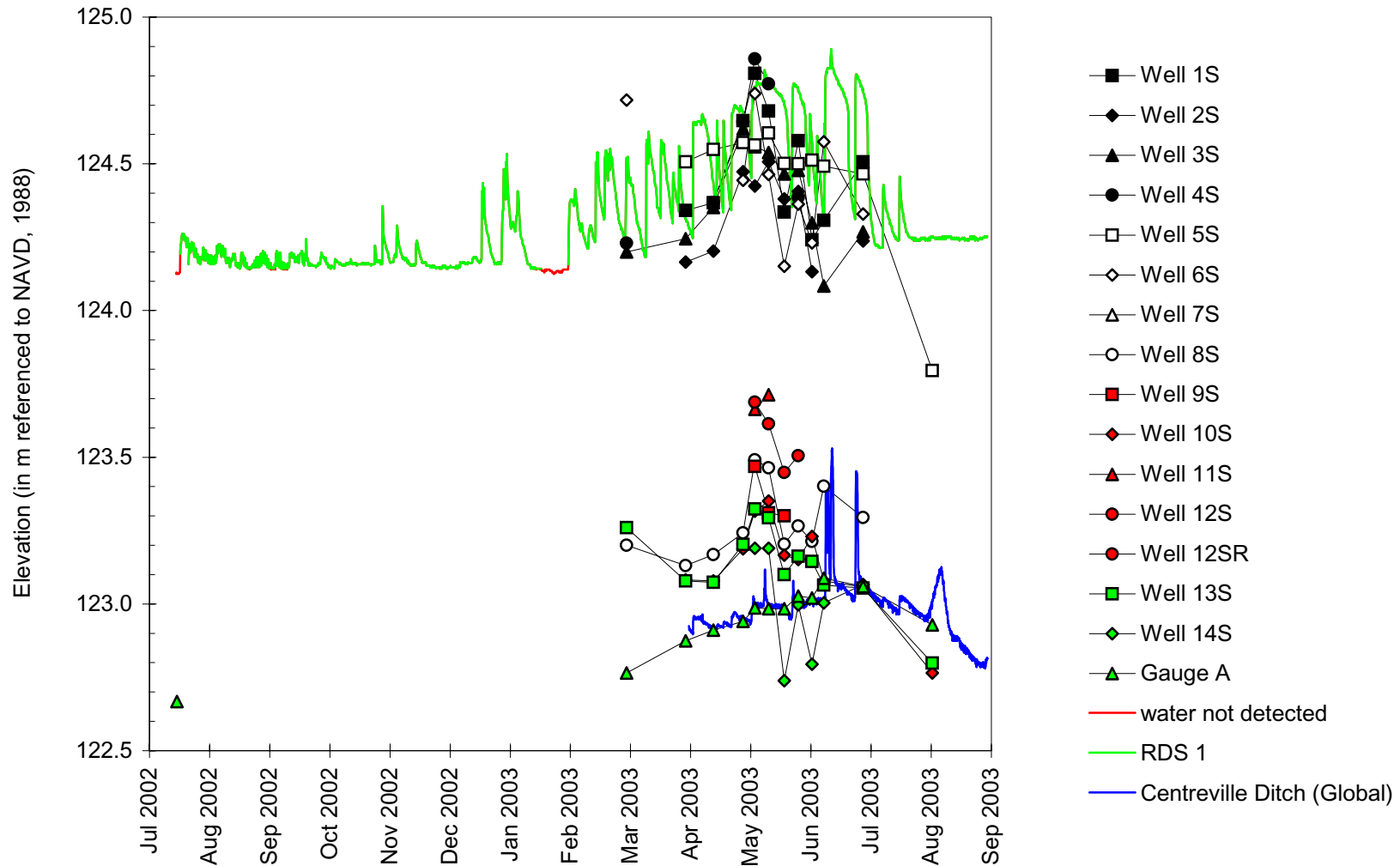
map based on USGS digital orthophotograph, French Village, NW quarter quadrangle  
produced from 4/2/1998 aerial phtography (ISGS 2001)



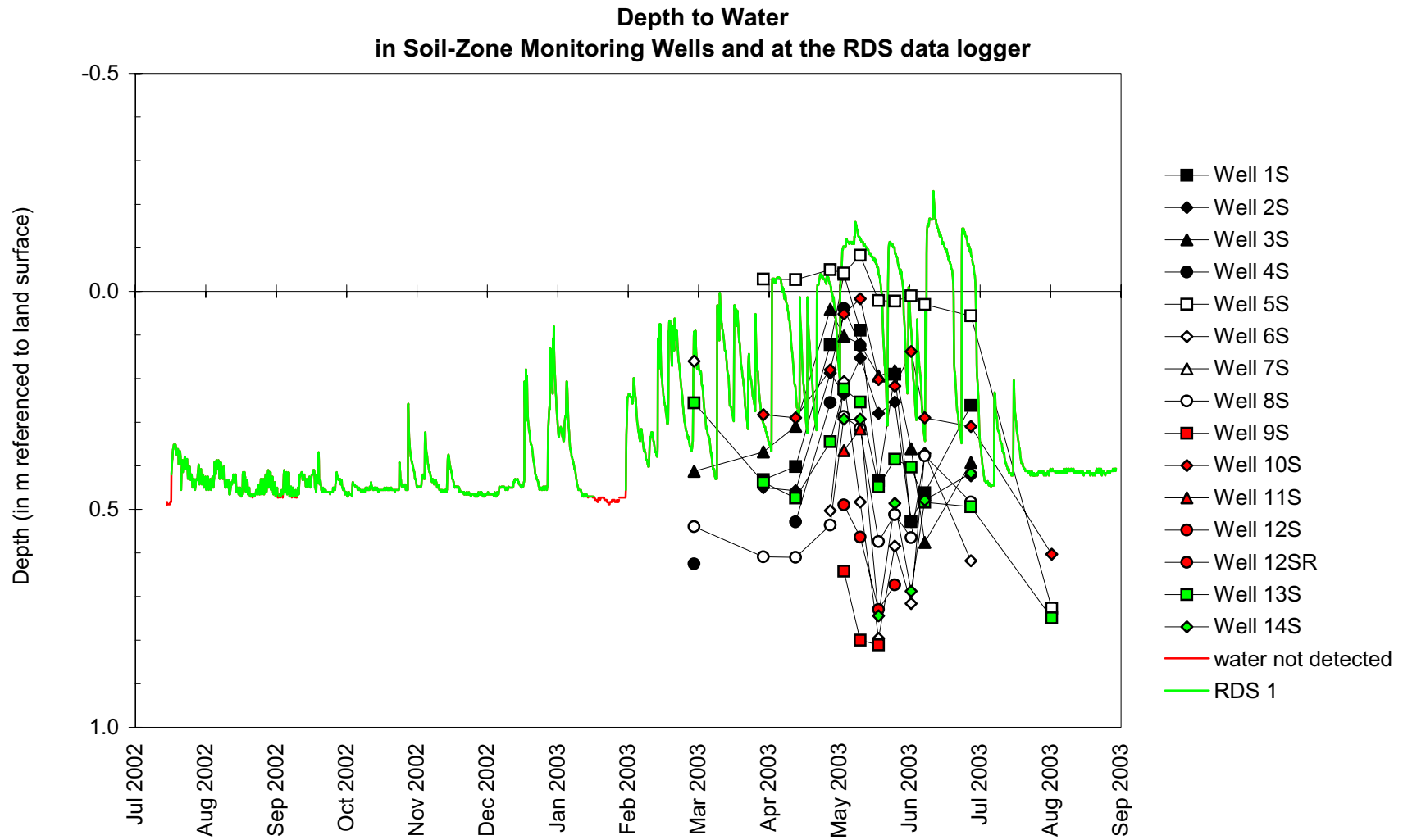
# Centreville, New River Crossing Potential Wetland Compensation Site

## July 1, 2002 to September 1, 2003

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

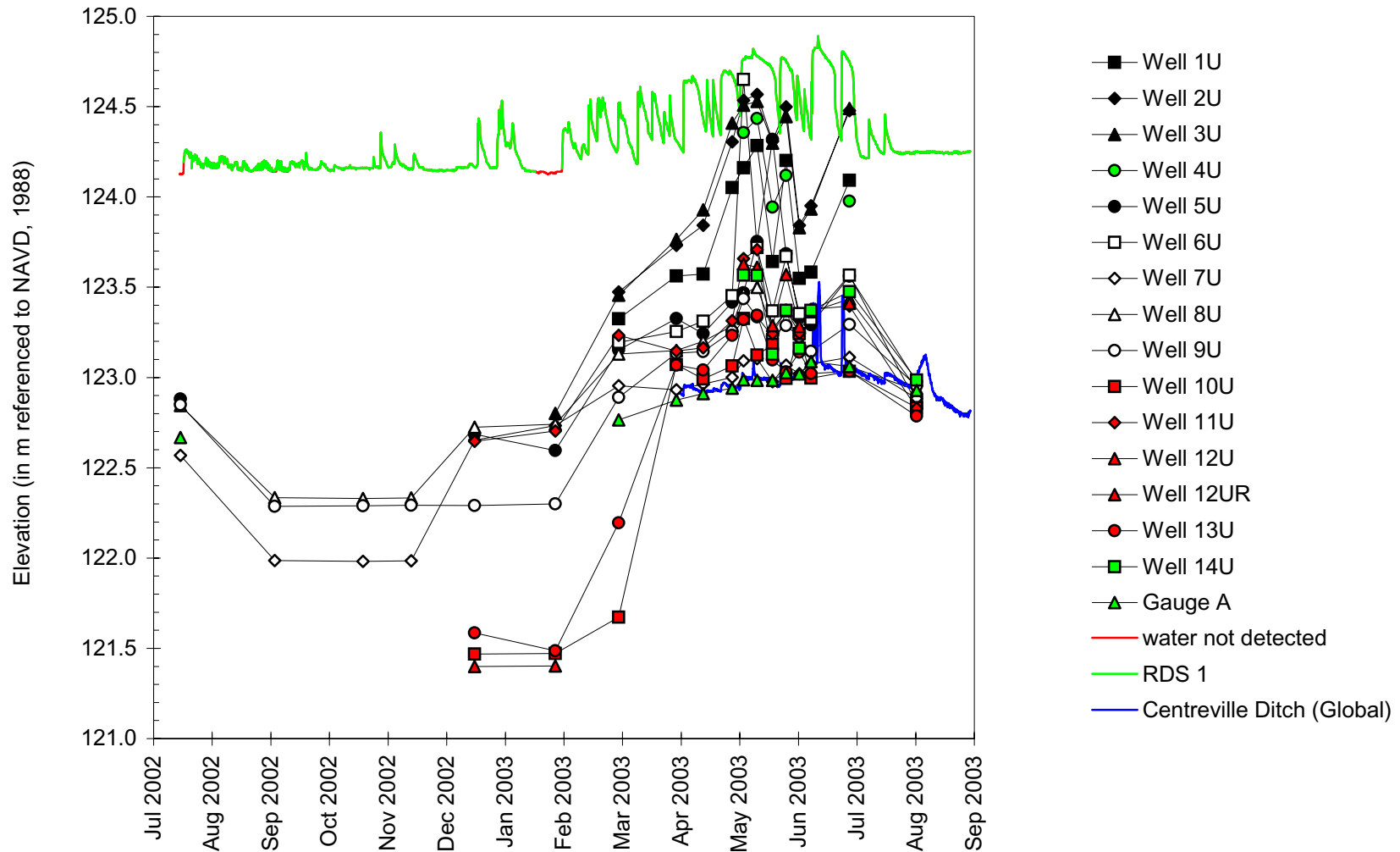


# **Centreville, New River Crossing Potential Wetland Compensation Site** **July 1, 2002 to September 1, 2003**

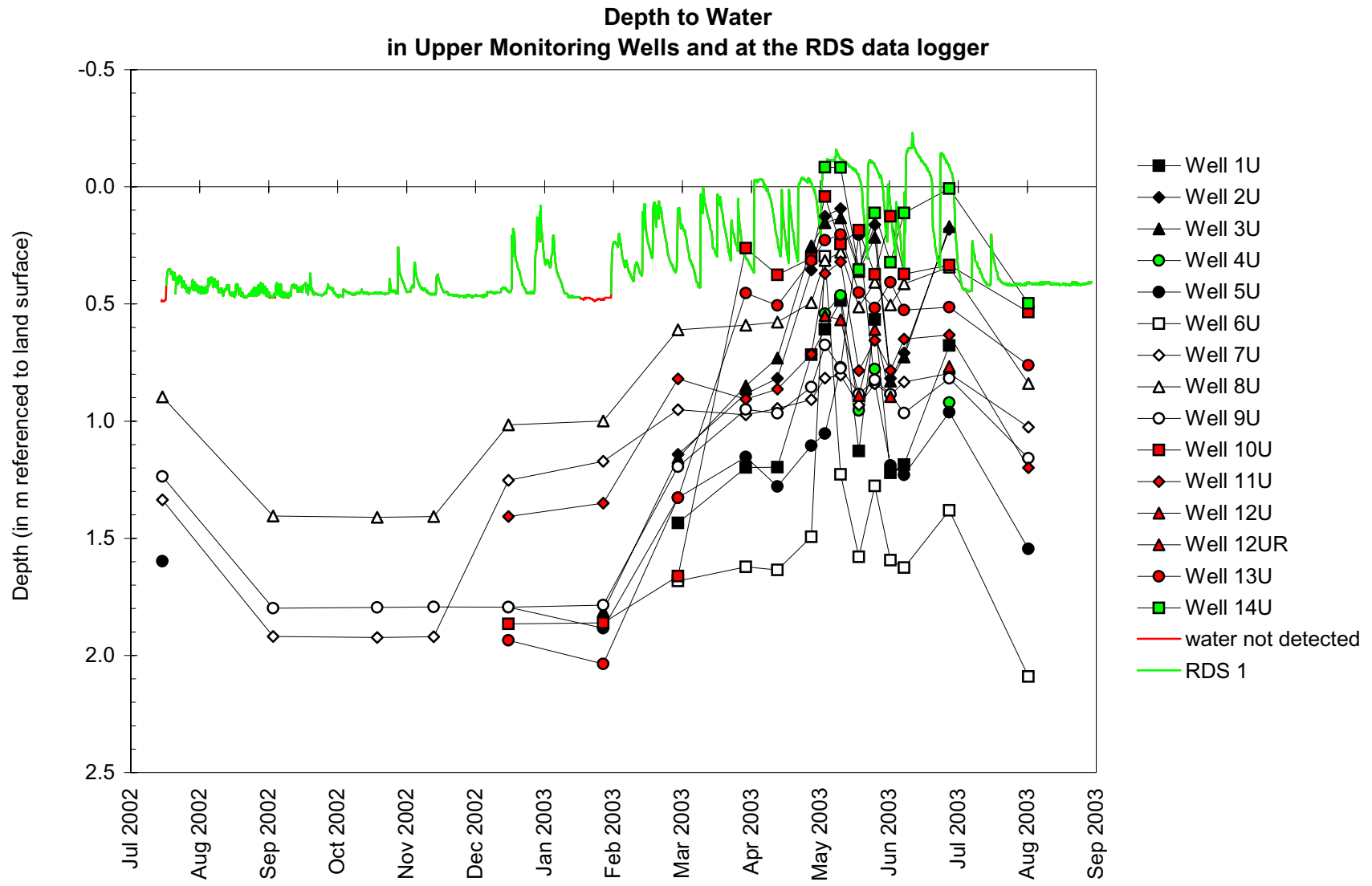


# Centreville, New River Crossing Potential Wetland Compensation Site July 1, 2002 to September 1, 2003

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

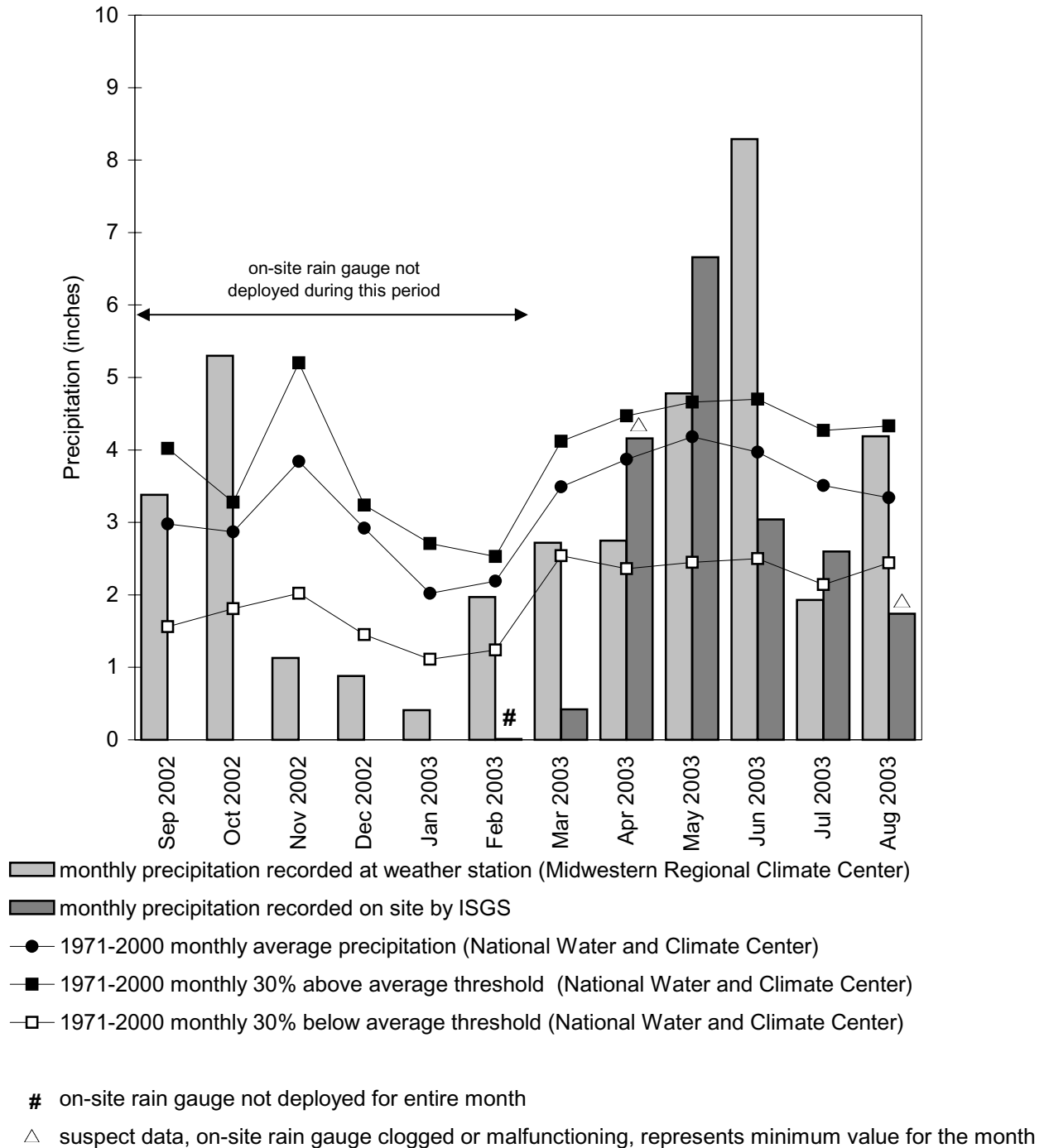


# **Centreville, New River Crossing Potential Wetland Compensation Site** **July 1, 2002 to September 1, 2003**



# **Centreville, New River Crossing Potential Wetland Compensation Site September 2002 through August 2003**

## **Total Monthly Precipitation Recorded at the Belleville, IL SIU Research Center Weather Station**



**PYATTS BLACKTOP  
WETLAND COMPENSATION SITE**

**ISGS #67**

FAP 42

Perry County, near Pyatts, Illinois

**Primary Project Manager: Geoffrey E. Pociask**

**Secondary Project Manager: Marshall A. Lake**

**SITE HISTORY**

- April 2002: ISGS was tasked by IDOT to monitor wetland hydrology for the compensation site.
- May 2002: ISGS initiated monitoring of the site.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

Based on a topographic map and ground-surface elevations surveyed by ISGS, we estimate that the total area that conclusively satisfied wetland hydrology criteria in 2003 is 6.4 ac (2.6 ha) out of 16.4 ac (6.7 ha) available for mitigation. No wetland hydrology acreage was reported for the previous year. The 2003 estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in Du Quoin is April 5 and the season lasts 207 days; 12.5% of the growing season is 26 days.
- Total precipitation for the reporting period from September 2002 through August 2003 was 91% of normal. Monthly precipitation totals varied widely through the reporting period. Precipitation exceeded the normal range in December 2002 and February and April through June 2003. Conditions were much drier than normal in September and November 2002 and January, March, and July through August 2003.
- Wells 1S, 2S, 3S, 4S, 5S, 6S and 7S conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual.
- Limitations of the wetland hydrology determination are as follows:
  - The wetland hydrology estimate includes the entire IDOT parcel. Preservation and enhancement areas are included in the wetland hydrology acreage estimate.
  - The area of wetland hydrology was calculated using GIS methods. The wetland-hydrology polygon was drawn from a topographic design plan (1-foot contour interval) provided by IDOT rectified via photo-identifiable points to a digital orthophotograph.
  - Instrument locations were determined using GPS in November 2002. The positions of instruments were superimposed on digital orthophotography.

**PLANNED FUTURE ACTIVITIES**

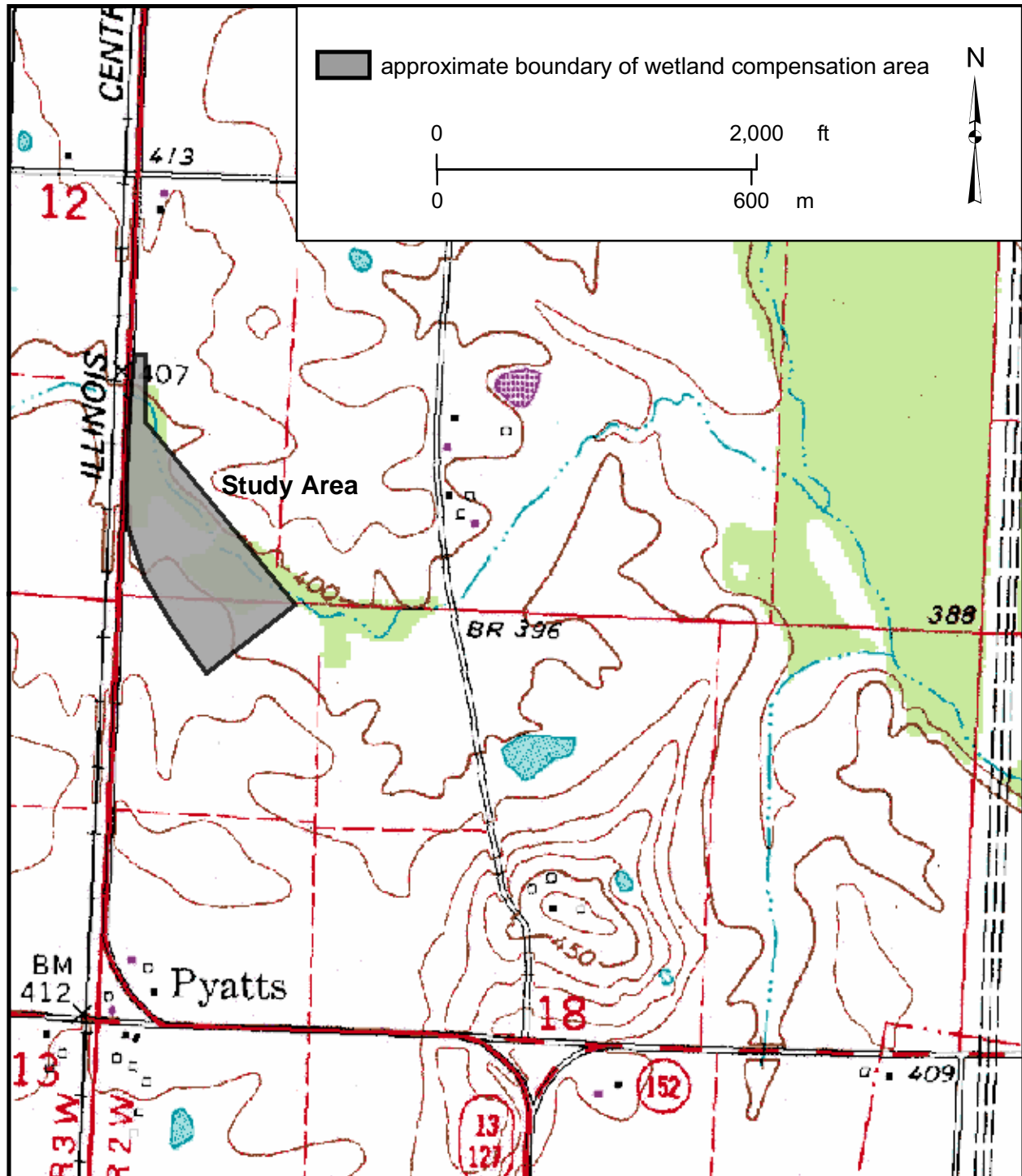
- Monitoring will continue at the site until September 2007 or until no longer required by IDOT.



# Pyatts Blacktop Wetland Compensation Site (FAP 42)

## General Study Area and Vicinity

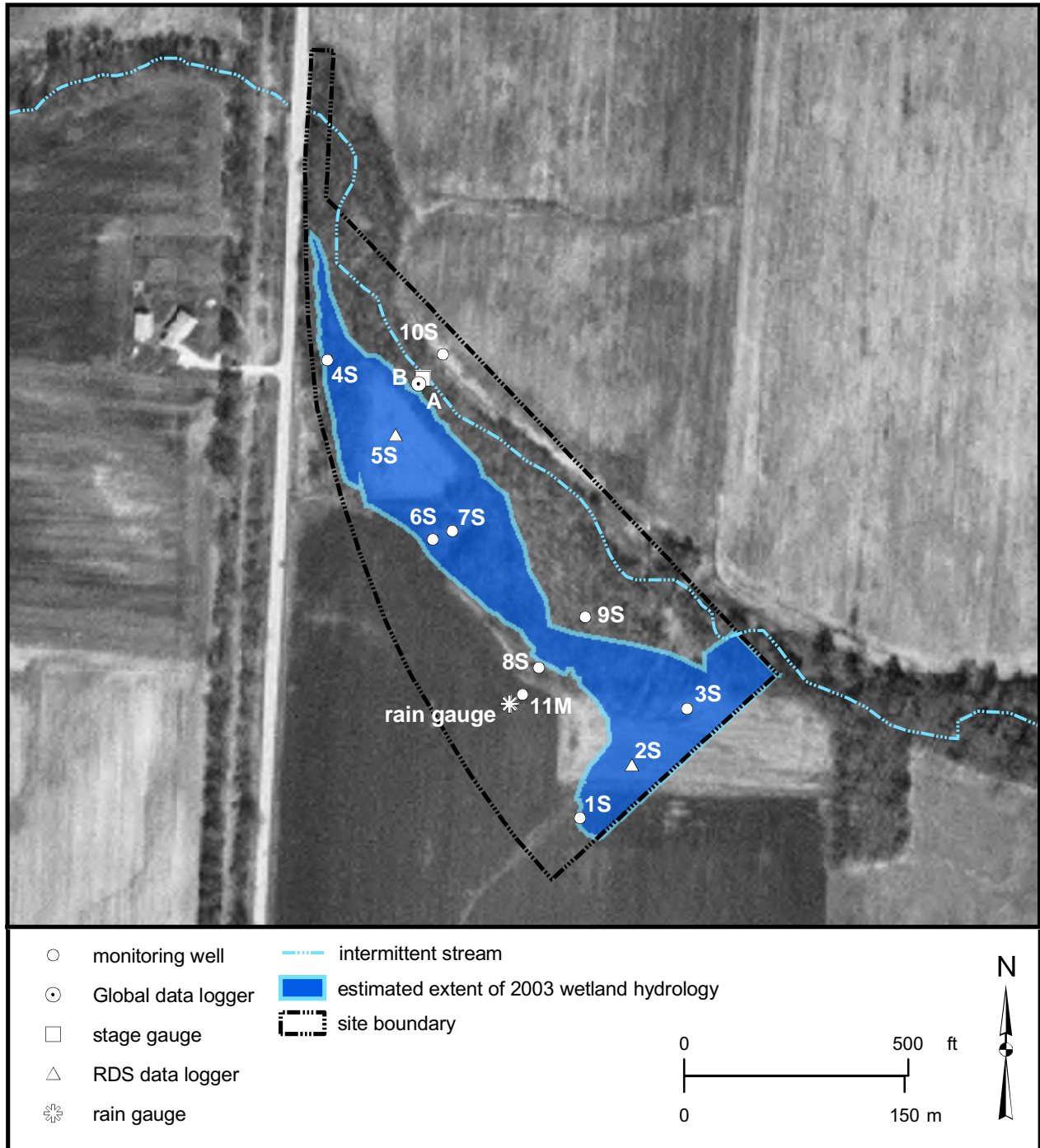
from the USGS Topographic Series, Pyatts, IL (USGS 1974; photorevised 1982) 7.5-minute Quadrangle  
contour interval is 10 feet



# Pyatts Blacktop Wetland Compensation Site (FAP 42)

## Estimated Areal Extent of 2003 Wetland Hydrology

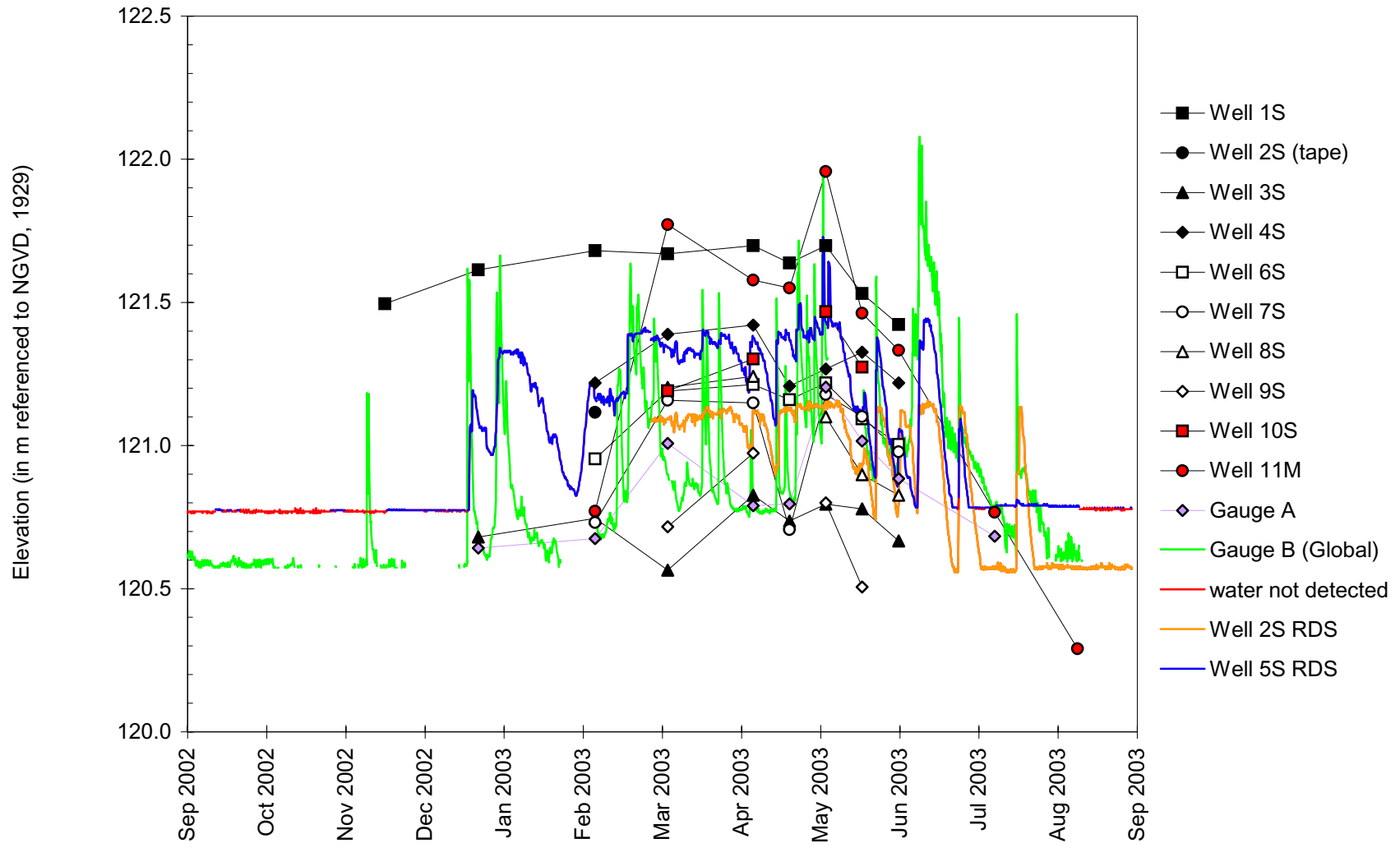
map produced by rectifying IDOT design plans to USGS digital orthophotograph  
Pinckneyville, SE quarter quadrangle (ISGS 2002)



# Pyatts Blacktop Wetland Compensation Site

## September 1, 2002 to September 1, 2003

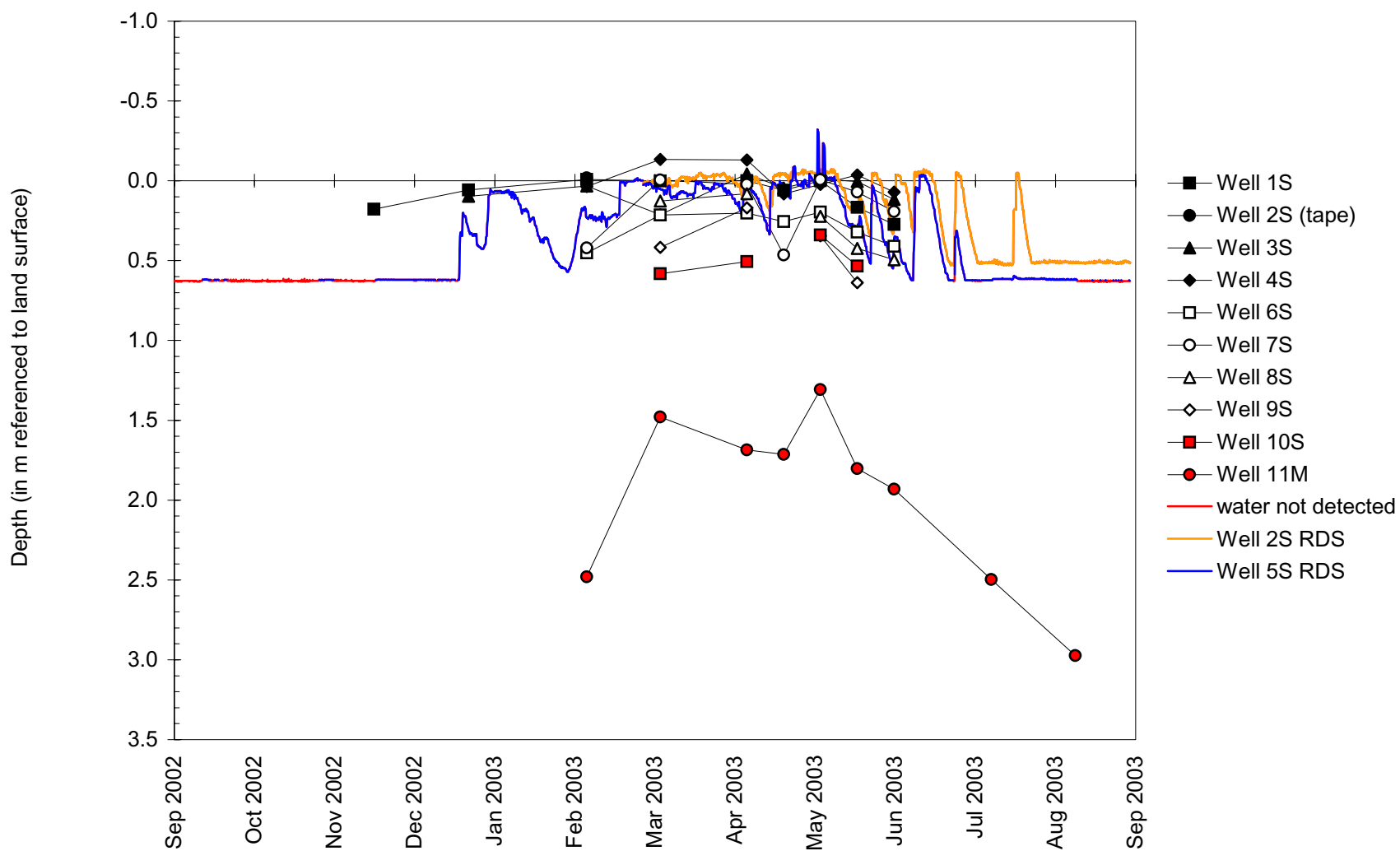
### Water-Level Elevations



# Pyatts Blacktop Wetland Compensation Site

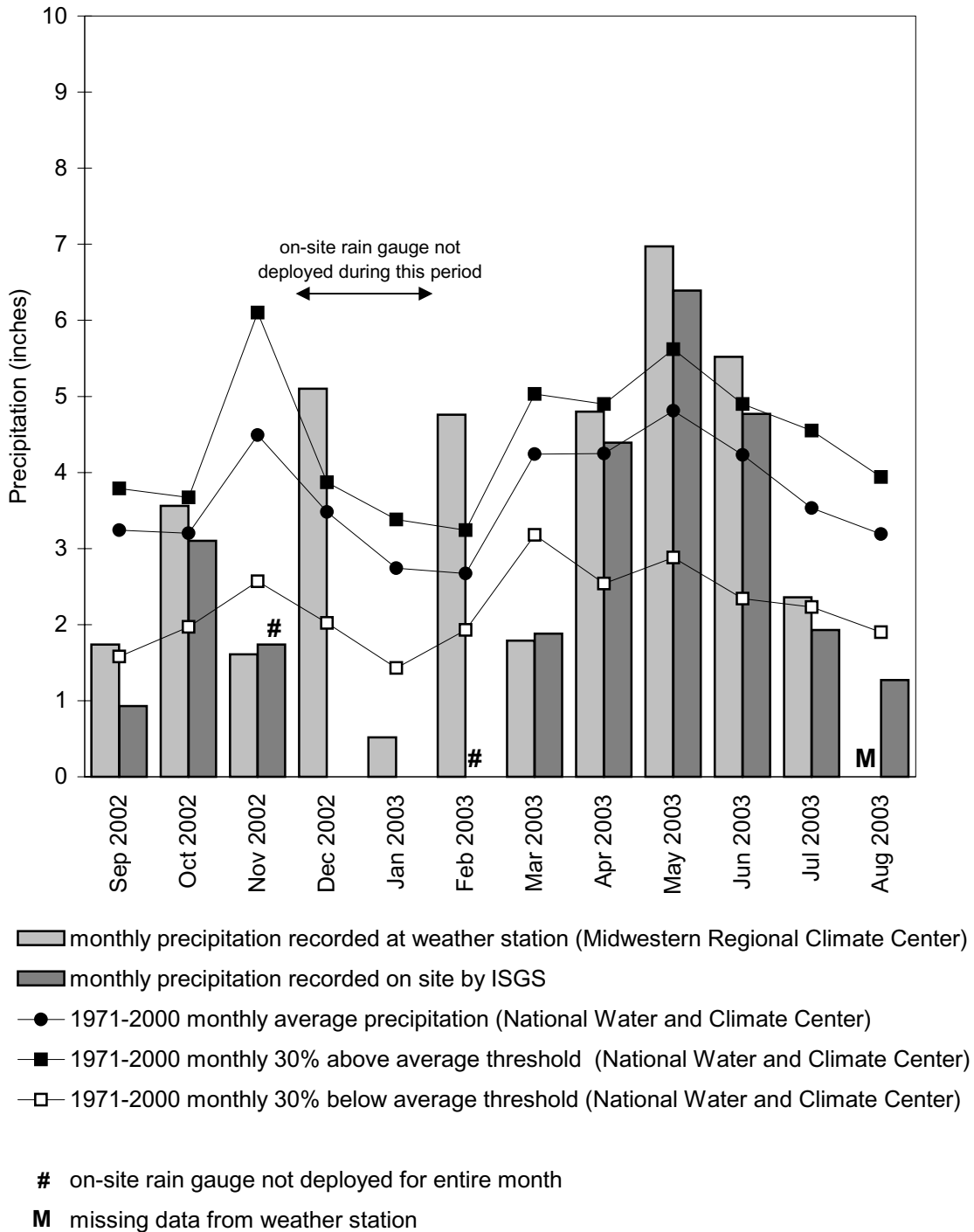
September 1, 2002 to September 1, 2003

## Depth to Water



# Pyatts Blacktop Wetland Compensation Site September 2002 through August 2003

## Total Monthly Precipitation Recorded On Site and at the Du Quoin, IL Weather Station



**DE SOTO  
WETLAND COMPENSATION SITE**

**ISGS #68**

FAP 322

Jackson County, near De Soto, Illinois

**Primary Project Manager: Geoffrey E. Pociask**

**Secondary Project Manager: Marshall A. Lake**

**SITE HISTORY**

- August 2002: ISGS was tasked by IDOT to monitor wetland hydrology for the compensation site.
- November 2002: ISGS initiated monitoring activities at the compensation site.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

Based on an as-built survey and ground-surface elevations surveyed by ISGS, we estimate that the total area that conclusively satisfied wetland hydrology criteria in 2003 is 5.4 ac (2.2 ha) out of an excavation of 6.0 ac (2.4 ha). The 2003 estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in De Soto is April 4 and the season lasts 203 days; 12.5% of the growing season is 26 days.
- Total precipitation for the reporting period from September 2002 through August 2003 was 97% of normal. Near normal conditions prevailed through the reporting period. Precipitation exceeded the normal range in October and December 2002 and February 2003. Conditions were much drier than normal in January and March 2003.
- In 2003, all shallow ground-water wells (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, and 9S) conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. All monitoring wells satisfied wetland hydrology criteria, therefore surface-water data were not used in the wetland hydrology estimate.
- Limitations of the wetland hydrology determination are as follows:
  - The area of wetland hydrology was calculated using GIS methods. The wetland-hydrology polygon drawn from an ISGS topographic map (0.1-meter contour interval) rectified to GPS positions of water-level instruments and point features identifiable from a digital orthophotograph.
  - Instrument locations were determined using GPS in November 2002 and March 2003. The GPS positions of instruments were superimposed on digital orthophotography.

**PLANNED FUTURE ACTIVITIES**

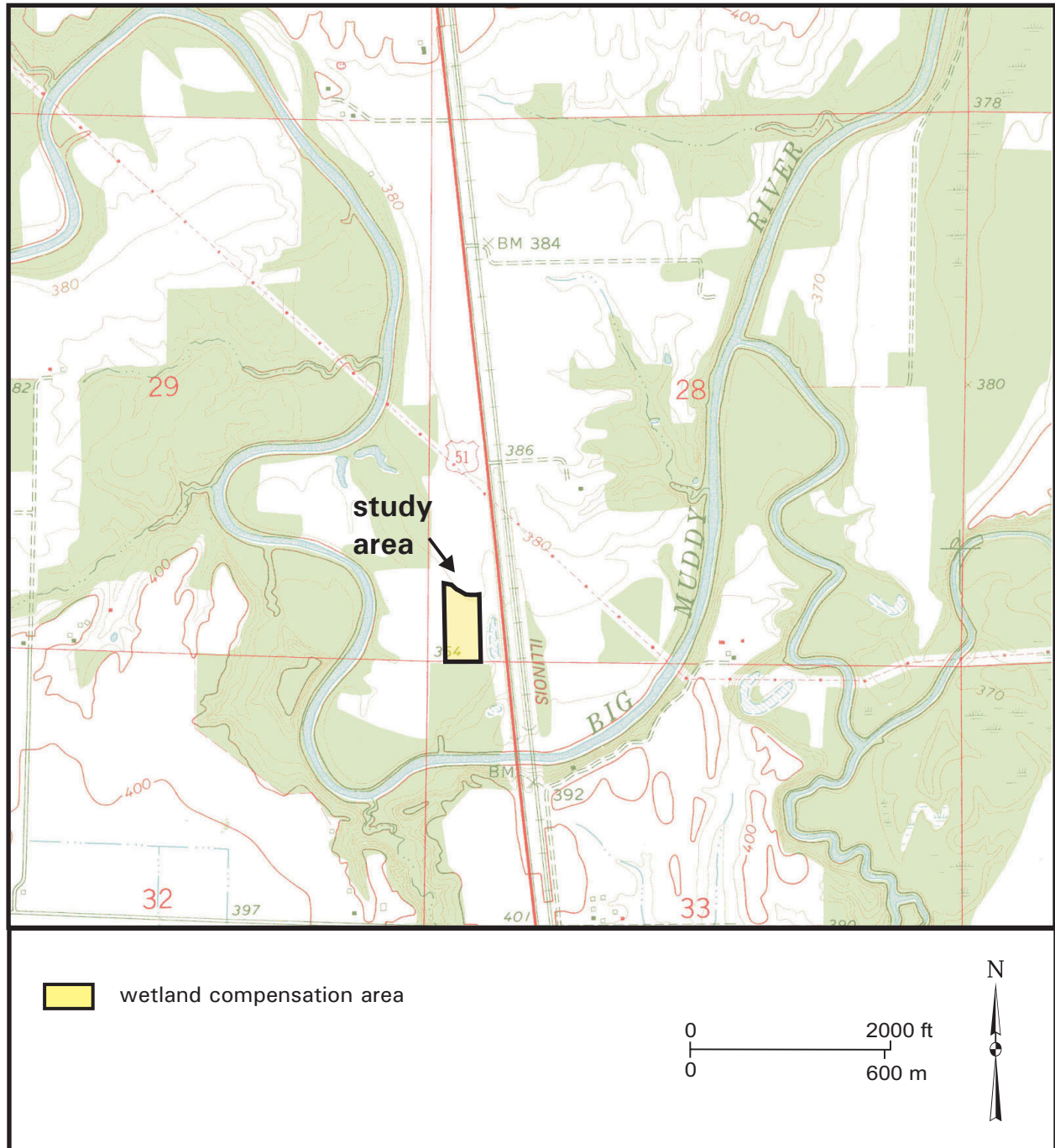
- Monitoring will continue until September 2007 or until no longer required by IDOT.



# De Soto Wetland Compensation Site (FAP 322)

## General Study Area and Vicinity

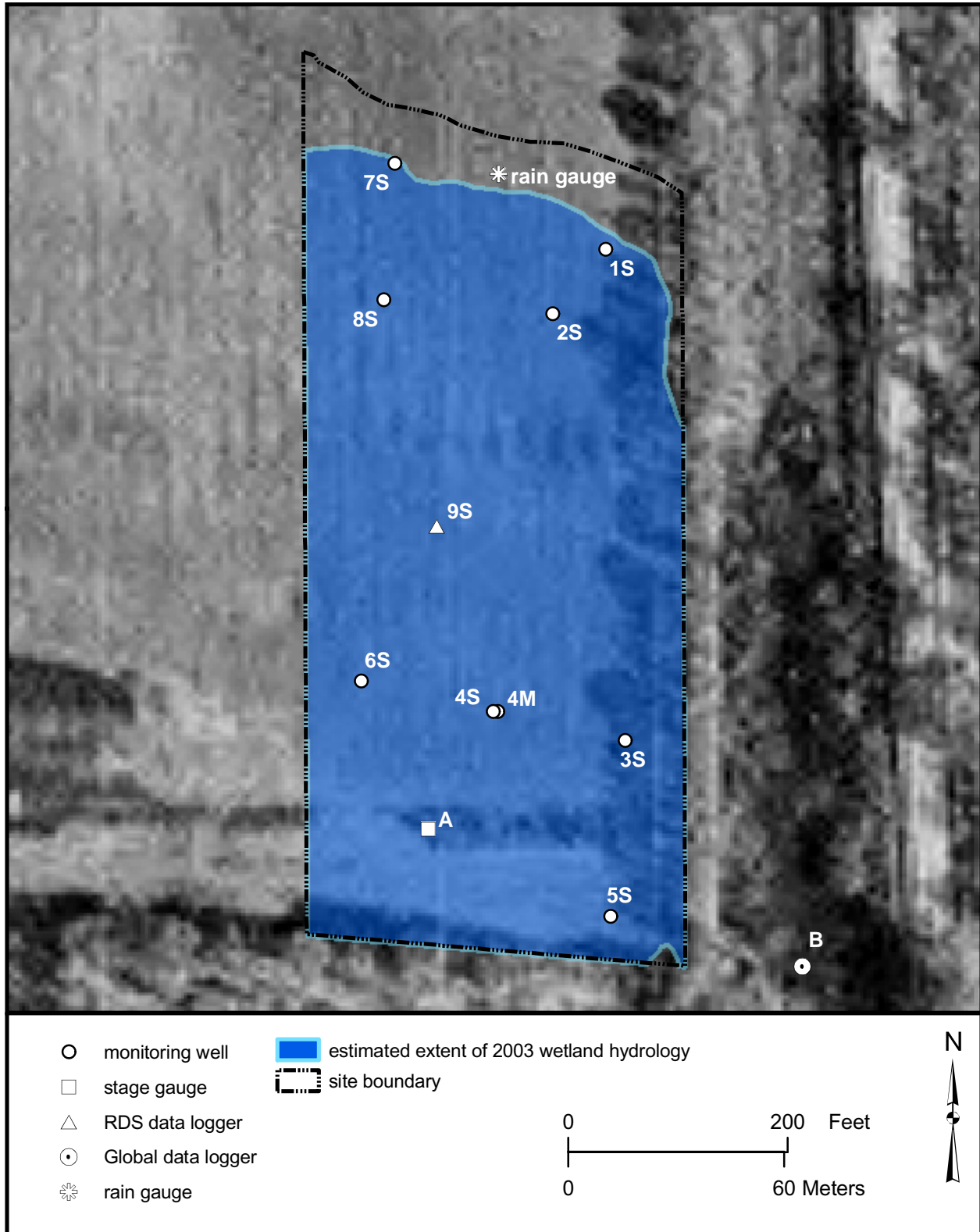
from the USGS Topographic Series, De Soto, IL 7.5-minute Quadrangle (USGS 1968; photorevised 1978)  
contour interval is 10 feet



# De Soto Wetland Compensation Site (FAP 322)

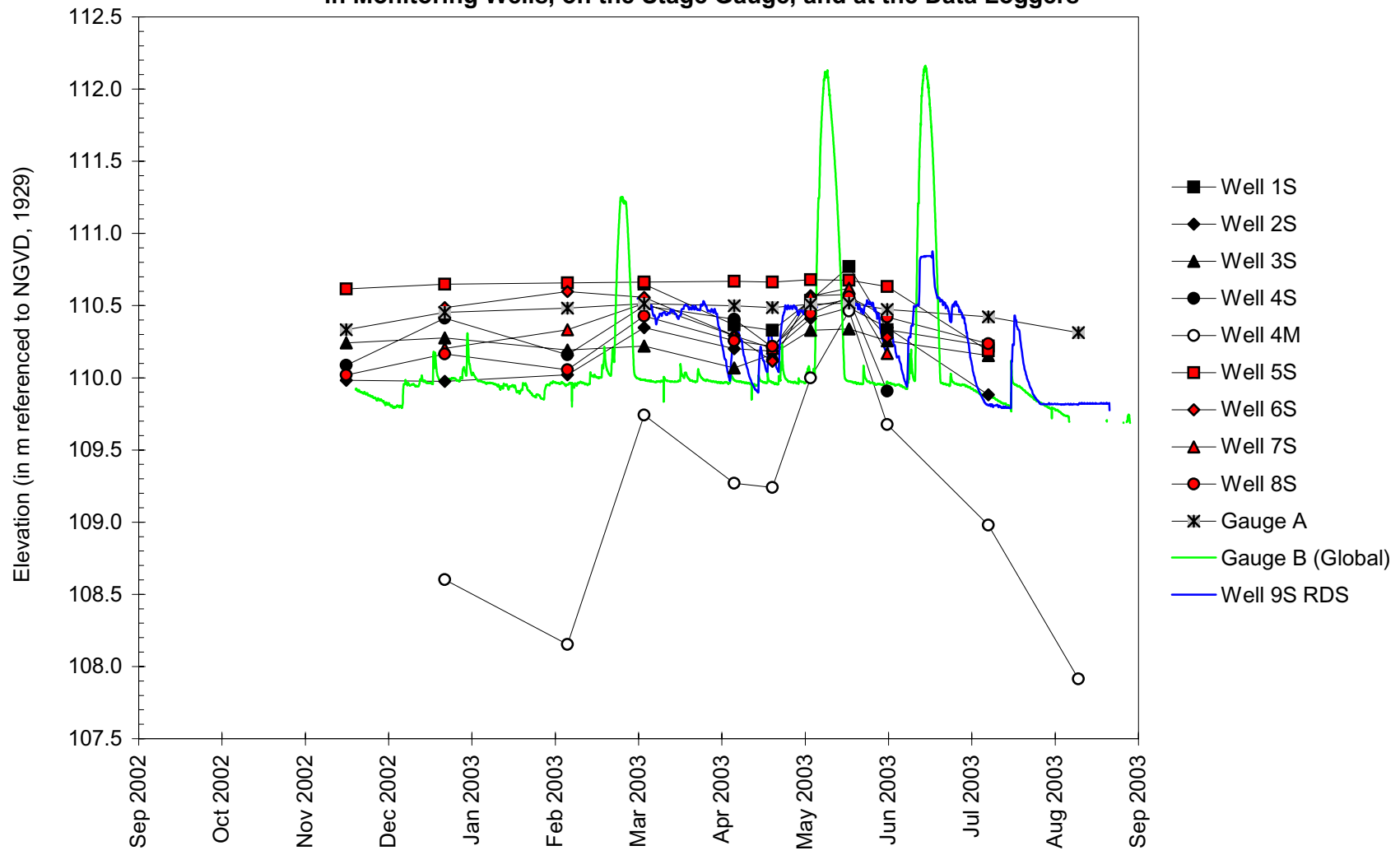
## Estimated Areal Extent of 2003 Wetland Hydrology

map produced by rectifying IDOT as-built plans and ISGS topography  
to USGS digital orthophotograph De Soto, NW quarter quadrangle (ISGS 2003)

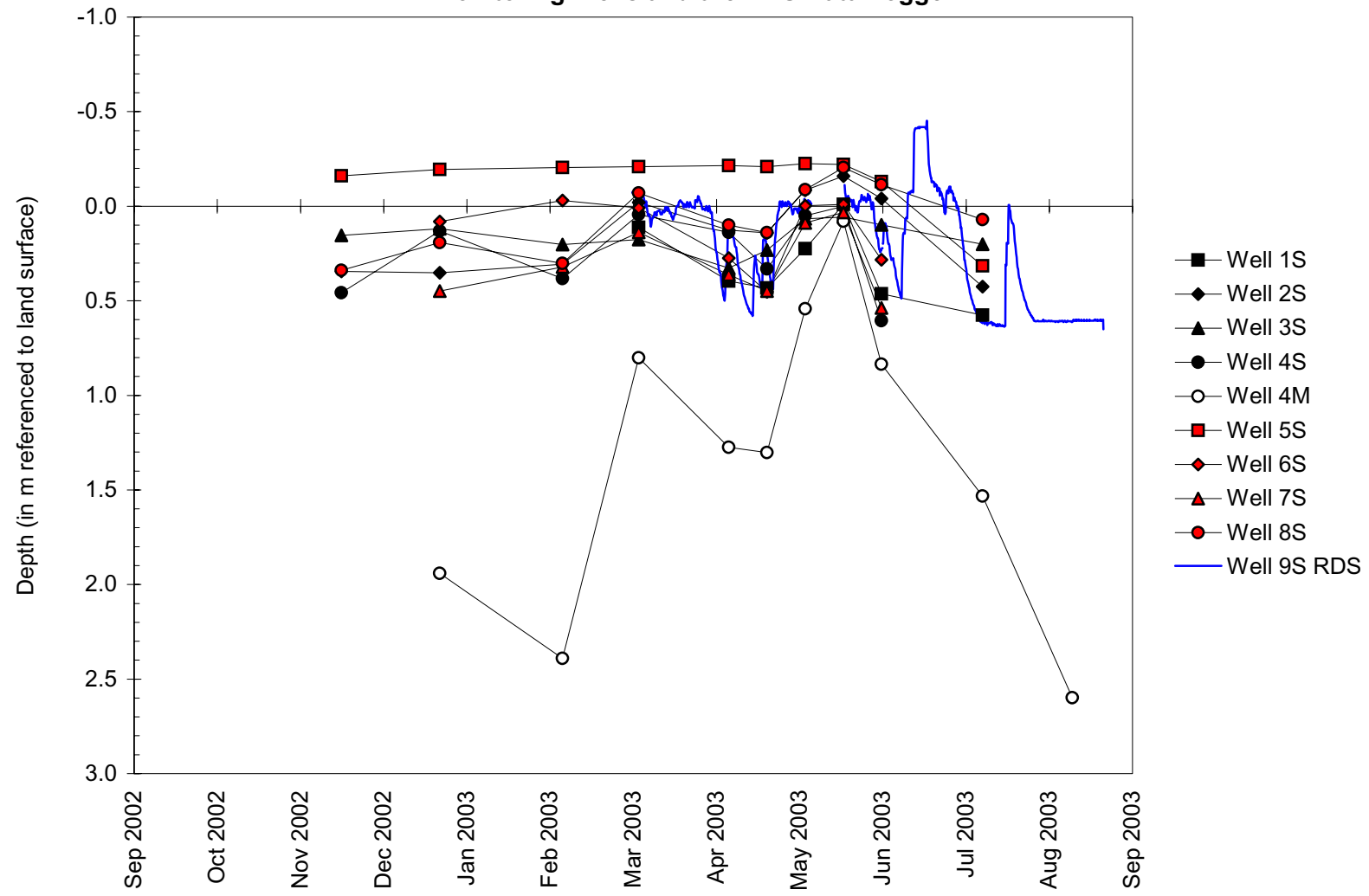




### Water-Level Elevations in Monitoring Wells, on the Stage Gauge, and at the Data Loggers



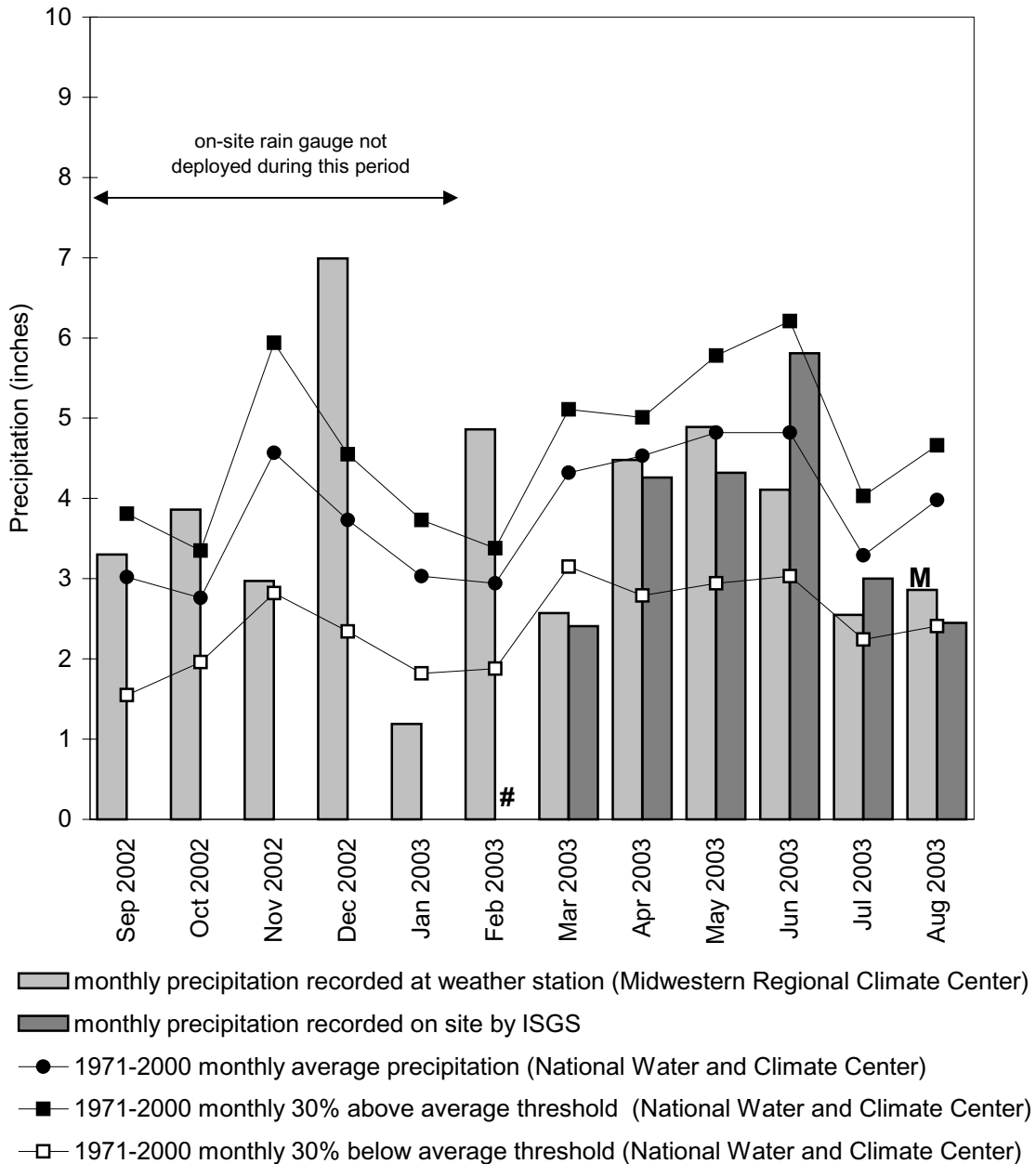
## Depth to Water in Monitoring Wells and the RDS Data Logger



# De Soto Wetland Compensation Site

## September 2002 through August 2003

### Total Monthly Precipitation Recorded On Site and at the Carbondale Sewage Plant Weather Station, Carbondale, IL



# on-site rain gauge not deployed for entire month

M missing data from weather station

## **EDGEWOOD**

**ISGS #69A**

### **POTENTIAL WETLAND COMPENSATION SITE**

FAP 328

Effingham County, near Edgewood, Illinois

**Primary Project Manager: Keith W. Carr**

**Secondary Project Manager: Blaine A. Watson**

### **SITE HISTORY**

- August 2002: ISGS submitted an Initial Site Evaluation Report to IDOT.
- September 2002: IDOT issued a task order for a Level II hydrogeologic characterization of the site.
- March-April 2003: ISGS data collection was initiated with the installation of monitoring wells, stage gauges, and data loggers.

### **WETLAND HYDROLOGY CALCULATION FOR 2003**

The area that conclusively satisfied wetland hydrology criteria in 2003 is estimated to be 0.4 ac (0.2 ha). Using the boundary provided in the tasking order, the entire site is roughly 12.8 ac (5.2 ha) in size. This estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in nearby Vandalia, Illinois is April 4 and the season lasts 211 days; 12.5% of the growing season is 26 days.
- At the Vandalia weather station, total precipitation for the monitoring period from September 2002 through August 2003 was 82% of normal. Total precipitation for the period from September 2002 through March 2003 was 60% of normal, resulting in drier than typical moisture conditions entering the growing season. In the April through August 2003 period, precipitation returned to normal (to slightly above normal) amounts.
- In 2003, ground-water levels measured at wells 8S and 8S-G conclusively satisfied the wetland hydrology criteria in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual.
- The unnamed tributary of Limestone Creek, which borders the site to the north, was instrumented with a standard stage gauge (Gauge A) and a "crest-type" stage gauge (CG-1), for the purpose of determining if the waterway has the potential to be a flood-water source for the site. The maximum flood height attained during the monitoring year, according to the crest gauge, was 141.79 m (465.18 ft), while the average ground-surface elevation of the mitigation site is roughly 143.44 m (470.60 ft). Therefore, in 2003, the creek was not a source of water for the site.
- The base map for the site is a digitally rectified DOQ. GPS locations for the instruments were also determined in 2003.
- Limitations of the wetland hydrology determination are as follows:
  - Some limited areas of the site contain small closed depressions, which tend to hold

surface water slightly longer than the site as a whole. Because soil-zone wells were placed in areas intermediate between the closed depressions and higher areas of the site, these areas are unrepresented at present. A planned topographic survey will aid in addressing the hydrology of these subtle depressions.

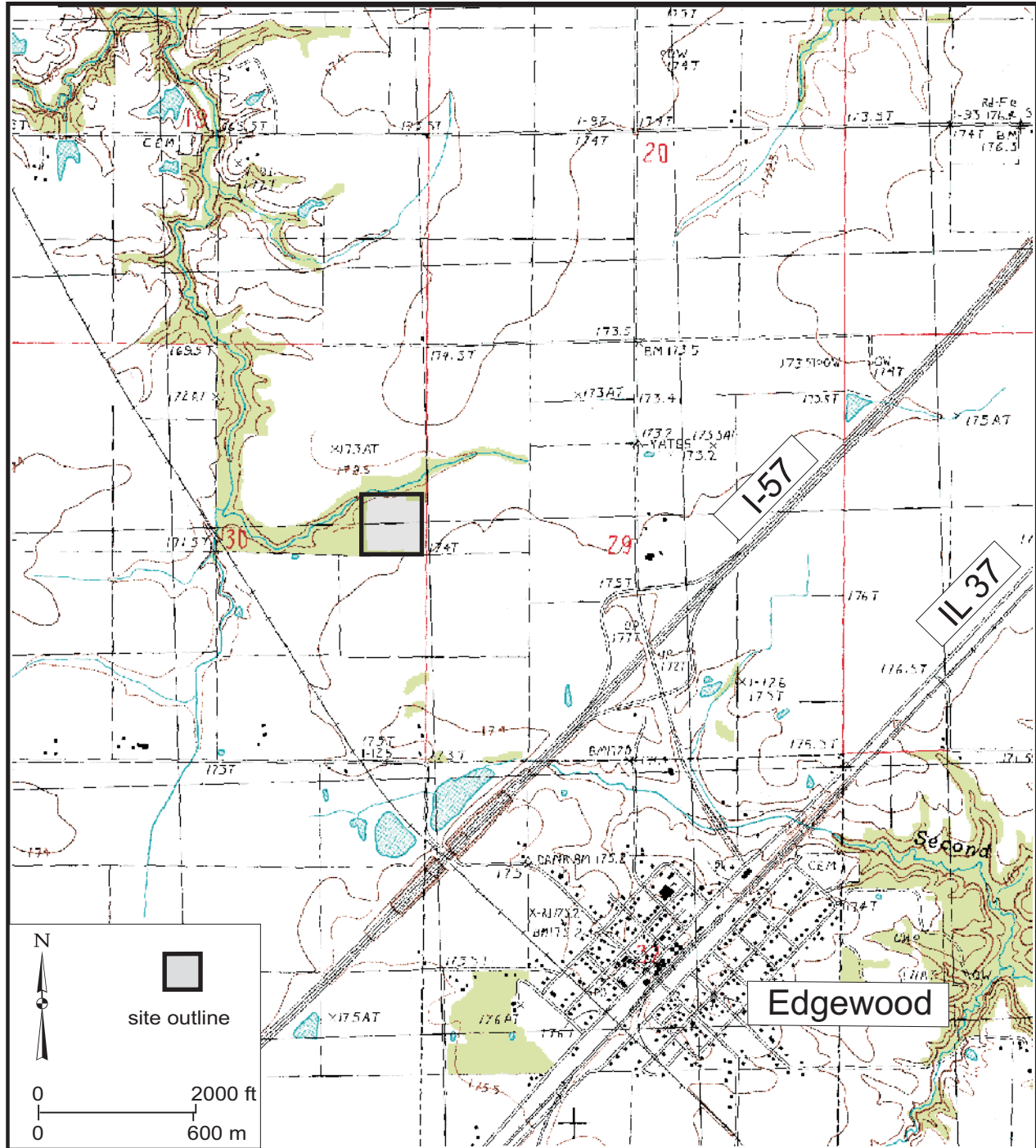
#### PLANNED FUTURE ACTIVITIES

- Several soil-zone wells will be added in 2004 to fill in the monitoring network.
- A topographic survey of the site will be undertaken during the next monitoring year.
- A Level II hydrogeological characterization report will be prepared soon for submission to IDOT.
- Monitoring will continue until no longer required by IDOT.

# Edgewood Potential Wetland Compensation Site (FAP 328)

## General Study Area and Vicinity

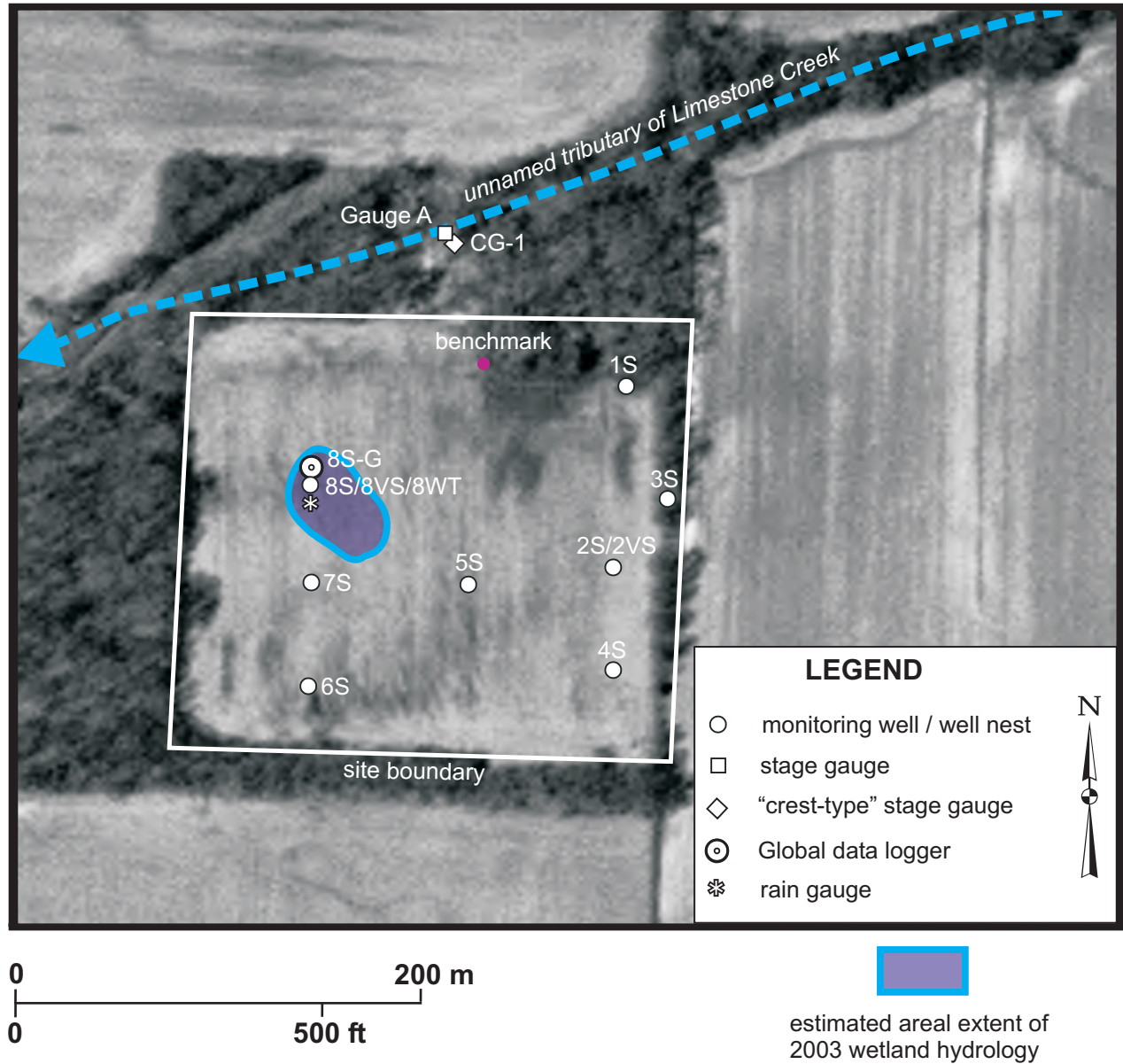
from the USGS Topographic Series, Edgewood, IL 7.5-minute Quadrangle (USGS 1985-provisional)  
contour interval is 10 feet



# Edgewood Potential Wetland Compensation Site (FAP 328)

## Estimated Areal Extent of 2003 Wetland Hydrology

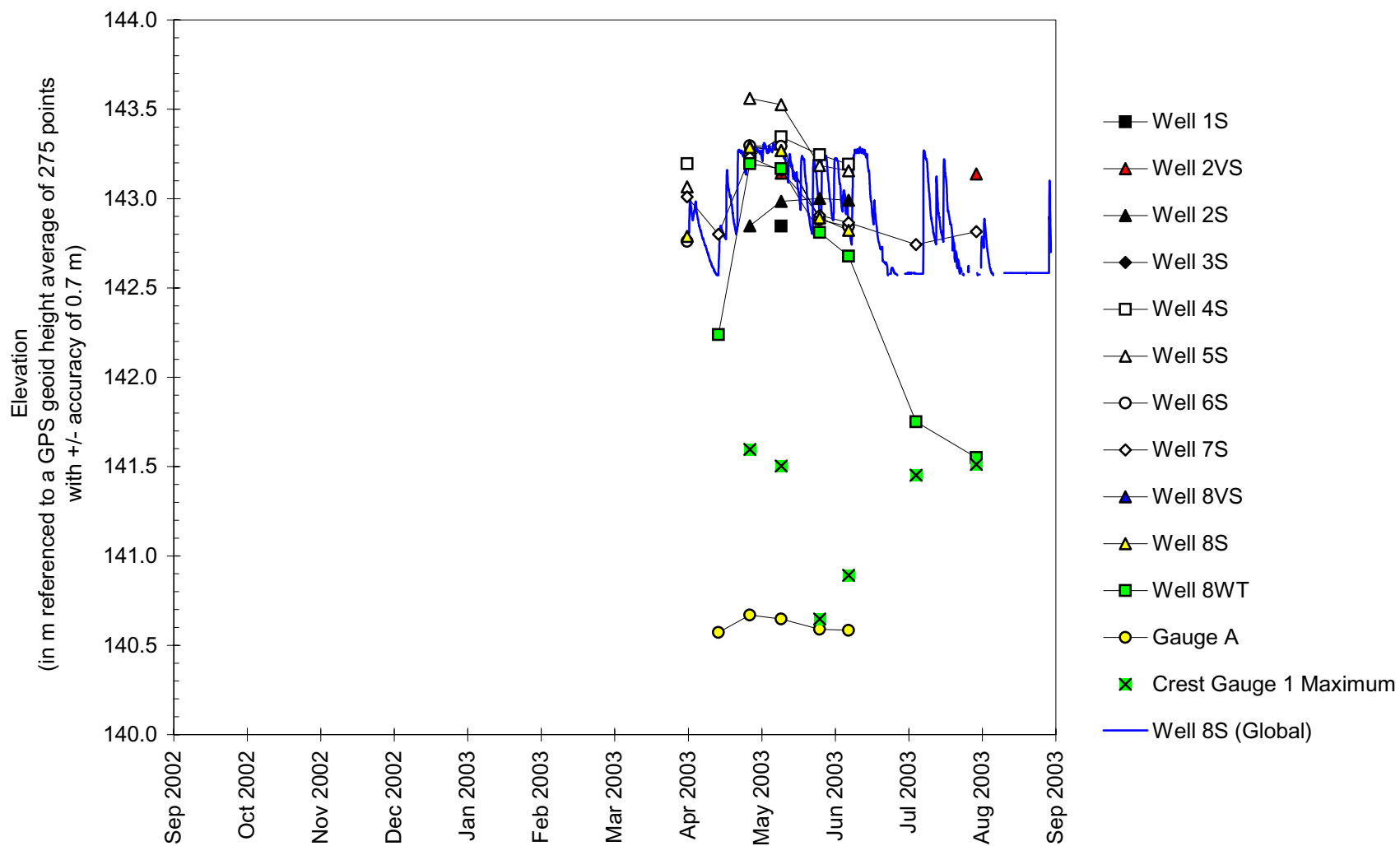
map based on USGS digital orthophotograph, Edgewood NE quarter quadrangle  
from April 1998 aerial photography (ISGS 2003)



# Edgewood Potential Wetland Compensation Site

September 1, 2002 to September 1, 2003

## Water-Level Elevations in Monitoring Wells, on the Stage Gauge, and at the Global Data Logger





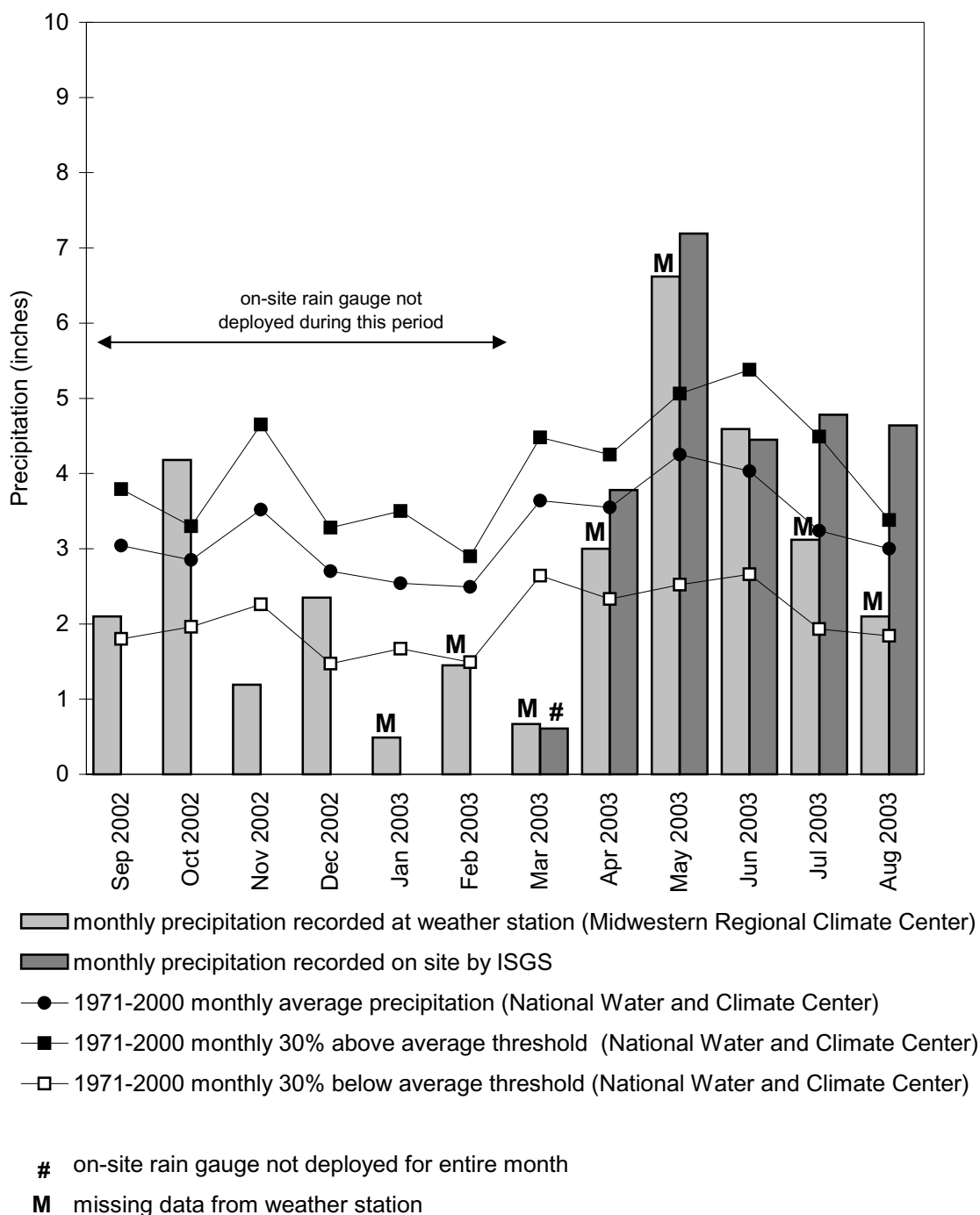
## September 1, 2002 to September 1, 2003

Figure 1 is a line graph showing the depth (in m referenced to land surface) of the water table from September 2002 to September 2003. The y-axis represents depth, ranging from -0.5 to 2.0 meters, with 0.0 at the land surface. The x-axis represents time, with labels for each month from Sep 2002 to Sep 2003. The graph displays data for several wells, including Well 1S, Well 2VS, Well 2S, Well 3S, Well 4S, Well 5S, Well 6S, Well 7S, Well 8VS, Well 8S, Well 8WT, and Well 8S (Global). The data shows significant fluctuations in water table depth, particularly in the latter half of 2003, with Well 8WT showing a sharp decline to approximately 1.75m depth by late August 2003.

# Edgewood Potential Wetland Compensation Site

## September 2002 through August 2003

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



## **LARKINSBURG**

**ISGS #69B**

### **POTENTIAL WETLAND COMPENSATION SITE**

FAP 328

Clay County, Larkinsburg Township, Illinois

**Primary Project Manager: Keith W. Carr**

**Secondary Project Manager: Blaine A. Watson**

### **SITE HISTORY**

- August 2002: ISGS submitted an Initial Site Evaluation Report to IDOT.
- September 2002: IDOT issued a task order for a Level II hydrogeologic characterization of the site.
- March-April 2003: ISGS data collection was initiated with the installation of monitoring wells, stage gauges, and data loggers.

### **WETLAND HYDROLOGY CALCULATION FOR 2003**

The area that conclusively satisfied wetland hydrology criteria in 2003 is estimated to be 0.5 ac (0.2 ha). Using the boundary provided in the tasking order, the entire site is roughly 45.3 ac (18.3 ha) in size. This estimate is based on the following factors.

- According to the Midwestern Climate Center, the median date that the growing season begins in nearby Vandalia, Illinois is April 4 and the season lasts 211 days; 12.5% of the growing season is 26 days.
- At the Vandalia weather station, total precipitation for the monitoring period from September 2002 through August 2003 was 82% of normal. Total precipitation from September 2002 through March 2003 was 60% of normal, resulting in drier than typical moisture conditions entering the growing season. From April through August 2003, precipitation returned to normal (to slightly above normal) amounts.
- In 2003, ground-water levels measured at wells 1S, 2S, 4S, and 4VS conclusively satisfied the wetland hydrology criteria in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual, although wells 1S and 2S are outside the site boundary as indicated by IDOT. All these wells that satisfied wetland hydrology criteria are also located at elevations ranging from 1.7 to 3.6 m (5.6 to 11.8 ft) below the average site elevation.
- The unnamed tributary of Dismal Creek, which borders the site to the north, was instrumented with a standard stage gauge (Gauge A) and a "crest-type" stage gauge (CG-1), for the purpose of determining if the waterway has the potential to be a flood-water source for the site. The maximum flood height attained during the monitoring year, according to the crest gauge, was 138.88 m (455.64 ft), while the average ground-surface elevation of the mitigation site is roughly 140.01 m (459.34 ft). Therefore, in 2003, the creek was not a source of water for the site.
- The base map for the site is a digitally rectified DOQ. GPS locations for the instruments were also determined in 2003.

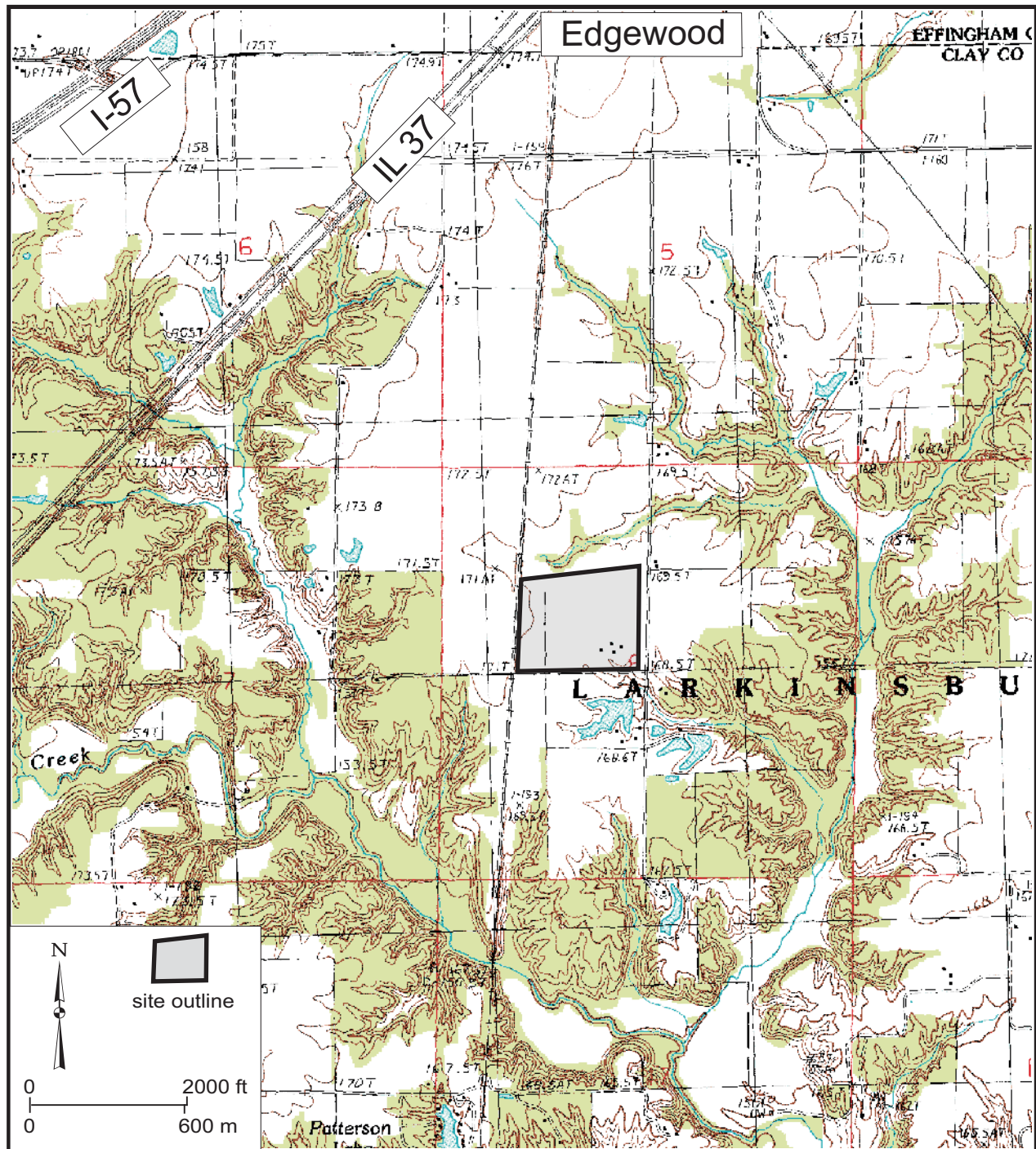
## PLANNED FUTURE ACTIVITIES

- Several soil-zone wells will be added in 2004 to fill in the monitoring network.
- Several topographic transects will be surveyed across the site in 2004 to aid in our understanding of topographic contrast on the site and its implication for water movement.
- A Level II hydrogeological characterization report will be in preparation shortly for submission to IDOT.
- Monitoring will continue until no longer required by IDOT.

# Larkinsburg Potential Wetland Compensation Site (FAP 328)

## General Study Area and Vicinity

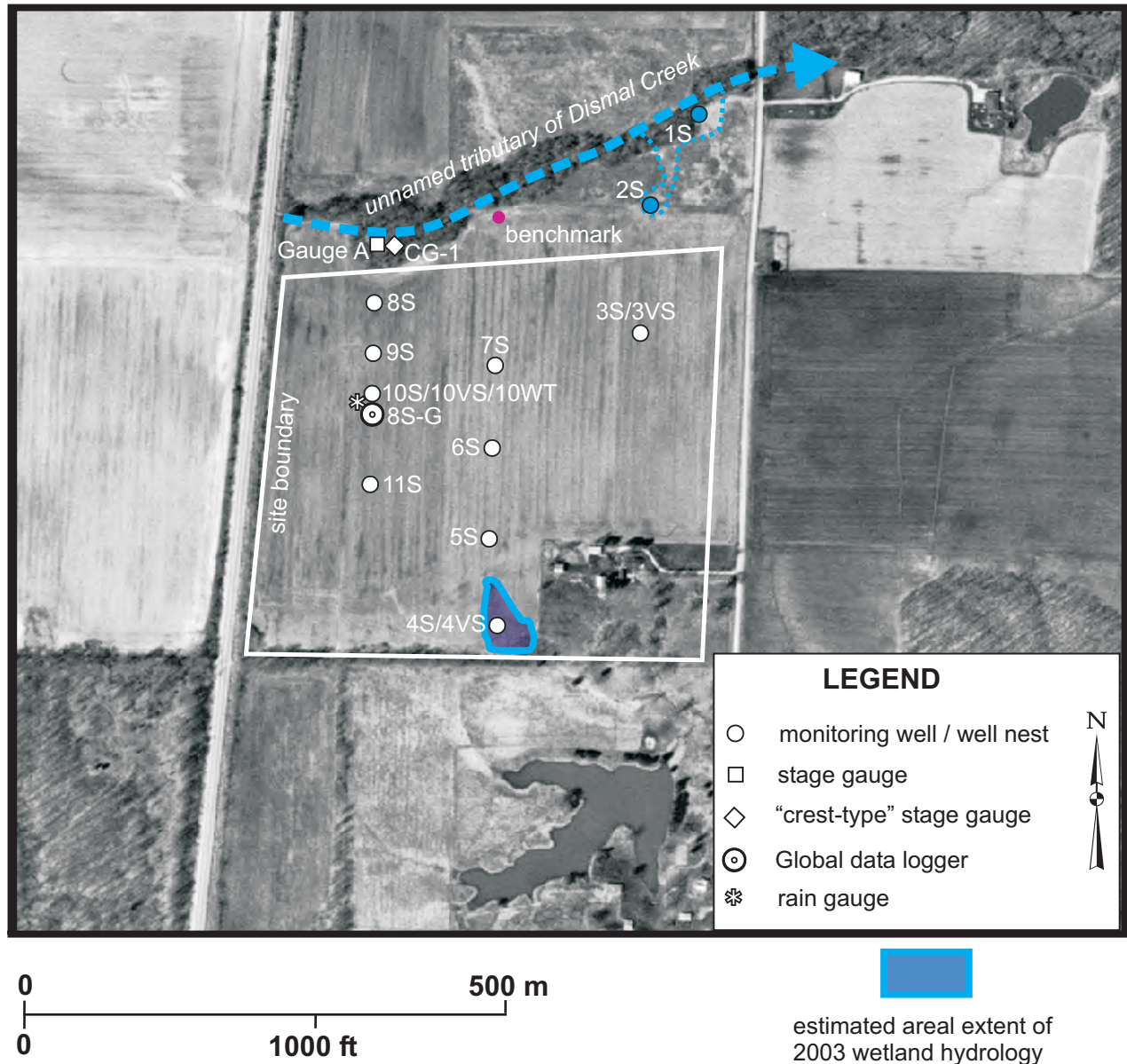
from the USGS Topographic Series, Edgewood, IL 7.5-minute Quadrangle (USGS 1985-provisional)  
contour interval is 10 feet



# Larkinsburg Potential Wetland Compensation Site (FAP 328)

## Estimated Areal Extent of 2003 Wetland Hydrology

map based on USGS digital orthophotograph, Edgewood SE quarter quadrangle  
from April 1998 aerial photography (ISGS 2003)

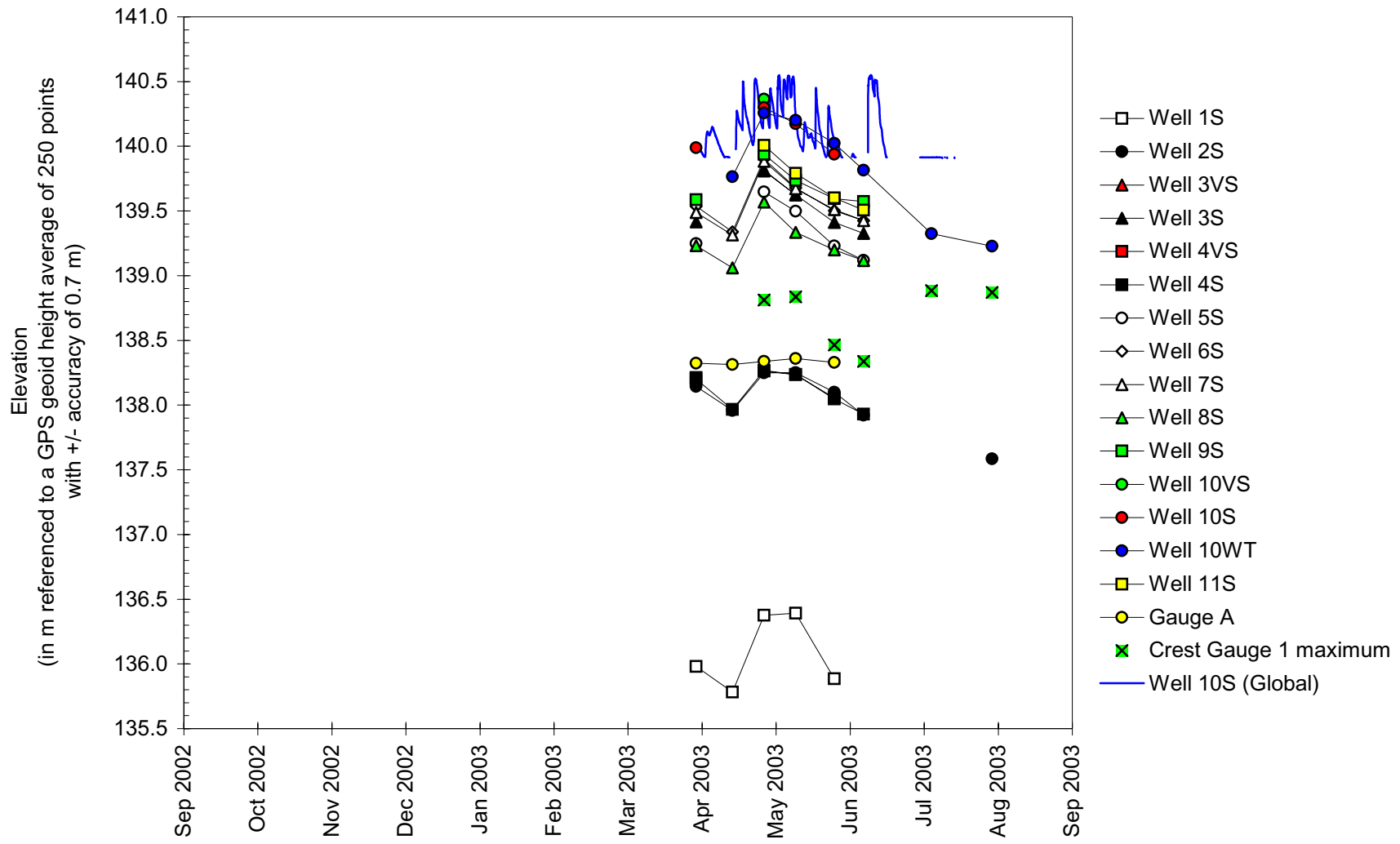




# Larkinsburg Potential Wetland Compensation Site

## September 1, 2002 to September 1, 2003

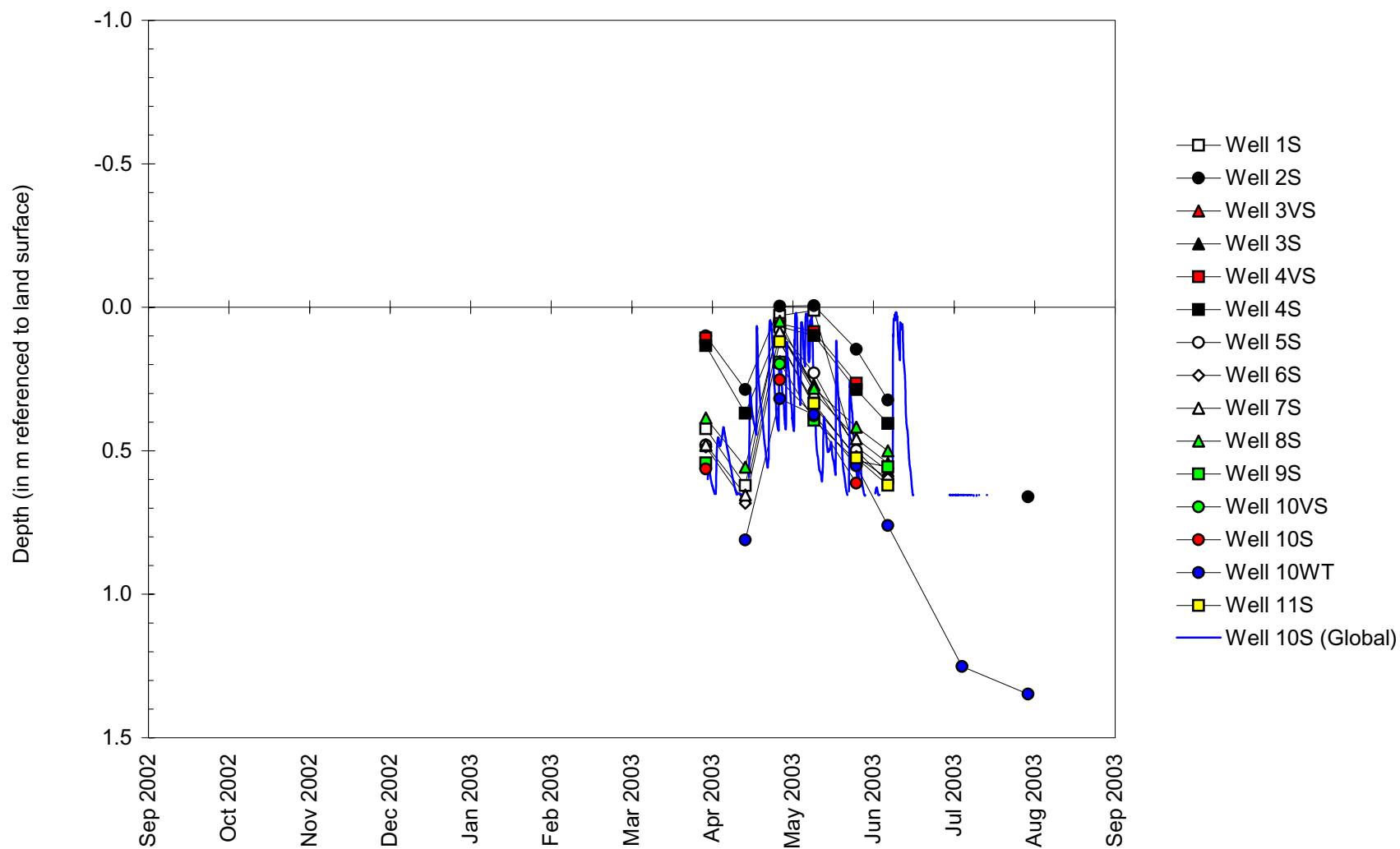
### Water-Level Elevations in Monitoring Wells, on the Stage Gauge, and at the Global Data Logger



# Larkinsburg Potential Wetland Compensation Site

September 1, 2002 to September 1, 2003

## Depth to Water in Monitoring Wells

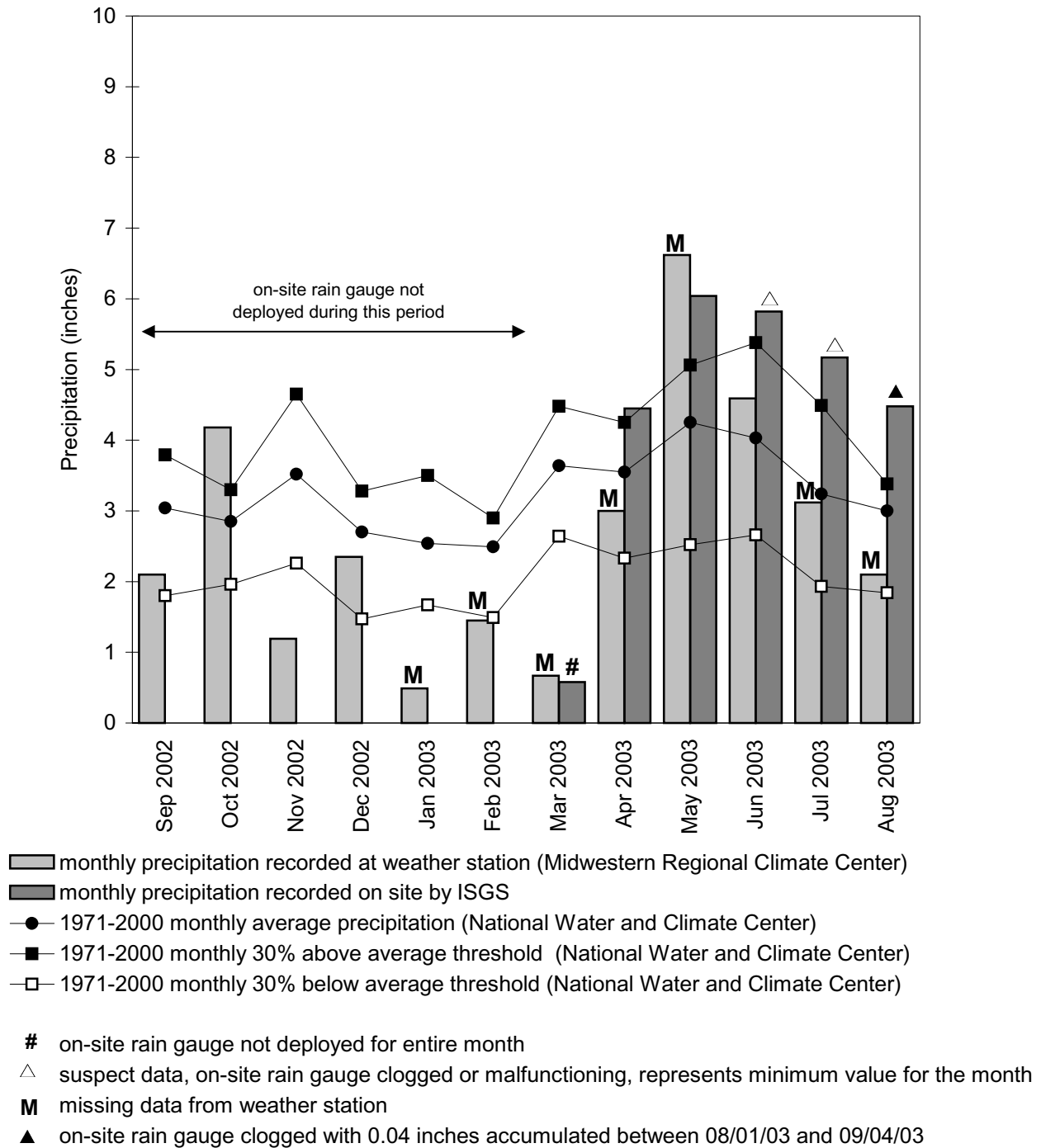




# Larkinsburg Potential Wetland Compensation Site

## September 2002 through August 2003

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



**FREEPORT BYPASS EAST  
POTENTIAL WETLAND COMPENSATION SITE 4E**

**ISGS #70A**

FAP 301

Stephenson County, near Freeport, Illinois

**Primary Project Manager: Kelli D. Weaver**

**Secondary Project Manager: Kara L. Hart**

**SITE HISTORY**

- January 2003: ISGS was tasked by IDOT to monitor wetland hydrology at this site.
- March 2003: ISGS installed 9 soil-zone monitoring wells, a staff gauge and an Ecotone data logger. Locations of monitoring wells and the data logger were determined with a GPS unit by ISGS, and a topographic survey of the site was conducted by IDOT during well installation.
- May 2003: ISGS was tasked by IDOT to perform a Level II hydrogeologic assessment of the potential wetland mitigation site.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

We estimate that the total area that conclusively satisfied wetland hydrology criteria in 2003 is 0.78 ac (0.31 ha). The site, as defined by a boundary line drawn on an IDOT air photo, is roughly 22.0 ac (8.9 ha) in size. The estimate is 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; 12.5% of the growing season is 23 days.
- The total precipitation for the monitoring period from September 2002 to August 2003 was 75% of normal. Despite above-normal precipitation for October 2002, the precipitation from September 2002 through April 2003 was significantly below normal, leading to drier than typical conditions entering the 2003 growing season. Precipitation levels were above the normal range in May and July, but were below the normal range for June and August.
- In 2003, water levels measured in soil-zone wells 1S and 3S conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. No surface-water flooding from the ditch was observed.
- Limitations of the wetland hydrology determination are as follows:
  - The map used to determine the acreage of the wetland site is a digital orthophoto with estimated site boundaries. Results of the topographic survey performed by IDOT will be necessary to accurately determine the extent of wetland hydrology in the future.
  - Positions of instruments determined via GPS were plotted at the same approximate scale as the base map and were overlain on the digital orthophoto.

**PLANNED FUTURE ACTIVITIES**

- Additional shallow-water monitoring wells will be added to better delineate wetland hydrology.

- A data logger will be added to the site so that the elevation of flood waters in the ditch can be monitored.
- Monitoring is expected to continue through 2005 or until no longer required by IDOT.

# Freeport Bypass East Wetland Compensation Site 4E (FAP 301)

## General Study Area and Vicinity

from the USGS Topographic Series, Freeport East, II 7.5 minute Quadrangle (USGS 1999)  
contour interval is 10 feet.

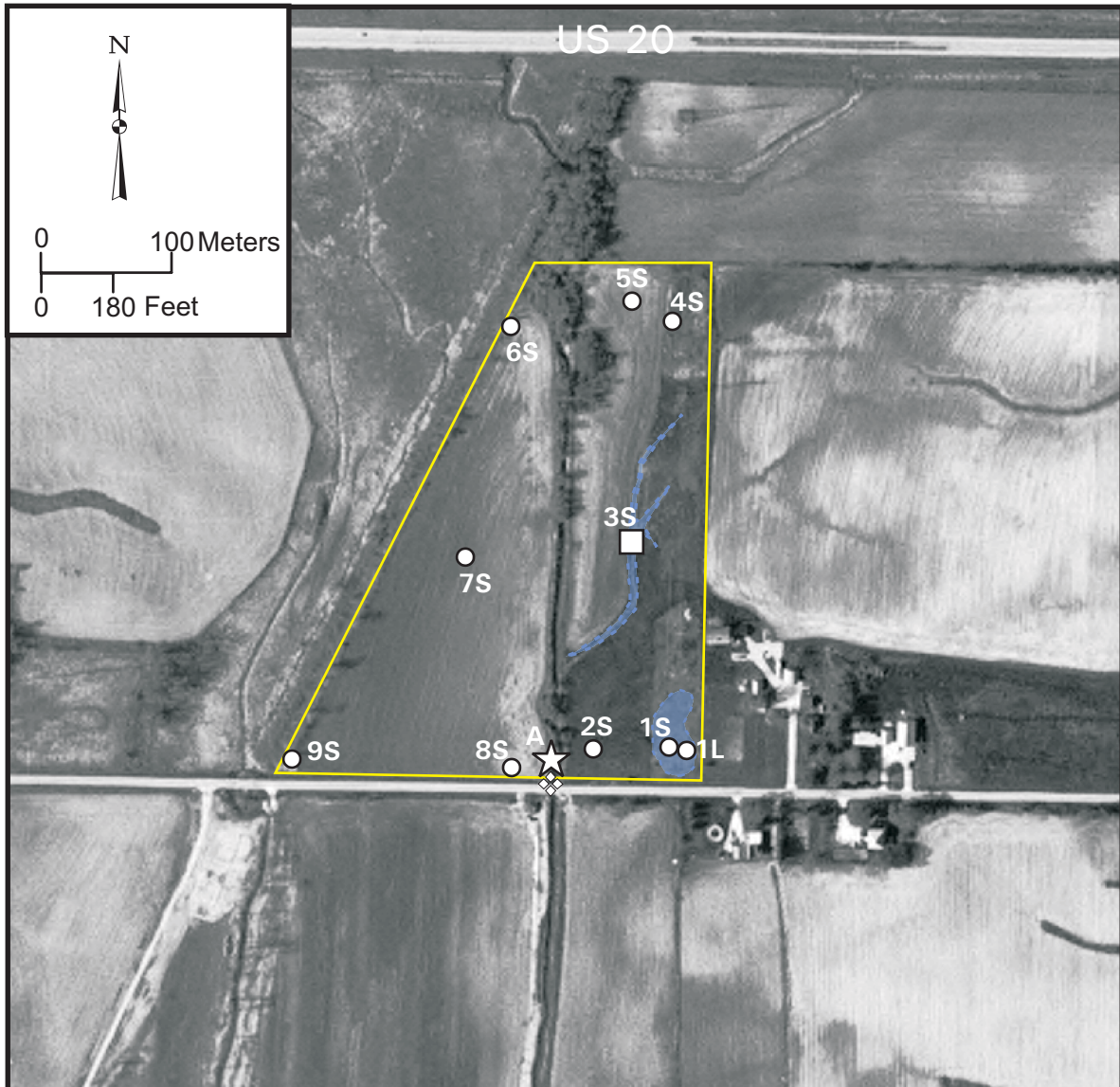


# Freeport Bypass East Wetland Compensation Site 4E (FAP 301)

## Estimated Areal Extent of 2003 Wetland Hydrology

based on data collected between September 1, 2002 and September 1, 2003

map based on USGS DOQ, Freeport East NW Quadrangle (1998-1999)



○ ISGS monitoring well



ISGS benchmark

□ Ecotone data logger



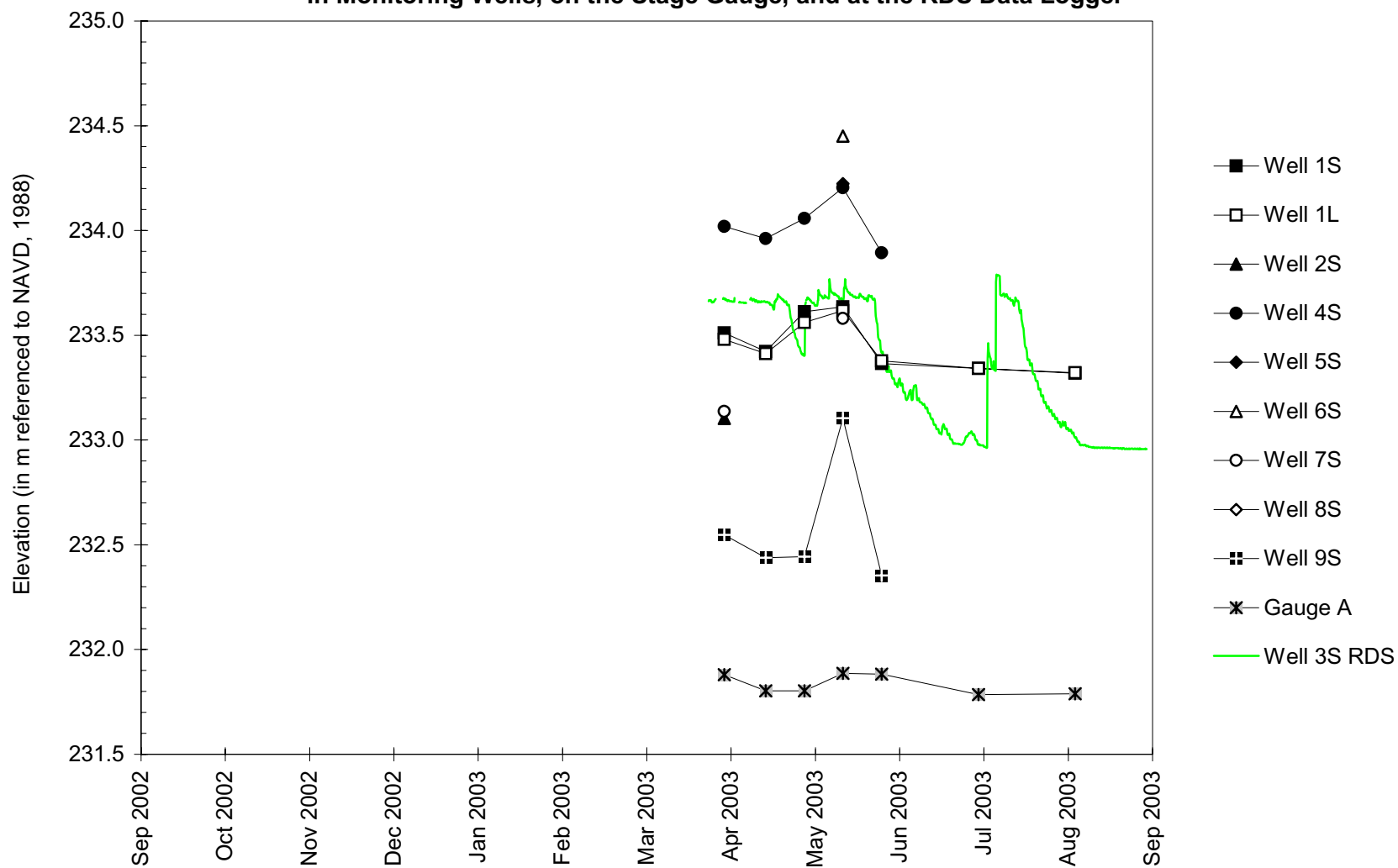
estimated areal extent of  
2003 wetland hydrology



stage gauge

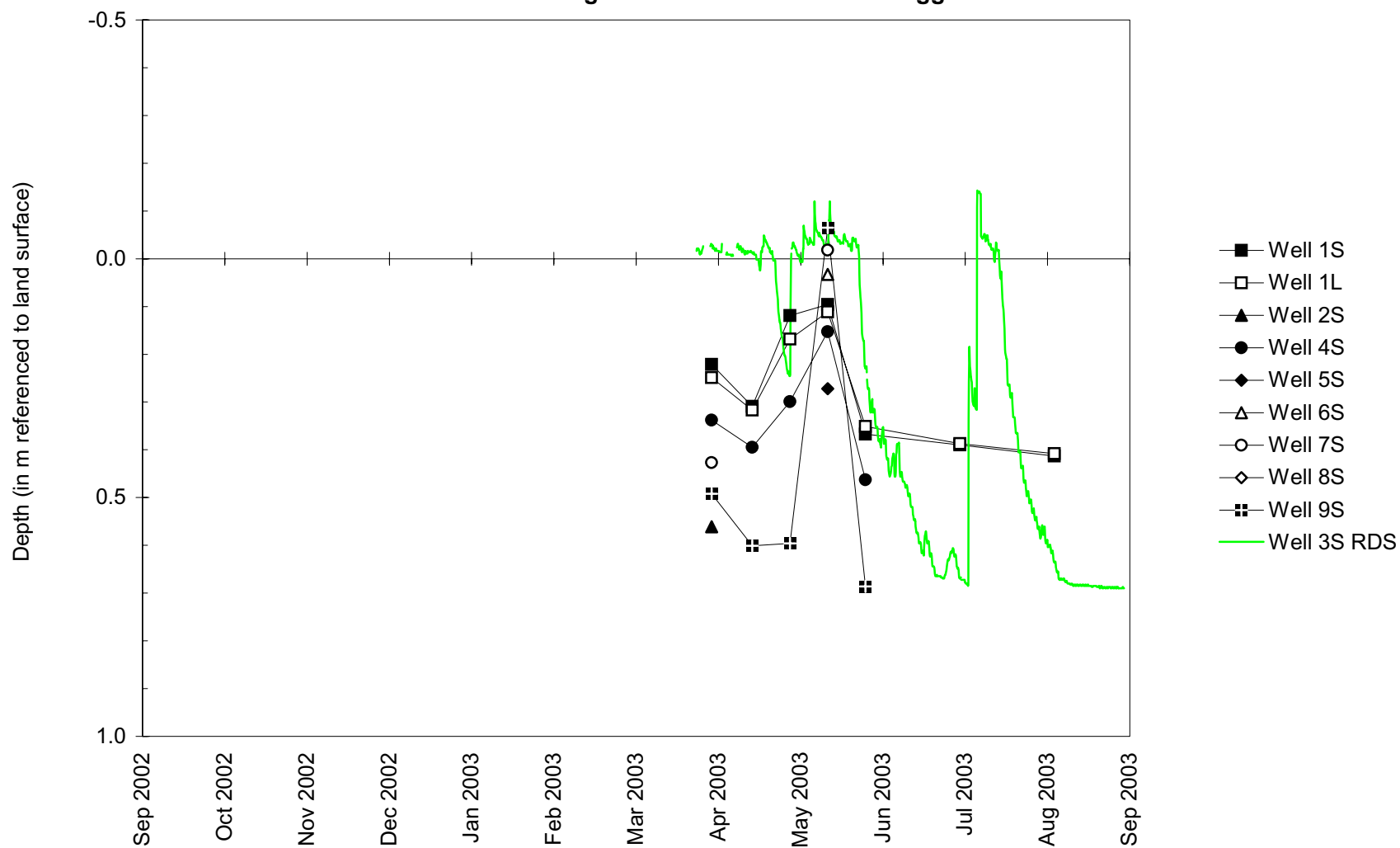
**September 1, 2002 to September 1, 2003**

### **in Monitoring Wells, on the Stage Gauge, and at the RDS Data Logger**



**September 1, 2002 to September 1, 2003**

## Depth to Water



**FREEPORT BYPASS EAST  
POTENTIAL WETLAND COMPENSATION SITE 8E**

**ISGS #70B**

FAP 301

Stephenson County, near Freeport, Illinois

**Primary Project Manager: Kelli D. Weaver**

**Secondary Project Manager: Kara L. Hart**

**SITE HISTORY**

- January 2003: ISGS was tasked by IDOT to monitor wetland hydrology at this site.
- March 2003: ISGS installed 8 soil-zone monitoring wells and an Ecotone data logger. Locations of monitoring wells and data logger were determined with a GPS unit by ISGS, and a topographic survey of the site was conducted by IDOT during well installation.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

We estimate that the total area that conclusively satisfied wetland hydrology criteria in 2003 is 0.0 ac (0.0 ha). The site, as defined by a boundary line drawn on an IDOT air photo, is roughly 22.4 ac (9.1 ha) in size. The estimate is 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; 12.5% of the growing season is 23 days.
- The total precipitation for the monitoring period from September 2002 to August 2003 was 75% of normal. Despite above-normal precipitation for October 2002, the precipitation from September 2002 through April 2003 was significantly below normal, leading to drier than typical conditions entering the 2003 growing season. Precipitation levels were above the normal range in May and July, but were below the normal range for June and August.
- The primary source of water for this site is flood water from the adjacent stream to the east, and from the Pecatonica River to the south. The site did not flood during the 2003 monitoring period.
- In 2003, water levels measured in none of the wells conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual.
- Limitations of the wetland hydrology determination are as follows:
  - The map used to determine the acreage of the wetland site is a digital orthophoto with estimated site boundaries. The topographic survey produced by IDOT will be necessary to accurately determine the extent of wetland hydrology in the future.
  - Positions of instruments determined via GPS were plotted at the same approximate scale as the base map and were overlain on the digital orthophoto.

**PLANNED FUTURE ACTIVITIES**

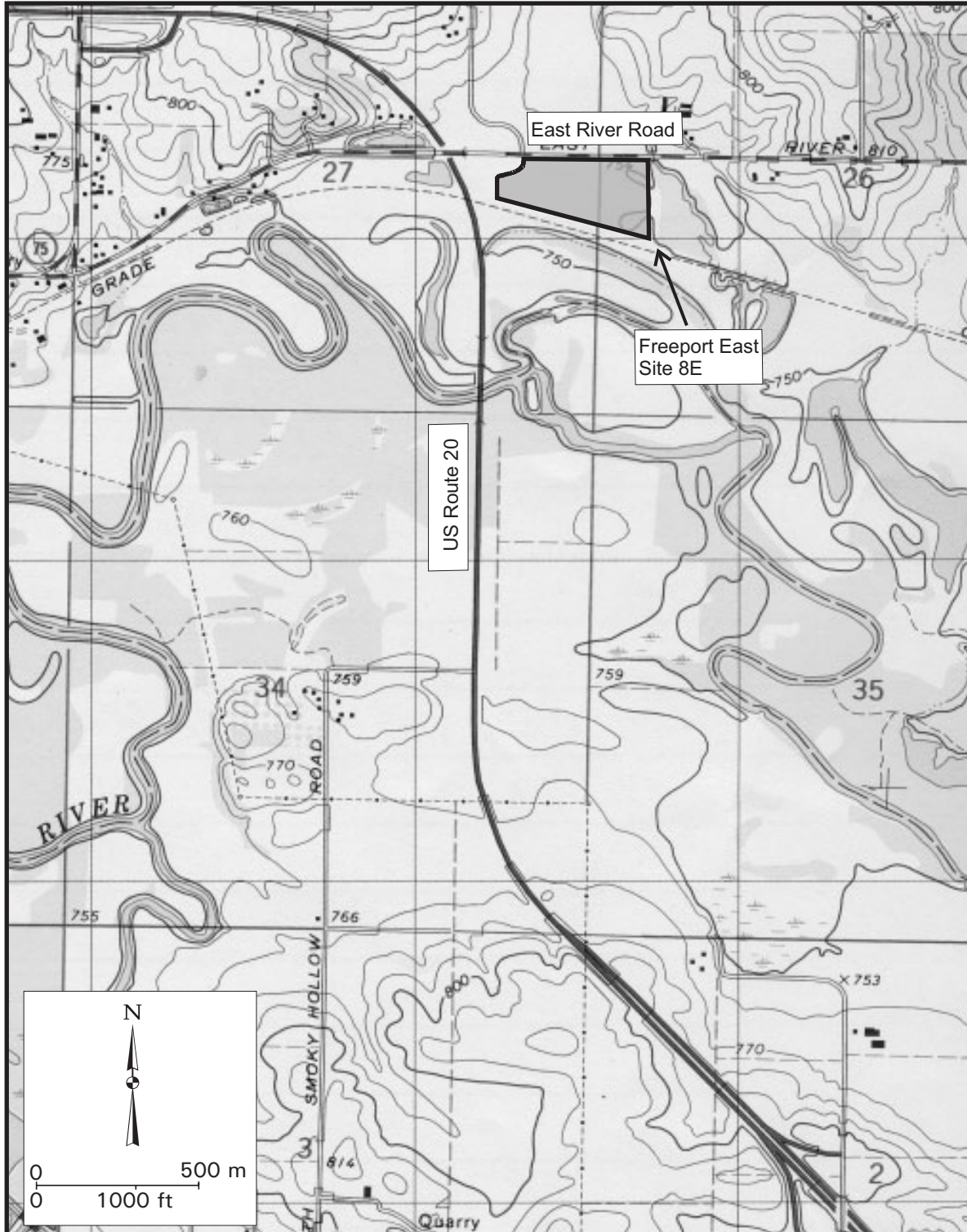
- Monitoring is expected to continue through 2005 or until no longer required by IDOT.



# Freeport Bypass East Wetland Compensation Site 8E (FAP 301)

## General Study Area and Vicinity

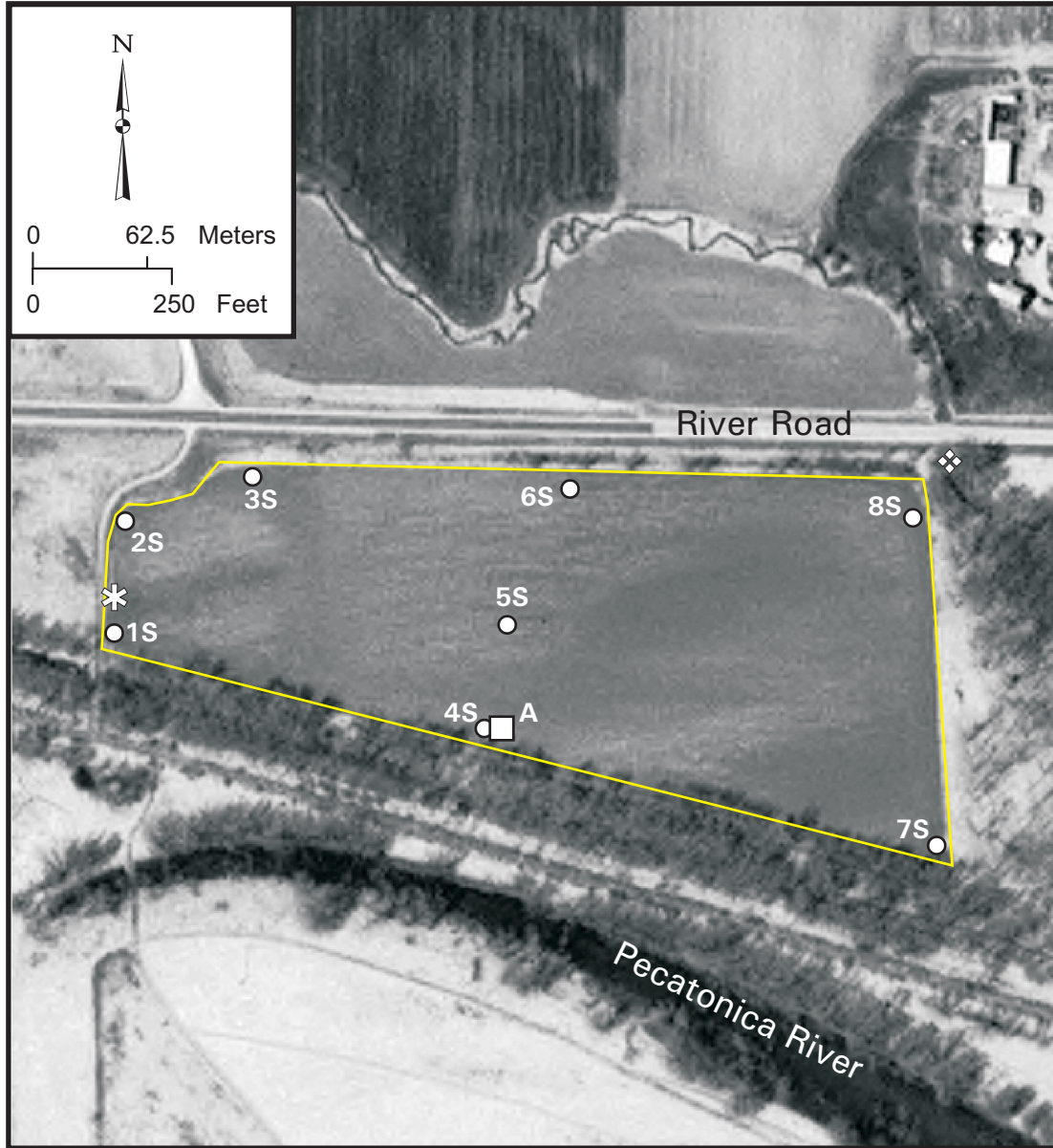
from the USGS Topographic Series, Freeport East, II 7.5 minute Quadrangle (USGS 1999)  
contour interval is 10 feet.



# Freeport Bypass East Wetland Compensation Site 8E (FAP 301)

## Estimated Areal Extent of 2003 Wetland Hydrology

based on data collected between September 1, 2002 and September 1, 2003  
map based on USGS DOQ, Freeport East SE Quadrangle (1998-1999)



○ ISGS monitoring well



ISGS benchmark

□ Ecotone data logger



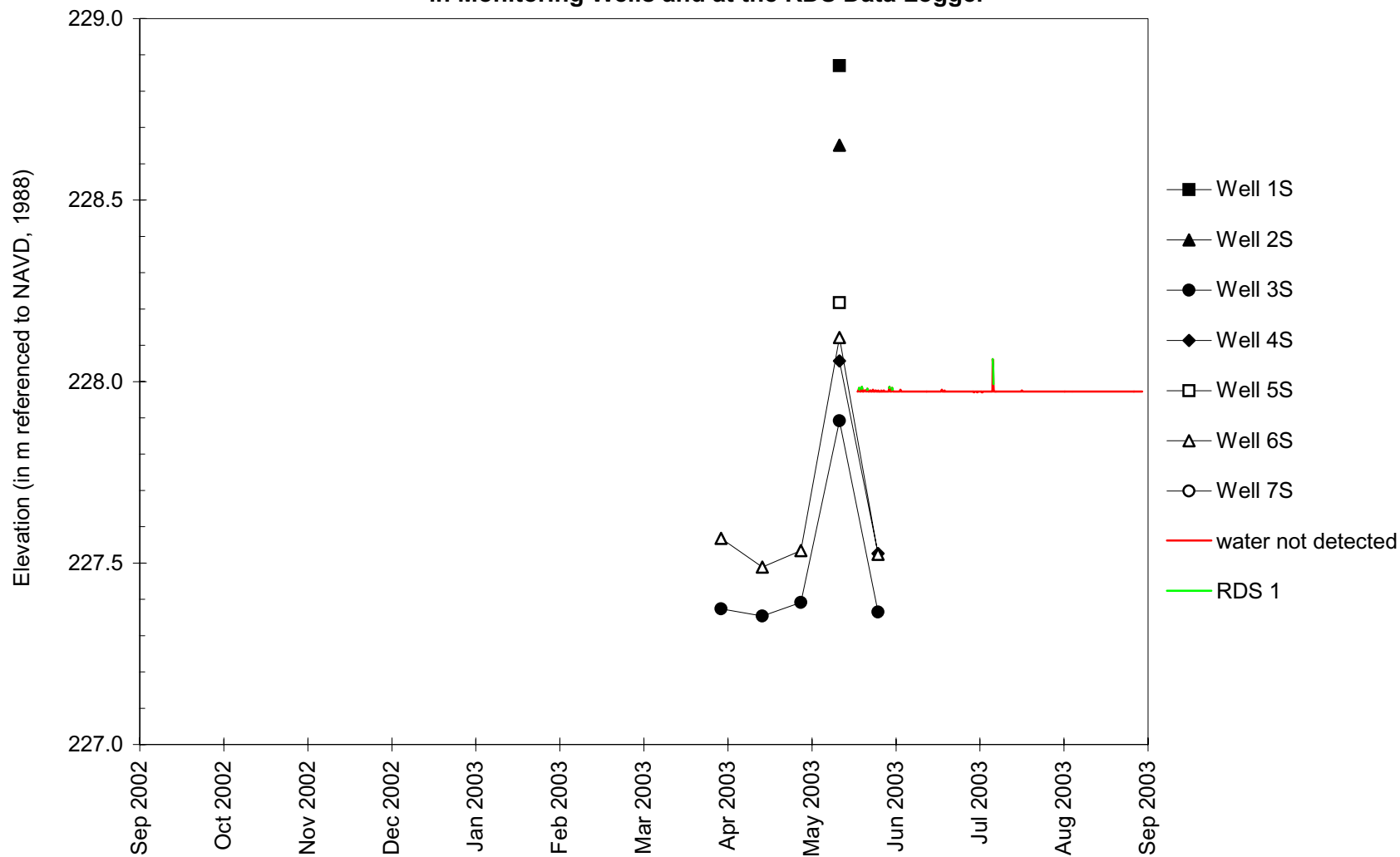
estimated areal extent of  
2003 wetland hydrology



rain gauge

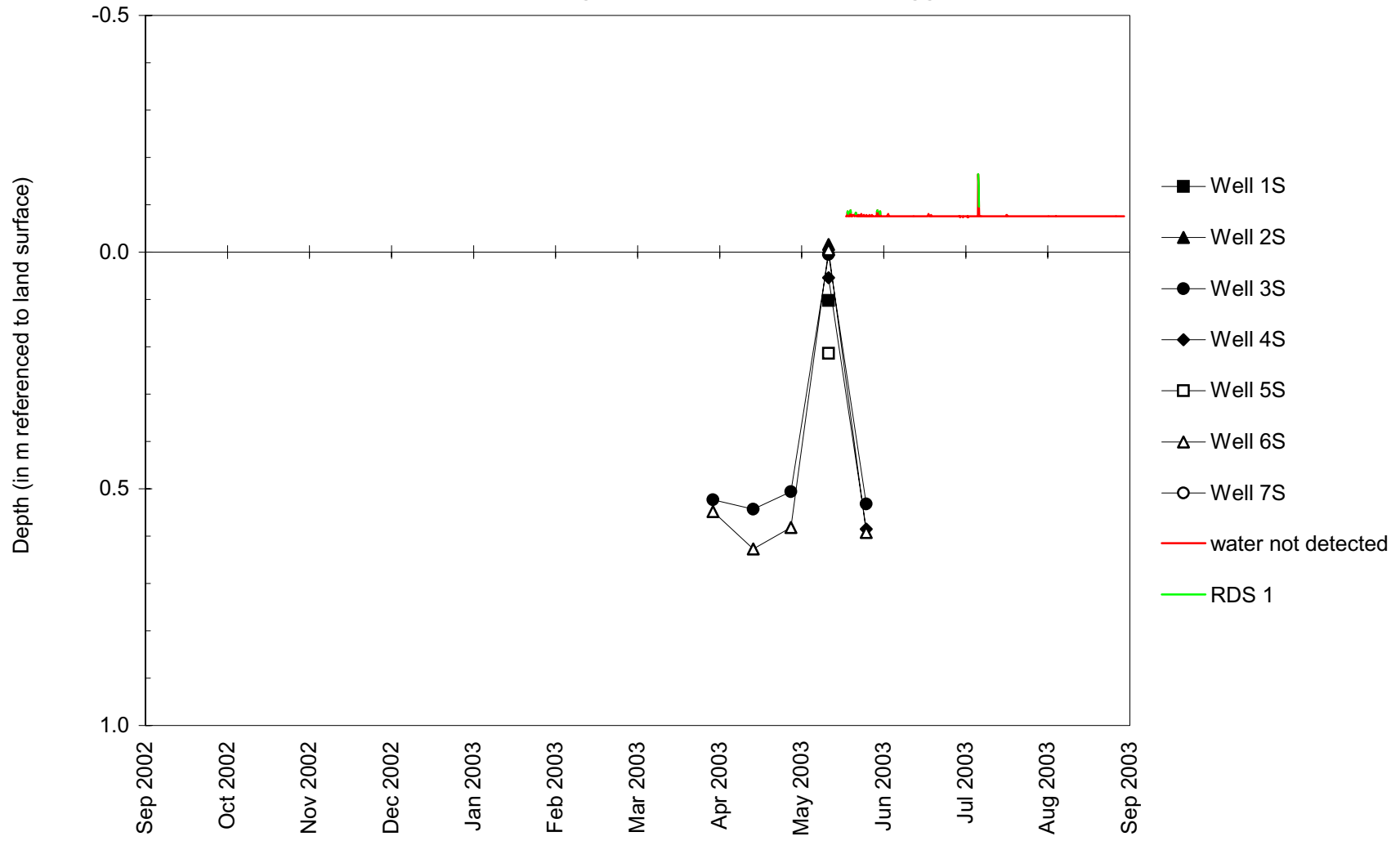
**September 1, 2002 to September 1, 2003**

### in Monitoring Wells and at the RDS Data Logger



**Freeport Bypass East Potential Wetland Compensation Site 8E**  
**September 1, 2002 to September 1, 2003**

**Depth to Water**  
**in Monitoring Wells and the RDS Data Logger**

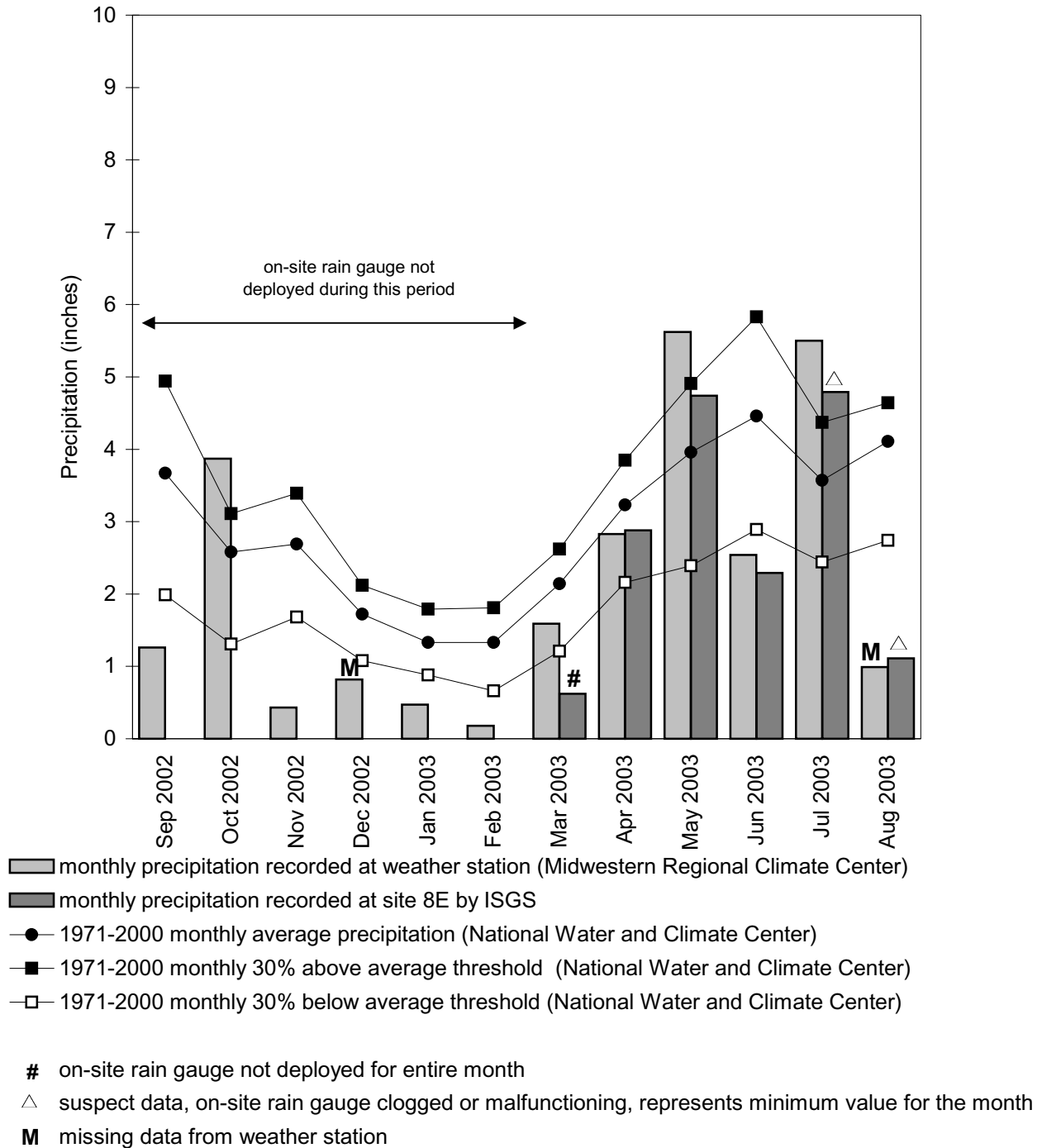


# Freeport Bypass East

## Potential Wetland Compensation Sites 4E, 8E, and 10E

### September 2002 through August 2003

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



**FREEPORT BYPASS EAST**  
**POTENTIAL WETLAND COMPENSATION SITE 10E**  
FAP 301

**ISGS #70C**

Stephenson County, near Freeport, Illinois

**Primary Project Manager: Kelli D. Weaver**

**Secondary Project Manager: Kara L. Hart**

**SITE HISTORY**

- January 2003: ISGS was tasked by IDOT to monitor wetland hydrology at this site.
- March 2003: ISGS installed 8 soil-zone monitoring wells and a Global data logger to monitor the water level of the Pecatonica River. Locations of monitoring wells and data logger were determined with a GPS unit by ISGS, and a topographic survey of the site was conducted by IDOT during well installation.

**WETLAND HYDROLOGY CALCULATION FOR 2003**

We estimate that the total area that conclusively satisfied wetland hydrology criteria in 2003 is 0.00 ac (0.00 ha). The site, as defined by a boundary line drawn on an IDOT air photo, is roughly 44.4 ac (18.0 ha) in size. The estimate is 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; 12.5% of the growing season is 23 days.
- The total precipitation for the monitoring period from September 2002 to August 2003 was 75% of normal. Despite above-normal precipitation for October 2002, the precipitation from September 2002 through April 2003 was significantly below normal, leading to drier than typical conditions entering the 2003 growing season. Precipitation levels were above the normal range in May and July, but were below the normal range for June and August.
- In 2003, water levels measured in none of the wells conclusively satisfied the wetland hydrology criteria of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual.
- Although the Pecatonica River flooded above the elevation of the lowest well on site (227.845 m [747.52 ft]) on three separate occasions, flooding did not exceed the elevation of the natural levee along the northern perimeter of the site; thus the monitoring wells on the interior of the site were not inundated. Additionally, the maximum duration of flooding was approximately three days, a period of time insufficient to satisfy wetland hydrology criteria.
- Limitations of the wetland hydrology determination are as follows:
  - The map used to determine the acreage of wetland site is a digital orthophoto with estimated site boundaries. The topographic survey produced by IDOT will be necessary to accurately determine the extent of wetland hydrology in the future.
  - Positions of instruments determined via GPS were plotted at the same approximate scale as the base map and were overlain on the digital orthophoto.

## PLANNED FUTURE ACTIVITIES

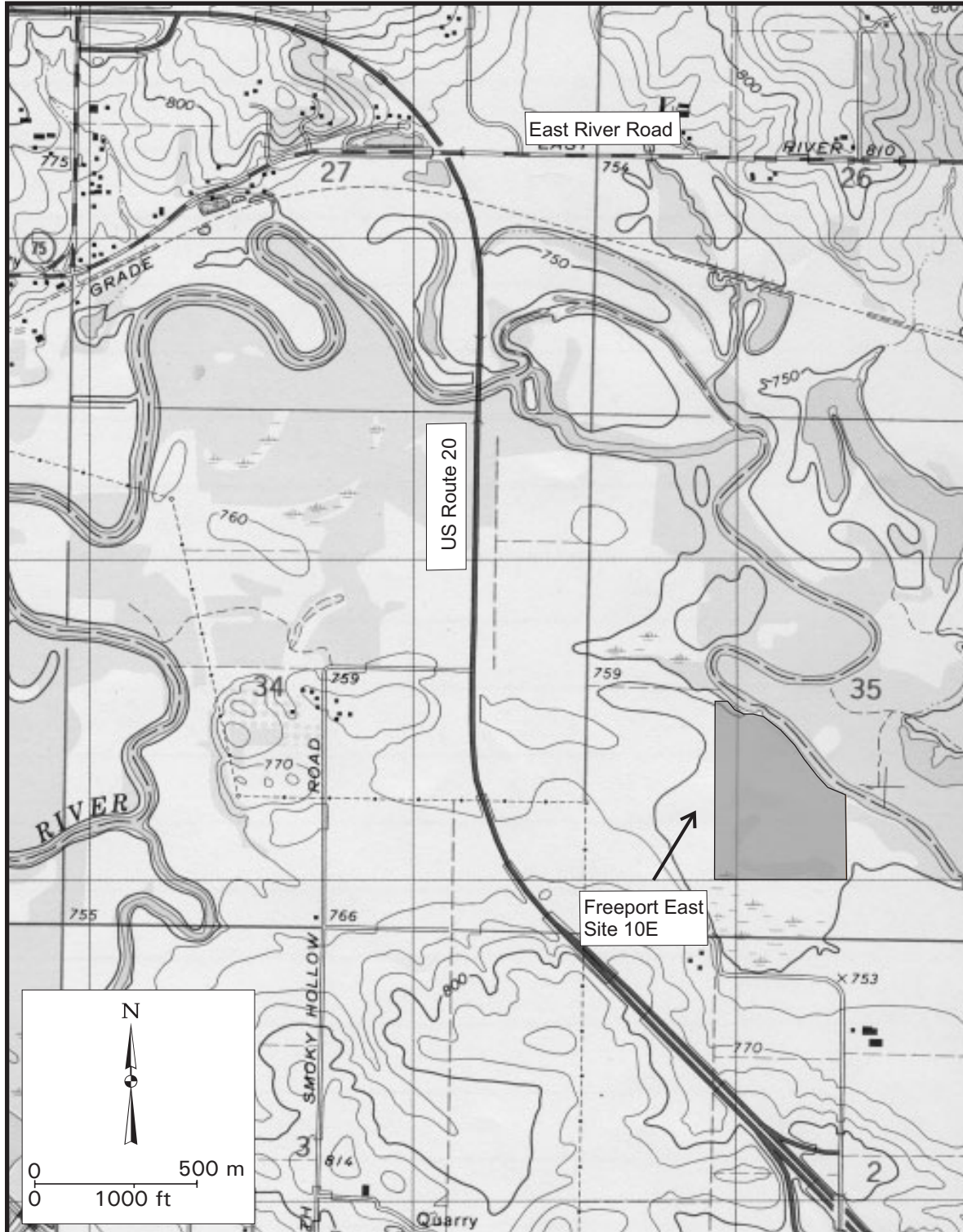
- The addition of a data logger in the apparent wetland southwest of well 3S would aid in determining the elevation and duration of saturation events in the lower, interior portions of the site.
- Monitoring is expected to continue through 2005 or until no longer required by IDOT.



# Freeport Bypass East Wetland Compensation Site 10E (FAP 301)

## General Study Area and Vicinity

from the USGS Topographic Series, Freeport East, II 7.5 minute Quadrangle (USGS 1999)  
contour interval is 10 feet.

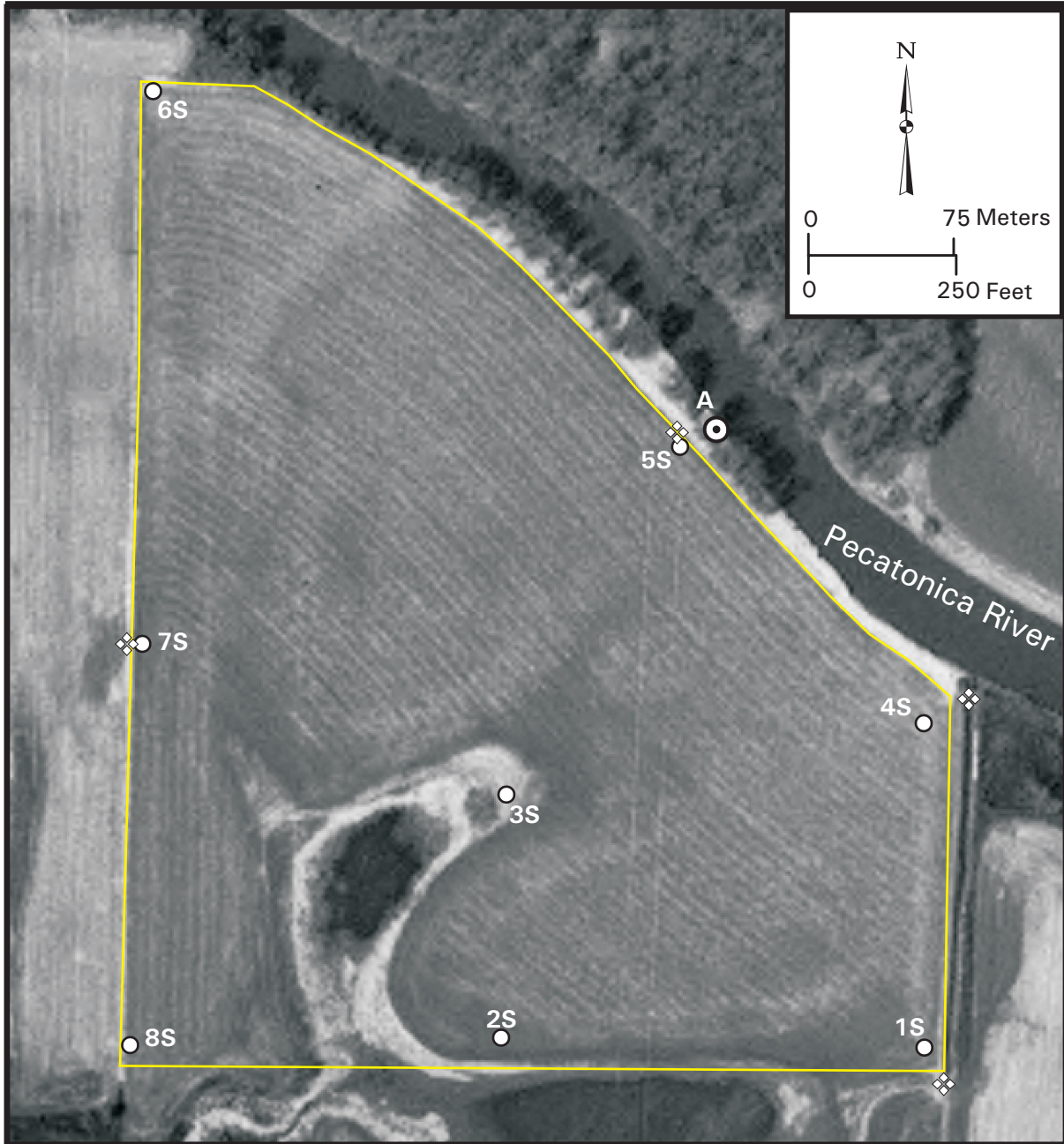





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## Estimated Areal Extent of 2003 Wetland Hydrology

based on data collected between September 1, 2002 and September 1, 2003  
map based on USGS DOQ, Freeport East SE Quadrangle (1998-1999)



- ISGS monitoring well
- Ecotone data logger
- ⊙ Global pressure transducer
- ⊞ ISGS benchmark

 estimated areal extent of 2003 wetland hydrology



**Freeport Bypass East Potential Wetland Compensation Site 10E**  
**September 1, 2002 to September 1, 2003**

