**Open File Series 2013-4**

# Annual Report for Active IDOT Wetland Mitigation and Hydrologic Monitoring Sites: September 1, 2012 through August 31, 2013

**Geoffrey E. Pociask, Steven E. Benton, Eric T. Plankell, Keith W. Carr, Kathleen E. Bryant, Melinda C. Higley, Jessica R. Ackerman, Jessica L. B. Monson, and Colleen M. Long**

*East Cape Girardeau wetland mitigation site, photo by Jessica Monson*

Wetlands Geology Section
Illinois State Geological Survey
Prairie Research Institute
University of Illinois at Urbana-Champaign

Submitted Under Grant D7129 to:

Illinois Department of Transportation
Bureau of Design and Environment, Wetlands Unit
2300 South Dirksen Parkway
Springfield, Illinois 62764-0002

November 1, 2013

ILLINOIS STATE GEOLOGICAL SURVEY
PRAIRIE RESEARCH INSTITUTE

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Illinois State Geological Survey
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ILLINOIS STATE GEOLOGICAL SURVEY
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ILLINOIS

**TABLE OF CONTENTS**

## 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 sites being monitored for IDOT under grant D7129, including current and potential wetland mitigation sites and banks. 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 and its online updates (Environmental Laboratory 1987), hereafter collectively referred to as the 1987 Manual, as well as areas meeting wetland hydrology criteria as outlined in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (U.S. Army Corps of Engineers [USACE] 2010), hereafter referred to as the 2010 Midwest Region Supplement. 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 22 wetland mitigation 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 from selected wells and surface-water gauges, 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. Also, a summary of areas meeting wetland hydrology criteria for each site is provided in Table 2. Except where noted, all data included in this report are from September 1, 2012, through August 31, 2013, at IDOT's request.

## METHODS

The primary purpose of this report is to present the area within each wetland mitigation site that satisfied the wetland hydrology criteria listed in the 1987 Manual and in the 2010 Midwest Region Supplement. Areas satisfying wetland hydrology criteria were delineated using both methods because both are in use at present, and to compare methodologies. However, to be a wetland, an area must also satisfy soils and vegetation criteria. The Illinois Natural History Survey (INHS) will combine the hydrologic data presented in this report with vegetation and soils data that they collect, determine the total wetland area of each mitigation site, and report it under separate cover. The total wetland area determined by INHS may differ from the areas that satisfied the wetland hydrology criteria shown in this report.

An area must be inundated or saturated for no less than 5% of the growing season to satisfy wetland hydrology criteria using the 1987 Manual, or a minimum of 14 consecutive days when using the 2010 Midwest Region Supplement. These areas will be identified as jurisdictional wetlands if vegetation and soils criteria mentioned above are also met. Areas that are inundated or saturated for greater than 12.5% of the growing season satisfy wetland hydrology criteria in a conclusive manner, and strongly indicate wetland conditions, especially where soil and/or vegetation are slow to respond or data from these components are inconclusive after site construction activities. To assist in proper characterization of wetland mitigation sites, this report shows areas that were inundated or saturated for at least 5% and 12.5% of the growing season. Areas satisfying wetland hydrology criteria in the 2010 Midwest Region Supplement (14 consecutive days during the growing season) are also shown. 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.

The Midwestern Regional Climate Center (MRCC) and the State Climatologist Office for Illinois at the Illinois State Water Survey (ISWS) provide data regarding the length and beginning and end

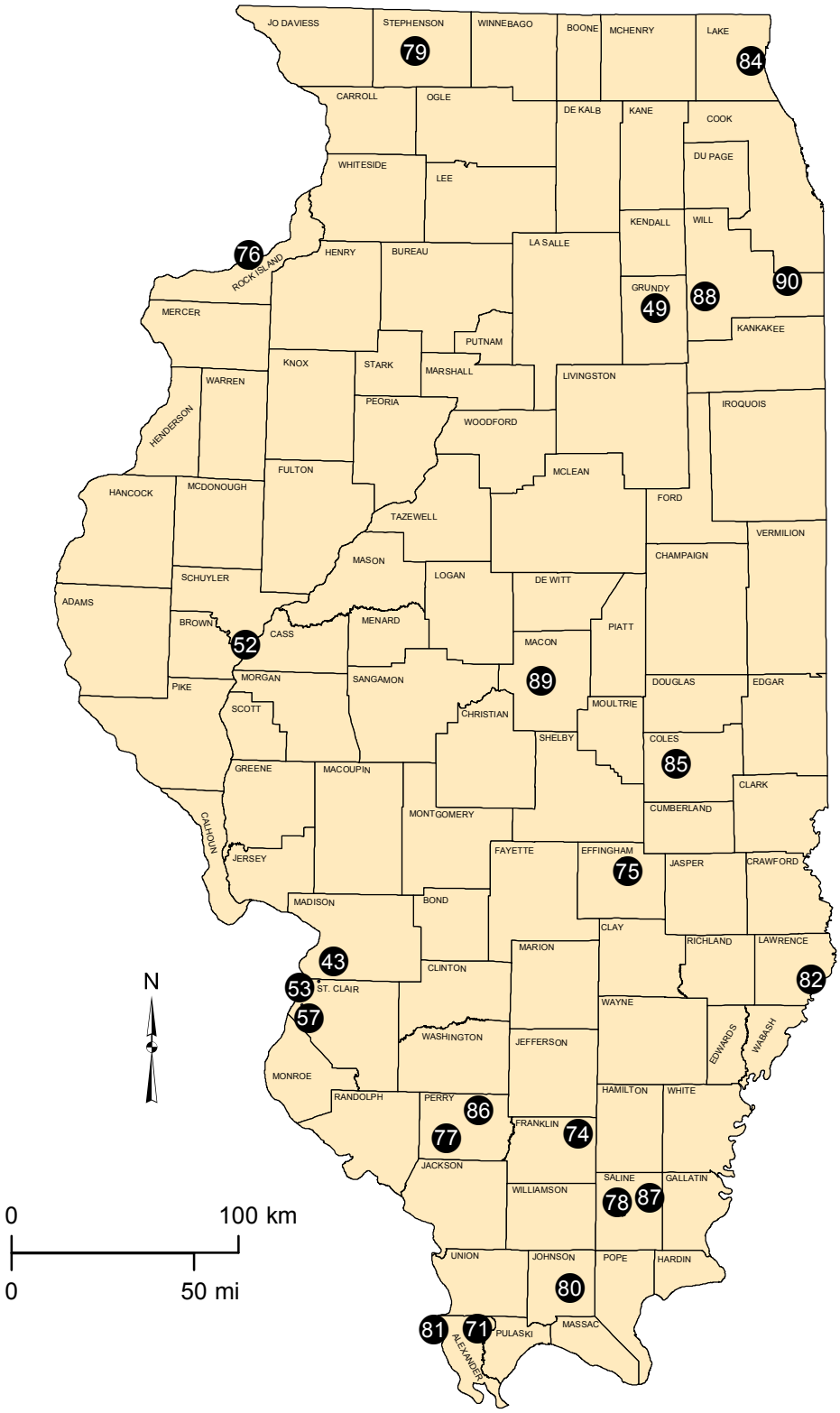



Figure 1 General locations of sites monitored by the ISGS for IDOT between September 1, 2012, and August 31, 2013. Numbers indicate ISGS project numbers listed in Table 1.

Table 1 ISGS project numbers and active IDOT wetland mitigation sites monitored by ISGS between September 1, 2012, and August 31, 2013.

| ISGS Number | Site Name | Site Type | Project | FA # | Sequence # | County |
|---|---|---|---|---|---|---|
| 43 | Eckmann/Bischoff | Wetland Mitigation Site | N/A | FAP 14 | 27 | Madison |
| 49 | Morris | Wetland Mitigation Bank | N/A | N/A | 1306 | Grundy |
| 52 | La Grange | Wetland Mitigation Bank | N/A | N/A | 9579 | Brown |
| 53 | Fairmont City | Potential Wetland Mitigation Site | N/A | FAP 14 | 27 | St. Clair |
| 57 | Former Tiernan Property | Potential Wetland Mitigation Site | N/A | FAP 14 | 27 | St. Clair |
| 71 | Tamms | Wetland Mitigation Site | IL 127 | FAS 1907 | 1026 | Alexander |
| 74 | Sugar Camp Creek | Wetland and Stream Mitigation Bank | N/A | N/A | 9282 | Franklin |
| 75 | Green Creek | Wetland Mitigation Site | IL 32/33 | FAP 774 | 12505 | Effingham |
| 76 | Milan Beltway, Rock Island | Wetland Mitigation Site | Milan Beltway | FAU 5822 | 67 | Rock Island |
| 77 | Pyramid Site EC25 | Wetland Mitigation Site | Pyatts Blacktop | FAS 864 | 9778 | Perry |
| 78 | Harrisburg, Site 2 | Wetland Mitigation Site | IL 14 | FAP 857 | 547 | Saline |
| 79 | Former Weber Property | Wetland Mitigation Site | US 20 | FAP 301 | 10487 | Stephenson |
| 80 | Max Creek | Wetland Mitigation Site | IL 147 | FAS 932 | 8717A | Johnson |
| 81 | East Cape Girardeau | Wetland Mitigation Site | IL 146 | FAP 312 | 633A | Alexander |
| 82 | Lawrence County | Wetland Mitigation Bank | N/A | N/A | 14912 | Lawrence |
| 84 | North Chicago | Wetland Mitigation Site | IL 56/47 | FAP 326 | 13406 | Lake |
| 85 | Coles County | Wetland Mitigation Site | TR 1000N and TR 41 | N/A | 1273 | Coles |
| 86 | Swan Road | Wetland Mitigation Site | TR 222 | N/A | 12315 | Perry |
| 87 | Harrisburg, Site 3 | Wetland Mitigation Site | US 45 | FAP 332 | N/A | Saline |
| 88 | Grant Creek North | Wetland Mitigation Site | I-55 | FAI 55 | N/A | Will |
| 89 | Stevens Creek Bikeway | Wetland Mitigation Site | Stevens Creek Bikeway | N/A | 10630 | Macon |
| 90 | Thorn Creek Headwaters Preserve | Wetland Mitigation Site | I-57/Stuenkel Road | FAI 57 | 12558 | Will |

Table 2 Summary of wetland hydrology area estimates for the 2013 growing season for active IDOT wetland mitigation sites monitored by ISGS between September 1, 2012, and August 31, 2013.

| ISGS Number | Site Name | Target Compensation Area | | >5% of growing season (1987 Manual) | | >12.5% of growing season (1987 Manual) | | 14 days or more (2010 Midwest Region Supplement) | |
|---|---|---|---|---|---|---|---|---|---|
| | | ha | ac | ha | ac | ha | ac | ha | ac |
| 43 | Eckmann/Bischoff | 17.20 | 42.50 | 25.50 | 63.00 | 25.50 | 63.00 | 25.50 | 63.00 |
| 49 | Morris | 44.11 | 109.00 | 17.11 | 42.29 | 12.33 | 30.47 | 17.11 | 42.29 |
| 52 | La Grange | 414.40 | 1024.00 | 586.14 | 1448.37 | 582.27 | 1438.82 | 586.14 | 1448.37 |
| 53 | Fairmont City | 10.93 | 27.00 | 13.75 | 33.97 | 12.80 | 31.63 | 13.27 | 32.80 |
| 57 | Former Tiernan Property | 17.04 | 42.10 | 17.85 | 44.10 | 14.49 | 35.81 | 17.19 | 42.48 |
| 71 | Tamms | 1.75 | 4.33 | 2.21 | 5.46 | 0.81 | 2.00 | 2.66 | 6.58 |
| 74 | Sugar Camp Creek* | 28.00 | 69.20 | 26.87 | 66.40 | 15.25 | 37.68 | 27.43 | 67.79 |
| 75 | Green Creek | 0.34 | 0.83 | 2.14 | 5.28 | 1.51 | 3.74 | 1.82 | 4.50 |
| 76 | Milan Beltway, Rock Island | 3.61 | 8.92 | 3.47 | 8.57 | 1.78 | 4.40 | 3.07 | 7.59 |
| 77 | Pyramid Site EC25 | 4.57 | 11.30 | 5.10 | 12.61 | 4.62 | 11.42 | 5.25 | 12.97 |
| 78 | Harrisburg, Site 2 | 4.13 | 10.20 | 7.33 | 18.10 | 2.73 | 6.73 | 8.53 | 21.07 |
| 79 | Former Weber Property | 1.21 | 3.00 | 4.31 | 10.65 | 2.36 | 5.83 | 3.21 | 7.93 |
| 80 | Max Creek | 0.49 | 1.20 | 0.87 | 2.14 | 0.81 | 1.99 | 0.98 | 2.42 |
| 81 | East Cape Girardeau | 3.08 | 7.60 | 5.43 | 13.42 | 4.79 | 11.84 | 5.34 | 13.20 |
| 82 | Lawrence County* | N/A | N/A | 16.64 | 41.12 | 11.37 | 28.09 | 12.91 | 31.89 |
| 84 | North Chicago | N/A | N/A | -- | -- | -- | -- | -- | -- |
| 85 | Coles County | 1.86 | 4.60 | 1.13 | 2.80 | 1.10 | 2.72 | 1.14 | 2.82 |
| 86 | Swan Road | 0.29 | 0.72 | 0.32 | 0.78 | 0.32 | 0.78 | 0.32 | 0.78 |
| 87 | Harrisburg, Site 3* | 0.69 | 1.70 | 0.10 | 0.24 | 0.00 | 0.00 | 0.13 | 0.31 |
| 88 | Grant Creek North* | 5.99 | 14.80 | 31.67 | 78.27 | 1.00 | 2.48 | 31.67 | 78.27 |
| 89 | Stevens Creek Bikeway | 6.03 | 14.89 | 12.37 | 30.56 | 12.18 | 30.09 | 12.31 | 30.43 |
| 90 | Thorn Creek Headwaters Preserve* | 12.02 | 29.70 | 9.96 | 24.62 | 0.00 | 0.00 | 9.38 | 23.18 |

* - Project construction not yet complete--see the project summary for details regarding wetland hydrology area.

N/A - Denotes that the target compensation area for the mitigation project is not available.

dates for the growing season (MRCC 2013, ISWS 2013). In the 1987 Manual, the growing season is defined as the time period between the last occurrence of 28°F (-2.2°C) air temperatures in the spring and the first occurrence of 28°F (-2.2°C) air temperatures in the fall. The median beginning date and length of the growing season are calculated by the MRCC 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. This method is used when determining the areas that satisfy wetland hydrology criteria under the 1987 Manual. The 2010 Midwest Region Supplement provides different methods for determining the growing season. While the above method is allowable, one of the two following site-specific methods is preferred. The first method relies on observations of vegetation growth and development, and defines the start of the growing season as when at least two different species of non-evergreen vascular plants begin to grow (colloquially referred to as "green-up"), as indicated by various features such as emergence of herbaceous plants from the ground, bud burst, emergence or opening of flowers, and others. The second method relies on soil temperatures, with the growing season being the period when soil temperatures at a depth of 30 cm (1 ft) are continuously above 41°F (5°C). Site-specific observations of soil temperatures and vegetation were collected by field staff. The earliest date when either methodology was satisfied was determined to be the beginning of the growing season, and was used when determining areas that satisfy wetland hydrology criteria under the 2010 Midwest Region Supplement. Soil temperatures were collected using analog bimetal thermometers at a depth of 30 cm (12 inches [in.]) during site visits, and some sites were equipped with soil-temperature data loggers for continuous readings. Also, the Illinois State Water Survey operates Illinois Climate Network (ICN) stations throughout the state that measure soil temperatures at 20 cm (8 in.). Those data were obtained from the Water and Atmospheric Resources Monitoring Program (WARM) website and used to supplement on-site readings as needed (WARM 2013).

Wells and surface-water gauges where water levels satisfied wetland hydrology criteria are listed in the text for each site. Interpolation between measuring points and extrapolation were used to locate the boundary of the area that satisfied wetland hydrology criteria. Best professional judgment was used to refine the location of this boundary, using observations of saturation, small-scale topographic features, vegetation, soils, and other site features. The areas that satisfied wetland hydrology criteria were mapped and calculated (in hectares [ha] and acres [ac]) using Esri's ArcGIS 10.1 geographic information system software.

The error of each area measurement varies depending on the quality, precision, scale of the topographic map, and the precision in measuring the location of monitoring devices. The base maps used for these determinations are orthorectified aerial imagery from the U.S. Department of Agriculture-Farm Service Agency (USDA-FSA) National Agricultural Imagery Program (NAIP) or base map imagery provided by Esri (2013). For most sites, detailed site topography was collected by IDOT (e.g., GPS or photogrammetry) or by ISGS (e.g., total station or GPS measurements) and was used for mapping wetland hydrology areas. In some cases, digital elevation models produced from LiDAR measurements (ISGS 2013a) were also used to guide delineation of wetland hydrology polygons. Where detailed topographic data were not available, as-built plans, construction plans, and/or U.S. Geological Survey (USGS) 7.5-minute topographic maps were used. Monitoring instruments were located using GPS devices or a total station. Given the many potential sources of error, estimates of the amount of error are difficult to calculate and are not included.

Water-level data ordinarily were collected monthly throughout the year, and biweekly during March through May, when the highest water levels generally occur in Illinois. As needed, biweekly readings were begun as early as February and/or extended into June and collected outside of the Spring period during floods or heavy precipitation events. Weekly readings were made at some sites to improve or check accuracy.

In Illinois, 5% of the growing season ranges from about 9 to 11 days, and 12.5% of the growing season ranges from about 23 to 29 days using the methods of the 1987 Manual. Therefore, two consecutive biweekly manual water-level measurements were required to satisfy wetland hydrology criteria at 5% of the growing season, and three readings were required at 12.5% of the growing season. If fewer readings suggested wetland hydrology, then interpolation of the water levels was performed to determine total number of days of inundation or saturation. Interpolation between two dates was not performed if a water level was not recorded for both dates. Flooding that prevented measurement of any specific instrument was considered sufficient evidence of inundation for that site visit. Manual water-level measurements were often supplemented with various automated data loggers that measured daily or more frequently. These data loggers were used to determine the timing of hydrologic events, such as precipitation or flooding, that occurred between manual measurements. One manual measurement alone was generally considered insufficient to indicate inundation or saturation for a sufficient duration without the identification of a precipitation or flooding event that would have initiated the inundation or saturation. If conflicts occurred between automatic and manually recorded data, best professional judgment was used to solve any conflicts in data, and a specific note was added to the site summary in question. The same methods, including a minimum of two consecutive biweekly manual readings, were used to determine duration of inundation or saturation to satisfy the 14-day requirement of the 2010 Midwest Region Supplement.

Monitoring wells were given an alphanumeric designation based in part on their relative depths. Monitoring wells designated with an ‘S’ or ‘VS’ are shallow and were specifically constructed for measuring wetland hydrology in the soil zone. Monitoring wells designated with a ‘U’ (i.e., upper) have varying depths but are deeper than ‘S’ wells, and may be used to determine wetland hydrology depending on well construction and hydrogeologic setting, as determined by the project manager. Other types of wells, including those designated with ‘M’, ‘L’, or ‘D’ (i.e., middle, lower, and deep), 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 are not listed or discussed in the text of this report.

Graphs for each site show water-level elevations at wells and surface-water instruments, and the depth to water below land surface at each well. The graphs follow the summary text for each site, and there may be multiple charts for each site. Depths are shown as negative values when water levels are above land surface. Elevations are shown relative to the North American Vertical Datum of 1988 (NAVD, 1988) unless otherwise labeled. If no data are shown on the charts for any specific well or gauge, then the well or gauge was either dry, not read, or the data were removed for quality-control purposes (see below).

At most sites, data loggers were used to monitor water levels at regular intervals ranging from daily to hourly. Various types of loggers were used and each type of instrument has different operations and default values. We have removed any incorrect readings that result when the instrument sensor was dry (i.e., zero or other default values). Other spurious readings that occurred due to data-logger malfunction or natural conditions that caused inaccuracies (e.g., freezing, vegetation growth, or debris accumulation beneath the logger) were removed after interpretation by ISGS scientists. For some sites, stage data from gauges operated by the USGS, USACE, or the U.S. Forest Service (USFS) were obtained from online or other sources (USGS 2013, USACE 2013, USFS 2013) and used to supplement ISGS data in evaluations of hydrologic conditions.

On-site precipitation data were collected by the ISGS using 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. None of

the ISGS rain gauges are heated and therefore are not appropriate for recording winter precipitation. However, monthly precipitation data obtained from MRCC climate observation stations are provided to show monthly precipitation throughout the year. The closest weather station with an adequate period of record was used for each site; however, additional stations or data collected by the ISGS at the site may be used to supplement the record if data from the closest station are missing. Normal (i.e., average) precipitation values and above- and below-normal range threshold values were calculated by the National Water and Climate Center (NWCC 2013). Normals and range threshold values were based on a 30-year period, either 1961-1990 or 1971-2000. Above- and below-normal thresholds were calculated using a 2-parameter gamma distribution over the 30-year period (NWCC 1995). Precipitation is classified as "above 30% threshold", or above the normal range, when there is a 30% chance precipitation will be greater than or equal to the value shown. Precipitation is "below 30% threshold", or below the normal range, when there is a 30% chance that precipitation will be less than or equal to the value shown. Monthly total precipitation is considered to be within the normal range when it is neither above nor below the 30% thresholds. Precipitation also may be described simply as above or below normal, where the above- and below-normal range threshold values are not shown.

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

This material is based upon work supported by the Illinois Department of Transportation under grants D7129. Any opinions, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the Illinois Department of Transportation.

## REFERENCES

Environmental Laboratory, 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://el.erdc.usace.army.mil/wetlands/pdfs/wlman87.pdf

Esri, 2013, World Imagery from Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, available online at http://services.arcgisonline.com/ArcGIS/rest/services/World_Imagery/MapServer

Illinois State Geological Survey, 2013a, Illinois Height Modernization: LiDAR Derivatives, Illinois Geospatial Data Clearinghouse, Champaign, Illinois, available online at http://crystal.isgs.uiuc.edu/nsdihome/webdocs/ilhmp/county/dsm-dtm.html

Illinois State Geological Survey, 2013b, USGS Digital Raster Graphic (DRG) Files, Illinois Geospatial Data Clearinghouse, Champaign, Illinois, available online at http://crystal.isgs.uiuc.edu/nsdihome/webdocs/drgs/

Illinois State Water Survey, 2013, Illinois Frost Dates and Growing Season, State Climatologist Office for Illinois, Champaign, Illinois, available online at http://www.isws.illinois.edu/atmos/statecli/Frost/frost.htm

Midwestern Regional Climate Center, 2013, MRCC Applied Climate System: Illinois State Water Survey, Champaign, Illinois, available online at http://mrcc.isws.illinois.edu/MACS/index.jsp

National Water and Climate Center, 2013, Climate Analysis for Wetlands by County: U.S. Department of Agriculture, Natural Resources Conservation Service, available online at http://www.wcc.nrcs.usda.gov/climate/wetlands.html

National Water and Climate Center, 1995, WETS Table Documentation: U.S. Department of Agriculture, Natural Resources Conservation Service, available online at http://www.wcc.nrcs.usda.gov/climate/wets_doc.html

U.S. Army Corps of Engineers, 2010, Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0): J.S. Wakeley, R.W. Lichvar, and C.V. Noble (eds.), ERDC/ELTR-10-16, U.S. Army Engineer Research and Development Center, Vicksburg, MS, 152 p., available on line at www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/erdc-el-tr-10-16.pdf

U.S. Army Corps of Engineers, 2013, RiverGages.com: Water Level of Rivers and Lakes, available online at http://www2.mvr.usace.army.mil/WaterControl/new/layout.cfm

U.S. Department of Agriculture-Farm Service Agency, 2012, National Agricultural Imagery Program, Aerial Photography Field Office, Salt Lake City, Utah, available online at http://datagateway.nrcs.usda.gov/GDGOrder.aspx

U.S. Geological Survey, 2013, National Water Information System: Web Interface, available online at http://waterdata.usgs.gov/nwis

U.S. Forest Service, 2013, Unpublished water-level data from former USGS Station #05541130, Grant Creek at West Patrol Road, Midewin National Tallgrass Prairie, Will County, Illinois.

Water and Atmospheric Resources Monitoring Program, 2013, Illinois Climate Network soil temperature data: Illinois State Water Survey, Champaign, Illinois, available online at http://www.isws.illinois.edu/warm/soiltemp.asp

**ECKMANN/BISCHOFF** **ISGS #43**
**WETLAND MITIGATION SITE**
FAP 14
Sequence #27
Madison County, near Collinsville, Illinois
**Primary Project Manager: Steven E. Benton**
**Secondary Project Manager: Jessica L. B. Monson**

SITE HISTORY

- March 2009: The IDOT tasked ISGS to resume monitoring of the site.

- April 2009: The ISGS installed a monitoring network at the site and resumed data collection.

WETLAND HYDROLOGY CALCULATION FOR 2013

The target compensation area for the Eckmann/Bischoff wetland mitigation site is 17.20 ha (42.50 ac). Using the 1987 Manual (Environmental Laboratory 1987), 25.50 ha (63.00 ac) of the total site area of 25.50 ha (63.00 ac) satisfied wetland hydrology criteria for greater than 5% of the 2013 growing season and 25.50 ha (63.00 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 25.50 ha (63.00 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Belleville, Illinois, is April 5 and the season lasts 202 days (MRCC 2013); 5% of the growing season is 10 days and 12.5% of the growing season is 25 days, using the 1987 Manual. Using the 2010 Midwest Region Supplement, March 29 was the starting date of the 2013 growing season based on soil temperatures measured on site and at the nearby Fairmont City wetland mitigation site (ISGS #53).

- Total precipitation for the monitoring period, recorded at Belleville, Illinois (MRCC station #110510), was 156% of normal. Precipitation in Spring 2013 (March through May) was 174% of normal.

- In 2013, water levels measured in all soil-zone monitoring wells satisfied wetland hydrology criteria for greater than 5%, and for greater than 12.5% of the growing season, using the 1987 Manual. In addition, using the 2010 Midwest Region Supplement, all soil-zone monitoring wells satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season.

- Water levels measured by the data loggers in monitoring wells 6S and 8S revealed that the longest periods of saturation at these wells during the 2013 growing season were 29 days (April 16-May 14) and 45 days (April 5-May 19), respectively.

- Surface-water elevations measured at the SW1 data logger revealed that areas of the site at and below an elevation of 124.39 m (408.10 ft) were inundated for greater than 5% of the growing season, and that areas at and below an elevation of 124.31 m (407.84 ft) were inundated for greater than 12.5% of the growing season, using the 1987

Manual. In addition, using the 2010 Midwest Region Supplement, areas of the site at and below an elevation of 124.38 m (408.07 ft) were inundated for 14 or more consecutive days of the growing season.

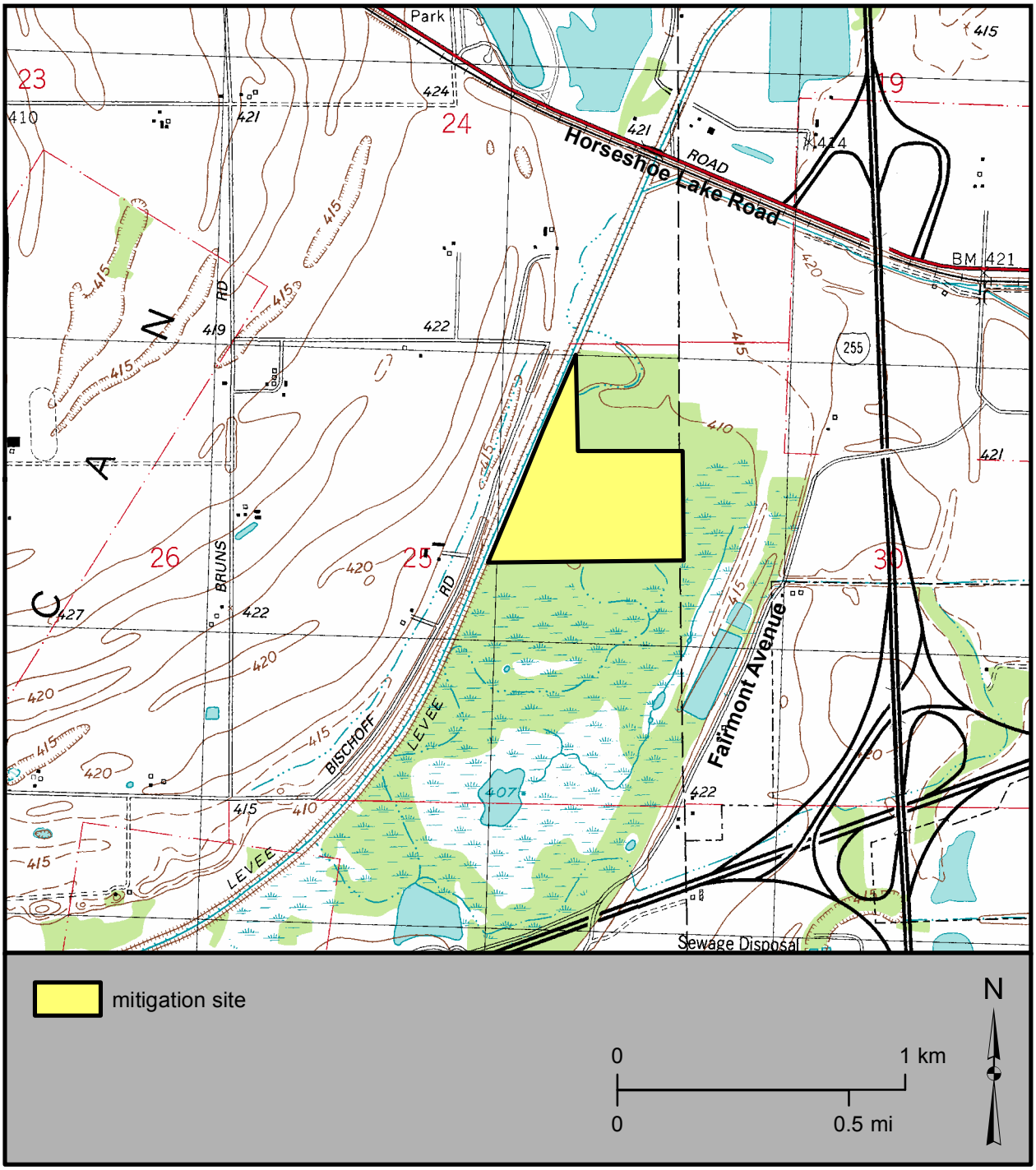
ADDITIONAL INFORMATION

- Evidence of new beaver activity at the site was noted in July and documented with photographs. It appears from the photographs that the beaver have rebuilt the dam on Schneider Ditch that was last breached by the Metro-east Sanitary District in January or February 2011.

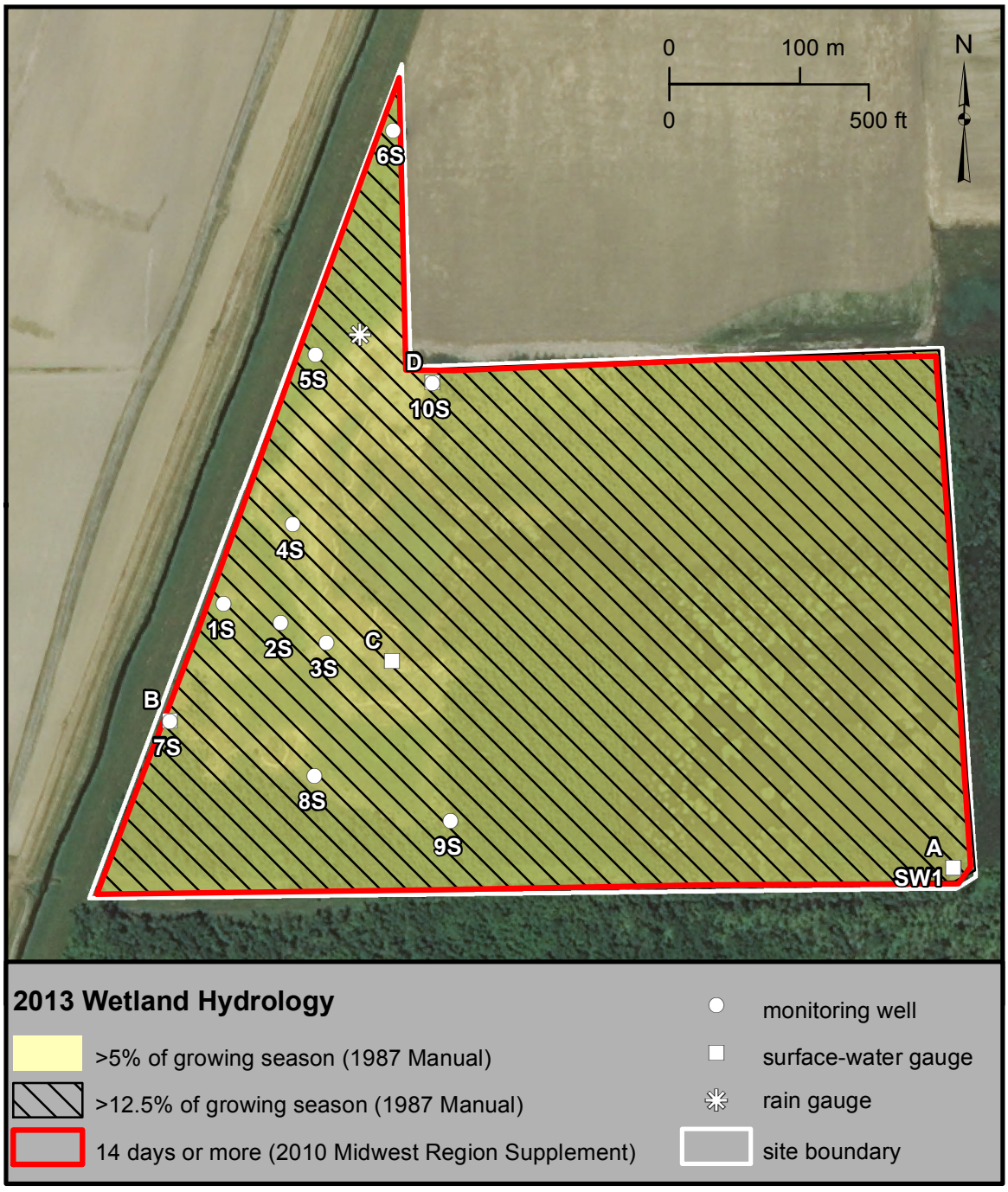
PLANNED FUTURE ACTIVITIES

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

# Eckmann/Bischoff Wetland Mitigation Site
# (FAP 14)
## General Study Area and Vicinity
from the USGS Topographic Series, Monks Mound, IL, 7.5-minute Quadrangle (ISGS 2013b)

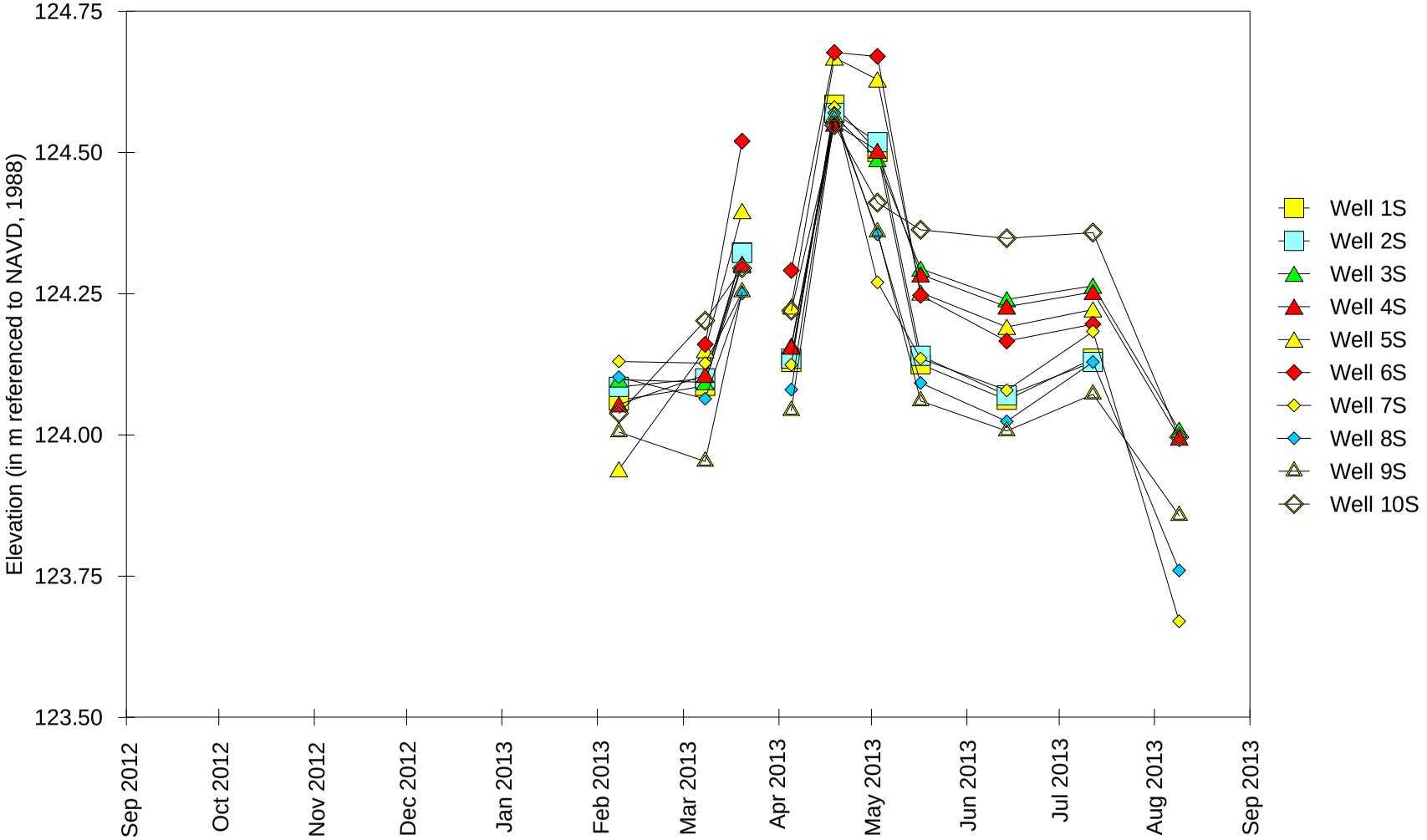


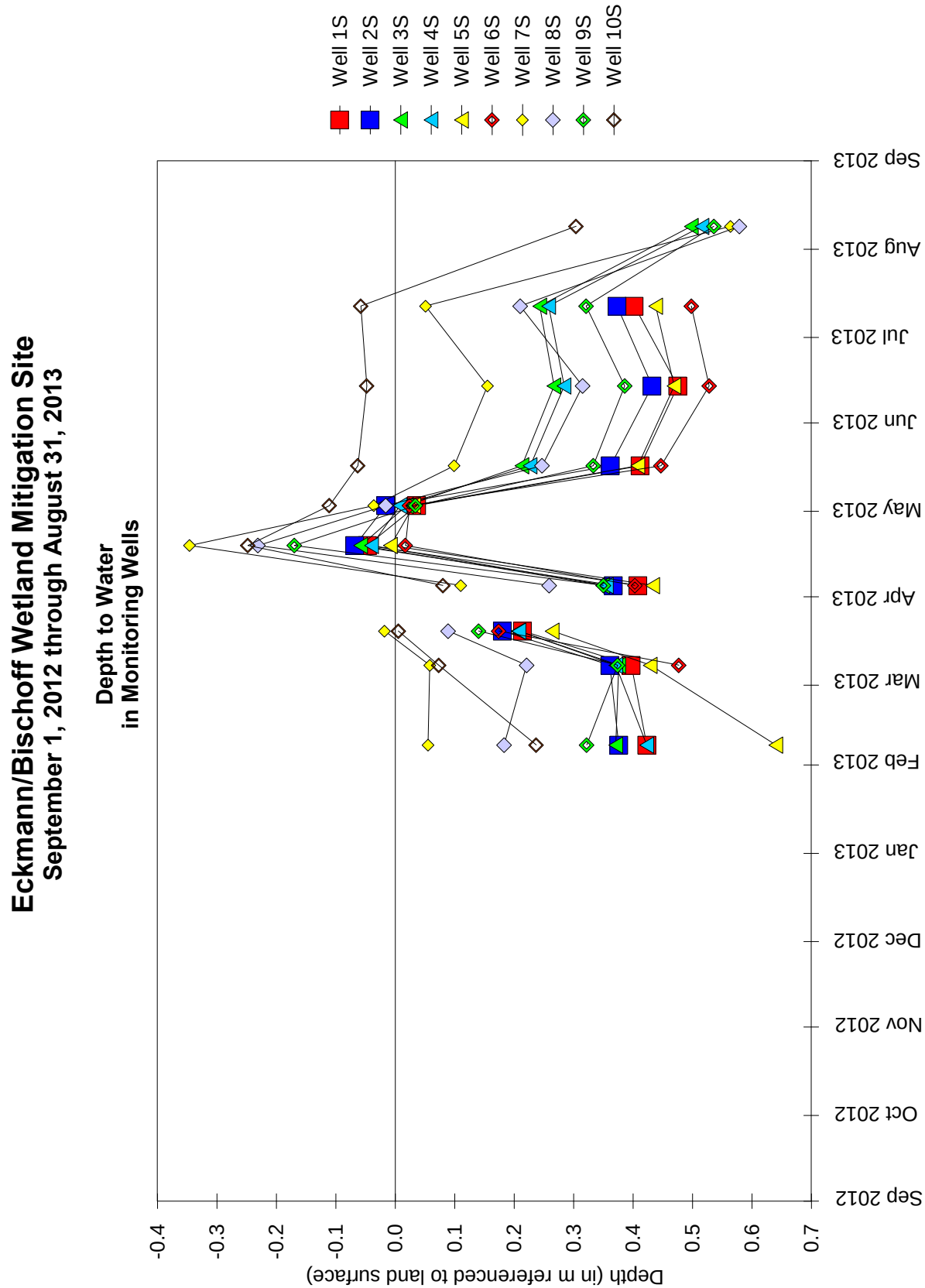
# Eckmann/Bischoff Wetland Mitigation Site
# (FAP 14)
## Estimated Areal Extent of 2013 Wetland Hydrology
**September 1, 2012 through August 31, 2013**
Map based on 2012 Farm Service Agency
digital orthophotography, Madison County, Illinois (USDA-FSA 2012)



# Eckmann/Bischoff Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

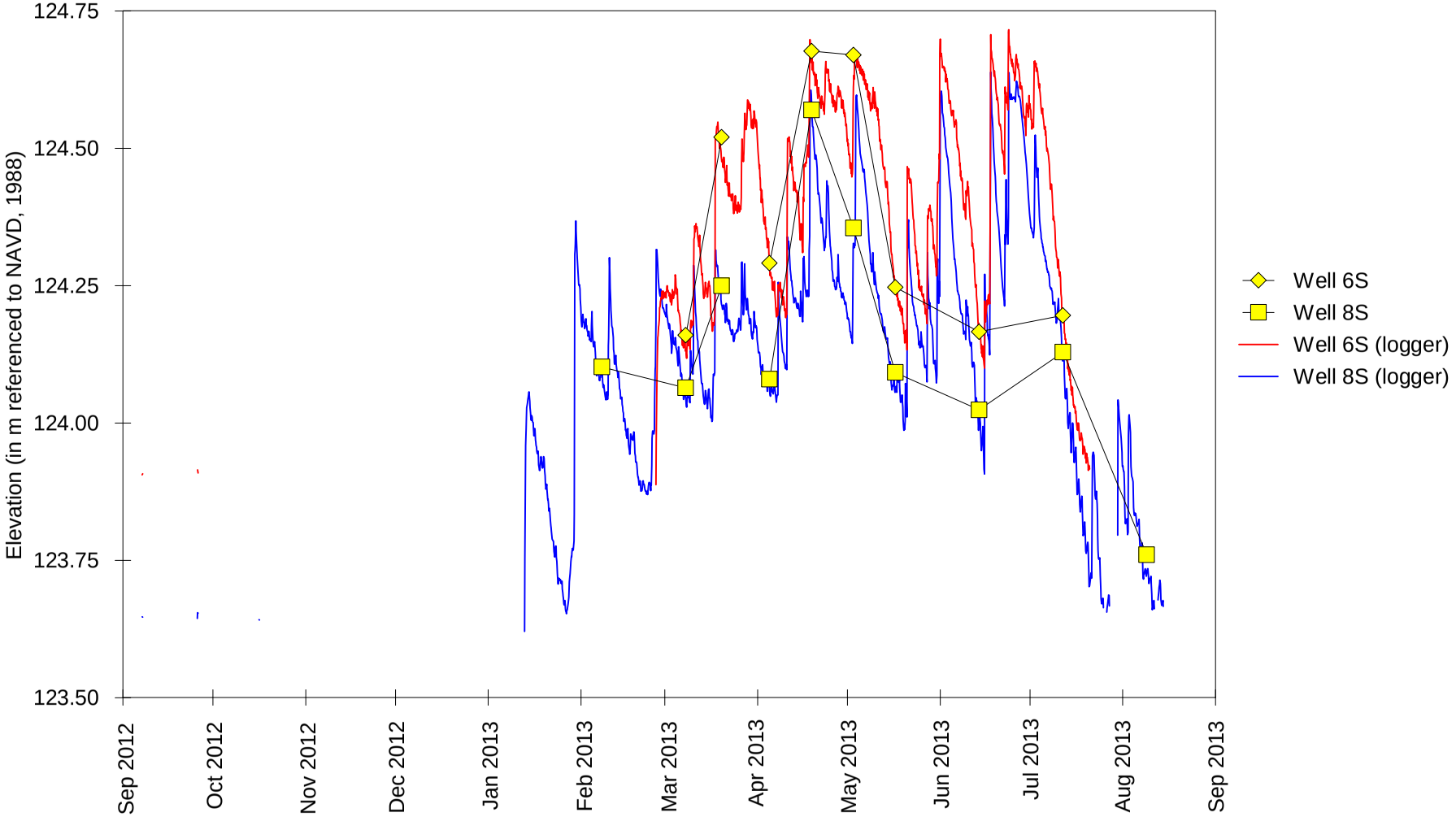
### Water-Level Elevations in Monitoring Wells




Eckmann/Bischoff Wetland Mitigation Site
September 1, 2012 through August 31, 2013
Depth to Water
in Monitoring Wells
Well 1S
Well 2S
Well 3S
Well 4S
Well 5S
Well 6S
Well 7S
Well 8S
Well 9S
Well 10S
Depth (in m referenced to land surface)
-0.4
-0.3
-0.2
-0.1
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
Sep 2012
Oct 2012
Nov 2012
Dec 2012
Jan 2013
Feb 2013
Mar 2013
Apr 2013
May 2013
Jun 2013
Jul 2013
Aug 2013
Sep 2013

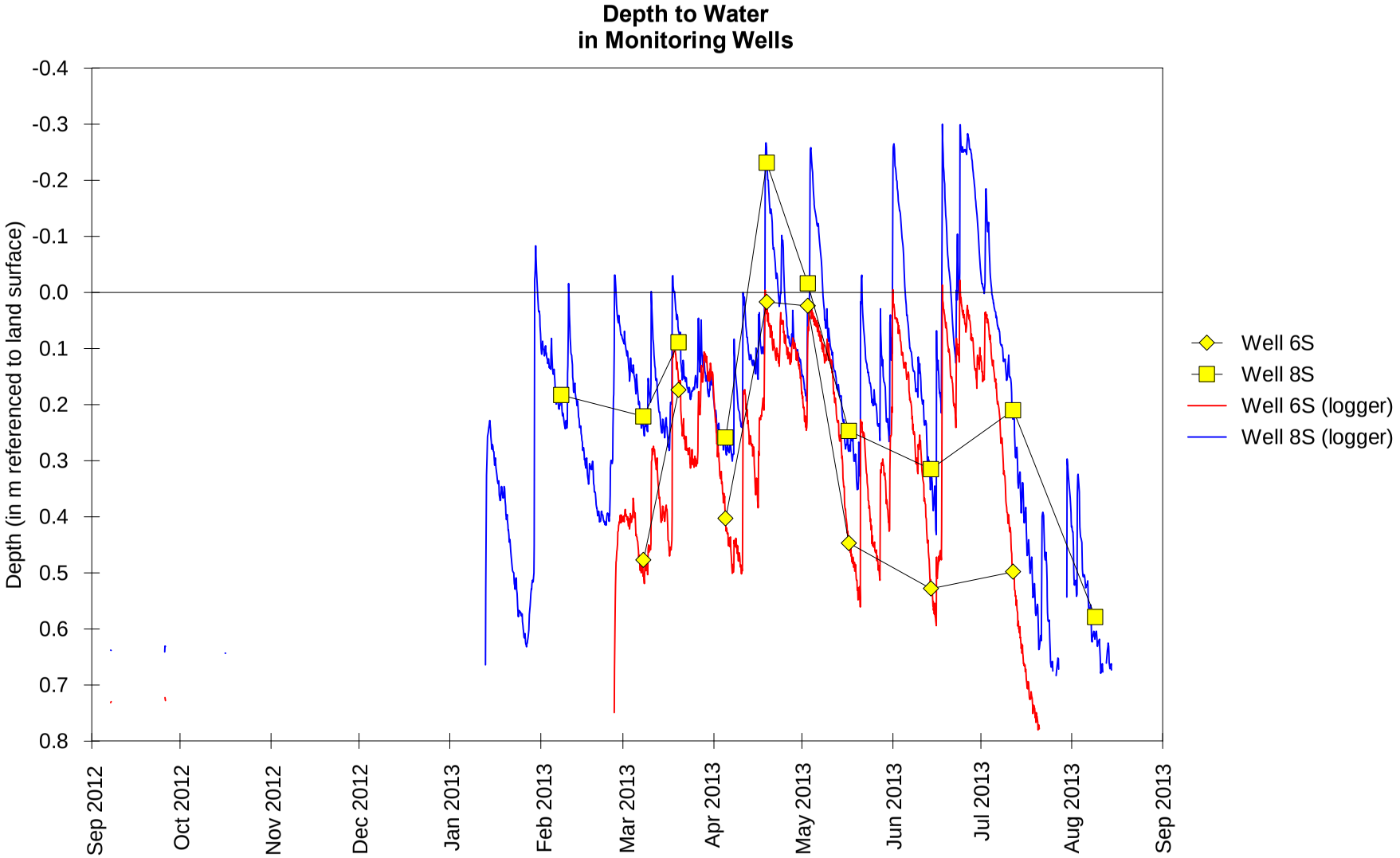
# Eckmann/Bischoff Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Monitoring Wells



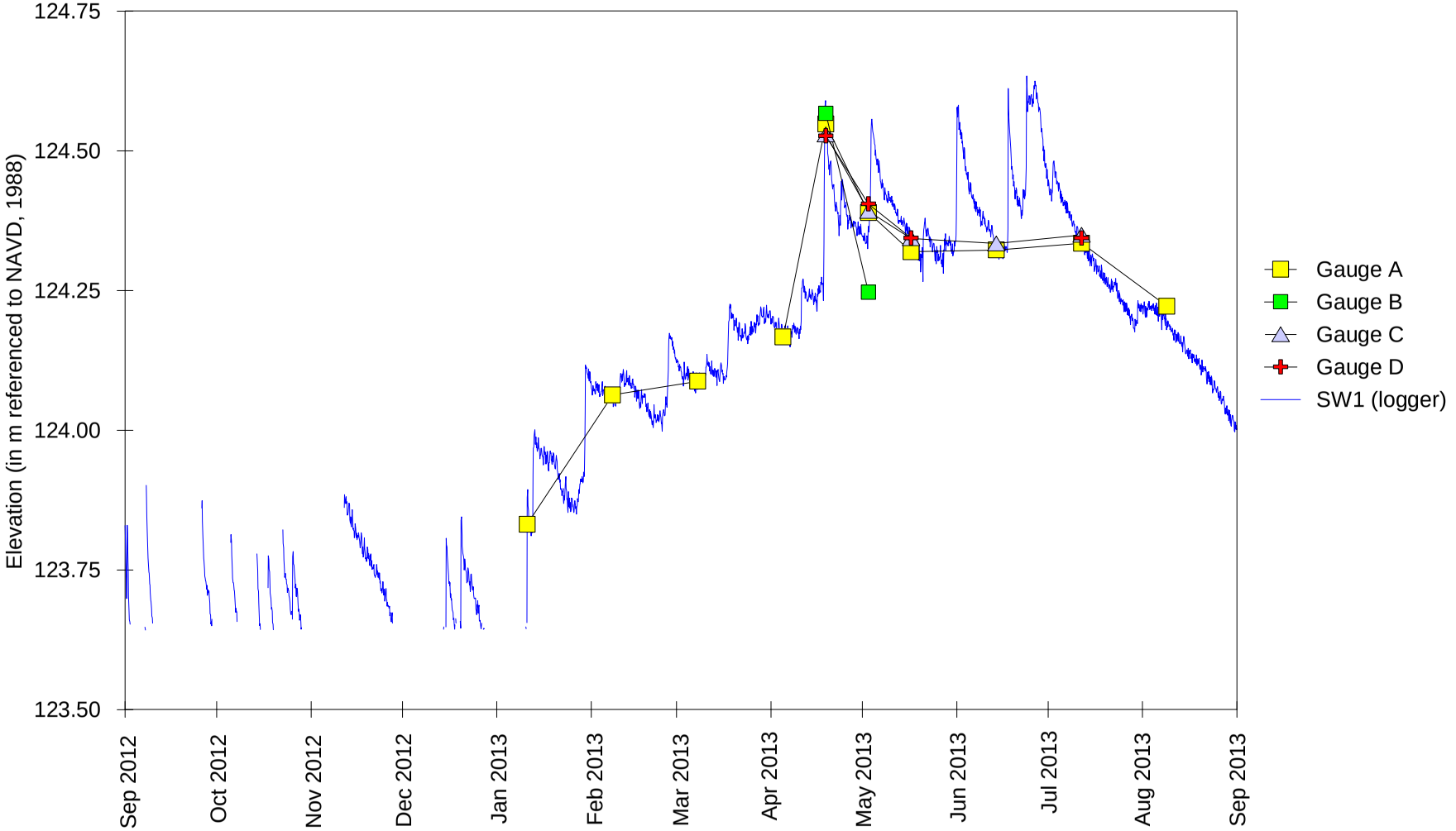
# Eckmann/Bischoff Wetland Mitigation Site

## September 1, 2012 through August 31, 2013

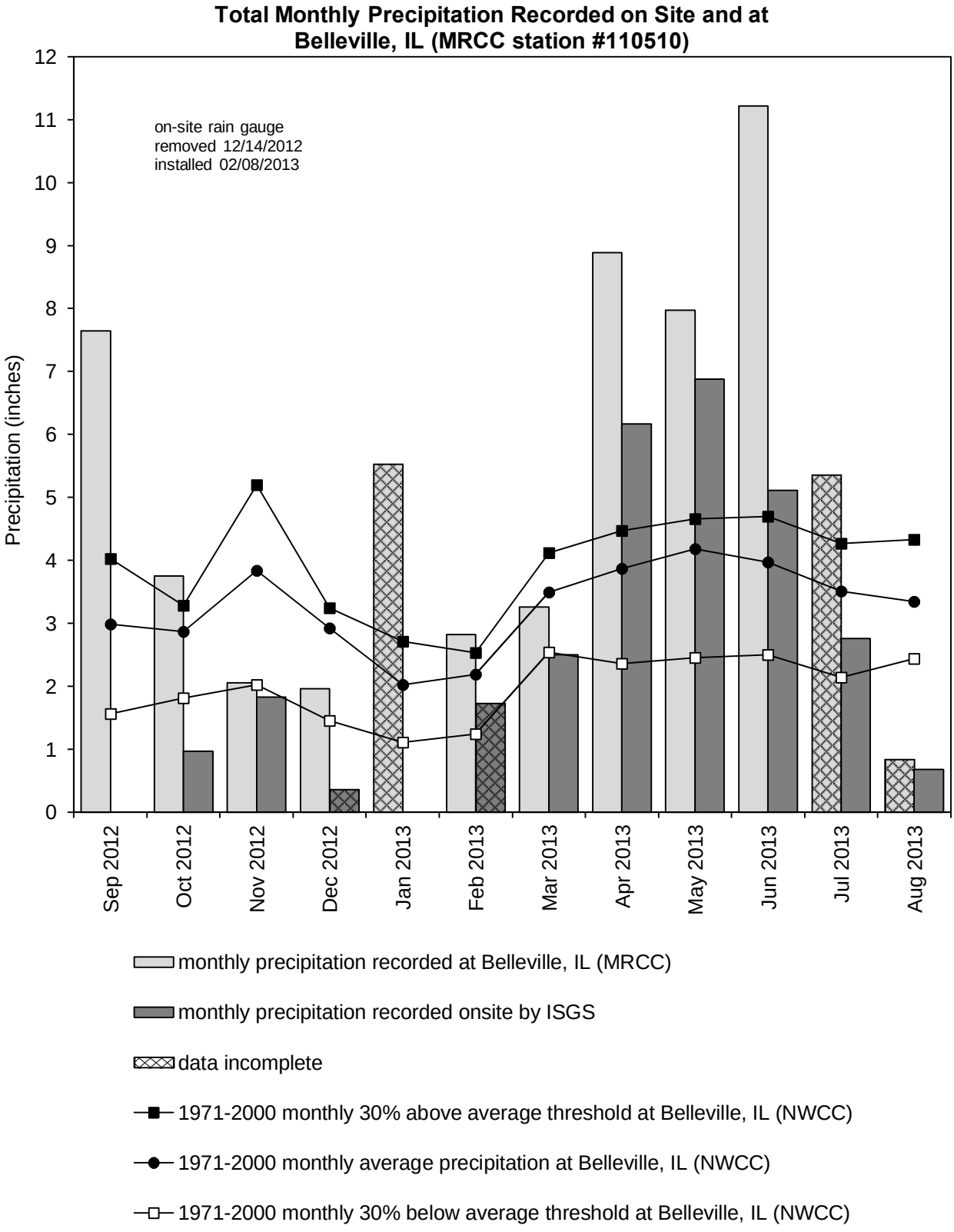


# Eckmann/Bischoff Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations at Surface-Water Gauges



# Eckmann/Bischoff Wetland Mitigation Site
## September 2012 through August 2013



**MORRIS** **ISGS #49**
**WETLAND MITIGATION BANK**
Sequence #1306
Grundy County, near Morris, Illinois
**Primary Project Manager: Eric T. Plankell**
**Secondary Project Manager: Keith W. Carr**

SITE HISTORY

- March 1999: The ISGS was tasked by IDOT to perform a Level II hydrogeologic assessment of the potential banking site.

- March 2007: A Level II hydrogeologic characterization report was submitted to IDOT (ISGS Open-File Series 2007–03).

- February 2009: IDOT specified that monitoring of surface-water inundation and floodwater storage functions would be limited to an off-site USACE river gauge and two on-site data loggers.

WETLAND HYDROLOGY CALCULATION FOR 2013

The target compensation area for the Morris wetland mitigation bank is 44.11 ha (109.00 ac). Using the 1987 Manual (Environmental Laboratory 1987), 17.11 ha (42.29 ac) of the total site area of 341.56 ha (844.00 ac) satisfied wetland hydrology criteria for greater than 5% of the 2013 growing season, and 12.33 ha (30.47 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 17.11 ha (42.29 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Joliet, Illinois, is April 6, and the season lasts 212 days (MRCC 2013). Using the 1987 Manual, 5% of the growing season is 11 days, and 12.5% of the growing season is 27 days. Using the 2010 Midwest Region Supplement, March 30 was the starting date of the 2013 growing season based on soil temperatures measured on site.

- Total precipitation for the monitoring period at Morris, Illinois, (MRCC station #115825) was 107% of normal. During Spring 2013 (March through May), precipitation was 165% of normal.

- Surface-water levels measured at Gauge SW43 indicated inundation in the “spider field” at and below 150.66 m (494.29 ft) for greater than 5% of the growing season, and inundation at and below 150.46 m (493.64 ft) for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, surface-water levels measured at Gauge SW43 indicated inundation at and below 150.62 m (494.16 ft) for 14 or more consecutive days of the growing season.

- Gauges SW8 and SW2I were destroyed by the April flood, and therefore could not be used to evaluate wetland hydrology. Gauge SW2I was replaced on May 16, 2013, and recorded a second flood of lesser magnitude during late May and early June. However, surface-water levels measured at Gauge SW2I did not stay above bank-full elevations of on-site streams for a period sufficient to satisfy wetland hydrology criteria.

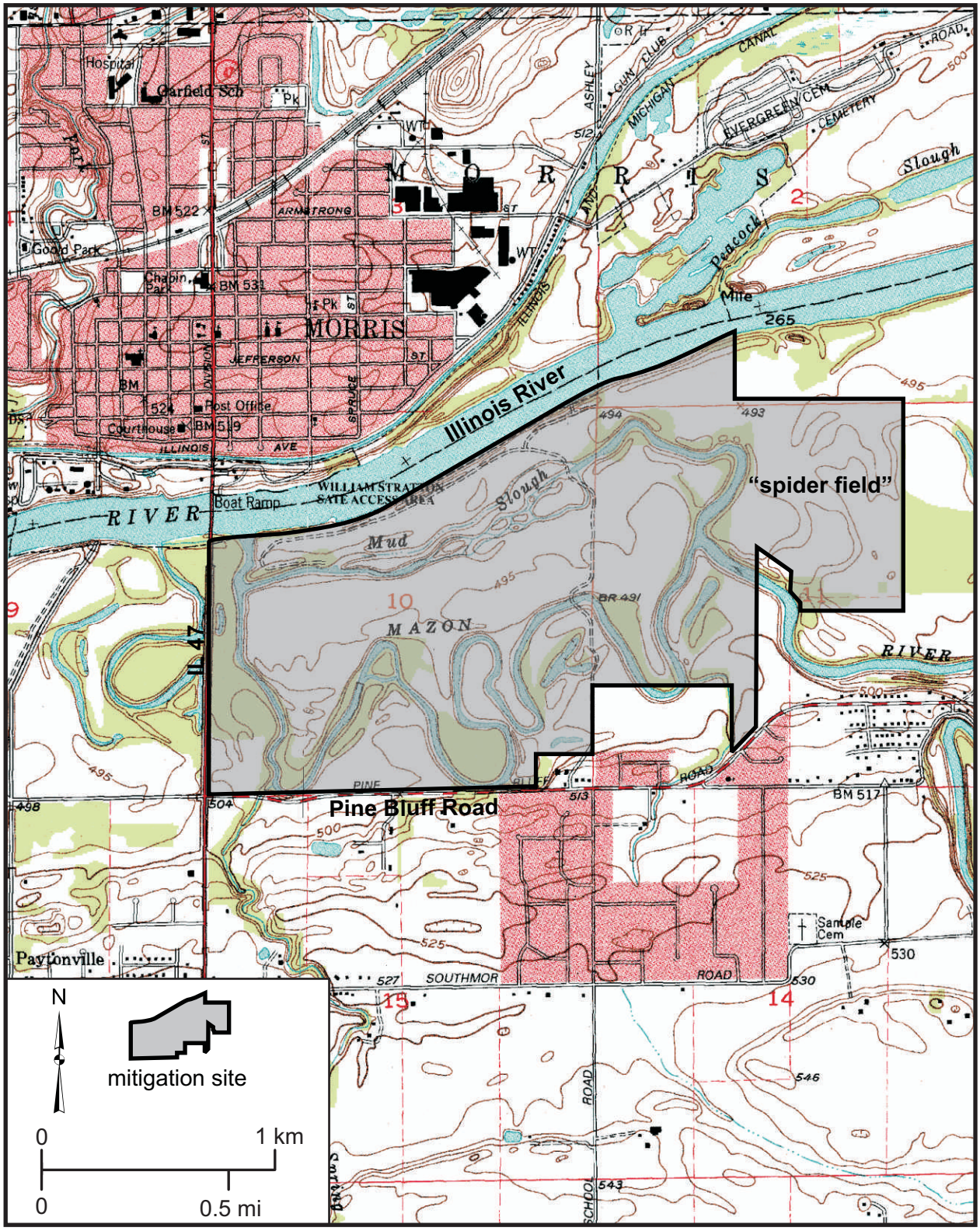
PLANNED FUTURE ACTIVITIES

- Monitoring of surface water via three on-site ISGS data loggers and one off-site USACE river gauge will continue until no longer required by IDOT. The continued aim will be to watch for significant changes in the on-site wetland hydrology acreage or site functions.

# Morris Wetland Mitigation Bank

## General Study Area and Vicinity

from the USGS Topographic Series, Morris, IL, 7.5-minute Quadrangle (ISGS 2013b)
contour interval is 5 feet

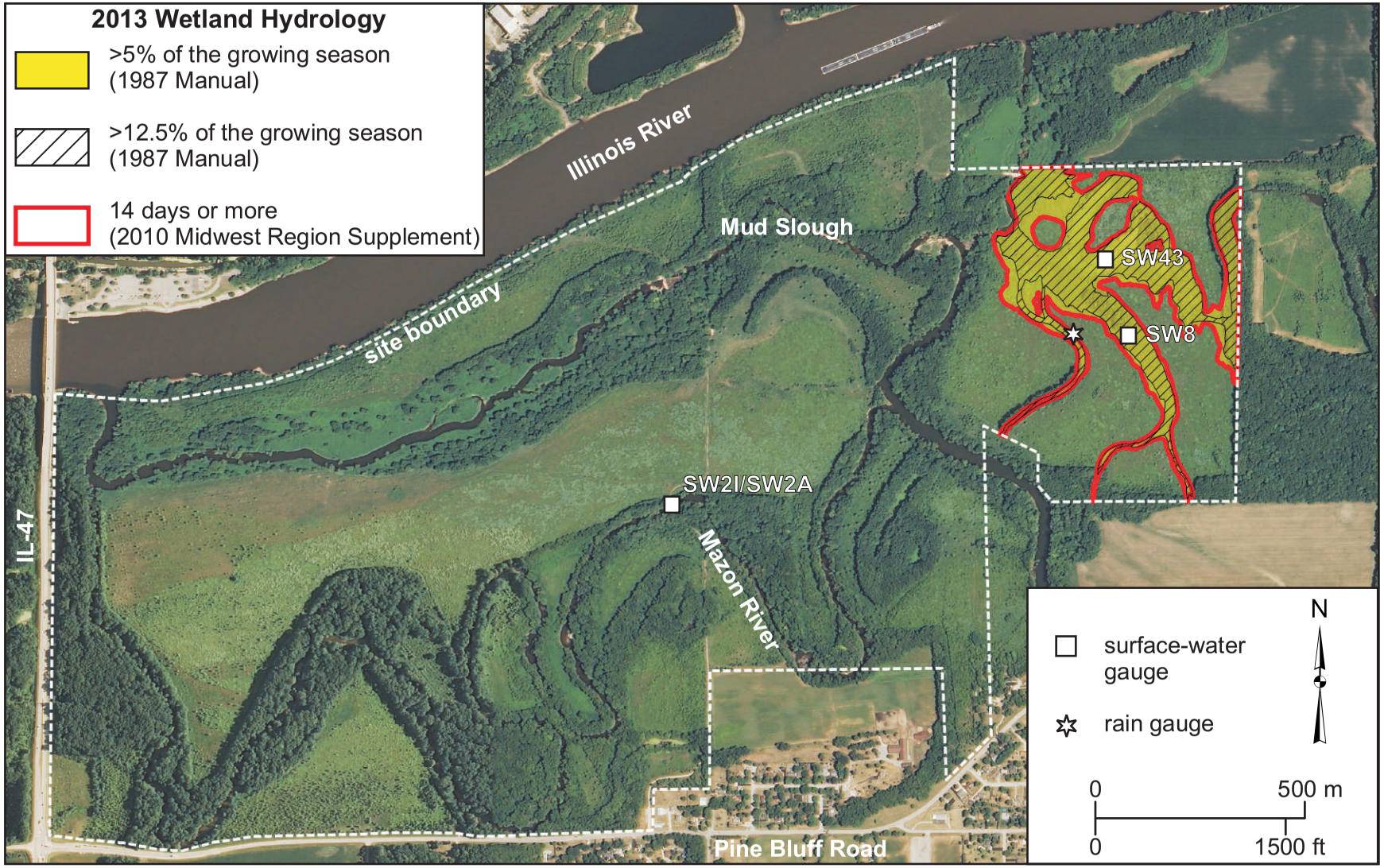


# Morris Wetland Mitigation Bank

## Estimated Areal Extent of 2013 Wetland Hydrology

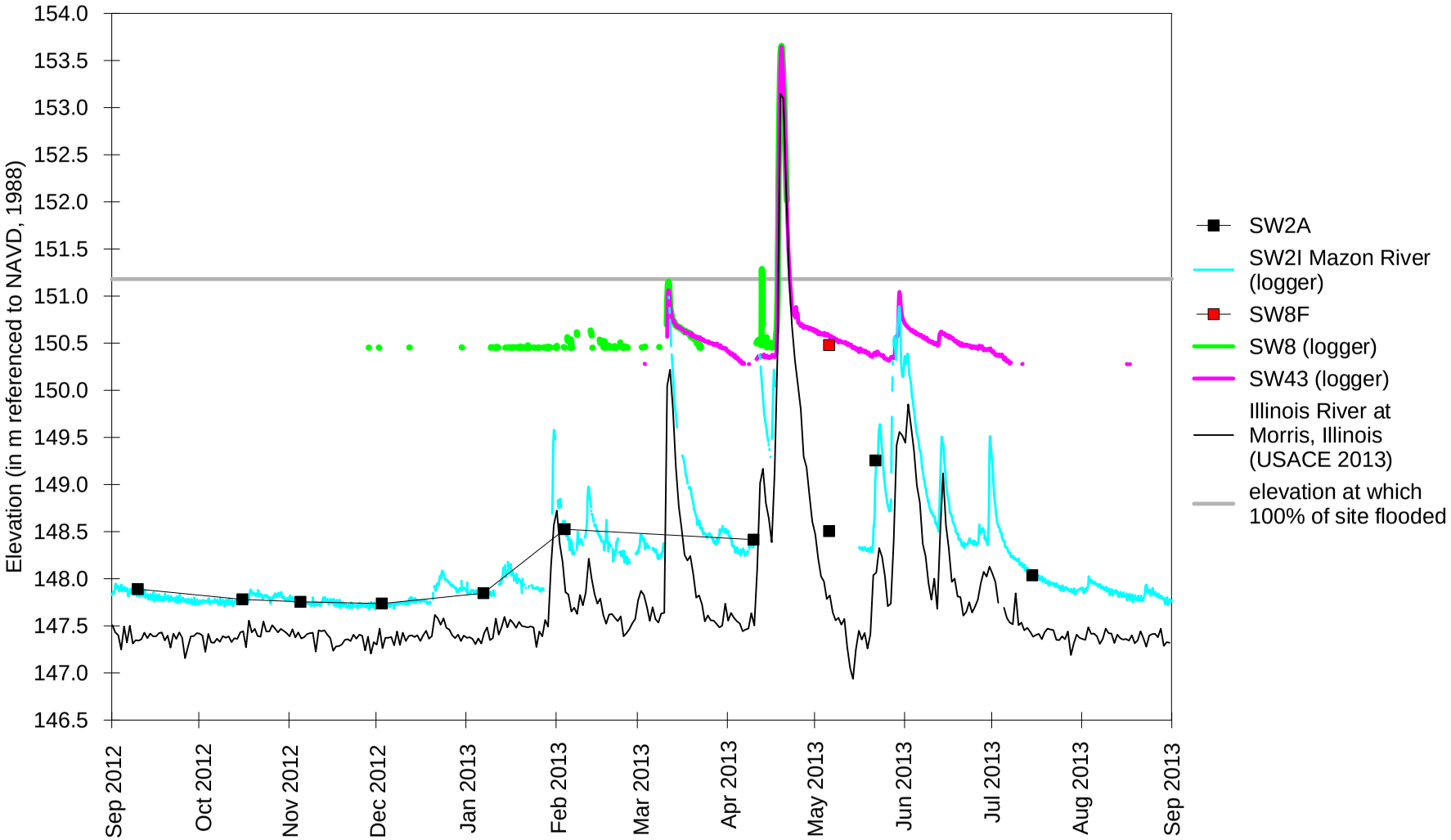
### September 1, 2012 through August 31, 2013

Map based on 2012 Farm Service Agency digital orthophotography, Grundy County, Illinois (USDA-FSA 2012)



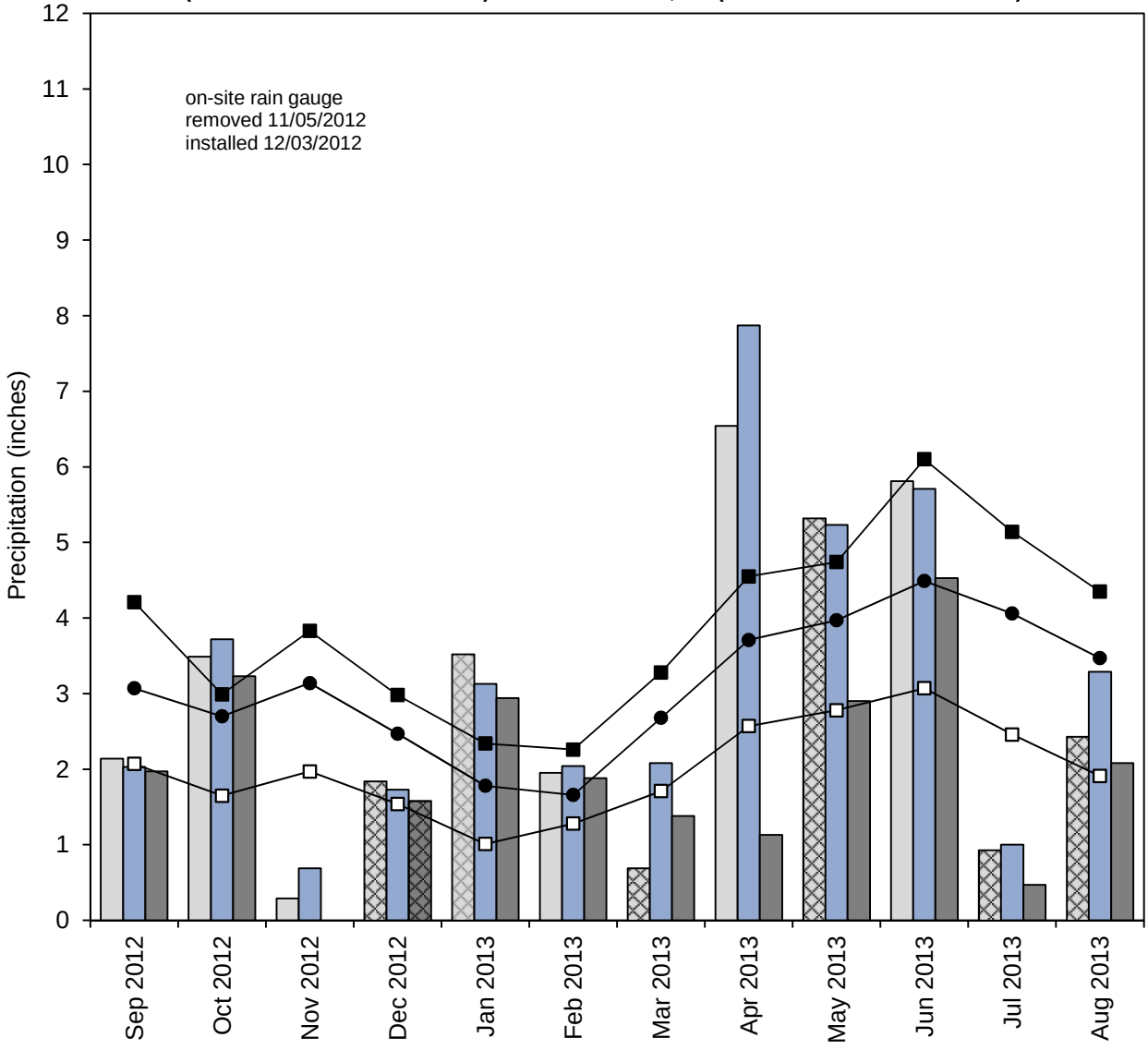
# Morris Wetland Mitigation Bank
## September 1, 2012 through August 31, 2013

### Water-Level Elevations at Surface-Water Gauges



# Morris Wetland Mitigation Bank
## September 2012 through August 2013

**Total Monthly Precipitation Recorded on Site, at Channahon, IL, (MRCC station #111420) and at Morris, IL (MRCC station #115825)**




monthly precipitation recorded at Channahon, IL (MRCC)

monthly precipitation recorded at Morris, IL (MRCC)

monthly precipitation recorded on site by ISGS

data incomplete

1971-2000 monthly 30% above average threshold at Channahon, IL (NWCC)

1971-2000 monthly average precipitation at Channahon, IL (NWCC)

1971-2000 monthly 30% below average threshold at Channahon, IL (NWCC)

**LA GRANGE** **ISGS #52**
**WETLAND MITIGATION BANK**
Sequence #9579
Brown County, near La Grange, Illinois
**Primary Project Manager: Geoffrey E. Pociask**
**Secondary Project Manager: Keith W. Carr**

SITE HISTORY

- February 2000: The ISGS was tasked by IDOT to conduct a Level II hydrogeologic assessment of the site.

- January 2003: The ISGS submitted a wetland banking instrument to IDOT.

- January 2005: A Level II hydrogeologic characterization report was submitted to IDOT (ISGS Open-File Series 2005–02).

- Fall 2005 and 2006: Extensive earthworks were undertaken by IDOT, including filling and plugging of several ditches, reshaping of the east levee, constructing a raised access road, and excavating a large basin in the north-central area of the site.

- Summer 2011: Further earthworks were undertaken at the site. The former basin of Amelia Barker Lake was widened and the fill was utilized for road construction.

- Fall 2011: Trees were planted in portions of Fields 12, 13, 14, and 15 and in areas surrounding Amelia Barker Lake.

WETLAND HYDROLOGY CALCULATION FOR 2013

The target compensation area for the La Grange wetland mitigation bank is 414.40 ha (1024.00 ac). Using the 1987 Manual (Environmental Laboratory 1987), 586.14 ha (1448.37 ac) of the total site area of 665.72 ha (1645.00 ac) satisfied wetland hydrology criteria for greater than 5% of the growing season and 582.27 ha (1438.82 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 586.14 ha (1448.37 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Jacksonville, Illinois, is April 8, and the season lasts 197 days (MRCC 2013); 5% of the growing season is 10 days, and 12.5% of the growing season is 25 days, using the 1987 Manual. Using the 2010 Midwest Region Supplement, March 29 was the starting date of the 2013 growing season based on soil temperatures measured on site.

- Total precipitation for the monitoring period at Rushville, Illinois, (MRCC station #177551) was 122% of normal. During Spring 2013 (March to May), precipitation was 167% of normal.

- In 2013, water-levels measured in all soil-zone monitoring wells satisfied wetland hydrology criteria for greater than 5% of the growing season, and all wells except well 2S satisfied wetland hydrology criteria for greater than 12.5% of the growing season,

using the 1987 Manual. Using the 2010 Midwest Region Supplement, all soil-zone monitoring wells also satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.

- The river gauge at the La Grange Lock and Dam (USACE 2013) indicated that a record flood peak occurred on April 27, 2013. Flooding from this event covered nearly the entire site and inundation persisted over most of the site during April, May, and June 2013.

- Data from gauges SW15 and SW17 indicated that areas at and below 135.63 m (444.98 ft) were inundated for greater than 5% of the growing season and areas at and below 134.12 m (440.03 ft) were inundated for greater than 12.5% of the growing season, using the 1987 Manual. Data from these gauges also indicated that areas inundation at and below 135.63 m (444.98 ft) were inundated for 14 or more consecutive days during the growing season, using the 2010 Midwest Regional Supplement.

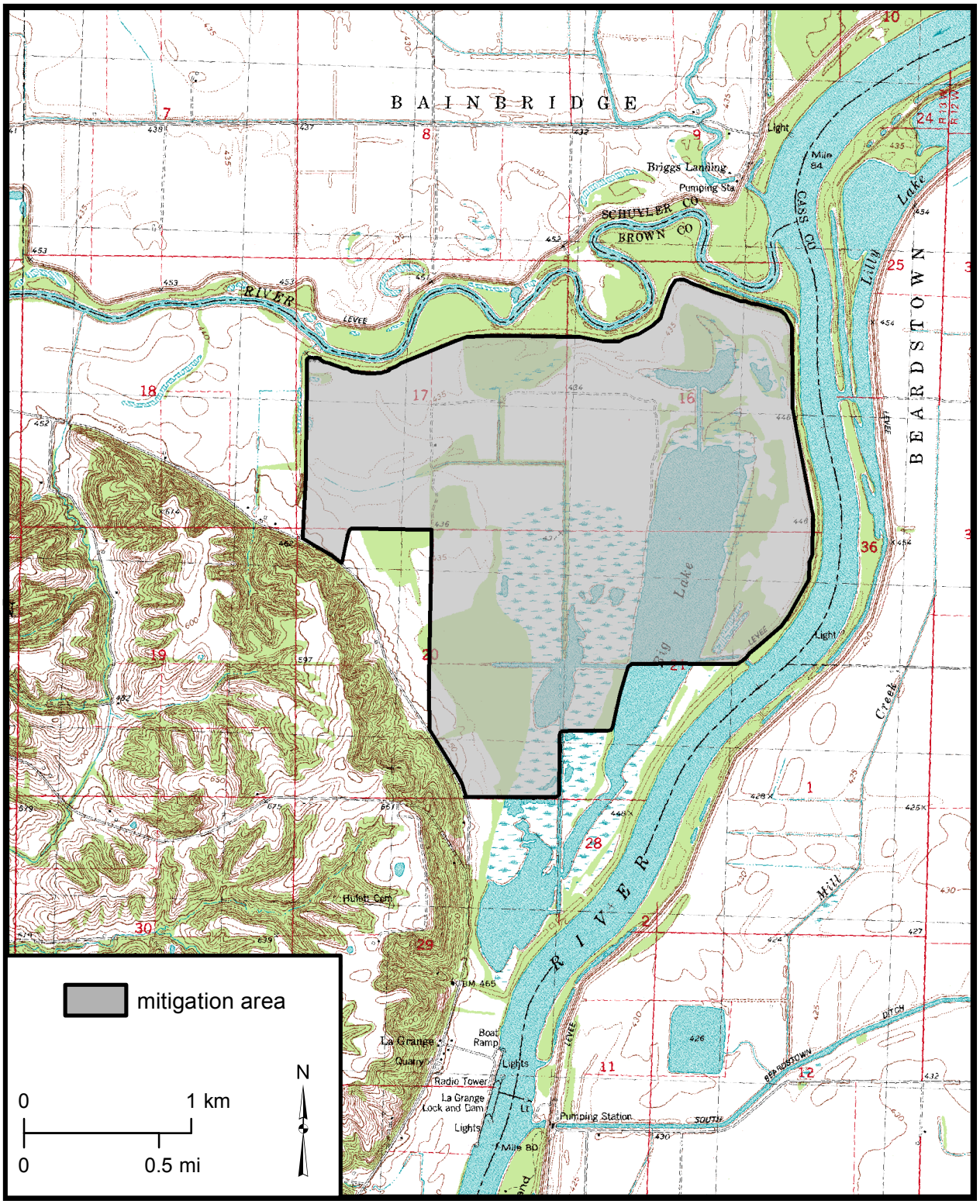
PLANNED FUTURE ACTIVITIES

- The ISGS will monitor the hydrology at this site until no longer required by IDOT.

# La Grange Wetland Mitigation Bank

## General Study Area and Vicinity

from the USGS Topographic Series, Cooperstown, IL, 7.5-minute Quadrangle (ISGS 2013b)
contour interval is 10 feet



# La Grange Wetland Mitigation Bank

## Management Areas

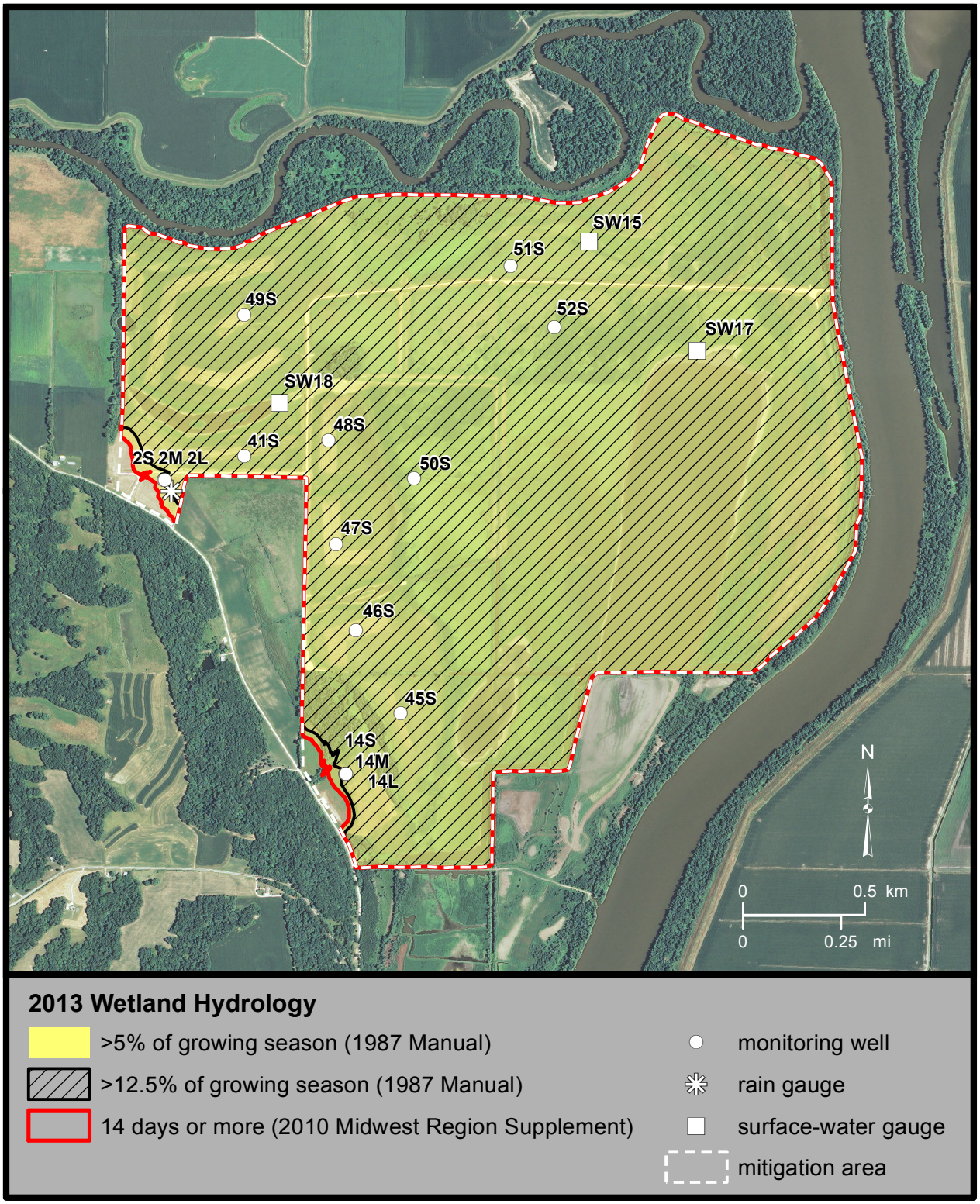
Map based on 2012 Farm Service Agency digital orthophotography, Brown County, Illinois (USDA-FSA 2012)

# La Grange Wetland Mitigation Bank

## Estimated Areal Extent of 2013 Wetland Hydrology

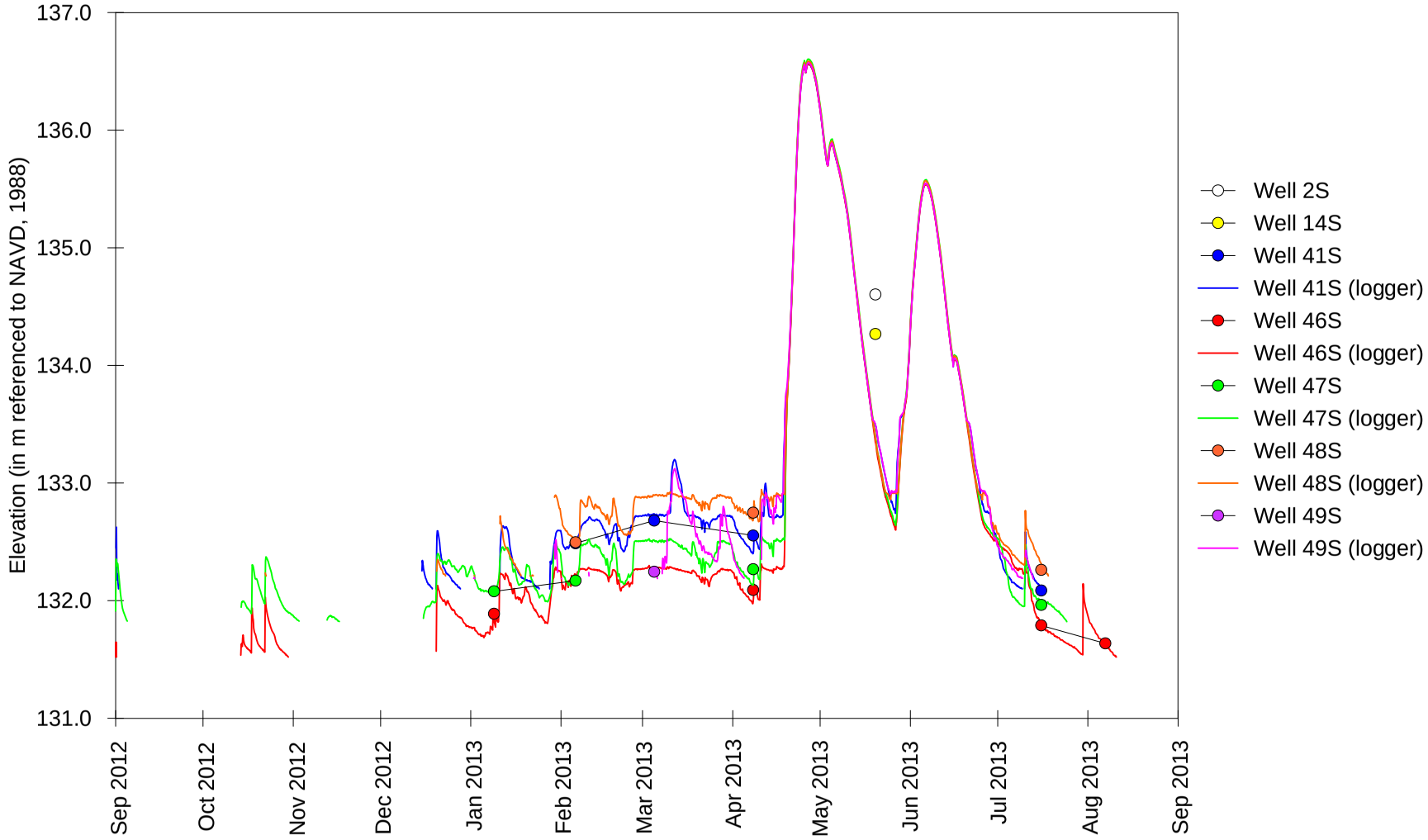
**September 1, 2012 through August 31, 2013**

Map based on 2012 Farm Service Agency digital orthophotography, Brown County, Illinois (USDA-FSA 2012)

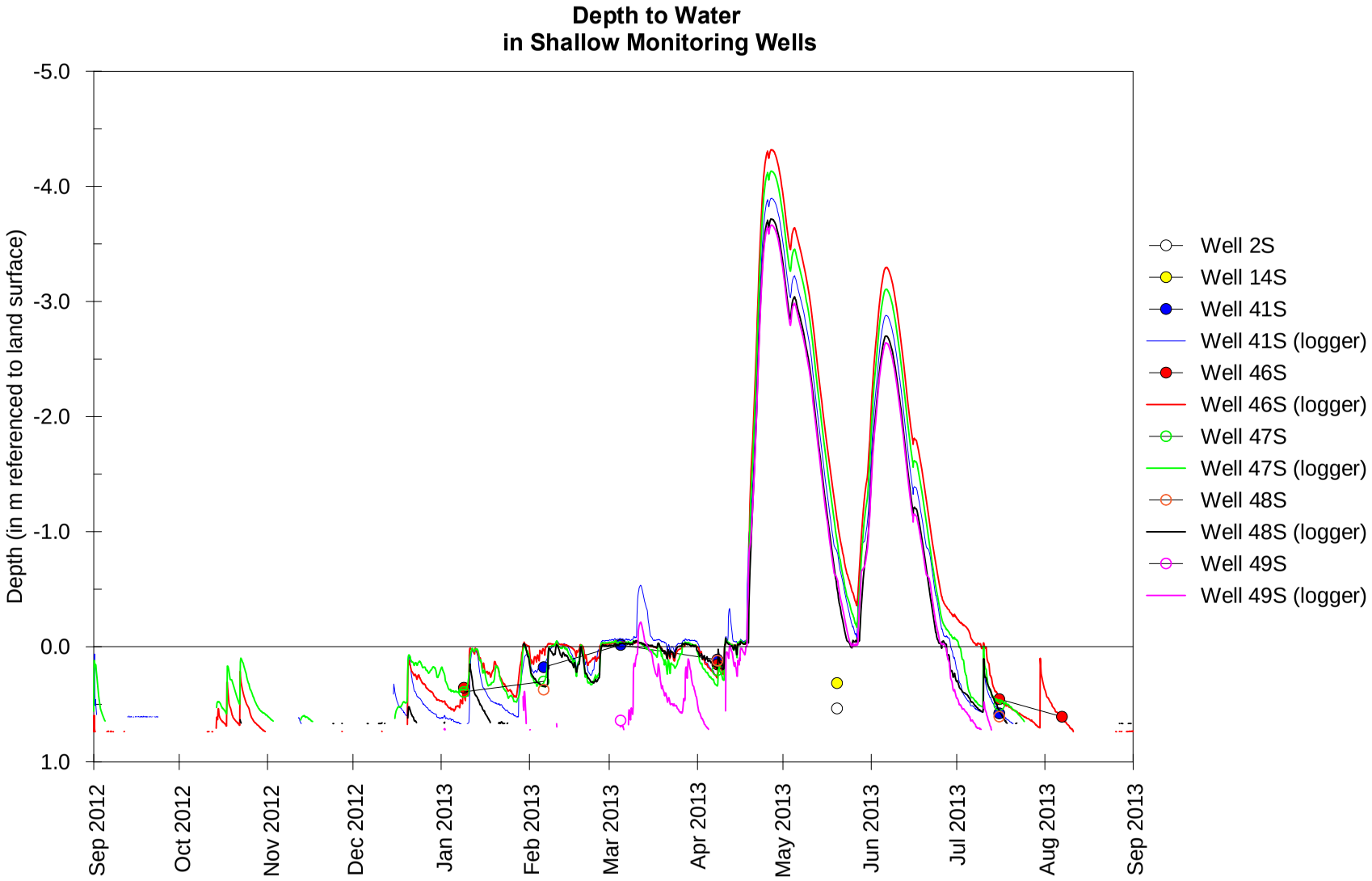


# La Grange Wetland Mitigation Bank
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Shallow Monitoring Wells

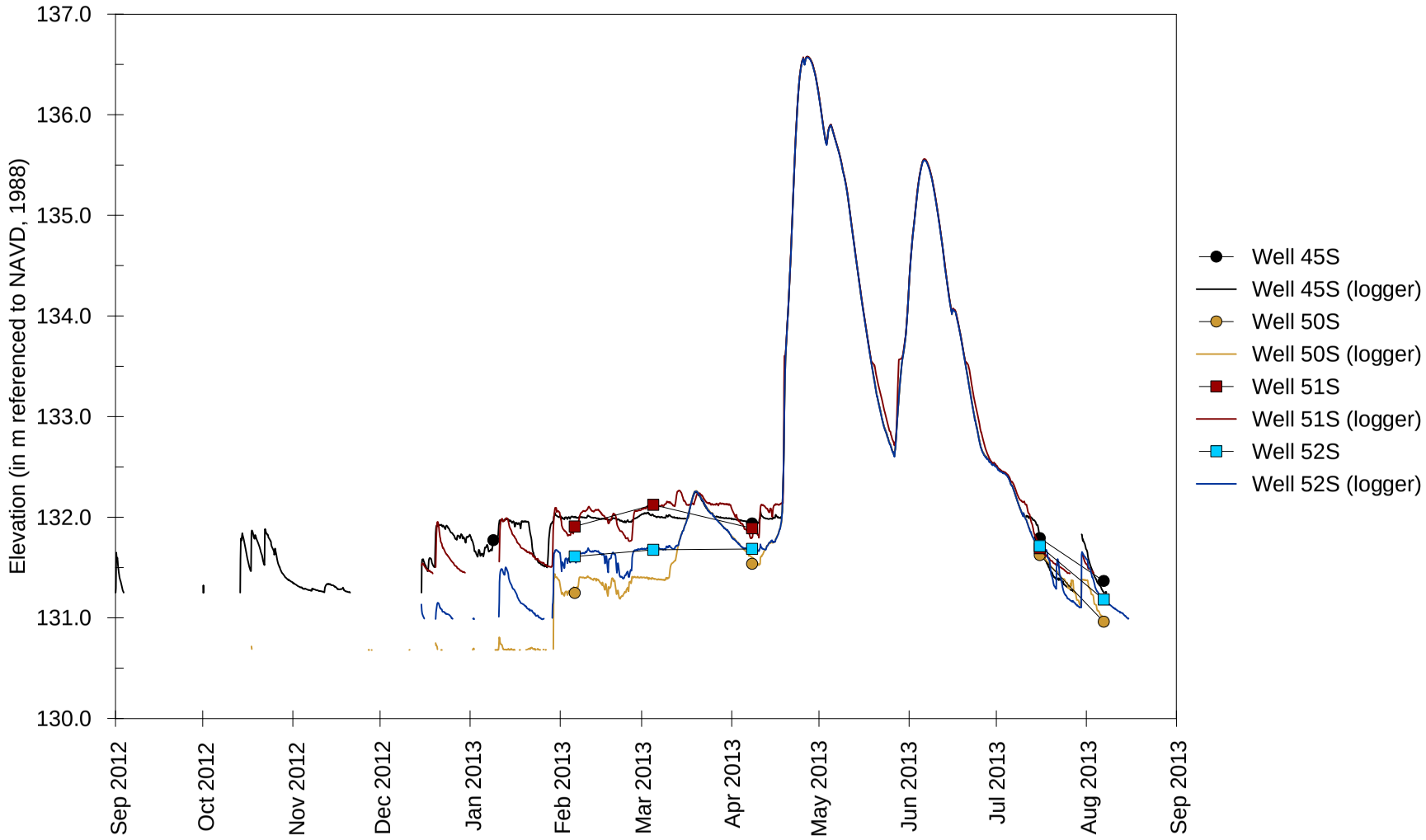


# La Grange Wetland Mitigation Bank
## September 1, 2012 through August 31, 2013

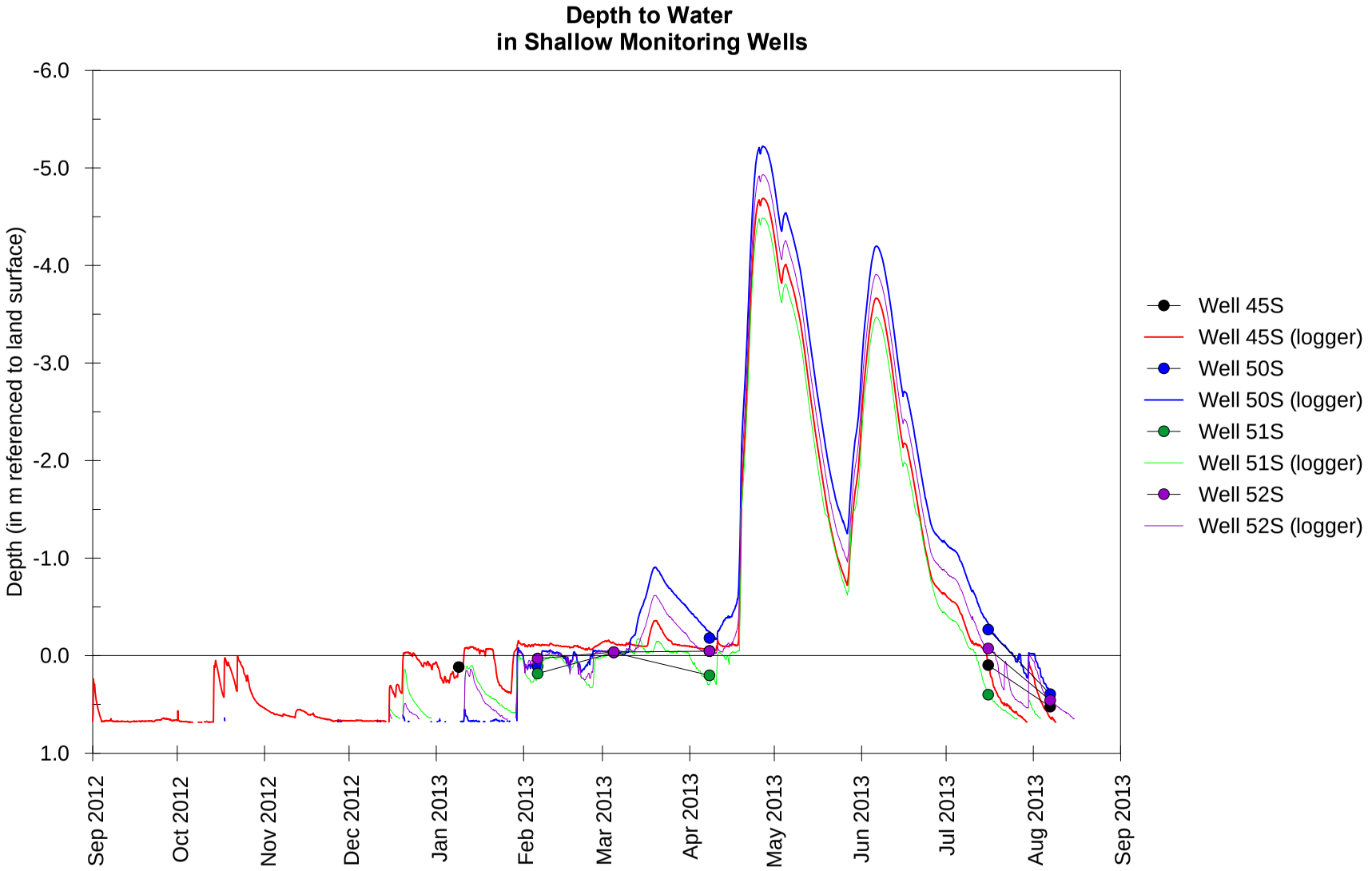


# La Grange Wetland Mitigation Bank
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Shallow Monitoring Wells

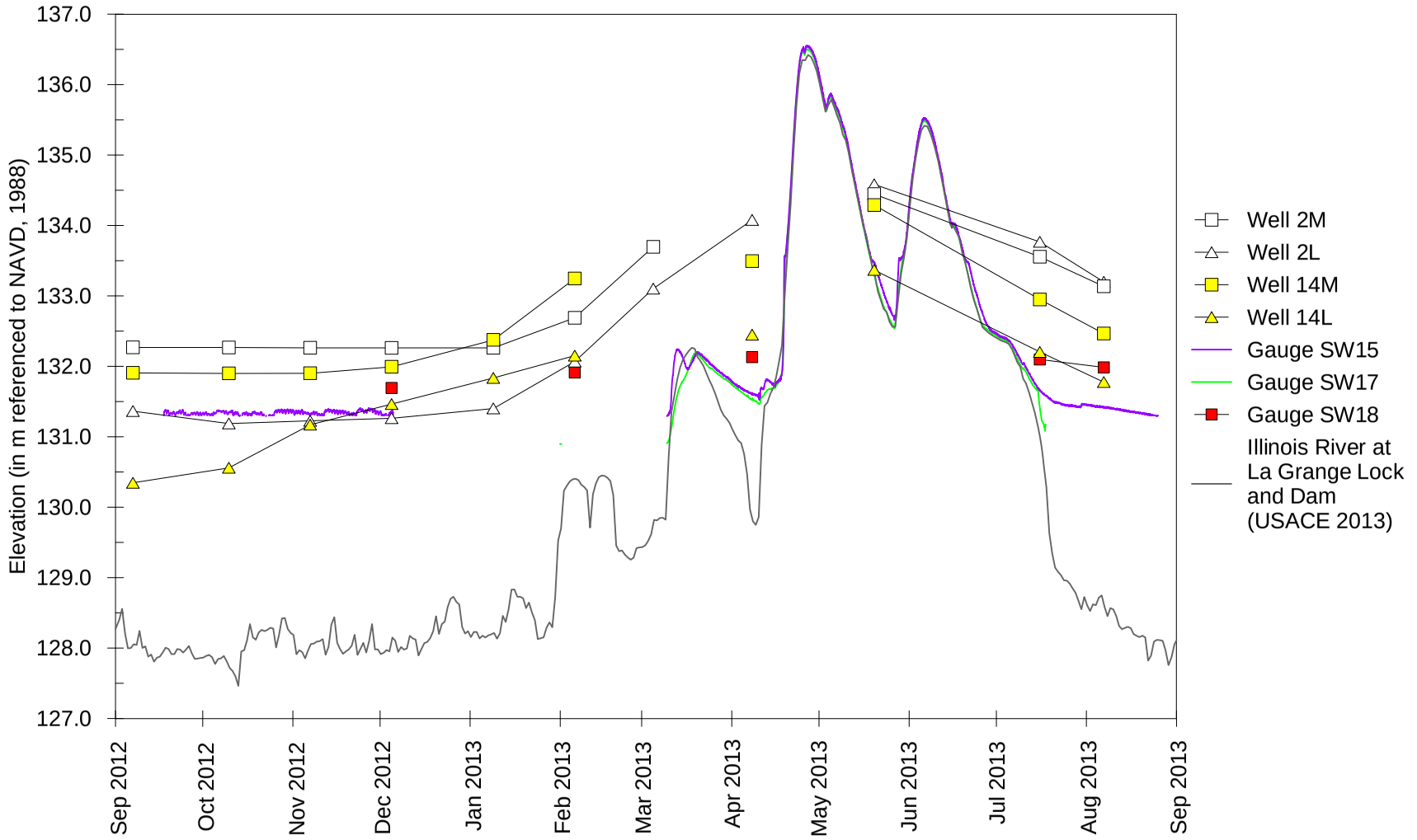


# La Grange Wetland Mitigation Bank
## September 1, 2012 through August 31, 2013

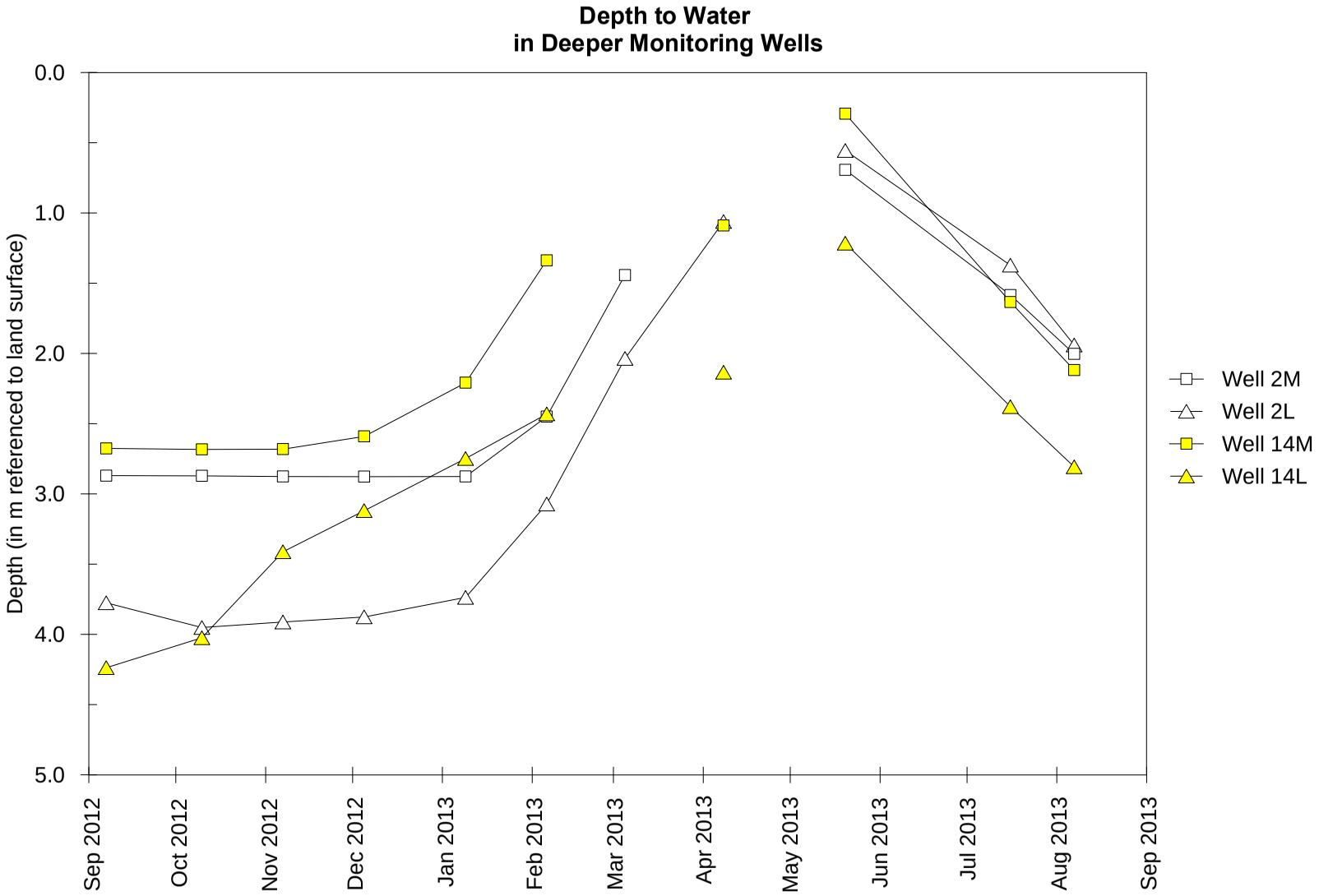


# La Grange Wetland Mitigation Bank
## September 1, 2012 through August 31, 2013

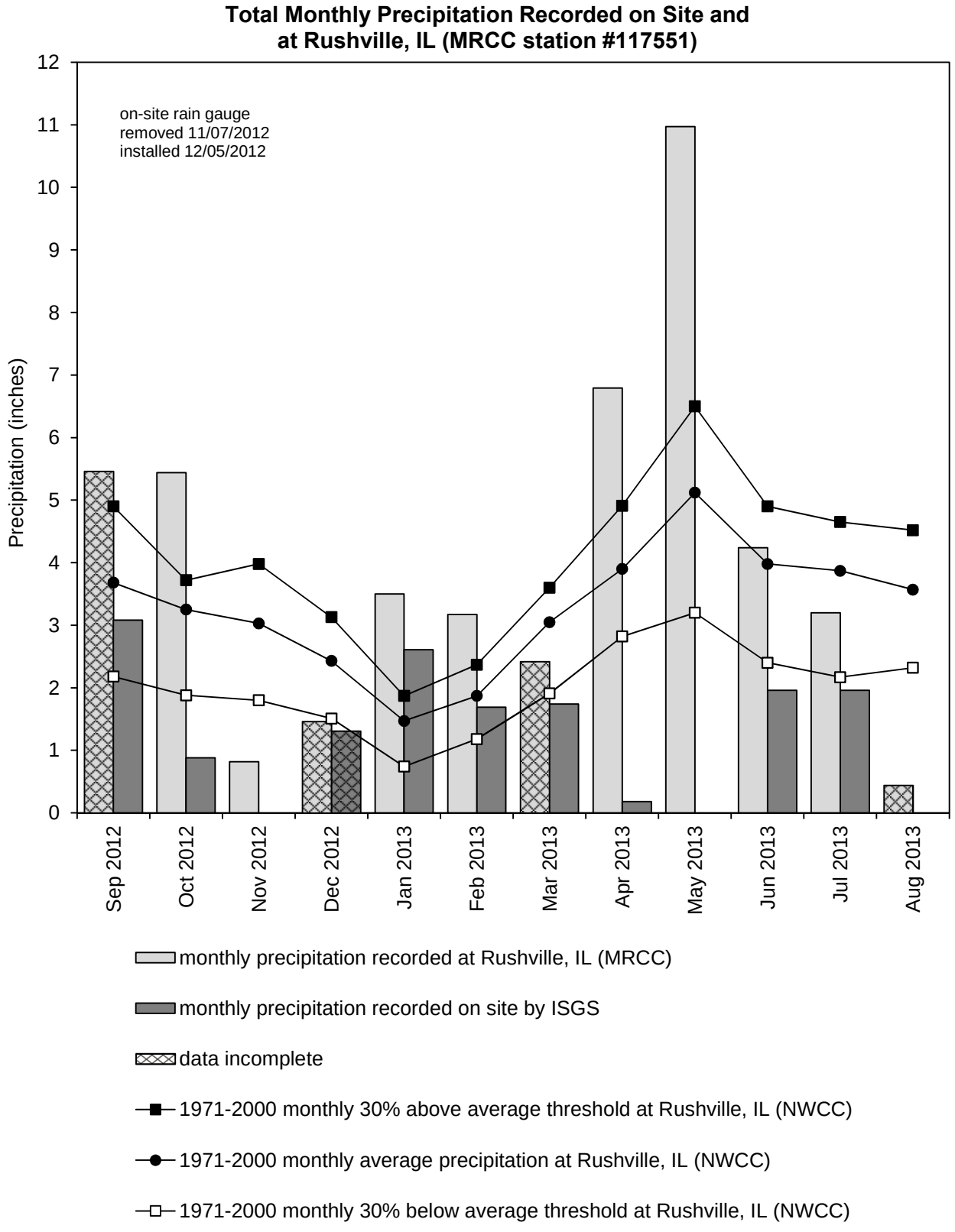
### Water-Level Elevations
### in Deeper Wells and at Surface-Water Gauges



# La Grange Wetland Mitigation Bank
## September 1, 2012 through August 31, 2013



# La Grange Wetland Mitigation Bank
## September 2012 through August 2013



**FAIRMONT CITY** **ISGS #53**
**POTENTIAL WETLAND MITIGATION SITE**
FAP 14
Sequence #27
St. Clair County, near Fairmont City, Illinois
**Primary Project Manager: Steven E. Benton**
**Secondary Project Manager: Jessica L. B. Monson**

SITE HISTORY

- August 1999: The ISGS conducted an initial site evaluation.
- September 2000: The ISGS began monitoring groundwater and surface-water levels.
- March 2003: A Level II hydrogeologic characterization report was submitted to IDOT (ISGS Open-File Series 2003–04).
- August 2013: Ownership of the site was transferred from IDOT to Fairmont City, Illinois.

WETLAND HYDROLOGY CALCULATION FOR 2013

The target compensation area for the Fairmont City wetland mitigation site is 10.93 ha (27.00 ac). Using the 1987 Manual (Environmental Laboratory 1987), 13.75 ha (33.97 ac) of the total site area of 32.38 ha (80.00 ac) satisfied wetland hydrology criteria for greater than 5% of the 2013 growing season and 12.80 ha (31.63 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 13.27 ha (32.80 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Belleville, Illinois, is April 5 and the season lasts 202 days (MRCC 2013); 5% of the growing season is 10 days and 12.5% of the growing season is 25 days, using the 1987 Manual. Using the 2010 Midwest Region Supplement, March 29 was the starting date of the 2013 growing season based on soil temperatures measured on site.
- Total precipitation for the monitoring period, recorded at Belleville, Illinois (MRCC station #115510), was 156% of normal. Precipitation in Spring 2013 (March through May) was 174% of normal.
- In 2013, water levels measured in all of the soil-zone monitoring wells, except well 28S, satisfied wetland hydrology criteria for greater than 5%, and water levels measured in all soil-zone monitoring wells, except 6S, 6VS, and 28S, satisfied wetland hydrology criteria for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, water levels measured in all of the soil-zone monitoring wells, except wells 6S, 6VS, and 28S, satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.
- Data from the SW Pond gauge revealed that areas at and below 122.24 m (401.05 ft) were inundated for greater than 5% of the growing season, and areas at and below 122.23 m (401.01 ft) were inundated for greater than 12.5% of the growing season,

using the 1987 Manual. Using the 2010 Midwest Region Supplement, areas at and below 122.23 m (401.02 ft) were inundated for 14 or more consecutive days during the growing season.

- Surface-water elevations measured in Old Cahokia Creek (Gauge E) revealed that areas at and below 121.89 m (399.90 ft) were inundated for greater than 5% of the growing season, and areas at and below 121.85 m (399.77 ft) were inundated for greater than 12.5% of the growing season using the 1987 Manual. Using the 2010 Midwest Region Supplement, areas at and below 121.89 m (399.90 ft) were inundated for 14 or more consecutive days during the growing season.

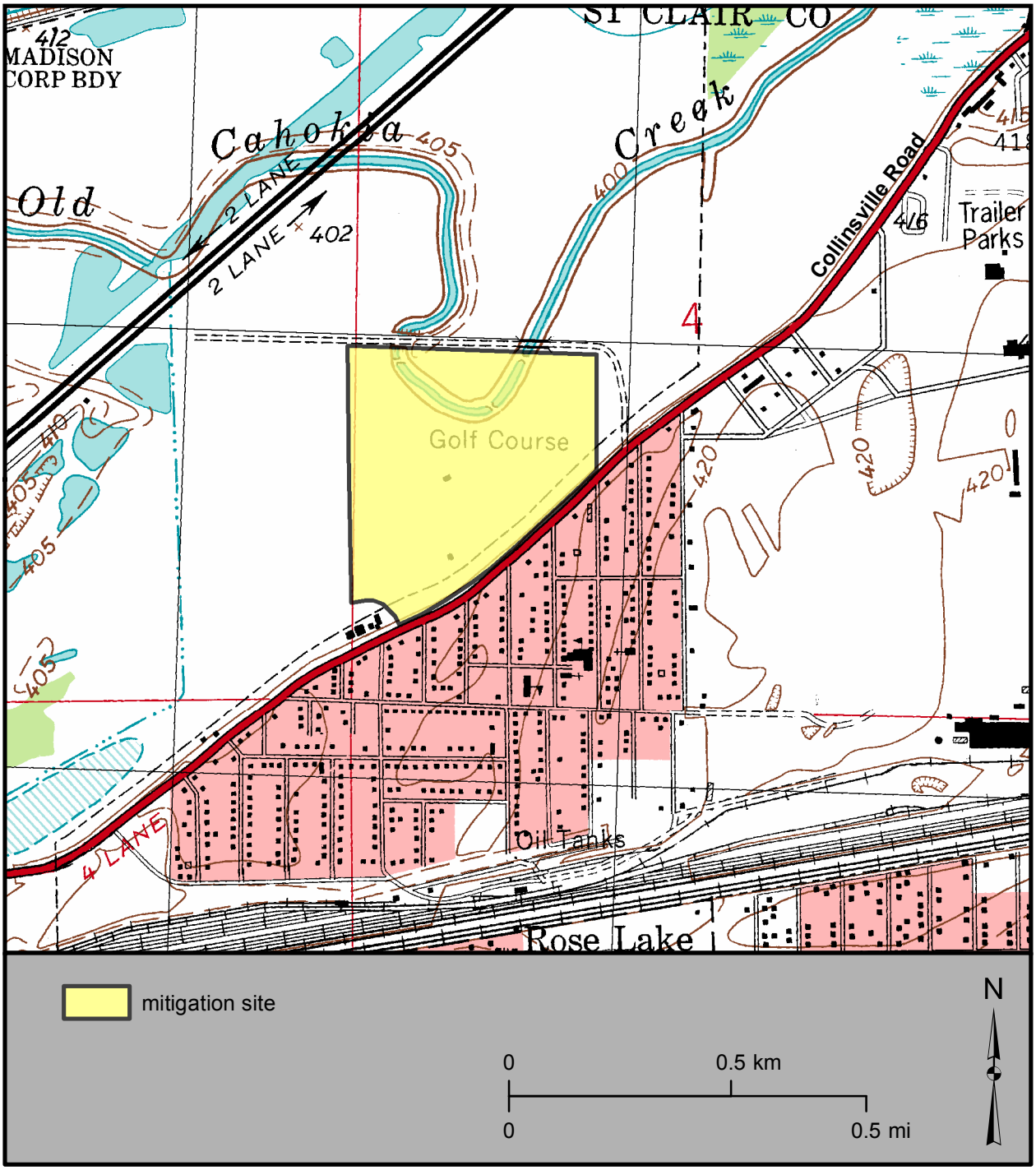
ADDITIONAL INFORMATION

- Well 9S was damaged early in the growing season, however, it was assumed that all three jurisdictional wetland hydrology criteria were satisfied at the location of this well. This assumption is based on the following. First, water-level data recorded in previous years showed that saturation usually occurs in the spring at well 9S for periods sufficient to satisfy all three criteria. Second, the occurrence of saturation at well 9S is apparently influenced by the presence of surface water at Gauge G (Gauge D prior to 2011), in that the shallowest water levels in the well occur when water is present at the gauge. In 2013, water was present at Gauge G until May 16, 2013, or for the first 42 days of the growing season.

PLANNED FUTURE ACTIVITIES

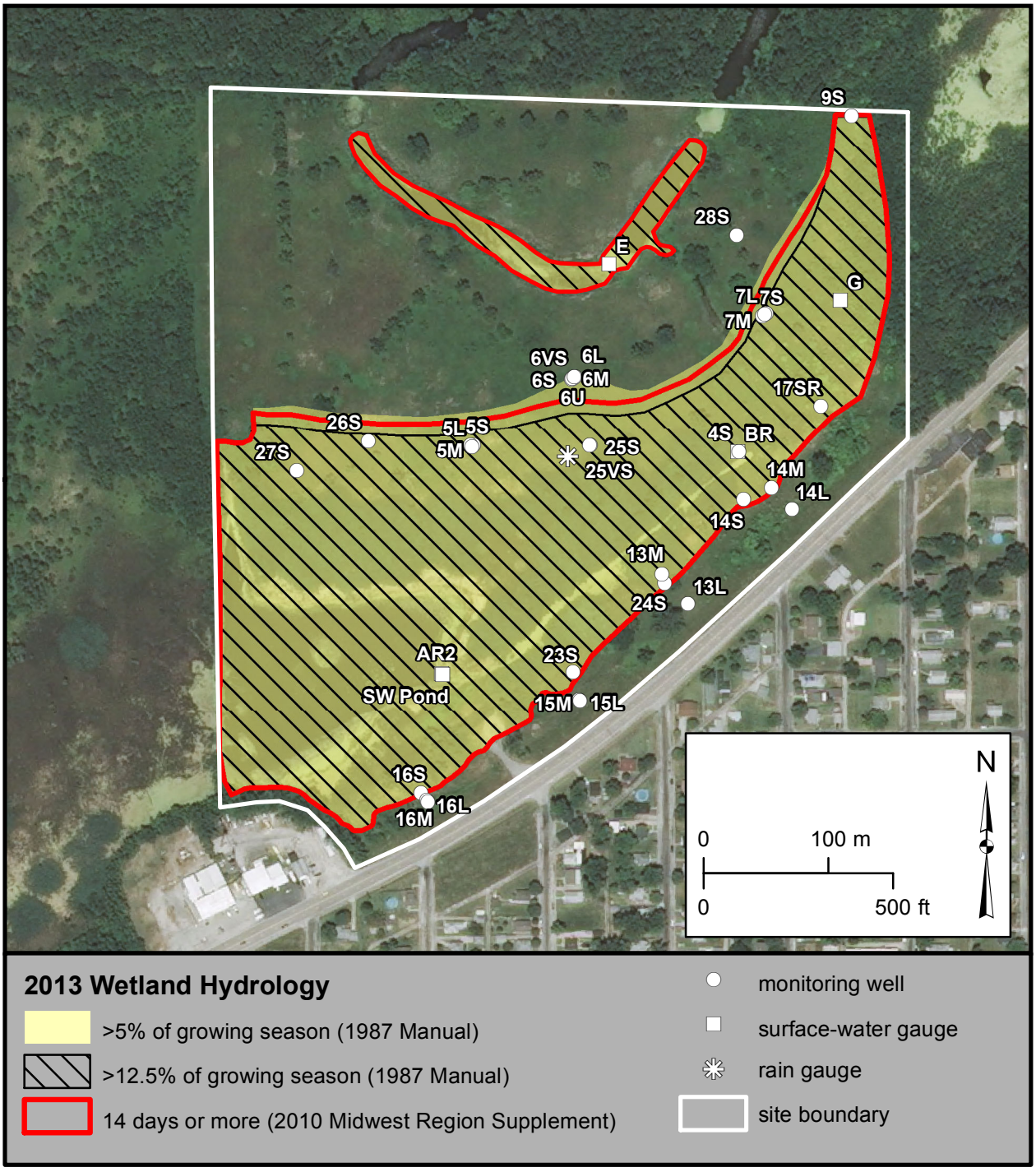
- Monitoring will continue until no longer required by IDOT.

# Fairmont City Potential Wetland Mitigation Site
# (FAP 14)
## General Study Area and Vicinity
from the USGS Topographic Series, Monks Mound, IL, 7.5-minute Quadrangle (ISGS 2013b)



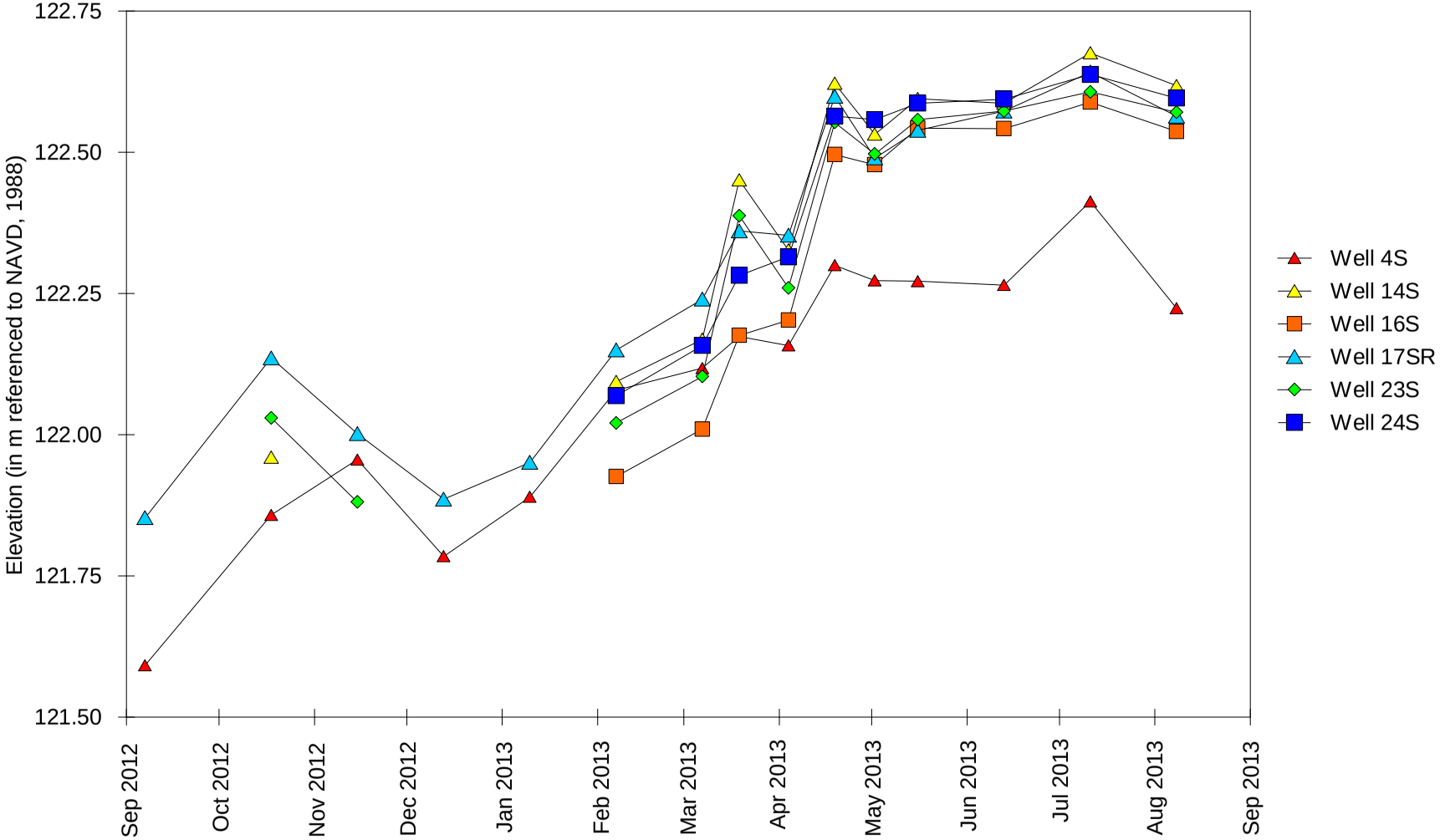
# Fairmont City Potential Wetland Mitigation Site
# (FAP 14)
## Estimated Areal Extent of 2013 Wetland Hydrology
**September 1, 2012 through August 31, 2013**

Map based on 2012 Farm Service Agency digital orthophotography, St. Clair County, Illinois (USDA-FSA 2012)



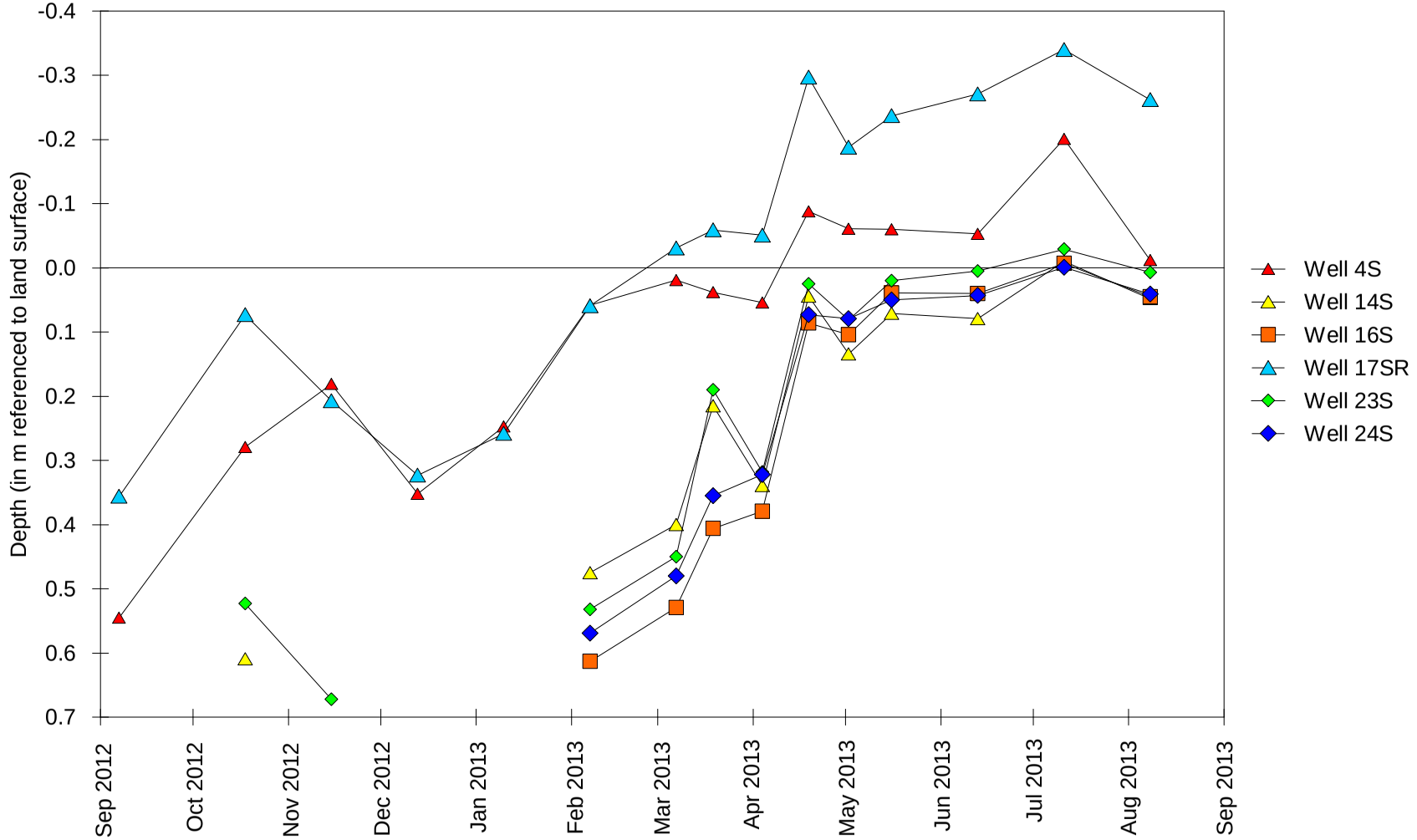
# Fairmont City Potential Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations
### in Shallow Monitoring Wells South of the Drainage Ditch



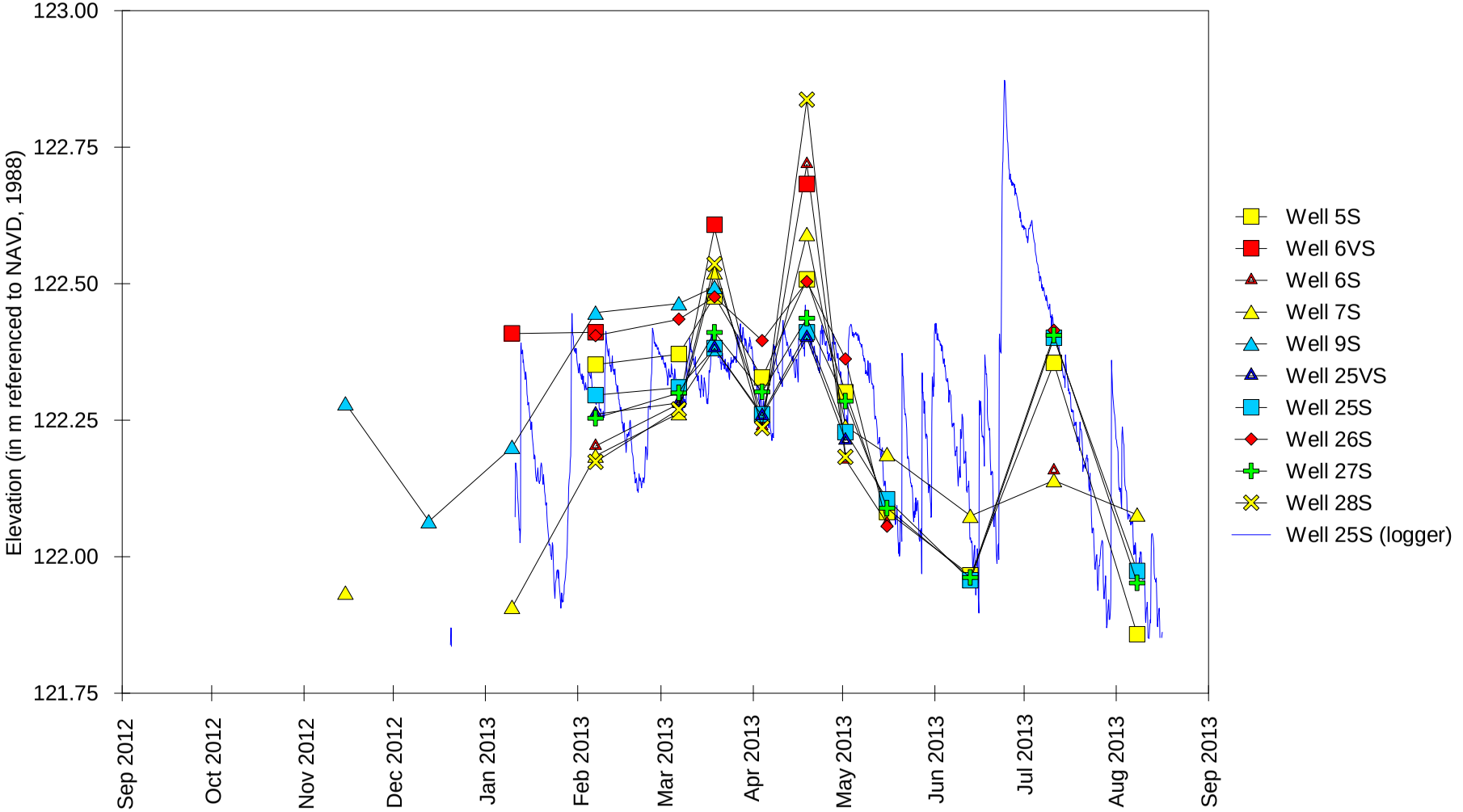
# Fairmont City Potential Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Shallow Monitoring Wells South of the Drainage Ditch



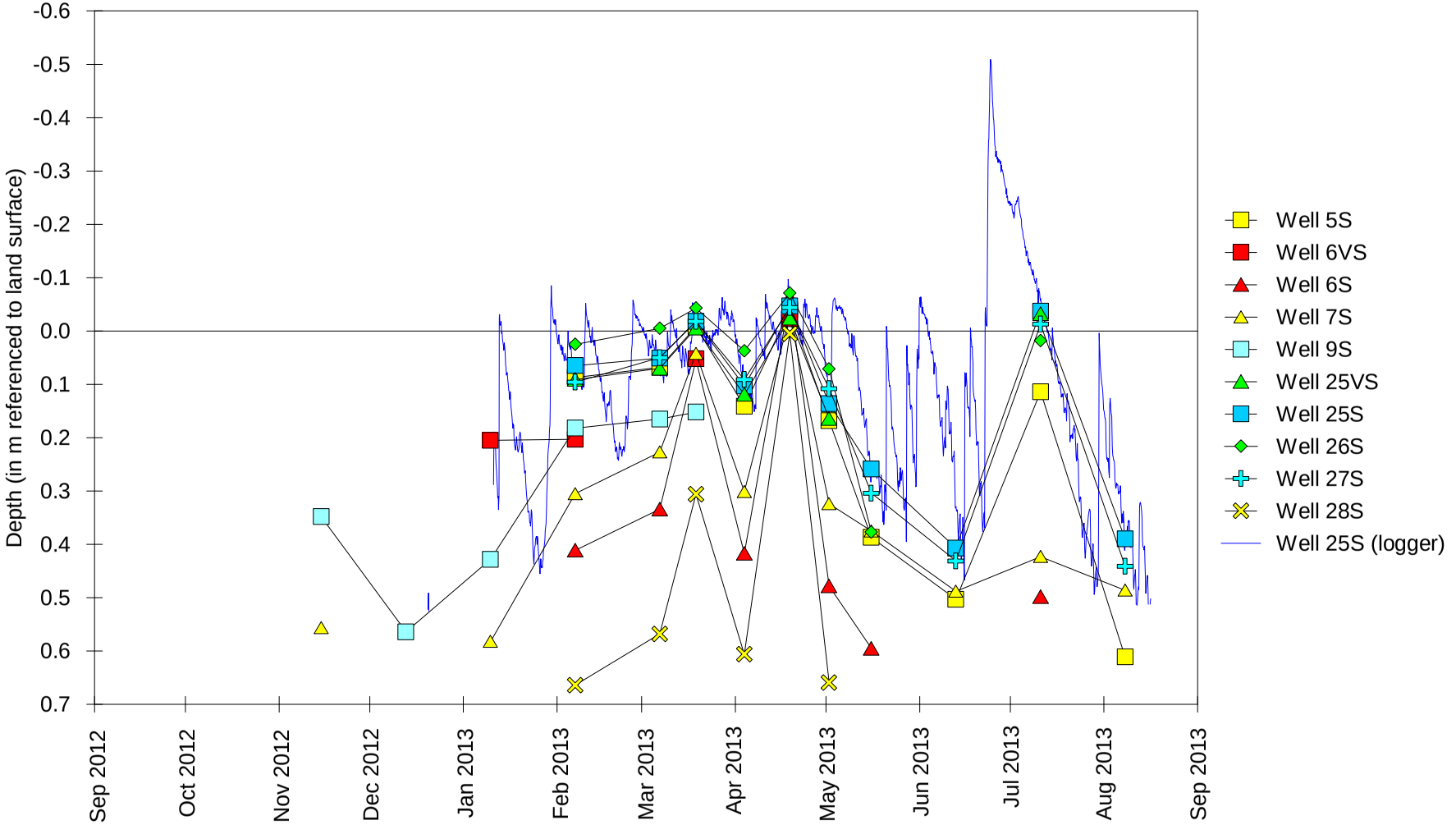
# Fairmont City Potential Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations
### in Shallow Monitoring Wells North of the Drainage Ditch



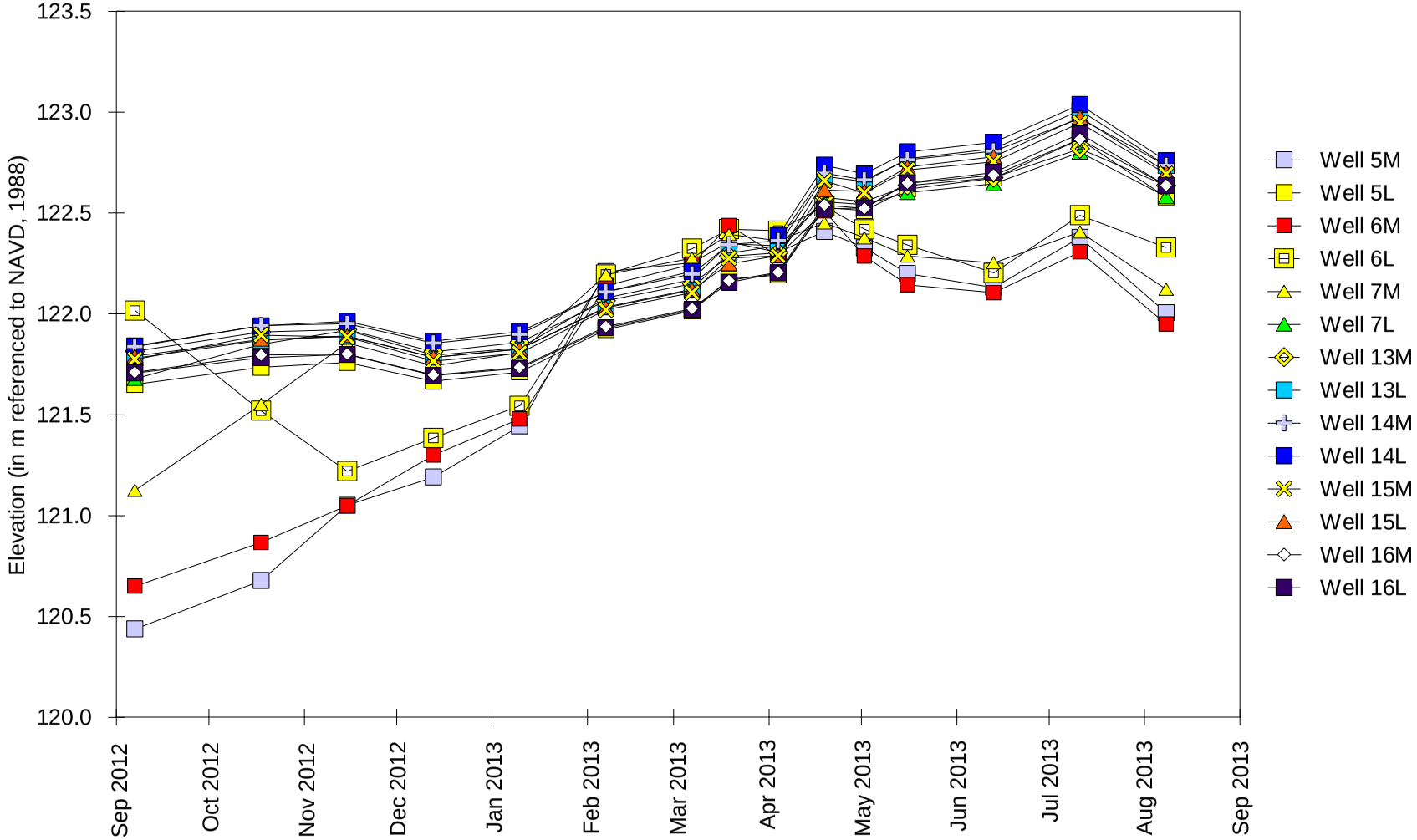
# Fairmont City Potential Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Shallow Monitoring Wells North of the Drainage Ditch



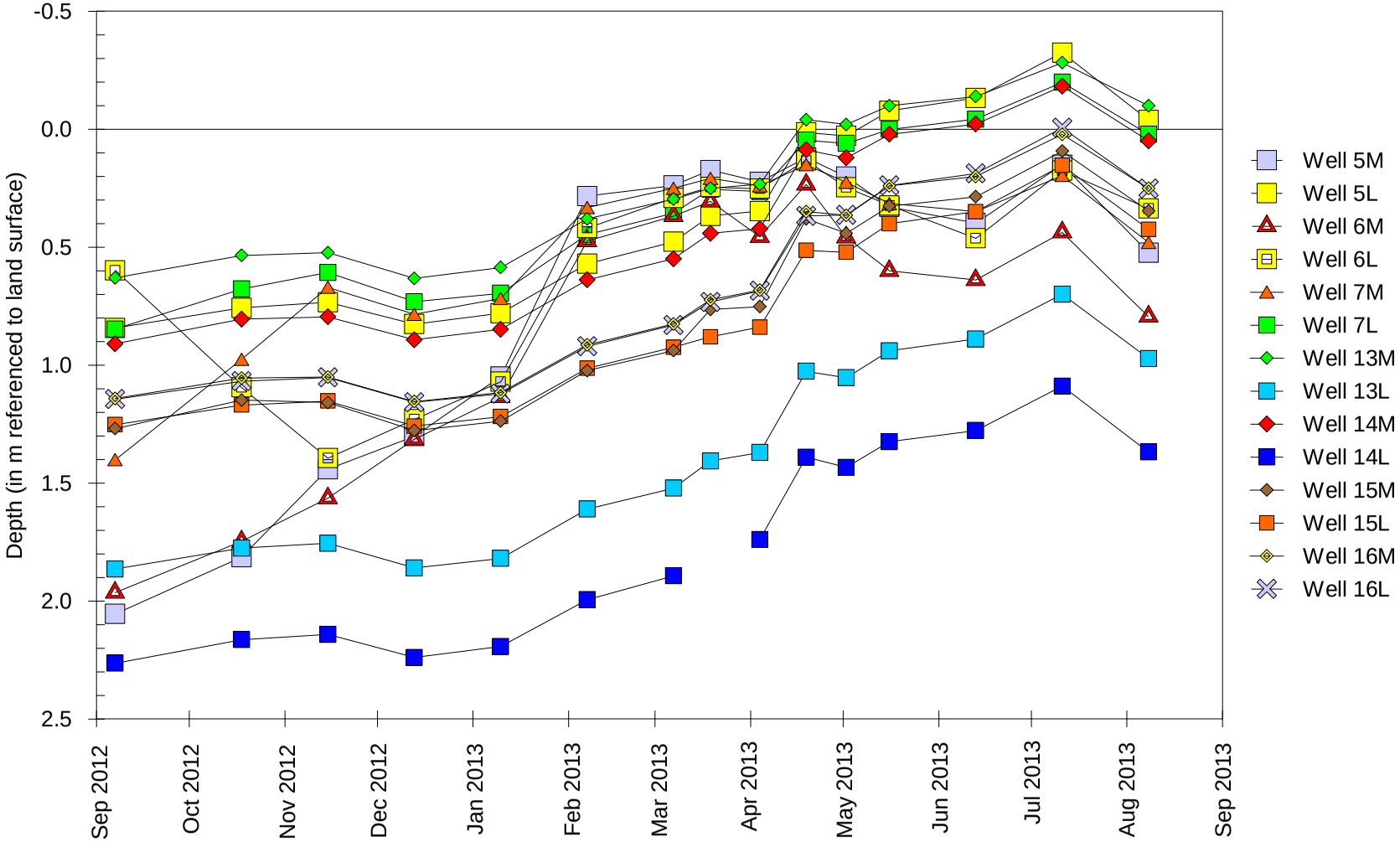
# Fairmont City Potential Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Deeper Monitoring Wells



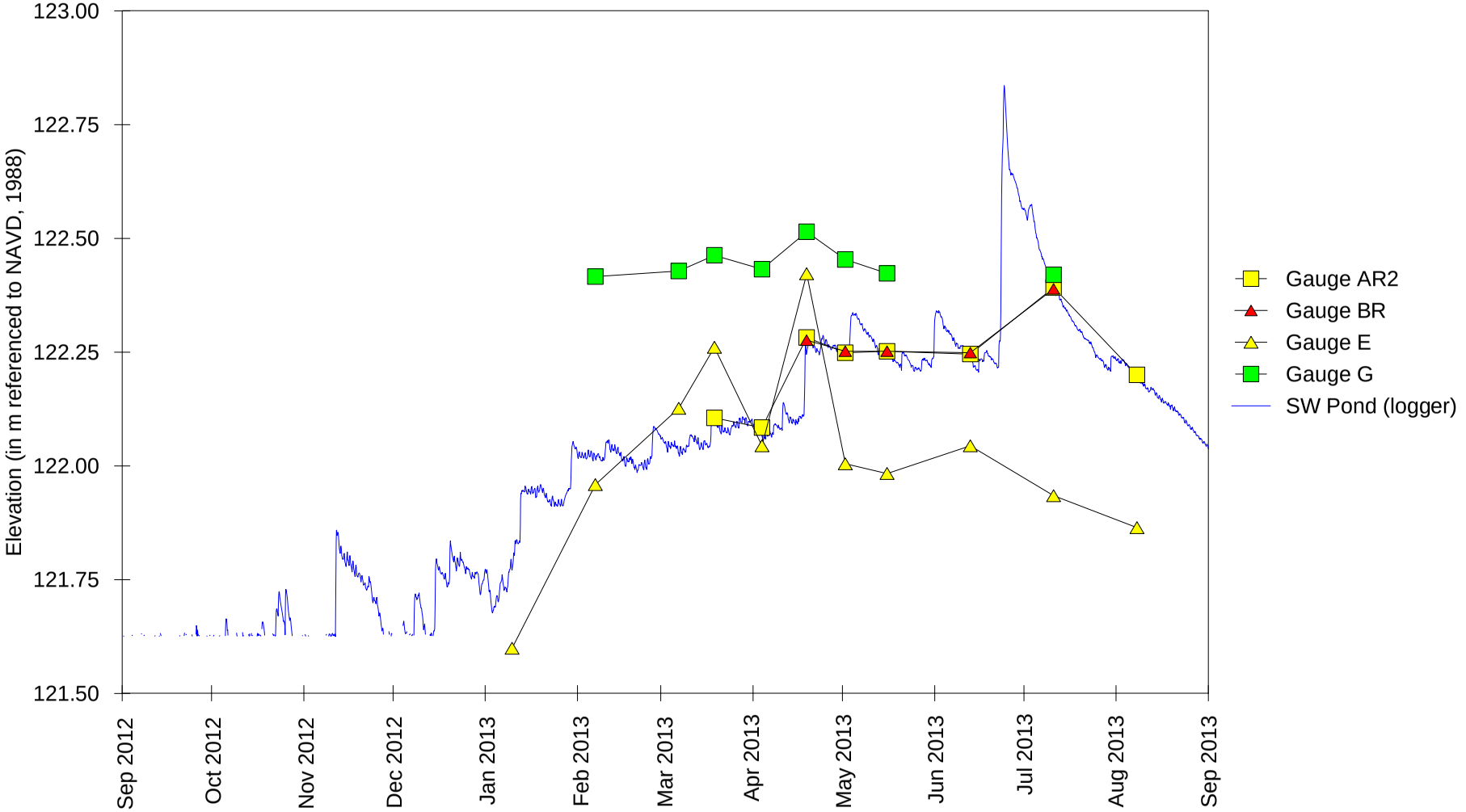
# Fairmont City Potential Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Deeper Monitoring Wells

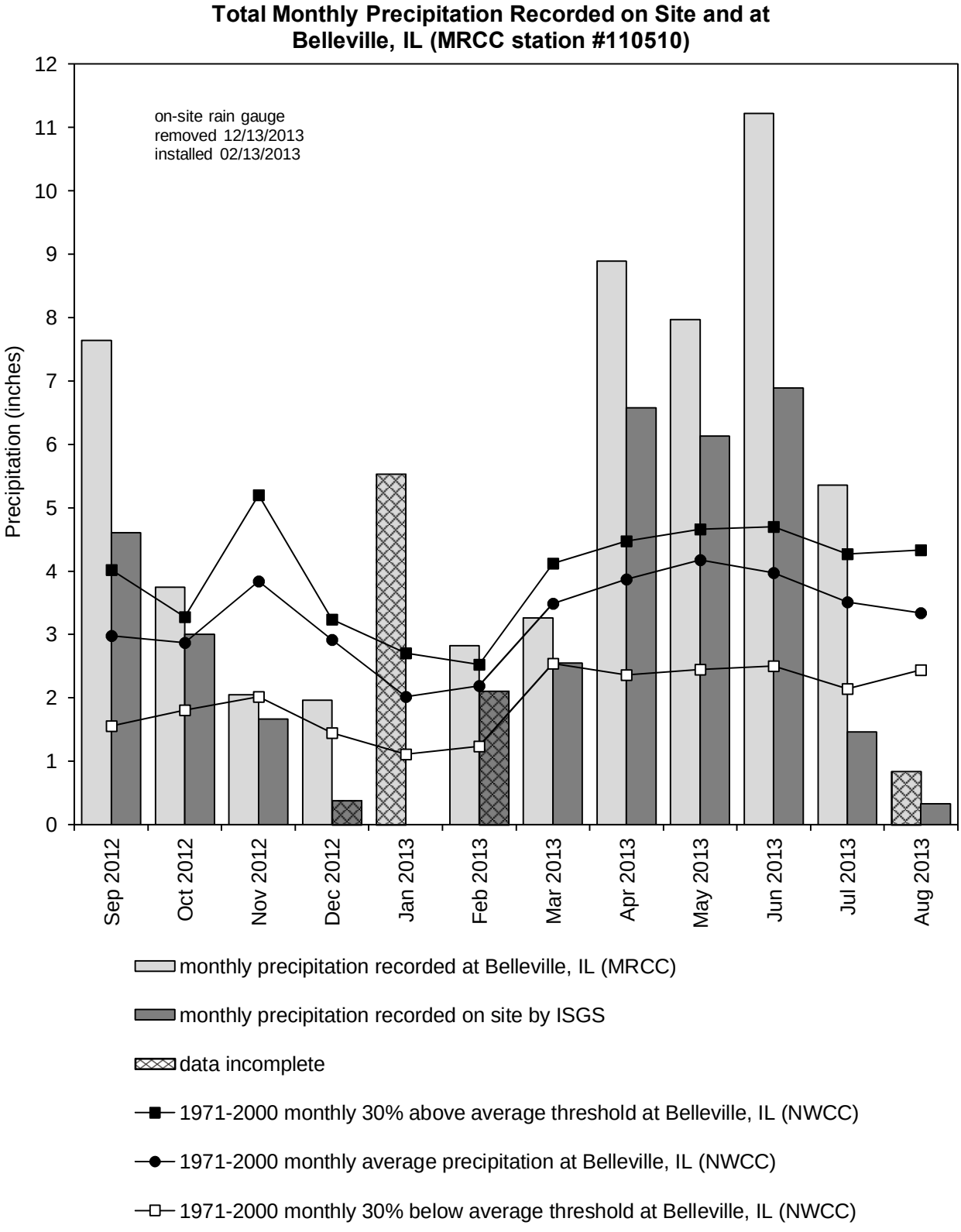


# Fairmont City Potential Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations at Surface-Water Gauges



# Fairmont City Potential Wetland Mitigation Site
## September 2012 through August 2013



**FORMER TIERNAN PROPERTY** **ISGS #57**
**POTENTIAL WETLAND MITIGATION SITE**
FAP 14
Sequence #27
St. Clair County, near Cahokia, Illinois
**Primary Project Manager: Steven E. Benton**
**Secondary Project Manager: Jessica L. B. Monson**

SITE HISTORY

- July 2000: The ISGS was tasked to perform a Level II hydrogeologic assessment of the site.

- July 2005: A Level II hydrogeologic characterization report was submitted to IDOT (ISGS Open-File Series 2005–11).

WETLAND HYDROLOGY CALCULATION FOR 2013

The target compensation area for the Former Tiernan Property wetland mitigation site is 17.04 ha (42.10 ac). Using the 1987 Manual (Environmental Laboratory 1987), 17.85 ha (44.10 ac), out of a total site area of 26.43 ha (65.30 ac), satisfied wetland hydrology criteria for greater than 5% of the 2013 growing season and 14.49 ha (35.81 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 17.19 ha (42.48 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Cahokia, Illinois, is April 5 and the season lasts 202 days (MRCC 2013); 5% of the growing season is 10 days and 12.5% of the growing season is 25 days, using the 1987 Manual. Using the 2010 Midwest Region Supplement, March 29 was the starting date of the 2013 growing season based on soil temperatures measured on site and at the nearby Fairmont City wetland mitigation site (ISGS #53).

- Total precipitation for the monitoring period, recorded at Belleville, Illinois (MRCC station #110510), was 156% of normal. Precipitation in Spring 2013 (March through May) was 174% of normal.

- In 2013, water levels measured in all of the soil-zone monitoring wells except 6S, 7S, 11S, 23VS, and 23S satisfied wetland hydrology criteria for greater than 5% of the growing season, and water levels measured in all of the soil-zone monitoring wells except 1S, 4S, 6S, 7S, 11S, 23S, 23VS, 28S, 28VS, and 33S satisfied wetland hydrology criteria for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, water levels measured in all of the soil-zone monitoring wells except 4S, 6S, 7S, 11S, 23S, 23VS, and 33S satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.

- Data from Gauge G, in the southern portion of the site, revealed that areas at and below an elevation of 121.30 m (397.97 ft) were inundated for more than 5% of the growing season, and areas at and below an elevation of 121.22 m (397.70 ft) were inundated for more than 12.5% of the growing season, using the 1987 Manual. Using the 2010

Midwest Region Supplement, areas at and below an elevation of 121.28 m (397.90 ft) were inundated for 14 or more consecutive days during the growing season.

- Data from Gauge H, in the northern portion of the site, revealed that areas at and below an elevation of 121.67 m (399.17 ft) were inundated for more than 5% of the growing season, and areas at and below an elevation of 121.64 m (399.08 ft) were inundated for more than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, areas at and below an elevation of 121.64 m (399.08 ft) were inundated for 14 or more consecutive days during the growing season.

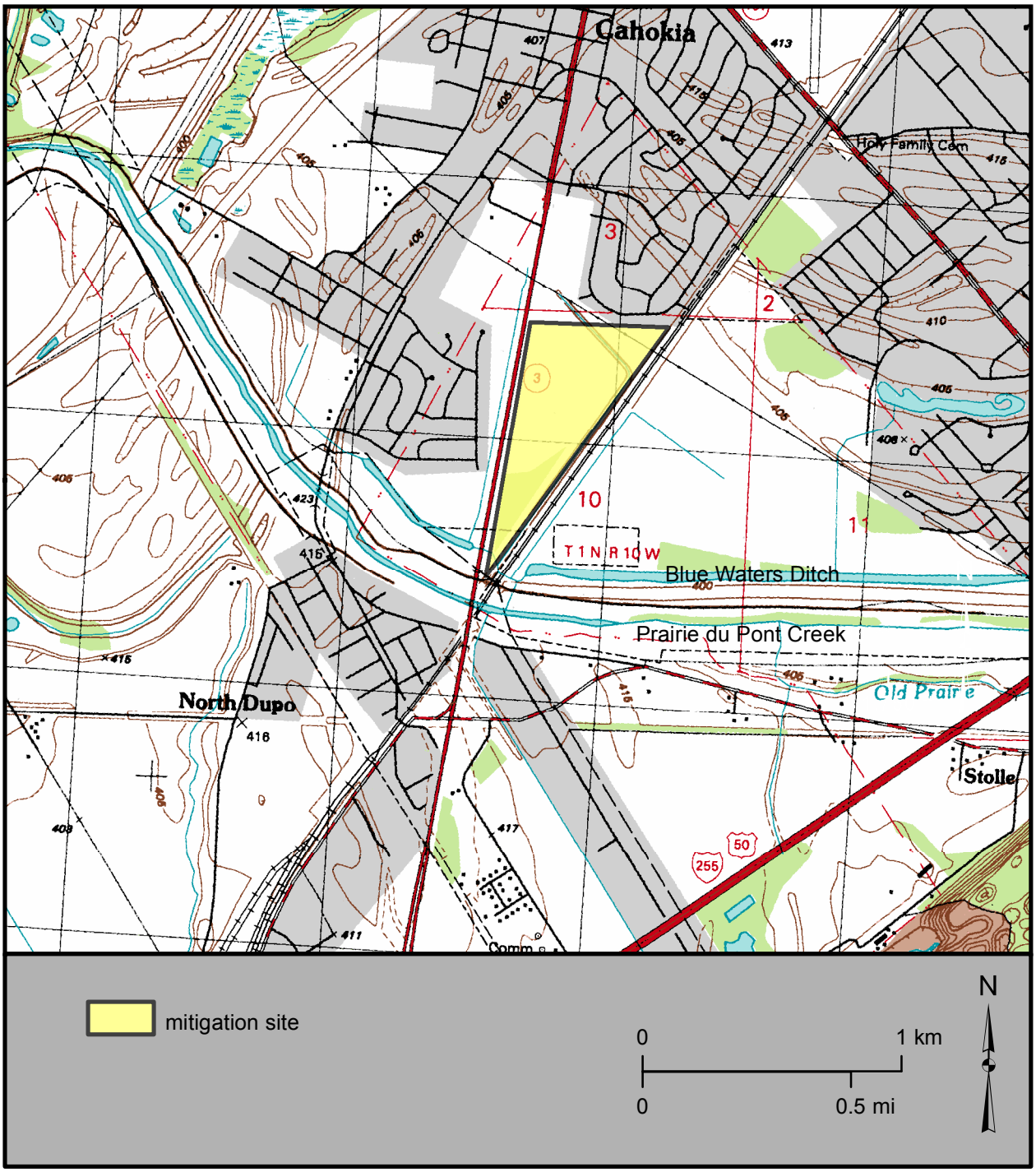
PLANNED FUTURE ACTIVITIES

- Monitoring will continue until no longer required by IDOT.

# Former Tiernan Property, Potential Wetland Mitigation Site (FAP 14)

## General Study Area and Vicinity

from the USGS Topographic Series, Cahokia, IL, 7.5-minute Quadrangle (ISGS 2013b)

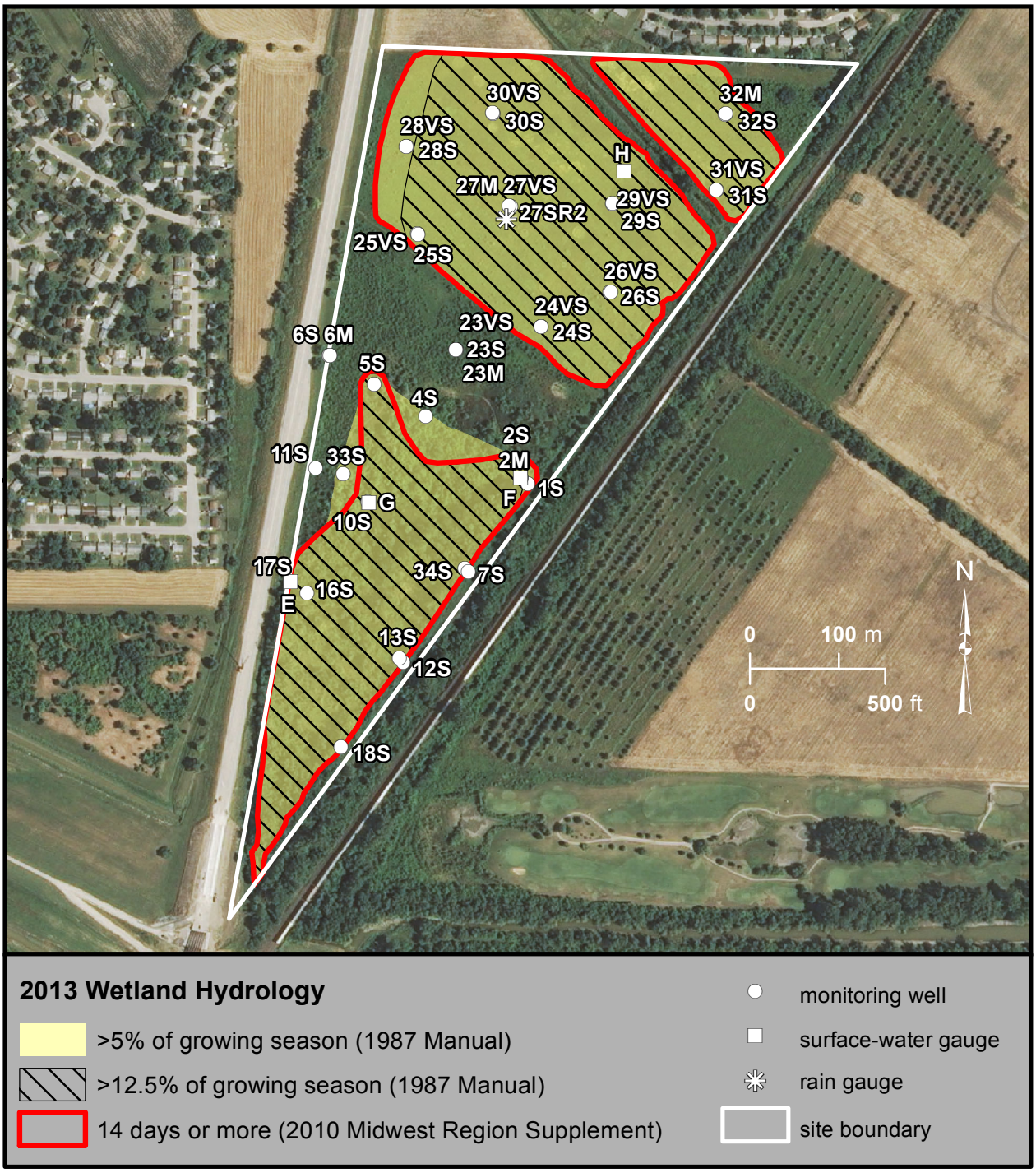


# Former Tiernan Property, Potential Wetland Mitigation Site (FAP 14)

## Estimated Areal Extent of 2013 Wetland Hydrology

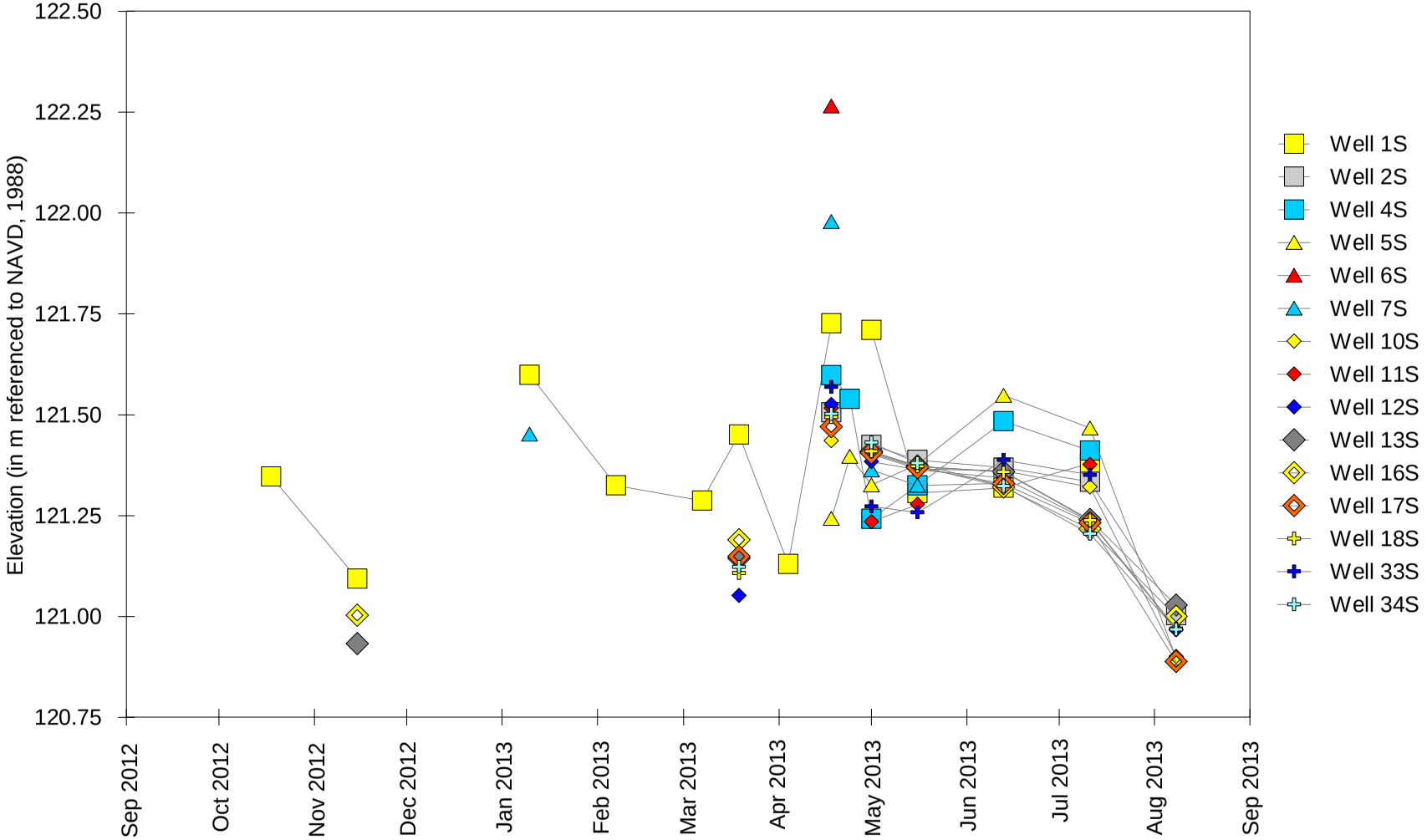
**September 1, 2012 through August 31, 2013**

Map based on 2012 Farm Service Agency digital orthophotography, St. Clair County, Illinois (USDA-FSA 2012)

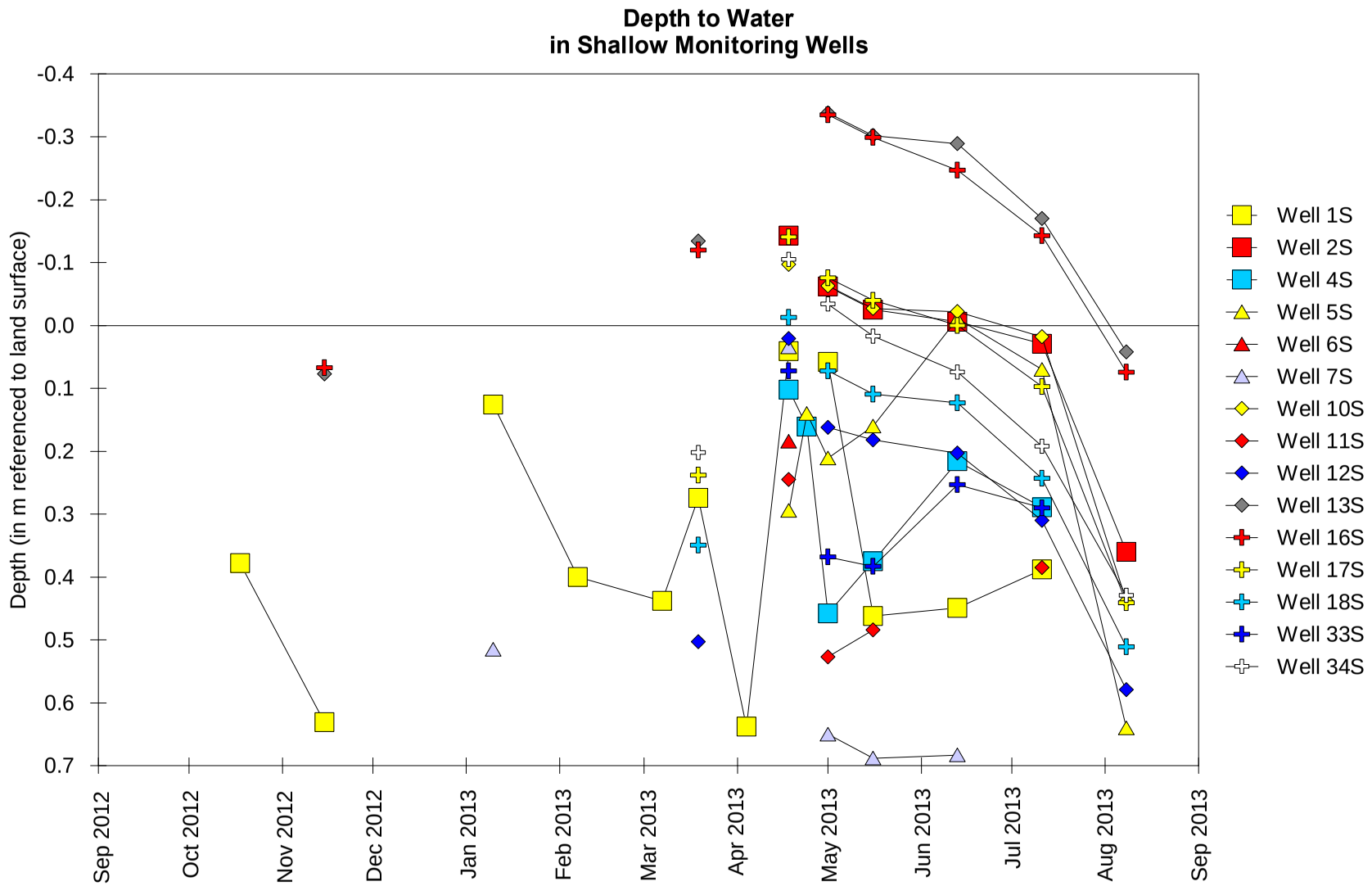


# Former Tiernan Property Potential Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Shallow Monitoring Wells

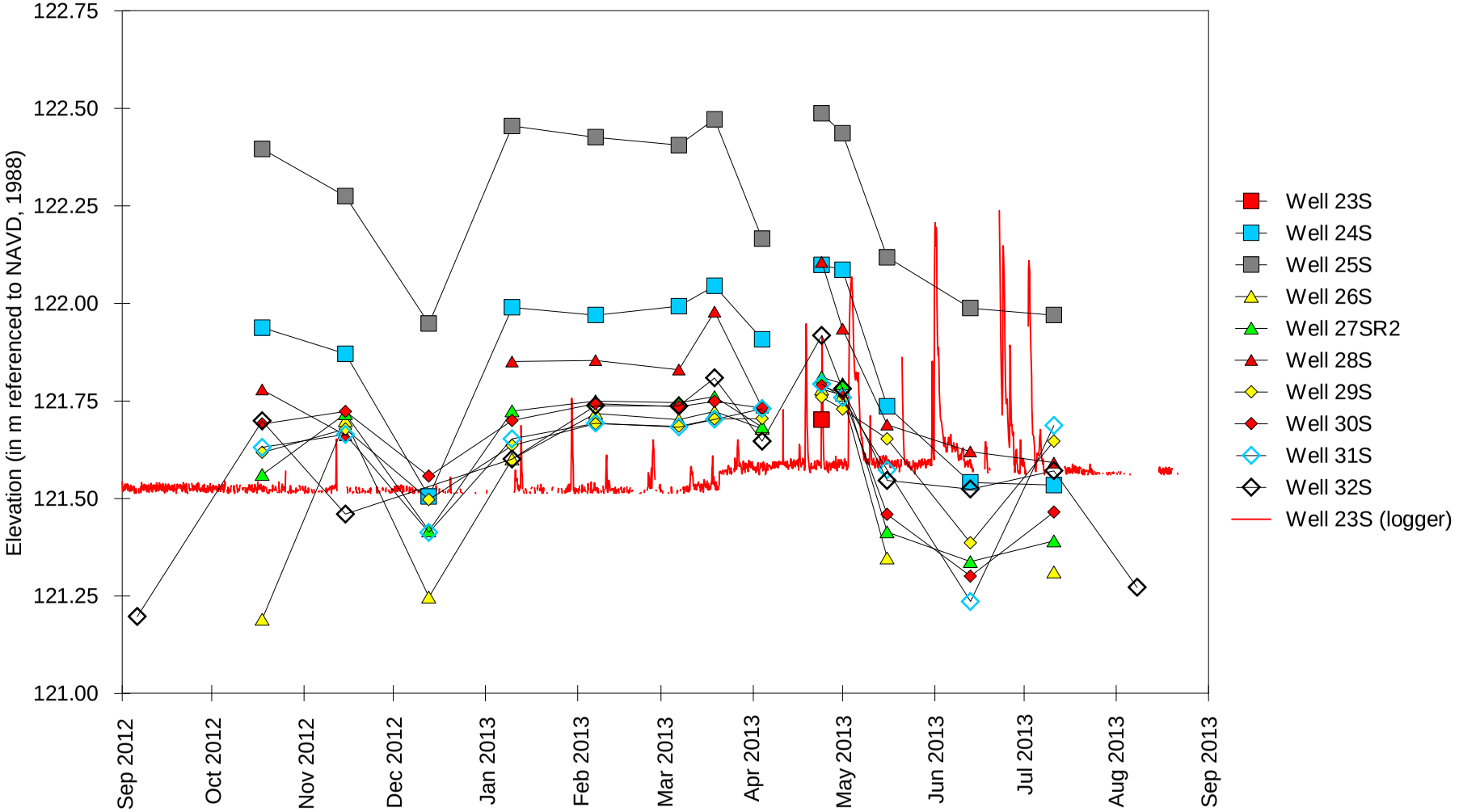


# Former Tiernan Property Potential Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

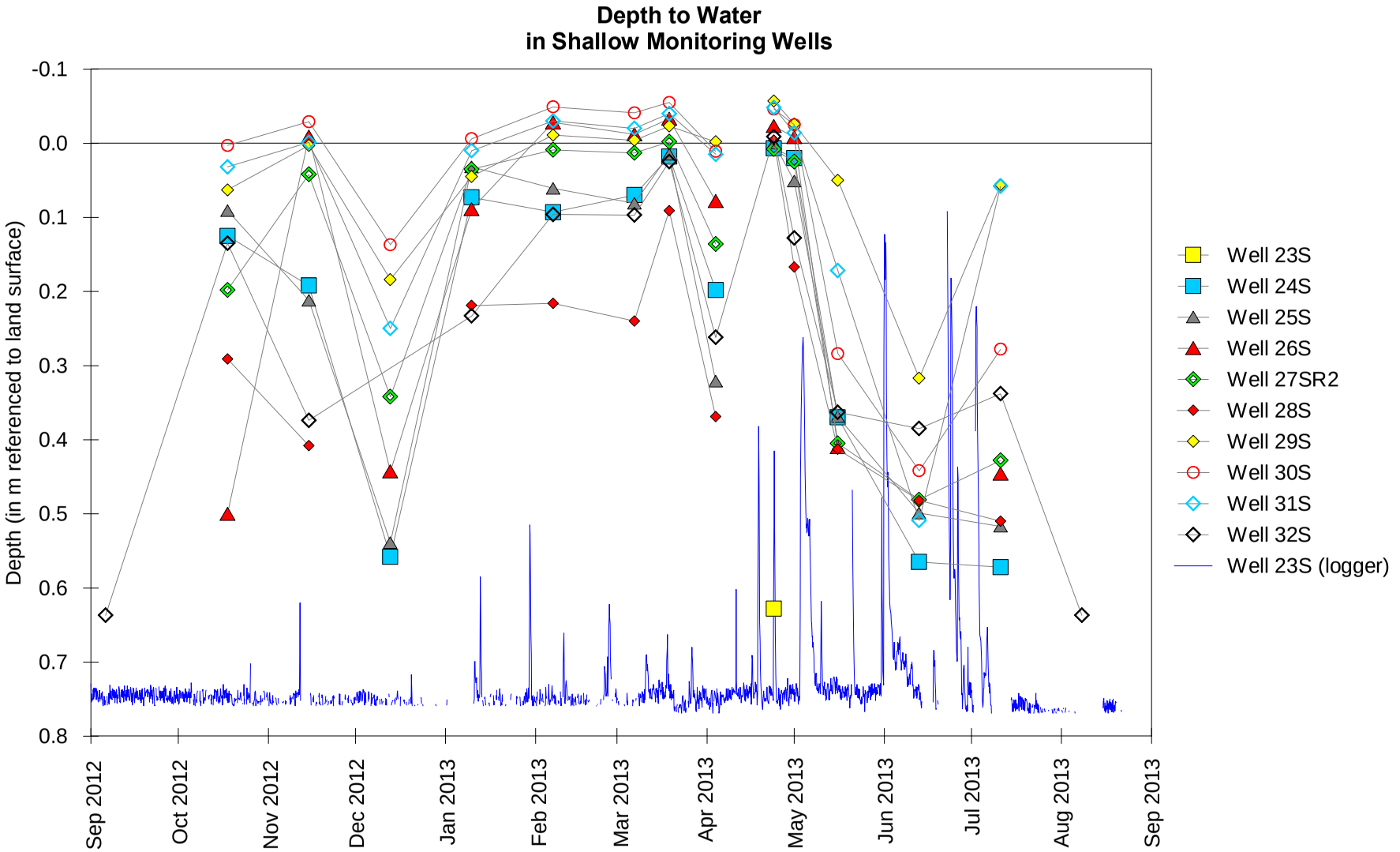


# Former Tiernan Property Potential Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Shallow Monitoring Wells

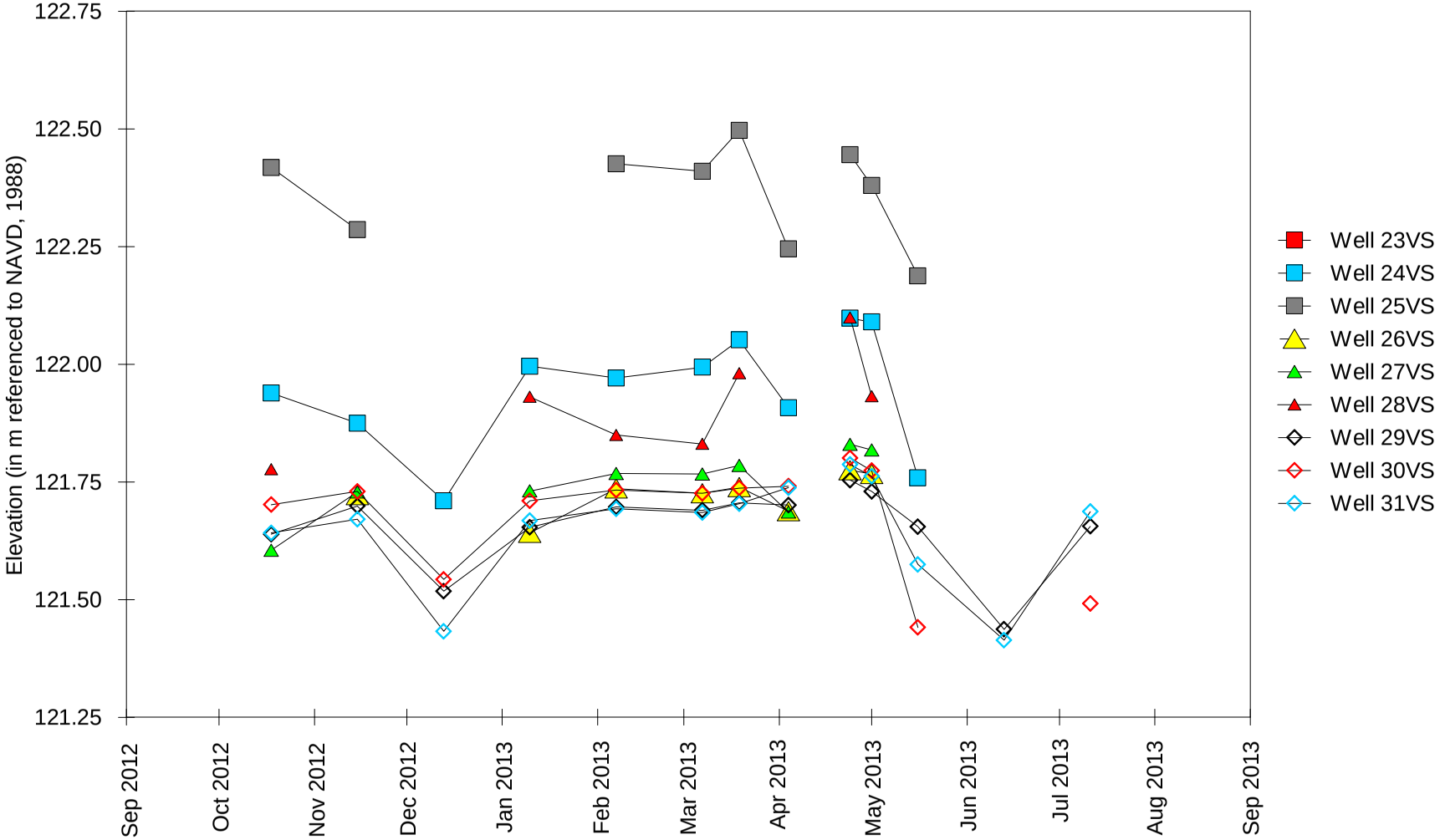


# Former Tiernan Property Potential Wetland Mitigation Site
## September 1, 2012 through August 31, 2013



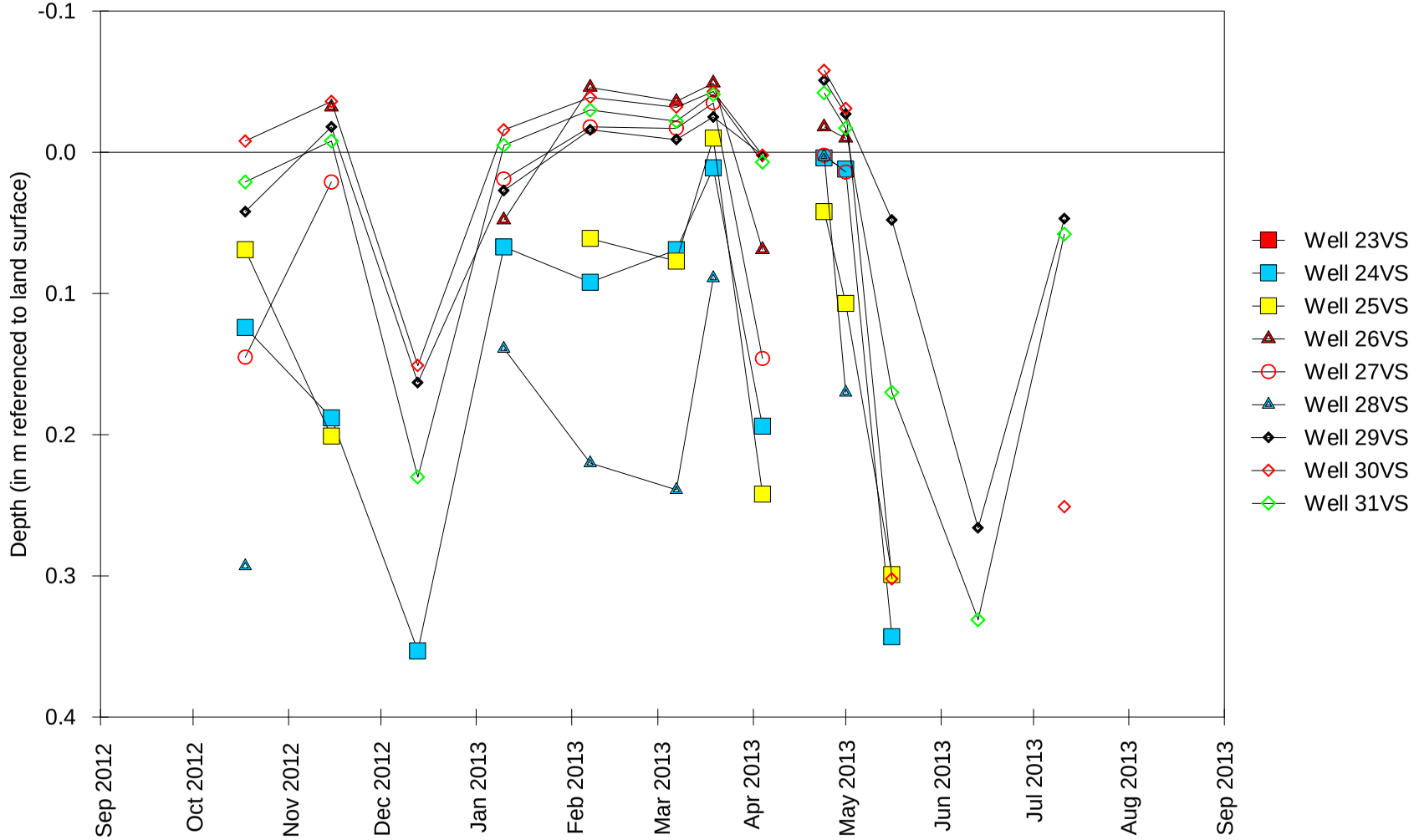
# Former Tiernan Property Potential Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Very Shallow Monitoring Wells



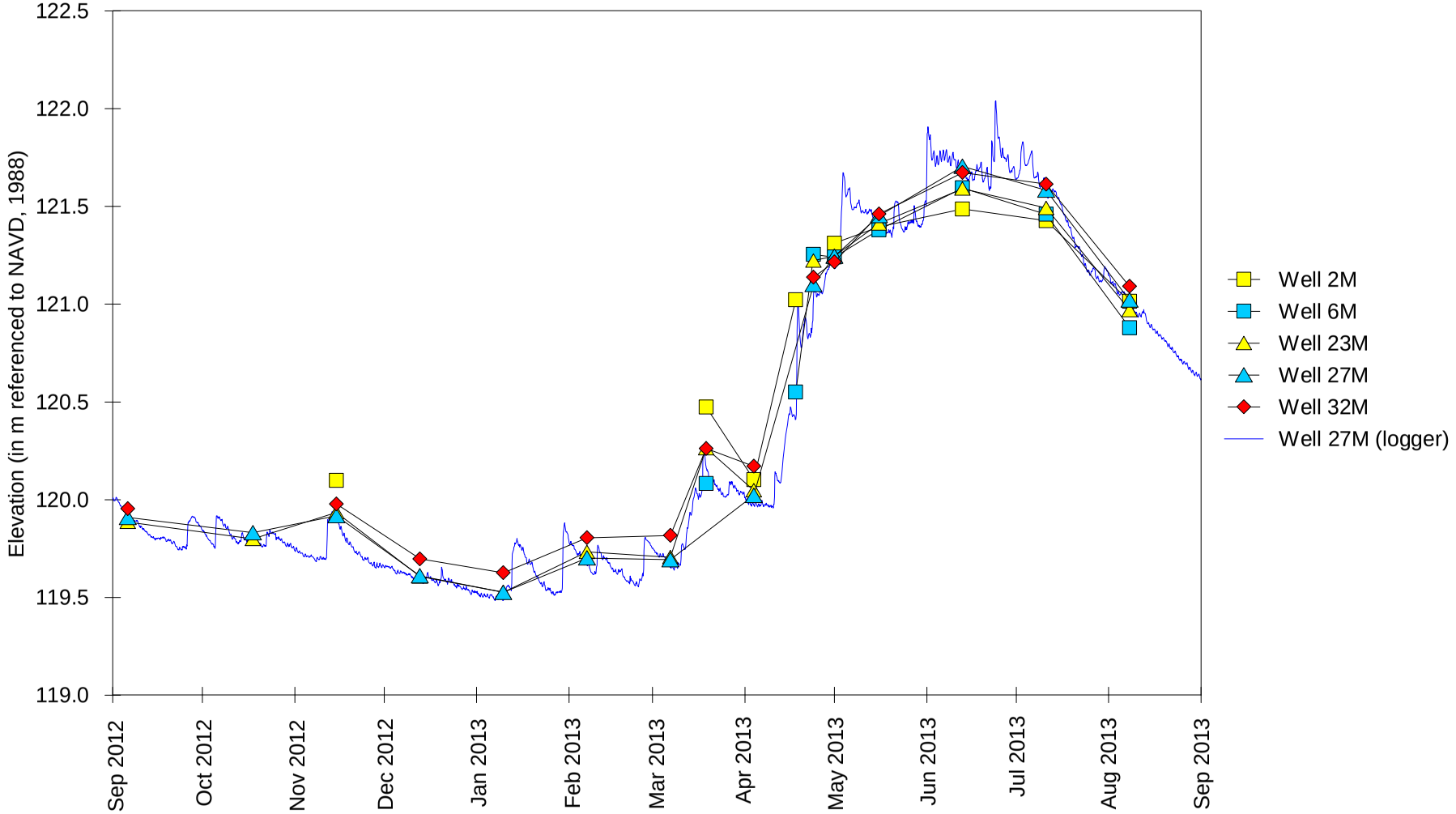
# Former Tiernan Property Potential Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Very Shallow Monitoring Wells



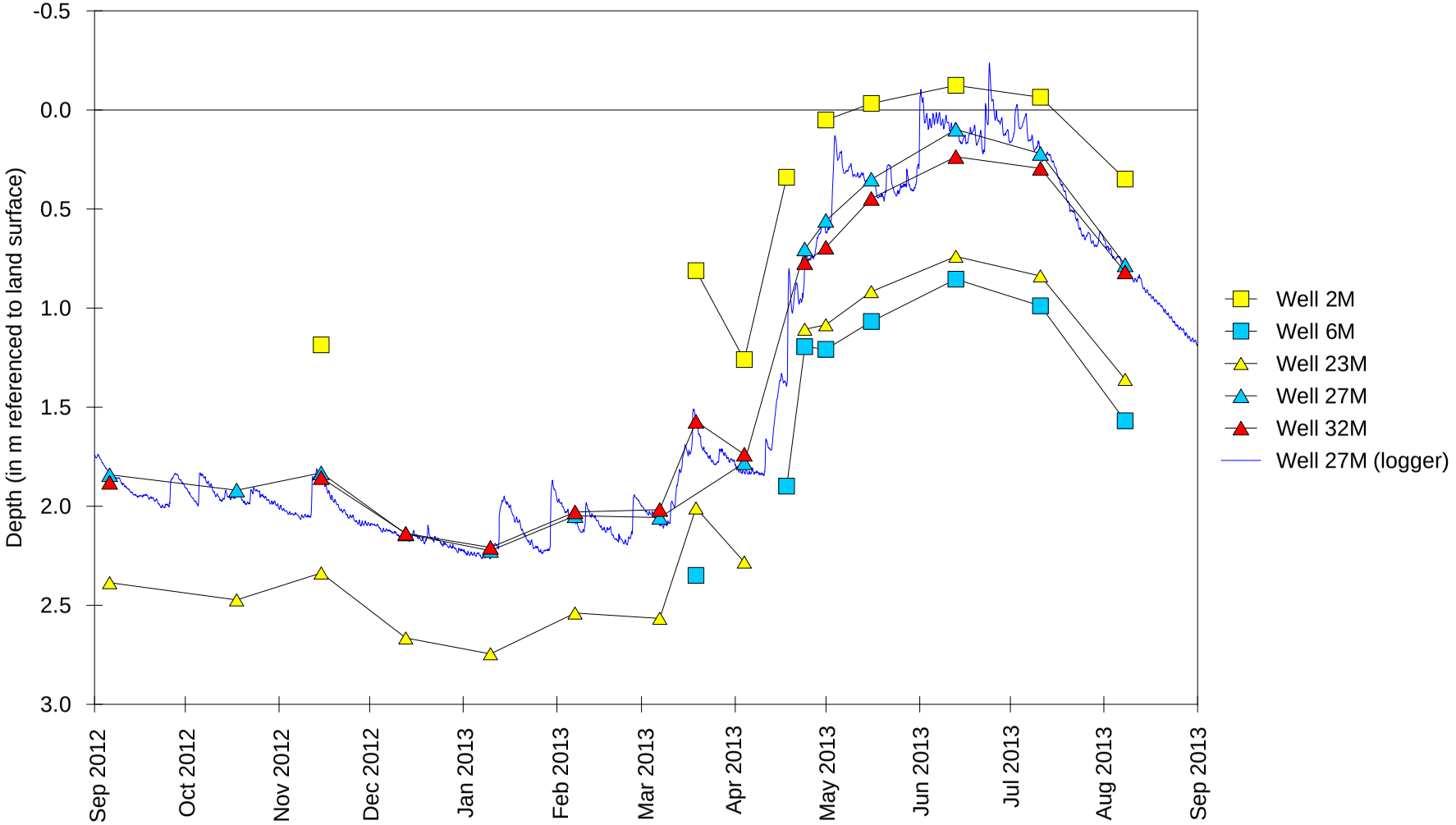
# Former Tiernan Property Potential Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Deeper Monitoring Wells



# Former Tiernan Property Potential Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

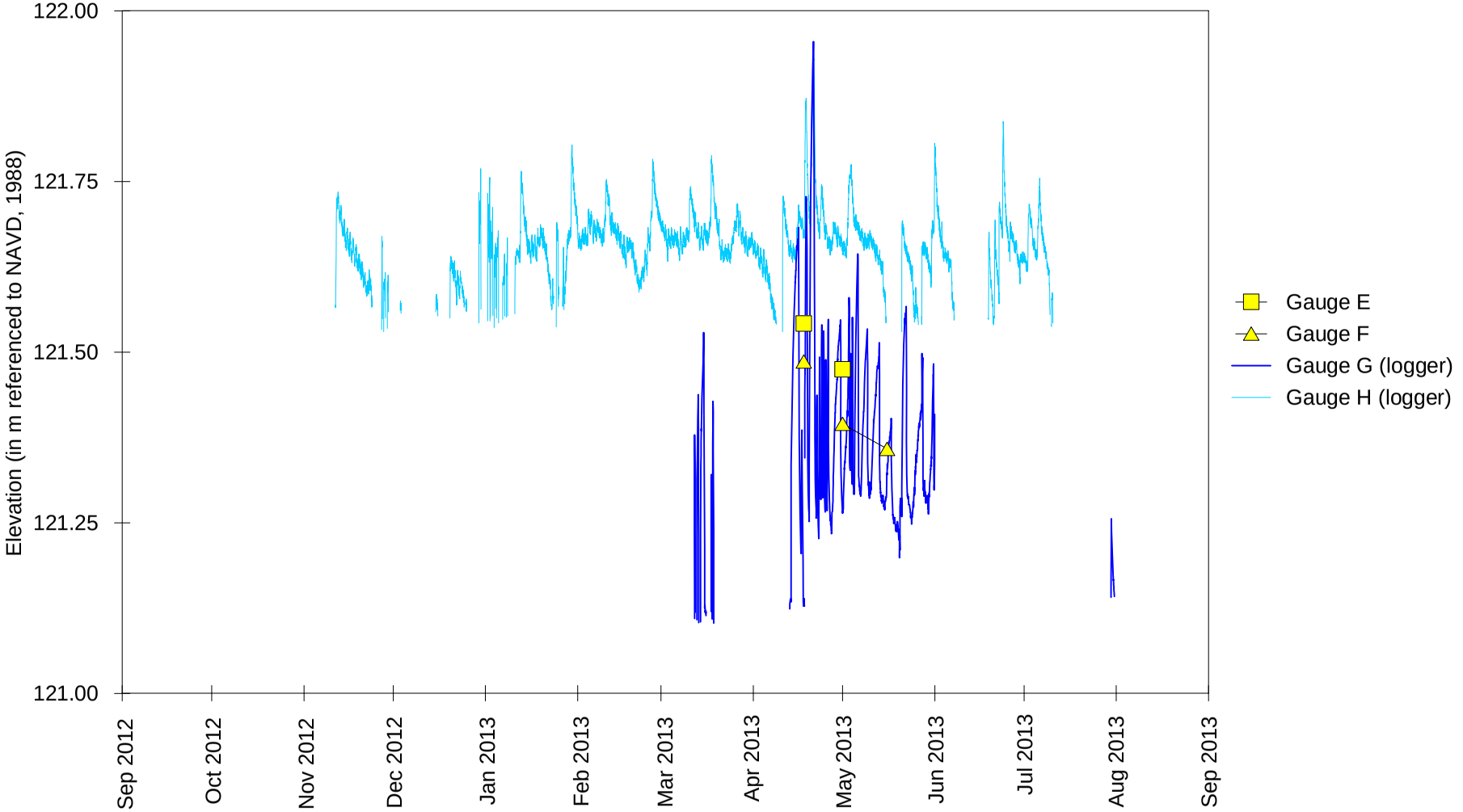
### Depth to Water
### in Deeper Monitoring Wells



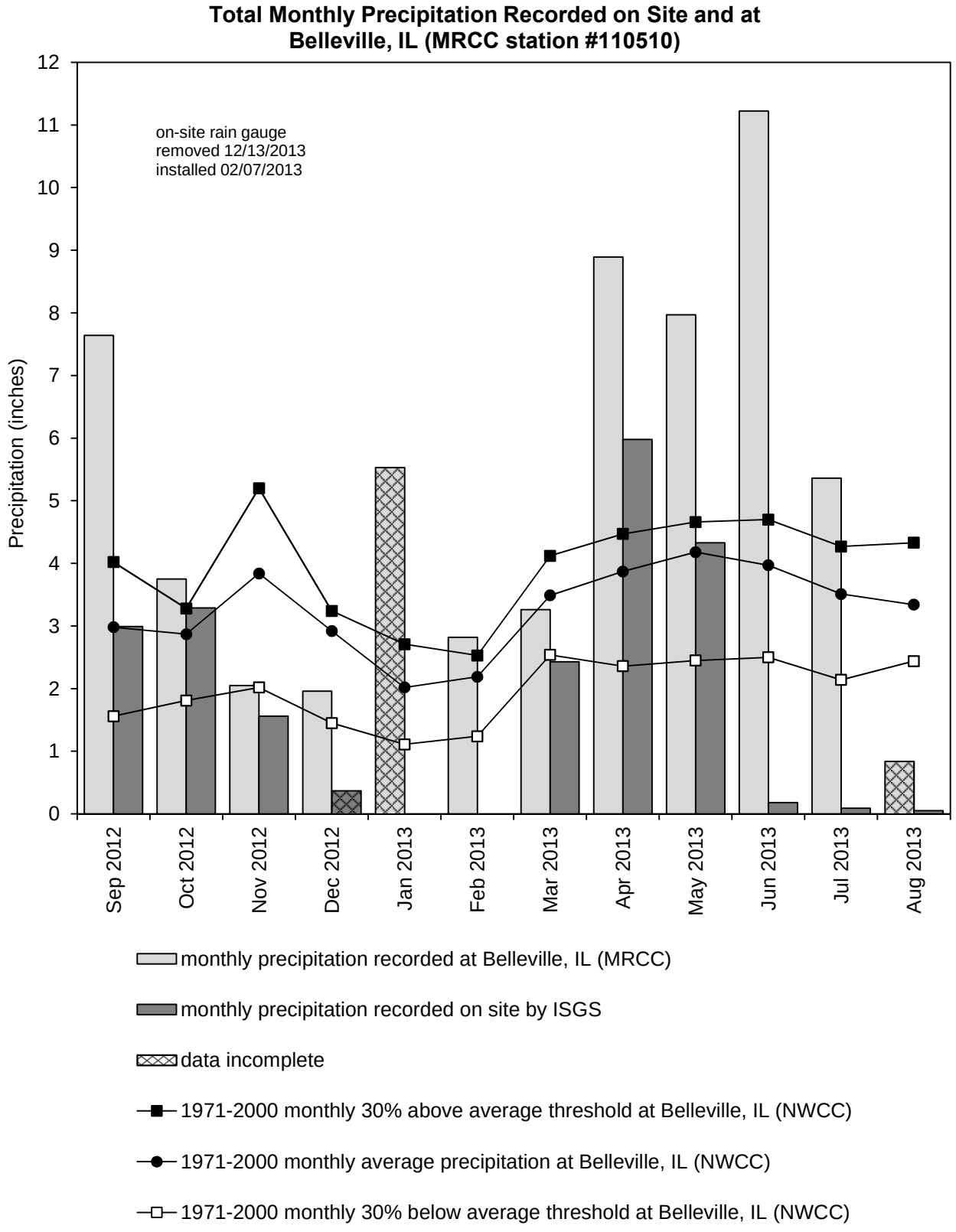

09

# Former Tiernan Property Potential Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevation at Surface-Water Gauges



# Former Tiernan Property Potential Wetland Mitigation Site
## September 2012 through August 2013



**TAMMS** **ISGS #71**
**WETLAND MITIGATION SITE**
IL 127
FAS 1907
Sequence #1026
Alexander County, near Tamms, Illinois
**Primary Project Manager: Geoffrey E. Pociask**
**Secondary Project Manager: Jessica L. B. Monson**

SITE HISTORY

- Summer 2001: The wetland mitigation site was constructed.
- November 2003: Post-construction water-level monitoring was initiated by ISGS.

WETLAND HYDROLOGY CALCULATION FOR 2013

The target compensation area for the Tamms wetland mitigation site is 1.75 ha (4.33 ac). Using the 1987 Manual (Environmental Laboratory 1987), 2.21 ha (5.46 ac) out of the 6.3-ha (15.6-ac) site satisfied wetland hydrology criteria for greater than 5% of the growing season in 2013, whereas 0.81 ha (2.00 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 2.66 ha (6.58 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Anna, Illinois, is April 3, and the season lasts 214 days (MRCC 2013). Using the 1987 Manual, 5% of the growing season is 11 days and 12.5% of the growing season is 27 days. Using the 2010 Midwest Region Supplement, March 4 was the starting date of the 2013 growing season based on soil temperatures measured on site.
- Total precipitation for the monitoring period at Cape Girardeau, Missouri, (MRCC station #231289) was 85% of normal, and Spring 2013 (March through May) precipitation was 66% of normal.
- In 2013, monitoring wells 3S, 7S, and 10S satisfied wetland hydrology criteria for greater than 5% of the growing season, and wells 7S and 10S satisfied wetland hydrology criteria for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, wells 3S, 6S, 7S, and 10S satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.
- Using the 1987 Manual, water levels measured at gauges A, B, and E showed that depressions surrounding each of these gauges were inundated at and below 102.88 m (337.53 ft), 102.30 m (335.63 ft), and 103.32 m (338.98 ft), respectively, for greater than 5% of the growing season, and at and below 102.82 m (337.34 ft), 102.25 m (335.47 ft), and 103.00 m (337.93 ft), respectively, for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement, data from gauges A, B, and E showed that the area surrounding each of these gauges at and below 102.88 m (337.53 ft), 102.30 m (335.63 ft) and 103.32 m (338.98 ft), respectively, were inundated for 14 or more consecutive days during the growing season. Surface water at Gauge C did not persist long enough to satisfy wetland hydrology criteria.

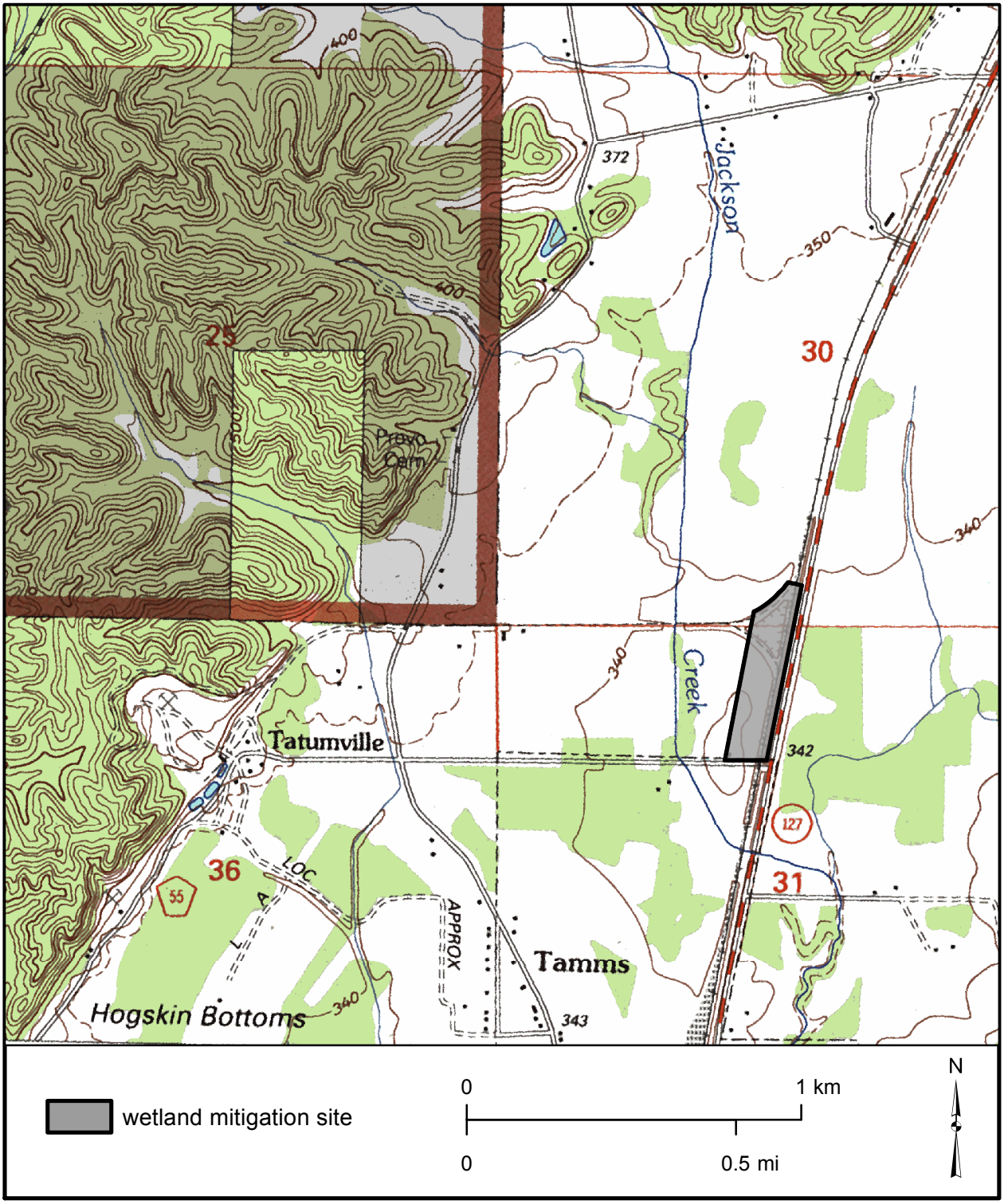
PLANNED FUTURE ACTIVITIES

- Water-level monitoring will continue until no longer required by IDOT.

# Tamms Wetland Mitigation Site
# (IL 127, FAS 1907)

## General Study Area and Vicinity

from the USGS Topographic Series, Mill Creek, IL, 7.5-minute Quadrangle (ISGS 2013b)
contour interval is 20 feet

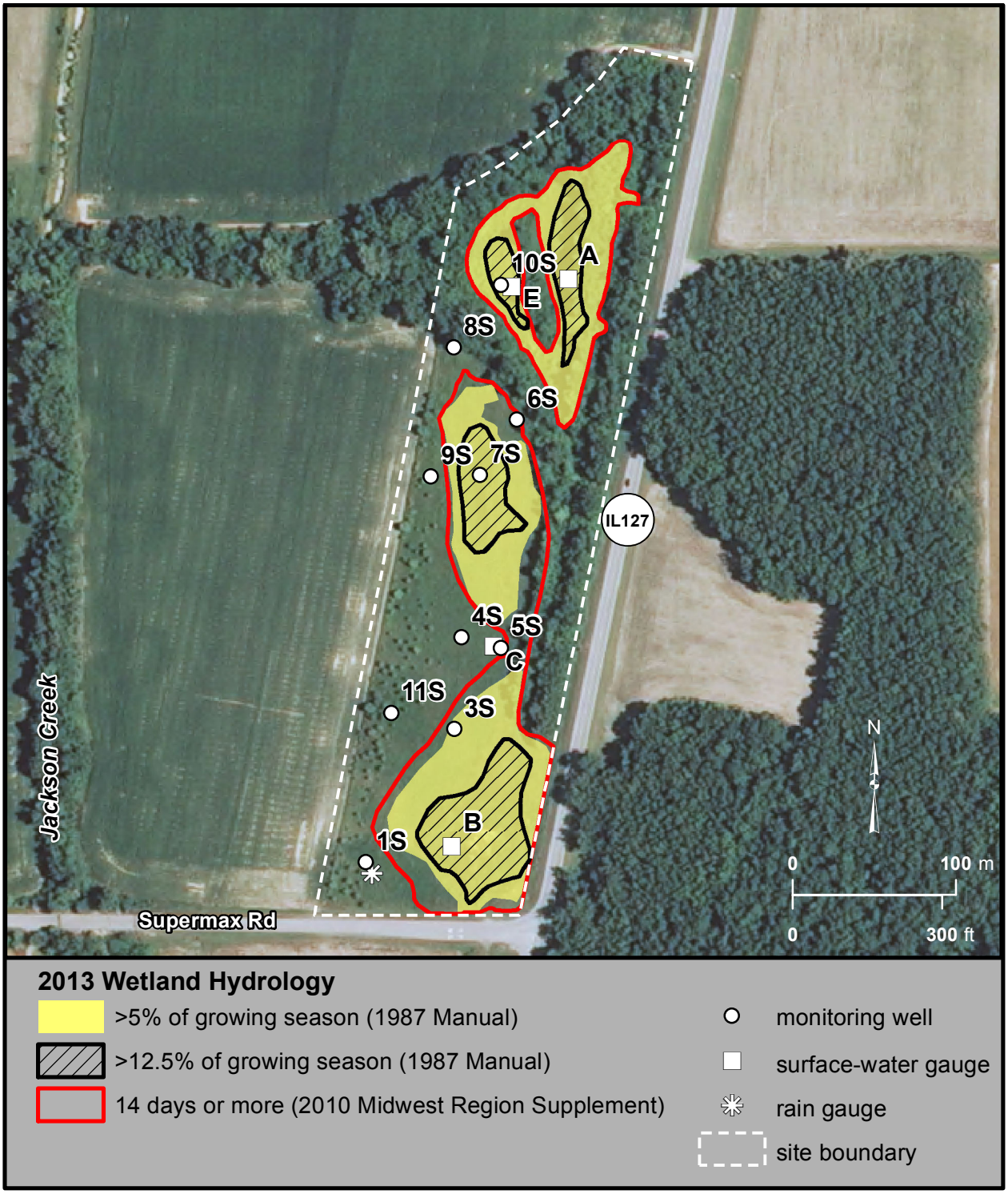


# Tamms Wetland Mitigation Site
# (IL 127, FAS 1907)

## Estimated Areal Extent of 2013 Wetland Hydrology

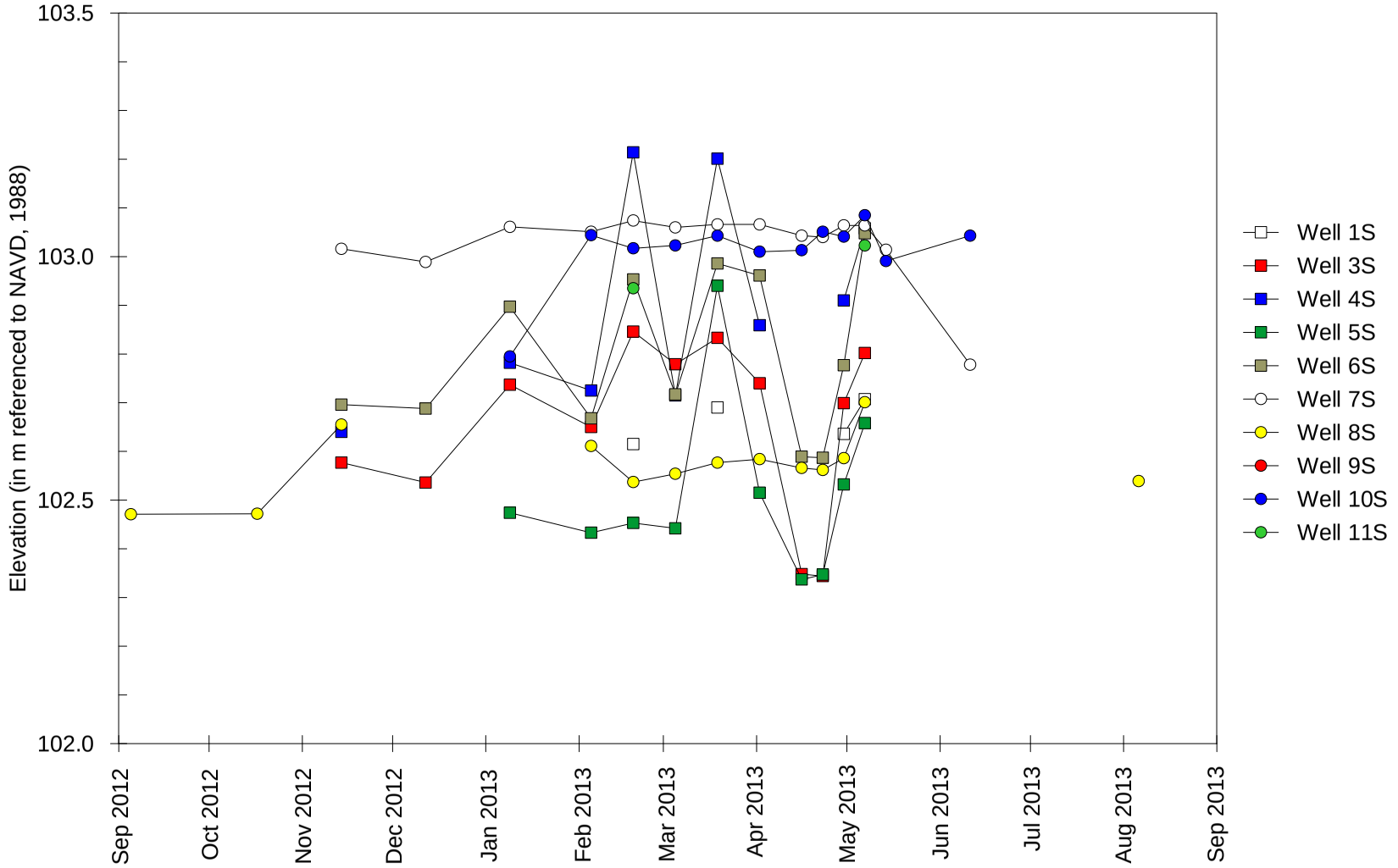
**September 1, 2012 through August 31, 2013**

Map based on 2012 Farm Service Agency digital orthophotography,
Alexander County, Illinois (USDA-FSA 2012)

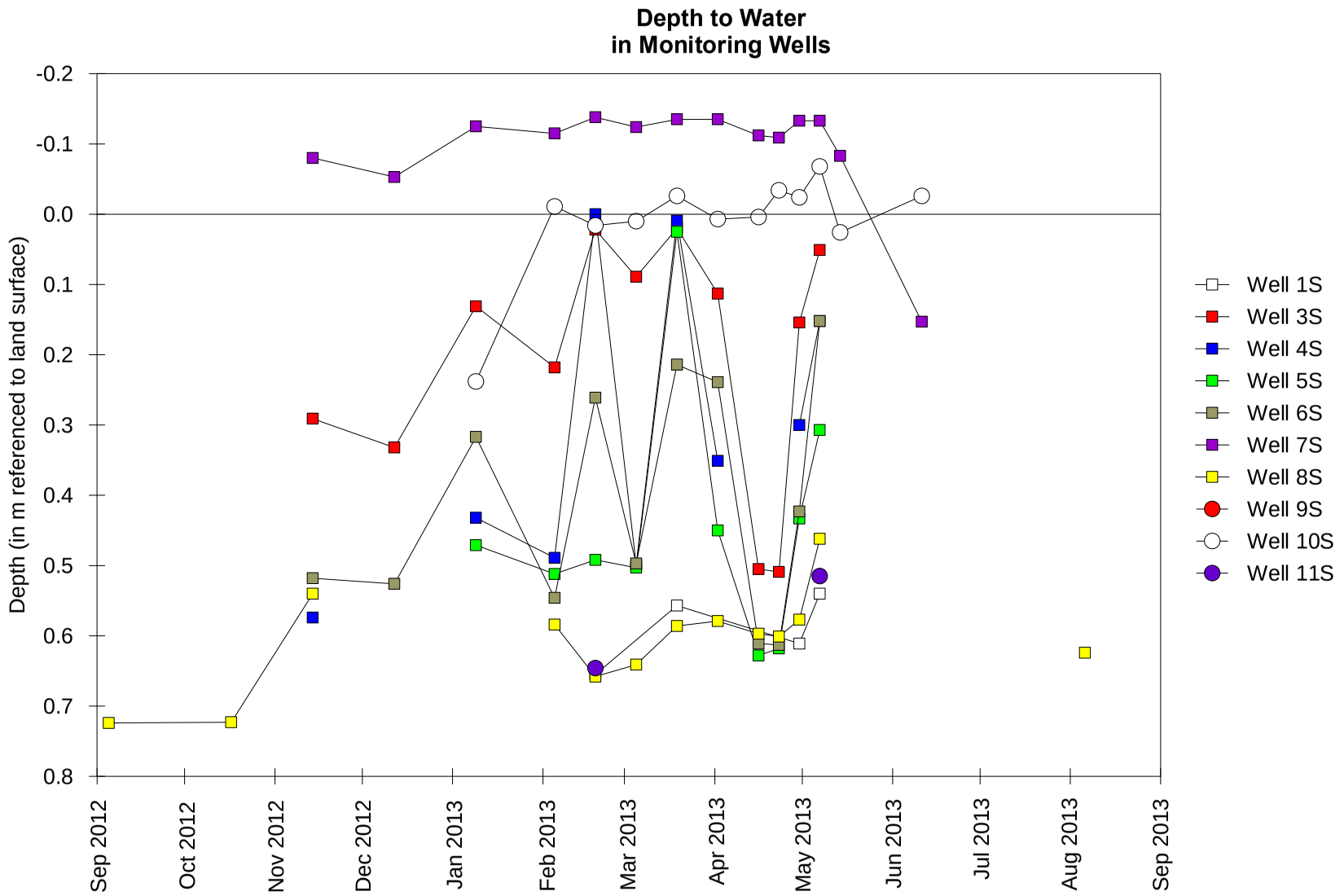


# Tamms Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Monitoring Wells

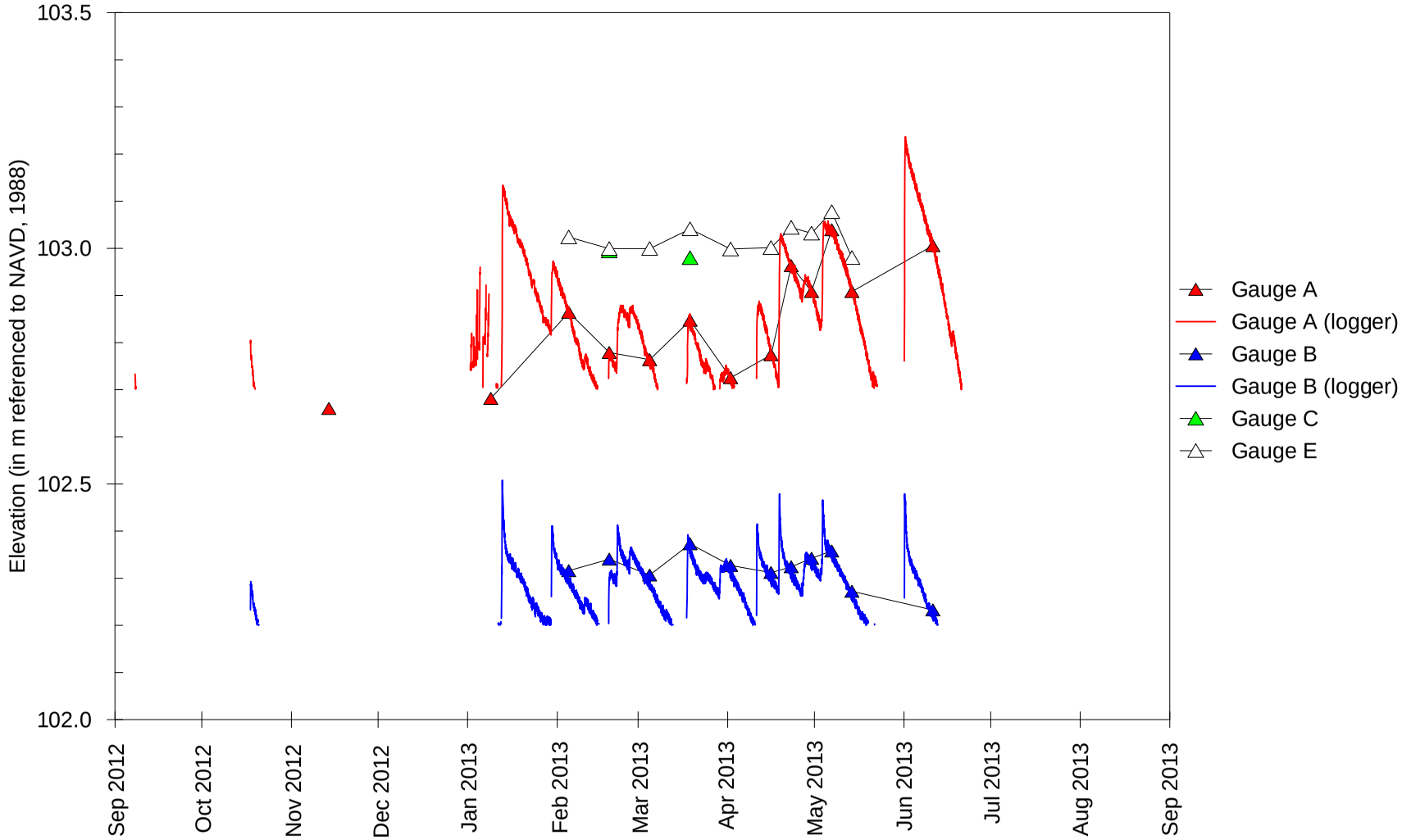


# Tamms Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

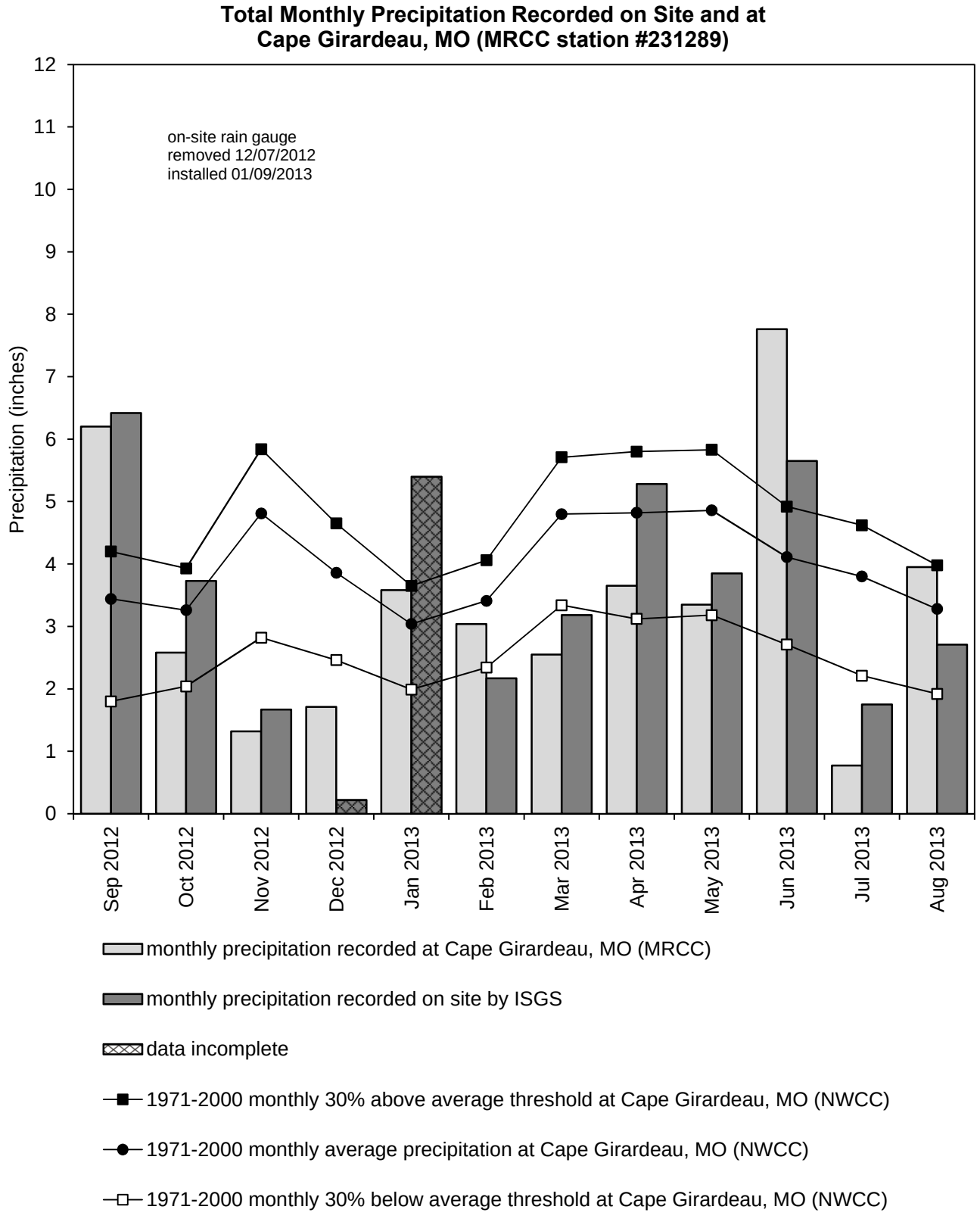


# Tamms Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations at Surface-Water Gauges



# Tamms Wetland Mitigation Site
## September 2012 through August 2013



**SUGAR CAMP CREEK** **ISGS #74**
**WETLAND AND STREAM MITIGATION BANK**
Sequence #9282
Franklin County, Northern Township, Illinois
**Primary Project Manager: Geoffrey E. Pociask**
**Secondary Project Manager: Jessica L. B. Monson**

SITE HISTORY

- December 2004: The ISGS submitted an initial site evaluation report to IDOT.
- March 2007: The ISGS submitted the Level II hydrogeologic characterization report to IDOT (ISGS Open-File Series 2007–02).
- June 2009: A wetland and stream mitigation banking instrument was approved by the Interagency Review Team.
- August 2011: The IDOT tasked ISGS to monitor Phase 1 of the Sugar Camp Creek Wetland and Stream Mitigation Bank for performance standards.
- August 2012: Construction of Phase 2 began.

WETLAND HYDROLOGY CALCULATION FOR 2013

The total target compensation area, including Phase 1 and Phase 2 of the Sugar Camp Creek wetland mitigation bank, is 28.00 ha (69.20 ac). Using the 1987 Manual (Environmental Laboratory 1987), 26.87 ha (66.40 ac) of the total bank area of 42.57 ha (105.20 ac) satisfied wetland hydrology criteria for greater than 5% of the growing season in 2013, and 15.25 ha (37.68 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 27.43 ha (67.79 ac) of the wetland bank satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. The areas that satisfied wetland hydrology criteria within each phase of the mitigation bank can be found in the 'Additional Information' section below. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Du Quoin, Illinois, is April 1, and the season lasts 215 days (MRCC 2013). Using the 1987 Manual, 5% of the growing season is 11 days and 12.5% of the growing season is 27 days. Using the 2010 Midwest Region Supplement, March 15 was the starting date of the 2013 growing season based on soil temperatures measured on site and at the nearby Pyramid Site EC25 wetland mitigation site (ISGS #77).
- Total precipitation for the monitoring period at Du Quoin, Illinois, (MRCC station #112483) was 126% of normal, and Spring 2013 (March through May) precipitation was 130% of normal.
- In 2013, all wells except 47S, 48S, and 51S satisfied wetland hydrology criteria for greater than 5% of the growing season, and wells 11S, 13S, 15S, 19S, 36VS, 38S, 39S, 41S, 42S, 45S, 50S and 53S satisfied wetland hydrology criteria for greater than 12.5% of the growing season using the 1987 Manual. Furthermore, using the 2010 Midwest

Region Supplement, all wells except 48S satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.

- Data from Gauge A in Sugar Camp Creek indicated that seven floods inundated portions of the site during the 2013 growing season, but the duration of inundation from each of these floods was not sufficient to satisfy wetland hydrology criteria.

- Data from gauges G and L in Phase I of the mitigation bank indicated that areas at and below 124.00 m (406.82 ft) and 123.97 m (406.73 ft), respectively, were inundated for greater than 5% of the growing season and areas at and below 123.99 m (406.79 ft) and 123.94 m (406.63 ft) were inundated for greater than 12.5% of the growing season, using the 1987 Manual. Also, data from gauges G and L indicated that areas at and below 124.00 m (406.82 ft) and 123.95 m (406.66 ft), respectively, were inundated for 14 or more consecutive days during the growing season, using the 2010 Midwest Region Supplement. Data from gauges M and N in Phase II of the mitigation bank indicated that areas at and below 123.59 m (405.48 ft) and 123.83 m (406.27 ft), respectively, were inundated for greater than 5% of the growing season and areas at and below 123.57 m (405.41 ft) and 123.80 m (406.17 ft), respectively, were inundated for greater than 12.5% of the growing season, using the 1987 Manual. Also, data from gauges M and N indicated that areas at and below 123.58 m (405.45 ft) and 123.82 m (406.23 ft), respectively, were inundated for 14 or more consecutive days during the growing season, using the 2010 Midwest Region Supplement.

ADDITIONAL INFORMATION

- Phase 1 of the wetland mitigation bank is in year 2 of post-construction monitoring and Phase 2 is in Level 2 pre-construction monitoring. Therefore, we present wetland hydrology acreage separately for each phase in this section. Using the 1987 Manual (Environmental Laboratory 1987), 14.08 ha (34.80 ac) of Phase 1 and 12.79 ha (31.60 ac) of Phase 2 satisfied wetland hydrology criteria for greater than 5% of the growing season, and 9.92 ha (24.52 ac) of Phase 1 and 5.33 ha (13.16 ac) of Phase 2 satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement, 14.09 ha (34.81 ac) of Phase 1 and 13.35 ha (32.98 ac) of Phase 2 satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.

- Beaver are still at the site and the dam in the spillway at the southeast corner of the parcel remains. Although inundation and saturation in the south portion of Phase 1 is prolonged by the beaver dam, we recommend removing the dam to reduce the potential for erosion during floods and periods of heavy precipitation. Additionally, beaver have constructed a dam in Sugar Camp Creek near the north end of the site.

PLANNED FUTURE ACTIVITIES

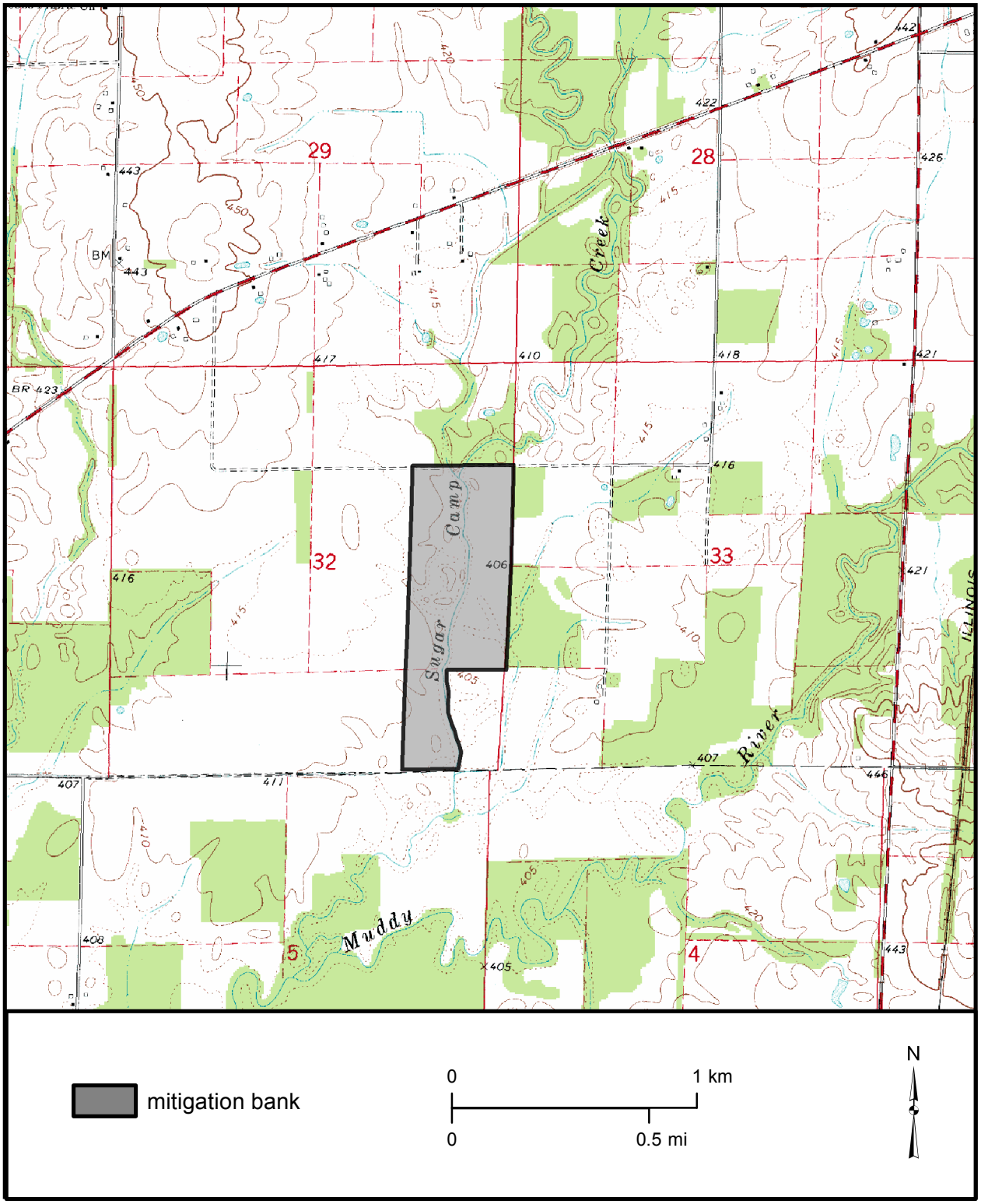
- Additional wells will be installed in Phase 2 during Fall 2013. Tasking for post-construction monitoring is expected in 2014.

- Monitoring activities will continue until no longer required by IDOT.

# Sugar Camp Creek Wetland and Stream Mitigation Bank

## General Study Area and Vicinity

from the USGS Topographic Series, Ewing, IL, 7.5-minute Quadrangle (ISGS 2013b)
contour interval is 10 feet

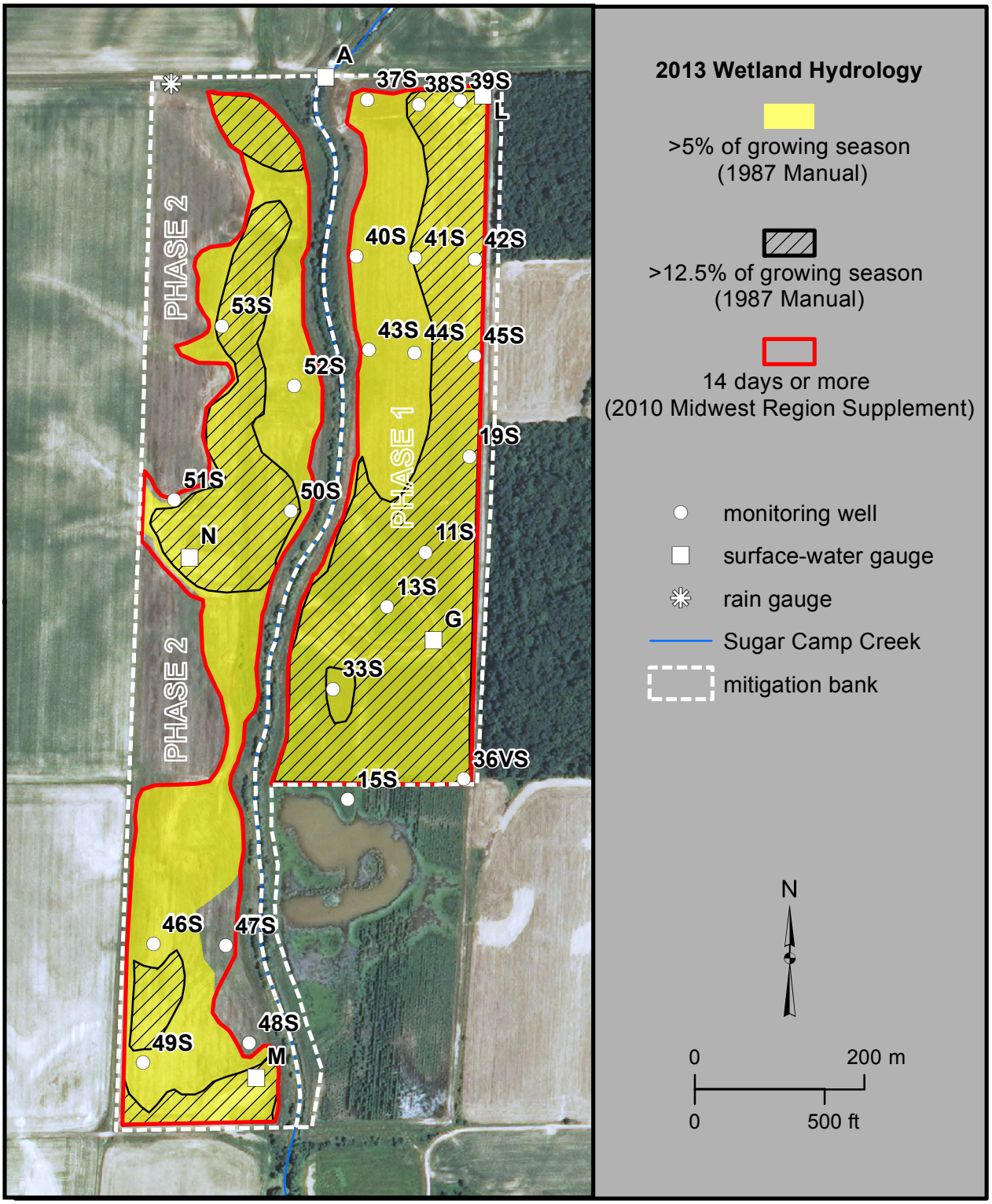


# Sugar Camp Creek Wetland and Stream Mitigation Bank

## Estimated Areal Extent of 2013 Wetland Hydrology

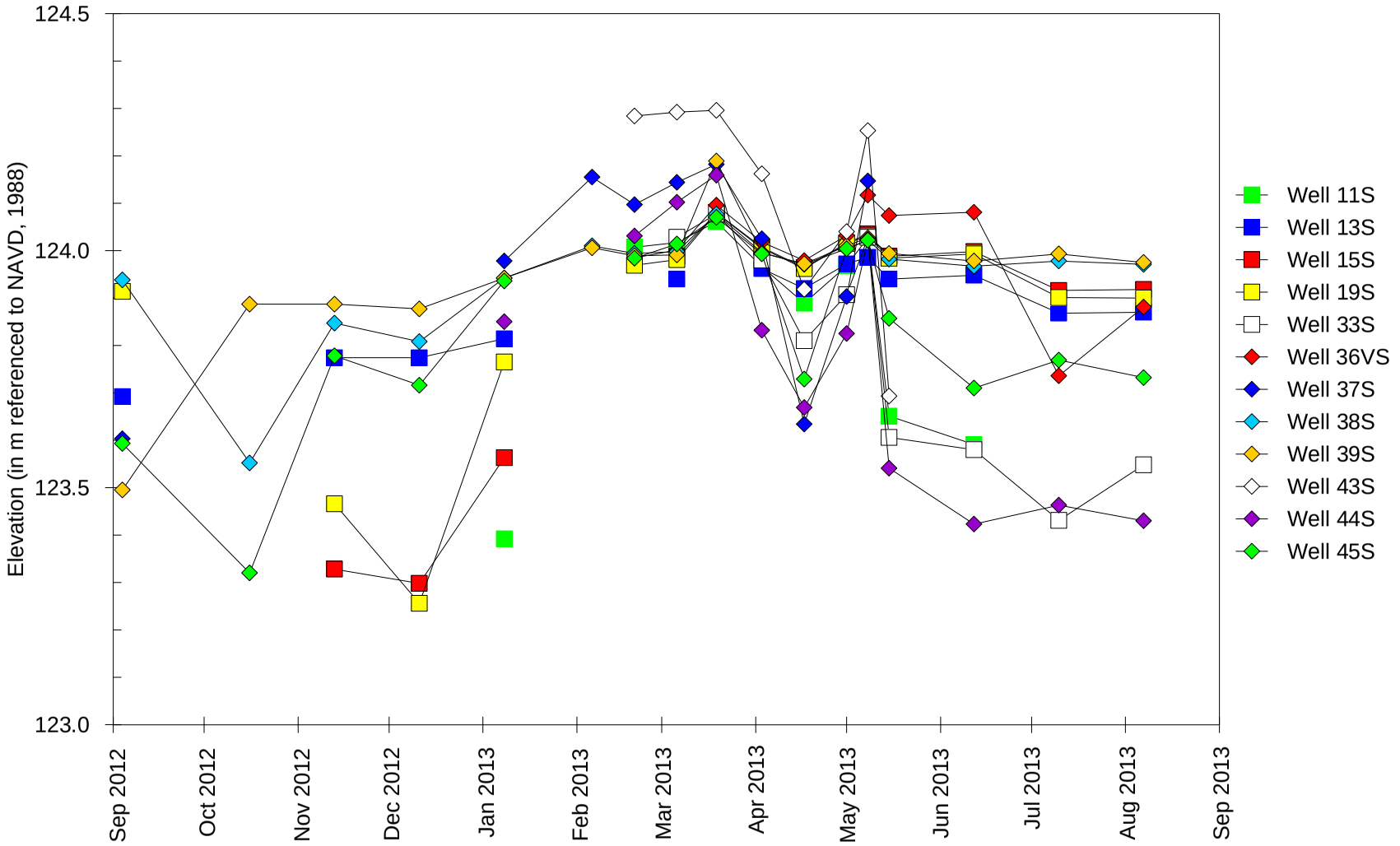
**September 1, 2012 through August 31, 2013**

Map based on 2012 Farm Service Agency digital orthophotography, Franklin County, Illinois (USDA-FSA 2012)



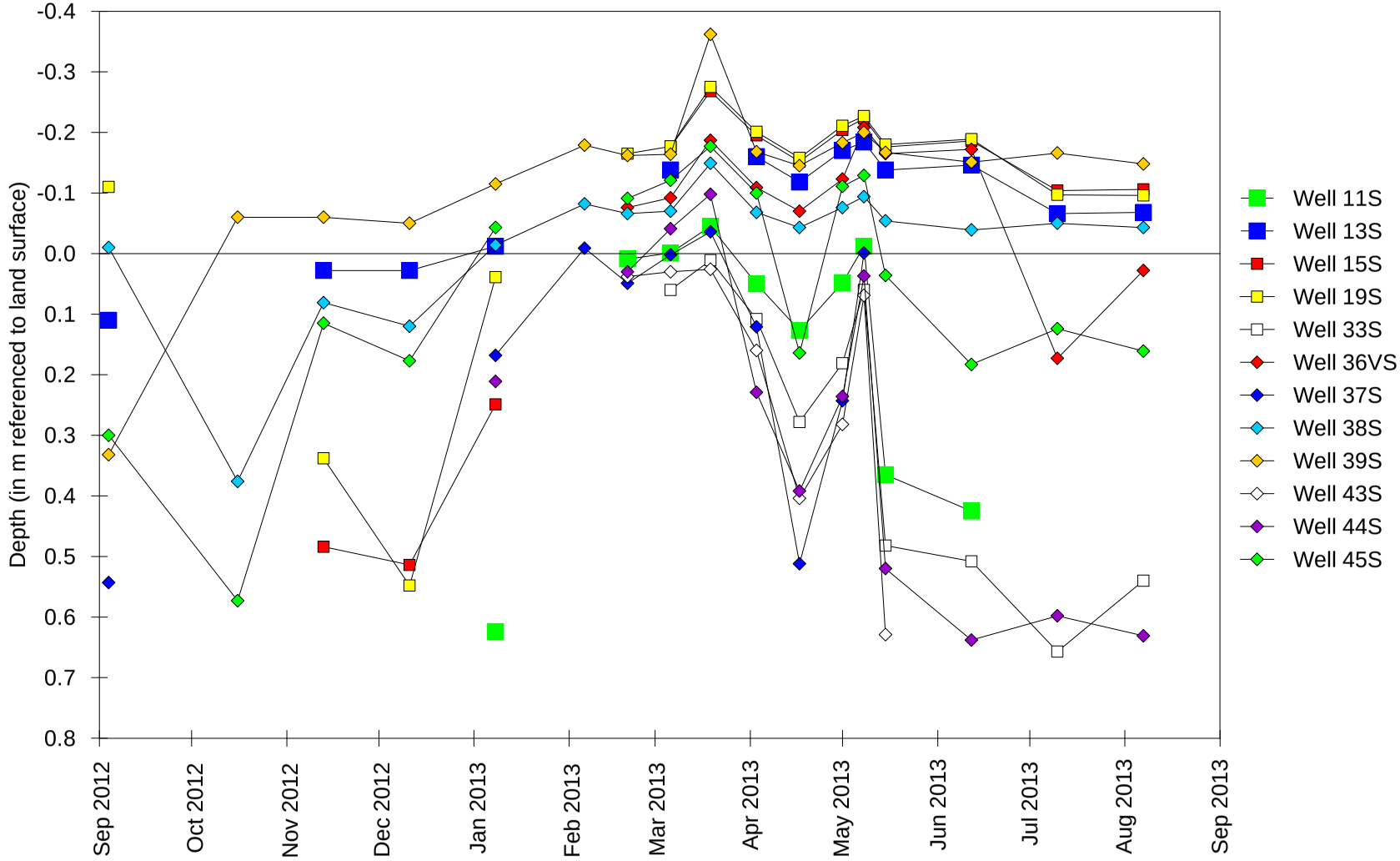
# Sugar Camp Creek Wetland and Stream Mitigation Bank
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Monitoring Wells in Phase I



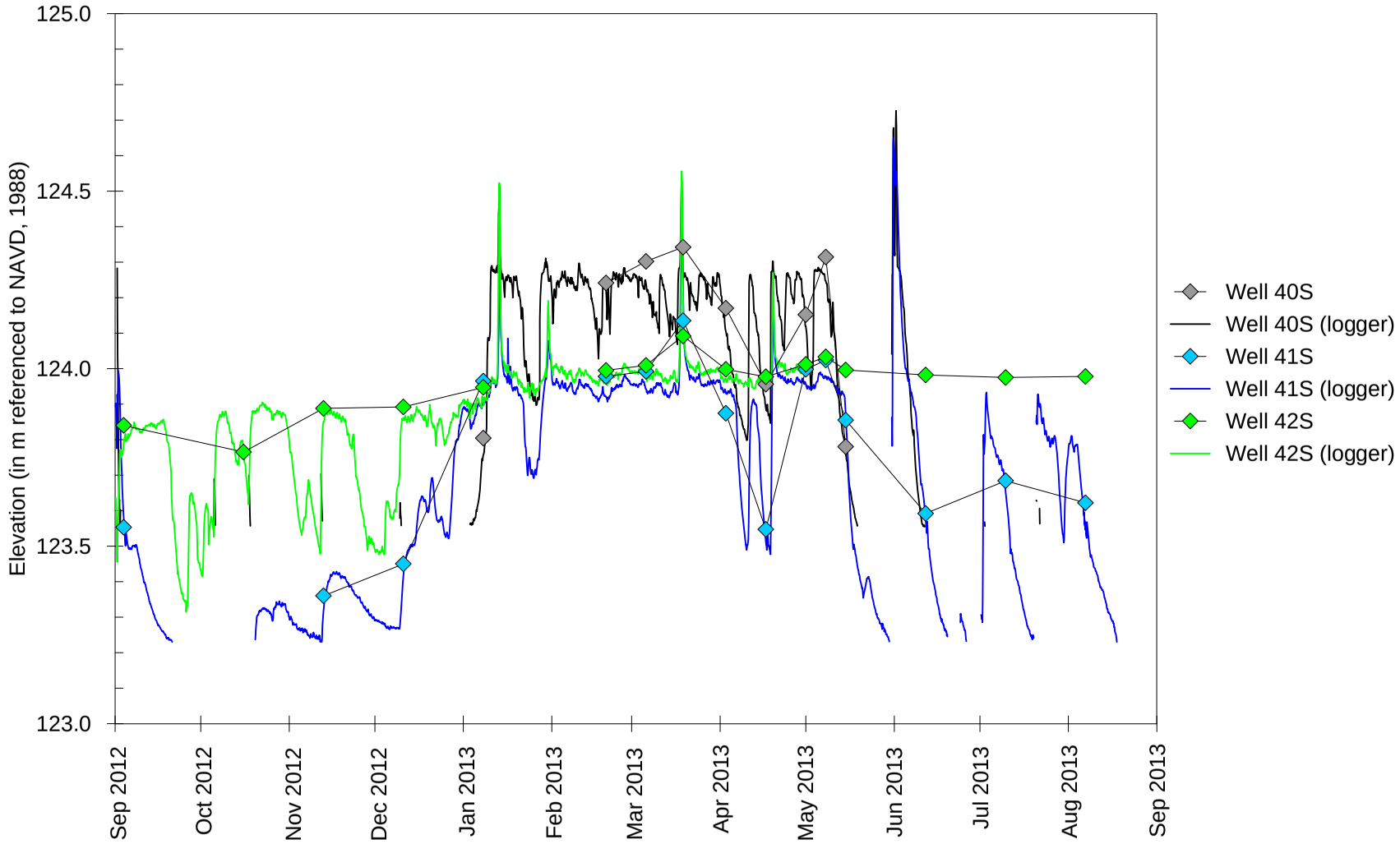
# Sugar Camp Creek Wetland and Stream Mitigation Bank
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Monitoring Wells in Phase I



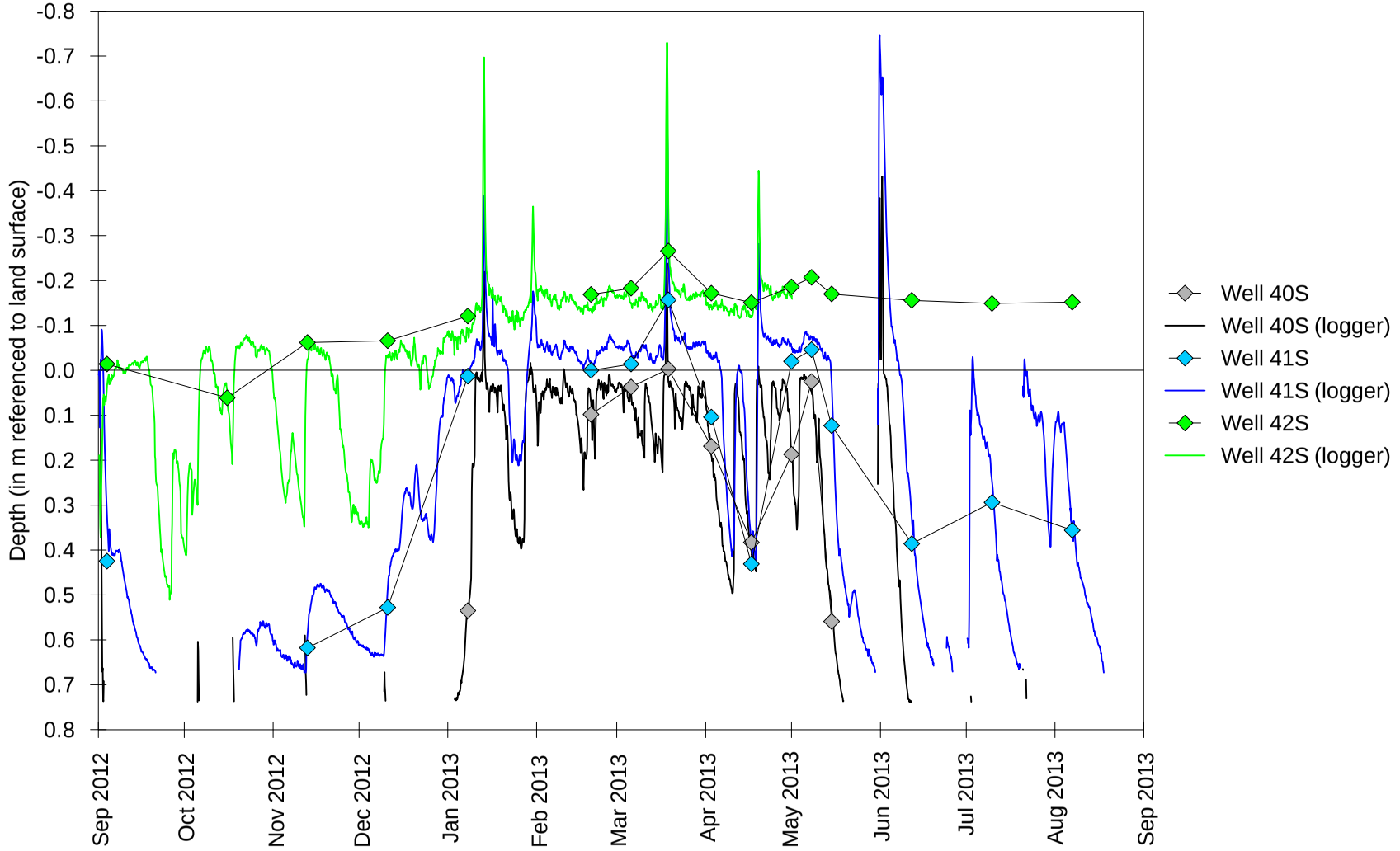
# Sugar Camp Creek Wetland and Stream Mitigation Bank
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Monitoring Wells in Phase I



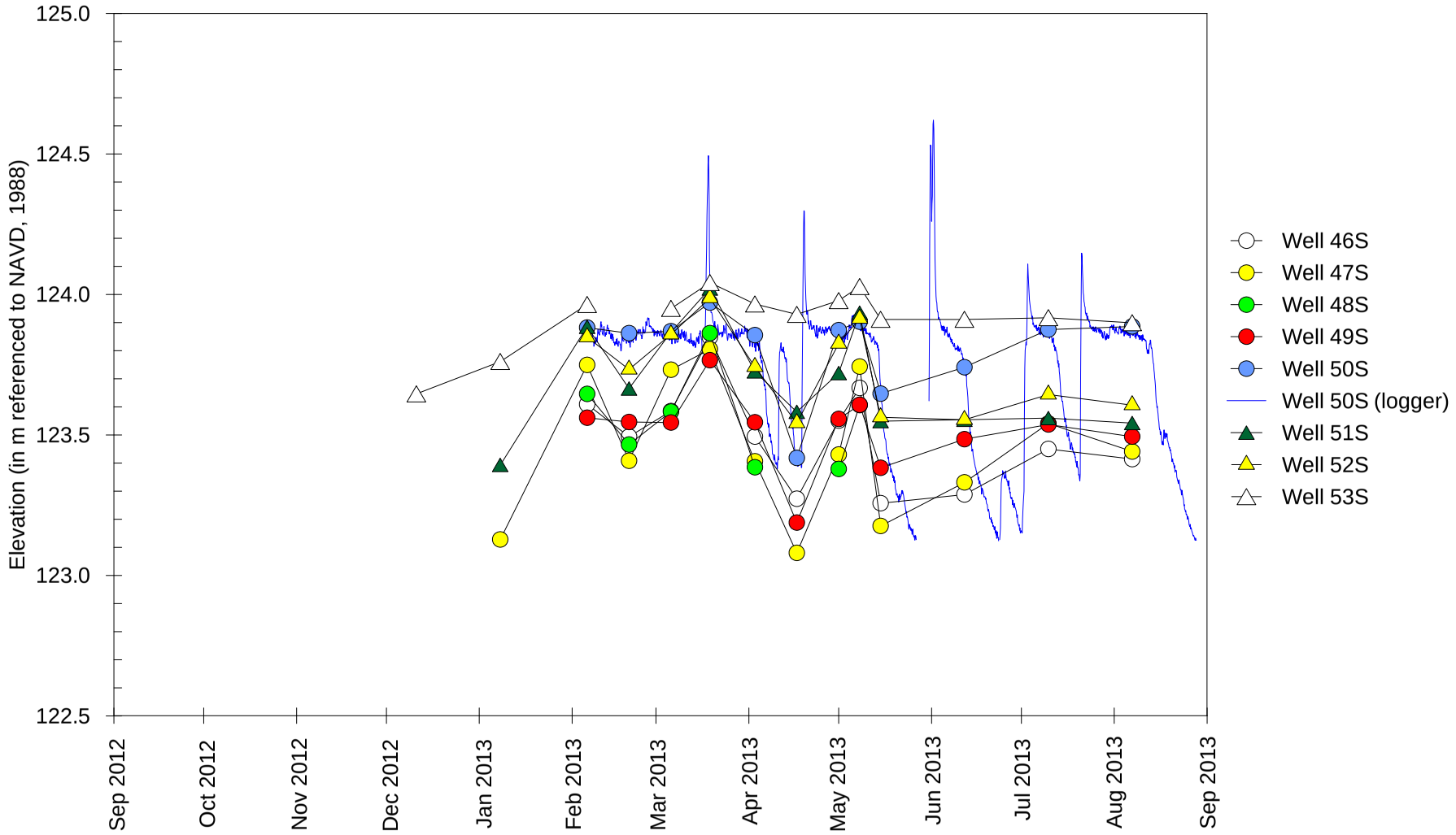
# Sugar Camp Creek Wetland and Stream Mitigation Bank
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Monitoring Wells in Phase I



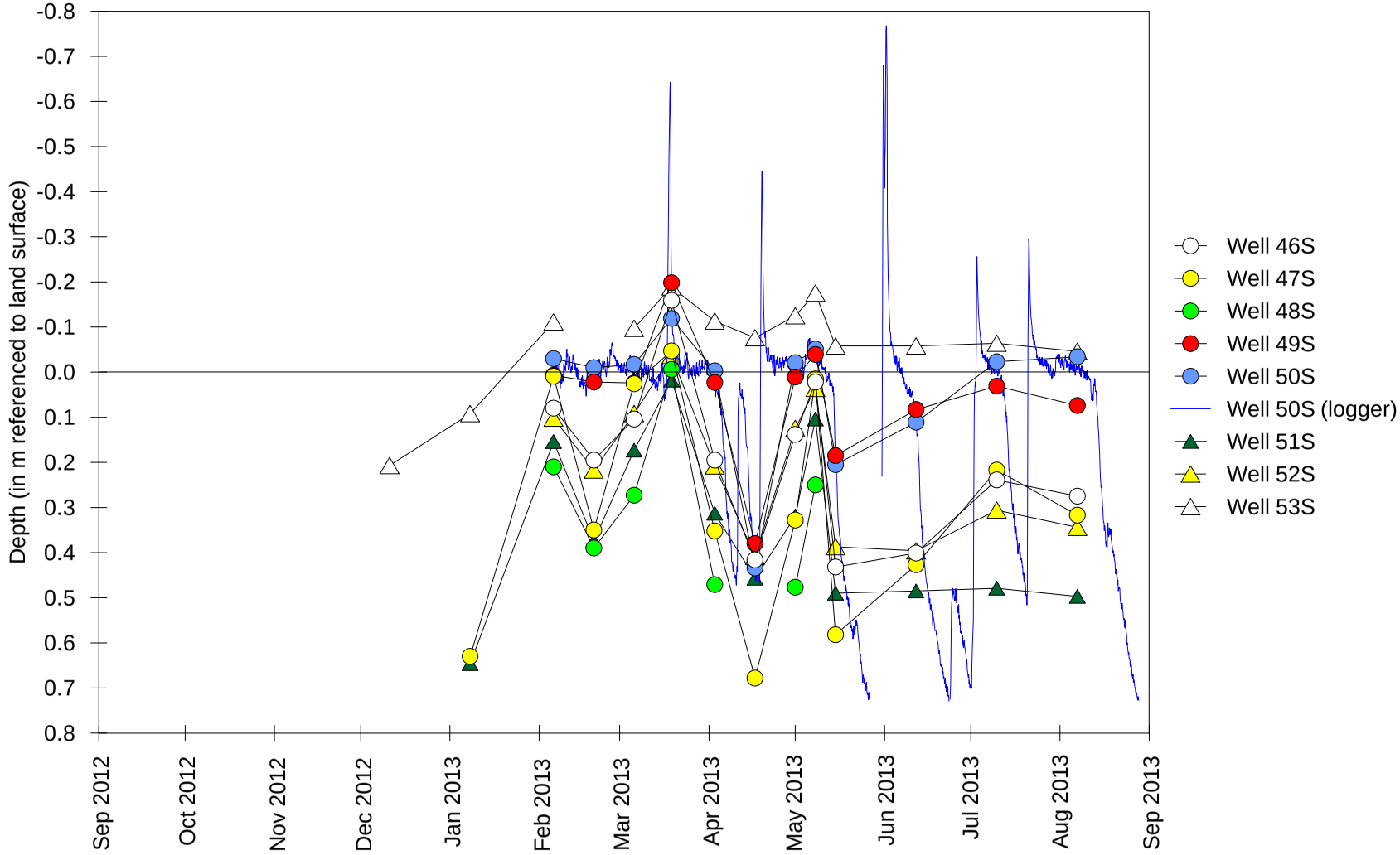
# Sugar Camp Creek Wetland and Stream Mitigation Bank
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Monitoring Wells in Phase II



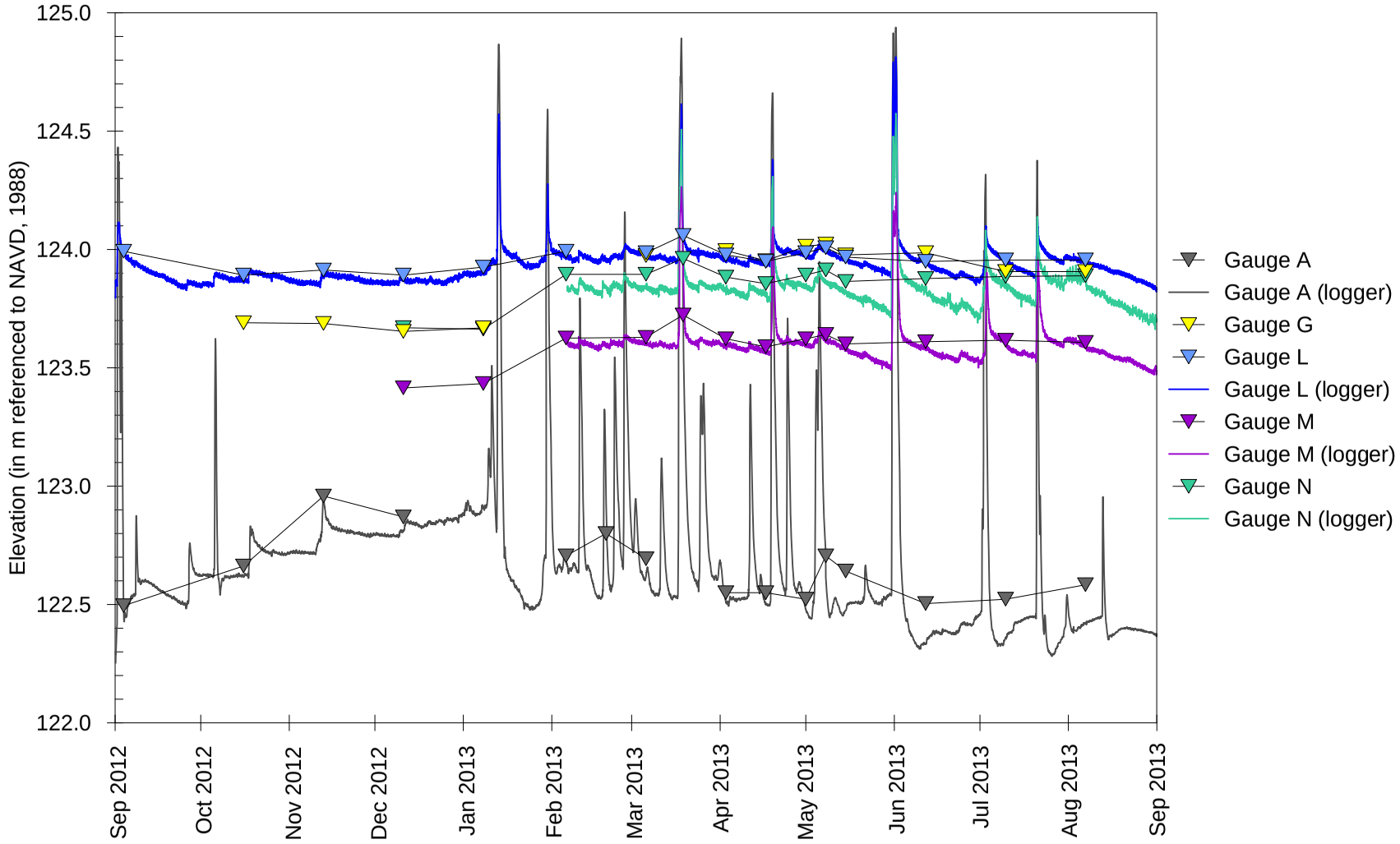
# Sugar Camp Creek Wetland and Stream Mitigation Bank
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Monitoring Wells in Phase II

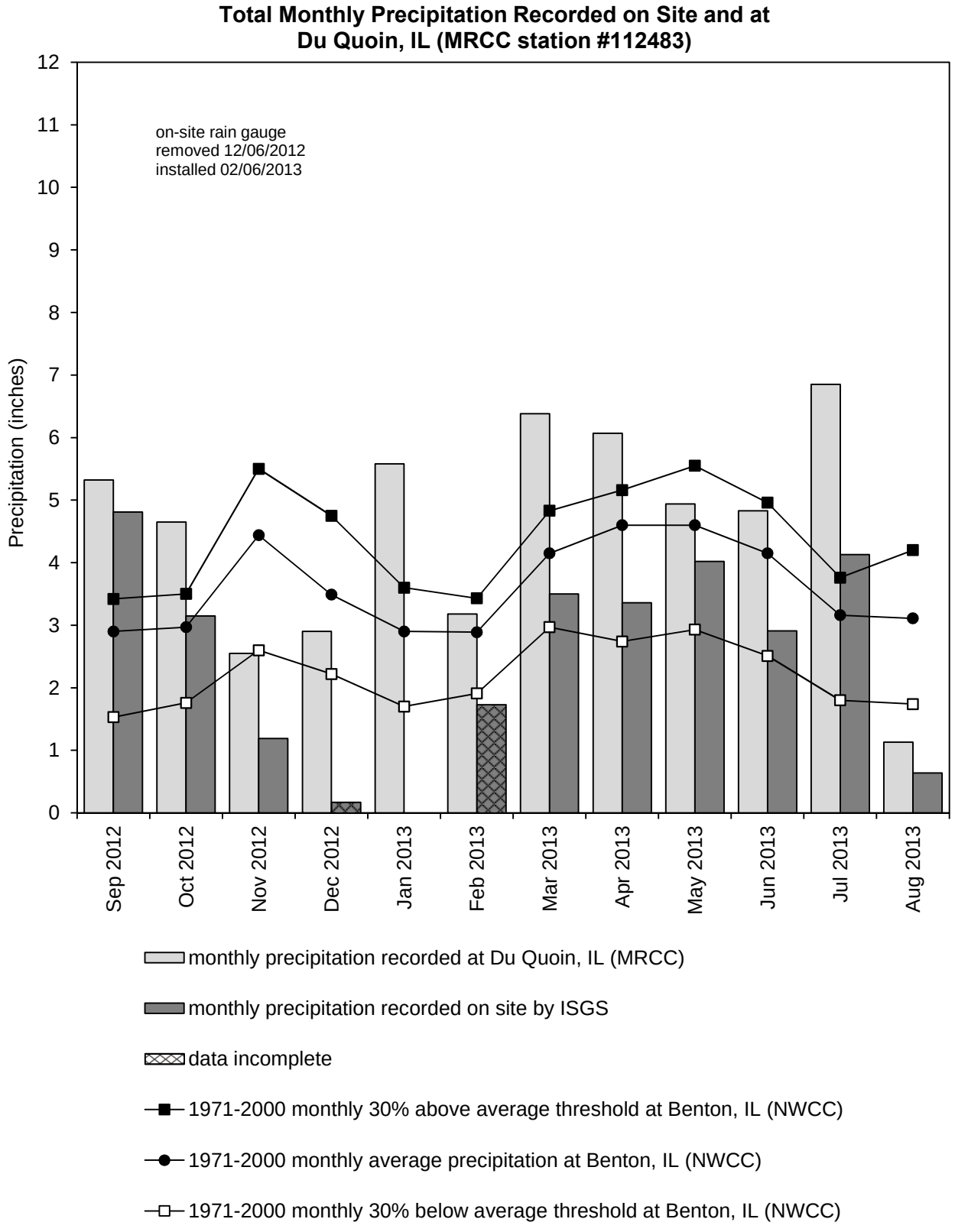


# Sugar Camp Creek Wetland and Stream Mitigation Bank
## September 1, 2012 through August 31, 2013

### Water-Level Elevations at Surface-Water Gauges



# Sugar Camp Creek Wetland and Stream Mitigation Bank
## September 2012 through August 2013



**GREEN CREEK** **ISGS #75**
**WETLAND MITIGATION SITE**
IL 32/33
FAP 774
Sequence #12505
Effingham County, near Effingham, Illinois
**Primary Project Manager: Eric T. Plankell**
**Secondary Project Manager: Jessica L. B. Monson**

SITE HISTORY

- September 2006: The ISGS submitted a Level II hydrogeologic characterization report to IDOT (ISGS Open-File Series 2006–03).
- June 2007: Construction at the wetland mitigation site was completed.
- November 2007: Additional post-construction monitoring instruments were installed.
- May 2013: IDOT informed ISGS that monitoring is no longer required.

WETLAND HYDROLOGY CALCULATION FOR 2013

The target compensation area for the Green Creek wetland mitigation site is 0.34 ha (0.83 ac). Using the 1987 Manual (Environmental Laboratory 1987), 2.14 ha (5.28 ac) of the total site area of 4.1 ha (10.0 ac) satisfied wetland hydrology criteria for greater than 5% of the 2013 growing season and 1.51 ha (3.74 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 1.82 ha (4.50 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Effingham, Illinois, is April 5, and the season lasts 211 days (MRCC 2013). Using the 1987 Manual, 5% of the growing season is 11 days, and 12.5% of the growing season is 26 days. Using the 2010 Midwest Region Supplement, March 30 was the starting date of the 2013 growing season based on soil temperatures measured at the nearby Brownstown, Illinois, ICN station (WARM 2013).
- Total precipitation for the monitoring period at Effingham, Illinois, (MRCC station #112685) was 129% of normal. During Spring 2013 (March through May), precipitation was 156% of normal.
- In 2013, water levels measured in all monitoring wells satisfied wetland hydrology criteria for greater than 5% and for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, all monitoring wells also satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season.
- Surface-water levels measured at Gauge E indicated inundation east of the main ditch at and below 160.76 m and 160.72 m (527.43 ft and 527.30 ft) for greater than 5% and for greater than 12.5% of the growing season, respectively, using the 1987 Manual. Using the 2010 Midwest Region Supplement, surface-water levels measured at Gauge E indicated inundation east of the main ditch at and below 160.76 m (527.43 ft) for 14 or more

consecutive days of the growing season. Surface-water levels measured at Gauge B indicated inundation west of the main ditch at and below 160.45 m and 160.05 m (526.41 ft and 525.10 ft) for greater than 5% and for greater than 12.5% of the growing season, respectively, using the 1987 Manual. Using the 2010 Midwest Region Supplement, surface-water levels measured at Gauge B indicated inundation west of the main ditch at and below 160.30 m (525.92 ft) for 14 or more consecutive days of the growing season.

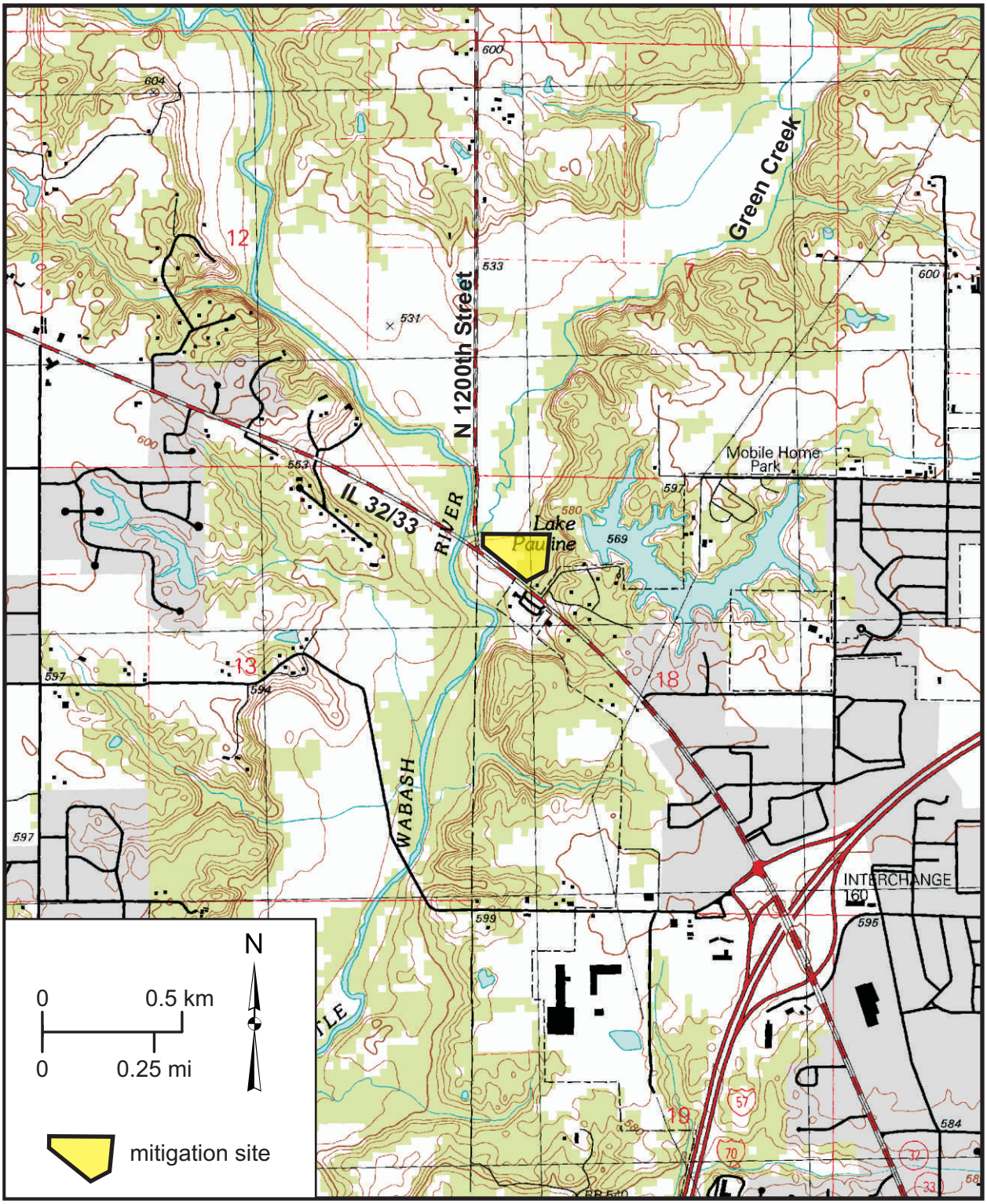
- According to the data loggers at gauges C and E, Green Creek flooded the majority of the site on April 18-19, 2013.

PLANNED FUTURE ACTIVITIES

- The ISGS removed the hydrologic monitoring network from the Green Creek wetland mitigation site on September 5, 2013. The ISGS has no further activities planned at the site.

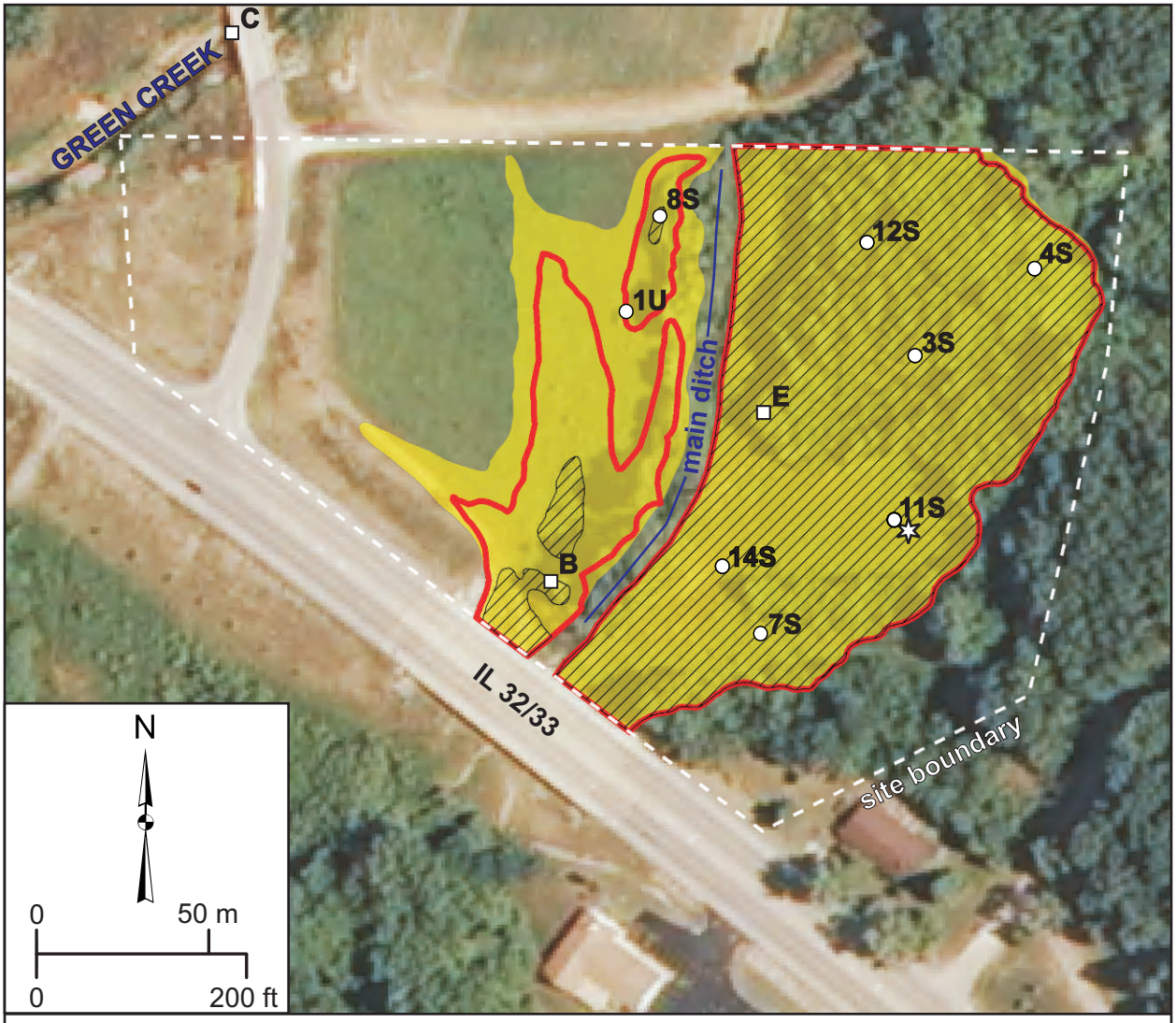
# Green Creek Wetland Mitigation Site
# (IL 32/33, FAP 774)
## General Study Area and Vicinity

from the USGS Topographic Series, Effingham North, IL, 7.5-minute Quadrangle (ISGS 2013b)
contour interval is 10 ft



# Green Creek Wetland Mitigation Site
# (IL 32/33, FAP 774)
## Estimated Areal Extent of 2013 Wetland Hydrology
### September 1, 2012 through August 31, 2013

Map based on 2012 Farm Service Agency digital orthophotography, Effingham County, Illinois
(USDA-FSA 2012)

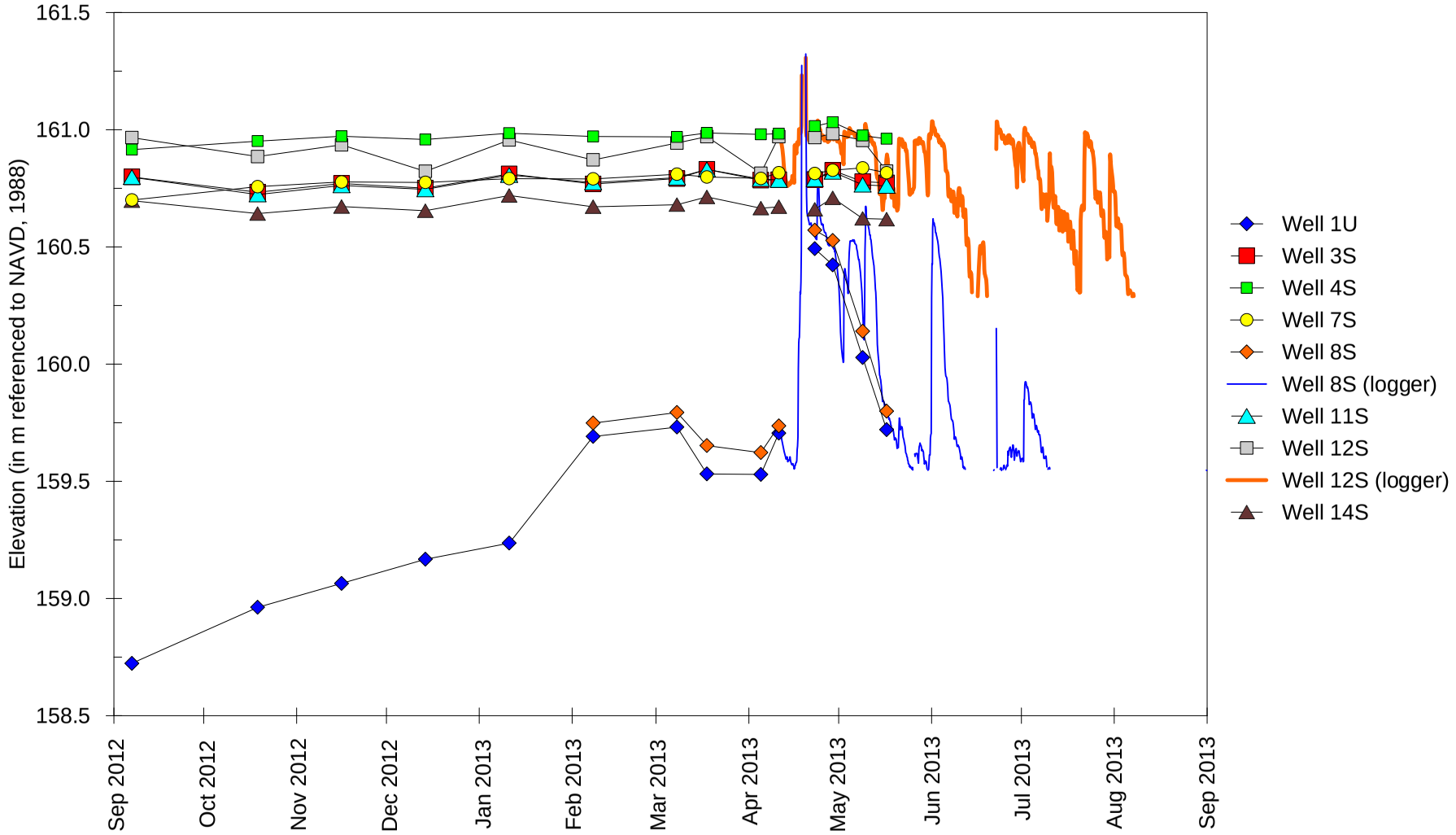



**2013 Wetland Hydrology**

- monitoring well
- surface-water gauge
- rain gauge
- >5% of the growing season (1987 Manual)
- >12.5% of the growing season (1987 Manual)
- 14 days or more (2010 Midwest Region Supplement)

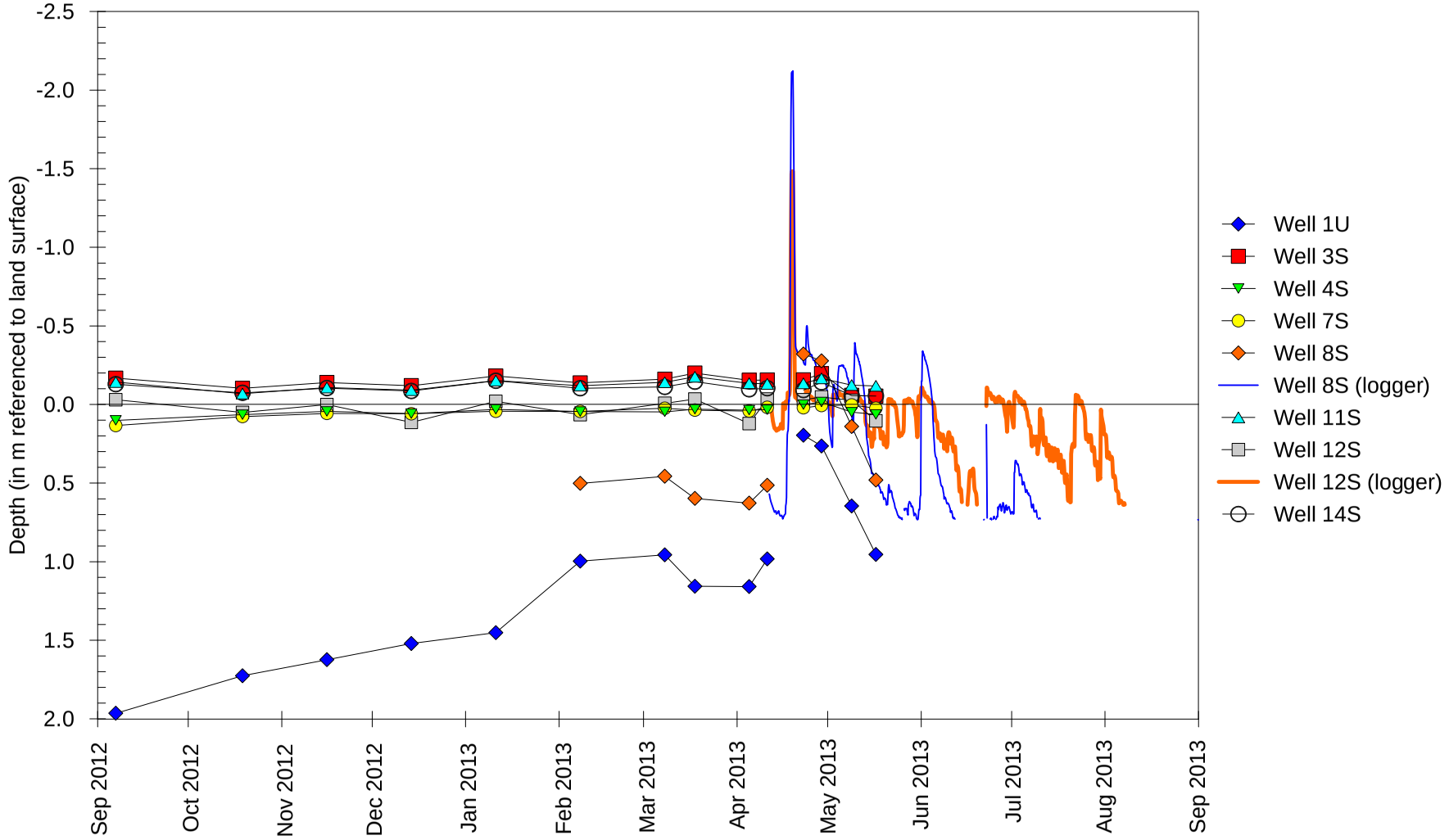
# Green Creek Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Monitoring Wells



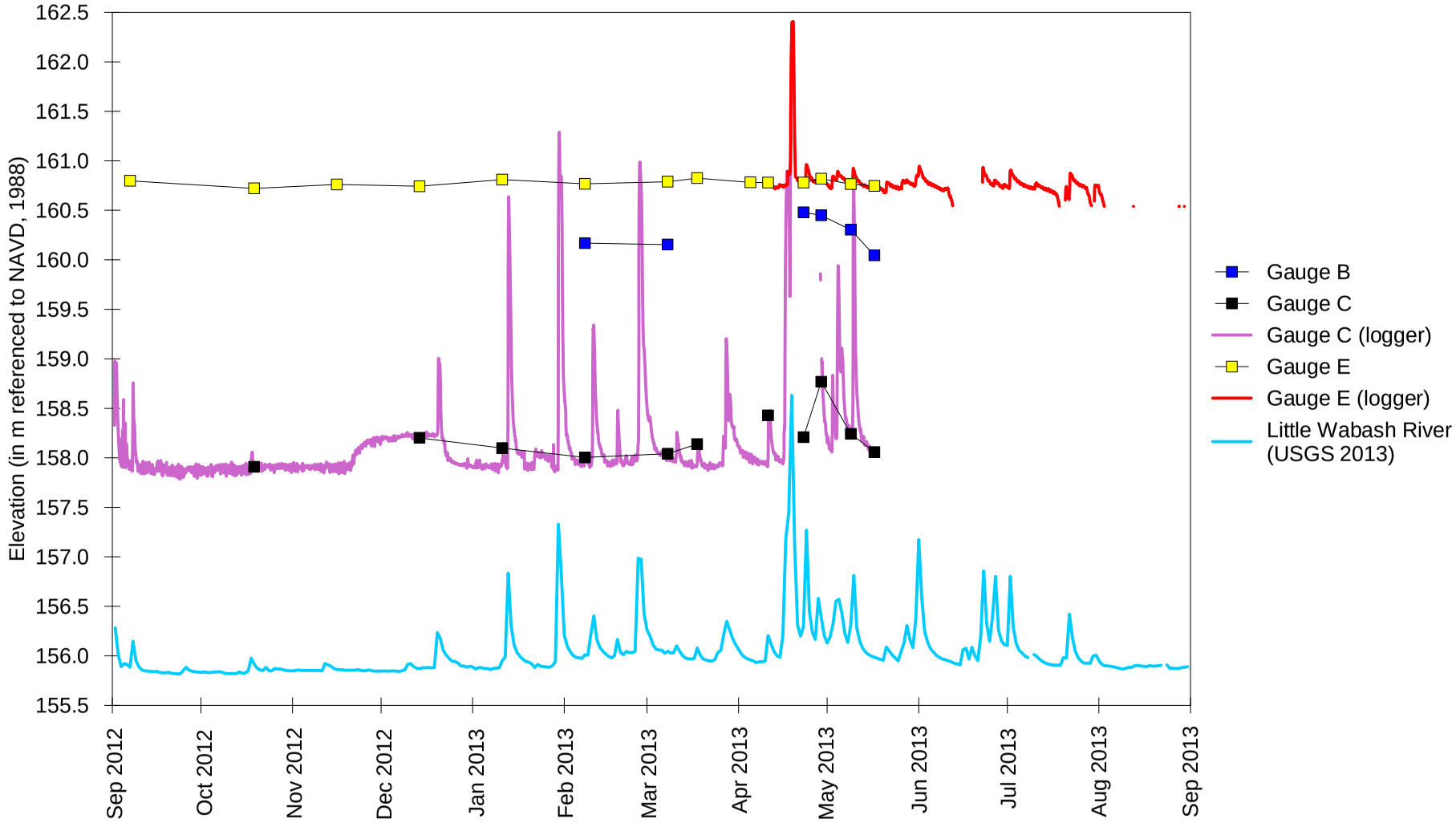
# Green Creek Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water in Monitoring Wells

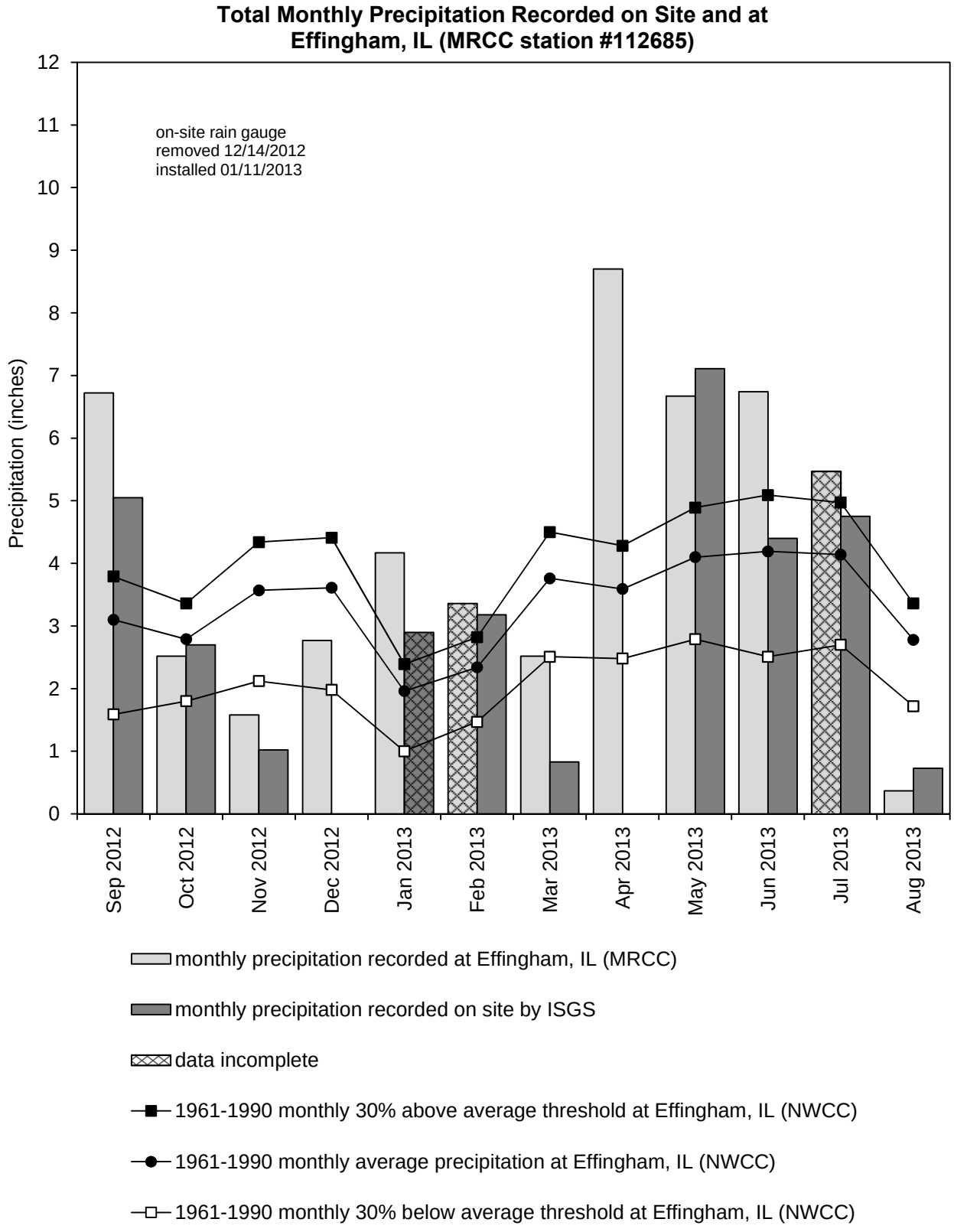


# Green Creek Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations at Surface-Water Gauges



# Green Creek Wetland Mitigation Site
## September 2012 through August 2013



**MILAN BELTWAY, ROCK ISLAND** **ISGS #76**
**WETLAND MITIGATION SITE**
FAU 5822
Sequence #67
Rock Island County, near Moline, Illinois
**Primary Project Manager: Steven E. Benton**
**Secondary Project Manager: Jessica R. Ackerman**

SITE HISTORY

- February 2008: The ISGS was tasked by IDOT to conduct 5-year monitoring.
- March 2008: A monitoring network was installed on the site by ISGS.
- June 2013: on June 19, ISGS was notified by IDOT to discontinue monitoring at the site.
- September 2013: All monitoring wells, staff gauges, and other instruments were removed from the site.

WETLAND HYDROLOGY CALCULATION FOR 2013

The target compensation area for the Milan Beltway, Rock Island wetland mitigation site is 3.61 ha (8.92 ac). Using the 1987 Manual (Environmental Laboratory 1987), 3.47 ha (8.57 ac), of a total site area of 4.13 ha (10.20 ac), satisfied wetland hydrology criteria for greater than 5% of the 2013 growing season, and 1.78 ha (4.40 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 3.07 ha (7.59 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins at the nearby Quad City International Airport in Moline, Illinois, is April 10 and the season lasts 196 days (MRCC 2013); 5% of the growing season is 10 days, and 12.5% of the growing season is 25 days, using the 1987 Manual. Using the 2010 Midwest Region Supplement, April 6 was the start date of the 2013 growing season based on soil temperatures measured on site and at the nearby Monmouth, Illinois ICN Station (WARM 2013).
- Total precipitation for the monitoring period, recorded at the Quad City International Airport in Moline, Illinois (MRCC station #115751), was 110% of normal, and total precipitation in Spring 2013 (March through May) was 162% of normal.
- In 2013, water levels satisfied wetland hydrology criteria for greater than 5% of the growing season at soil-zone monitoring wells 2S, 3S, 4S, 6S, 7S, 8S, 12S, 13S, 14S, 15S, 16S, 18S, 18VS, 19S, 20S, 21S, 21VS, 22S, 23S, 24S, and 25S, and for greater than 12.5% of the growing season at monitoring wells 7S, 8S, 15S, 18S, 18VS, 19S, 20S, 21S, 21VS, 22S, 23S, and 25S, using the 1987 Manual. Using the 2010 Midwest Region Supplement, wells 2S, 3S, 6S, 7S, 8S, 12S, 13S, 14S, 15S, 16S, 18S, 18VS, 19S, 20S, 21S, 21VS, 22S, 23S, 24S, and 25S satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.
- Portions of Area D were inundated for the entire monitoring period. Surface-water elevations measured at Gauge C revealed that the portions of Area D at and below

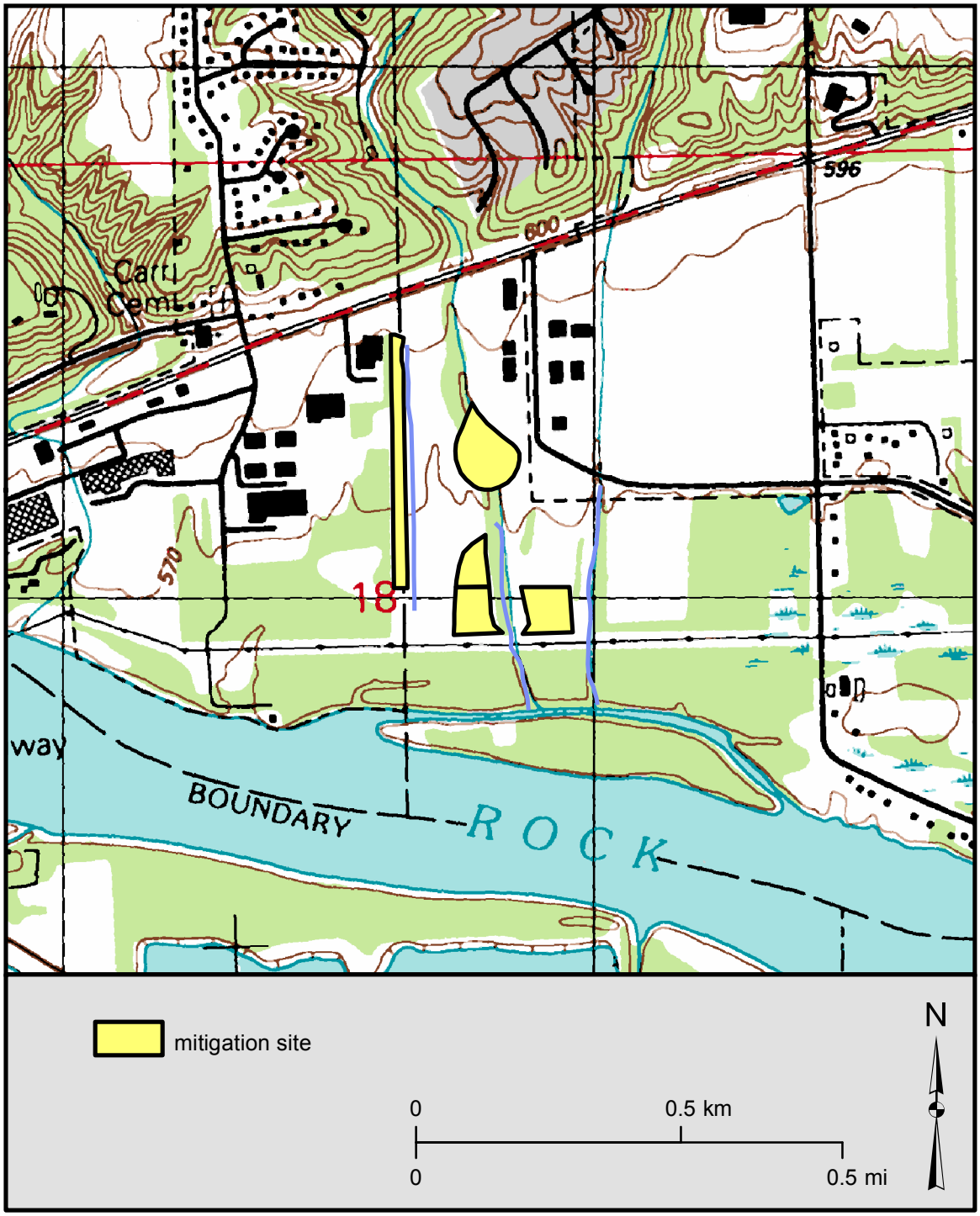
172.51 m (565.98 ft) were inundated for periods long enough to satisfy wetland hydrology criteria for greater than 5% and 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, portions of area D at and below 172.51 m (565.98 ft) were inundated long enough to satisfy wetland hydrology criteria for 14 or more consecutive days during the growing season.

- Surface-water elevations recorded by data loggers SW1 and SW2, and by the USACE, Rock River gauge at Moline (USACE 2013), revealed that areas B and C were flooded by the Rock River in April and May, and again in June, but the duration of the resulting on-site inundation was not sufficient to satisfy any of the jurisdictional wetland hydrology criteria.

# Milan Beltway, Rock Island
# Wetland Mitigation Site
# (FAU 5822)

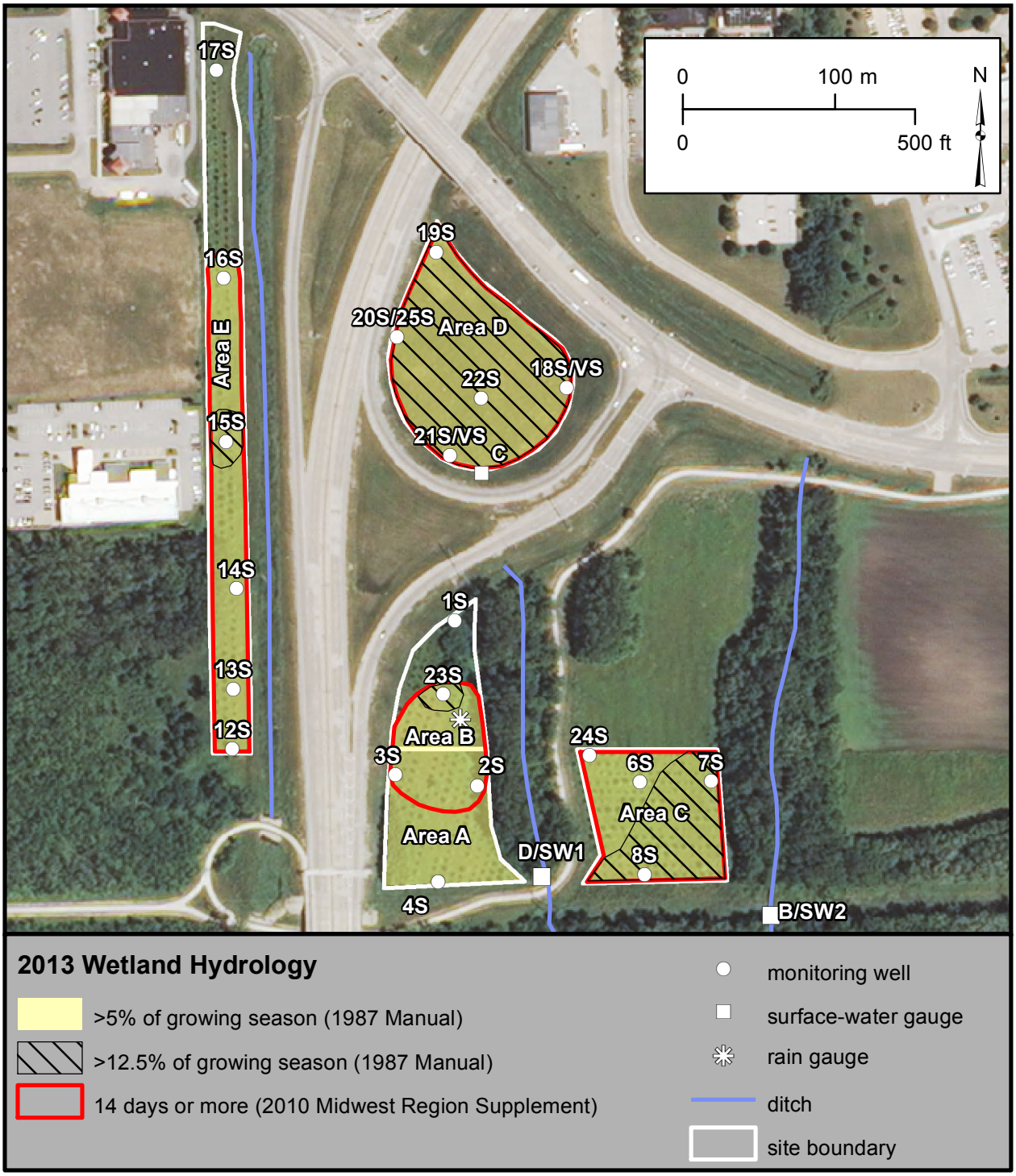
## General Study Area and Vicinity

from the USGS Topographic Series, Milan, IL, 7.5-minute Quadrangle (ISGS 2013b)



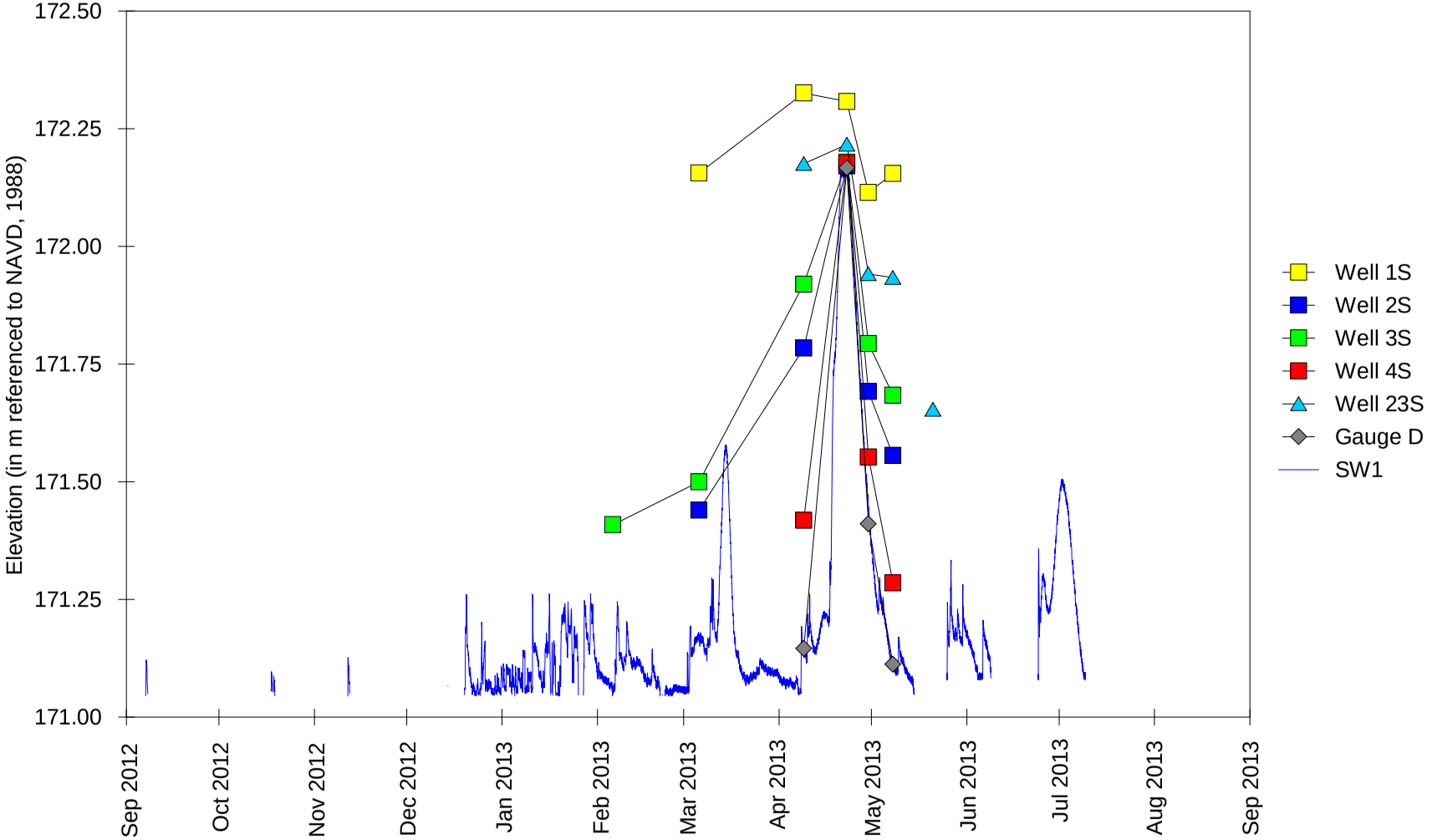
# Milan Beltway, Rock Island Wetland Mitigation Site
# (FAU 5822)
## Estimated Areal Extent of 2013 Wetland Hydrology
**September 1, 2012 through August 31, 2013**

Map based on 2012 Farm Service Agency digital orthophotography, Rock Island County, Illinois (USDA-FSA 2012)



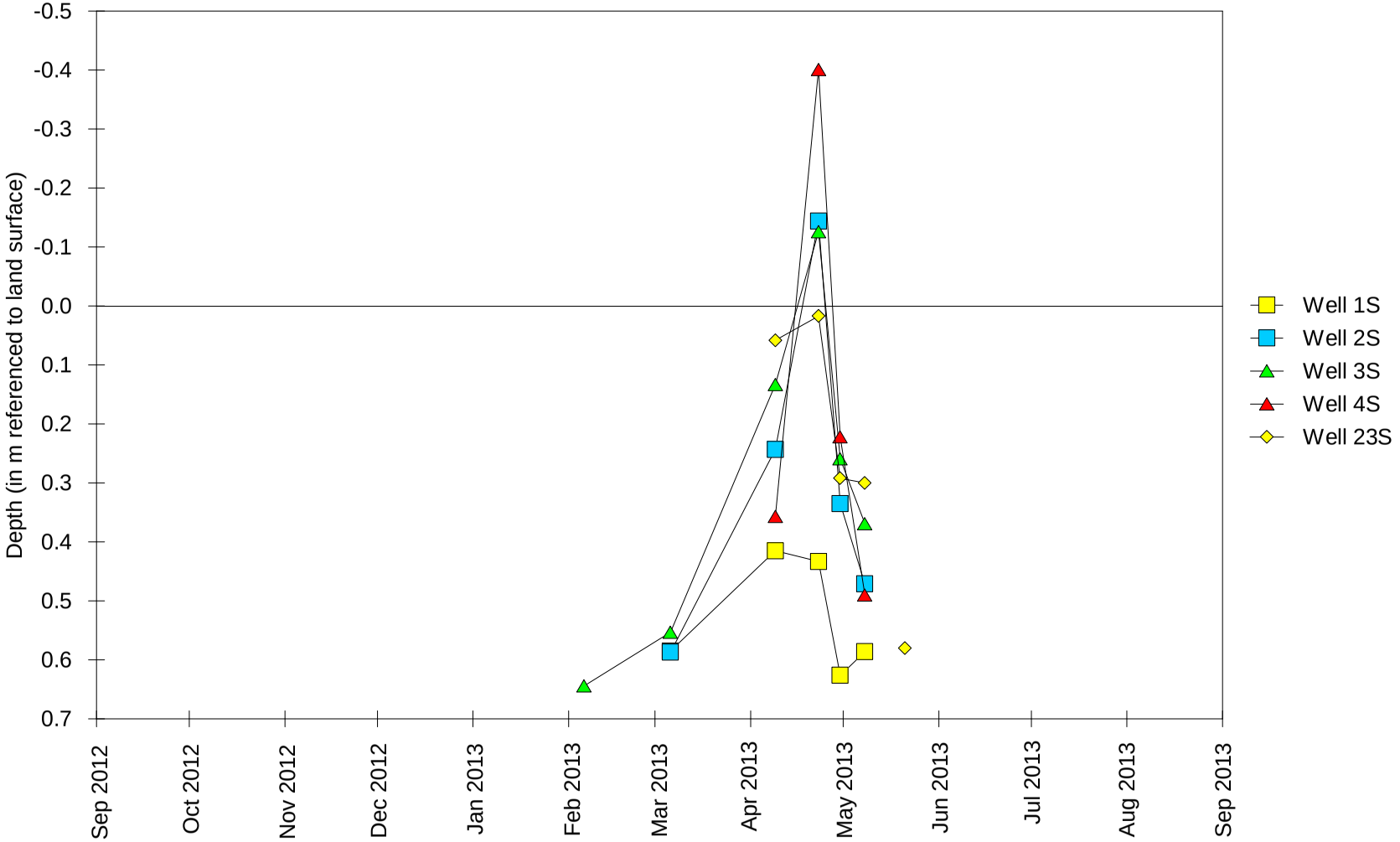
# Milan Beltway, Rock Island Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations
### in Monitoring Wells and at Surface-Water Gauges in Areas A and B



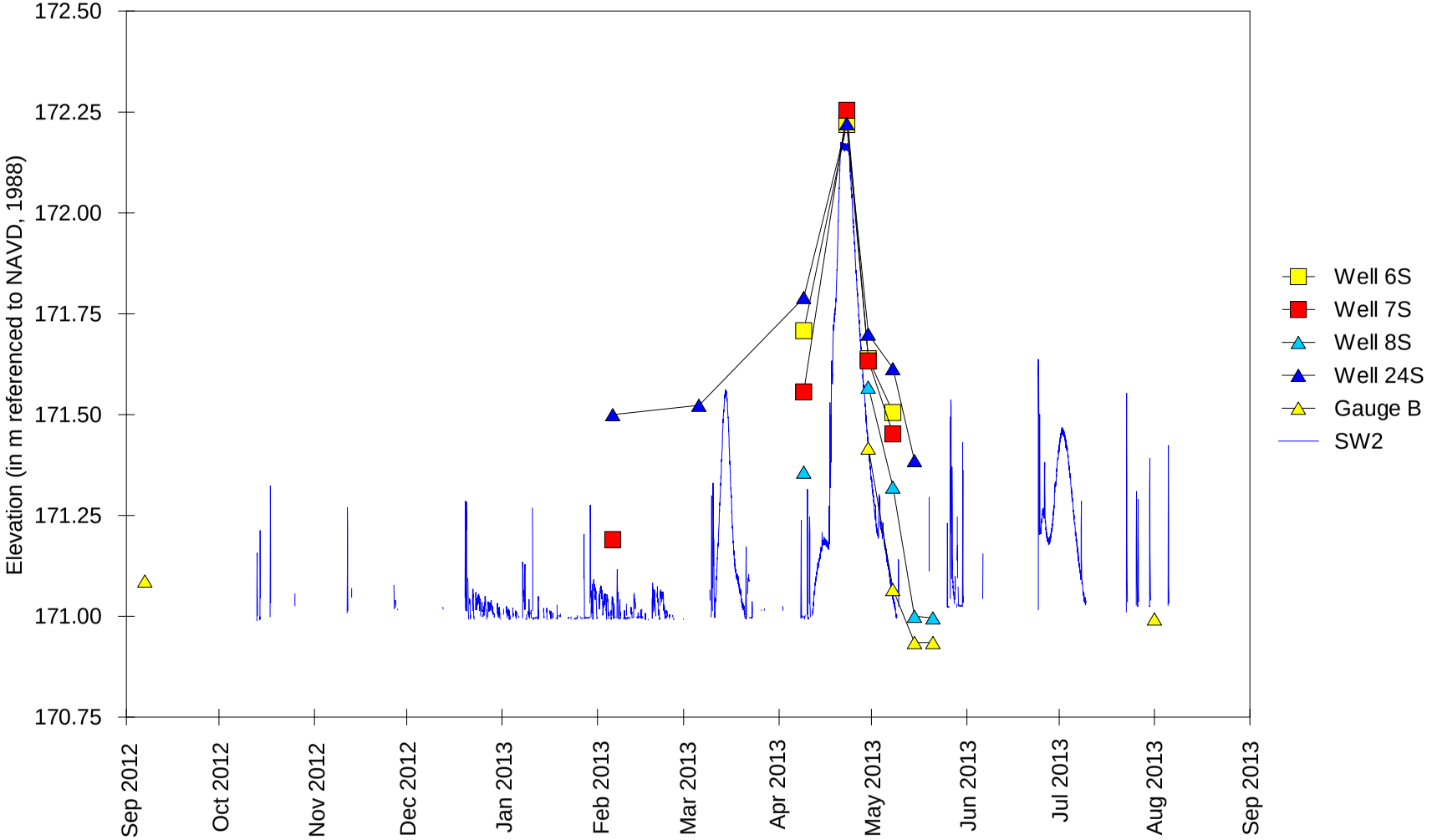
# Milan Beltway, Rock Island Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Monitoring Wells in Areas A and B



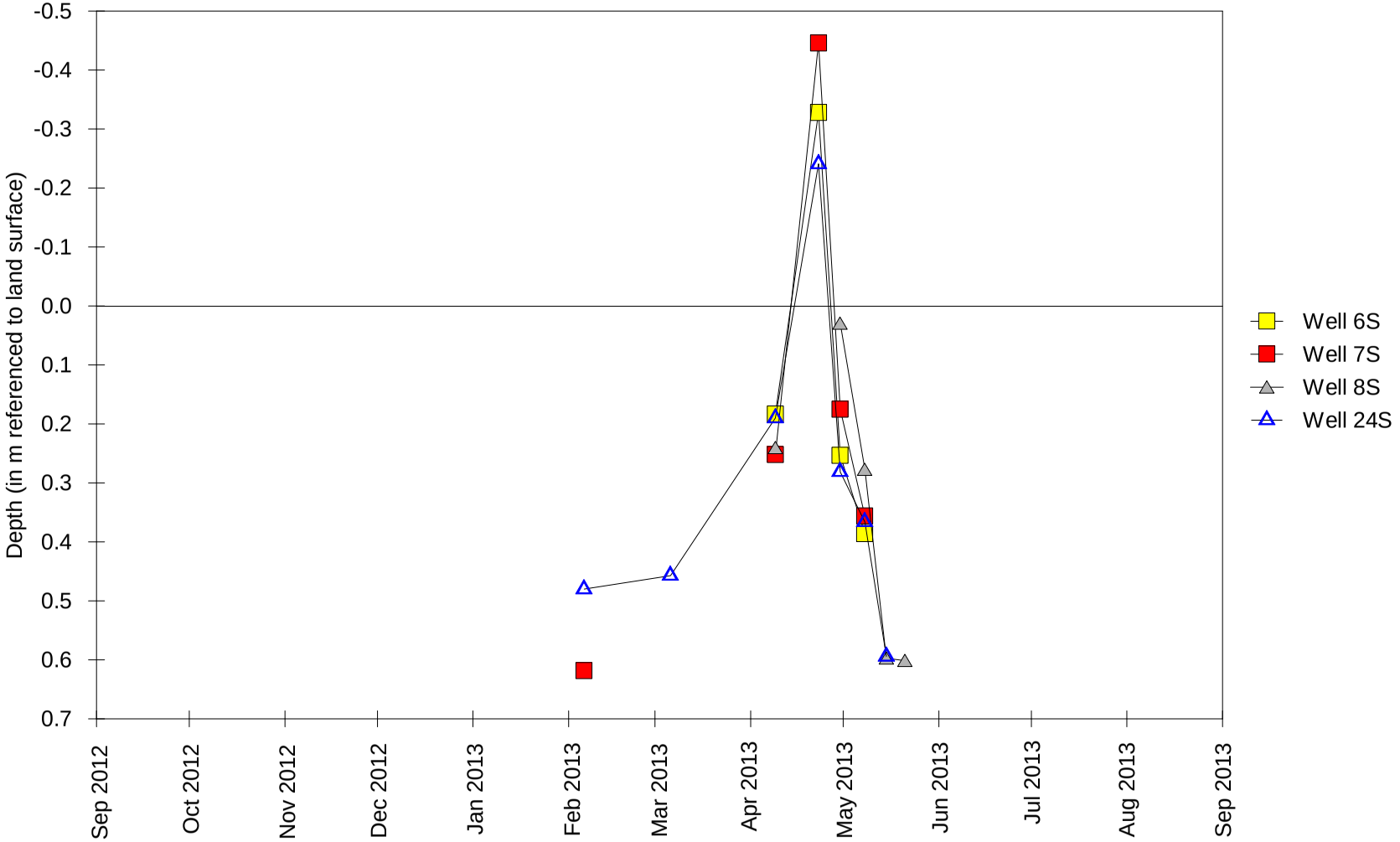
# Milan Beltway, Rock Island Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations
### in Monitoring Wells and at Surface-Water Gauges in Area C



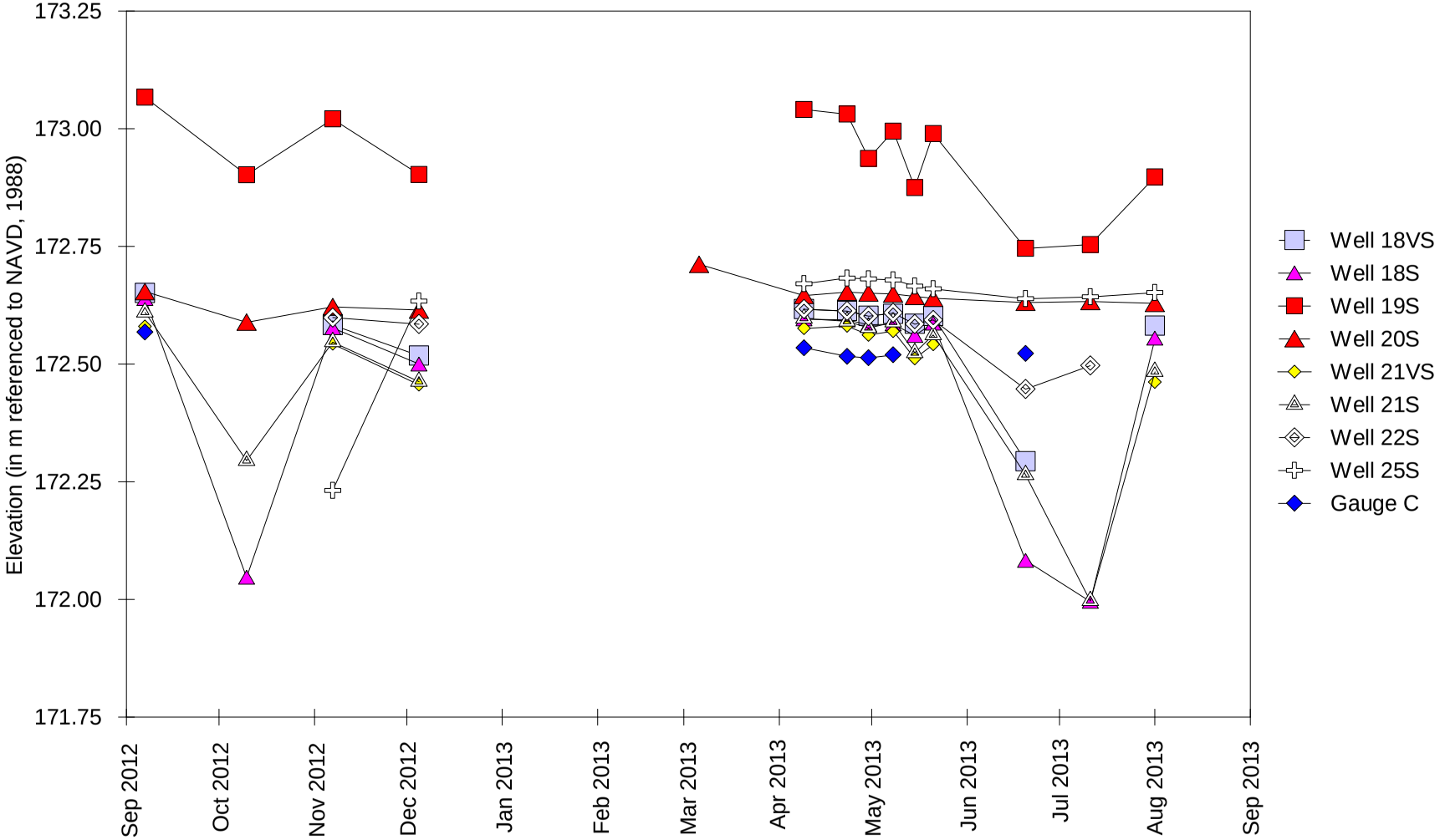
# Milan Beltway, Rock Island Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Monitoring Wells in Area C



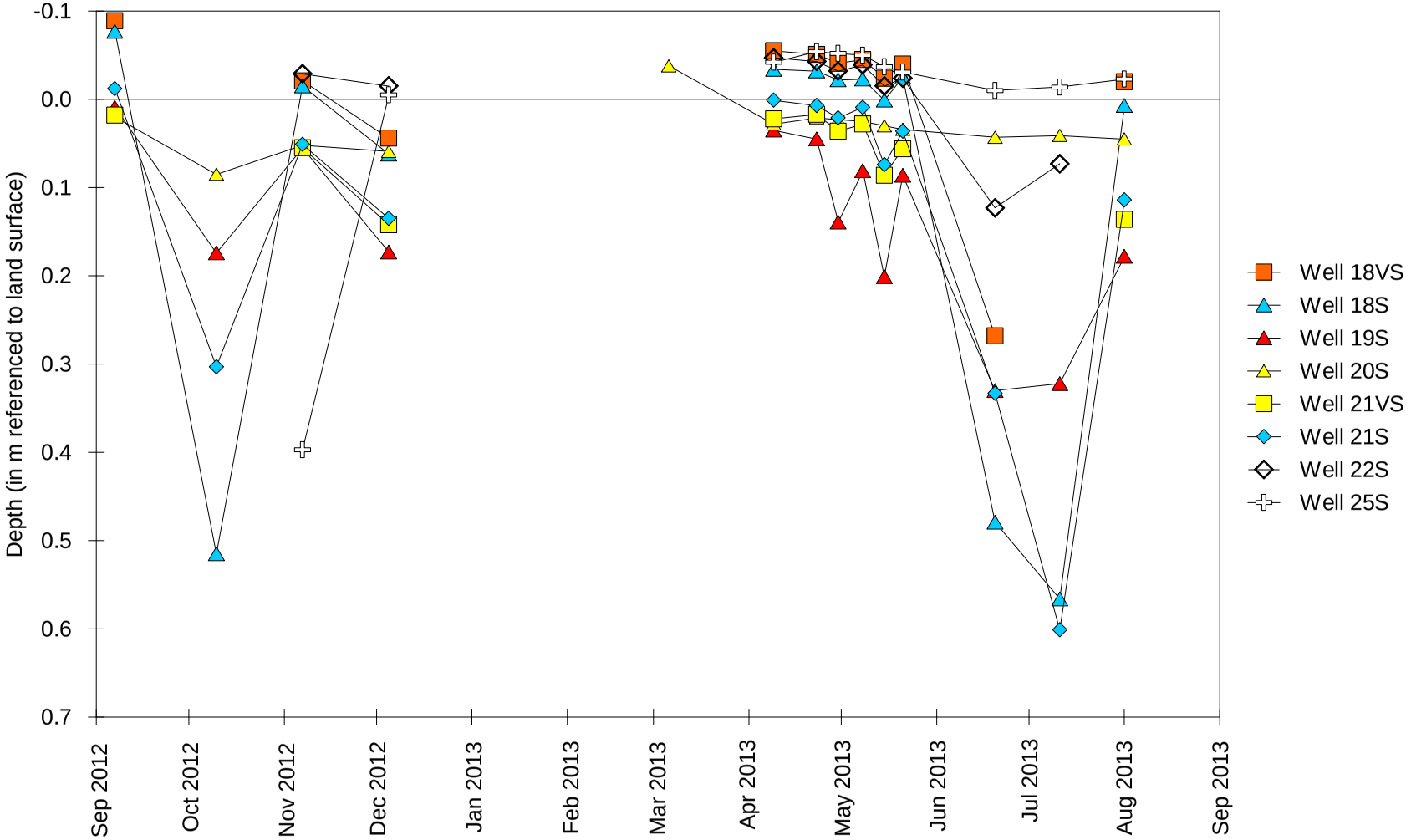
# Milan Beltway, Rock Island Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations
### in Monitoring Wells and at the Surface-Water Gauge in Area D



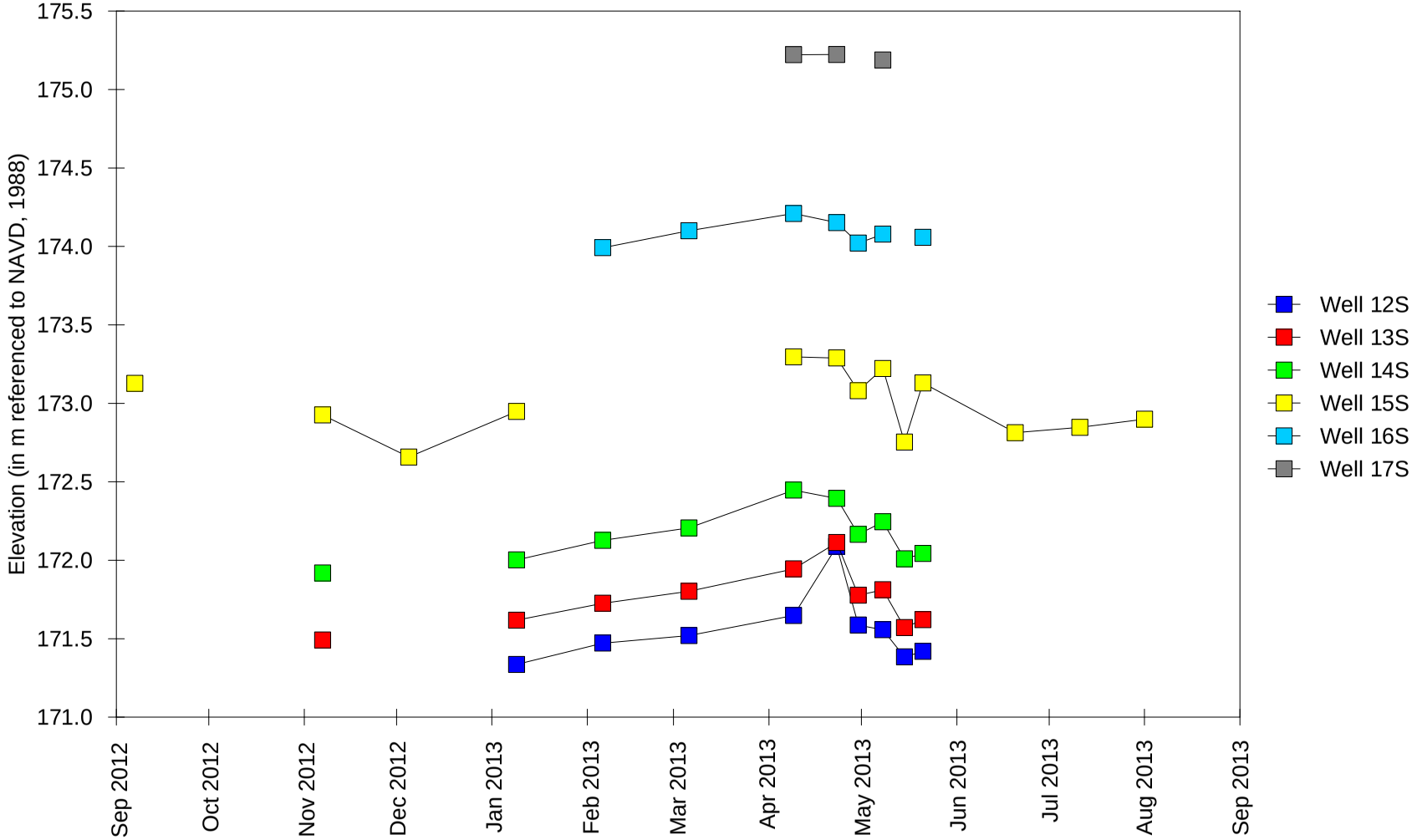
# Milan Beltway, Rock Island Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Monitoring Wells in Area D



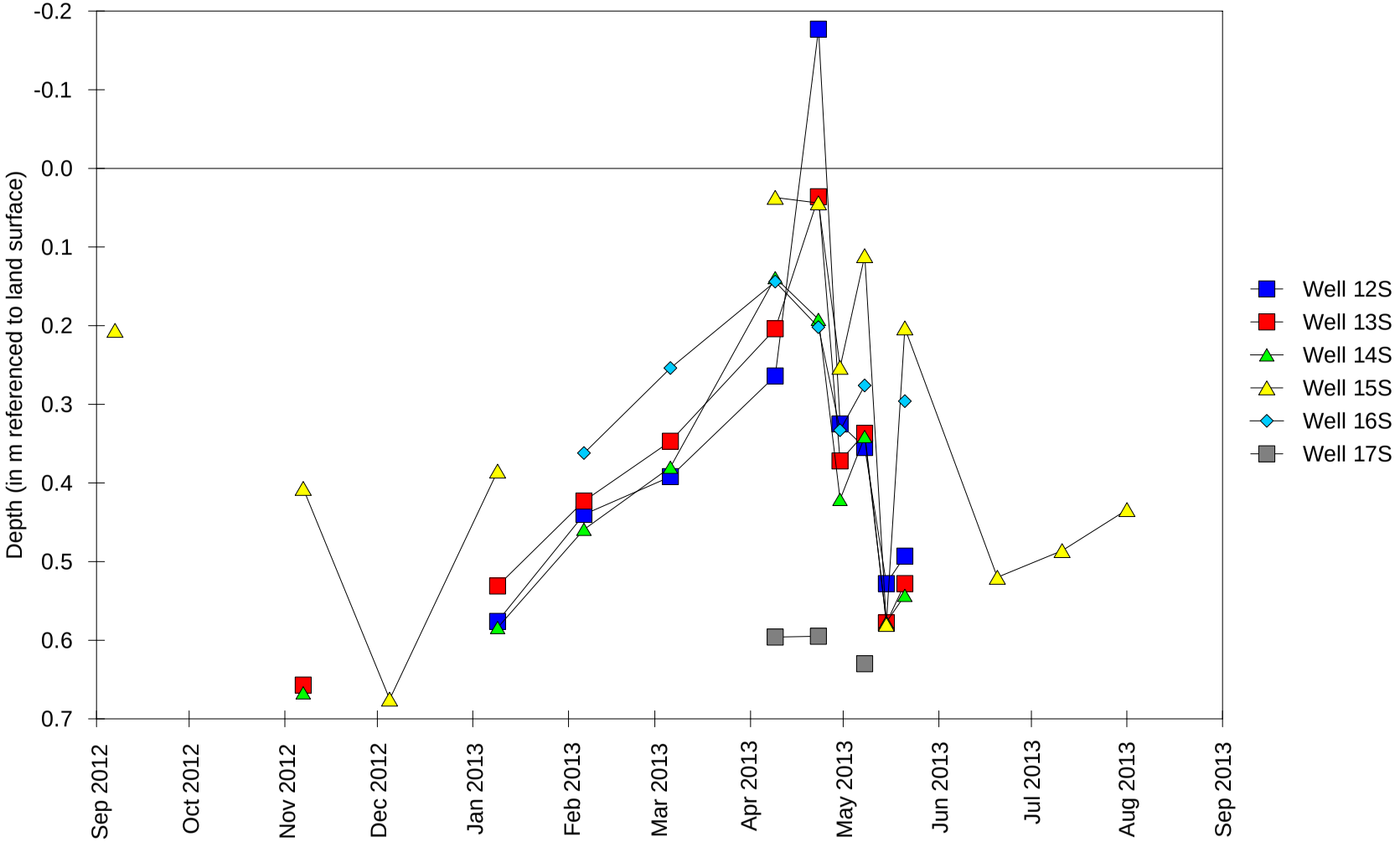
# Milan Beltway, Rock Island Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Monitoring Wells in Area E



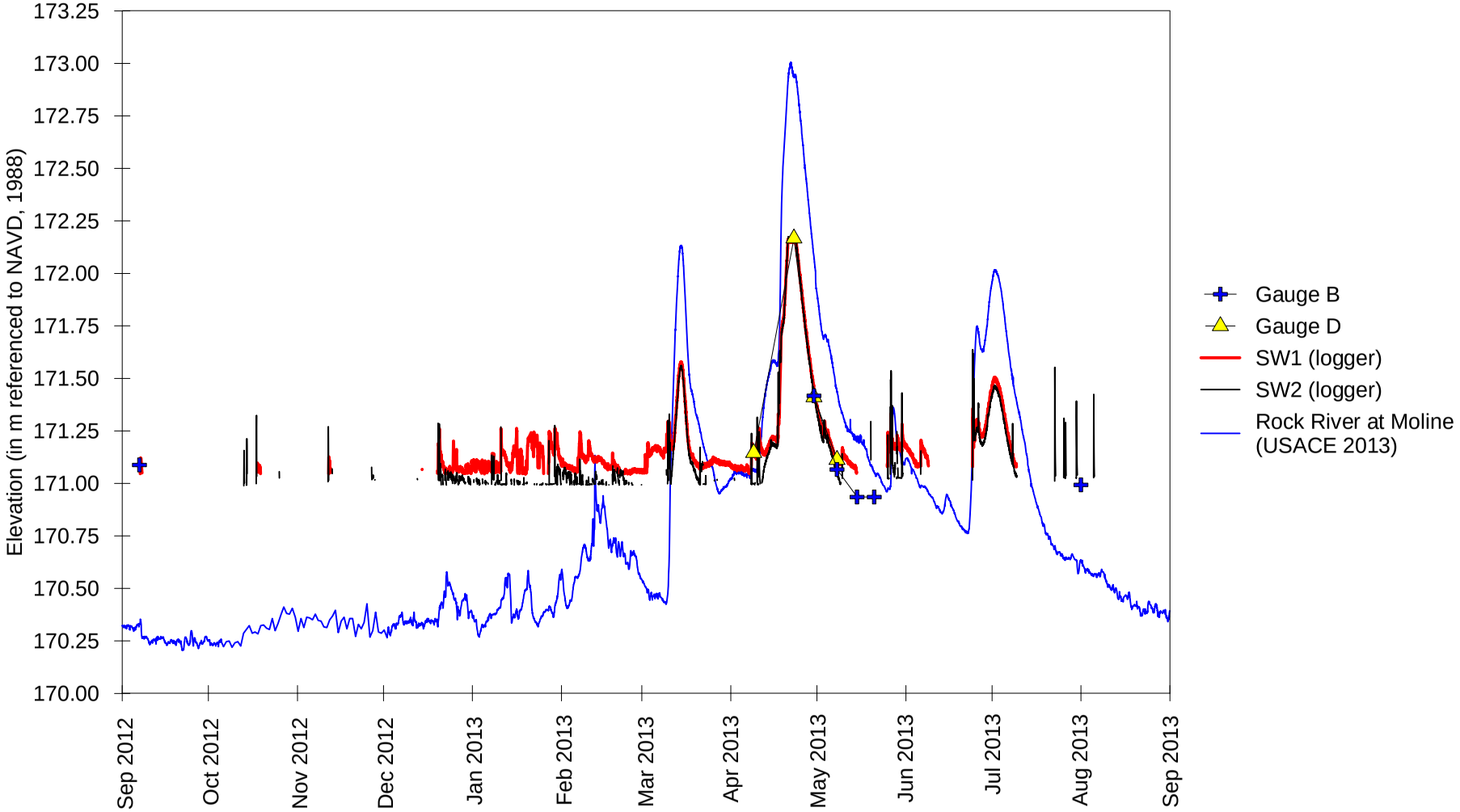
# Milan Beltway, Rock Island Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Monitoring Wells in Area E

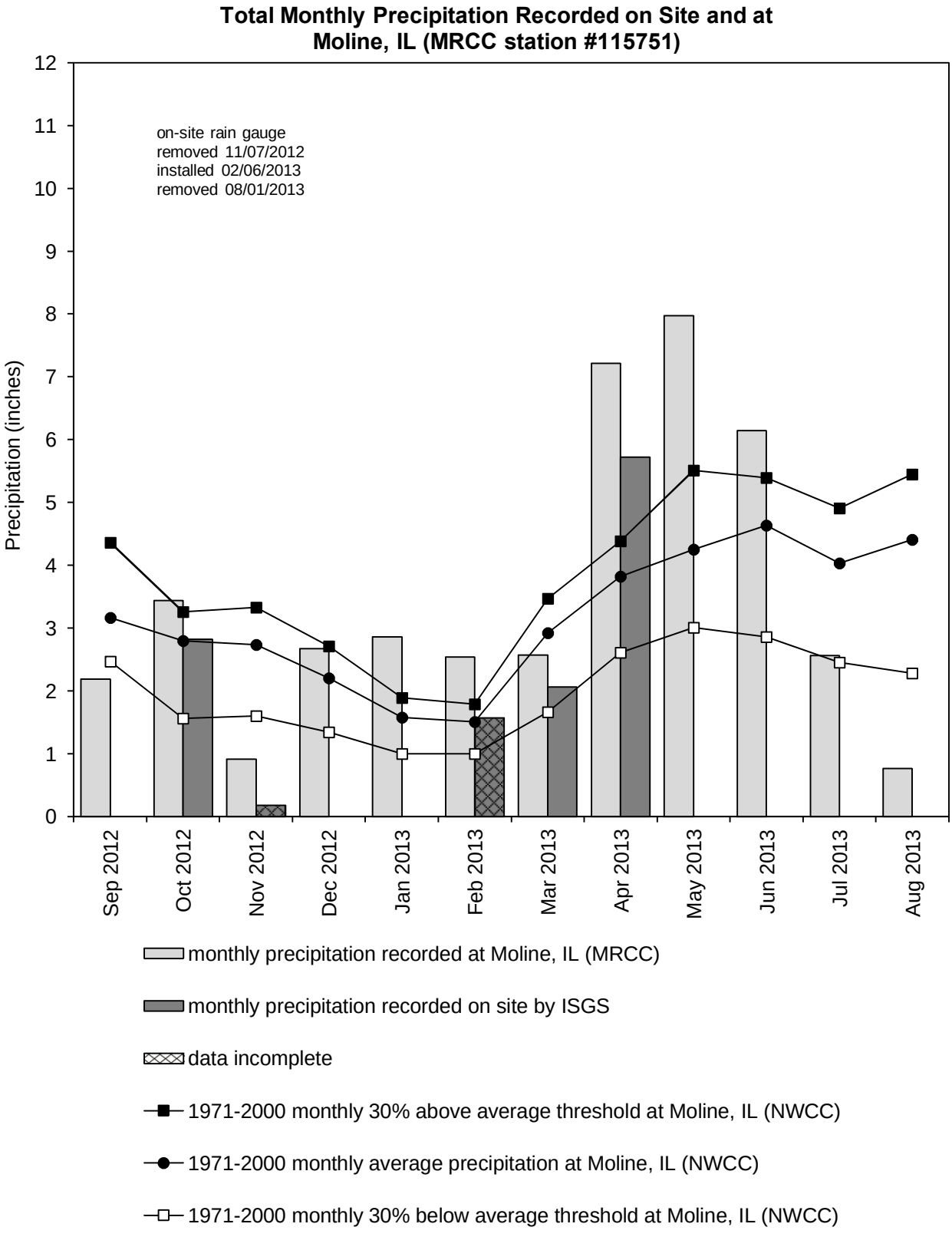


# Milan Beltway, Rock Island Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations
### at Surface-Water Gauges in the West Ditch and the Rock River



# Milan Beltway, Rock Island Wetland Mitigation Site
## September 2012 through August 2013



**PYRAMID SITE EC25** **ISGS #77**
**WETLAND MITIGATION SITE**
Pyatts Blacktop
FAS 864
Sequence #9778
Perry County, near Pinckneyville, Illinois
**Primary Project Manager: Eric T. Plankell**
**Secondary Project Manager: Jessica L. B. Monson**

SITE HISTORY

- June 2007: The ISGS was tasked by IDOT to monitor wetland hydrology.
- April 2008: The ISGS began on-site monitoring.

WETLAND HYDROLOGY CALCULATION FOR 2013

The target compensation area for the Pyramid Site EC25 wetland mitigation site is 4.57 ha (11.30 ac). Using the 1987 Manual (Environmental Laboratory 1987), 5.10 ha (12.61 ac) of the total site area of 5.30 ha (13.10 ac) satisfied wetland hydrology criteria for greater than 5% of the 2013 growing season and 4.62 ha (11.42 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 5.25 ha (12.97 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

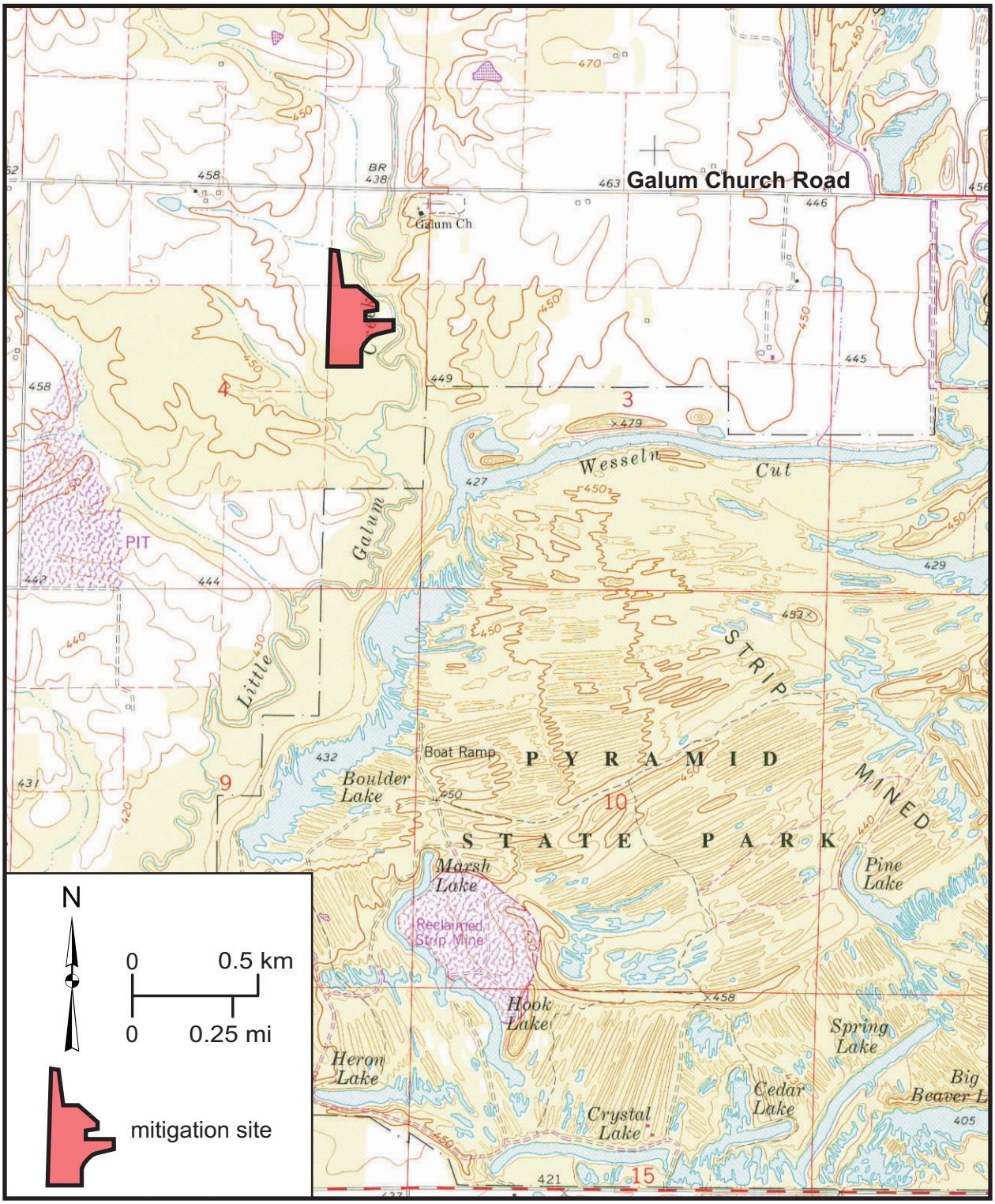
- The median date that the growing season begins in nearby Du Quoin, Illinois, is April 1, and the season lasts 215 days (MRCC 2013). Using the 1987 Manual, 5% of the growing season is 11 days, and 12.5% of the growing season is 27 days. Using the 2010 Midwest Region Supplement, March 15 was the starting date of the 2013 growing season based on soil temperatures measured on site.
- Total precipitation for the monitoring period at Du Quoin, Illinois, (MRCC station #112483) was 123% of normal. During Spring 2013 (March through May), precipitation was 131% of normal.
- In 2013, water levels measured in all monitoring wells except well 5VS satisfied wetland hydrology criteria for greater than 5% of the growing season, using the 1987 Manual. Additionally, wells 2S, 3VS, 4VS, 4S, 6S, 7VS, 7S, 8VS, 9VS, 11S, 12VS, 14VS, and 15VS satisfied wetland hydrology criteria for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, all monitoring wells satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season.
- Surface-water levels measured at Gauge BR indicated inundation at and below 131.65 m (431.92 ft) for greater than 5% of the growing season, and inundation at and below 131.60 m (431.76 ft) for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, surface-water levels measured at Gauge BR indicated inundation at and below 131.69 m (432.05 ft) for 14 or more consecutive days of the growing season.

PLANNED FUTURE ACTIVITIES

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

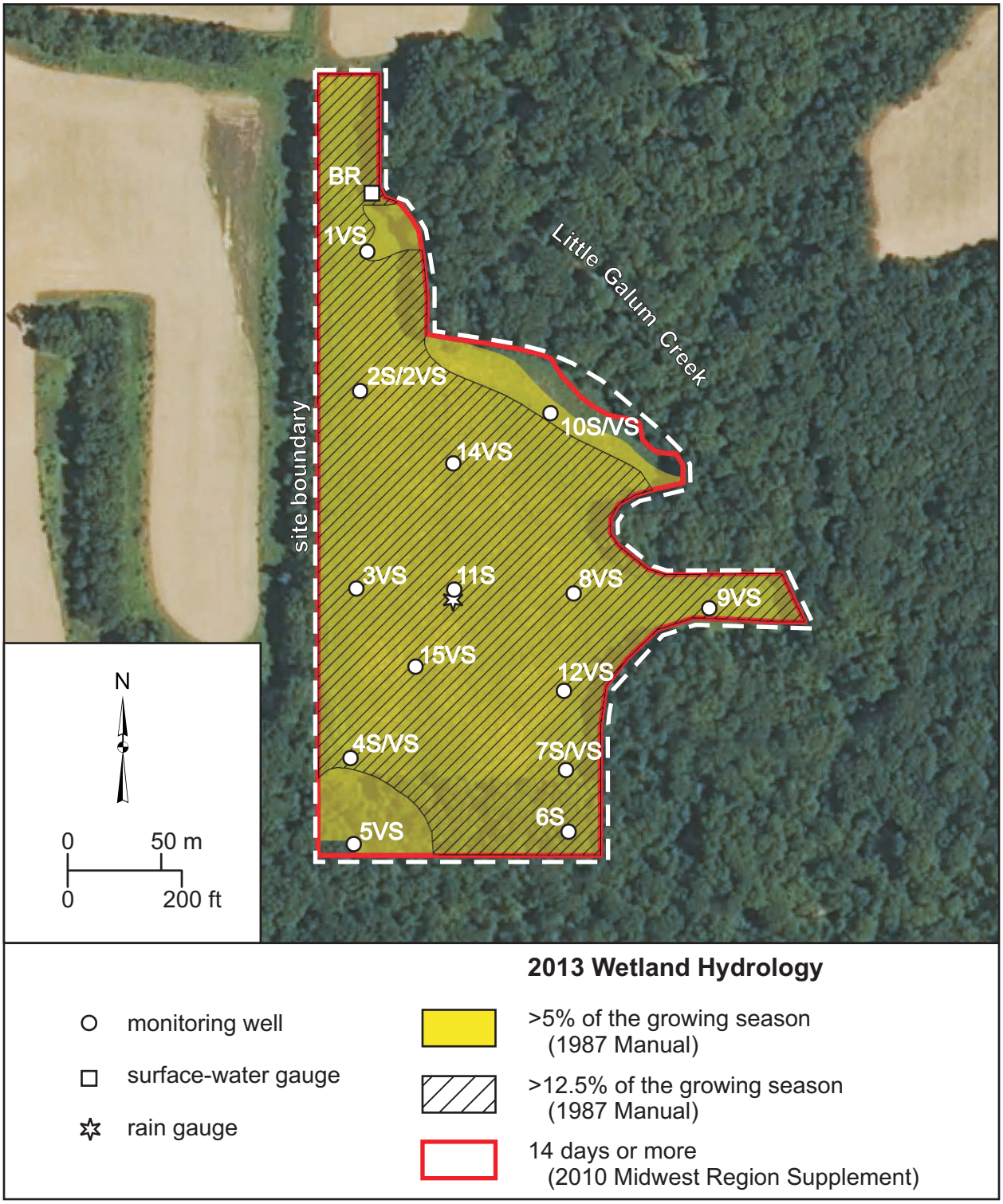
# Pyramid Site EC25 Wetland Mitigation Site
# (Pyatts Blacktop, FAS 864)
## General Study Area and Vicinity

from the USGS Topographic Series, Pinckneyville, IL, 7.5-minute Quadrangle (ISGS 2013b)
contour interval is 10 feet



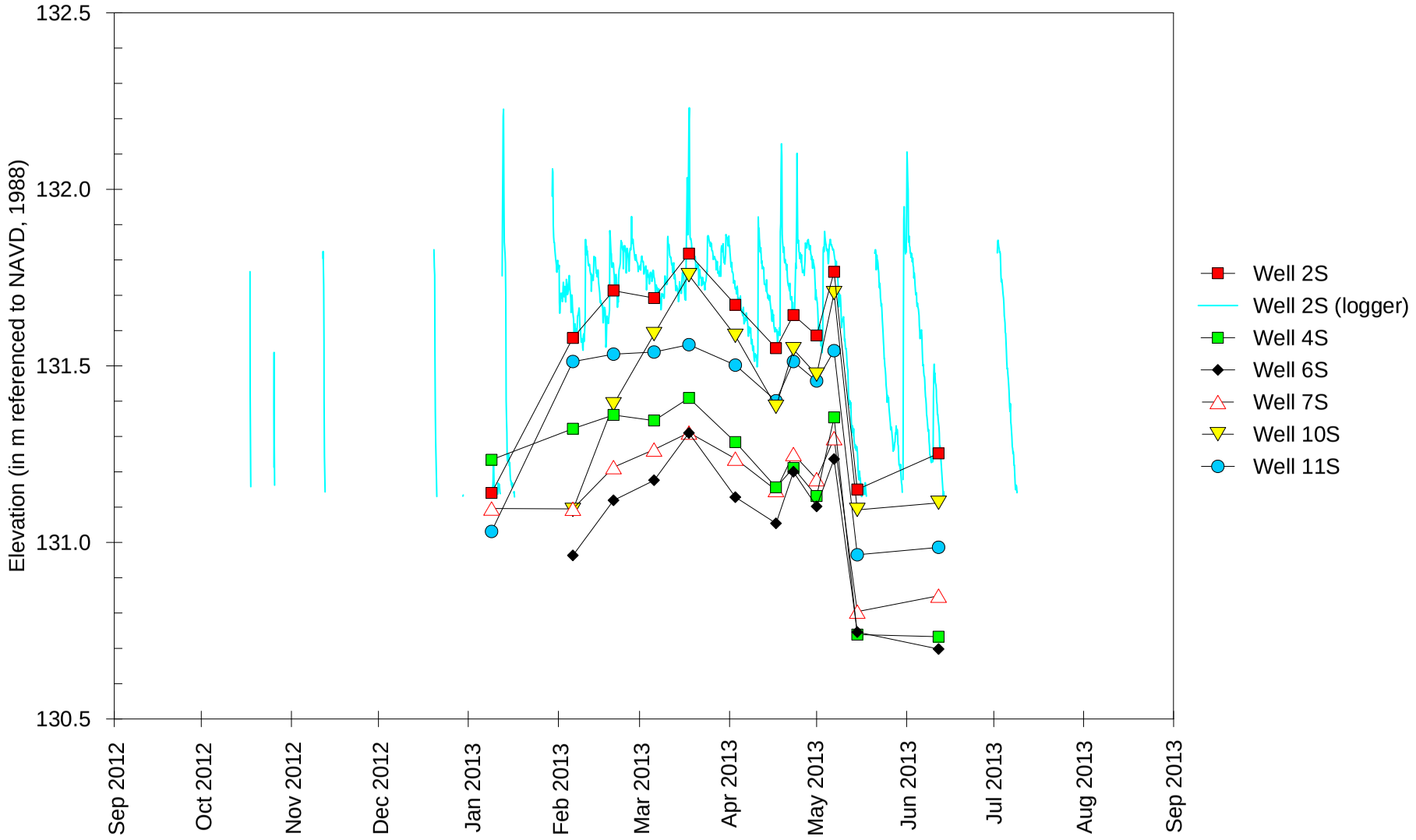
# Pyramid Site EC25 Wetland Mitigation Site
# (Pyatts Blacktop, FAS 864)
## Estimated Areal Extent of 2013 Wetland Hydrology
### September 1, 2012 through August 31, 2013

Map based on 2012 Farm Service Agency digital orthophotography, Perry County, Illinois (USDA-FSA 2012)



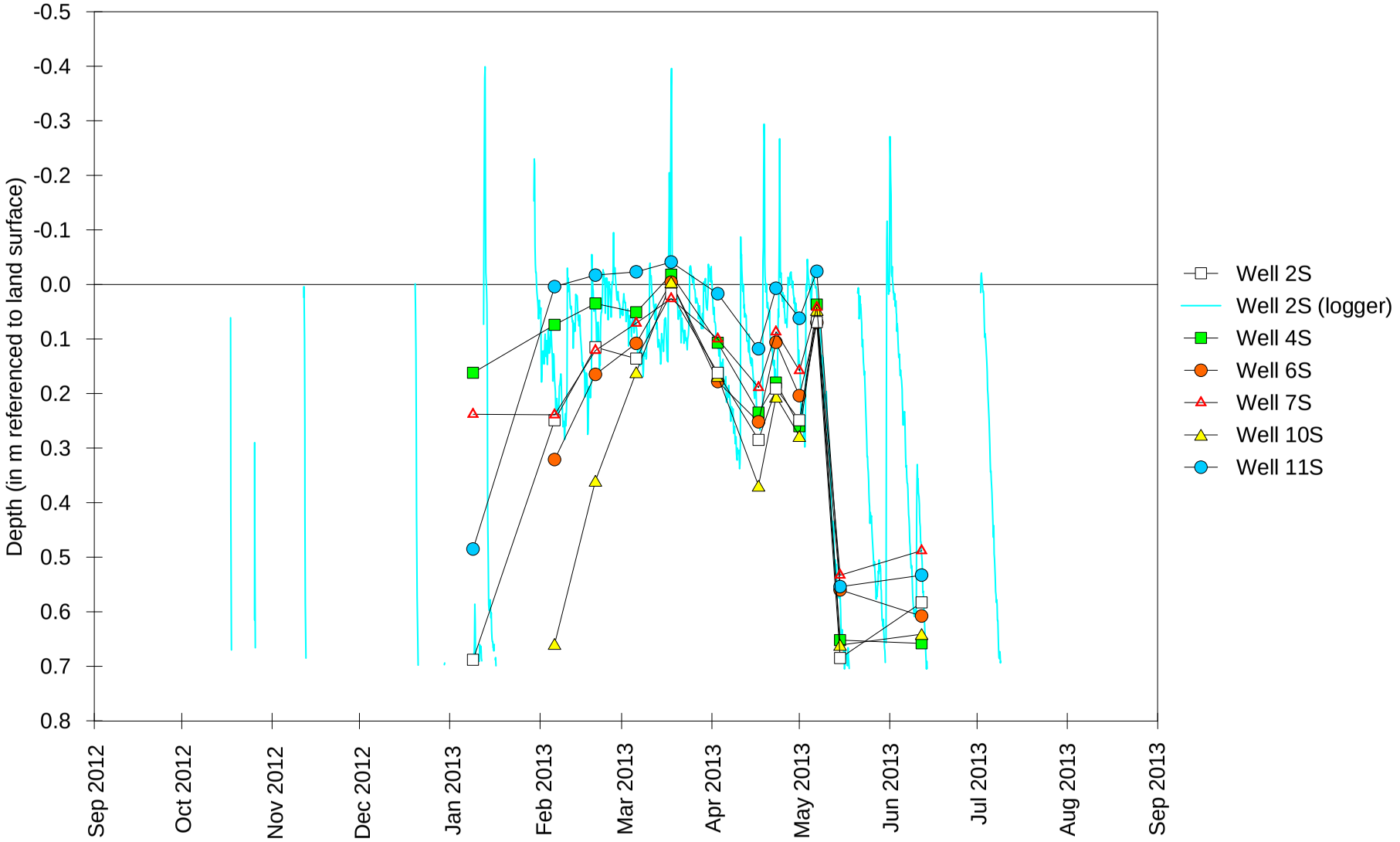
# Pyramid Site EC25 Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Shallow (S) Monitoring Wells



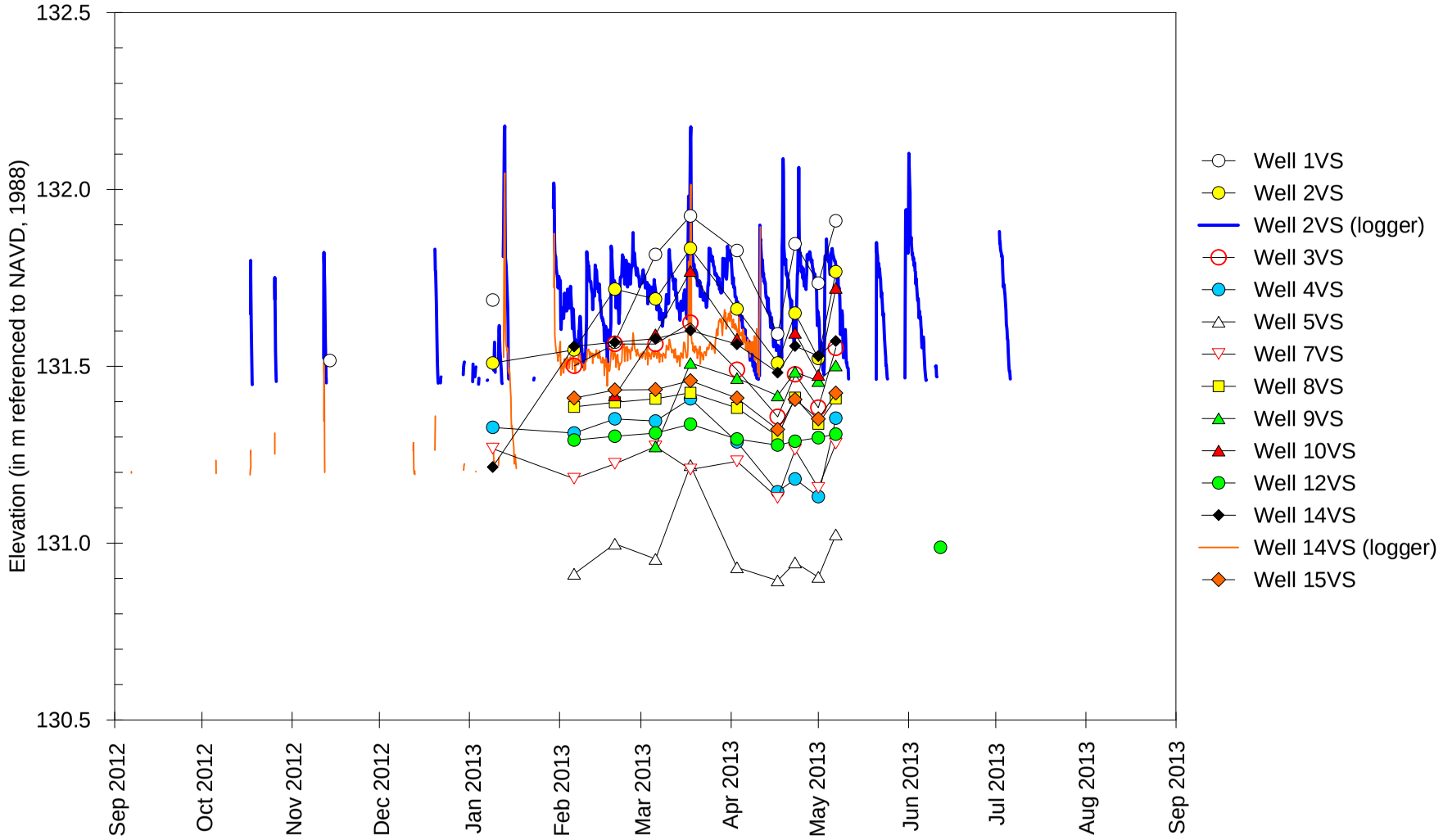
# Pyramid Site EC25 Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Shallow (S) Monitoring Wells



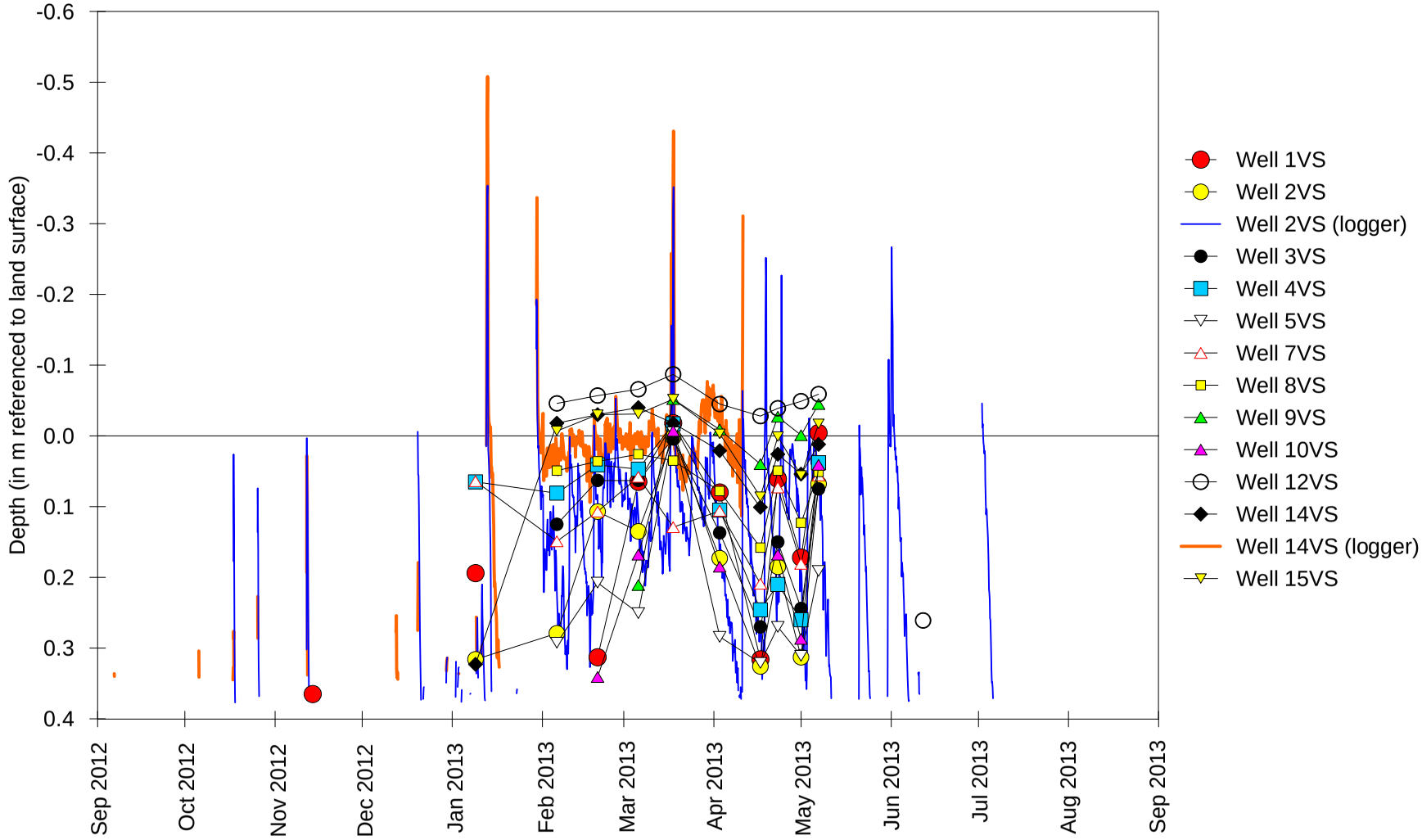
# Pyramid Site EC25 Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations
### in Very Shallow (VS) Monitoring Wells



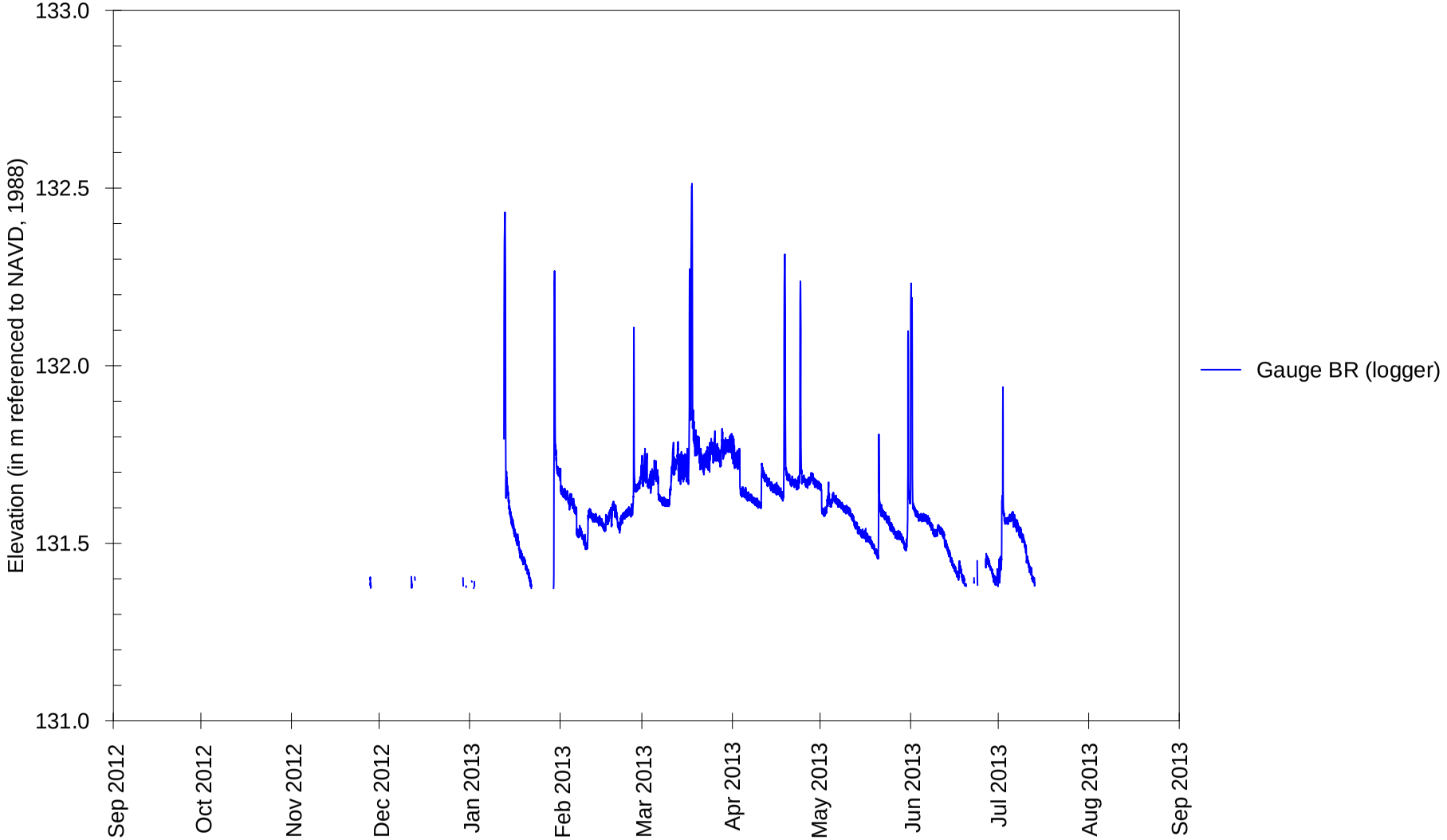
# Pyramid Site EC25 Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Very Shallow (VS) Monitoring Wells

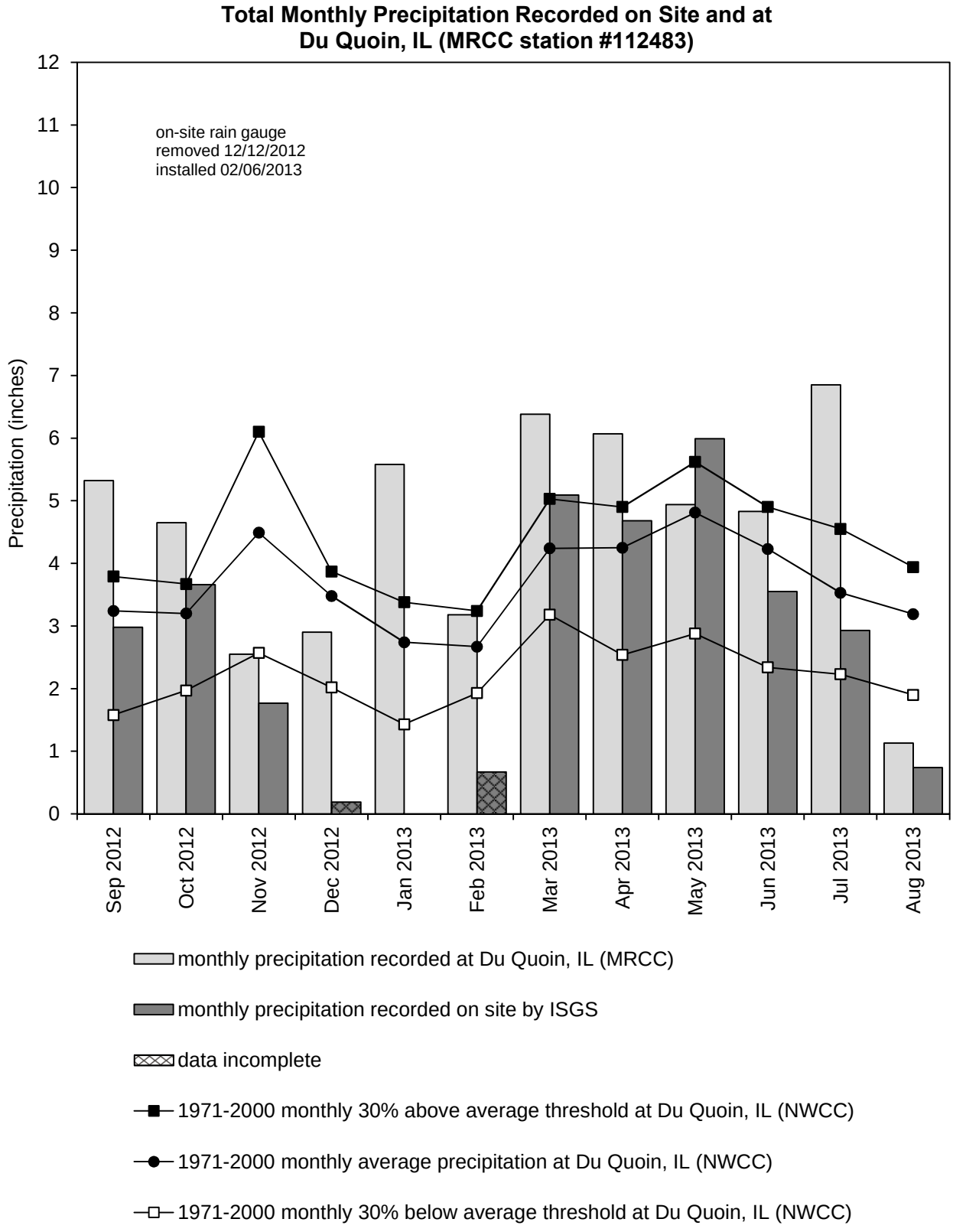


# Pyramid Site EC25 Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations at the Surface-Water Gauge



# Pyramid Site EC25 Wetland Mitigation Site
## September 2012 through August 2013



**HARRISBURG, SITE 2** **ISGS #78**
**WETLAND MITIGATION SITE**
IL 14
FAP 857
Sequence #547
Saline County, near Harrisburg, Illinois
**Primary Project Manager: Geoffrey E. Pociask**
**Secondary Project Manager: Jessica L. B. Monson**

SITE HISTORY

- October 2007: Construction began at the wetland mitigation site.
- March 2008: The ISGS was tasked by IDOT to monitor the site for performance standards as outlined in the wetland mitigation plan, and post-construction water-level monitoring was initiated.
- May 2008: Construction at the wetland mitigation site was completed.

WETLAND HYDROLOGY CALCULATION FOR 2013

The target compensation area for the Harrisburg, Site 2 wetland mitigation site is 4.13 ha (10.20 ac). Using the 1987 Manual (Environmental Laboratory 1987), 7.33 ha (18.10 ac) out of a total site area of approximately 14.16 ha (35.00 ac) satisfied wetland hydrology criteria for greater than 5% of the growing season, whereas 2.73 ha (6.73 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 8.53 ha (21.07 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Du Quoin, Illinois, is April 1 and the season lasts 215 days (MRCC 2013). Using the 1987 Manual, 5% of the growing season is 11 days and 12.5% of the growing season is 27 days. Using the 2010 Midwest Region Supplement, March 15 was the starting date of the 2013 growing season based on soil temperatures measured on site and at the nearby Pyramid Site EC25 wetland mitigation site (ISGS #77).
- Total precipitation for the monitoring period at Du Quoin, Illinois, (MRCC #112483) was 123% of normal, and Spring 2013 (March through May) precipitation was 131% of normal.
- In 2013, wells 1S, 1VS, 2S, 2VS, 3S, 3VS, 4S, 5S, 5VS, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16VS, 17VS, 18VS, 21VS, 22VS, 23VS, and 26VS satisfied wetland hydrology criteria for greater than 5% of the growing season and wells 1S, 2VS, 3S, 3VS, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 21VS, 22VS, 23VS, and 26VS satisfied wetland hydrology criteria for greater than 12.5% of the growing season, using the 1987 Manual. Furthermore, all wells except 5S satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season, using the 2010 Midwest Region Supplement.
- Gauges B, E, and H showed that areas at and below 112.57 m (369.32 ft), 114.74 m (376.44 ft), and 113.08 m (371.00 ft), respectively, were inundated for greater than 5% of the growing season and areas at and below 112.51 m (369.13 ft), 114.74 m (376.44 ft), and 113.08 m (371.00 ft), respectively, were inundated for greater than 12.5% of the growing

season, using the 1987 Manual. These gauges also showed that areas at and below 112.55 m (369.26 ft), 114.75 m (376.48 ft), and 113.09 m (371.03 ft), respectively, were inundated for 14 or more days during the growing season, using the 2010 Midwest Region Supplement.

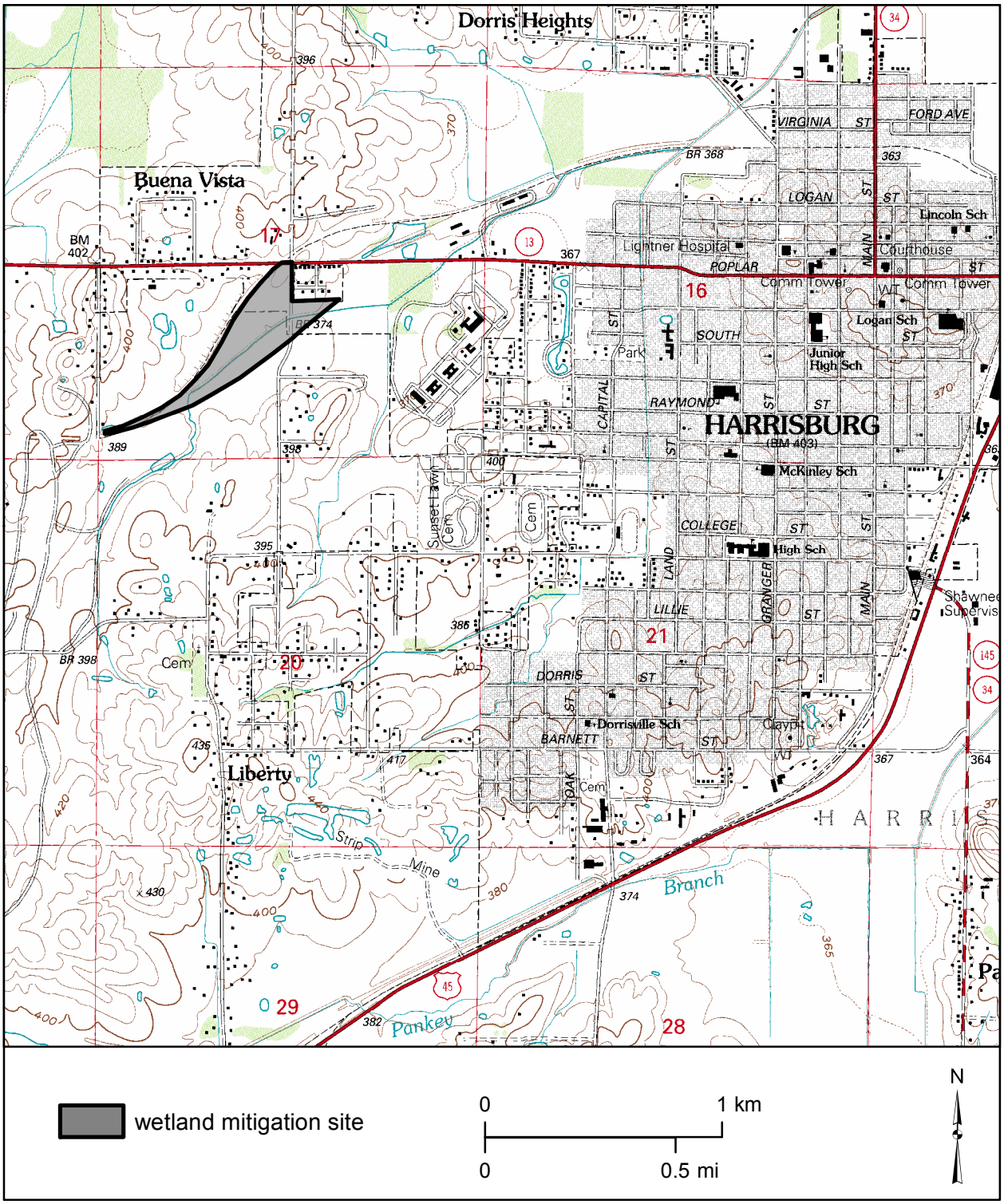
PLANNED FUTURE ACTIVITIES

- Water-level monitoring is expected to continue through 2013 or until no longer required by IDOT.

# Harrisburg, Site 2 Wetland Mitigation Site
# (IL 14, FAP 857)

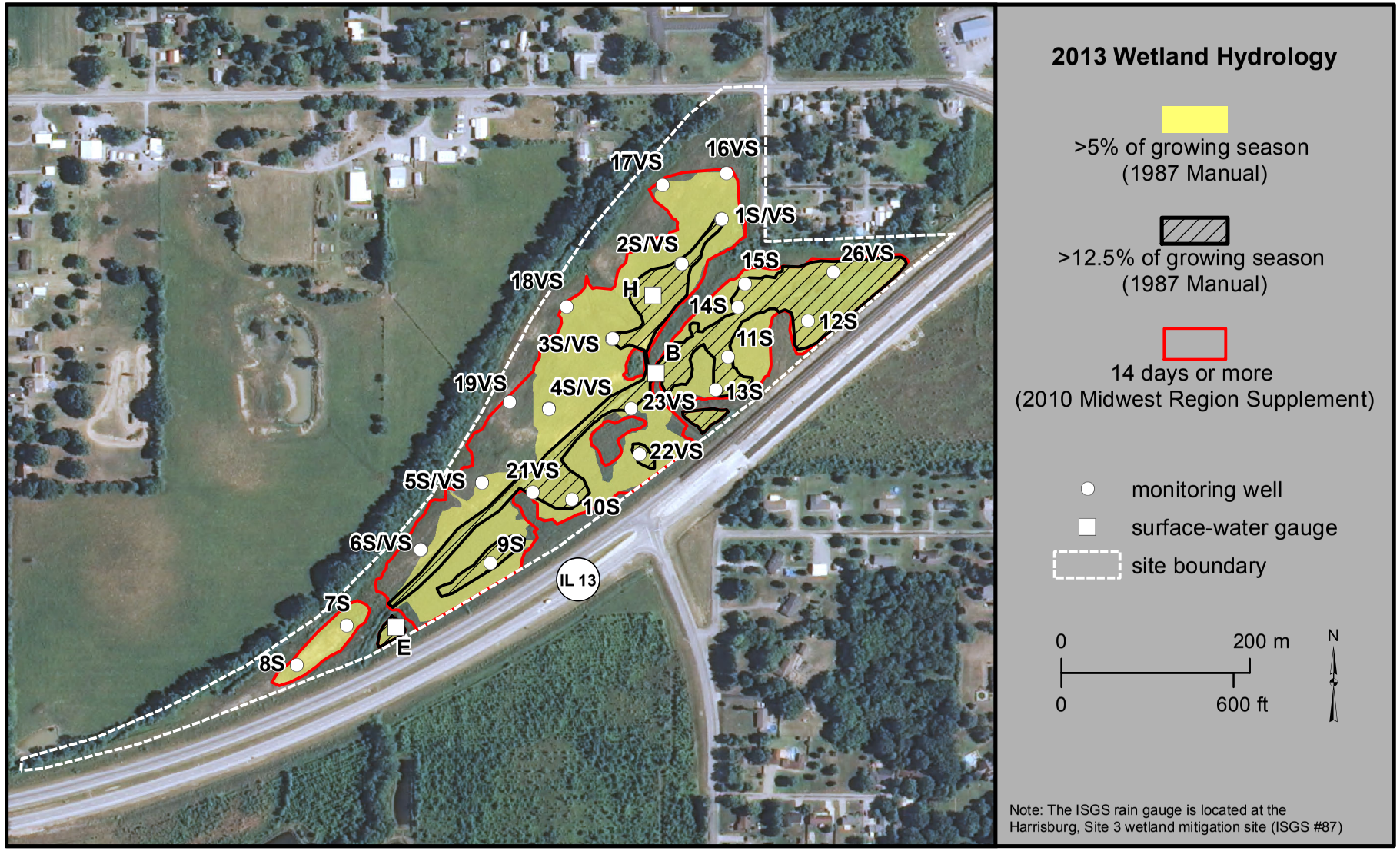
## General Study Area and Vicinity

from the USGS Topographic Series, Harrisburg, IL, 7.5-minute Quadrangle (ISGS 2013b)
contour interval is 5 feet



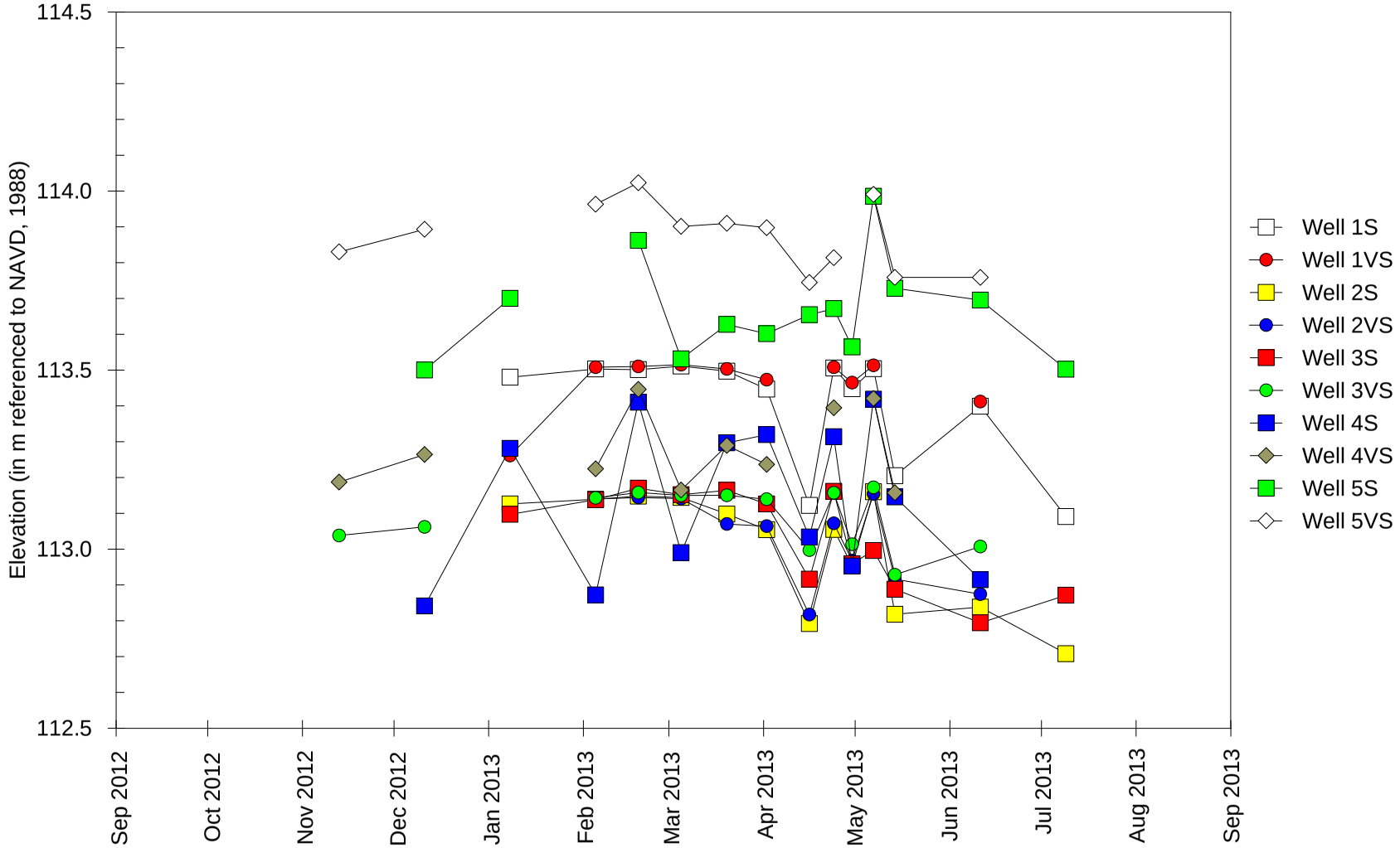
# Harrisburg, Site 2 Wetland Mitigation Site
# (IL 14, FAP 857)
## Estimated Areal Extent of 2013 Wetland Hydrology
### September 1, 2012 though August 31, 2013

Map based on 2012 Farm Service Agency digital orthophotography, Saline County, Illinois (USDA-FSA 2012)



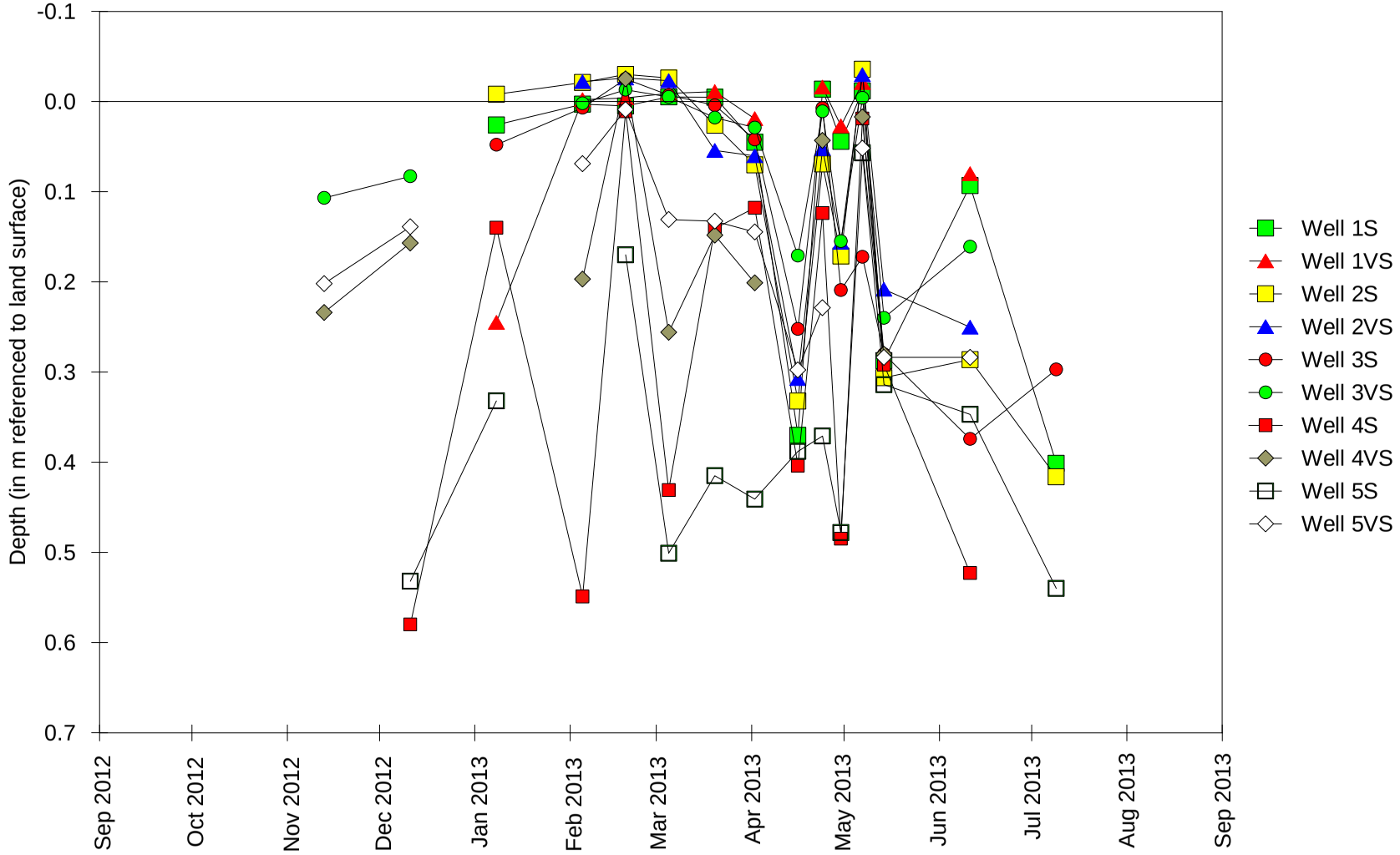
# Harrisburg, Site 2 Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations
### in Monitoring Wells (North)



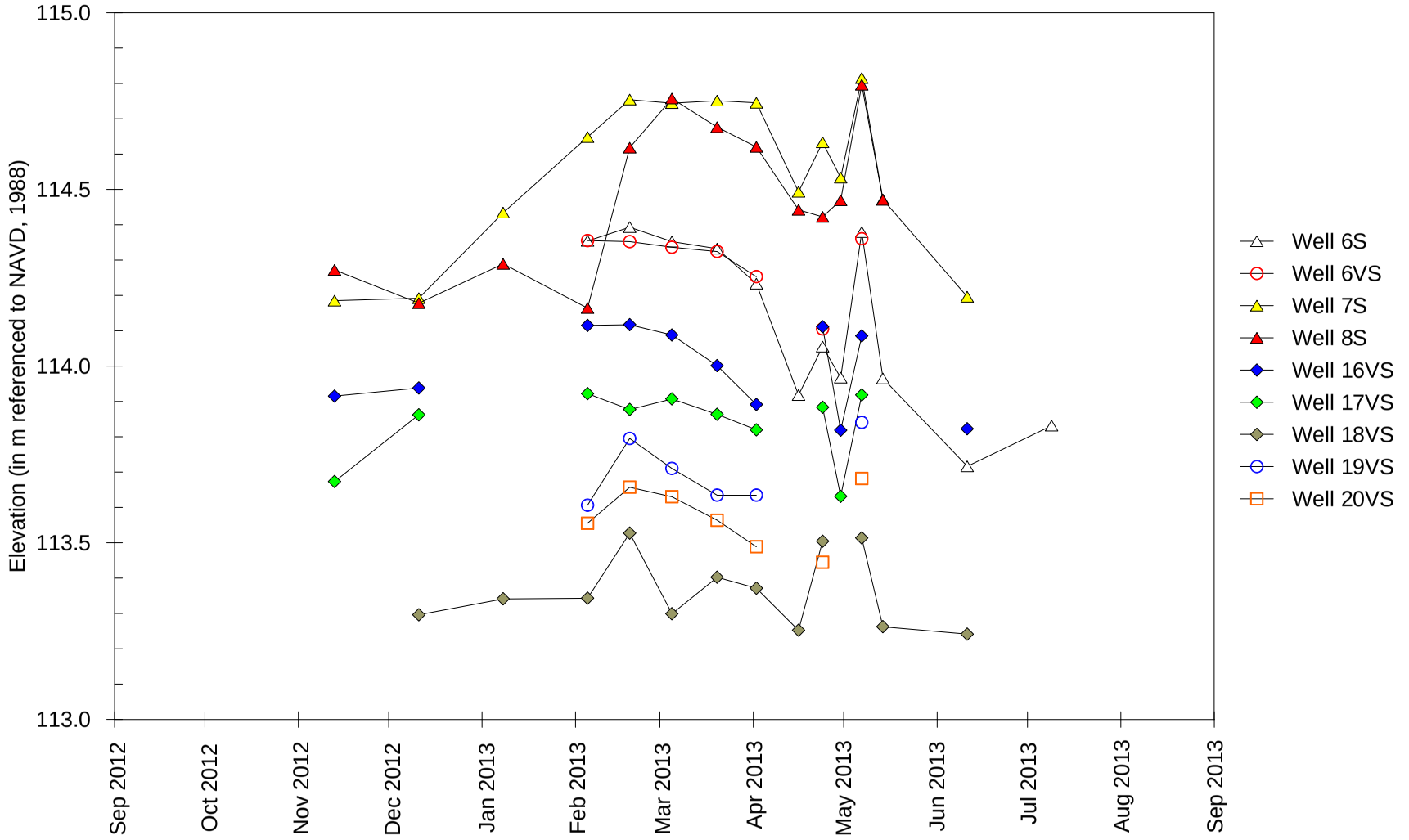
# Harrisburg, Site 2 Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Monitoring Wells (North)



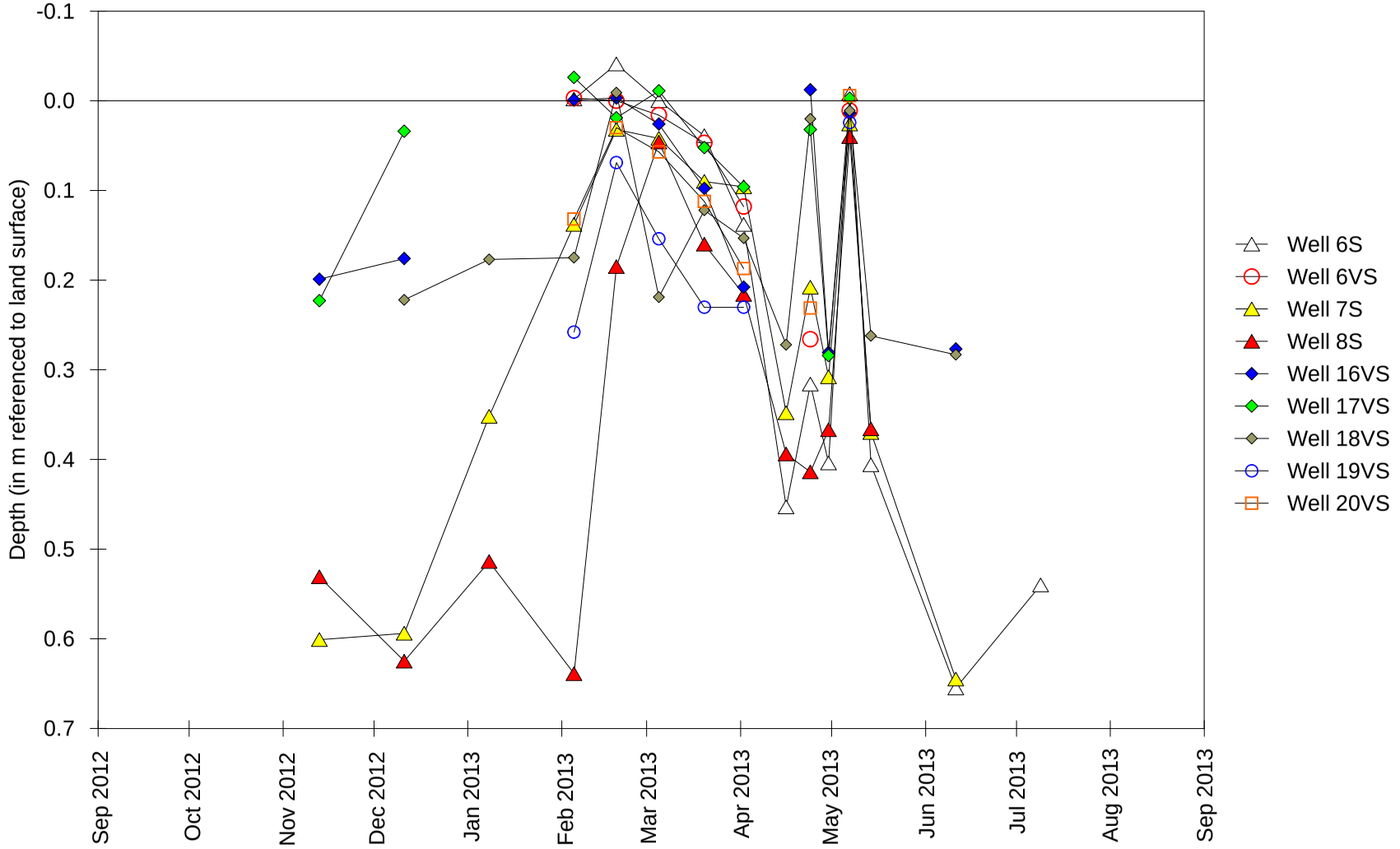
# Harrisburg, Site 2 Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Monitoring Wells (North)



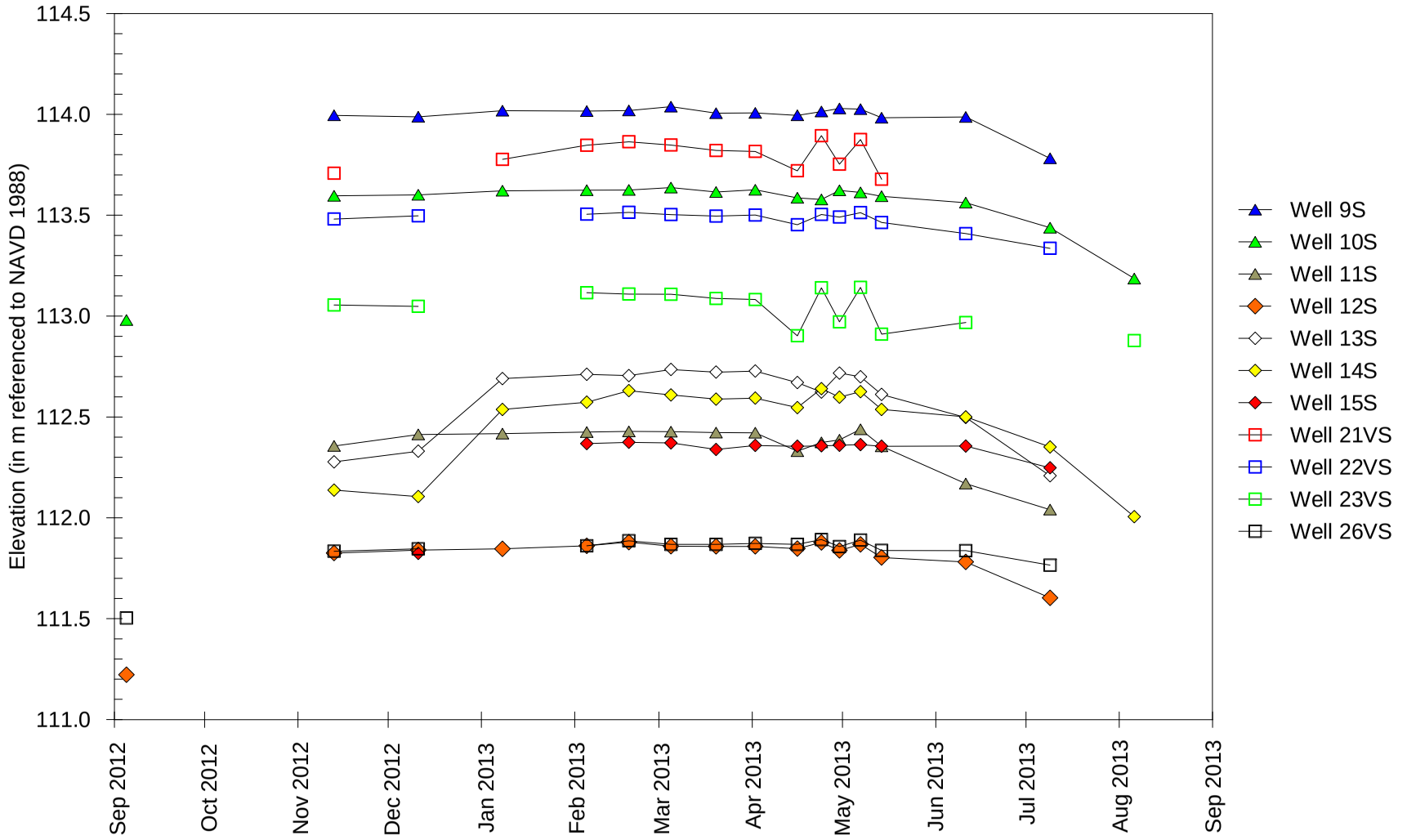
# Harrisburg, Site 2 Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Monitoring Wells (North)



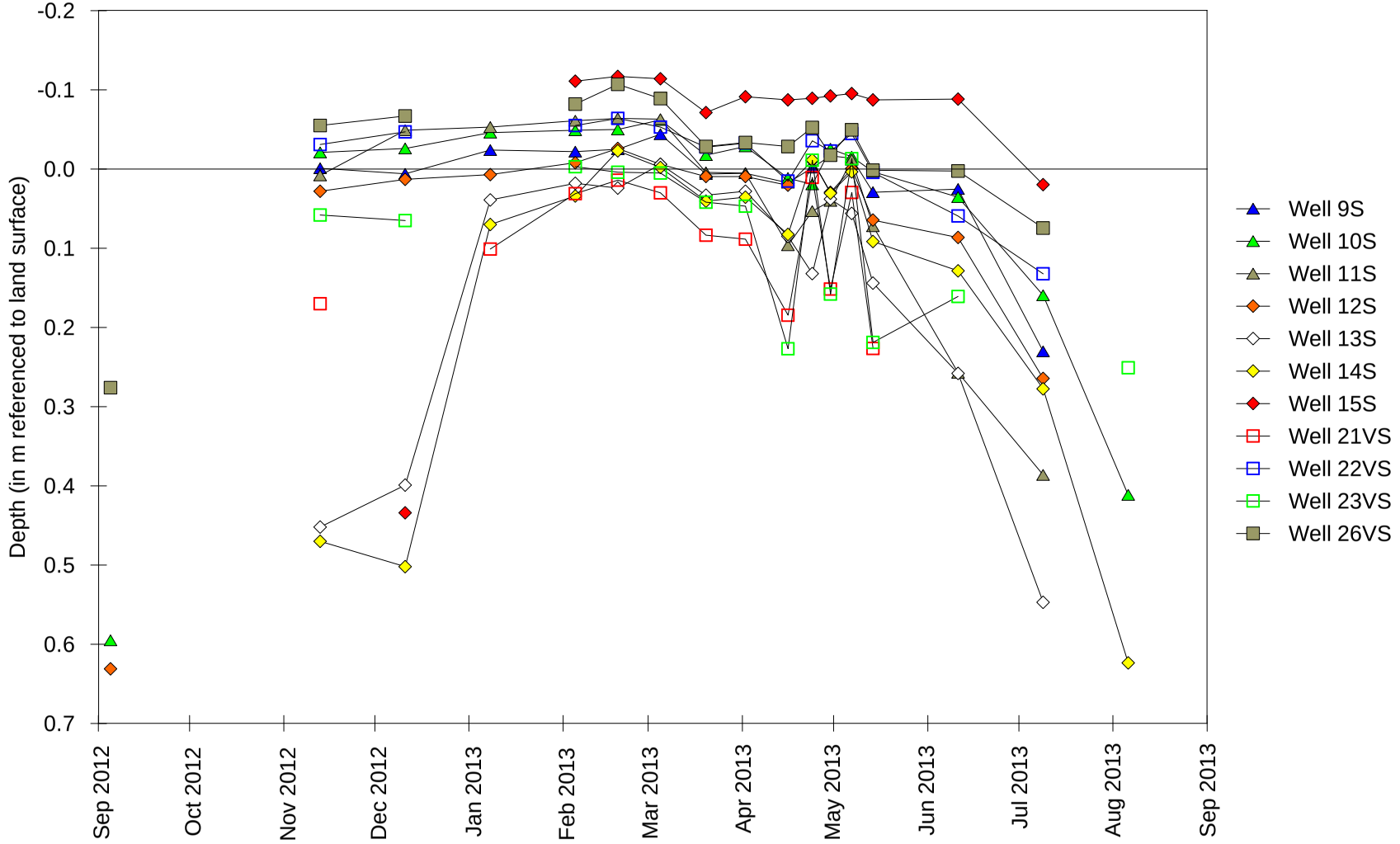
# Harrisburg, Site 2 Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations
### in Monitoring Wells (South)



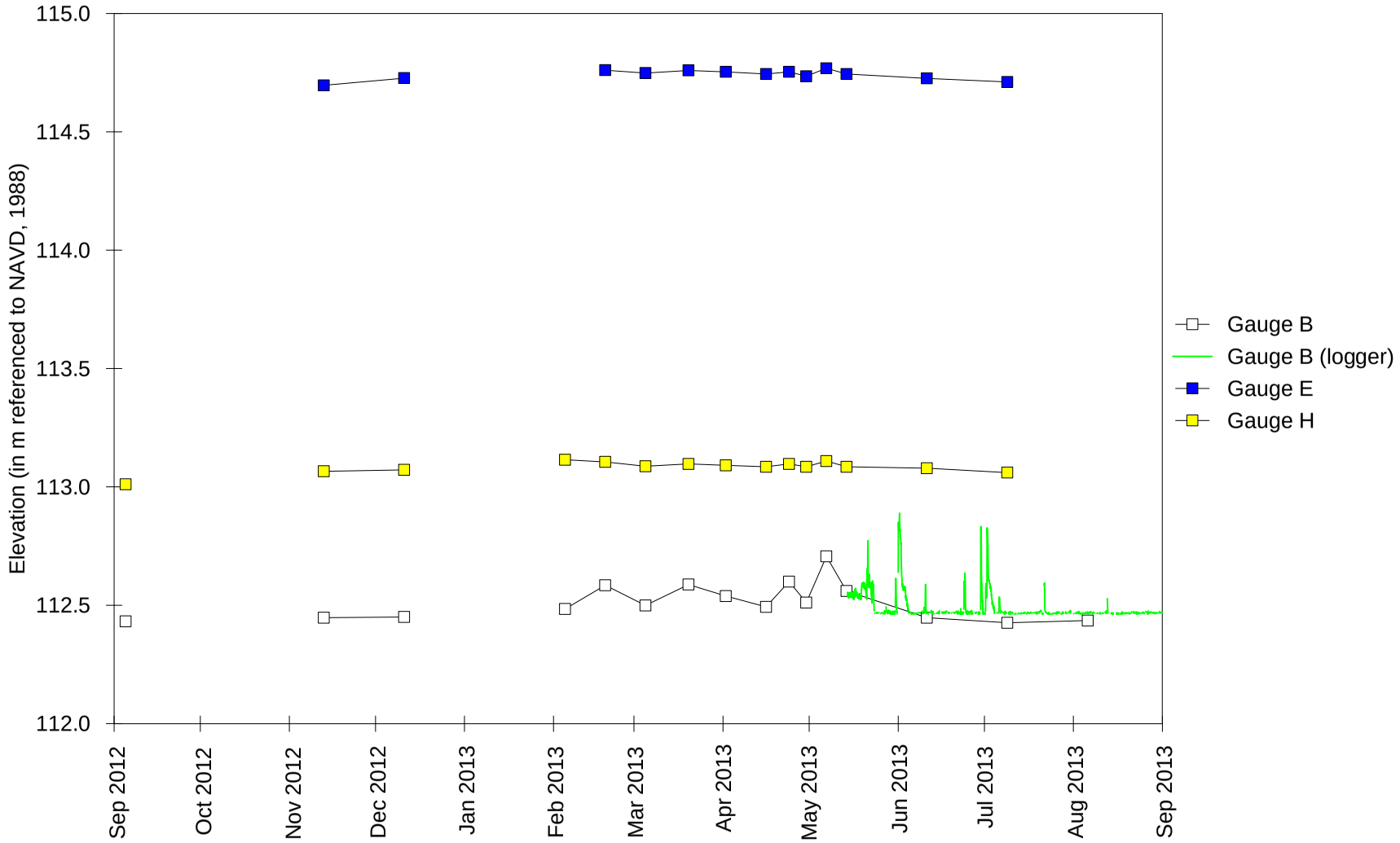
# Harrisburg, Site 2 Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Monitoring Wells (South)

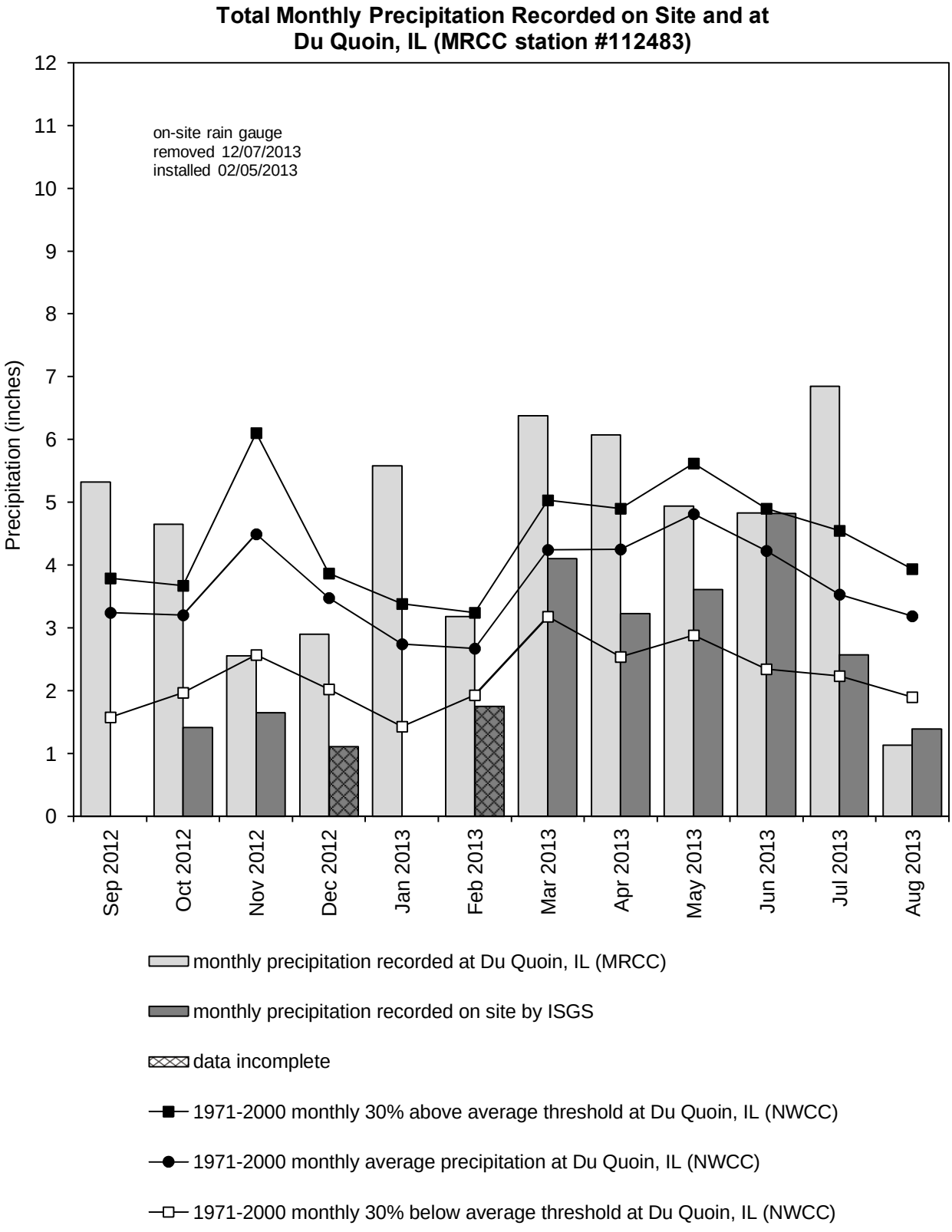


# Harrisburg, Site 2 Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations at Surface-Water Gauges



# Harrisburg, Site 2 Wetland Mitigation Site
## September 2012 through August 2013



**FORMER WEBER PROPERTY** **ISGS #79**
**WETLAND MITIGATION SITE**
US 20
FAP 301
Sequence #10487
Stephenson County, near Freeport, Illinois
**Primary Project Manager: Eric T. Plankell**
**Secondary Project Manager: Colleen M. Long**

SITE HISTORY

- September 2010: ISGS provided IDOT with conceptual plans for wetland creation.
- November 2010: Wetland construction was completed, and ISGS was tasked by IDOT to monitor wetland hydrology.
- May 2011: The ISGS installed a post-construction monitoring network.

WETLAND HYDROLOGY CALCULATION FOR 2013

The target compensation area for the Former Weber Property wetland mitigation site is 1.21 ha (3.00 ac). Using the 1987 Manual (Environmental Laboratory 1987), 4.31 ha (10.65 ac) of the total site area of 5.79 ha (14.30 ac) satisfied wetland hydrology criteria for greater than 5% of the 2013 growing season, and 2.36 ha (5.83 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 3.21 ha (7.93 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in Freeport, Illinois, is April 13, and the season lasts 183 days (MRCC 2013). Using the 1987 Manual, 5% of the growing season is 9 days, and 12.5% of the growing season is 23 days. Using the 2010 Midwest Region Supplement, April 7 was the starting date of the 2013 growing season based on soil temperatures measured on site and at the nearby Freeport, Illinois, ICN station (WARM 2013).
- Total precipitation for the monitoring period at Freeport, Illinois, (MRCC #113262) was 111% of normal. During Spring 2013 (March through May), precipitation was 142% of normal.
- In 2013, water levels measured in monitoring wells 2S, 3S, 7S, 8S, 9S,10S, and 10VS satisfied wetland hydrology criteria for greater than 5% of the growing season, and wells 7S, 8S, and 9S satisfied wetland hydrology criteria for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, wells 2S, 7S, 8S, 9S, 10S, and 10VS also satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season.
- Surface-water levels measured at gauges A, E, and F indicated inundation at and below 231.49 m, 231.47 m, and 231.51 m (759.48 ft, 759.42 ft, and 759.55 ft), respectively, for greater than 5% of the growing season, and inundation at and below 230.73 m, 230.77 m, and 231.01 m (756.99 ft, 757.12 ft, and 757.91 ft), respectively, for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, surface-water levels measured at gauges A, E, and F indicated inundation at and below

231.09 m, 231.13 m, and 231.19 m (758.17 ft, 758.30 ft, and 758.50 ft), respectively, for 14 or more consecutive days of the growing season.

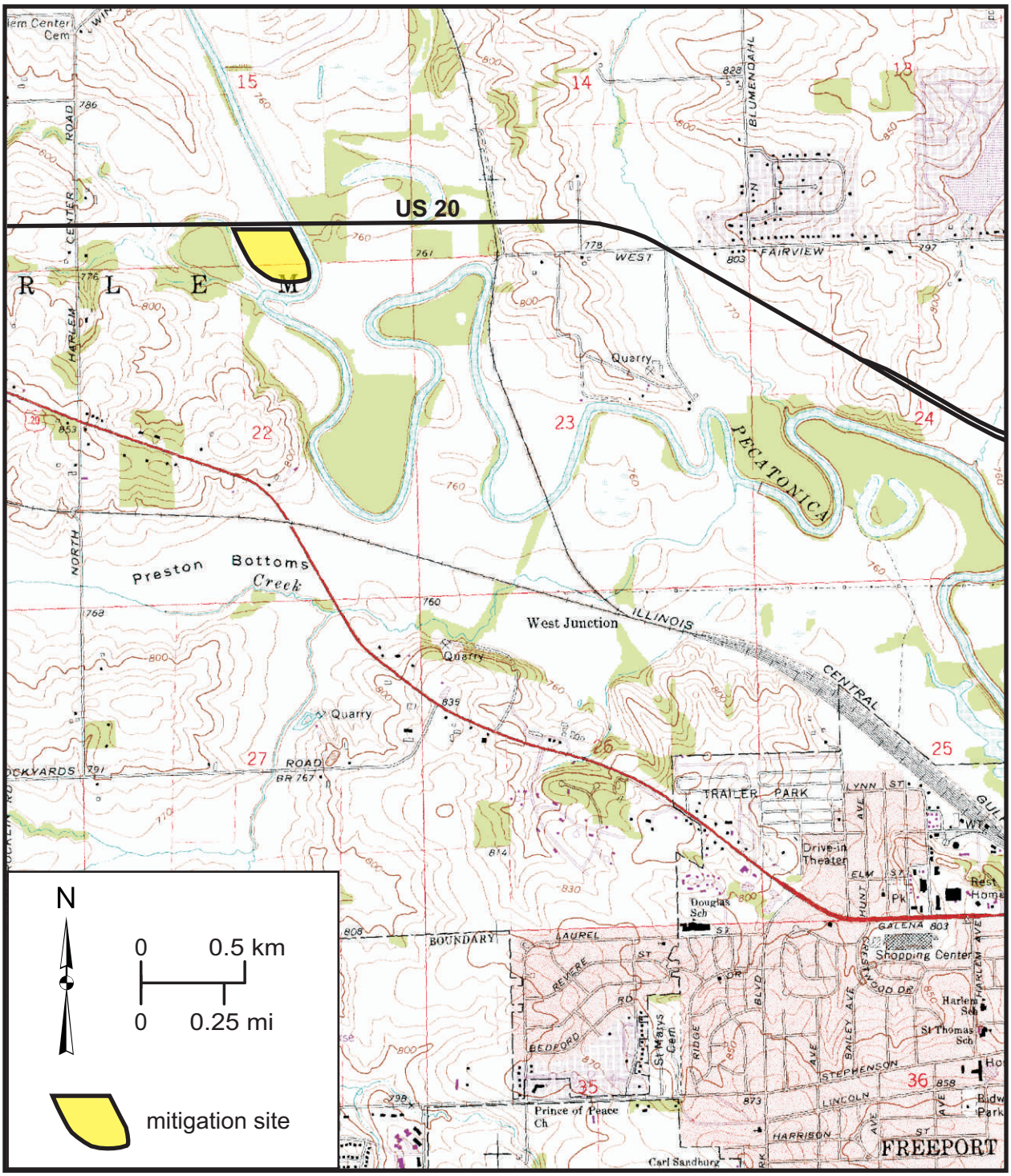
- Two floods (one in April and one in June) occurred on the Pecatonica River during the 2013 growing season, inundating the vast majority of the site on both occasions.

PLANNED FUTURE ACTIVITIES

- Monitoring will continue until no longer required by IDOT.

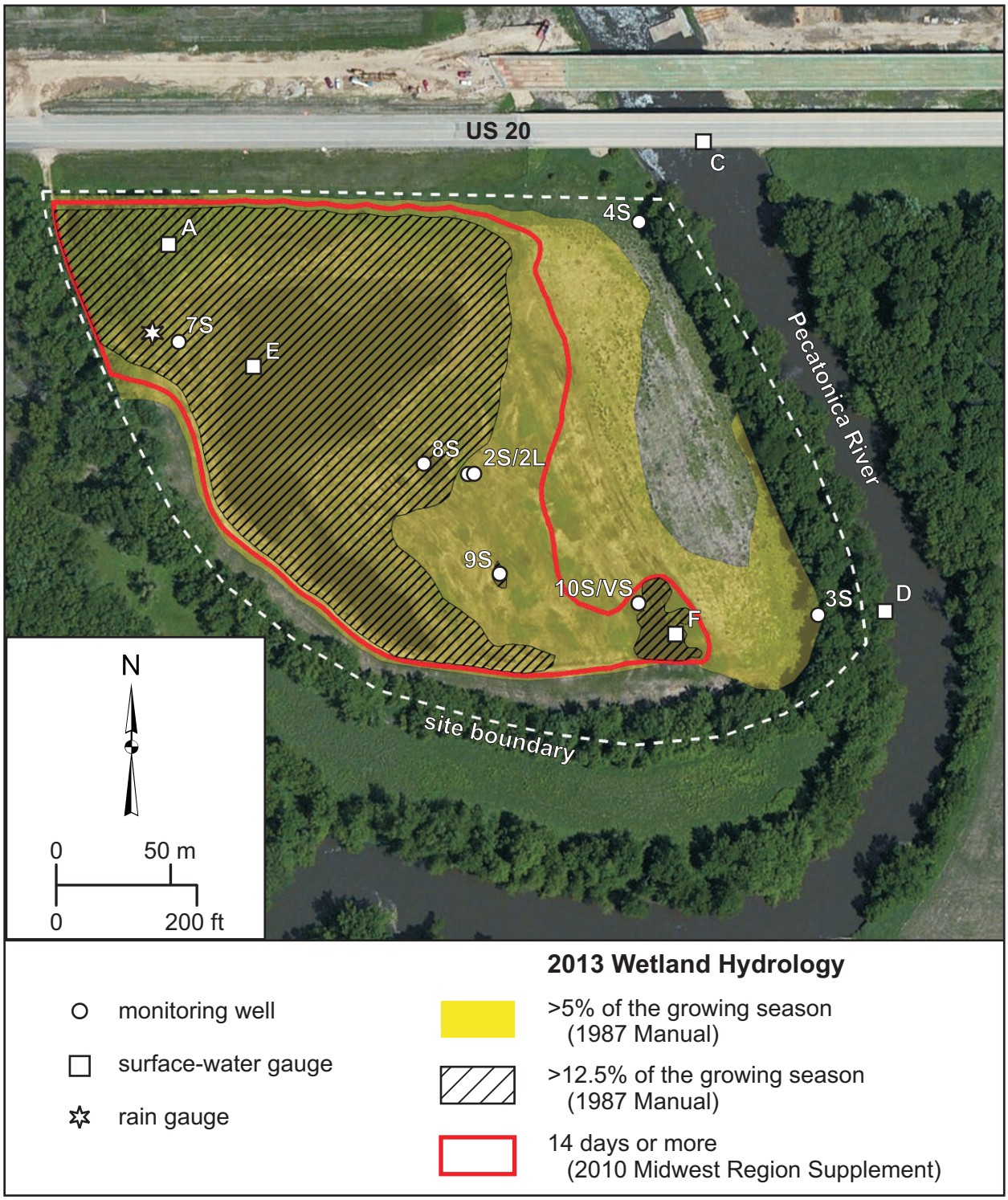
# Former Weber Property Wetland Mitigation Site
# (US 20, FAP 301)
## General Study Area and Vicinity

from the USGS Topographic Series, Freeport West, IL, 7.5-minute Quadrangle (ISGS 2013b)
contour interval is 10 feet



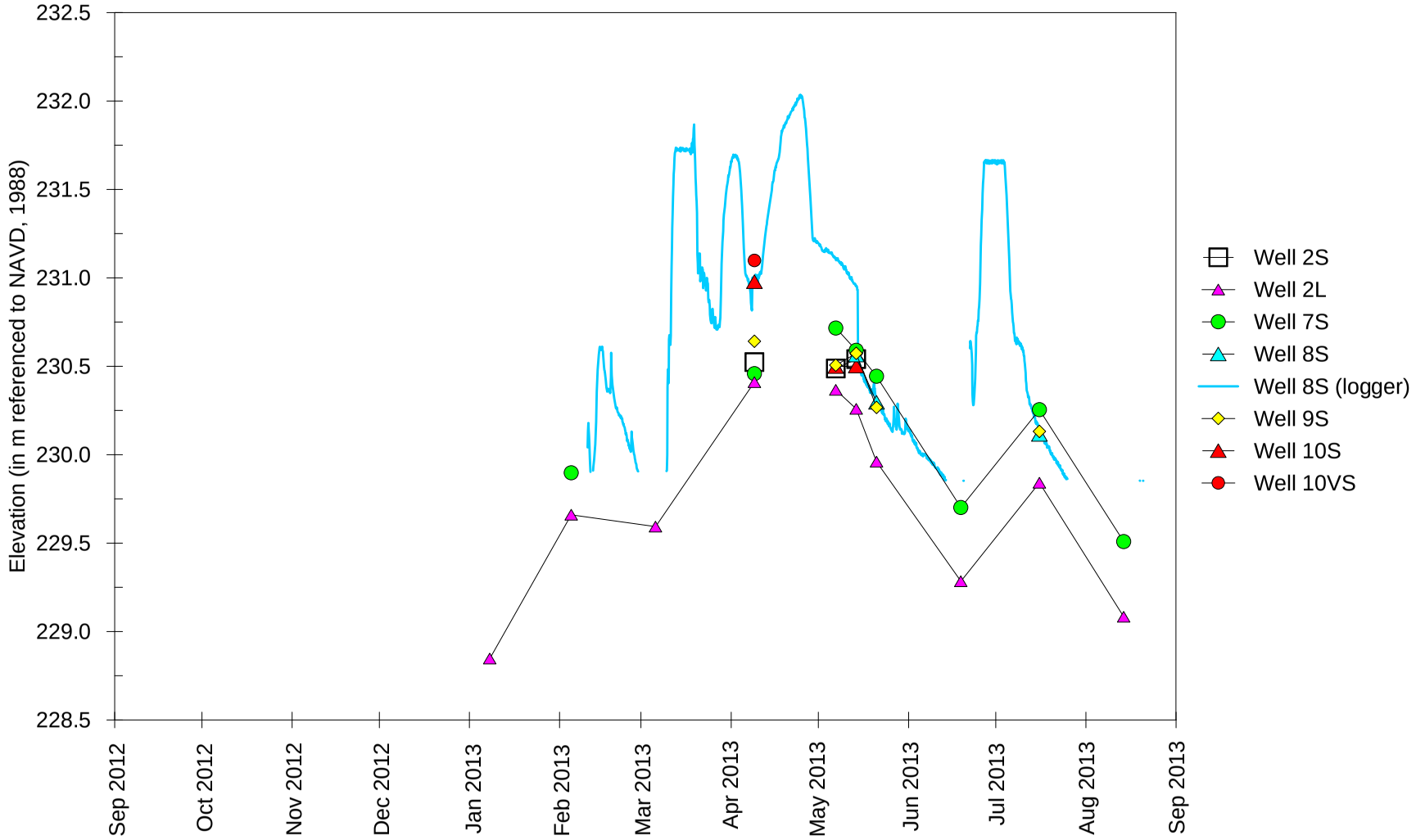
# Former Weber Property Wetland Mitigation Site
# (US 20, FAP 301)
## Estimated Areal Extent of 2013 Wetland Hydrology
### September 1, 2012 through August 31, 2013

Map based on 0.3-meter resolution imagery provided by DigitalGlobe and available from Esri (Esri 2013).
Image acquired April 29, 2011.

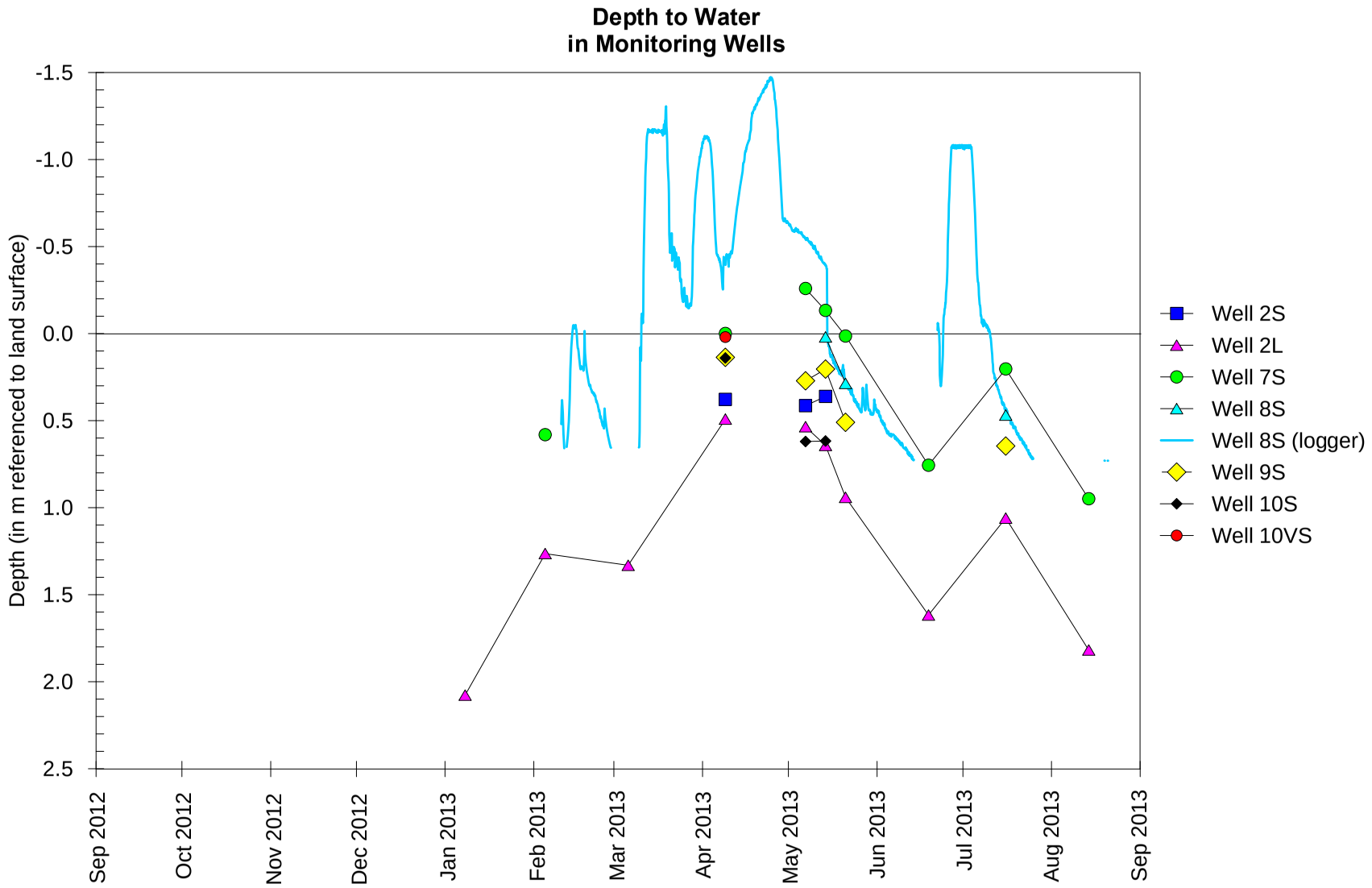


# Former Weber Property Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Monitoring Wells

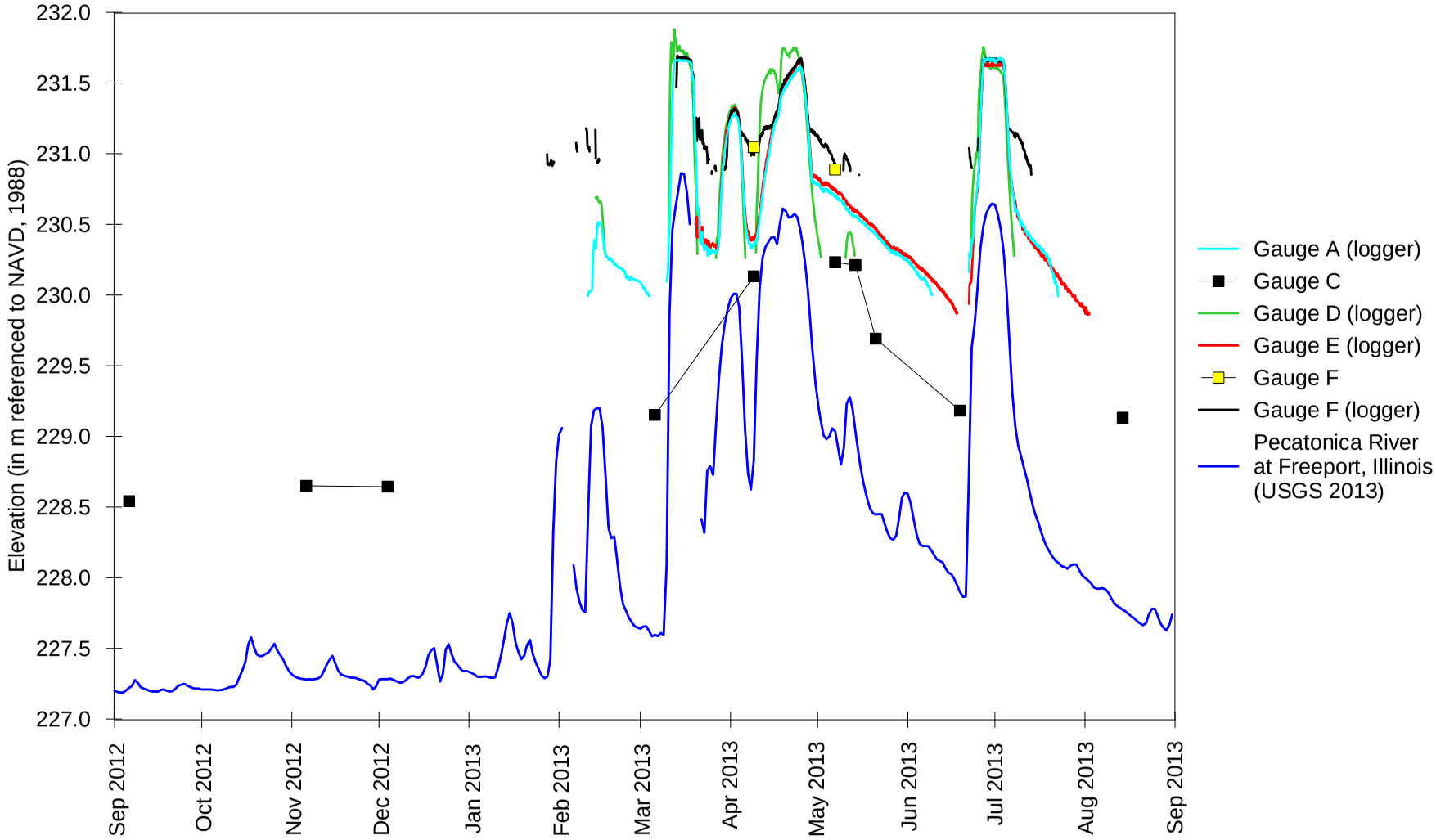


# Former Weber Property Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

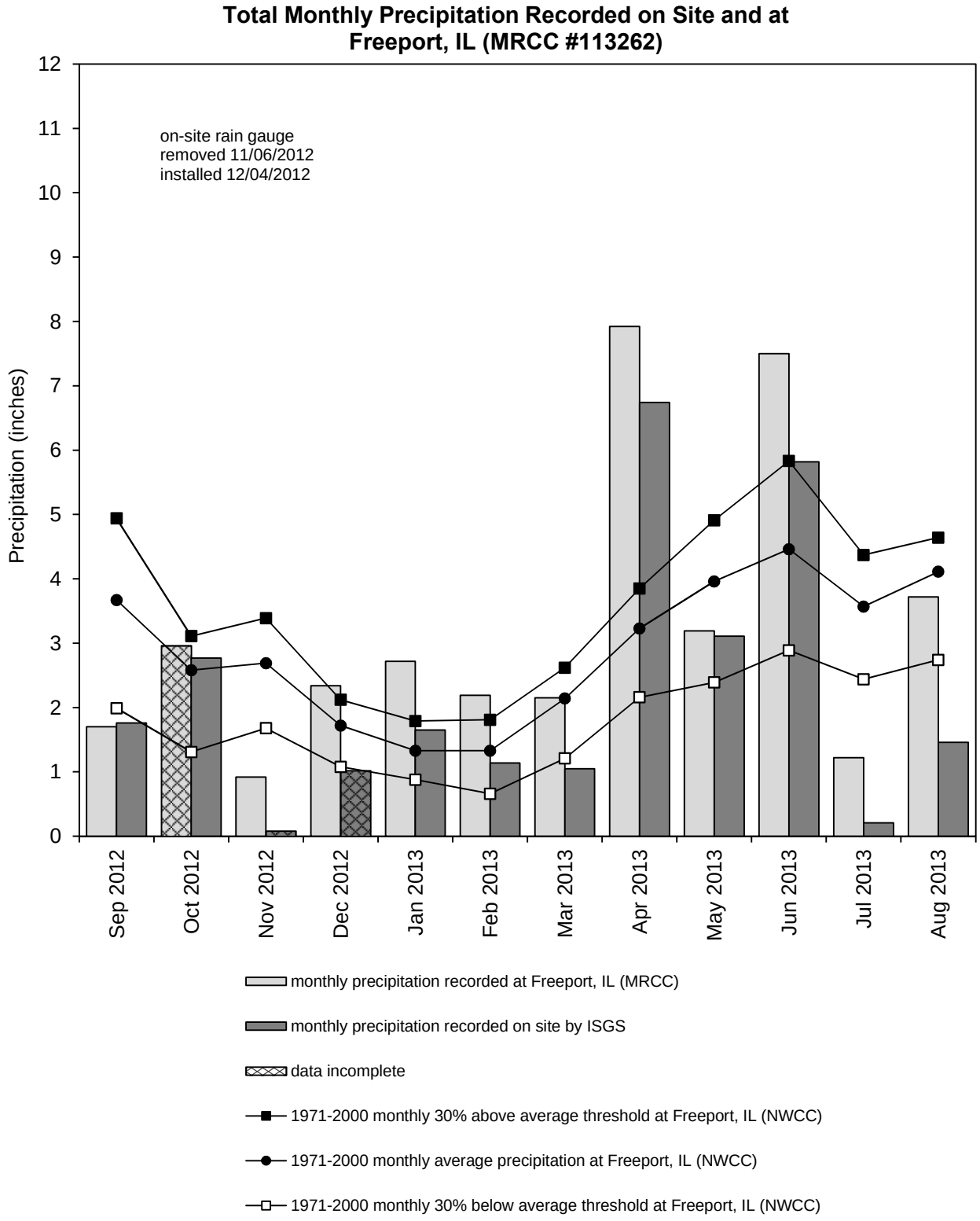


# Former Weber Property Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations at Surface-Water Gauges



# Former Weber Property Wetland Mitigation Site
## September 2012 through August 2013



**MAX CREEK** **ISGS #80**
**WETLAND MITIGATION SITE**
IL 147
FAS 932
Sequence #8717A
Johnson County, near Simpson, Illinois
**Primary Project Manager: Geoffrey E. Pociask**
**Secondary Project Manager: Jessica L. B. Monson**

SITE HISTORY

- July 2008: An Initial Site Evaluation was submitted to IDOT.
- December 2008: Water-level monitoring was initiated.
- August 2009: Construction at the wetland mitigation site began.
- Spring 2011: The ISGS was notified by IDOT to begin post-construction monitoring.

WETLAND HYDROLOGY CALCULATION FOR 2013

The target compensation area for the Max Creek wetland mitigation site is 0.49 ha (1.20 ac). Using the 1987 Manual (Environmental Laboratory 1987), 0.87 ha (2.14 ac) out of a total site area of approximately 1.21 ha (3.00 ac) satisfied wetland hydrology criteria for greater than 5% of the growing season, and 0.81 ha (1.99 ac) of the site satisfied wetland hydrology for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 0.98 ha (2.42 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Anna, Illinois, is April 3, and the season lasts 214 days (MRCC 2013). Using the 1987 Manual, 5% of the growing season is 11 days and 12.5% of the growing season is 27 days. Using the 2010 Midwest Region Supplement, March 4 was the starting date of the 2013 growing season based on soil temperatures measured on site and at the nearby Tamms wetland mitigation site (ISGS #71).
- Total precipitation for the monitoring period at Cape Girardeau, Missouri, (MRCC station #231289) was 85% of normal. During Spring 2013 (March through May), precipitation was 66% of normal.
- In 2013, wells 1VS, 9S, 10S, 11S, and 12S satisfied wetland hydrology criteria for greater than 5% of the growing season, and wells 9S, 10S, 11S, and 12S satisfied wetland hydrology criteria for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, all wells satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.
- Water-level data from Gauge A indicated that Max Creek flooded the site three times during the 2013 growing season. However, these floods did not persist long enough to satisfy wetland hydrology criteria.

- Data from Gauge E showed that areas at and below 115.69 m (379.56 ft) were inundated for greater than 5% and for greater than 12.5% of the growing season, using the 1987 Manual, and for 14 or more consecutive days during the growing season, using the 2010 Midwest Region Supplement.

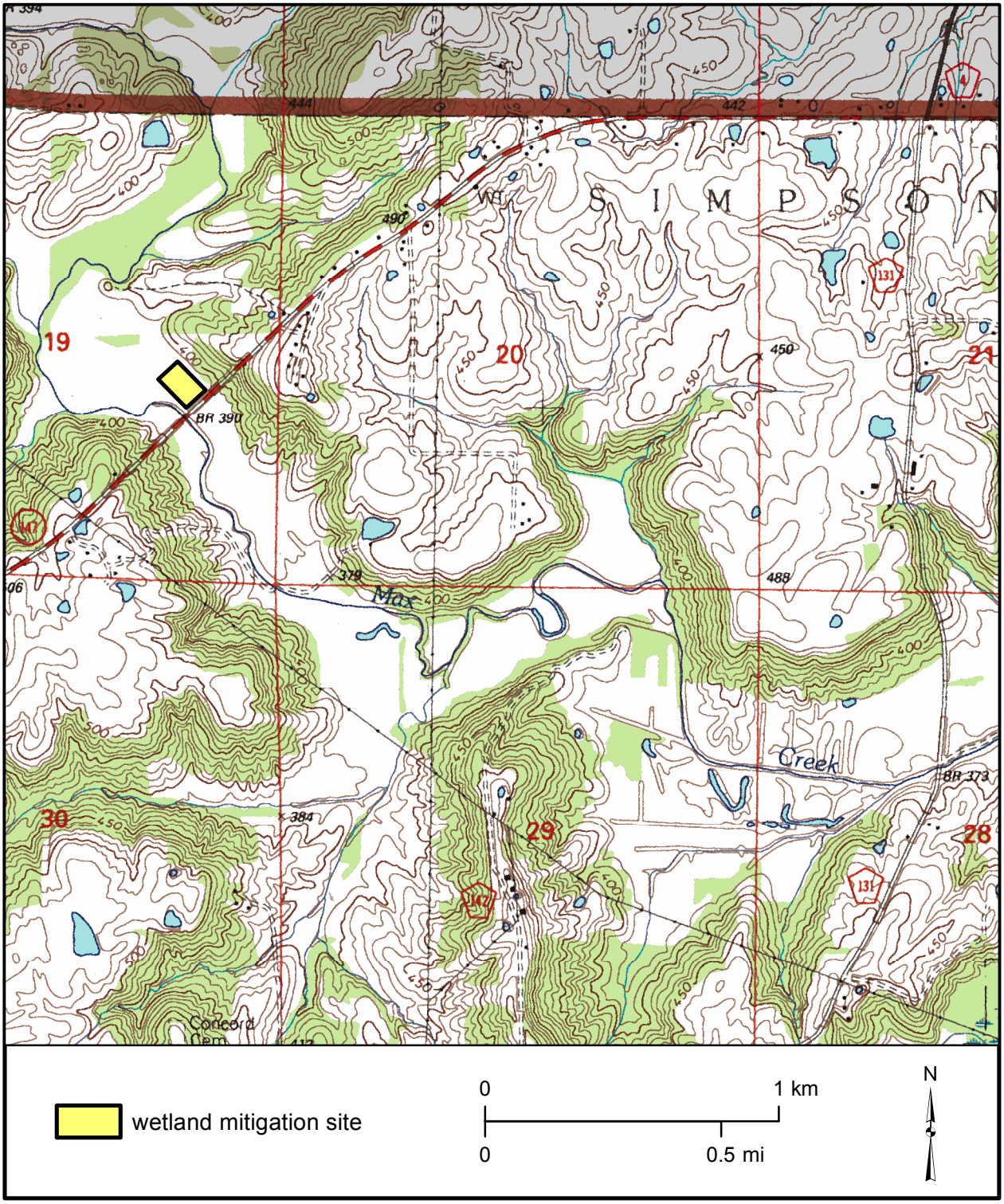
PLANNED FUTURE ACTIVITIES

- Water-level monitoring is expected to continue through 2016 or until no longer required by IDOT.

# Max Creek Wetland Mitigation Site
# (IL 147, FAS 932)

## General Study Area and Vicinity

from the USGS Topographic Series, Bloomfield, IL 7.5-minute Quadrangle (ISGS 2013b)
contour interval is 10 feet

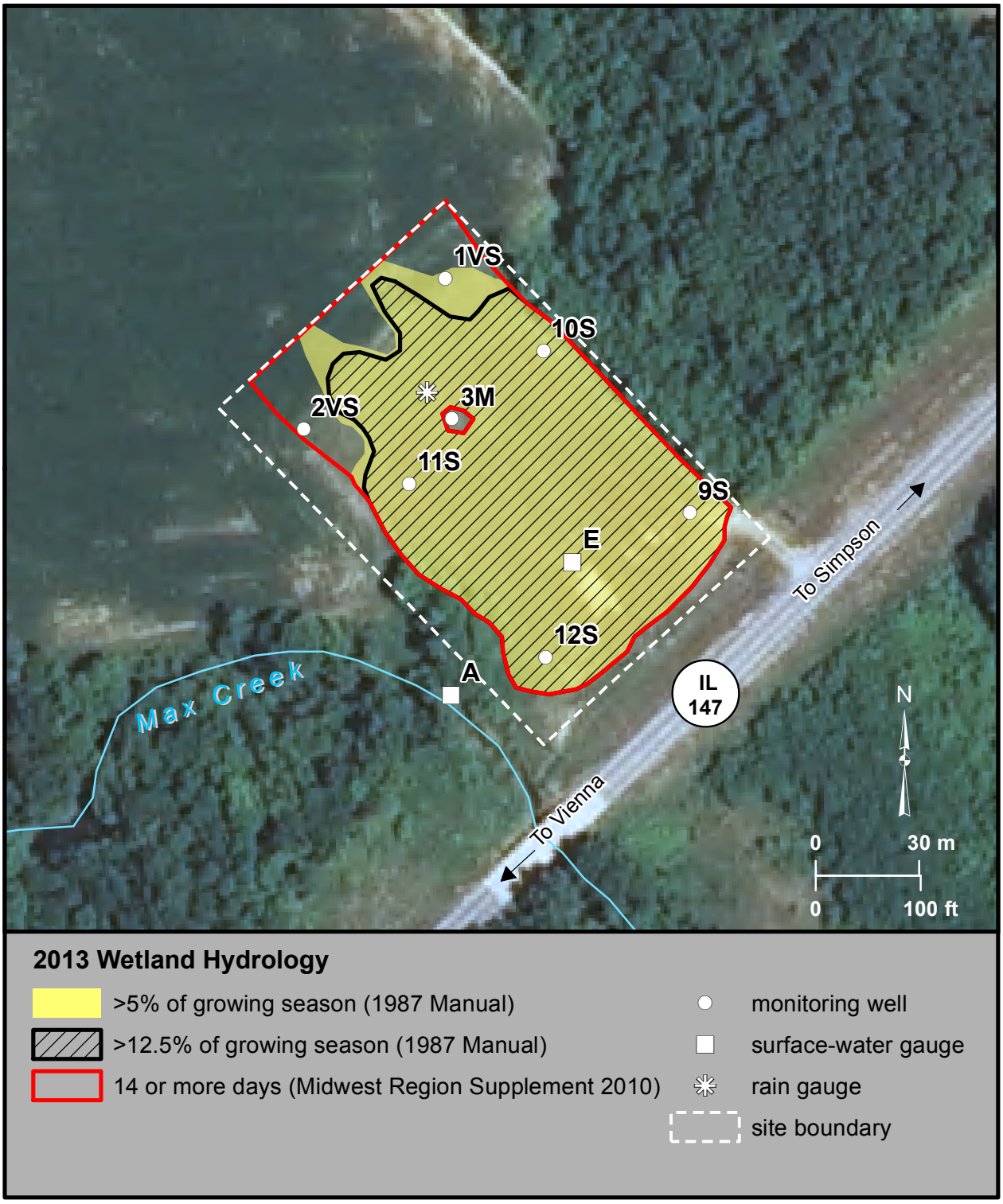


# Max Creek Wetland Mitigation Site
# (IL 147, FAS 932)

## Estimated Areal Extent of 2013 Wetland Hydrology

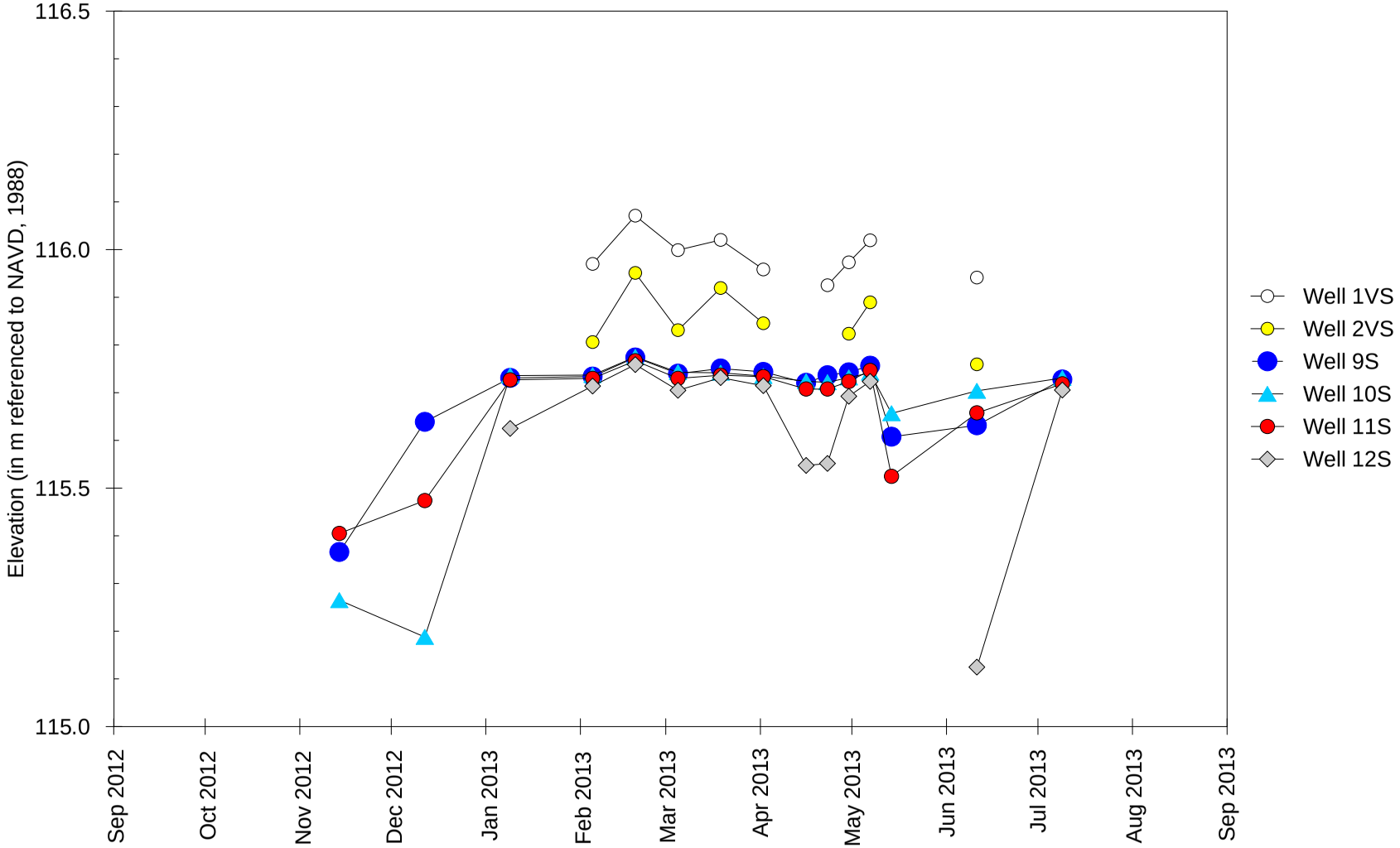
**September 1, 2012 through August 31, 2013**

Map based on 2012 Farm Service Agency digital orthophotography, Johnson County, Illinois (USDA-FSA 2012)



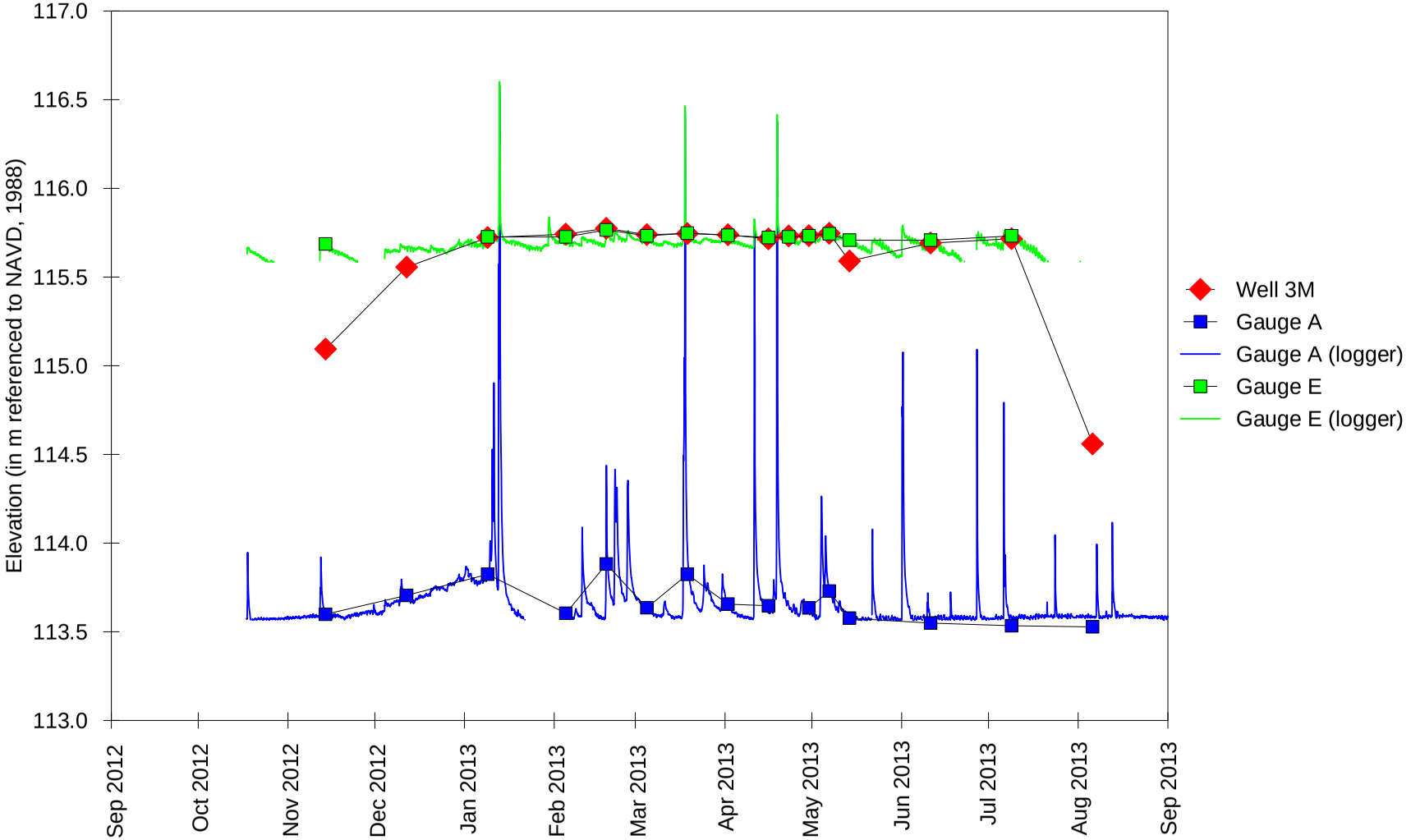
# Max Creek Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Monitoring Wells



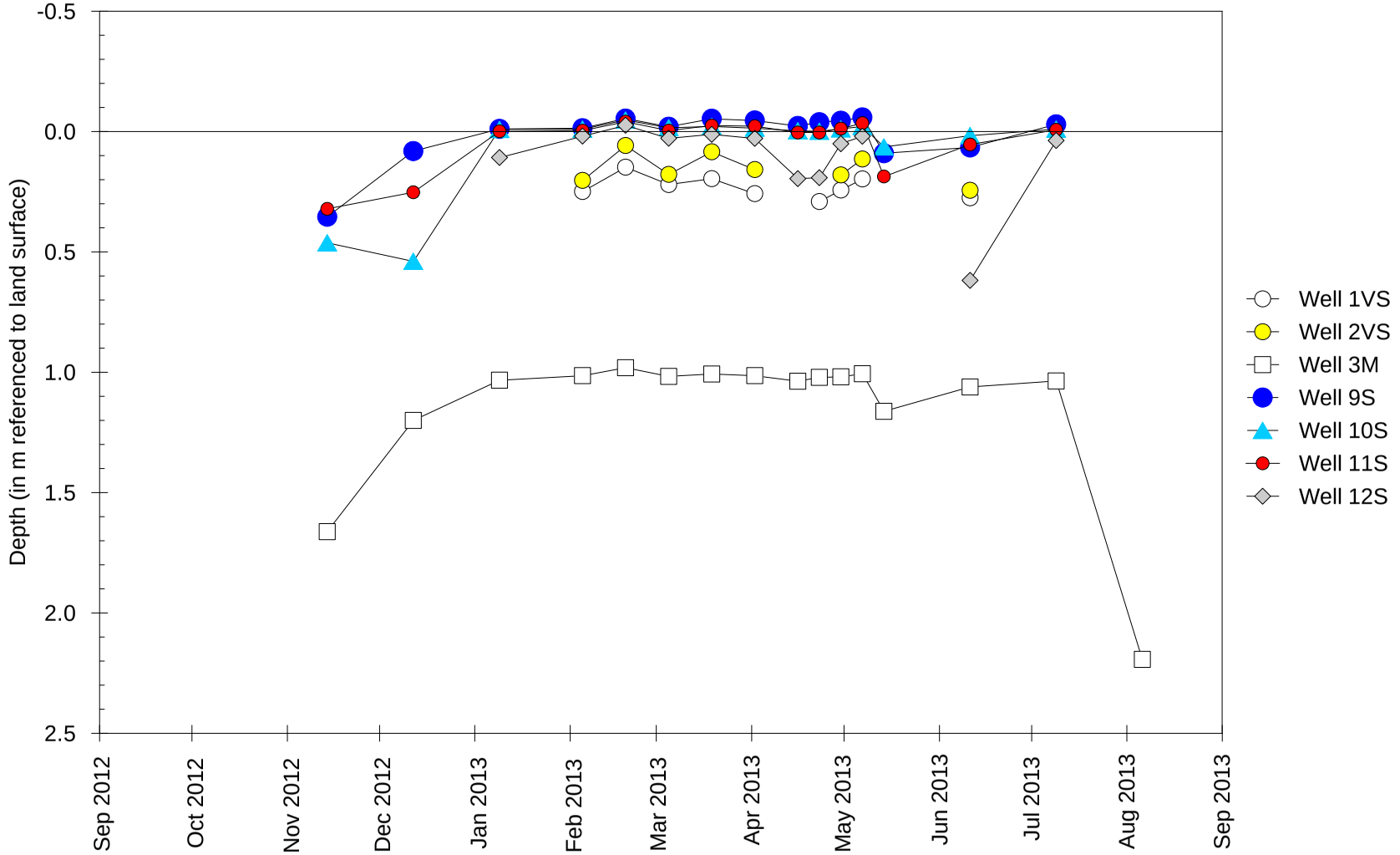
# Max Creek Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Well 3M and at Surface-Water Gauges

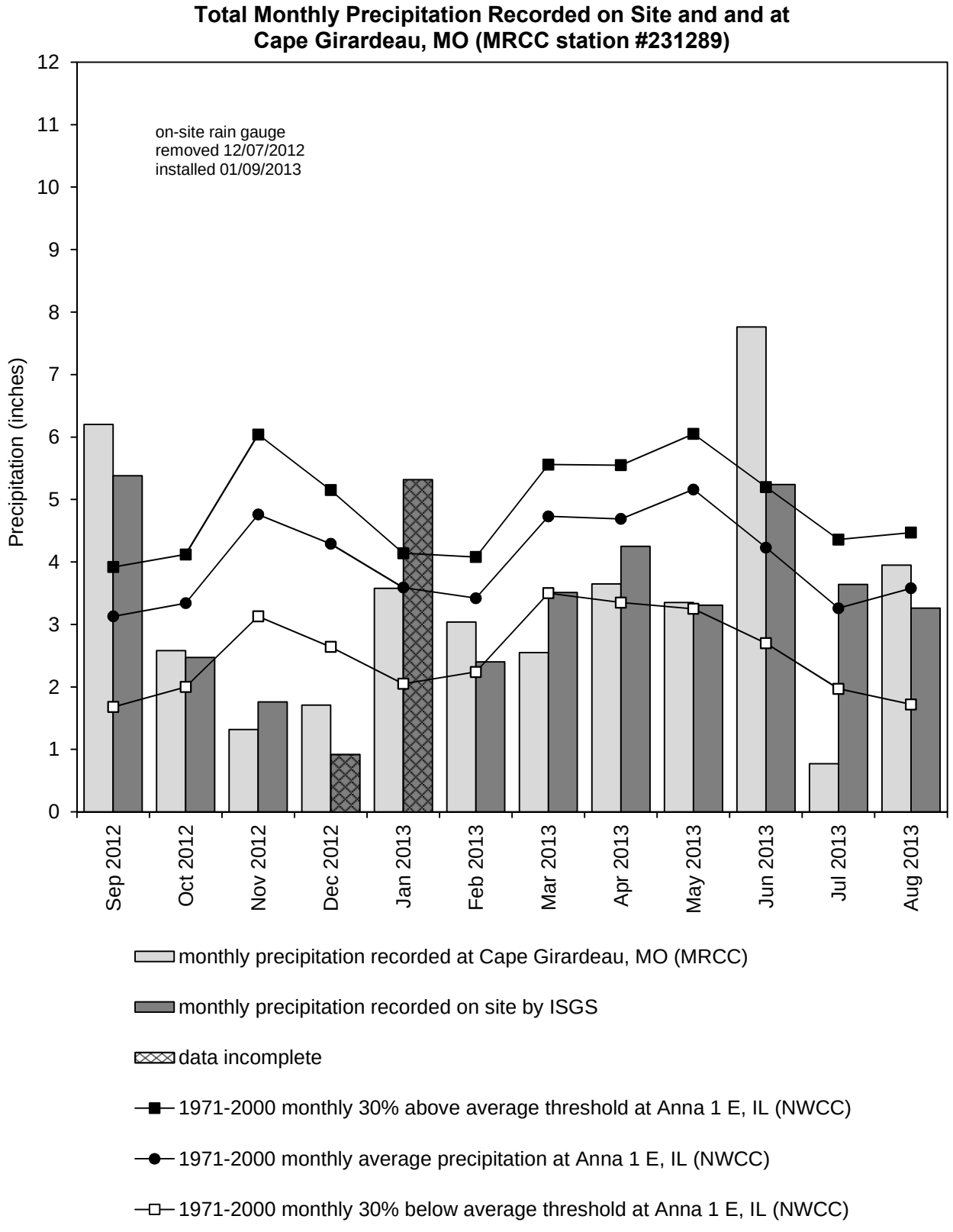


# Max Creek Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water in Monitoring Wells



# Max Creek Wetland Mitigation Site
## September 2012 through August 2013



**EAST CAPE GIRARDEAU** **ISGS #81**
**WETLAND MITIGATION SITE**
IL 146
FAP 312
Sequence #633A
Alexander County, near East Cape Girardeau, Illinois
**Primary Project Manager: Eric T. Plankell**
**Secondary Project Manager: Jessica L. B. Monson**

SITE HISTORY

- Fall 2009: Wetland construction began.
- March 2010: The ISGS submitted a Level II hydrogeologic characterization report to IDOT (ISGS Open-File Series 2010-3).
- August 2011: The IDOT reported that the site had been graded and drainage control structures were completed. The ISGS was tasked by IDOT to monitor the site for performance criteria outlined in the wetland compensation plan, and post-construction water-level monitoring was initiated.
- September 2011: A levee was constructed along the north portion of the eastern edge of the site.
- October 2011: Trees and a cover crop were planted at the site.

WETLAND HYDROLOGY CALCULATION FOR 2013

The target compensation area for the East Cape Girardeau wetland mitigation site is 3.08 ha (7.60 ac). Using the 1987 Manual (Environmental Laboratory 1987), 5.43 ha (13.42 ac) of the total site area of 6.20 ha (15.20 ac) satisfied wetland hydrology criteria for greater than 5% of the 2013 growing season and 4.79 ha (11.84 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 5.34 ha (13.20 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Cape Girardeau, Missouri, is March 26, and the season lasts 228 days (MRCC 2013). Using the 1987 Manual, 5% of the growing season is 11 days, and 12.5% of the growing season is 29 days. Using the 2010 Midwest Region Supplement, March 5 was the starting date of the 2013 growing season based on soil temperatures measured on site.
- Total precipitation for the monitoring period at Cape Girardeau, Missouri, (MRCC station #231289) was 85% of normal. During Spring 2013 (March through May), precipitation was 66% of normal.
- In 2013, water levels measured in all monitoring wells satisfied wetland hydrology criteria for greater than 5% of the growing season, and all wells, excluding 19S and 19VS, satisfied wetland hydrology criteria for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, water levels measured in all

monitoring wells satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season.

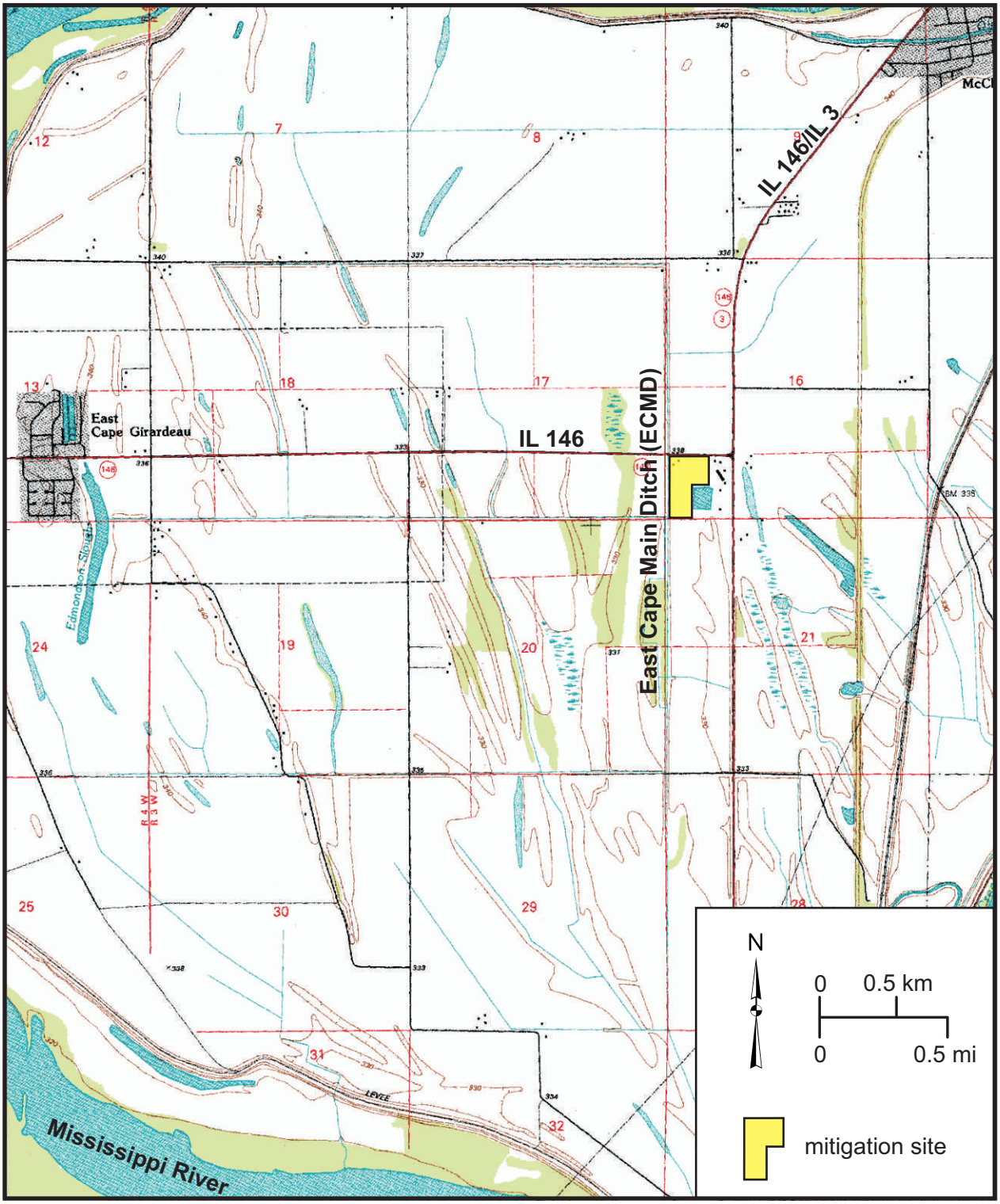
- Surface-water levels measured at Gauge B indicated inundation at and below 101.20 m (332.02 ft) for greater than 5% of the growing season, and inundation at and below 100.90 m (331.04 ft) for greater than 12.5% of the growing season, using the 1987 Manual. Surface-water levels measured at Gauge E indicated inundation at and below 101.23 m (332.12 ft) for greater than 5% of the growing season, and inundation at and below 100.93 m (331.14 ft) for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, surface-water levels measured at gauges B and E indicated inundation at and below 101.10 m and 101.12 m (331.69 ft and 331.76 ft), respectively, for 14 or more consecutive days of the growing season.

PLANNED FUTURE ACTIVITIES

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

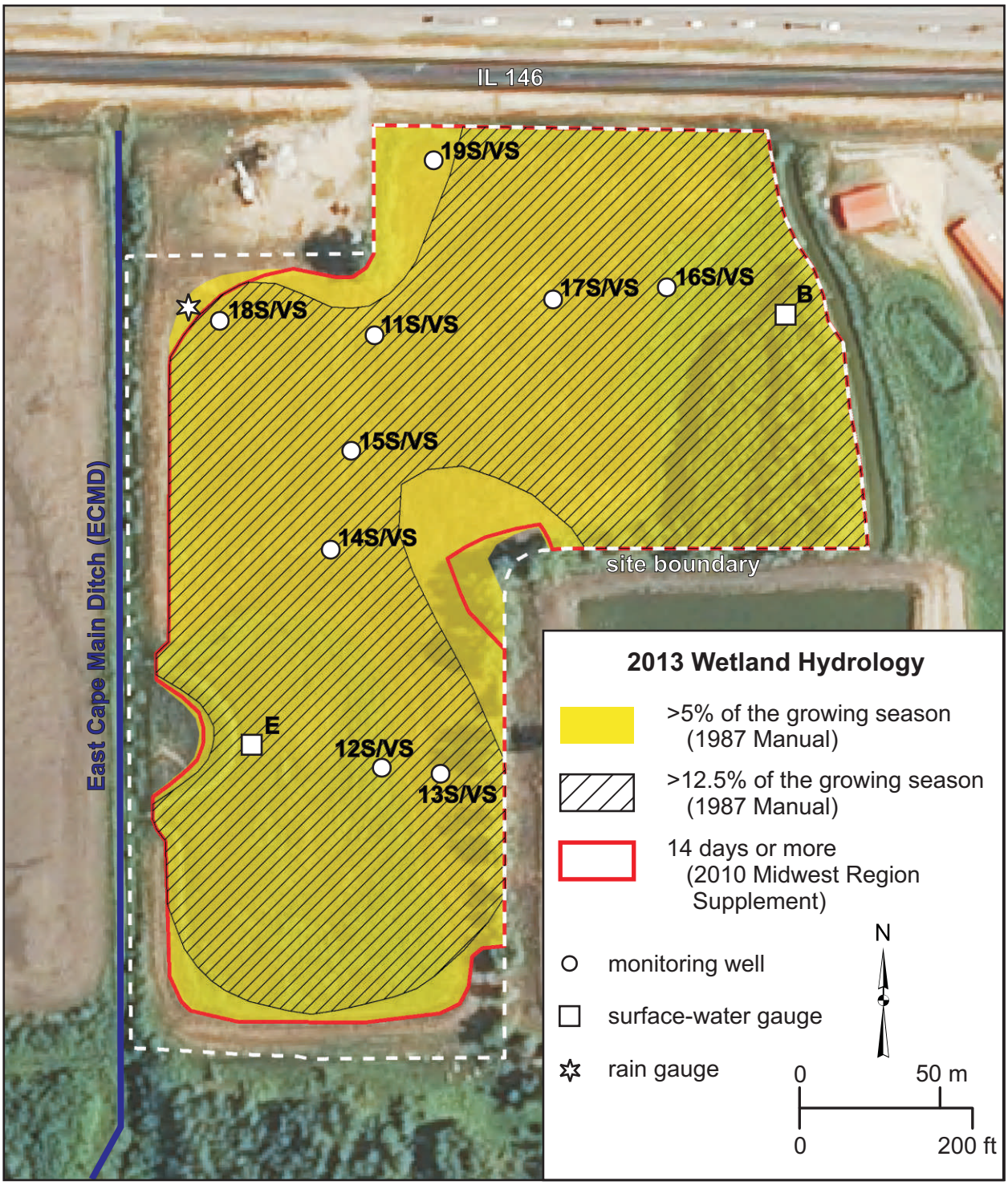
# East Cape Girardeau Wetland Mitigation Site
# (IL 146, FAP 312)
## General Study Area and Vicinity

from the USGS Topographic Series, McClure, IL-MO, 7.5-minute Quadrangle (ISGS 2013b)
contour interval is 20 feet, with supplementary contour interval of 10 feet



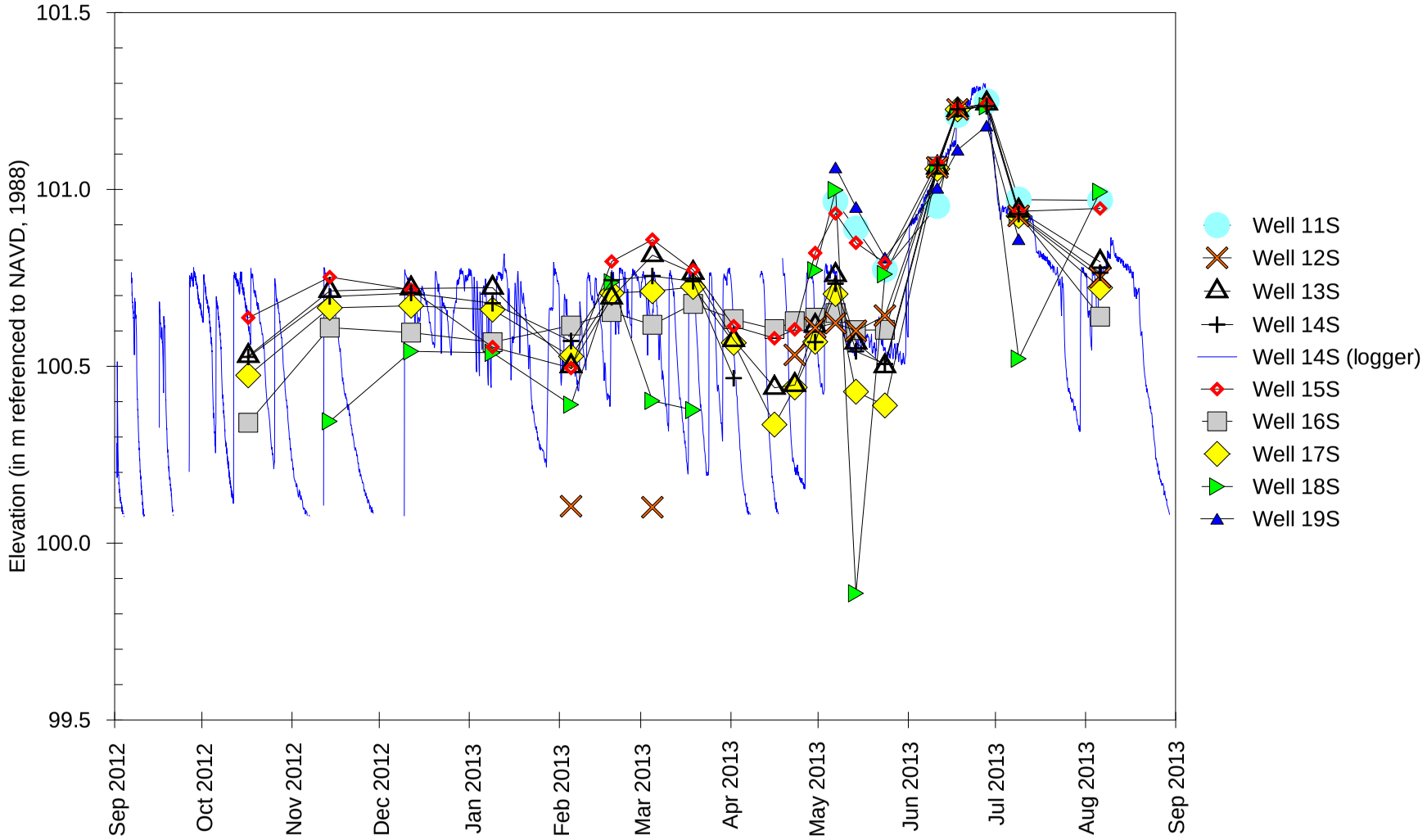
# East Cape Girardeau Wetland Mitigation Site
# (IL 146, FAP 312)
## Estimated Areal Extent of 2013 Wetland Hydrology
### September 1, 2012 through August 31, 2013

Map based on 2012 Farm Service Agency digital orthophotography, Alexander County, Illinois
(USDA-FSA 2012)



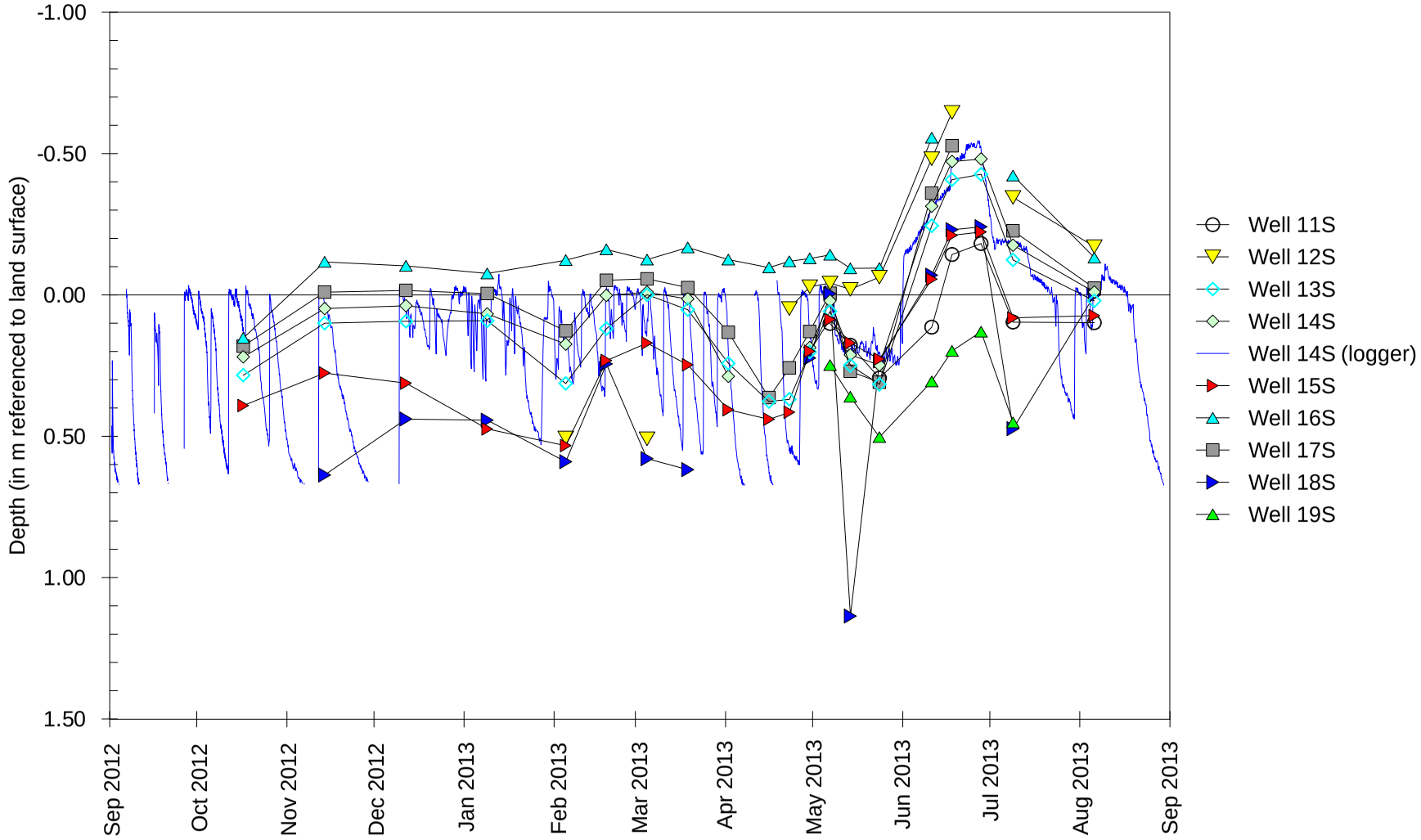
# East Cape Girardeau Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Shallow (S) Monitoring Wells



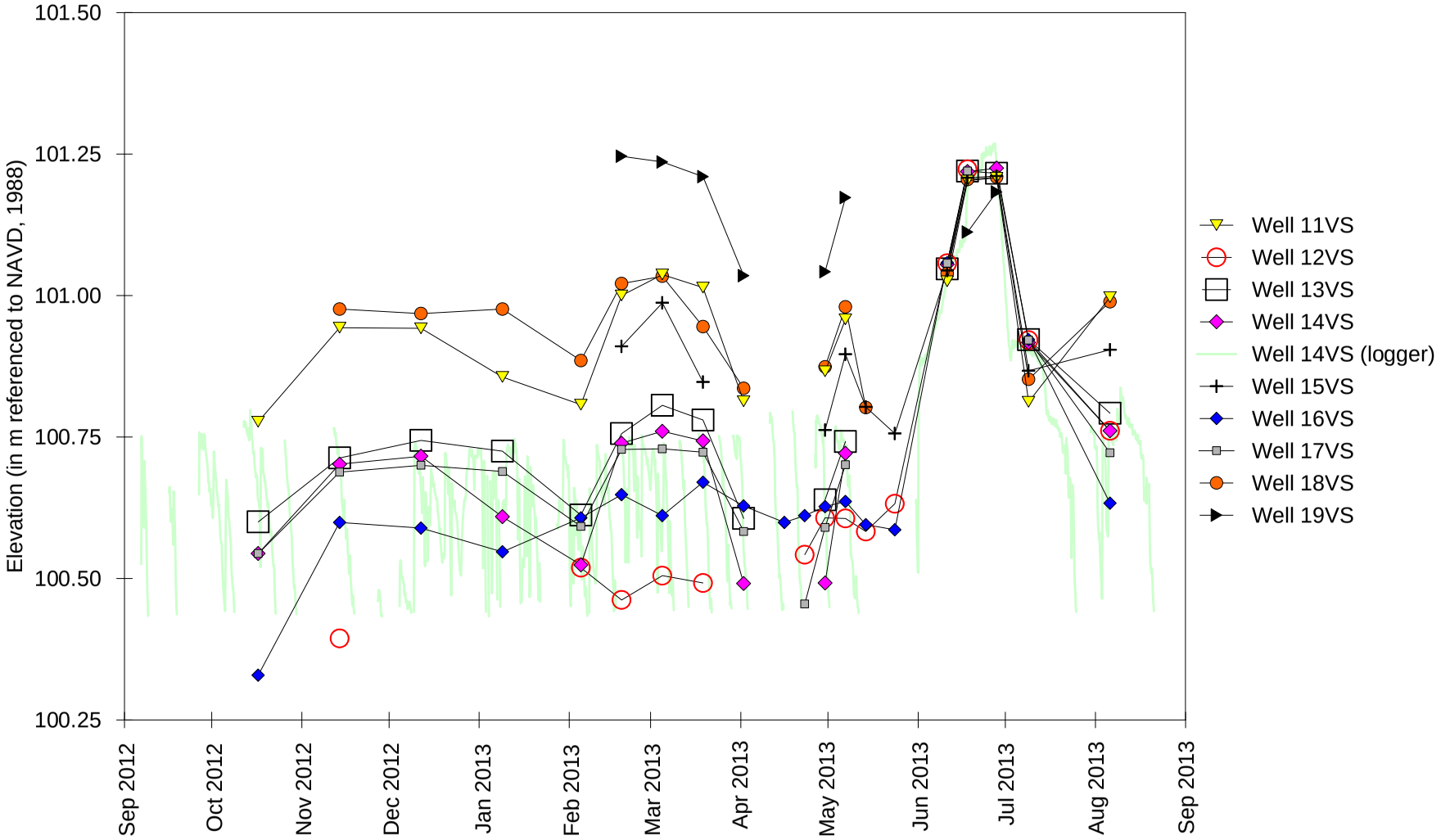
# East Cape Girardeau Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Shallow (S) Monitoring Wells



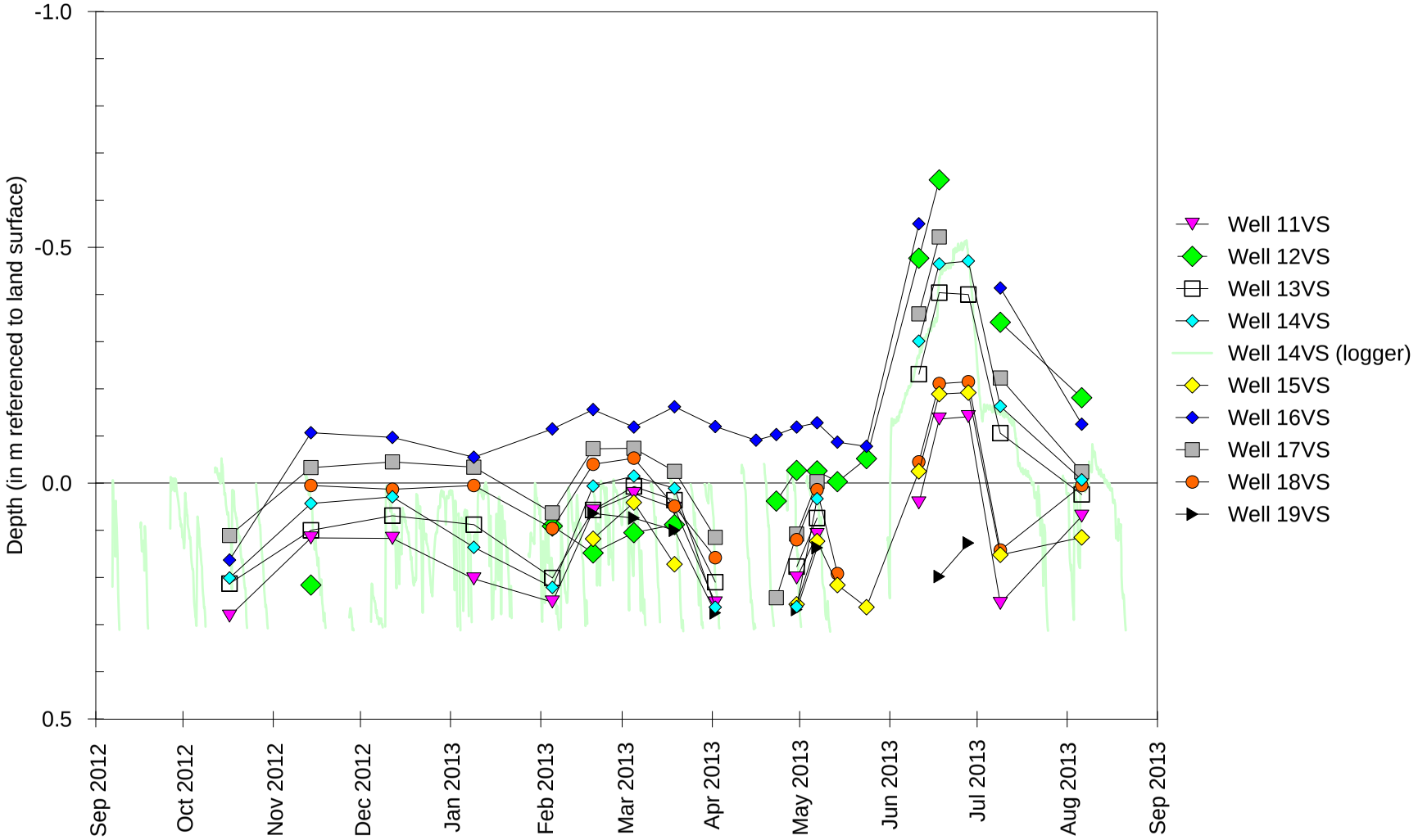
# East Cape Girardeau Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations
### in Very Shallow (VS) Monitoring Wells



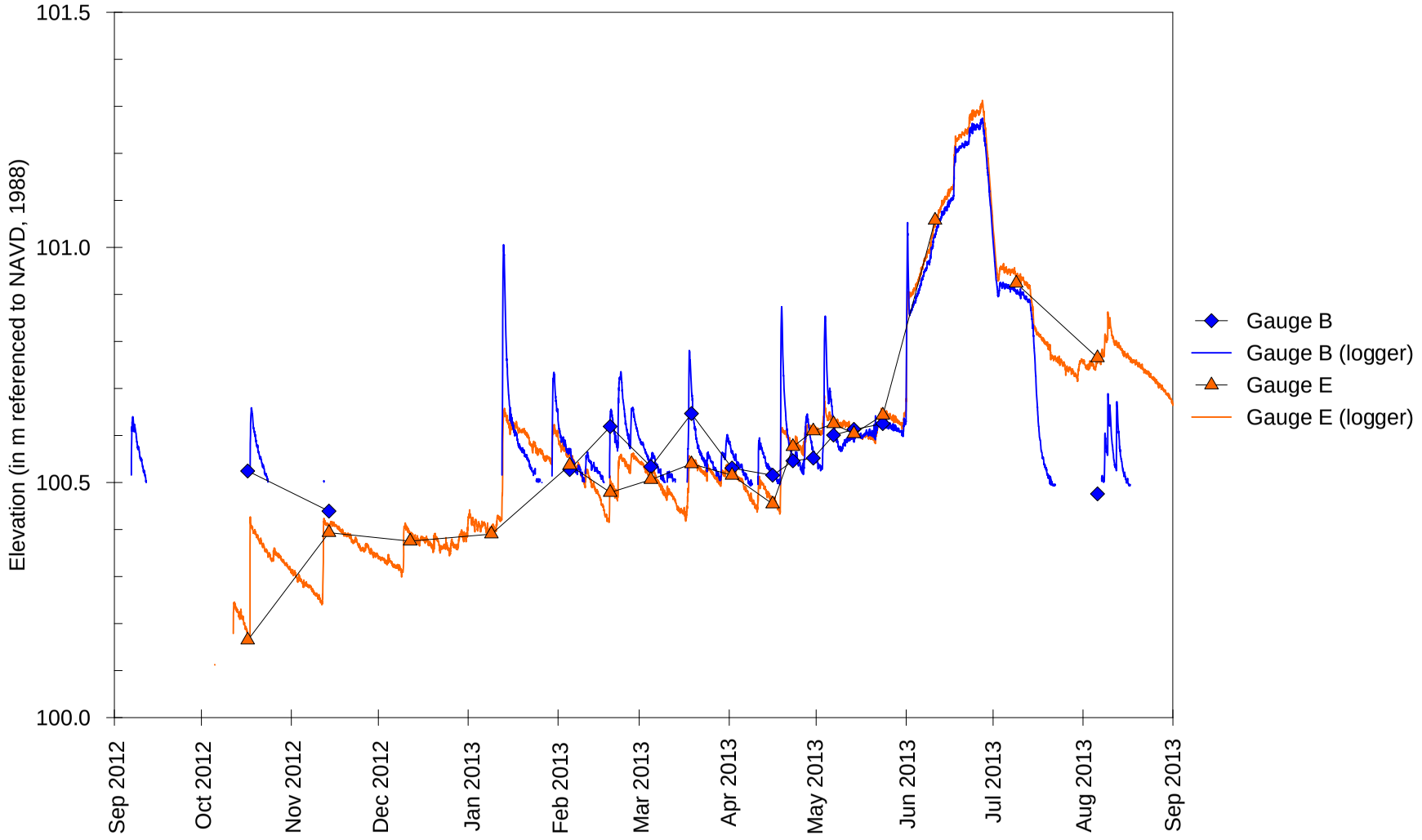
# East Cape Girardeau Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Very Shallow (VS) Monitoring Wells



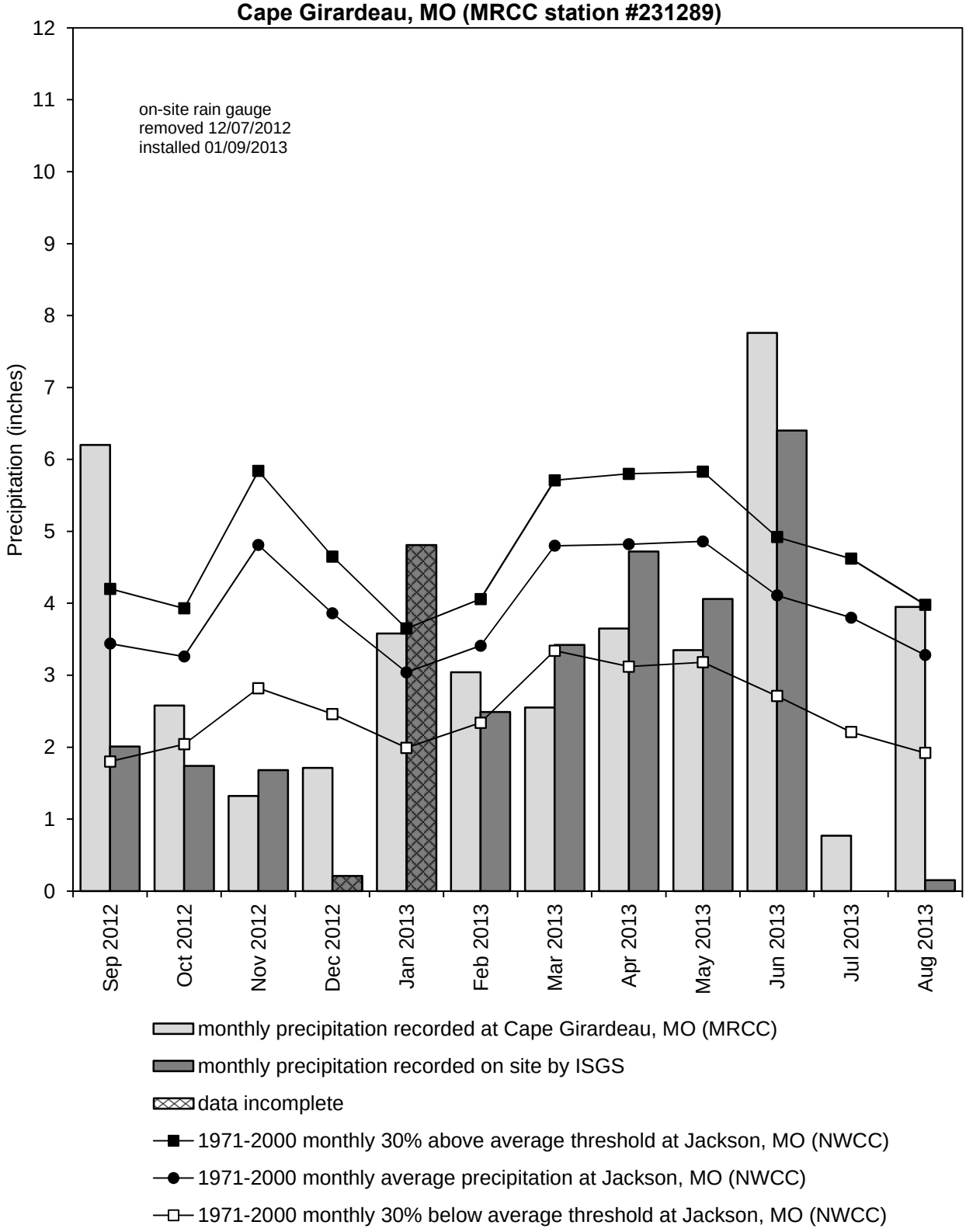
# East Cape Girardeau Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations at Surface-Water Gauges



# East Cape Girardeau Wetland Mitigation Site
## September 2012 through August 2013

### Total Monthly Precipitation Recorded on Site and at Cape Girardeau, MO (MRCC station #231289)



**LAWRENCE COUNTY** **ISGS #82**
**WETLAND MITIGATION BANK**
Sequence #14912
Lawrence County, near Lawrenceville, Illinois
**Primary Project Manager: Steven E. Benton**
**Secondary Project Manager: Jessica L. B. Monson**

SITE HISTORY

- June 2009: An Initial Site Evaluation report was submitted to IDOT on June 18, 2009.
- October 2009: a monitoring network was installed at the site.
- May 2010: The ISGS submitted a draft mitigation banking instrument to IDOT.
- December 2011: A Level II hydrologic characterization report (ISGS Open-File Series 2011-4) was submitted to IDOT.
- April 2013: The wetland banking instrument for the Lawrence County Potential Wetland Mitigation Bank was approved on April 8.

WETLAND HYDROLOGY CALCULATION FOR 2013

Using the 1987 Manual (Environmental Laboratory 1987), 16.64 ha (41.12 ac), of a total site area of 29.58 ha (73.10 ac), satisfied wetland hydrology criteria for greater than 5% of the 2013 growing season, and 11.37 ha (28.09 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 12.91 ha (31.89 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins at Olney, Illinois is April 7, and the season lasts 203 days (MRCC 2013); 5% of the growing season is 10 days, and 12.5% of the growing season is 25 days, using the 1987 Manual. Using the 2010 Midwest Region Supplement, March 29 was the starting date of the 2013 growing season based on soil temperatures measured on site and at the nearby Olney, Illinois ICN station (WARM 2013).
- Total precipitation for the monitoring period, recorded at Lawrenceville, Illinois (MRCC station #114957), was 108% of normal, and precipitation in Spring 2013 (March through May) was 94% of normal.
- In 2013, water levels measured in all of the soil-zone monitoring wells except 14S satisfied wetland hydrology criteria for greater than 5% of the growing season, and all of the wells except 11S, 14S, 16S, and 17S satisfied wetland hydrology criteria for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, water levels measured in all of the soil-zone monitoring wells except 14S, 16S, and 17S, satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.
- Surface-water levels measured at gauges A, B, and C revealed that portions of the site west of Beaver Pond Ditch at and below 124.90 m (409.78 ft) were inundated for more than 5% of the growing season, and areas at and below 124.00 m (406.82 ft) were inundated for

more than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, areas at and below 124.35 m (407.97 ft) were inundated for 14 or more consecutive days during the growing season.

ADDITIONAL INFORMATION

- There were three flood events on the Embarras River during the 2013 growing season. The greatest event occurred in April and resulted in several weeks of inundation on the site. The pumping station on Beaver Pond Ditch was not operational during any of the flood events, which likely contributed to the duration of inundation on the site.

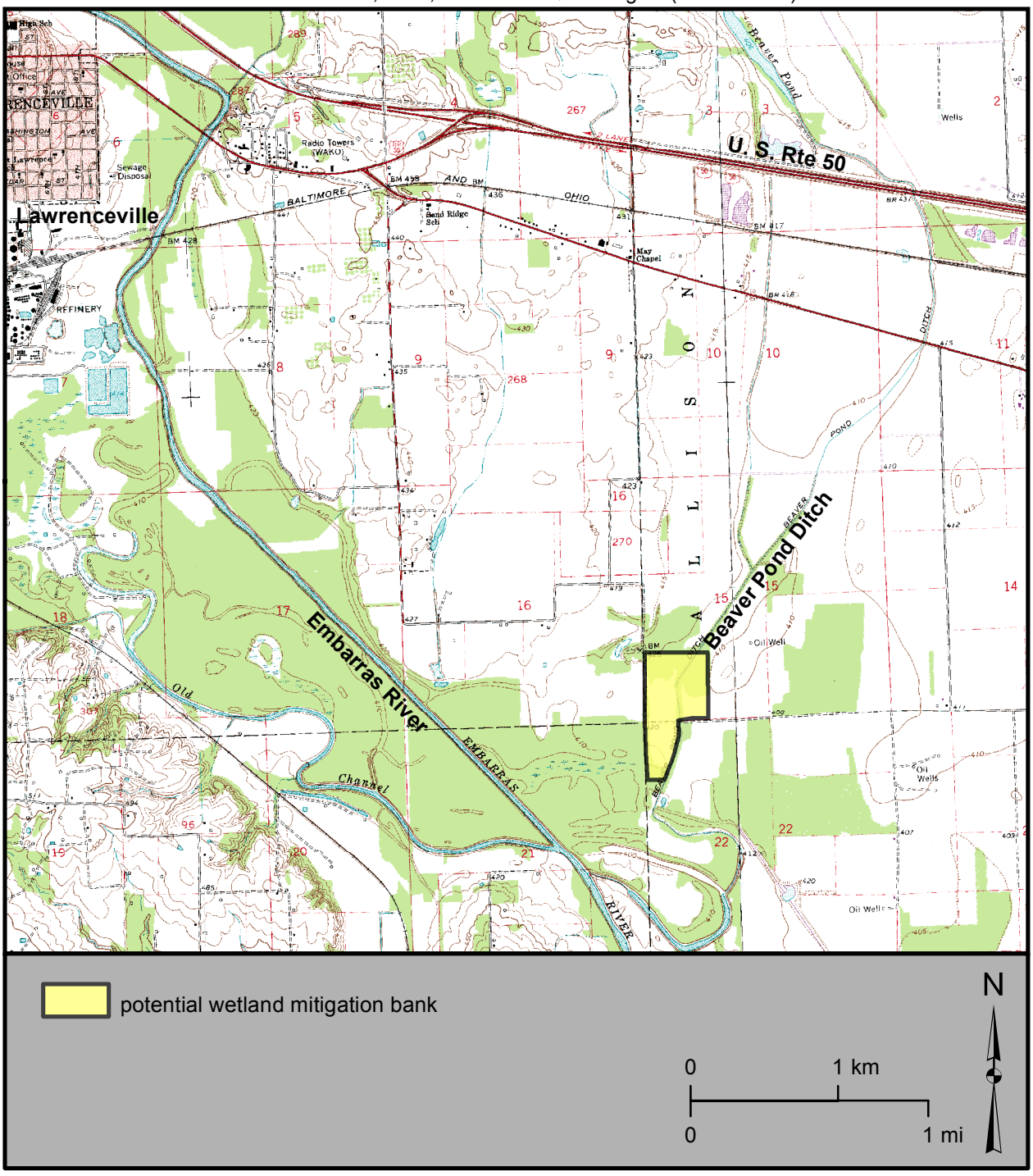
PLANNED FUTURE ACTIVITIES

- Construction began at the site in August 2013. New monitoring wells and surface-water gauges will be installed after excavation and earth-moving is completed.

# Lawrence County Wetland Mitigation Bank

## General Study Area and Vicinity

from the USGS Topographic Series, Lawrenceville, IL,
and Vincennes, IN-IL, 7.5-minute Quadrangles (ISGS 2013b)

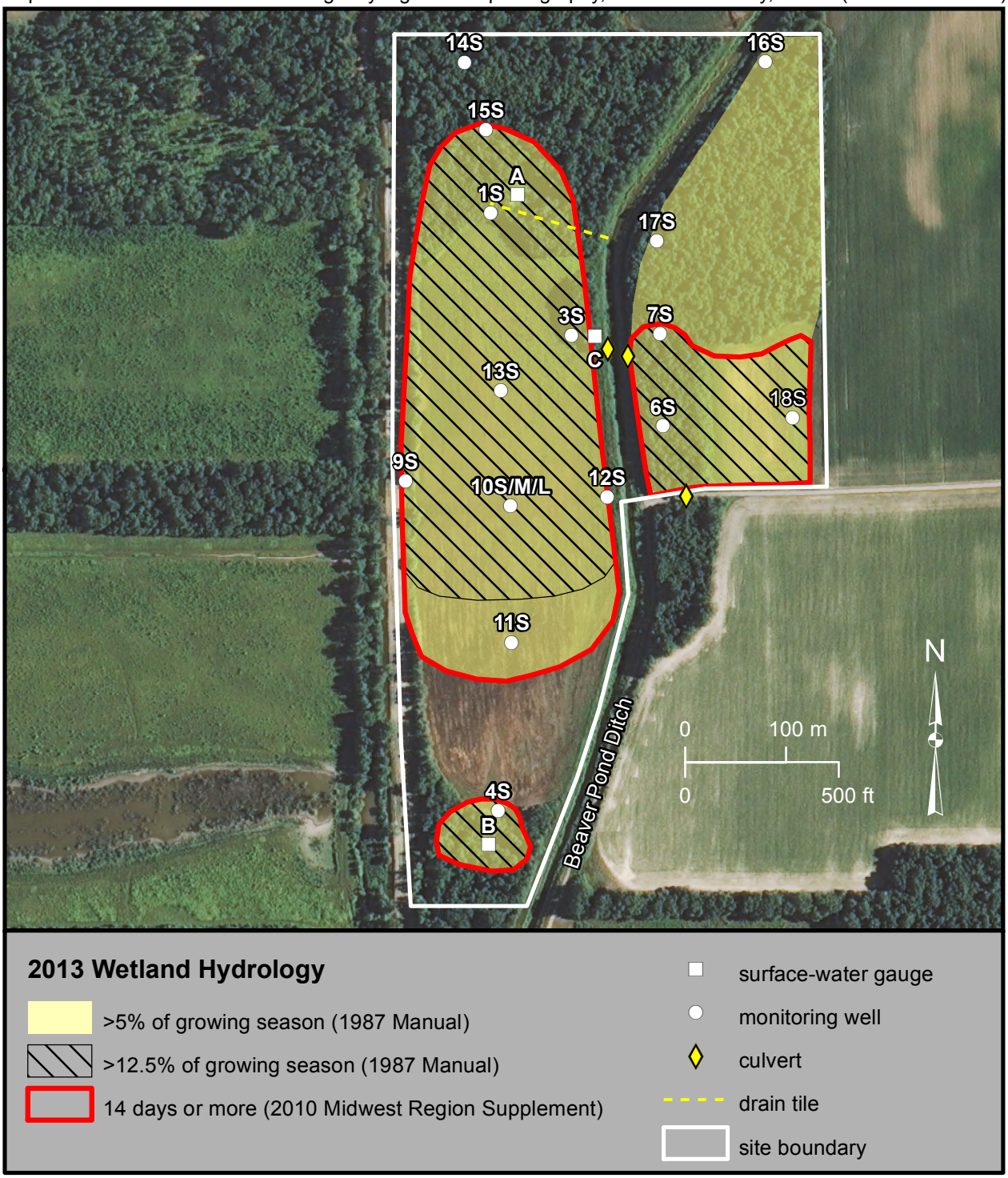


# Lawrence County Wetland Mitigation Bank

## Estimated Areal Extent of 2013 Wetland Hydrology

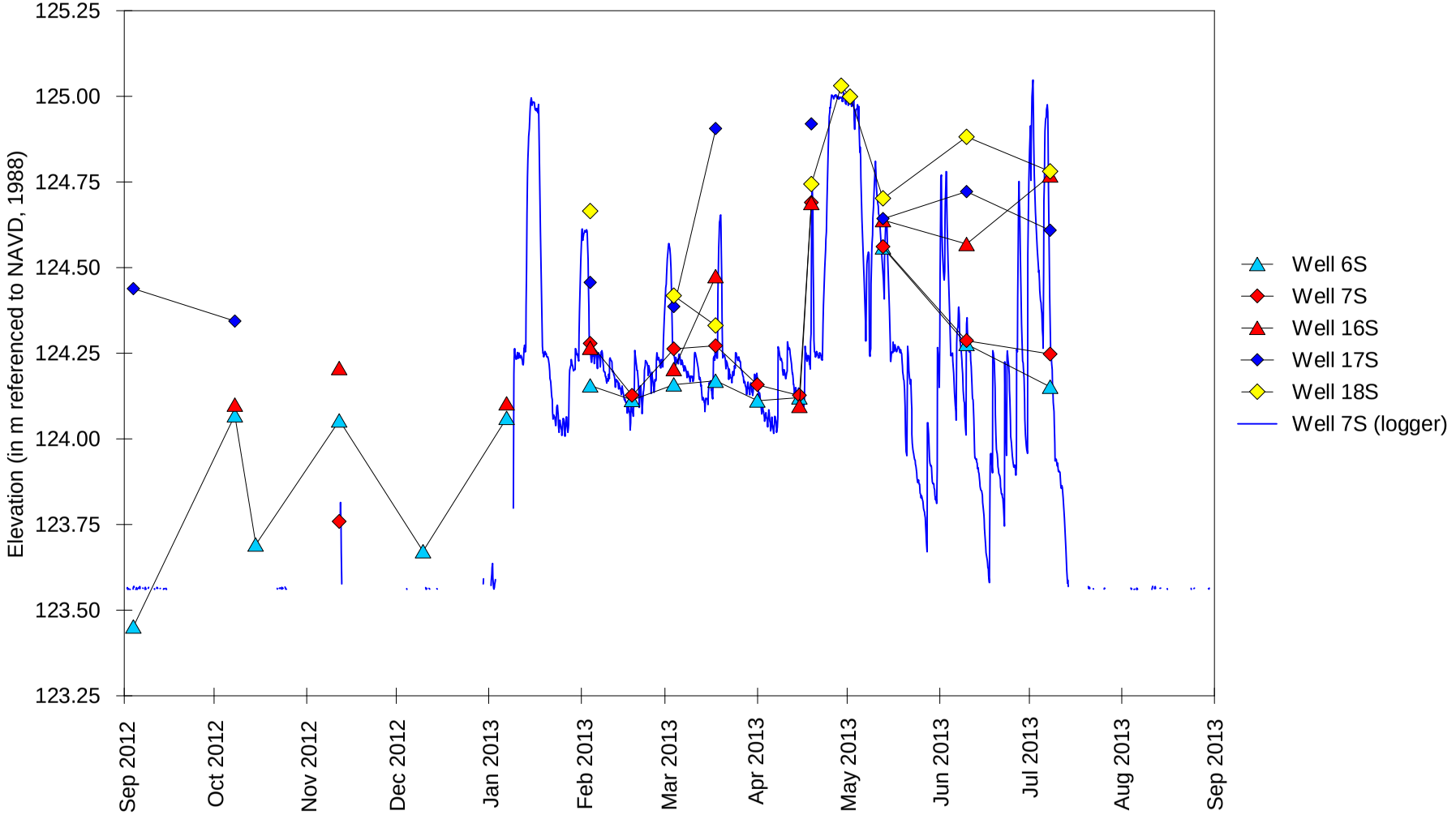
**September 1, 2012 through August 31, 2013**

Map based on 2012 Farm Service Agency digital orthophotography, Lawrence County, Illinois (USDA-FSA 2012)



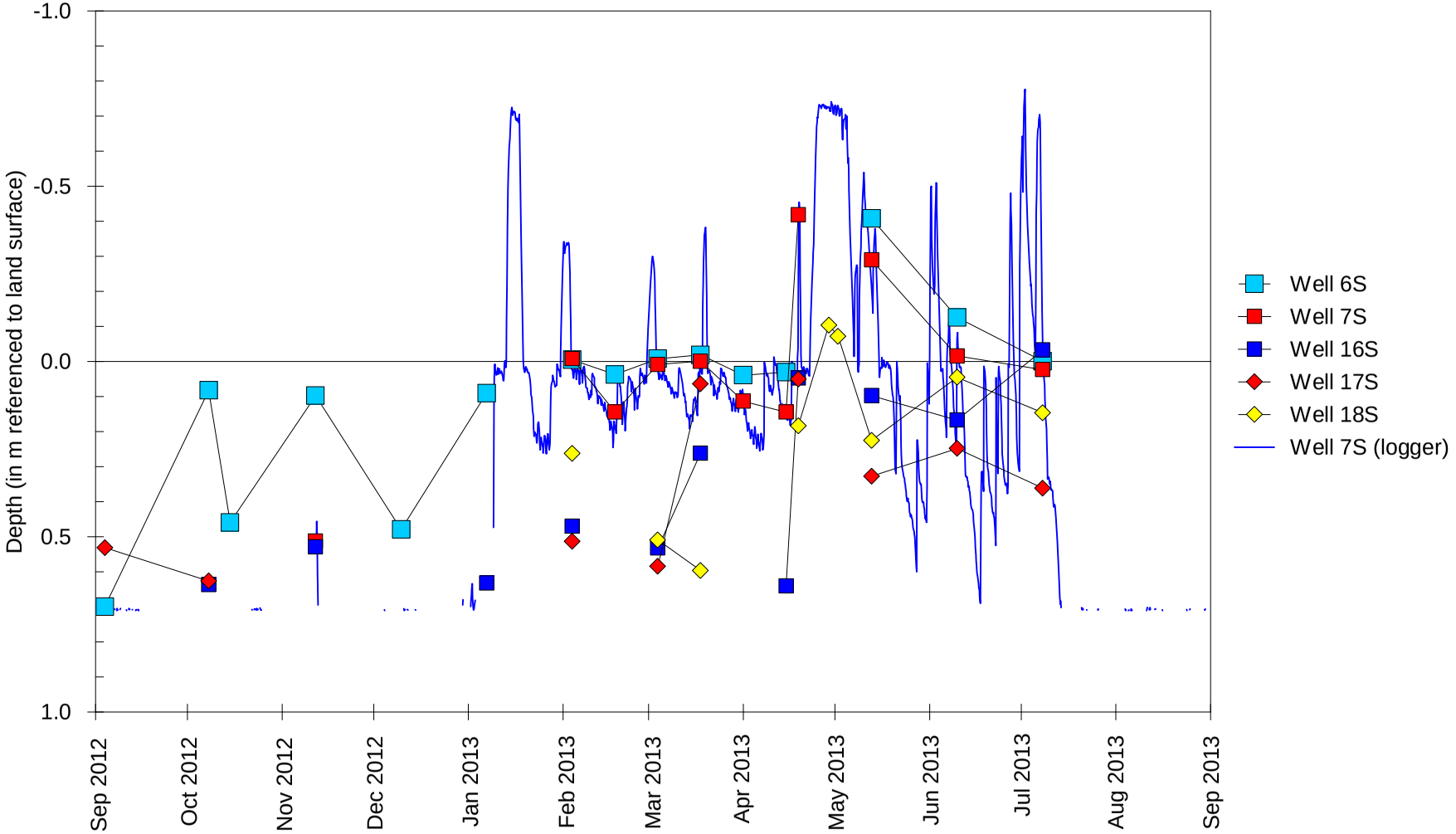
# Lawrence County Wetland Mitigation Bank
## September 1, 2012 through August 31, 2013

### Water-Level Elevations
### in Monitoring Wells East of Beaver Pond Ditch



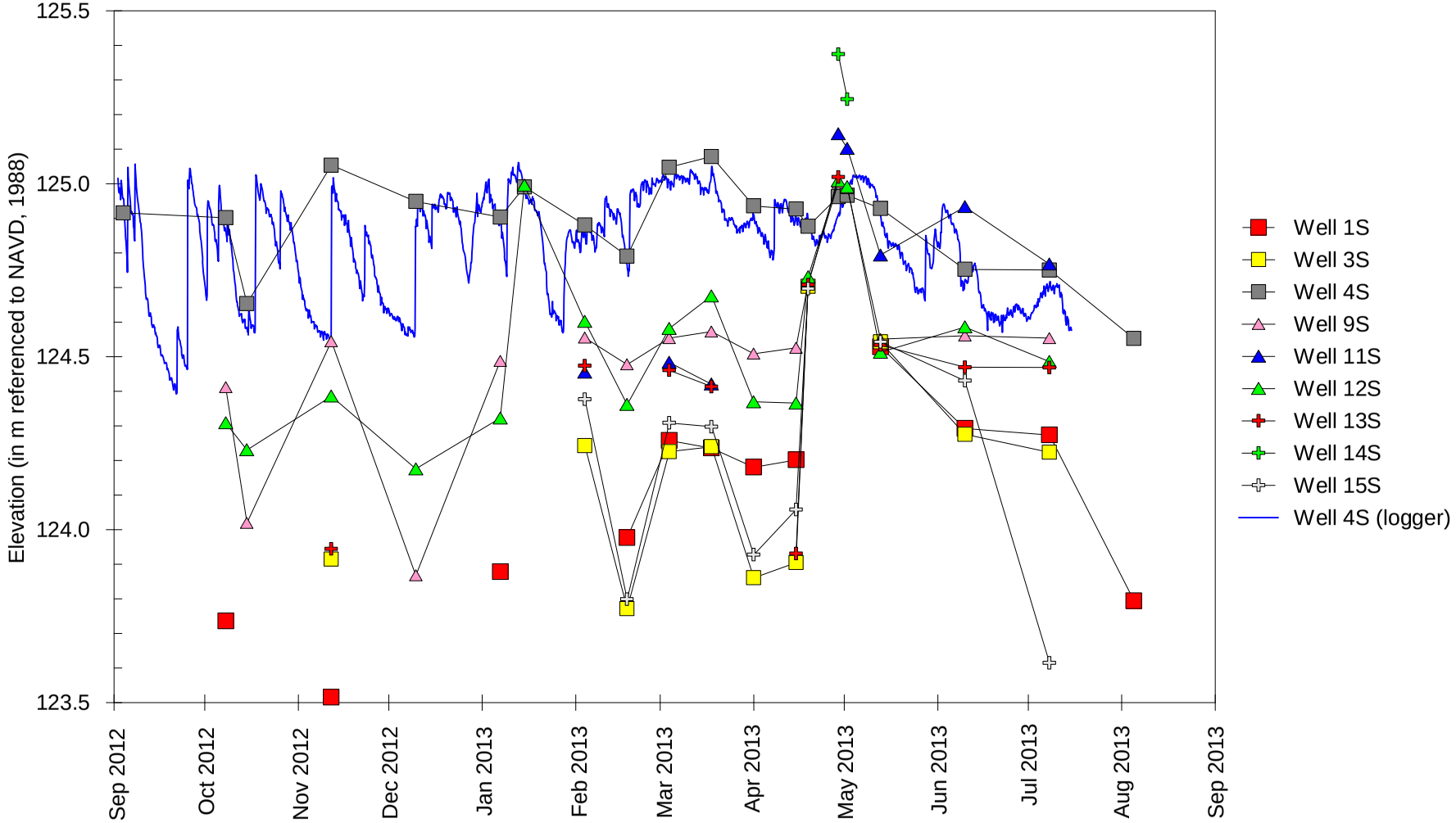
# Lawrence County Wetland Mitigation Bank
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Monitoring Wells East of Beaver Pond Ditch



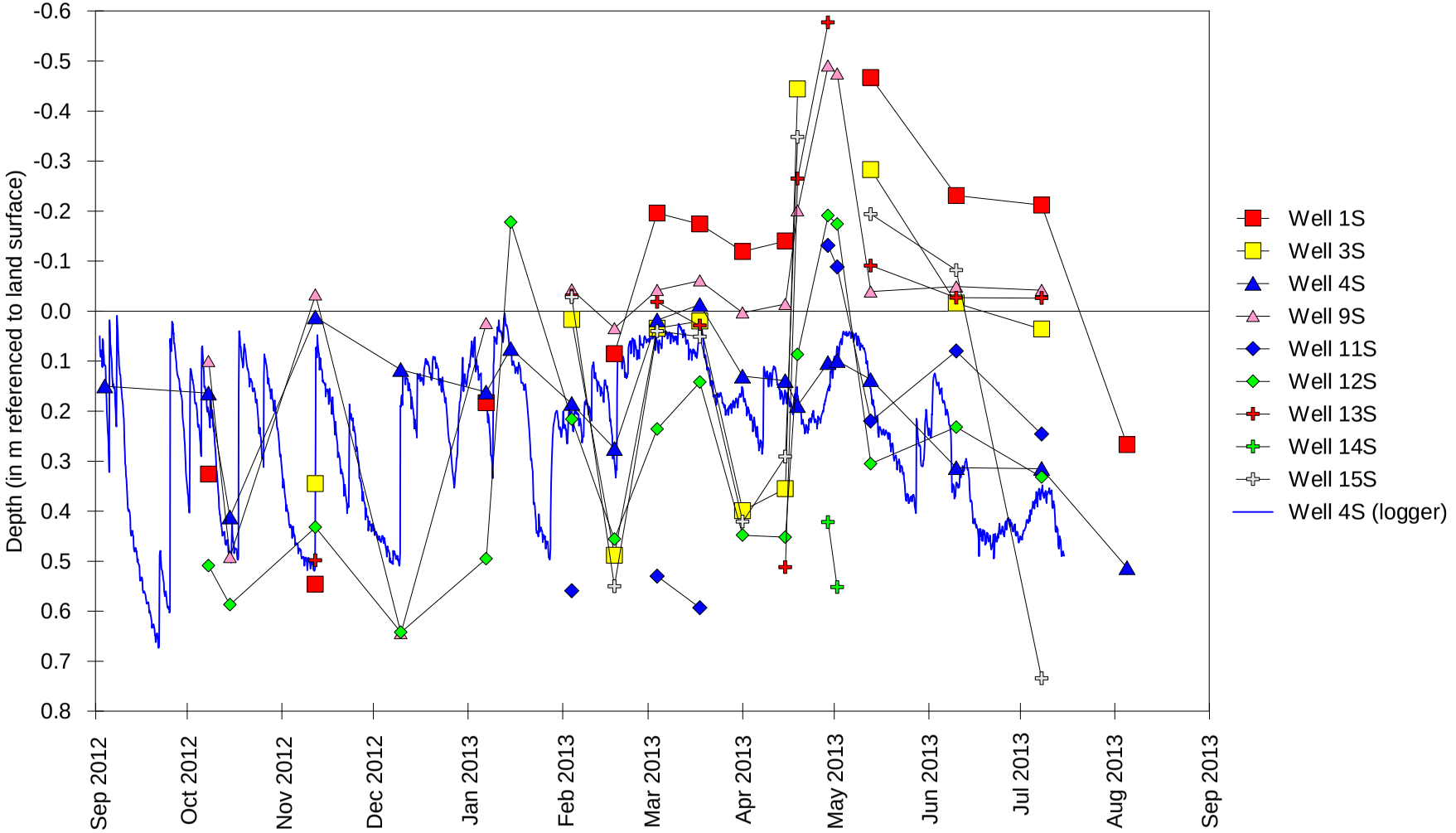
# Lawrence County Wetland Mitigation Bank
## September 1, 2012 through August 31, 2013

### Water-Level Elevations
### in Monitoring Wells West of Beaver Pond Ditch



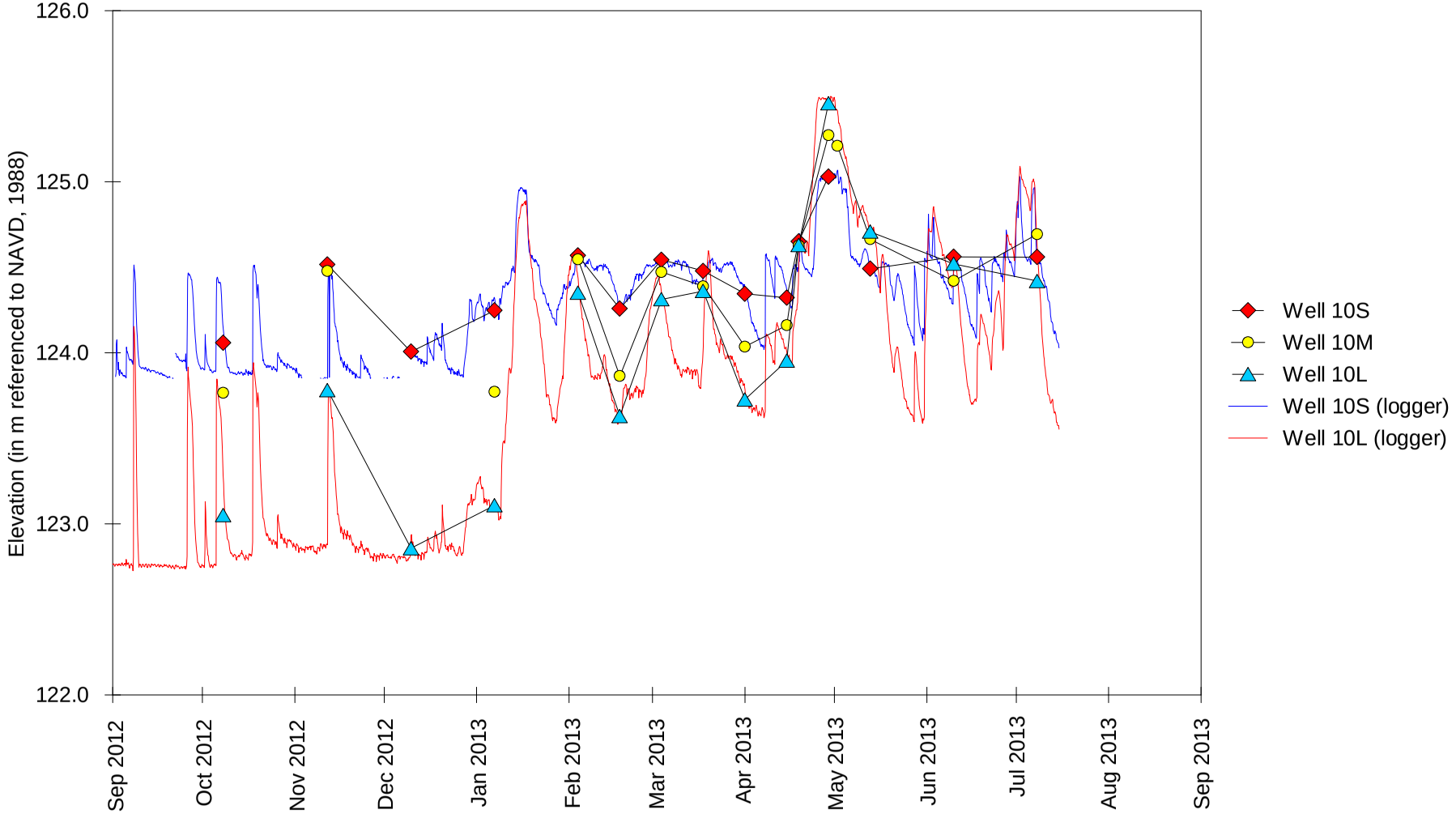
# Lawrence County Wetland Mitigation Bank
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Monitoring Wells West of Beaver Pond Ditch



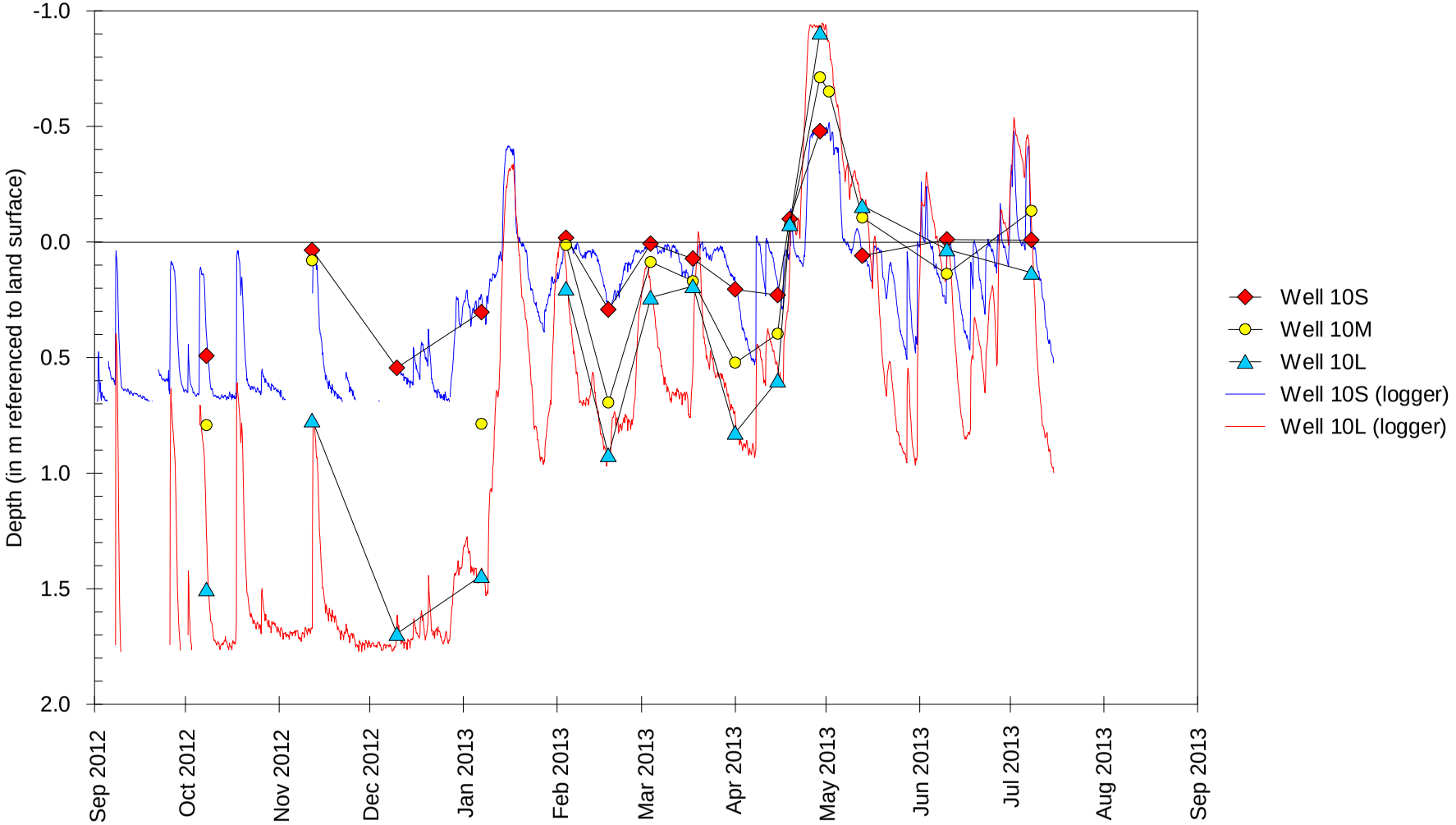
# Lawrence County Wetland Mitigation Bank
## September 1, 2012 through August 31, 2013

### Water-Level Elevations at Well Cluster 10



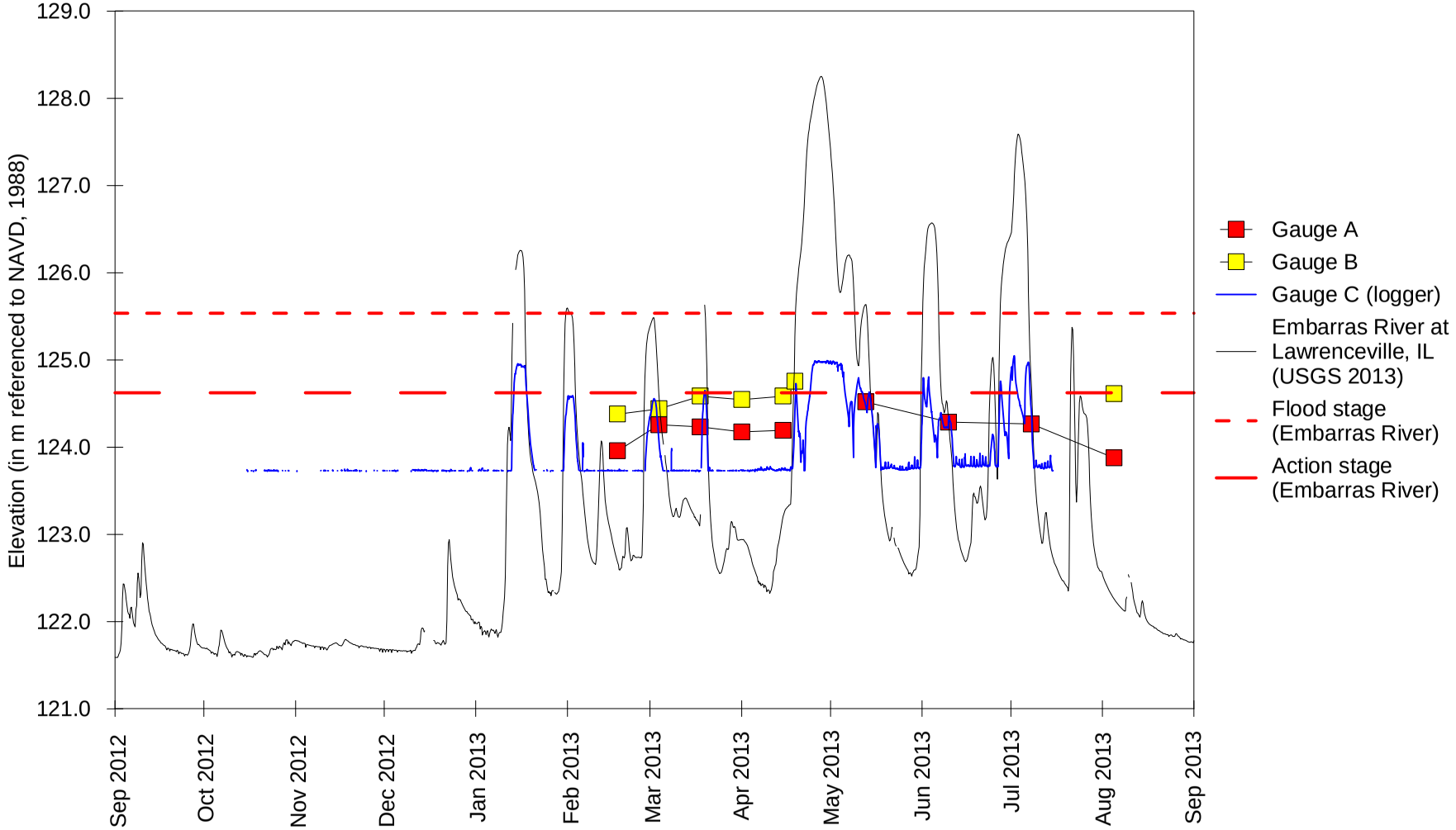
# Lawrence County Wetland Mitigation Bank
## September 1, 2012 through August 31, 2013

### Depth to Water at Well Cluster 10

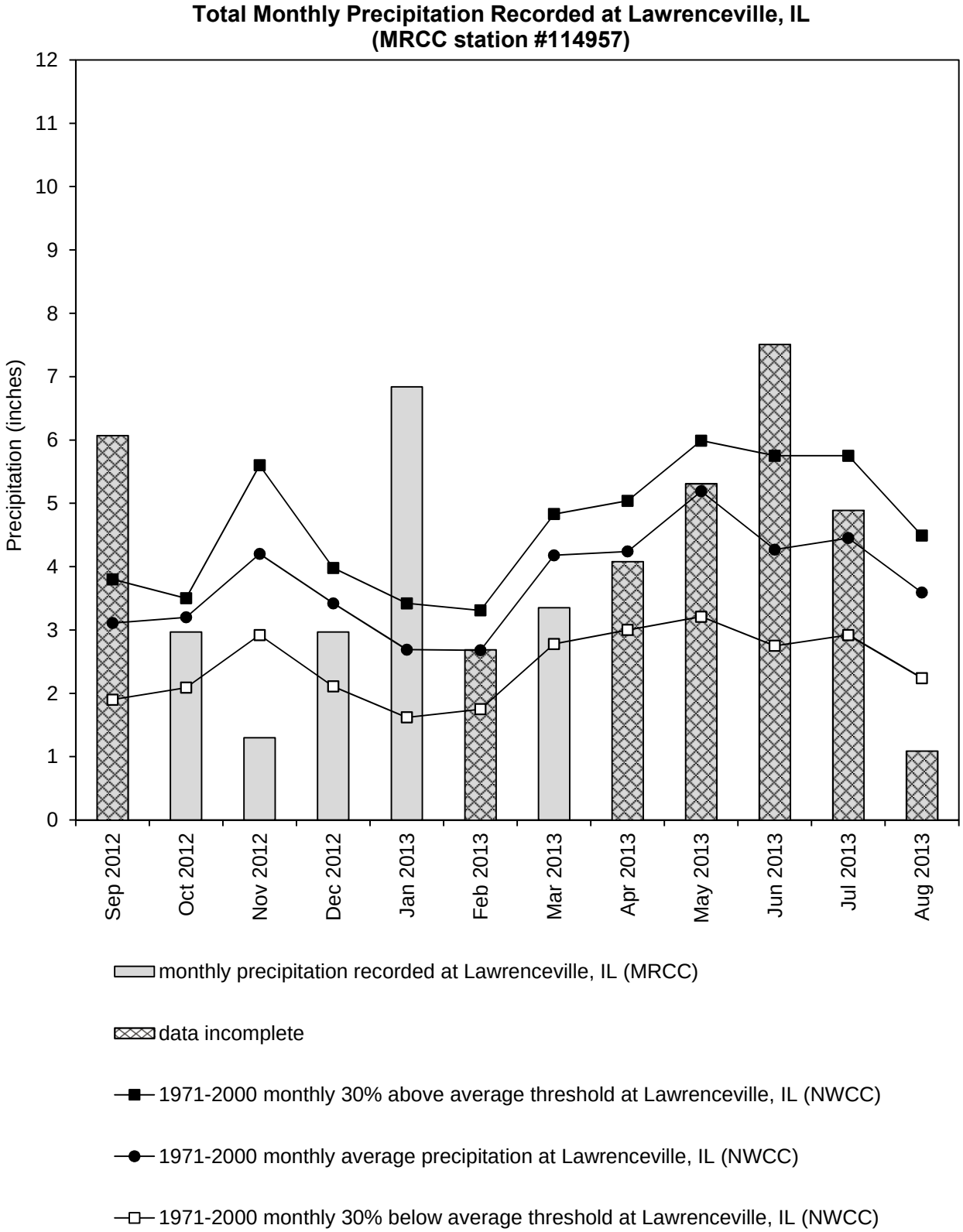


# Lawrence County Wetland Mitigation Bank
## September 1, 2012 through August 31, 2013

### Water-Level Elevations at Surface-Water Gauges



# Lawrence County Wetland Mitigation Bank
## September 2012 through August 2013



**NORTH CHICAGO** **ISGS #84**
**WETLAND MITIGATION SITE**
IL 56/IL 47
FAP 326
Sequence #13406
Lake County, North Chicago, Illinois
**Primary Project Manager: Keith W. Carr**
**Secondary Project Manager: James J. Miner**

SITE HISTORY

- 1995-2002: Previous site studies occurred during this period; monitoring was suspended by IDOT in Spring 2002.

- Spring 2009: The IDOT tasked ISGS to resume targeted monitoring. Eight monitoring wells were installed in the northernmost part of the site to document restoration potential associated with tile removal in that area.

- Spring and Summer 2010: Drain tiles and invasive vegetation were removed.

- August 2011: The ISGS added 14 soil-zone monitoring wells and one surface-water gauge to monitor various wetlands throughout the site.

WETLAND HYDROLOGY CALCULATION FOR 2013

Wetland acreage is not calculated for this site due to the limited scope of monitoring. In 2013, 15 locations on site were monitored to document hydrologic changes from restoration, including one surface-water gauge and 14 very-shallow (VS) wells equipped with data loggers. Only the wetland hydrology status at each of the monitoring well locations is presented.

Using the 1987 Manual (Environmental Laboratory 1987), 12 of the 14 monitoring wells satisfied wetland hydrology criteria for greater than 5% of the growing season, and 9 of the 14 wells satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 12 of the 14 wells also satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in Waukegan, Illinois, is April 13, and the season lasts 196 days (MRCC 2013). Using the 1987 Manual, 5% of the growing season is 10 days, and 12.5% of the growing season is 25 days. Using the 2010 Midwest Region Supplement, April 14 was the starting date of the 2013 growing season based on soil-temperature measurements on site.

- Total precipitation for the monitoring period at O'Hare International Airport in Chicago, Illinois, (MRCC station #111549) was 111% of normal. During Spring 2013 (March through May), precipitation was 161% of normal, leading to wetter than typical on-site moisture conditions in the early part of the growing season. However, during June through August, precipitation was only 86% of normal, resulting in a typical summer draw-down of water levels at the site.

- In 2013, water levels measured in wells 09-01VS, 09-02VS, 09-05VS, 09-06VS,

09-07VS, 09-08VS, 11-1VS, 11-2VS, 11-3VS, 11-4VS, 11-5VS, and 11-6VS satisfied wetland hydrology criteria for greater than 5% of the growing season, and water levels measured in monitoring wells 09-01VS, 09-02VS, 09-05VS, 11-1VS, 11-2VS, 11-3VS, 11-4VS, 11-5VS, and 11-6VS satisfied wetland hydrology criteria for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, the same wells meeting the 5% criteria above also satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.

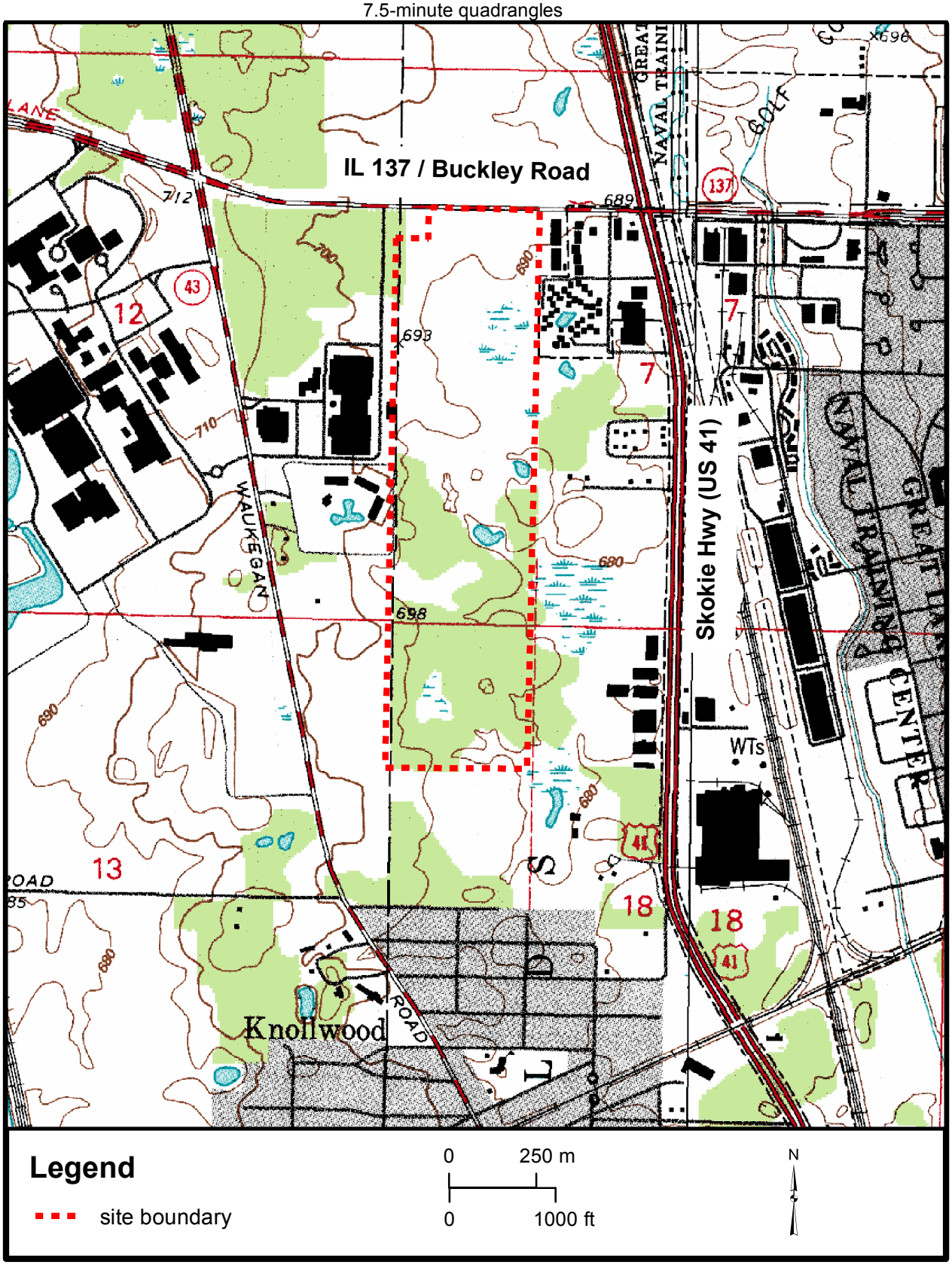
- Gauge A was used to monitor water levels in the northern part of the site but was not used to determine wetland hydrology in 2013.

PLANNED FUTURE ACTIVITIES

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

# North Chicago Wetland Mitigation Site
# (IL 56/IL47, FAP 326)
## General Study Area and Vicinity

from the USGS Topographic Series, Libertyville, IL (ISGS 2013b) and Waukegan, IL (ISGS 2013b)
7.5-minute quadrangles

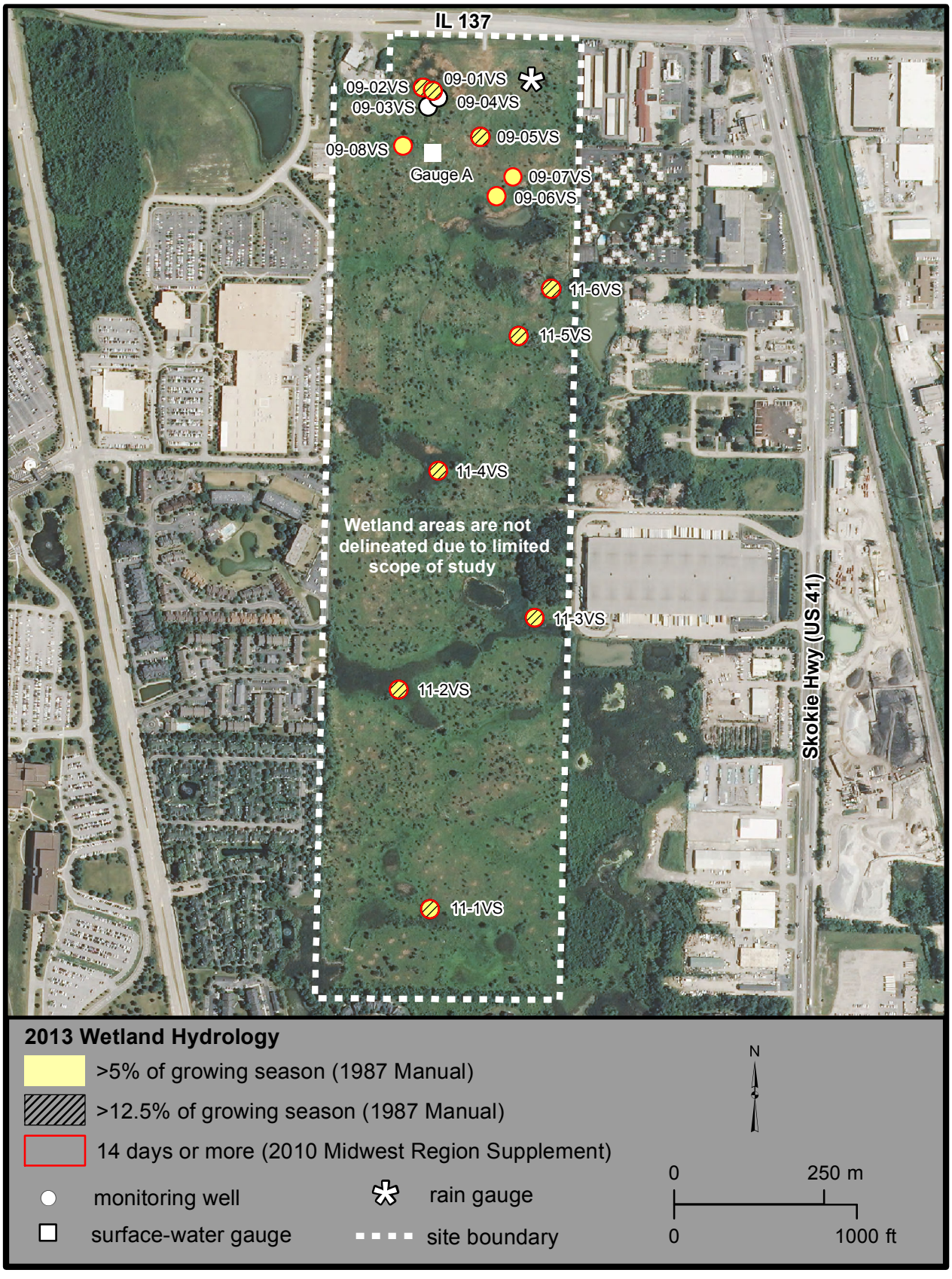


# North Chicago Wetland Mitigation Site (IL 56/IL47, FAP 326)

## Wells Meeting Wetland Hydrology Criteria

**September 1, 2012 through August 31, 2013**

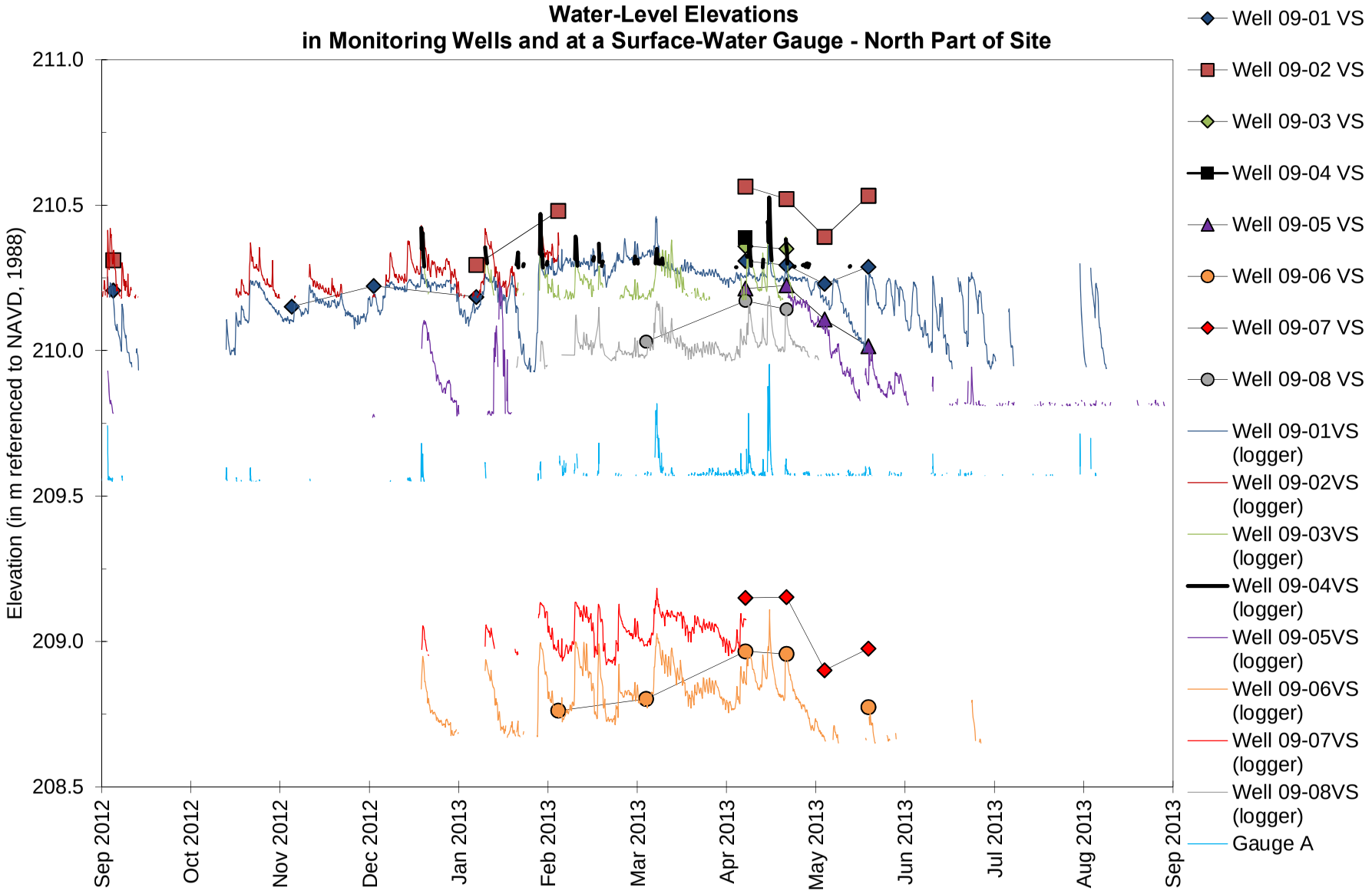
Map based on 2012 Farm Service Agency digital orthophotography, Lake County, Illinois (USDA-FSA 2012)



# North Chicago Wetland Mitigation Site

## September 1, 2012 through August 31, 2013

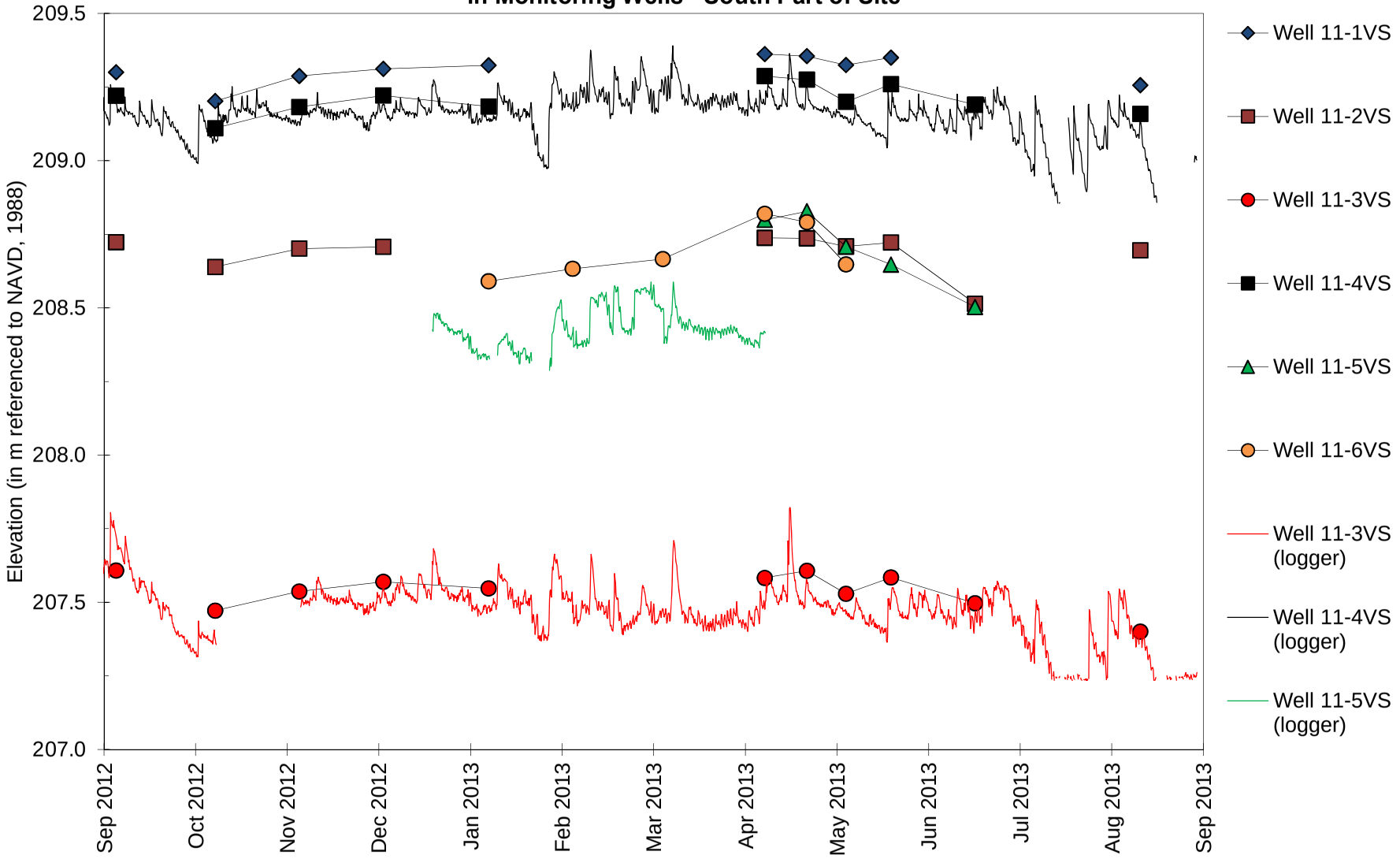
### Water-Level Elevations in Monitoring Wells and at a Surface-Water Gauge - North Part of Site



# North Chicago Wetland Mitigation Site

## September 1, 2012 through August 31, 2013

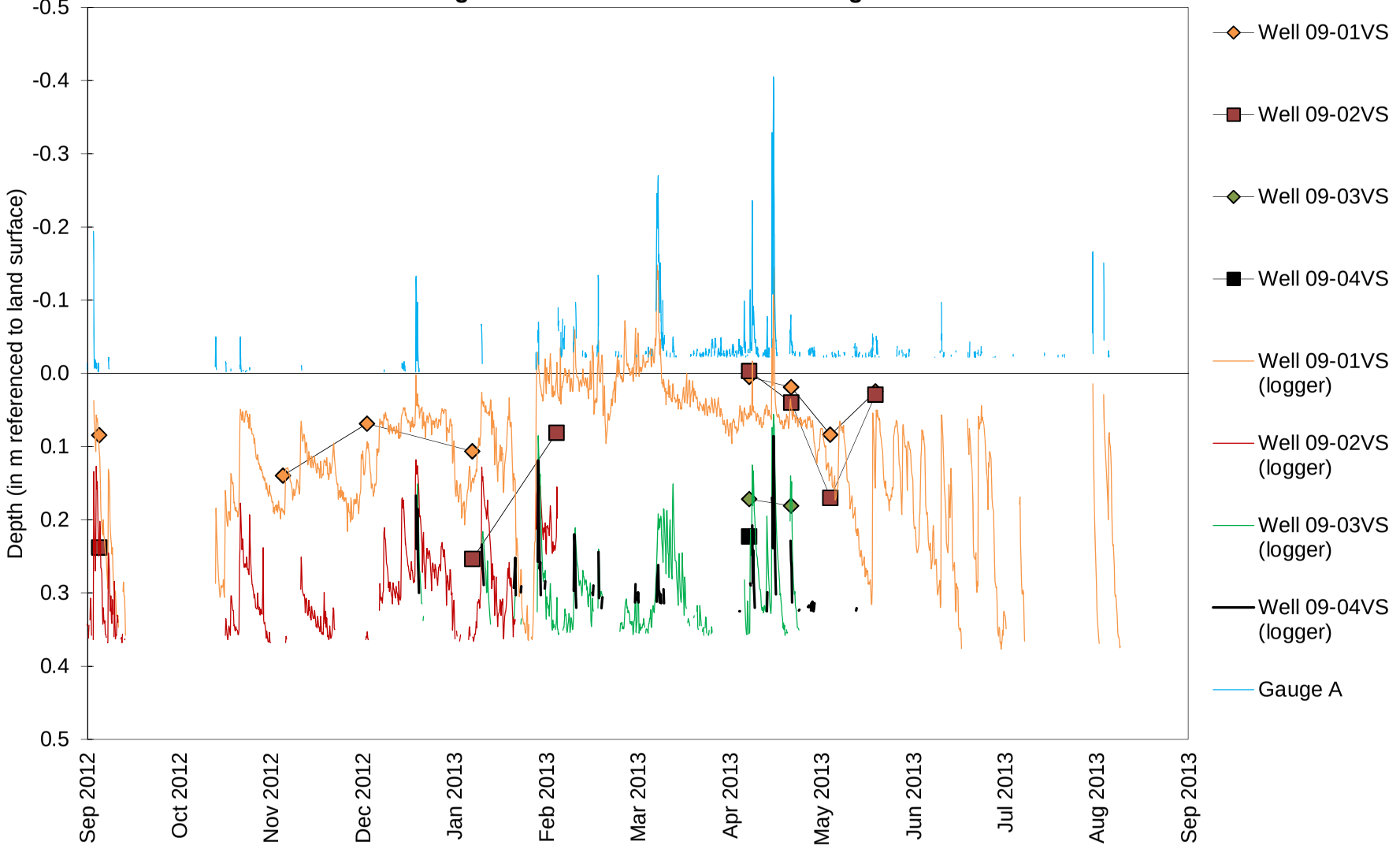
### Water-Level Elevations in Monitoring Wells - South Part of Site



# North Chicago Wetland Mitigation Site

## September 1, 2012 through August 31, 2013

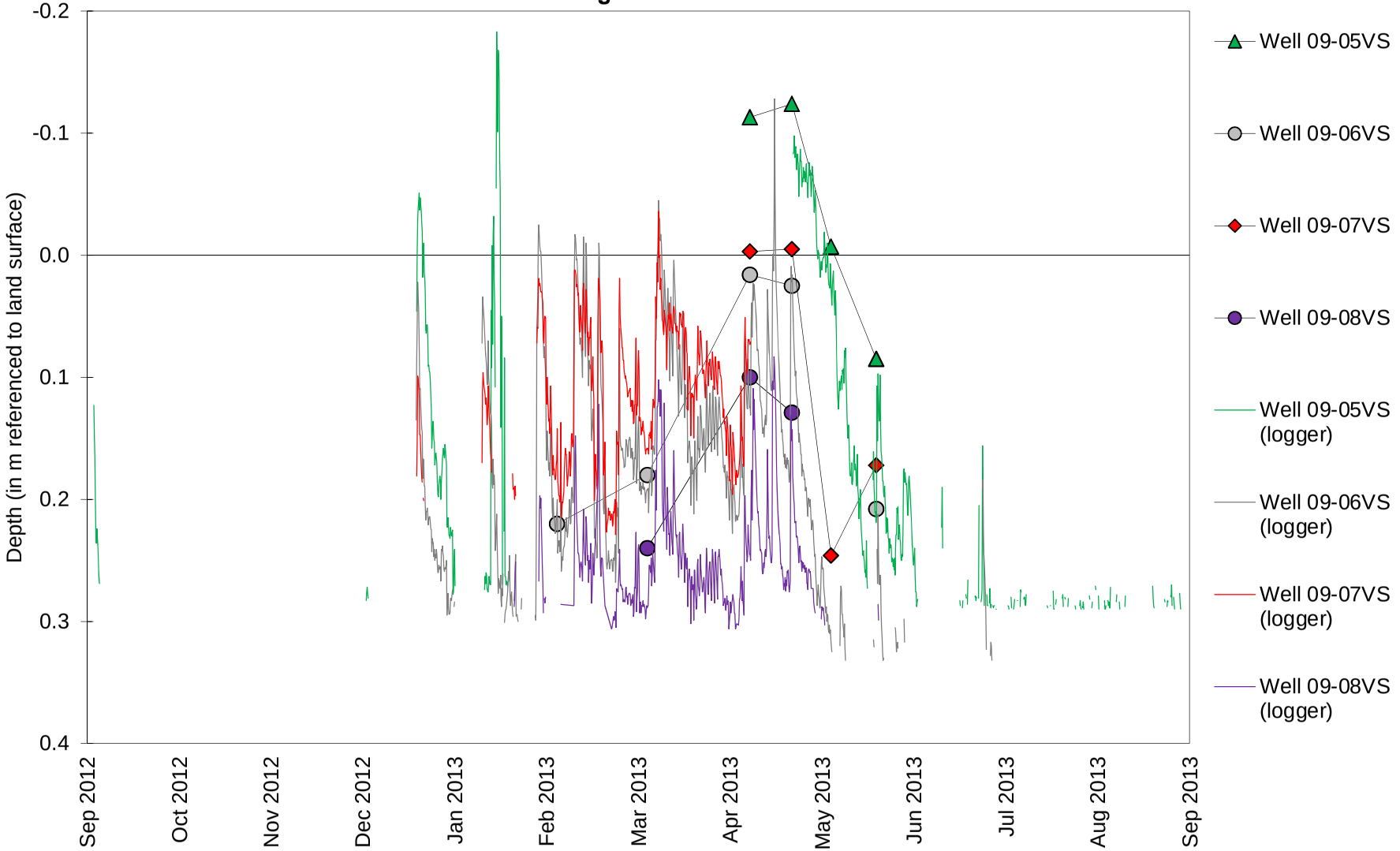
### Depth to Water
### in Monitoring Wells and at a Surface-Water Gauge - North Part of Site



# North Chicago Wetland Mitigation Site

## September 1, 2012 through August 31, 2013

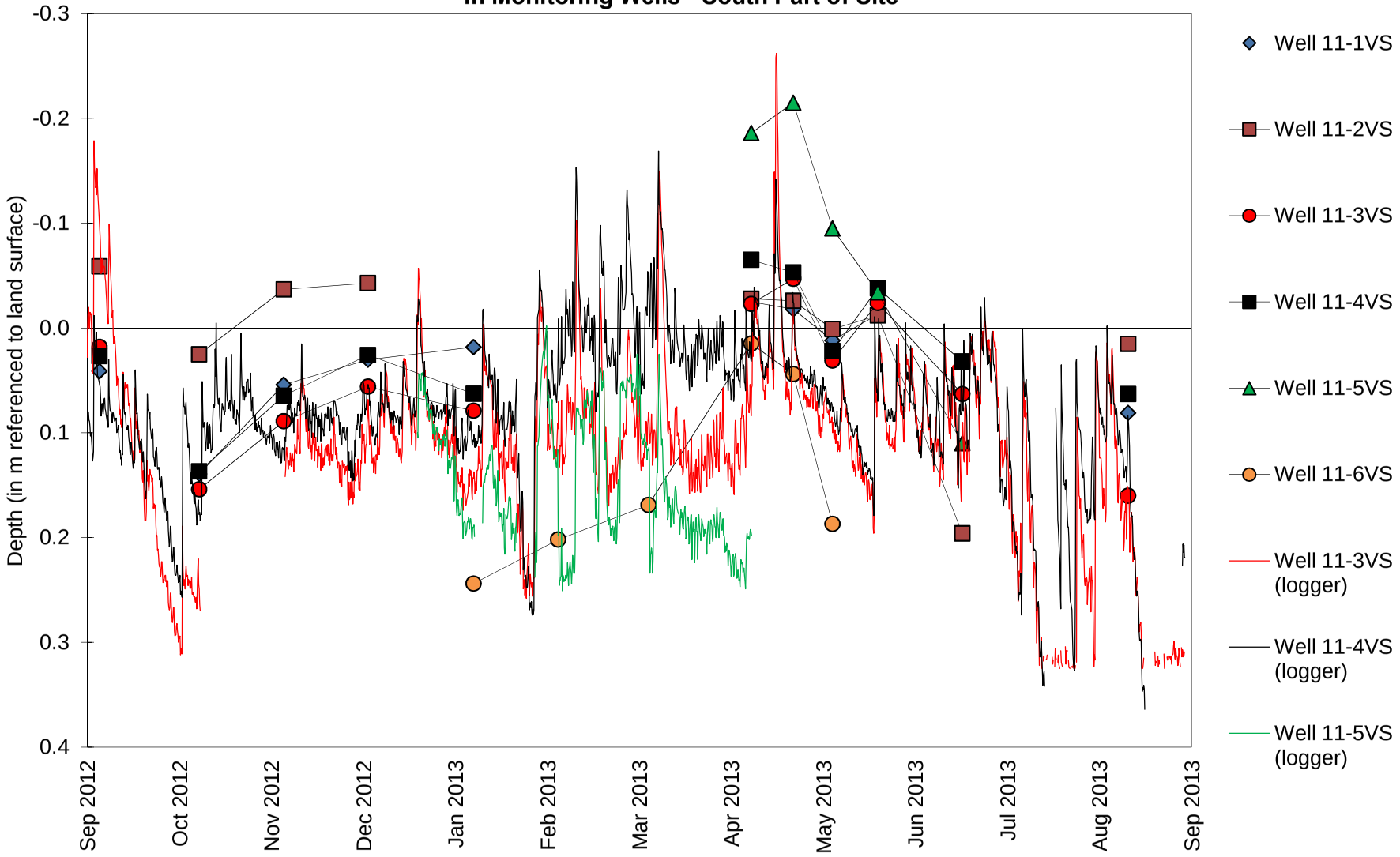
### Depth to Water
### in Monitoring Wells - North Part of Site



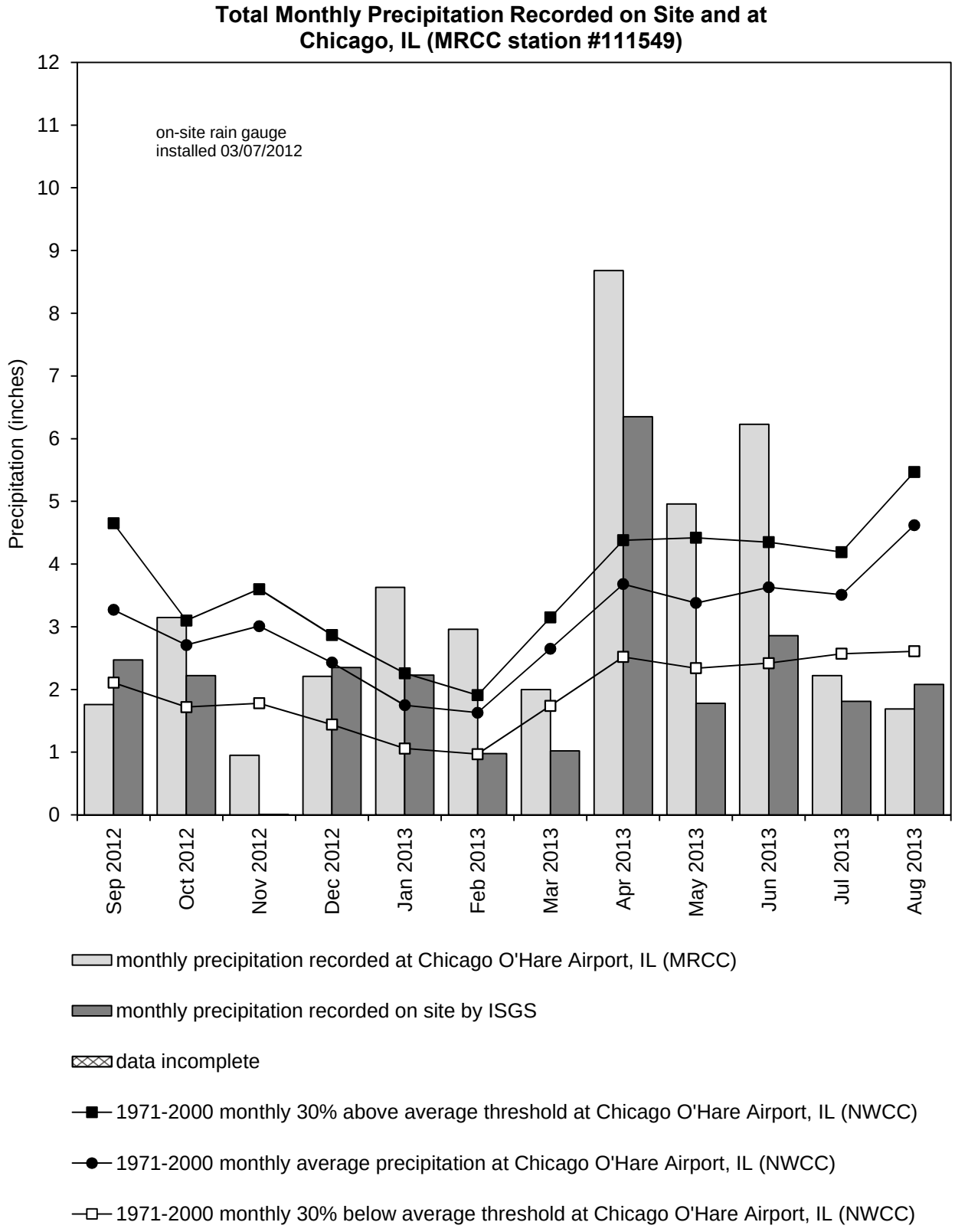
# North Chicago Wetland Mitigation Site

## September 1, 2012 through August 31, 2013

### Depth to Water
### in Monitoring Wells - South Part of Site



# North Chicago Wetland Mitigation Site
## September 2012 through August 2013



**COLES COUNTY** **ISGS #85**
**WETLAND MITIGATION SITE**
TR 1000N and TR 41
Sequence #1273
Coles County, near Mattoon, Illinois
**Primary Project Manager: Eric T. Plankell**
**Secondary Project Manager: Jessica L. B. Monson**

SITE HISTORY

- March 2008: Wetland construction was completed.
- August 2010: The ISGS was tasked by IDOT to monitor the site for performance criteria outlined in the wetland compensation plan.
- March 2011: The ISGS installed a monitoring network.

WETLAND HYDROLOGY CALCULATION FOR 2013

The target compensation area for the Coles County wetland mitigation site is 1.86 ha (4.60 ac). Using the 1987 Manual (Environmental Laboratory 1987), 1.13 ha (2.80 ac) of the total site area of 2.06 ha (5.10 ac) satisfied wetland hydrology criteria for greater than 5% of the 2013 growing season, and 1.10 ha (2.72 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 1.14 ha (2.82 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

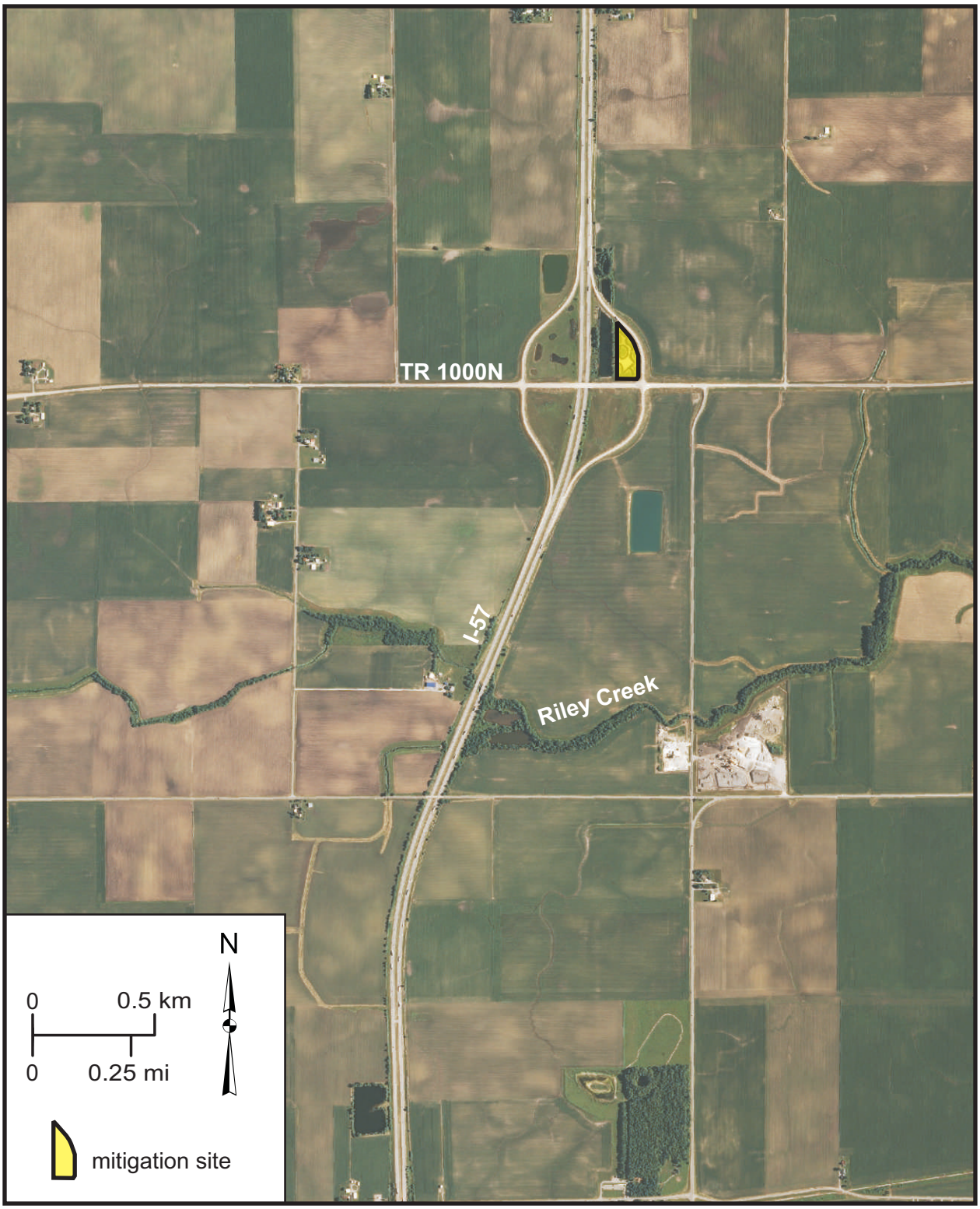
- The median date that the growing season begins in nearby Mattoon, Illinois, is April 5, and the season lasts 211 days (MRCC 2013). Using the 1987 Manual, 5% of the growing season is 11 days, and 12.5% of the growing season is 26 days. Using the 2010 Midwest Region Supplement, March 30 was the starting date of the 2013 growing season based on soil temperatures measured at the nearby Brownstown, Illinois, ICN station (WARM 2013).
- Total precipitation for the monitoring period at Mattoon, Illinois, (MRCC station #115430) was 141% of normal. During Spring 2013 (March through May), precipitation was 158% of normal.
- In 2013, water levels measured in monitoring wells 2S and 5S satisfied wetland hydrology criteria for greater than 5% of the growing season and for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, water levels measured in monitoring wells 2S and 5S satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season.
- Surface-water levels measured at Gauge A indicated inundation at and below 207.02 m (679.20 ft) for greater than 5% of the growing season, and inundation at and below 206.99 m (679.10 ft) for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, surface-water levels measured at Gauge A indicated inundation at and below 207.02 m (679.20 ft) for 14 or more consecutive days of the growing season.

PLANNED FUTURE ACTIVITIES

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

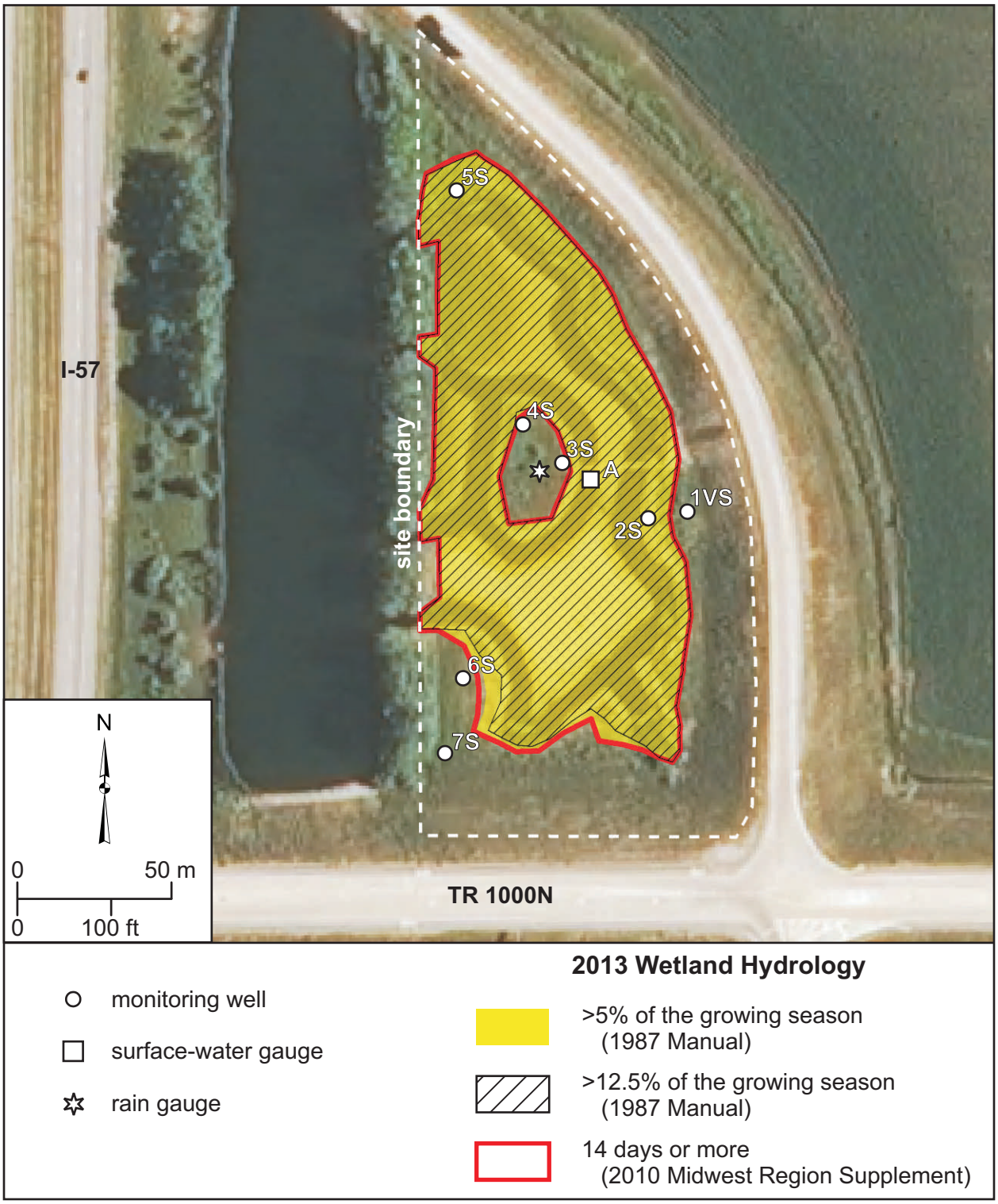
# Coles County Wetland Mitigation Site
# (TR 1000N and TR 41)
## General Study Area and Vicinity

Map based on 2012 Farm Service Agency digital orthophotography, Coles County, Illinois (USDA-FSA 2012)



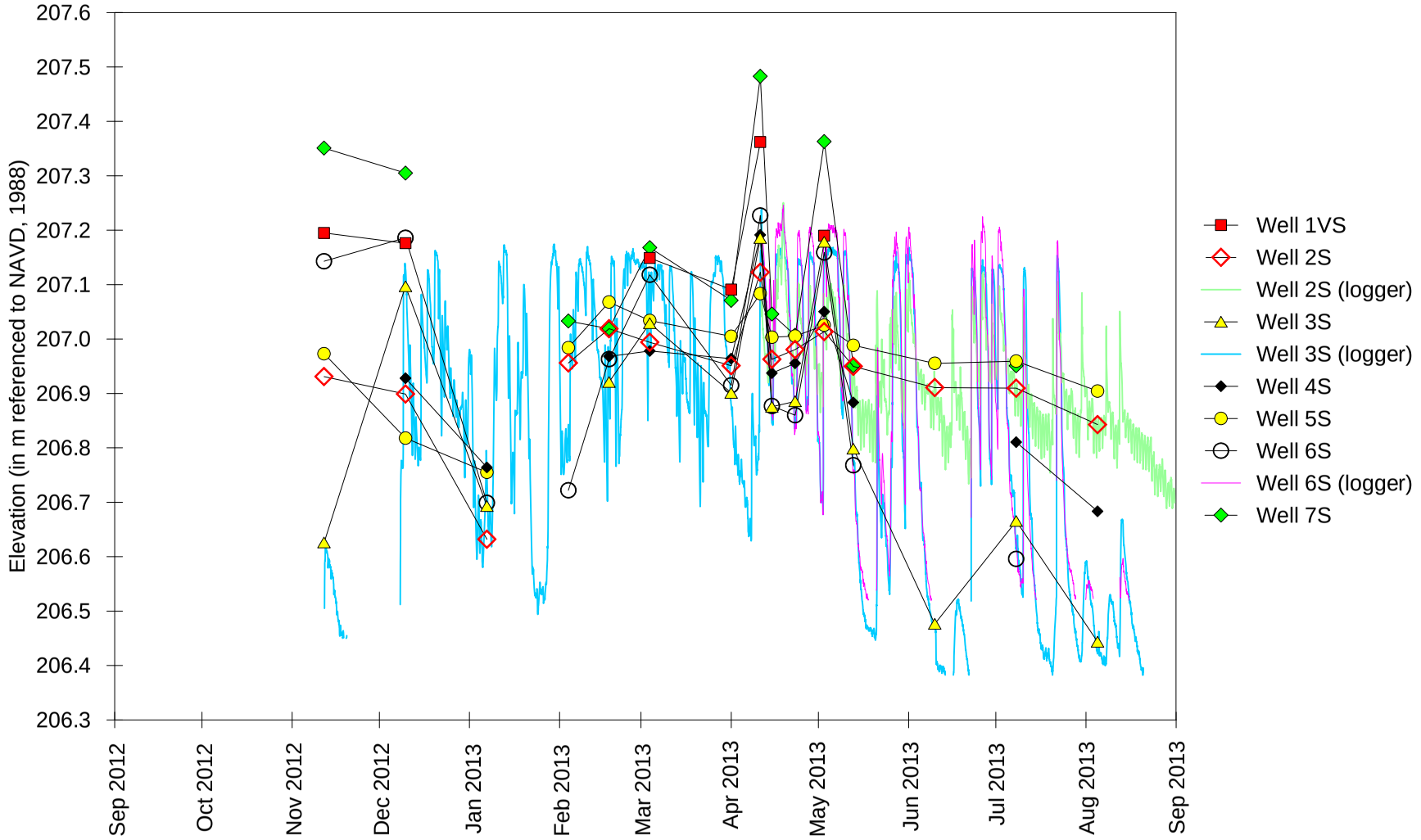
# Coles County Wetland Mitigation Site
# (TR 1000N and TR 41)
## Estimated Areal Extent of 2013 Wetland Hydrology
### September 1, 2012 through August 31, 2013

Map based on 2012 Farm Service Agency digital orthophotography, Coles County, Illinois (USDA-FSA 2012)



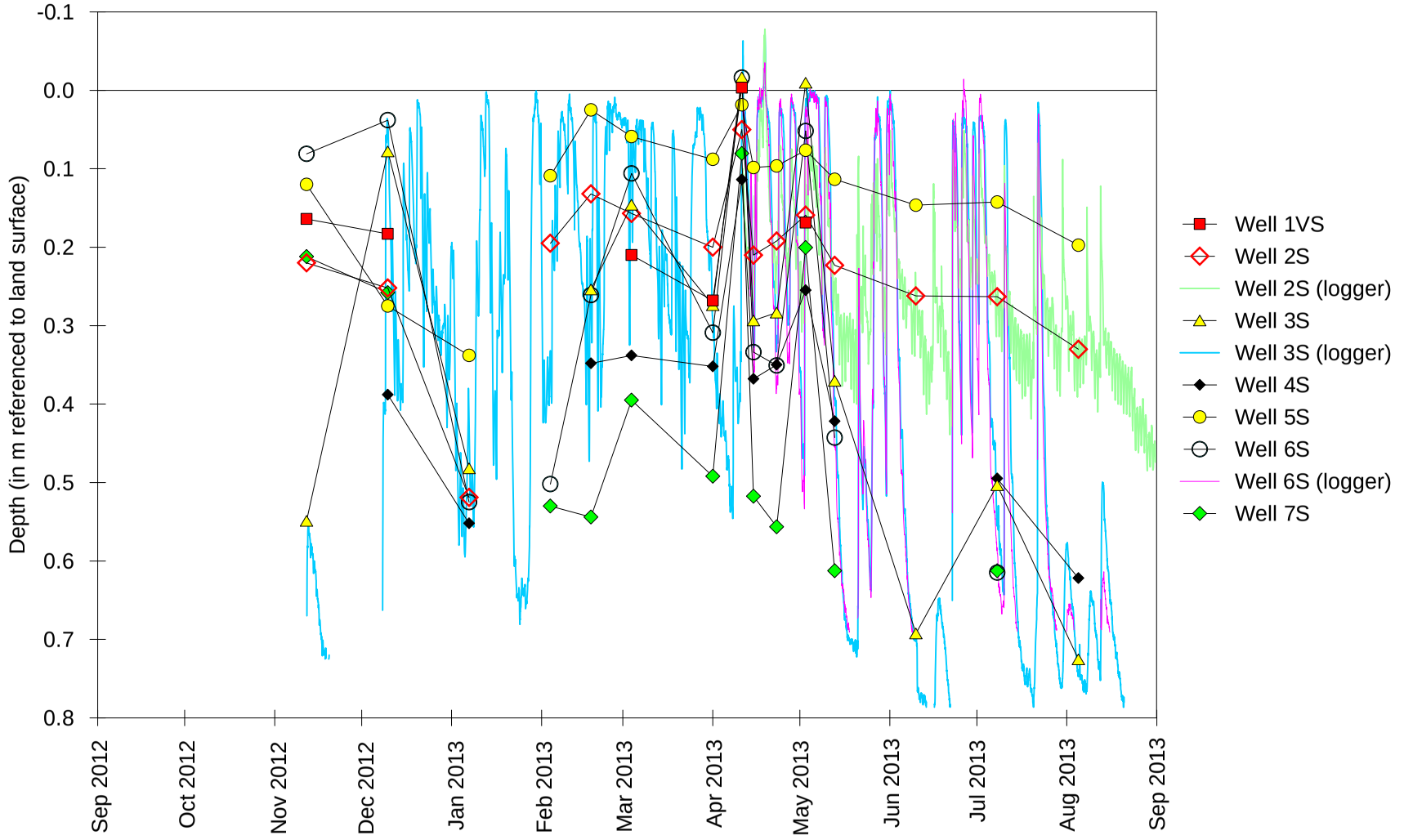
# Coles County Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Monitoring Wells



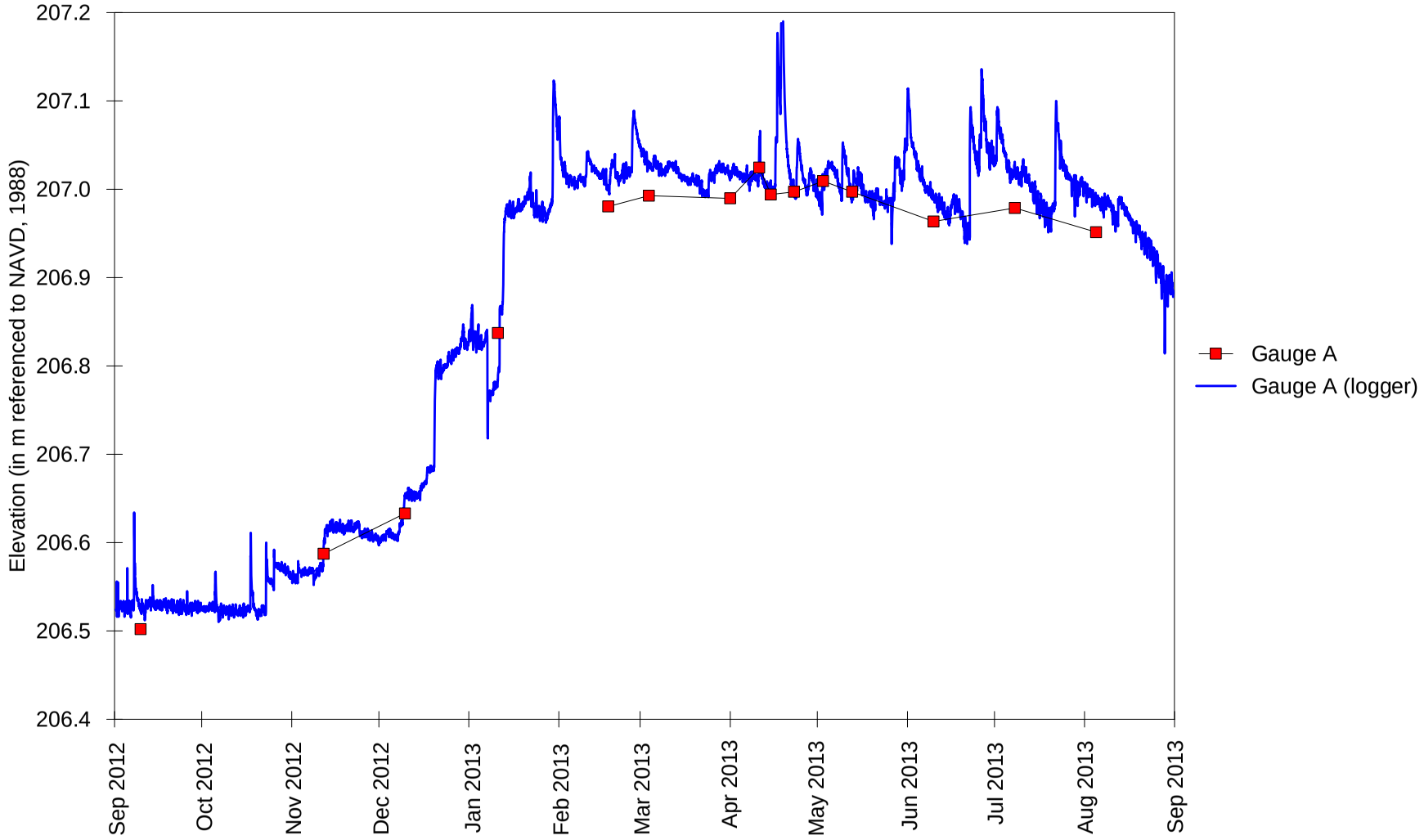
# Coles County Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Monitoring Wells

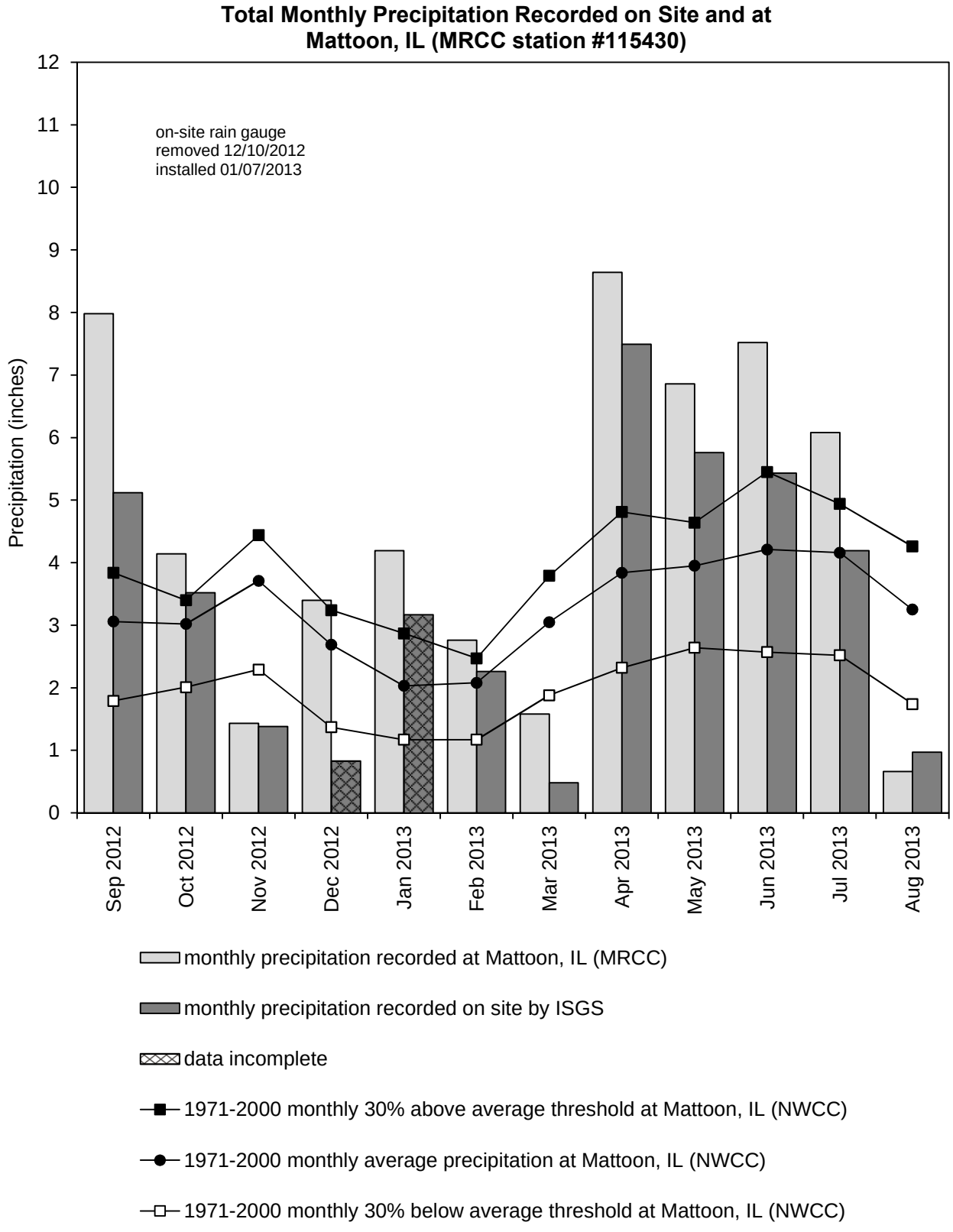


# Coles County Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations at Surface-Water Gauges



# Coles County Wetland Mitigation Site
## September 2012 through August 2013



**SWAN ROAD** **ISGS #86**
**WETLAND MITIGATION SITE**
TR 222
Sequence #12315
Perry County, near Tamaroa, Illinois
**Primary Project Manager: Melinda C. Higley**
**Secondary Project Manager: Jessica Monson**

SITE HISTORY

- April 2011: ISGS was tasked to monitor wetland hydrology at the site.
- May 2011: Water-level monitoring was initiated.

WETLAND HYDROLOGY CALCULATION FOR 2013

The target compensation area for the Swan Road wetland mitigation site is 0.29 ha (0.72 ac). Using the 1987 Manual (Environmental Laboratory 1987), 0.32 ha (0.78 ac) of the total site area of 0.43 ha (1.07 ac) satisfied wetland hydrology criteria for greater than 5% and greater than 12.5% of the 2013 growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 0.32 ha (0.78 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Du Quoin, Illinois, is April 5, and lasts 207 days (MRCC 2013). Using the 1987 Manual, 5% of the growing season is 10 days, and 12.5% of the growing season is 26 days. According to the 2010 Midwest Region Supplement, March 15 was the starting date of the 2013 growing season based on soil temperatures measured on site and at the nearby Pyramid Site EC25 wetland mitigation site (ISGS #77).
- Total precipitation recorded at the Du Quoin, Illinois (MRCC station # 112483) weather station was 126% of normal, and during Spring 2013 (March through May) precipitation was 131% of normal.
- In 2013, all monitoring wells except 5S satisfied wetland hydrology for greater than 5% and greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, water levels measured in all monitoring wells except 5S satisfied wetland hydrology for 14 or more consecutive days during the growing season.
- Data from Gauge A indicated that Little Beaucoup Creek flooded the site 10 times during the 2013 growing season. However, none of these floods persisted long enough to satisfy wetland hydrology criteria.

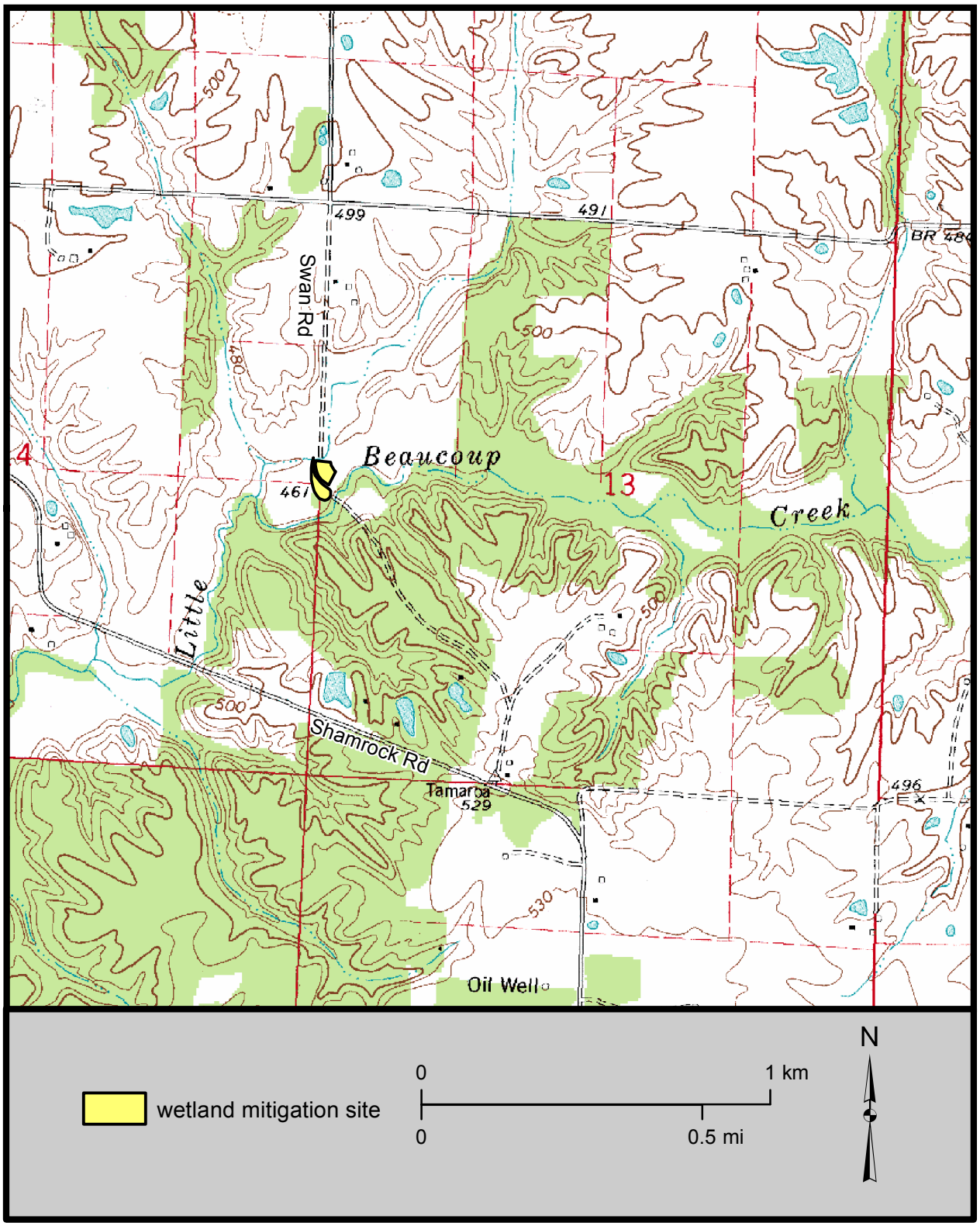
PLANNED FUTURE ACTIVITIES

- The ISGS plans to install a soil temperature logger prior to the 2014 growing season.

# Swan Road Wetland Mitigation Site

## General Study Area and Vicinity

from the USGS Topographic Series, Tamaroa, IL, 7.5-minute Quadrangle (ISGS 2013b)
contour interval is 10 feet

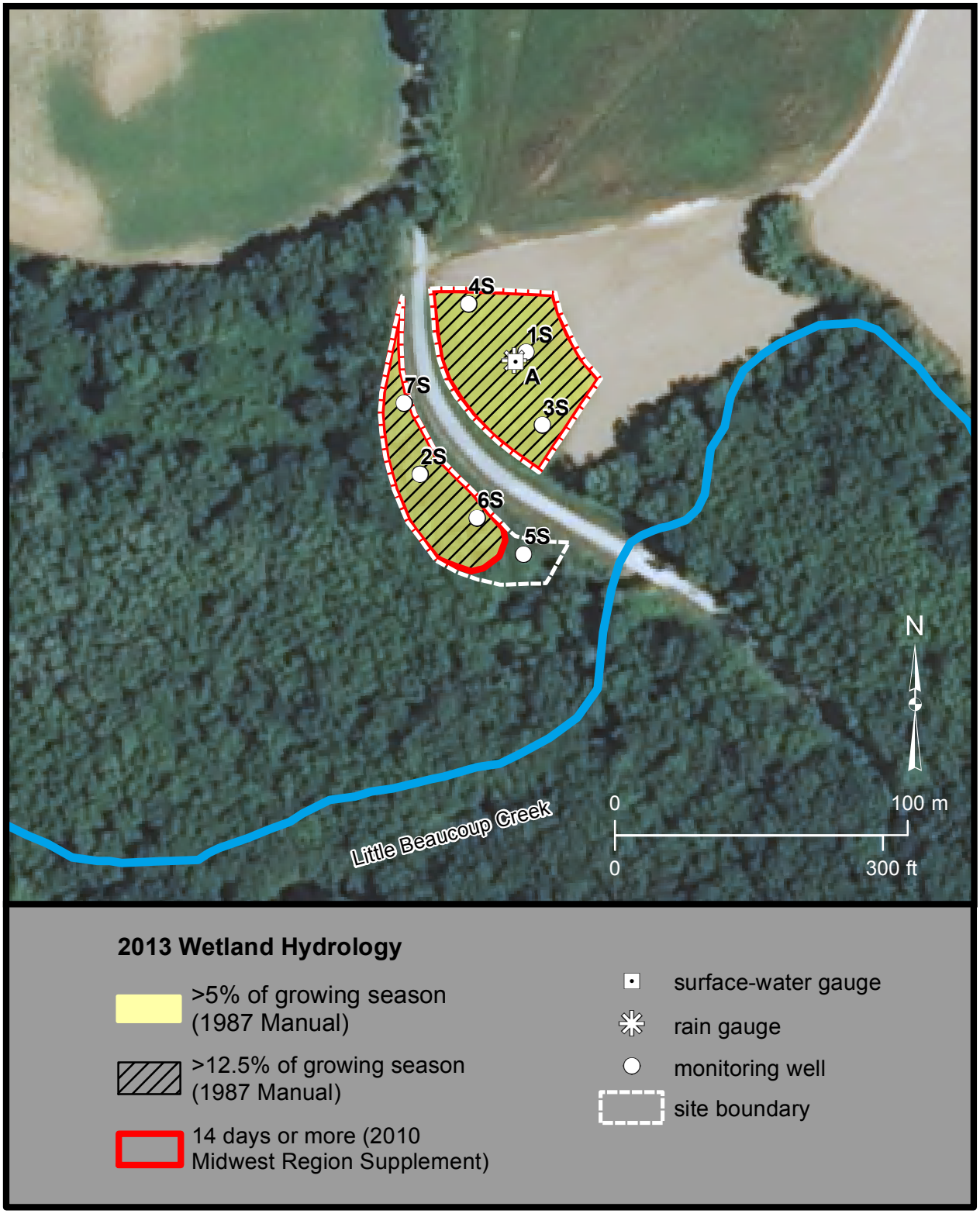


# Swan Road Wetland Mitigation Site

## Estimated Areal Extent of 2013 Wetland Hydrology

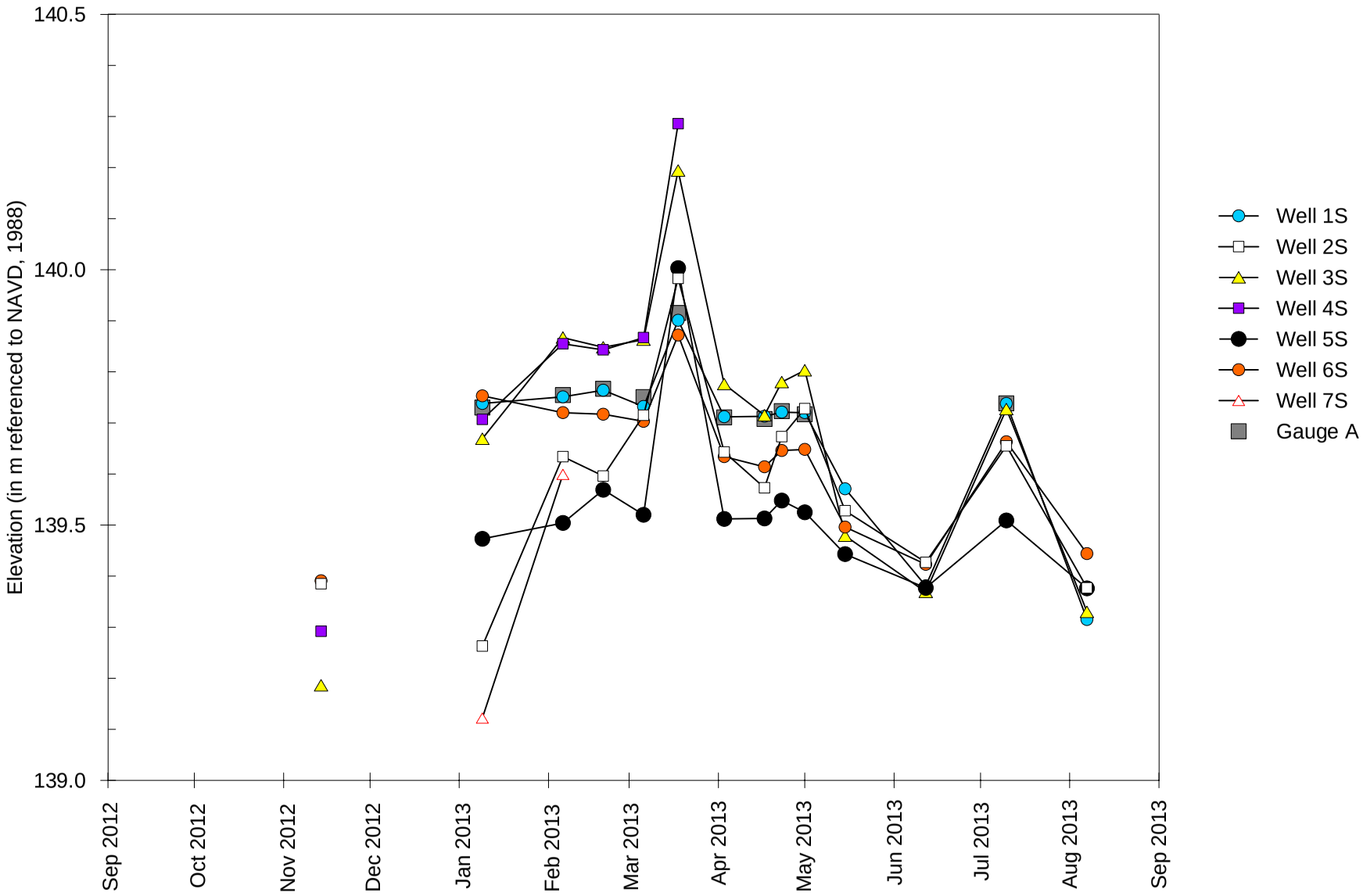
**September 1, 2012 through August 31, 2013**

Map based on 2012 Farm Service Agency digital orthophotograph, Perry County, Illinois (USDA-FSA 2012)



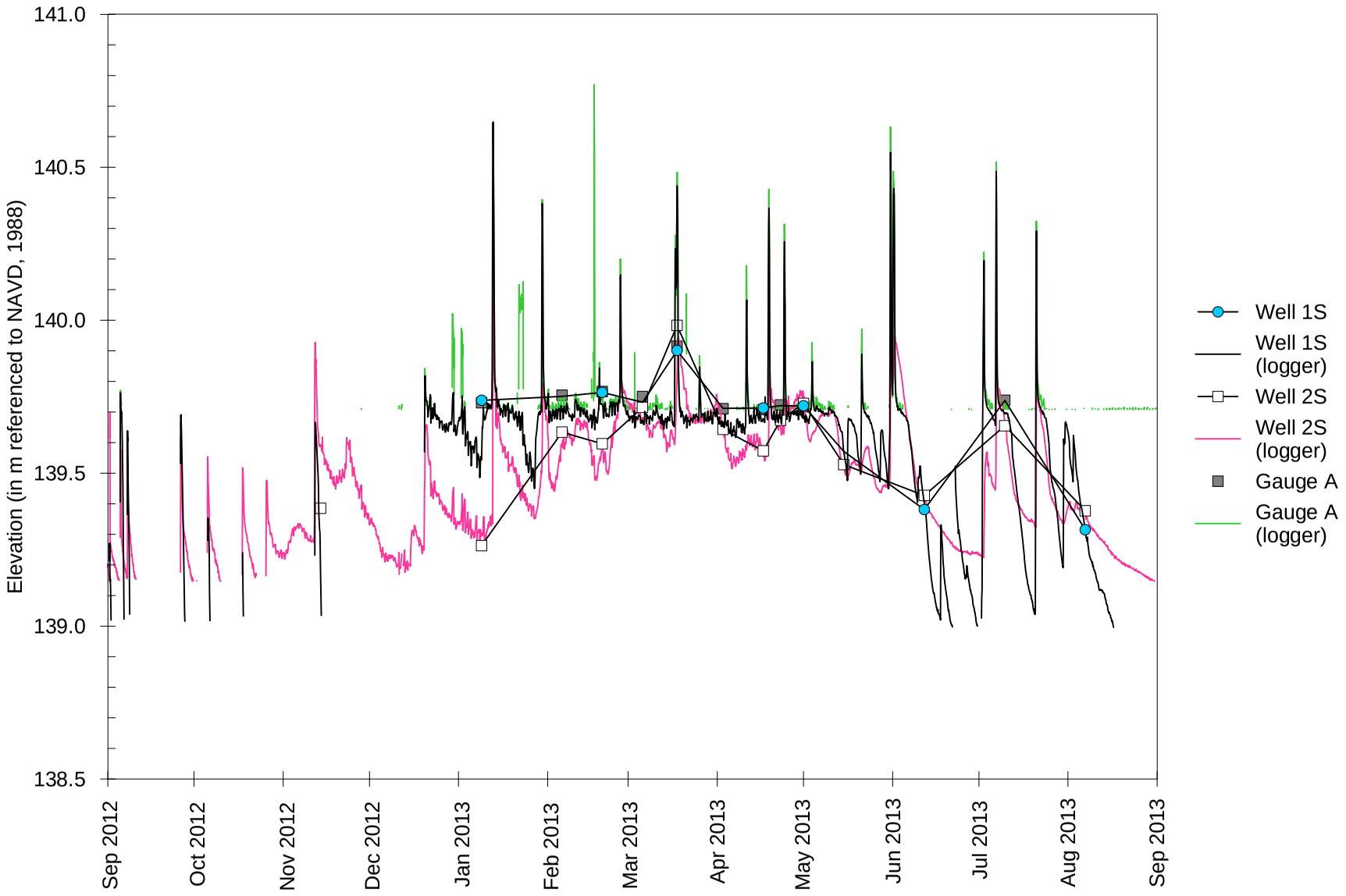
# Swan Road Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations
### in Monitoring Wells and at the Surface-Water Gauge



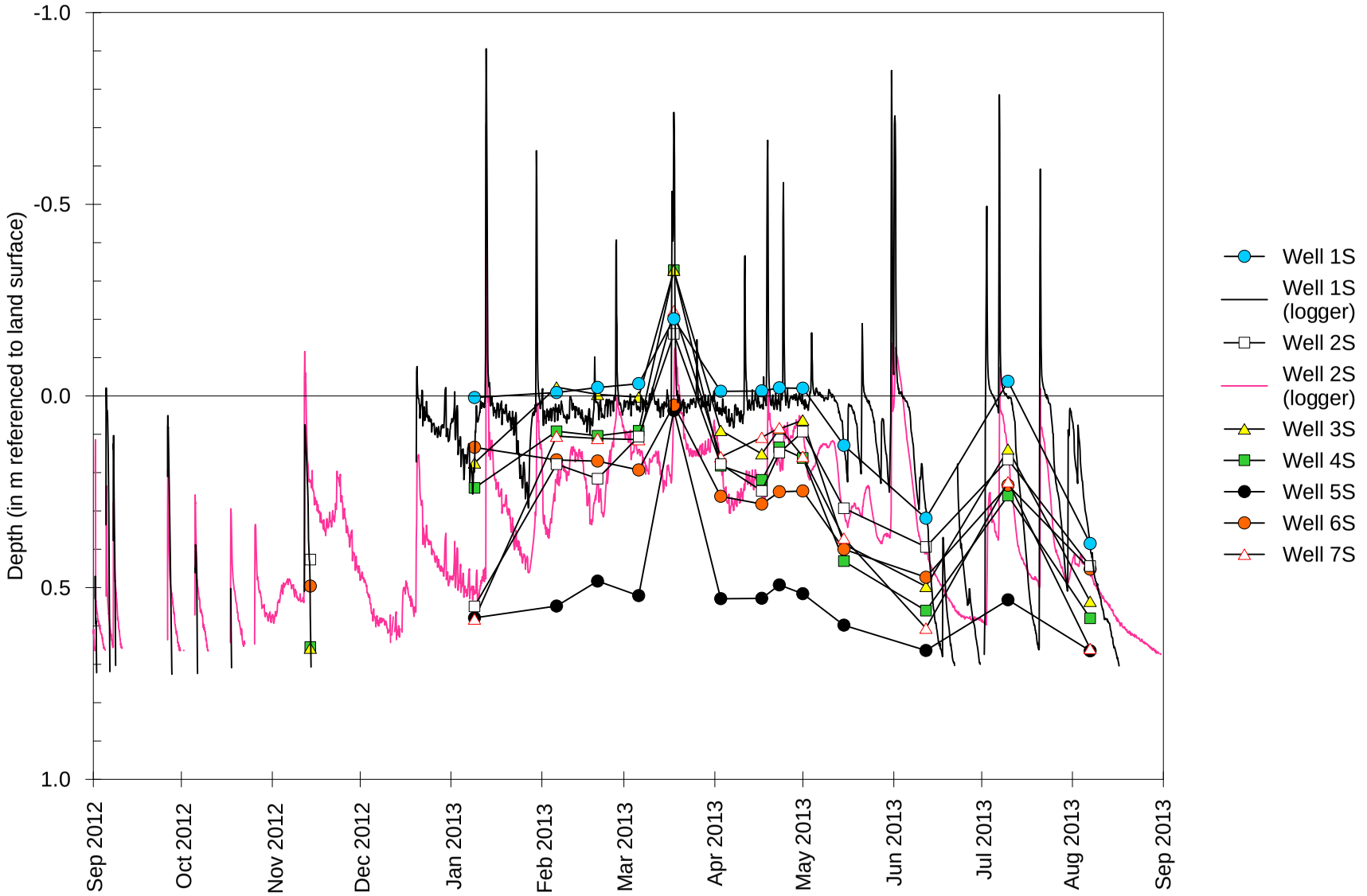
# Swan Road Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations
### in Monitoring Wells and at the Surface-Water Gauge

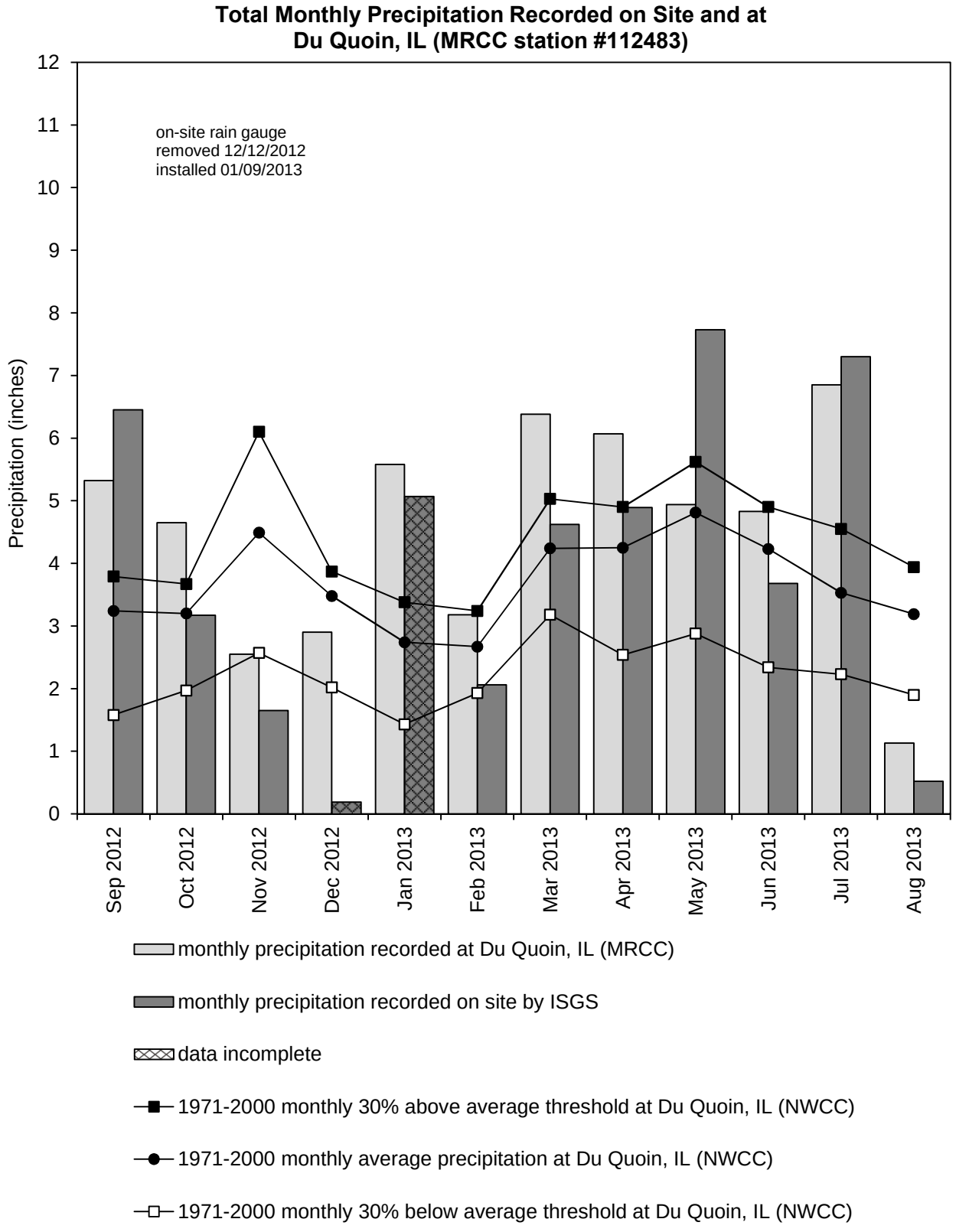


# Swan Road Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Shallow Monitoring Wells



# Swan Road Wetland Mitigation Site
## September 2012 through August 2013



**HARRISBURG, SITE 3** **ISGS #87**
**WETLAND MITIGATION SITE**
US 45
FAP 332
Saline County, near Harrisburg, Illinois
**Primary Project Manager: Geoffrey E. Pociask**
**Secondary Project Manager: Jessica L. B. Monson**

SITE HISTORY

- August 2011: The ISGS was tasked by IDOT to monitor the site for performance standards as outlined in the wetland compensation plan.
- February 2012: Post-construction water-level monitoring was initiated.
- April 2013: Trees were planted at the mitigation site.

WETLAND HYDROLOGY CALCULATION FOR 2013

The target compensation area for the Harrisburg, Site 3 wetland mitigation site is 0.69 ha (1.70 ac). Using the 1987 Manual (Environmental Laboratory 1987), 0.10 ha (0.24 ac) of the 0.81-ha (2.00-ac) mitigation site satisfied wetland hydrology criteria for greater than 5% of the growing season and no portion of the site satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Furthermore, 0.13 ha (0.31 ac) of the site satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season, using the 2010 Midwest Region Supplement (USACE 2010). These estimates are based on the following factors:

- The median date that the growing season begins in nearby Du Quoin, Illinois, is April 1, and the season lasts 215 days (MRCC 2013). Using the 1987 Manual, 5% of the growing season is 11 days and 12.5% of the growing season is 27 days. Using the 2010 Midwest Region Supplement, March 15 was the starting date of the 2013 growing season based on soil temperatures measured on site and data from the nearby Pyramid Site EC25 wetland mitigation site (ISGS #77).
- Total precipitation for the monitoring period at Du Quoin, Illinois, (MRCC #112483) was 123% of normal, and Spring 2013 (March through May) precipitation was 131% of normal.
- In 2013, wells 2S and 4S satisfied wetland hydrology criteria for greater than 5% of the growing season and no wells satisfied wetland hydrology criteria for greater than 12.5% of the growing season, using the 1987 Manual. Furthermore, wells 2S and 4S satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season using the 2010 Midwest Region Supplement.

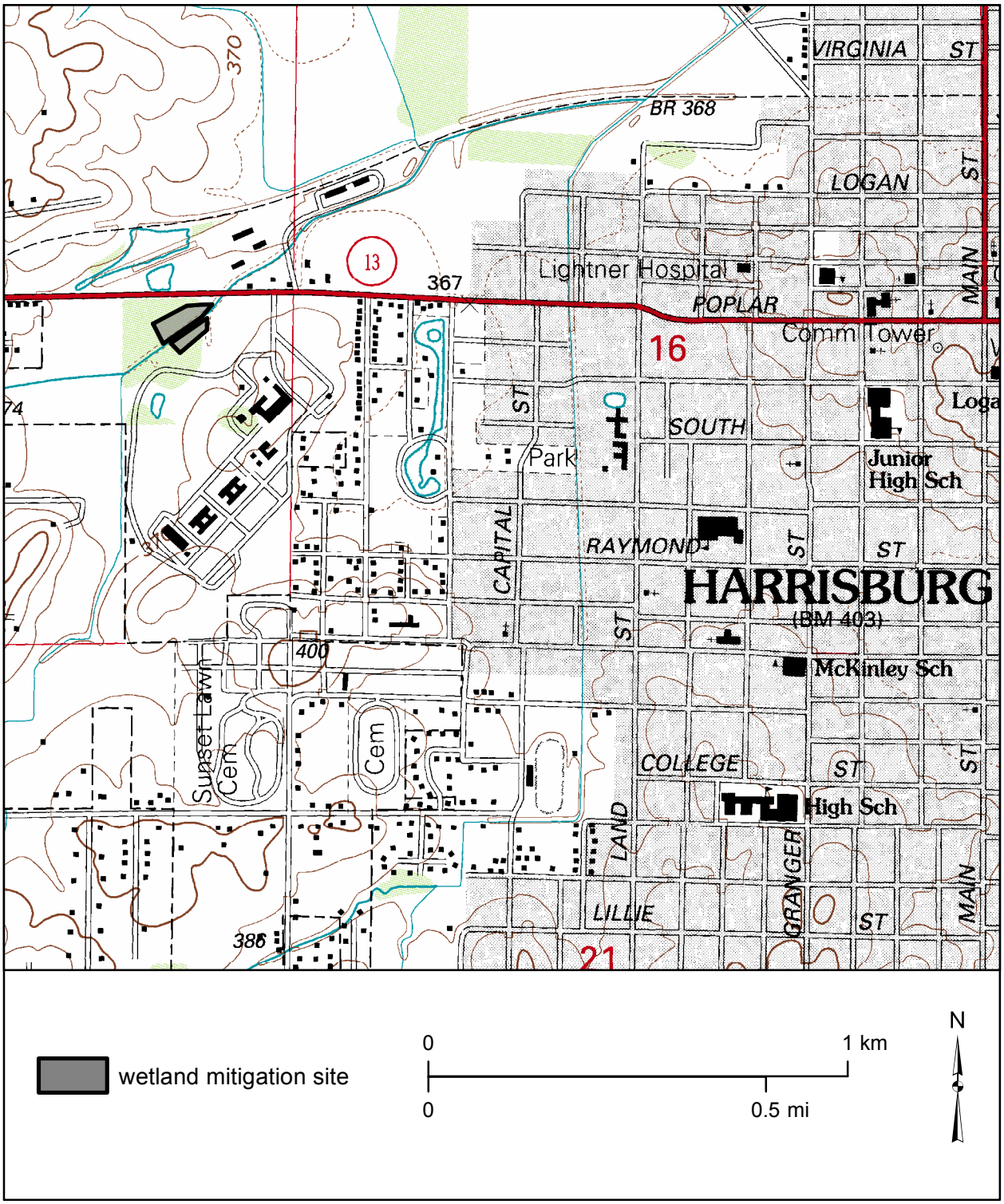
PLANNED FUTURE ACTIVITIES

- Additional monitoring instruments will be installed during Fall 2013.
- Water-level monitoring is expected to continue through 2018 or until no longer required by IDOT.

# Harrisburg, Site 3 Wetland Mitigation Site
# (US 45, FAP 332)

## General Study Area and Vicinity

from the USGS Topographic Series, Harrisburg, IL, 7.5-minute Quadrangle (ISGS 2013b)
contour interval is 5 feet

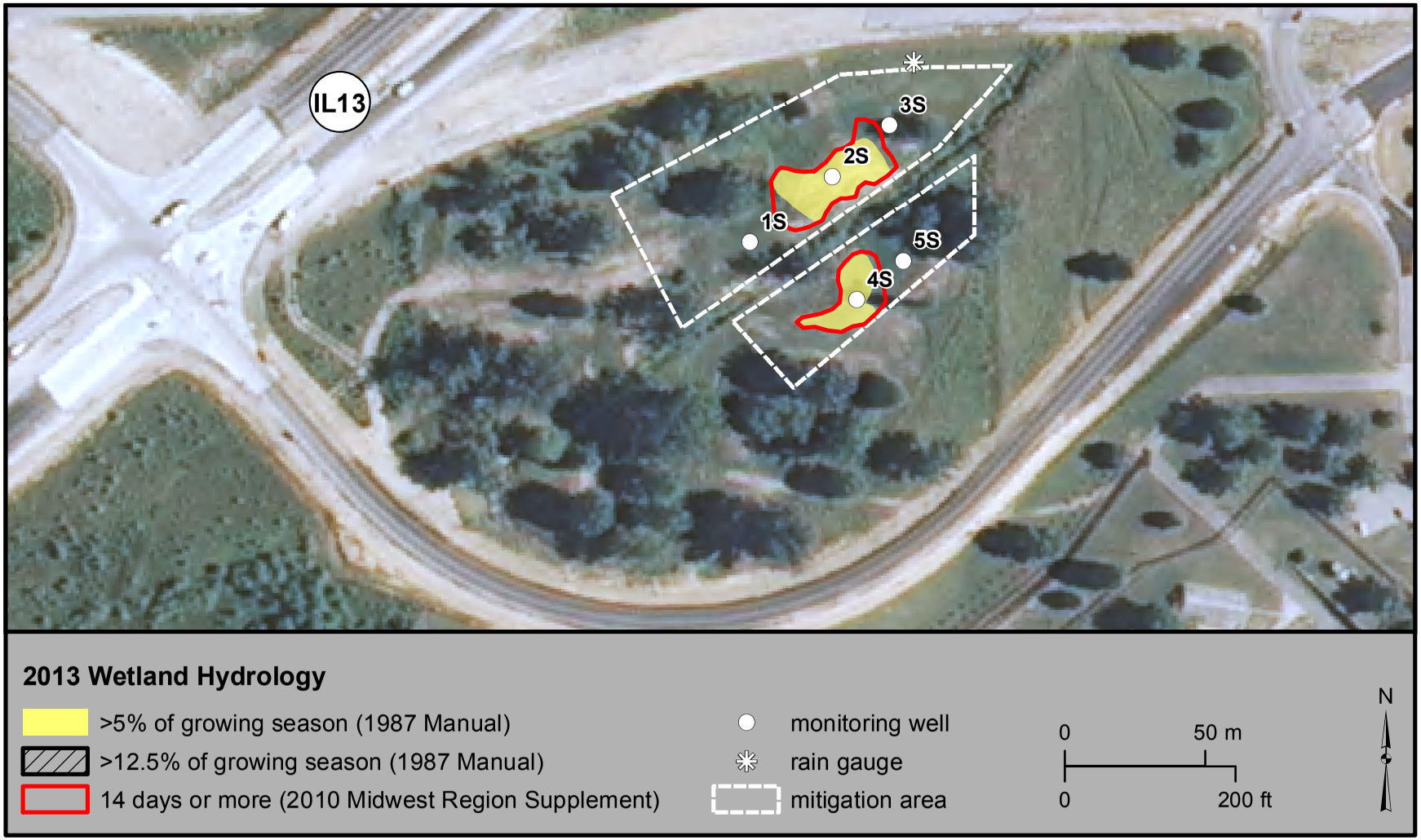


# Harrisburg, Site 3 Wetland Mitigation Site
# (US 45, FAP 332)

## Estimated Areal Extent of 2013 Wetland Hydrology

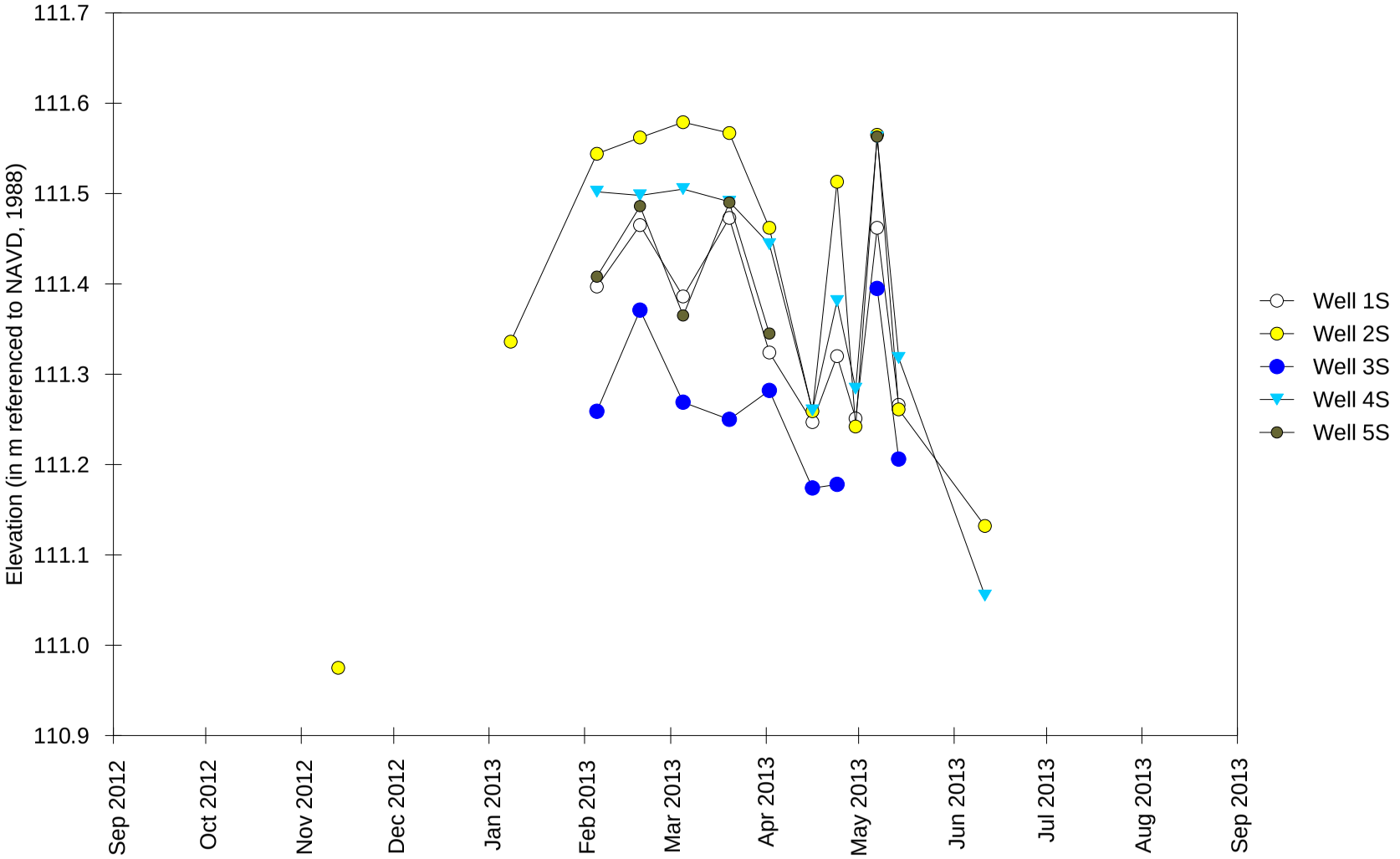
**September 1, 2012 though August 31, 2013**

Map based on 2012 Farm Service Agency digital orthophotography, Saline County, Illinois (USDA-FSA 2012)

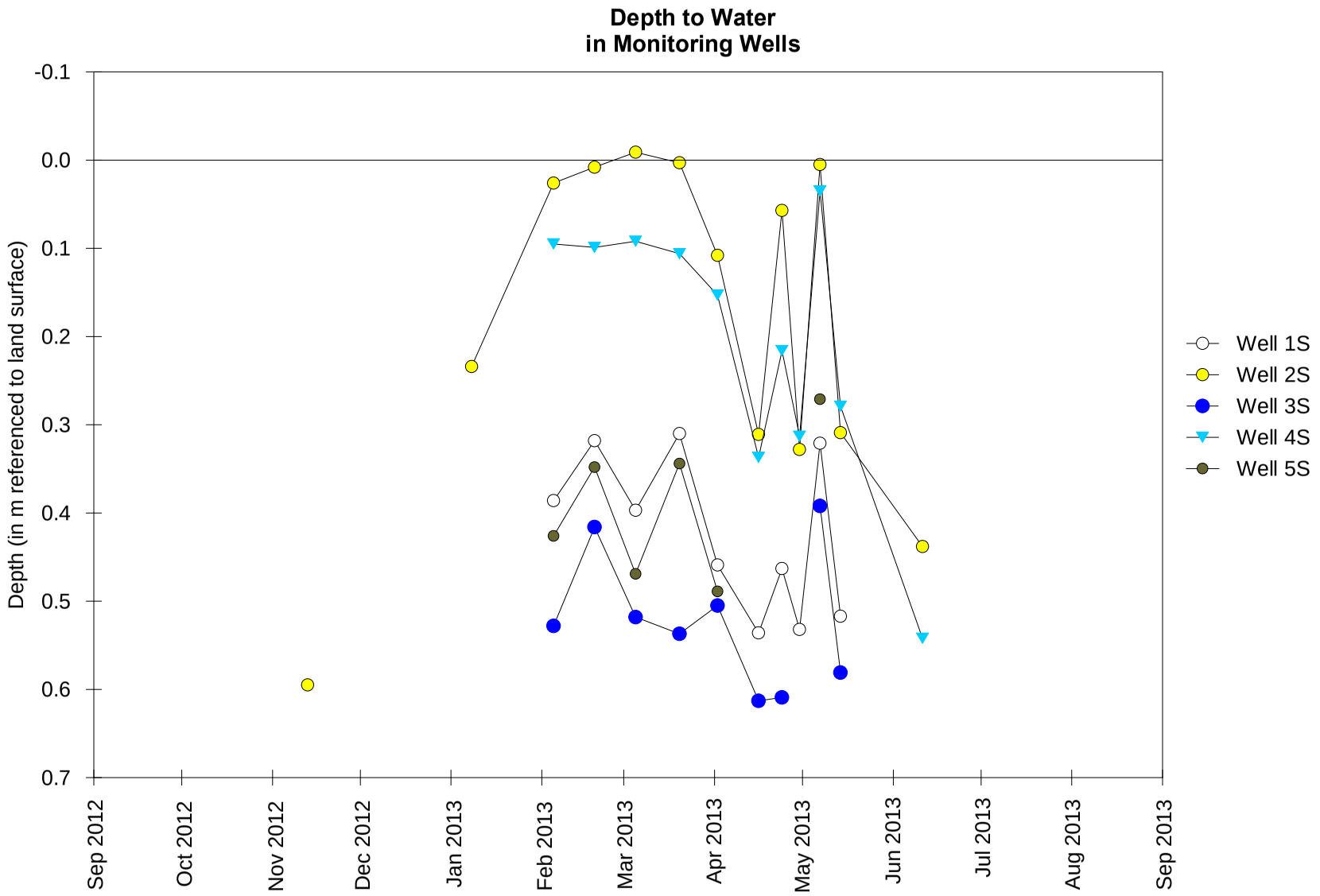


# Harrisburg, Site 3 Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

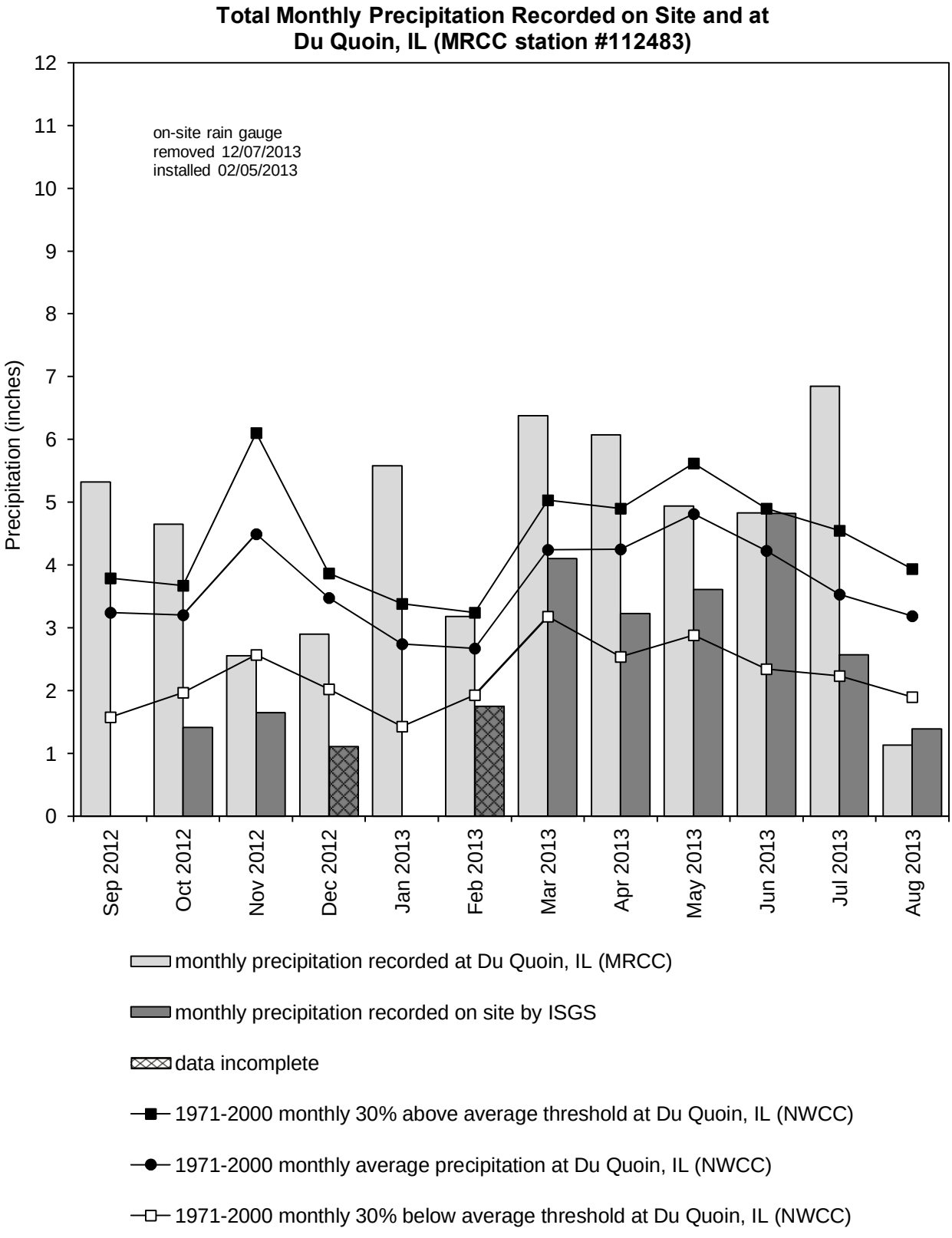
### Water-Level Elevations in Monitoring Wells



# Harrisburg, Site 3 Wetland Mitigation Site
## September 1, 2012 through August 31, 2013



# Harrisburg, Site 3 Wetland Mitigation Site
## September 2012 through August 2013



**GRANT CREEK NORTH** **ISGS #88**
**WETLAND MITIGATION SITE**
I-55
FAI 55
Will County, near Wilmington, Illinois
**Primary Project Manager: Eric T. Plankell**
**Secondary Project Manager: Jessica R. Ackerman**

SITE HISTORY

- February 2012: The ISGS was tasked by IDOT to monitor wetland hydrology.
- April 2012: The ISGS installed a monitoring network.
- September 2012: Huddleston-McBride Land Drainage Company installed gate valves at strategic positions along active drainage tiles underlying the site.

WETLAND HYDROLOGY CALCULATION FOR 2013

The target compensation area for the Grant Creek North wetland mitigation site is 5.99 ha (14.80 ac). Using the 1987 Manual (Environmental Laboratory 1987), 31.67 ha (78.27 ac) of the total site area of 62.73 ha (155.00 ac) satisfied wetland hydrology criteria for greater than 5% of the 2013 growing season, and 1.00 ha (2.48 ac) of the site satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 31.67 ha (78.27 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in nearby Joliet, Illinois, is April 6, and the season lasts 212 days (MRCC 2013). Using the 1987 Manual, 5% of the growing season is 11 days, and 12.5% of the growing season is 27 days. Using the 2010 Midwest Region Supplement, March 30 was the starting date of the 2013 growing season based on soil temperatures measured at the nearby Morris wetland mitigation bank (ISGS #49).
- Total precipitation for the monitoring period at Morris, Illinois, (MRCC station #115825) was 107% of normal. During Spring 2013 (March through May), precipitation was 165% of normal.
- In 2013, water levels measured in monitoring wells 1S, 2VS, 3VS, 5VS, 8S, 10S, 12S, 13S, 14VS, 15S, 16VS, 17VS, 18S, 19VS, 20VS, 21VS, 22VS, 23VS, and 24VS satisfied wetland hydrology criteria for greater than 5% of the growing season, and wells 1S, 8S, 19VS, and 23VS satisfied wetland hydrology criteria for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, all wells stated to have satisfied wetland hydrology criteria for greater than 5% of the growing season also satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season.
- Surface-water levels measured at gauges A, B, and C indicated inundation at and below 159.99 m, 159.54 m, and 159.78 m (524.90 ft, 523.43 ft, and 524.21 ft), respectively, for greater than 5% of the growing season, while surface-water levels, measured only at Gauge A, indicated inundation at and below 159.93 m (524.70 ft) for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, surface-water levels measured at gauges A, B, and C indicated inundation at and below

159.98 m, 159.45 m, and 159.77 m (524.87 ft, 523.13 ft, and 524.18 ft), respectively, for 14 or more consecutive days of the growing season.

ADDITIONAL INFORMATION

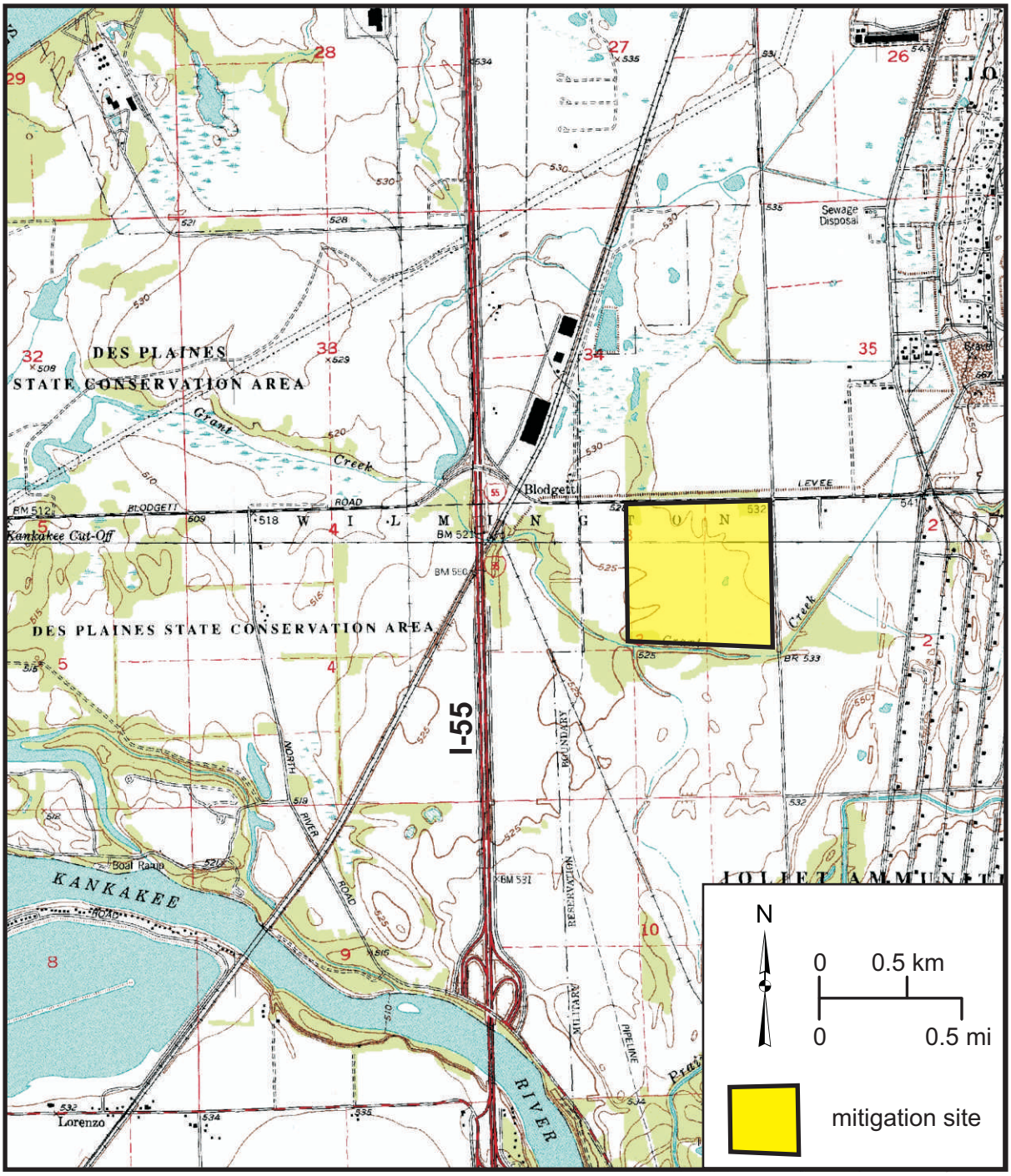
- After treatment measures for undesirable vegetation are completed, the gate valves are scheduled to be closed with the aim of restoring more natural hydrologic patterns at the site.

PLANNED FUTURE ACTIVITIES

- After the gate valves on the drainage tiles are closed, additional monitoring instruments may be added to the site to better document any changes in hydrology.
- Monitoring will continue until no longer required by IDOT.

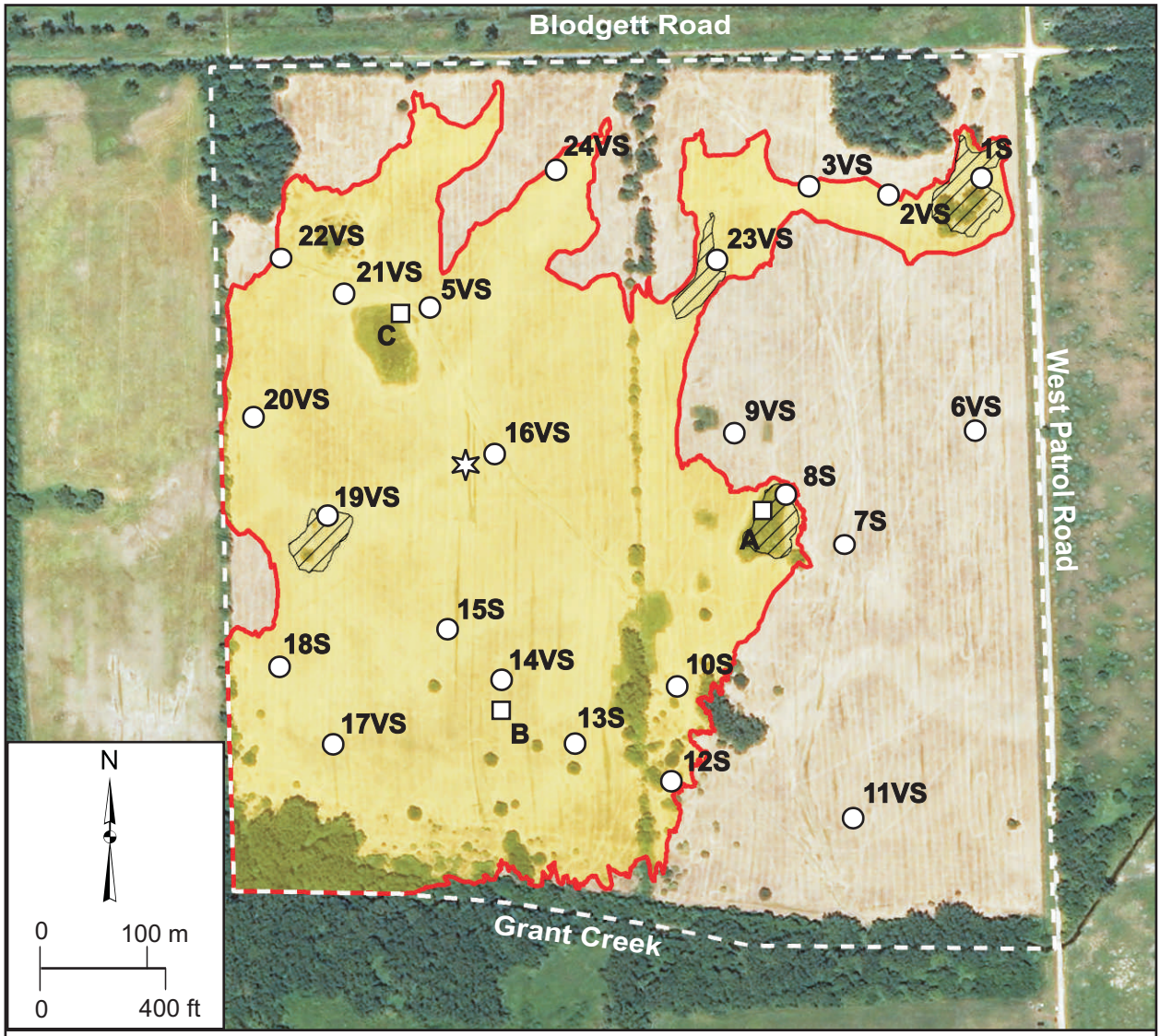
# Grant Creek North Wetland Mitigation Site
# (I-55, FAI 55)
## General Study Area and Vicinity

from the USGS Topographic Series, Wilmington, IL, (ISGS 2013b) and Channahon, IL, (ISGS 2013b)
7.5-minute Quadrangles. Contour intervals are 5 feet and 10 feet, respectively.



# Grant Creek North Wetland Mitigation Site
## (I-55, FAI 55)
### Estimated Areal Extent of 2013 Wetland Hydrology
**September 1, 2012 through August 31, 2013**

Map based on 2012 Farm Service Agency digital orthophotography, Will County, Illinois (USDA-FSA 2012)

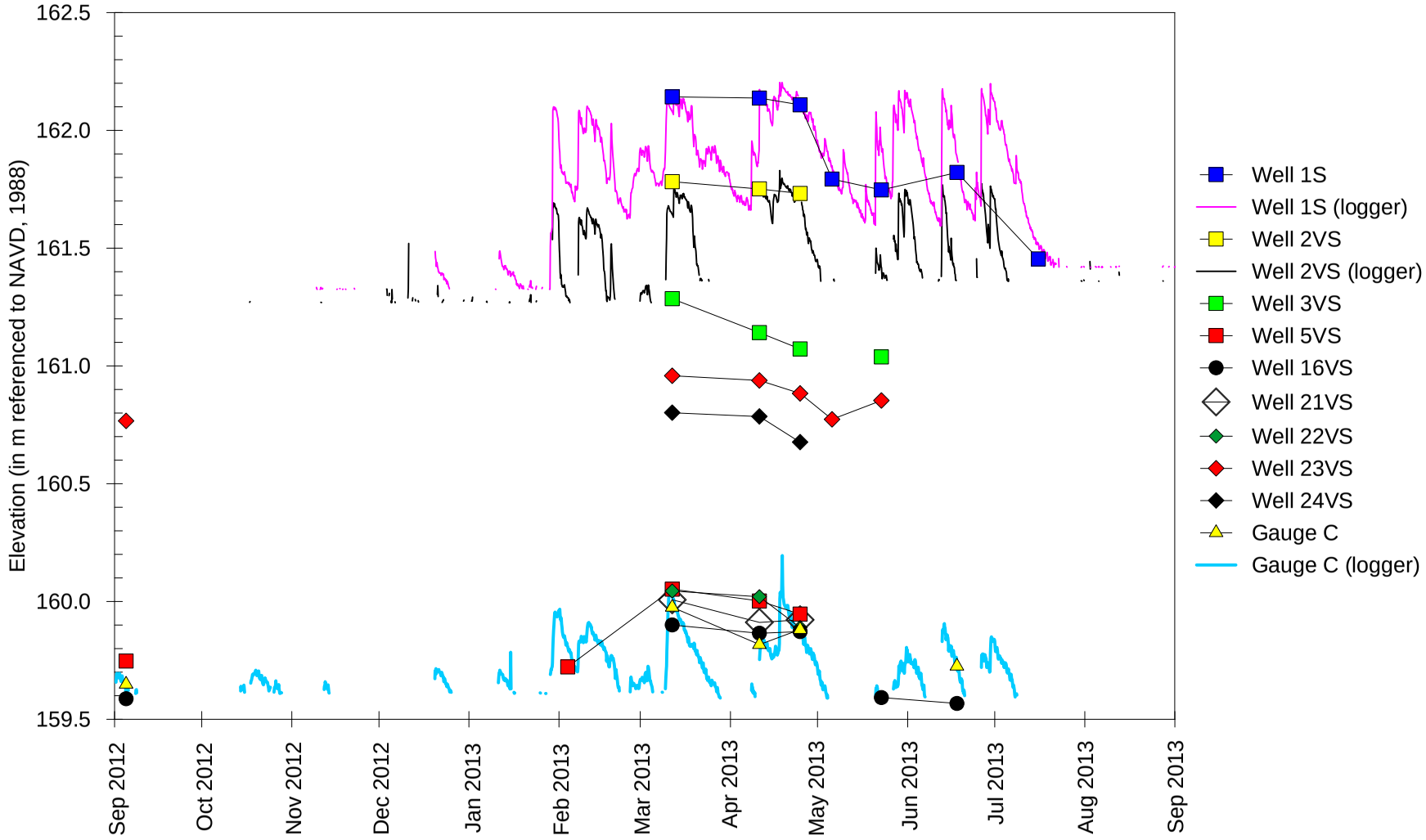



**2013 Wetland Hydrology**

- monitoring well
- surface-water gauge
- rain gauge
- site boundary
- >5% of the growing season (1987 Manual)
- >12.5% of the growing season (1987 Manual)
- 14 days or more (2010 Midwest Region Supplement)

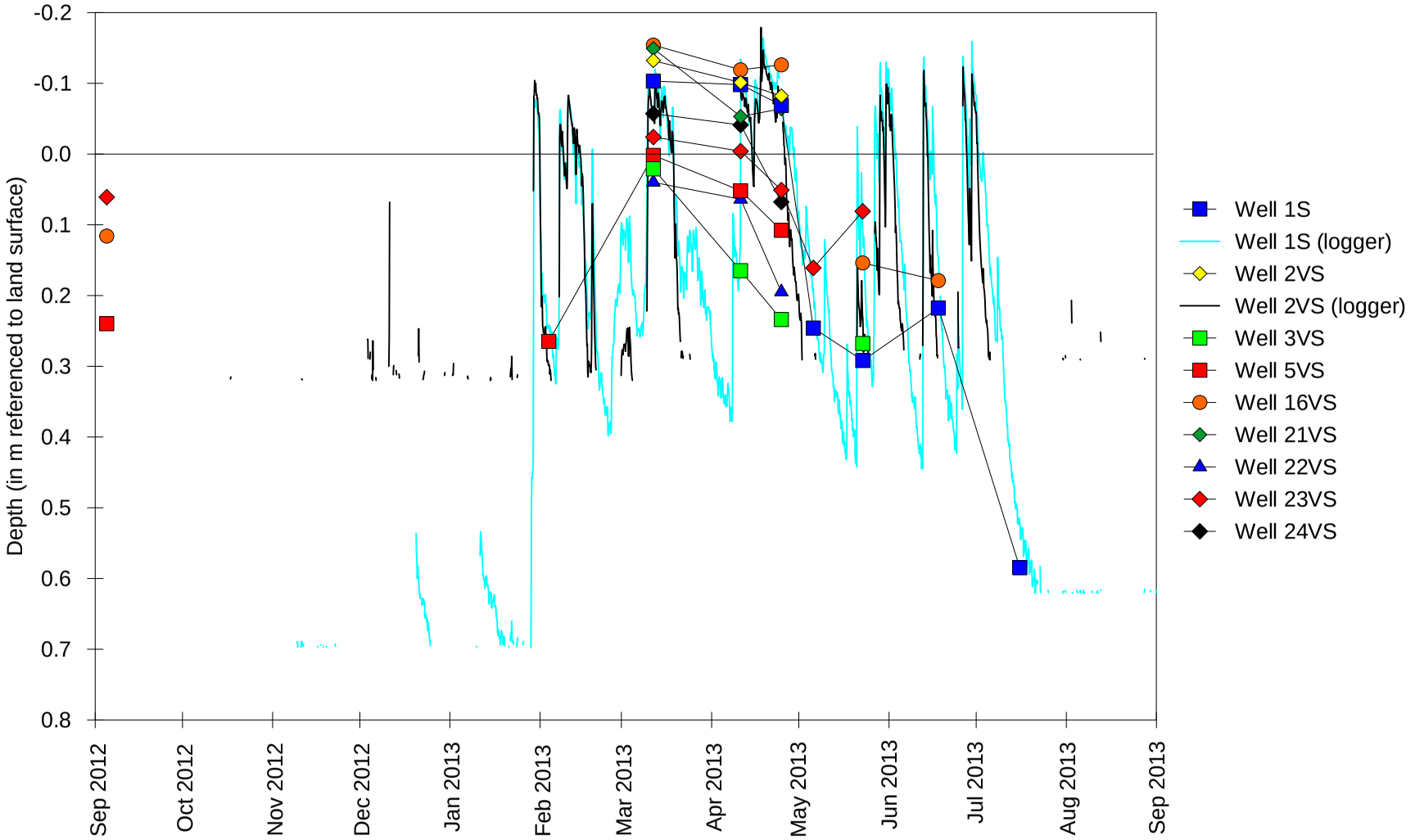
# Grant Creek North Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations
### in Monitoring Wells and at a Surface-Water Gauge in the North Half of the Site



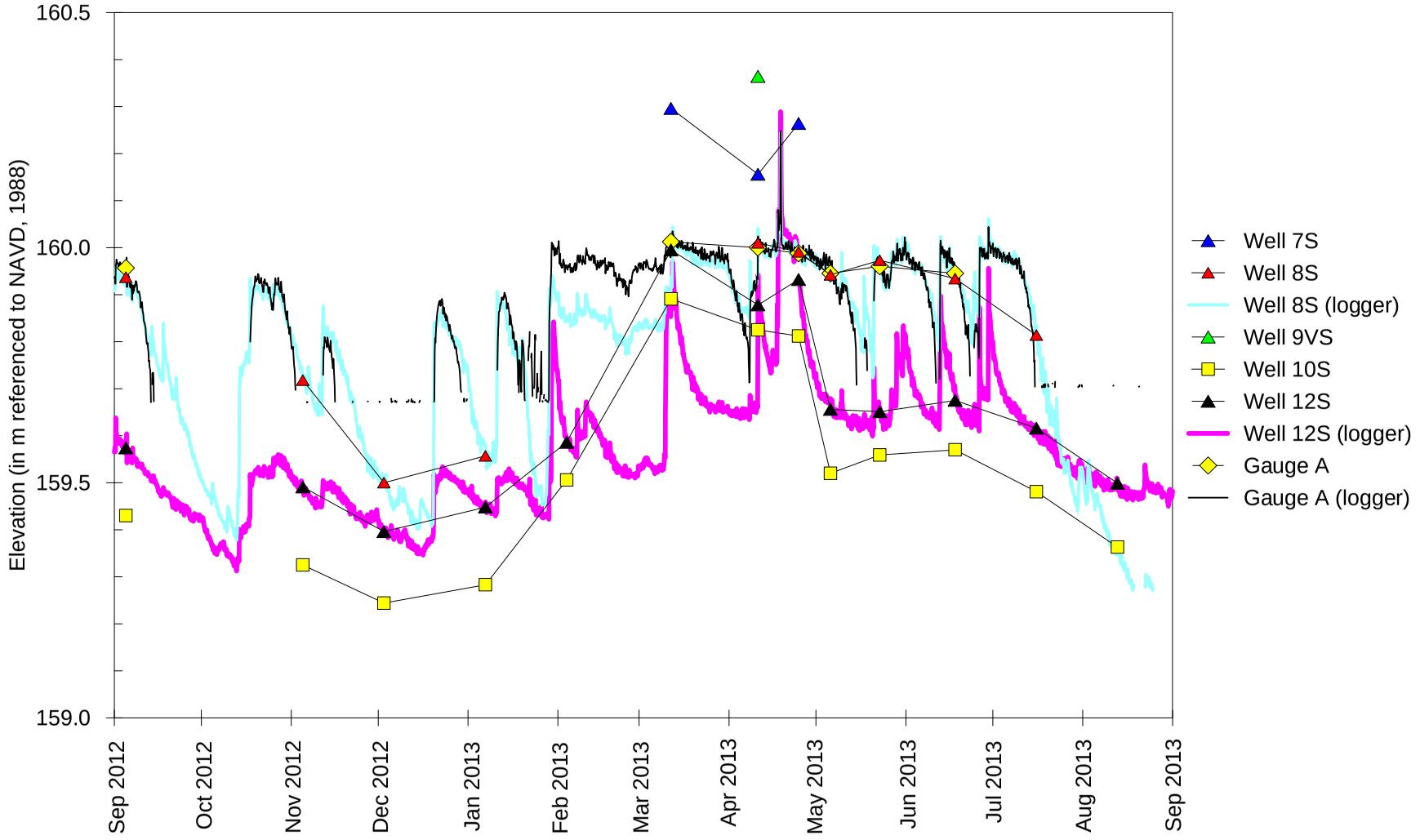
# Grant Creek North Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Monitoring Wells in the North Half of the Site



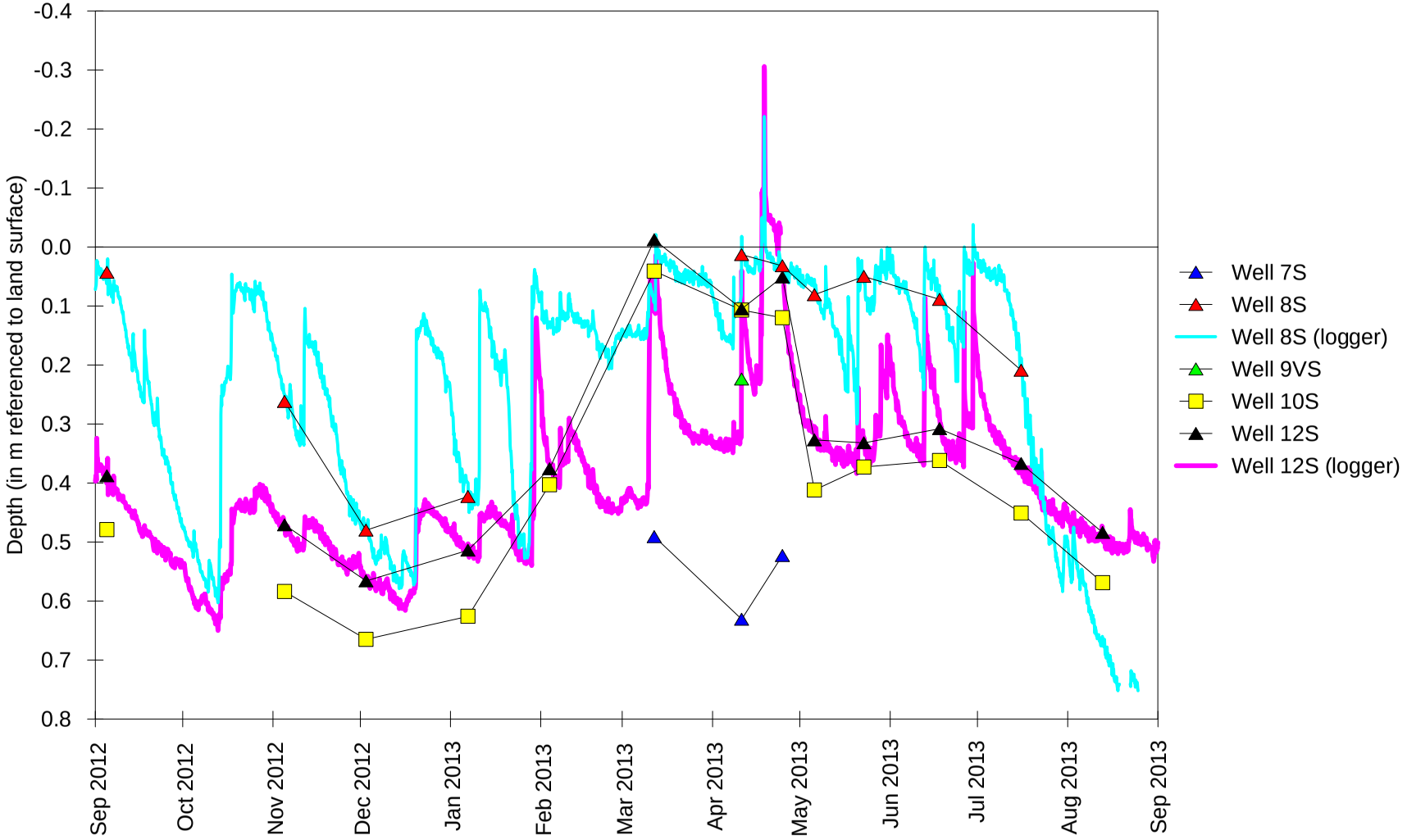
# Grant Creek North Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations
### in Monitoring Wells and at a Surface-Water Gauge in the Southeastern Quadrant of the Site



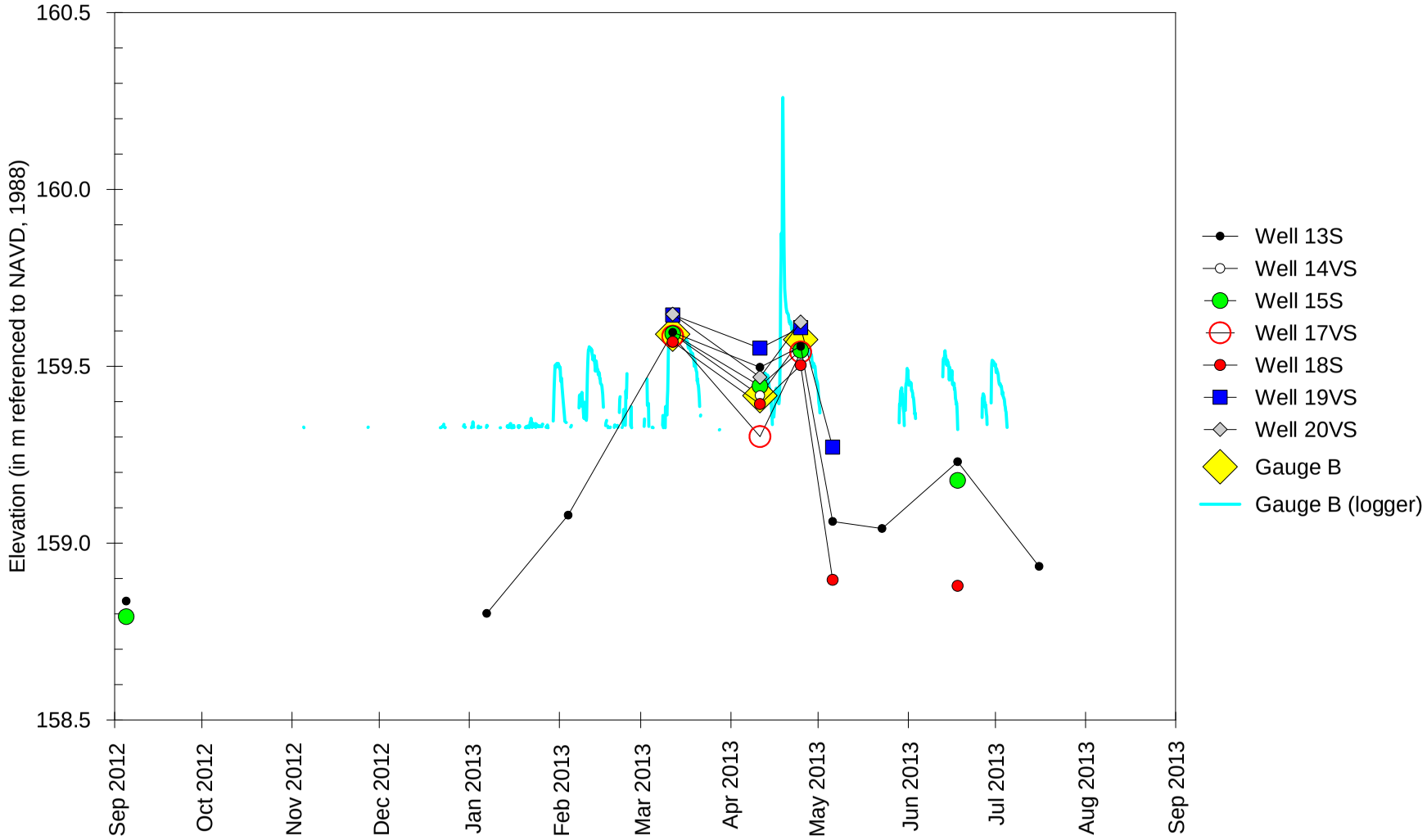
# Grant Creek North Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Monitoring Wells in the Southeastern Quadrant of the Site



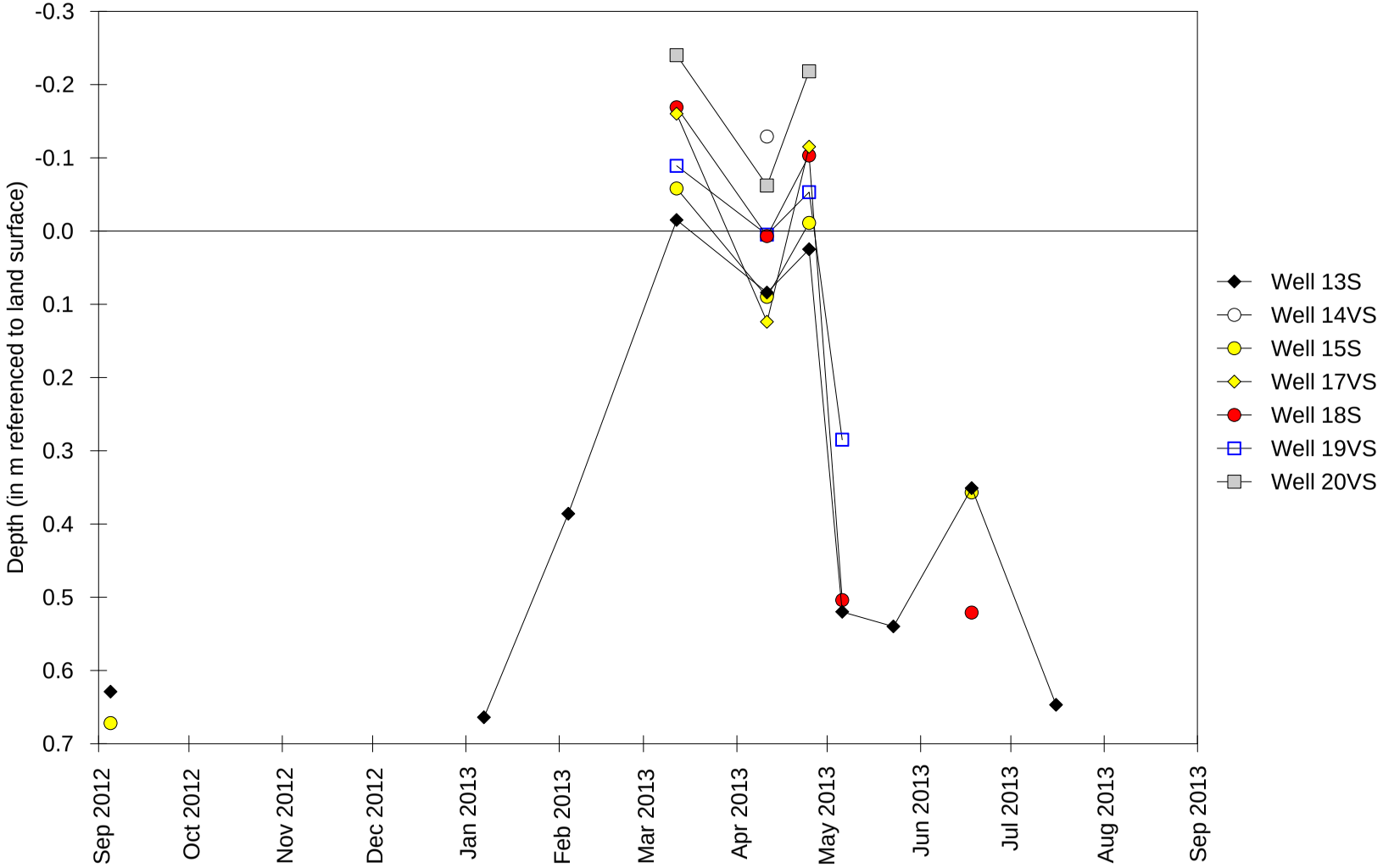
# Grant Creek North Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations
### in Monitoring Wells and at a Surface-Water Gauge in the Southwestern Quadrant of the Site



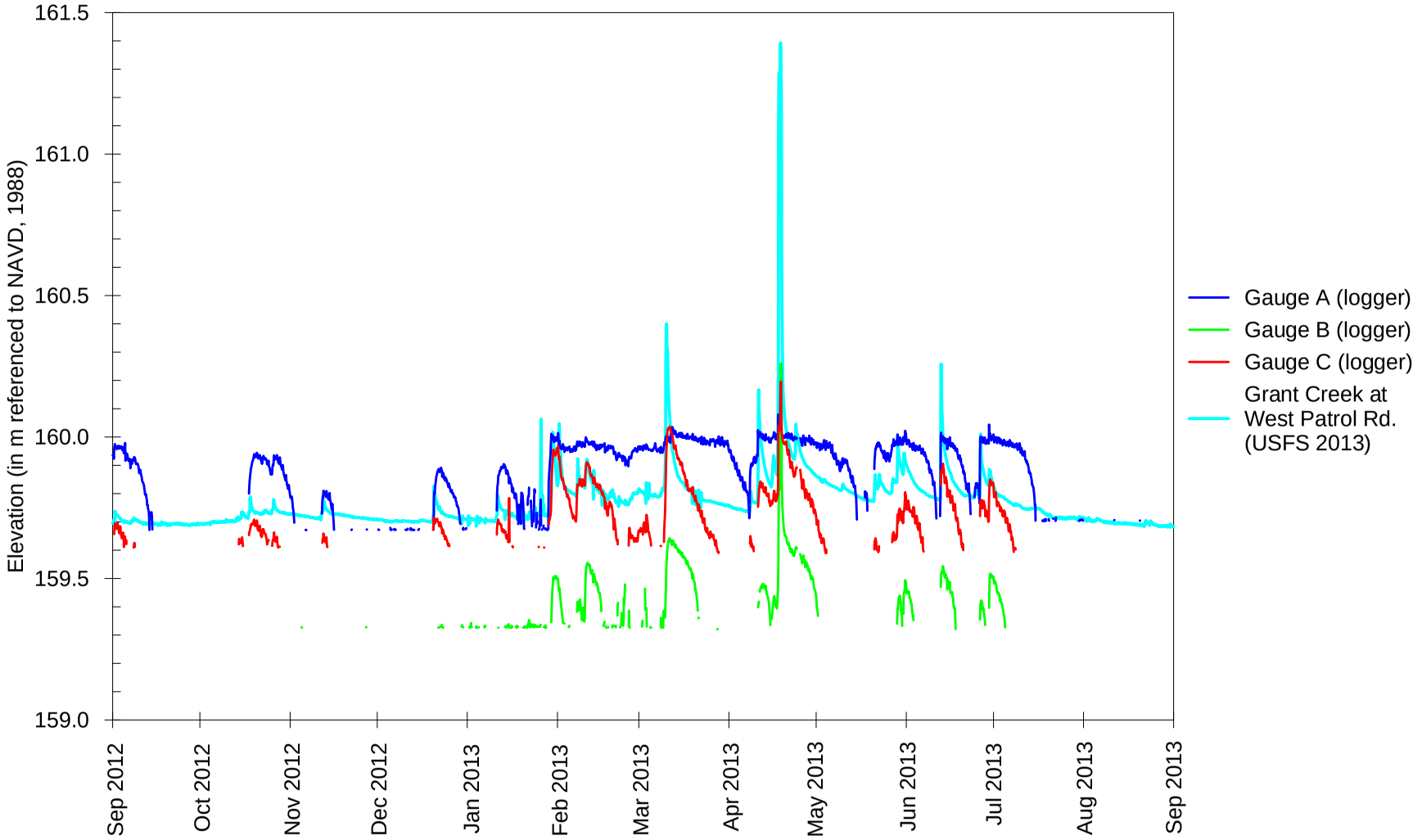
# Grant Creek North Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Monitoring Wells in the Southwestern Quadrant of the Site



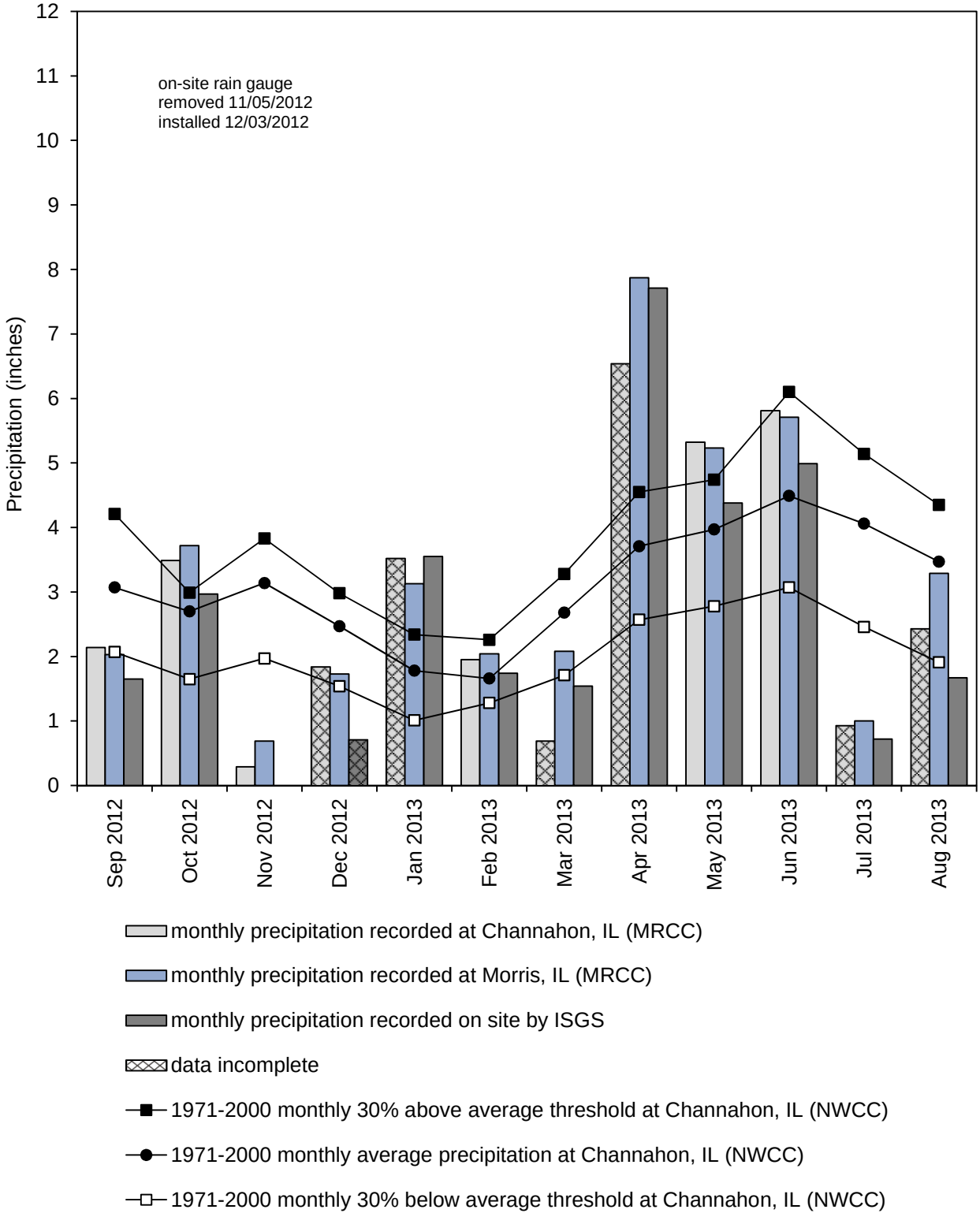
# Grant Creek North Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations at Surface-Water Gauges



# Grant Creek North Wetland Mitigation Site
## September 2012 through August 2013

**Total Monthly Precipitation Recorded on Site, at Channahon, IL (MRCC station #111420), and at Morris, IL (MRCC station #115825)**



**STEVENS CREEK BIKEWAY** **ISGS #89**
**WETLAND MITIGATION SITE**
Stevens Creek Bikeway
Sequence #10630
Macon County, Decatur, Illinois
**Primary Project Manager: Steven E. Benton**
**Secondary Project Manager: Colleen M. Long**

SITE HISTORY

- September 2012: The ISGS was tasked by IDOT to monitor wetland hydrology.
- December 2012: A monitoring network was installed on the site.

WETLAND HYDROLOGY CALCULATION FOR 2013

The target compensation area for the Stevens Creek Bikeway wetland mitigation site is 6.03 ha (14.89 ac). Using the 1987 Manual (Environmental Laboratory 1987), 12.37 ha (30.56 ac) of the total site area of 18.67 ha (46.10 ac) satisfied wetland hydrology criteria for greater than 5% of the 2013 growing season, and 12.18 ha (30.09 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 12.31 ha (30.43 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in Decatur, Illinois, is April 7, and the season lasts 207 days (MRCC 2013); 5% of the growing season is 10 days, and 12.5% of the growing season is 26 days, using the 1987 Manual. Using the 2010 Midwest Region Supplement, March 30 was the starting date of the 2013 growing season based on soil temperatures measured at the nearby Decatur, Illinois, ICN station (WARM 2013).
- Total precipitation for the monitoring period, recorded at Decatur, Illinois (MRCC station #112193), was 105% of normal, and precipitation in Spring 2013 (March through May) was 135% of normal.
- In 2013, water levels measured in all soil-zone monitoring wells except 9S, 10S, and 26S satisfied wetland hydrology criteria for greater than 5% of the growing season, and all soil-zone monitoring wells except 9S, 10S, 14S, and 26S satisfied wetland hydrology criteria for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, water levels in all soil-zone monitoring wells except 9S, 10S, 14S, and 26S satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season.
- Surface-water levels measured at gauges A and C indicated inundation in areas at and below 184.15 m (604.17 ft) and 184.16 m (604.20 ft), respectively, for greater than 5% of the growing season, and at and below 184.11 m (604.03 ft) and 184.10 m (604.00 ft), respectively, for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, surface-water levels measured at gauges A and C indicated inundation at and below 184.14 m (604.13 ft) and 184.15 m (604.17 ft), respectively, for 14 or more consecutive days of the growing season.

ADDITIONAL INFORMATION

- Water-levels measured at Gauge B showed that Stevens Creek flooded the site at least four times during the growing season. The greatest event occurred in April and evidence on the site in the form of drift lines suggests that as much as 90% of the site was inundated.

- Surface-water depths recorded at gauges A and C showed that inundation occurred in portions of the site for several weeks following each flood event, which revealed that the berm successfully retained water on the site. In addition, the duration of inundation was sufficient to satisfy jurisdictional wetland hydrology criteria.

PLANNED FUTURE ACTIVITIES

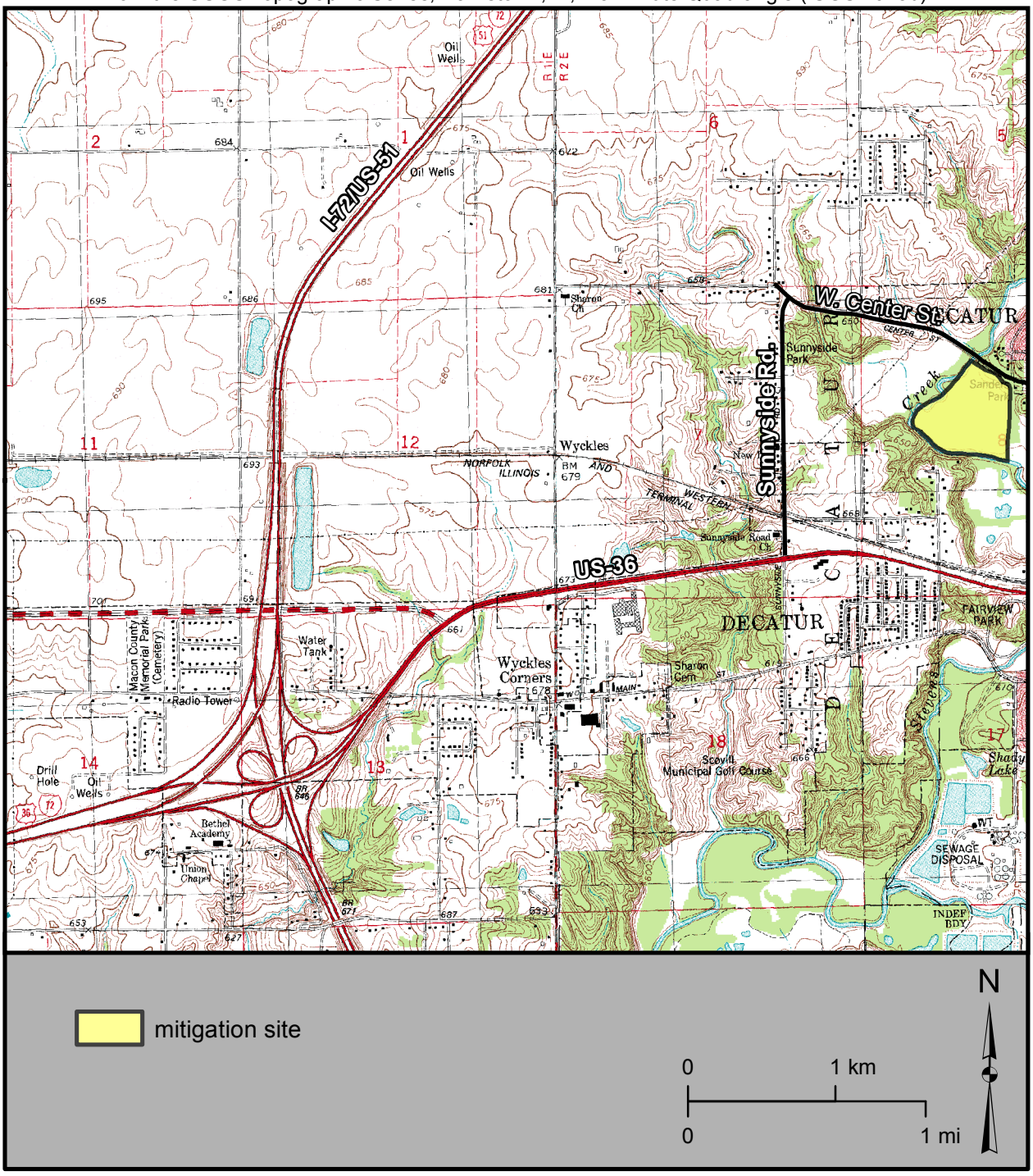
- In the portion of the site with the ridge and swale topography, monitoring wells will be installed on some of the ridges in order to determine if the duration of saturation varies from that of the swales.

- Monitoring will continue until no longer required by IDOT.

# Stevens Creek Bikeway Wetland Mitigation Site

## General Study Area and Vicinity

from the USGS Topographic Series, Harristown, IL, 7.5-minute Quadrangle (ISGS 2013b)

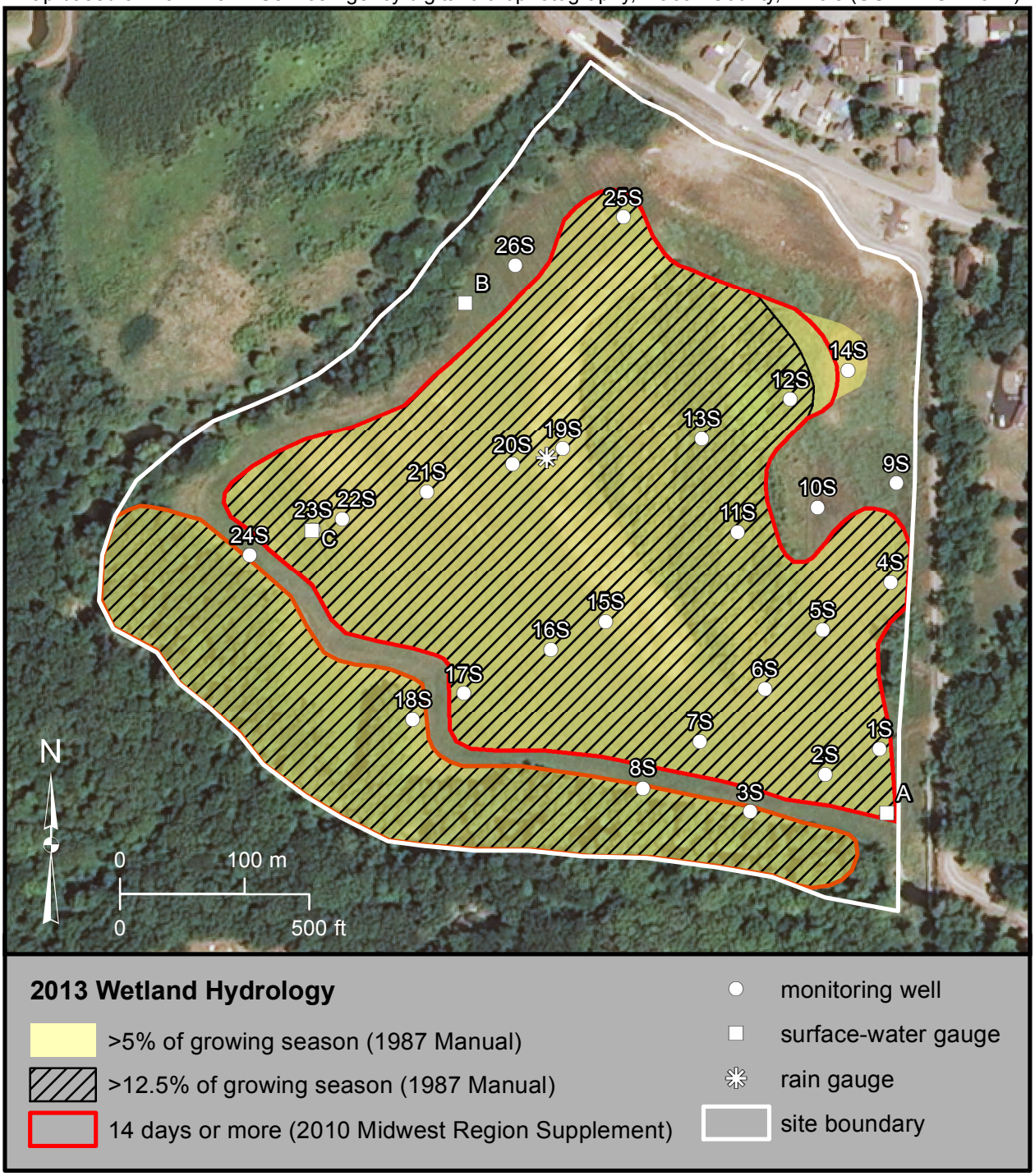


# Stevens Creek Bikeway Wetland Mitigation Site

## Estimated Areal Extent of 2013 Wetland Hydrology

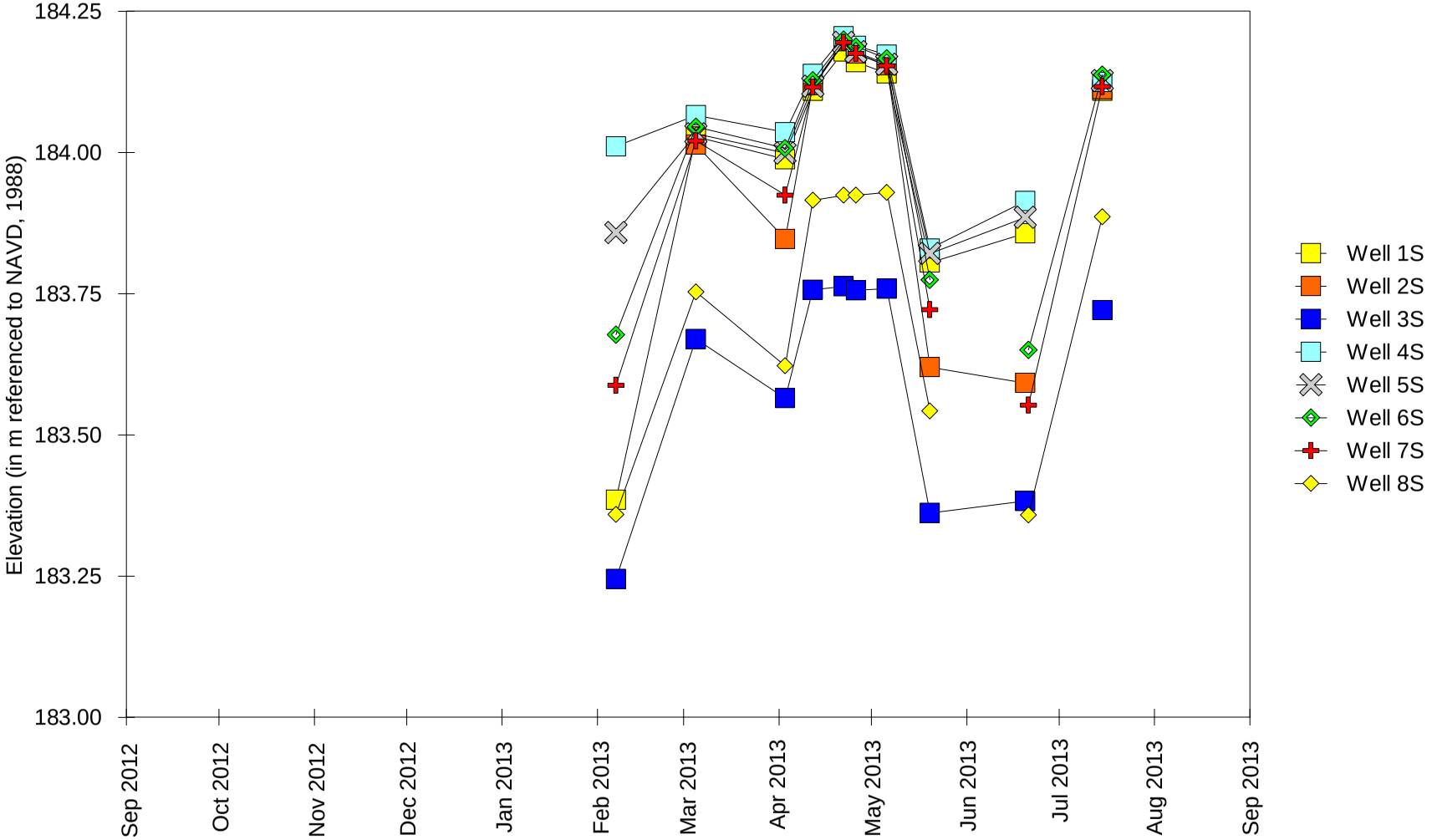
**September 1, 2012 through August 31, 2013**

Map based on 2012 Farm Service Agency digital orthophotography, Macon County, Illinois (USDA-FSA 2012)

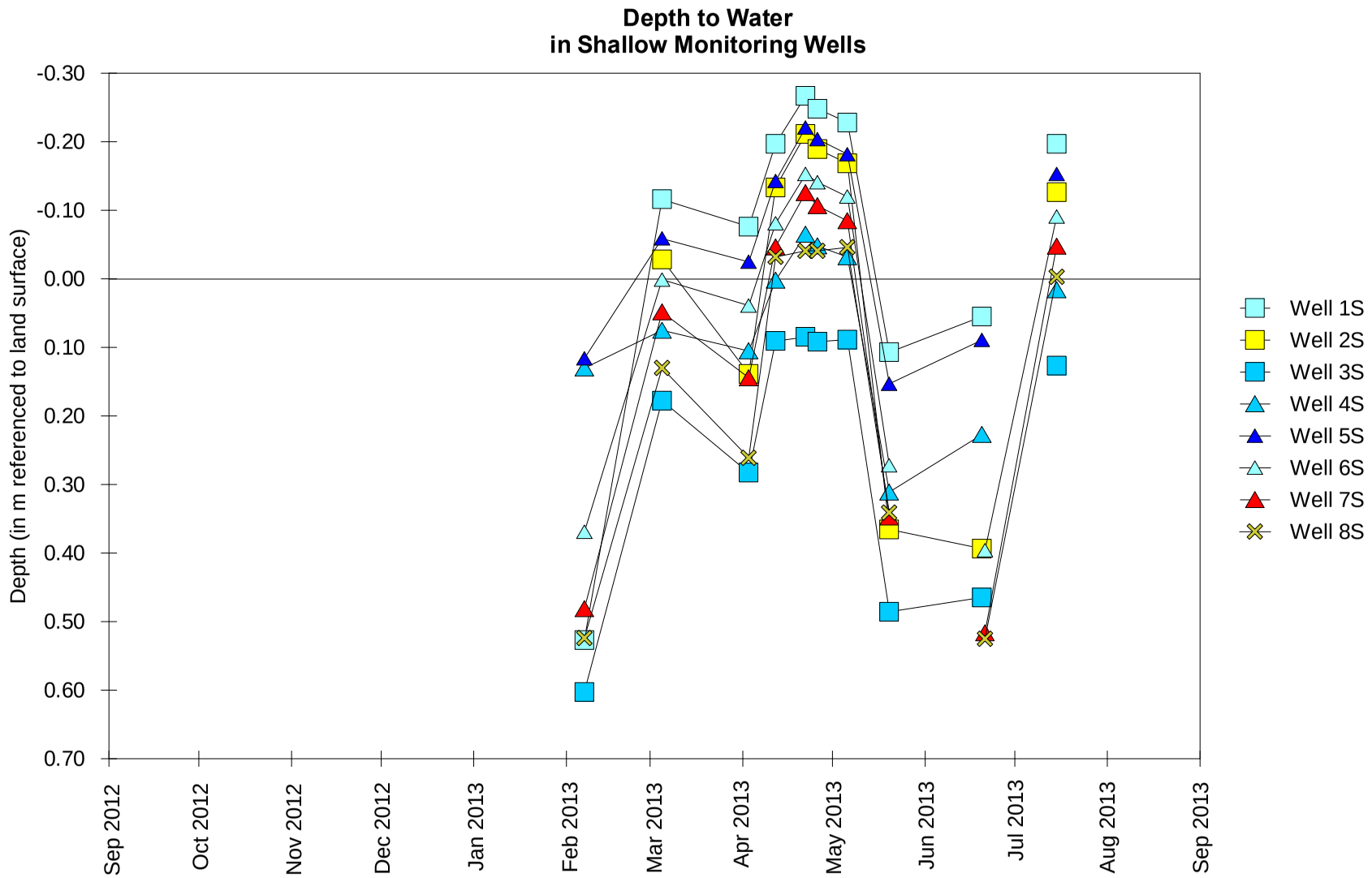


# Stevens Creek Bikeway Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Shallow Monitoring Wells

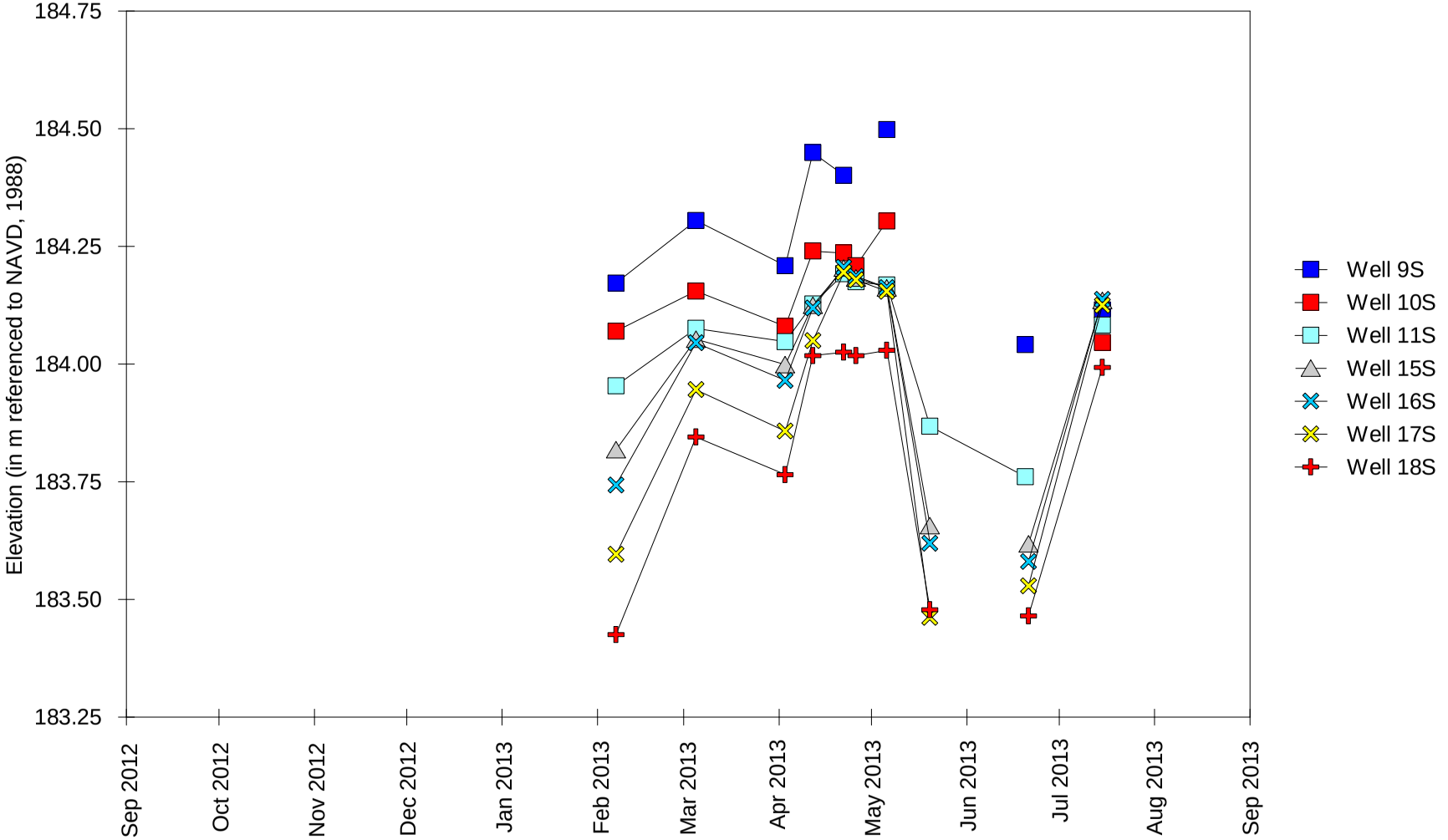


# Stevens Creek Bikeway Wetland Mitigation Site
## September 1, 2012 through August 31, 2013



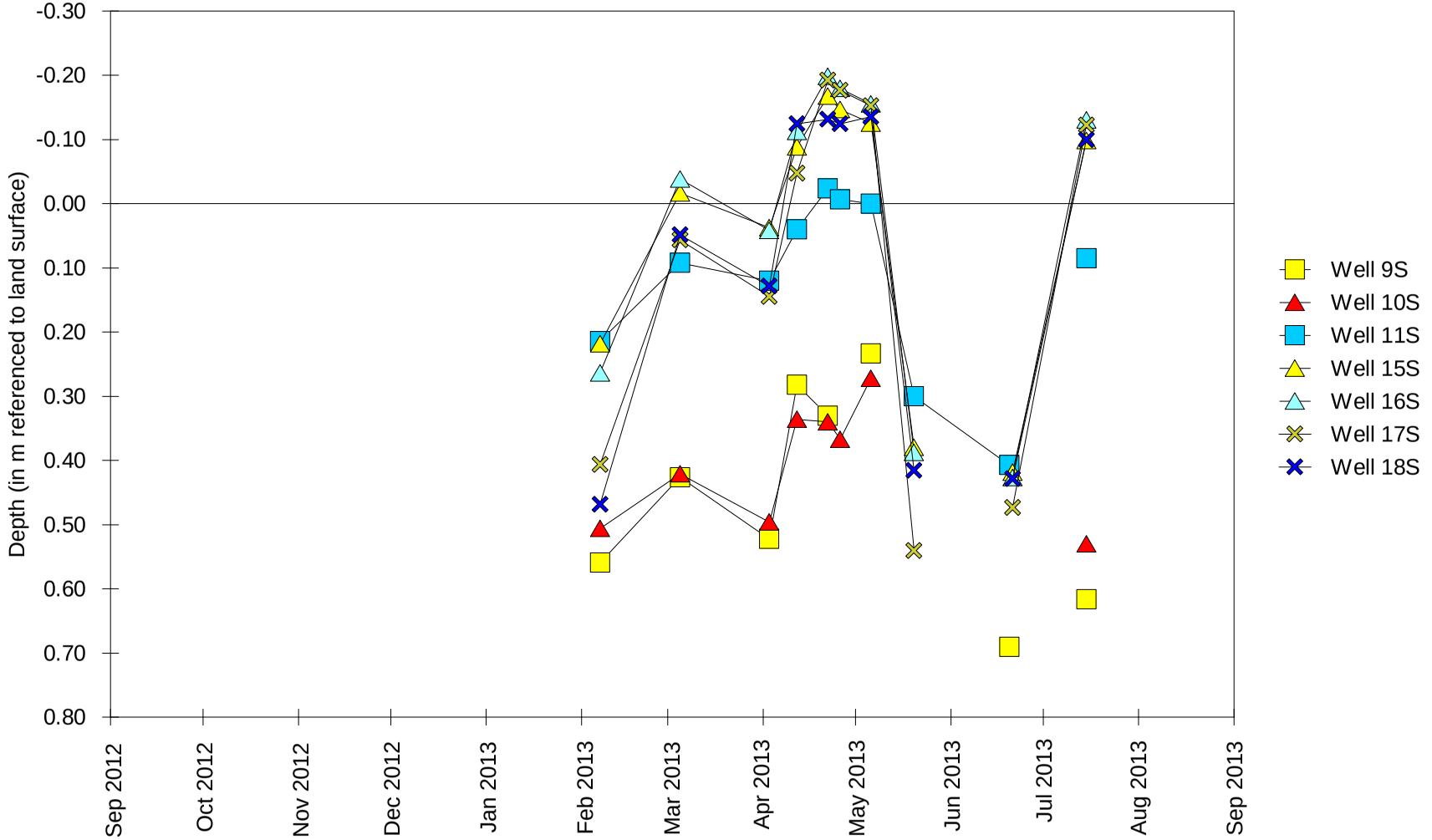
# Stevens Creek Bikeway Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Shallow Monitoring Wells



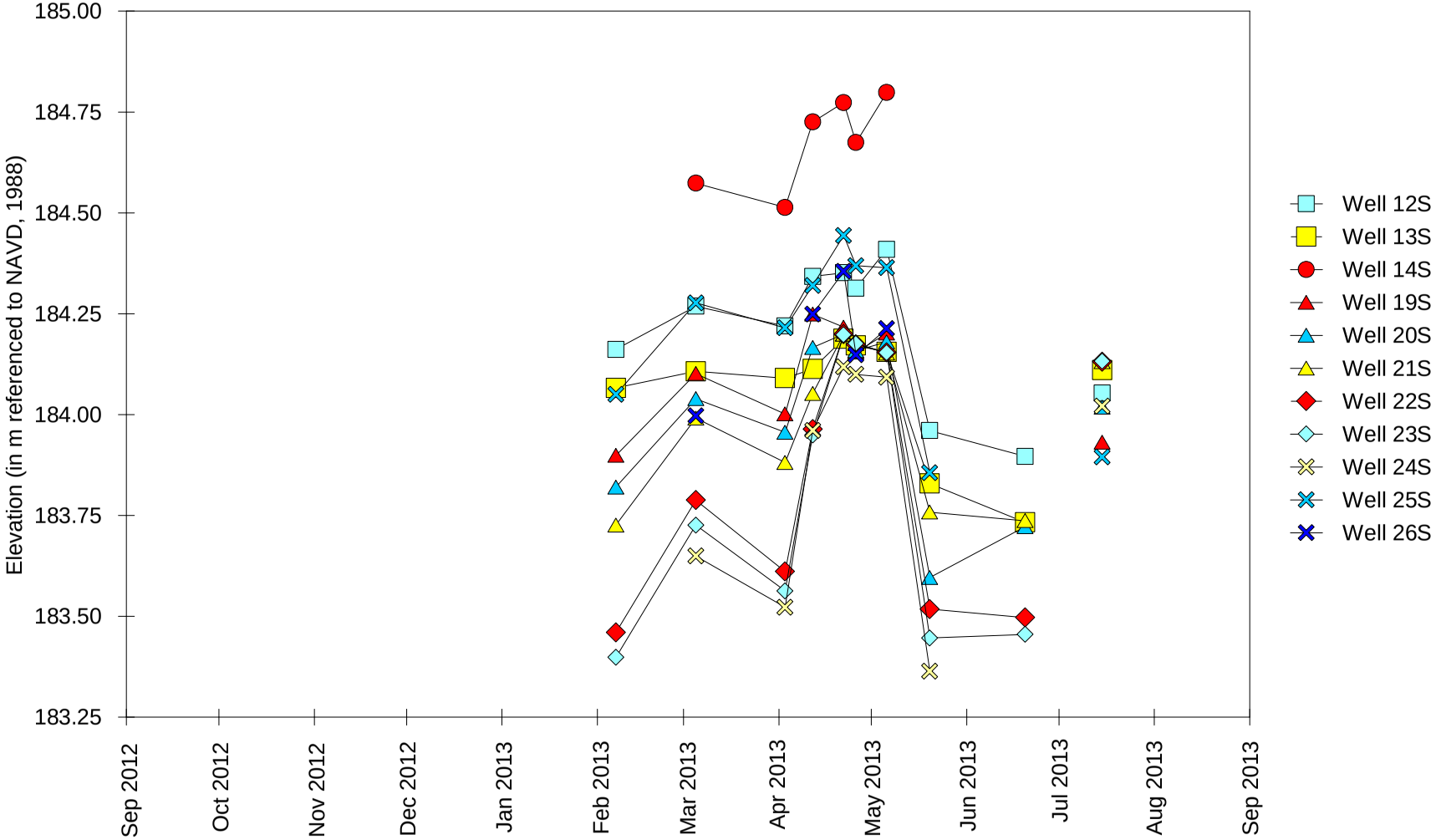
# Stevens Creek Bikeway Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Shallow Monitoring Wells



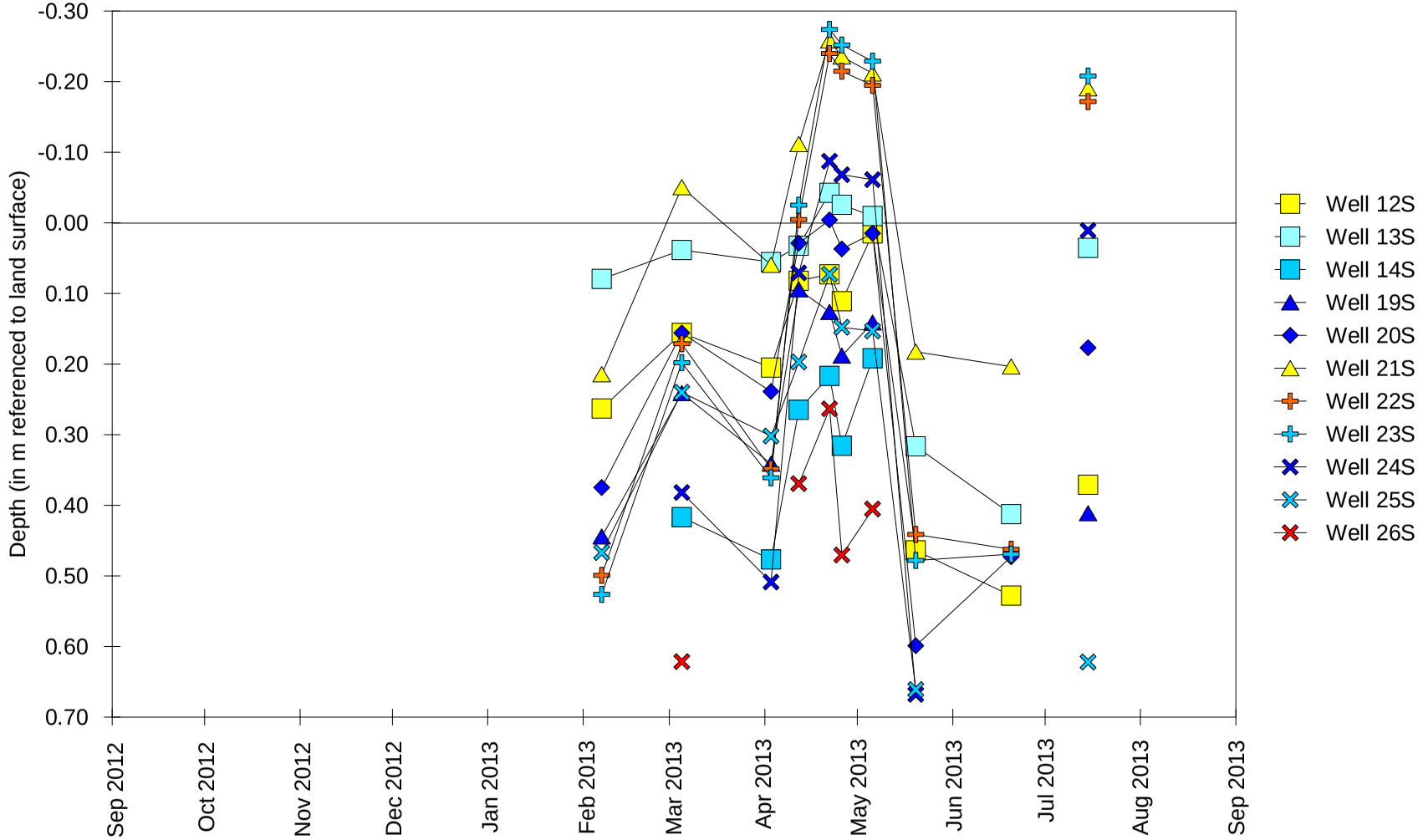
# Stevens Creek Bikeway Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations in Shallow Monitoring Wells



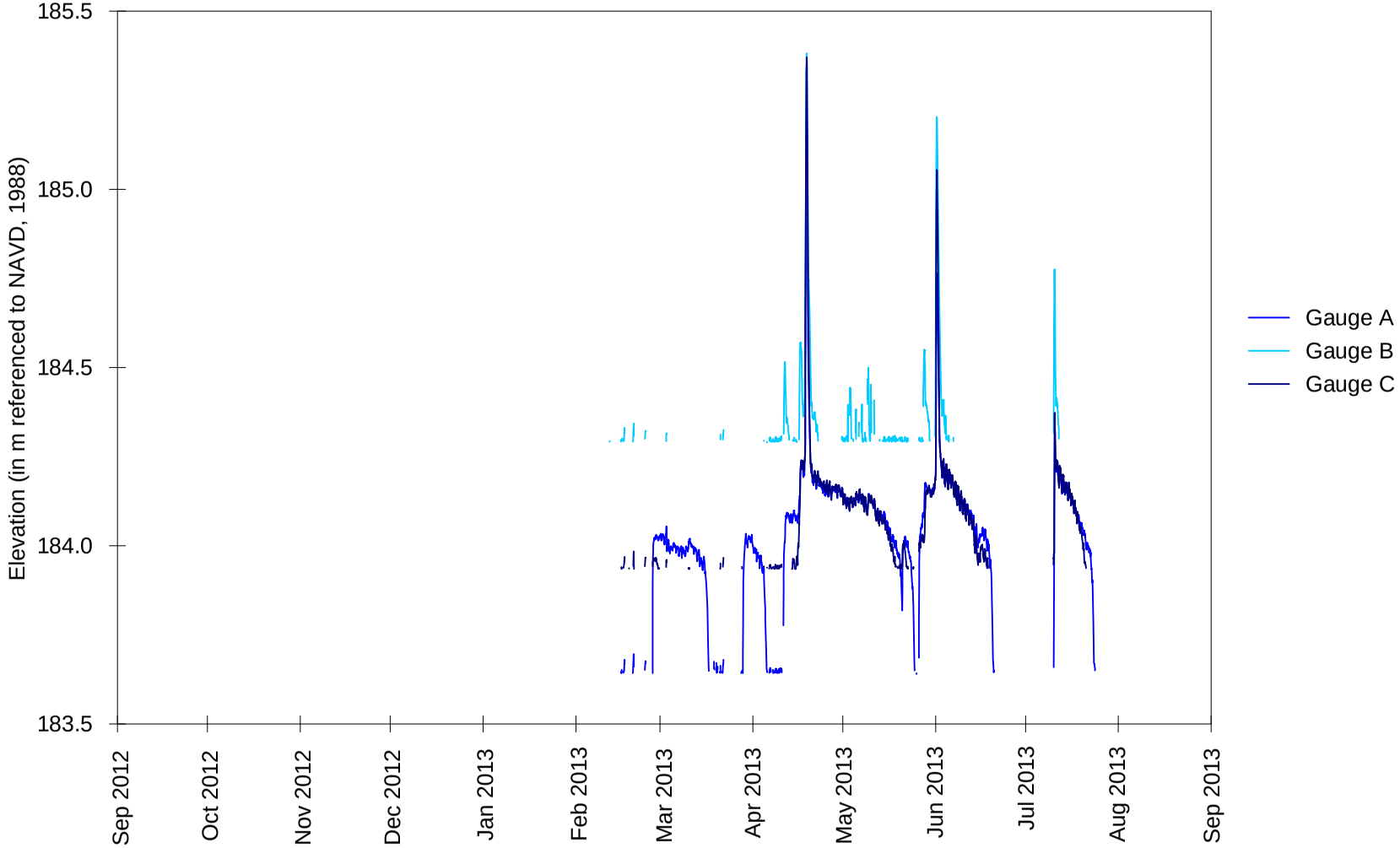
# Stevens Creek Bikeway Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Depth to Water
### in Shallow Monitoring Wells

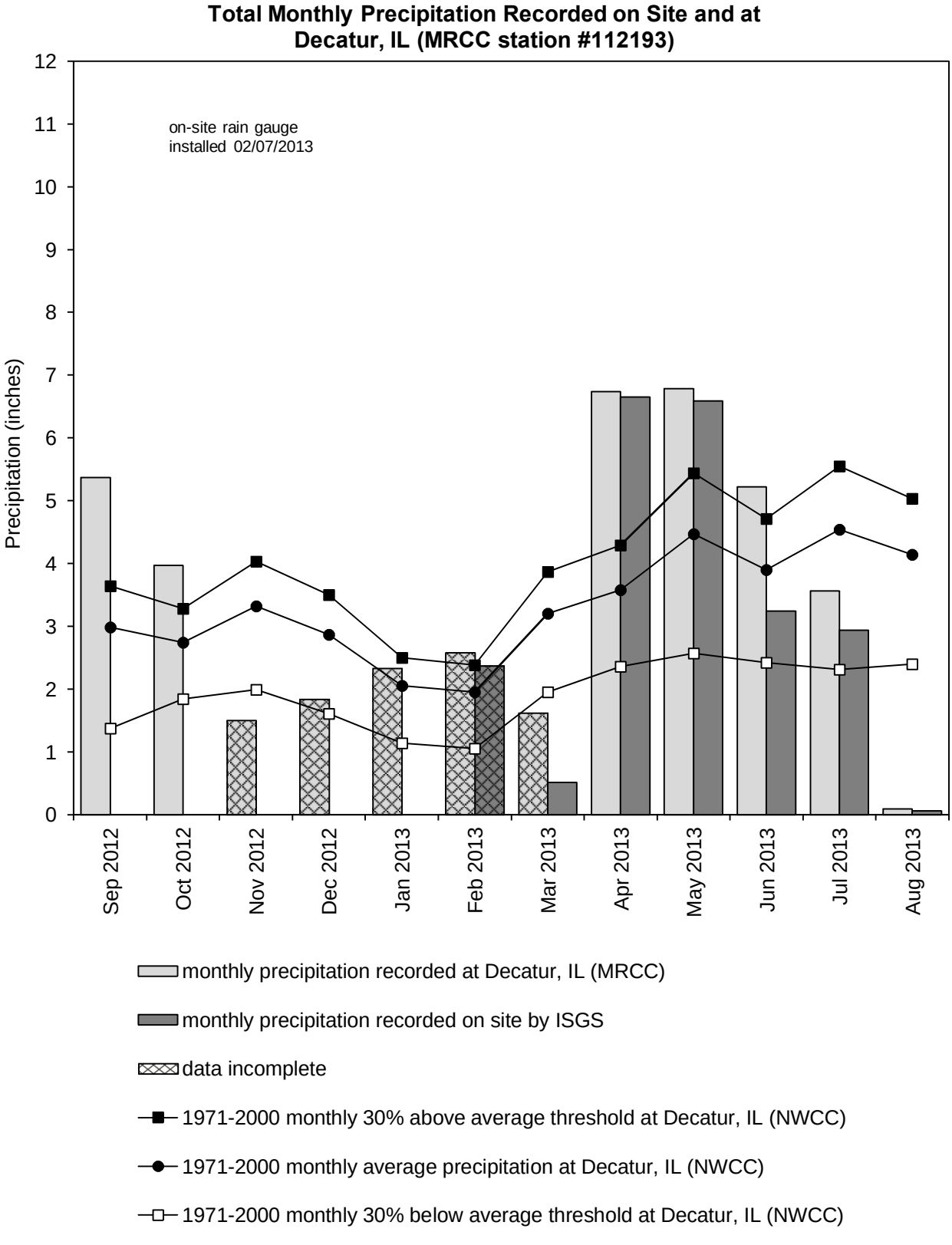


# Stevens Creek Bikeway Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevations at Surface-Water Gauges



# Stevens Creek Bikeway Wetland Mitigation Site
## September 2012 through August 2013



**THORN CREEK HEADWATERS PRESERVE** **ISGS #90**
**WETLAND MITIGATION SITE**
I-57/Stuenkel Road
FAI 57
Will County, near University Park, Illinois
**Primary Project Manager: Geoffrey E. Pociask**
**Secondary Project Manager: Colleen M. Long**

SITE HISTORY

- September 2012: The ISGS was tasked by IDOT to monitor wetland hydrology.
- March 2013: The ISGS installed a monitoring network at the site.

WETLAND HYDROLOGY CALCULATION FOR 2013

The target compensation area for the Thorn Creek Headwaters Preserve wetland mitigation site is 12.02 ha (29.70 ac). Using the 1987 Manual (Environmental Laboratory 1987), 9.96 ha (24.62 ac) of the total site area of 37.54 ha (92.77 ac) satisfied wetland hydrology criteria for greater than 5% of the 2013 growing season, and no portion of the site satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 9.38 ha (23.18 ac) satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season. These estimates are based on the following factors:

- The median date that the growing season begins in Park Forest, Illinois, is April 9, and the season lasts 208 days (MRCC 2013). Using the 1987 Manual, 5% of the growing season is 10 days, and 12.5% of the growing season is 26 days. Using the 2010 Midwest Region Supplement, April 6 was the starting date of the 2013 growing season based on soil temperatures measured on site and at the nearby Stelle, Illinois, ICN station (WARM 2013).
- Total precipitation for the monitoring period at Park Forest, Illinois, (MRCC station #116616) was 102% of normal, and Spring 2013 (March through May) precipitation was 150% of normal.
- In 2013, water levels measured in all monitoring wells except 12S satisfied wetland hydrology criteria for greater than 5% of the growing season, and water levels in no wells satisfied wetland hydrology criteria for greater than 12.5% of the growing season, using the 1987 Manual. Using the 2010 Midwest Region Supplement, all wells except 5S and 12S satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season.
- Surface-water levels measured at Gauge B indicated inundation at and below 236.70 m (776.58 ft) for greater than 5% of the growing season, whereas surface-water levels did not persist for greater than 12.5% of the growing season, using the 1987 Manual. Furthermore, surface-water levels at Gauge B did not persist for 14 days or more, using the 2010 Midwest Region Supplement. There was not enough data to make a wetland hydrology determination at Gauge A because it was installed after the start of the 2013 growing season.

ADDITIONAL INFORMATION

- Additional areas, particularly in the eastern half of the site, may have also satisfied wetland hydrology criteria in the 2013 growing season. However, the extent of hydrologic

monitoring was limited by farming operations. Although wells 13S and 14S satisfied wetland hydrology criteria, the area of wetland hydrology in the vicinity of these wells represents the hydrology of localized depressions and does not represent the hydrology of the eastern portion of the site as a whole.

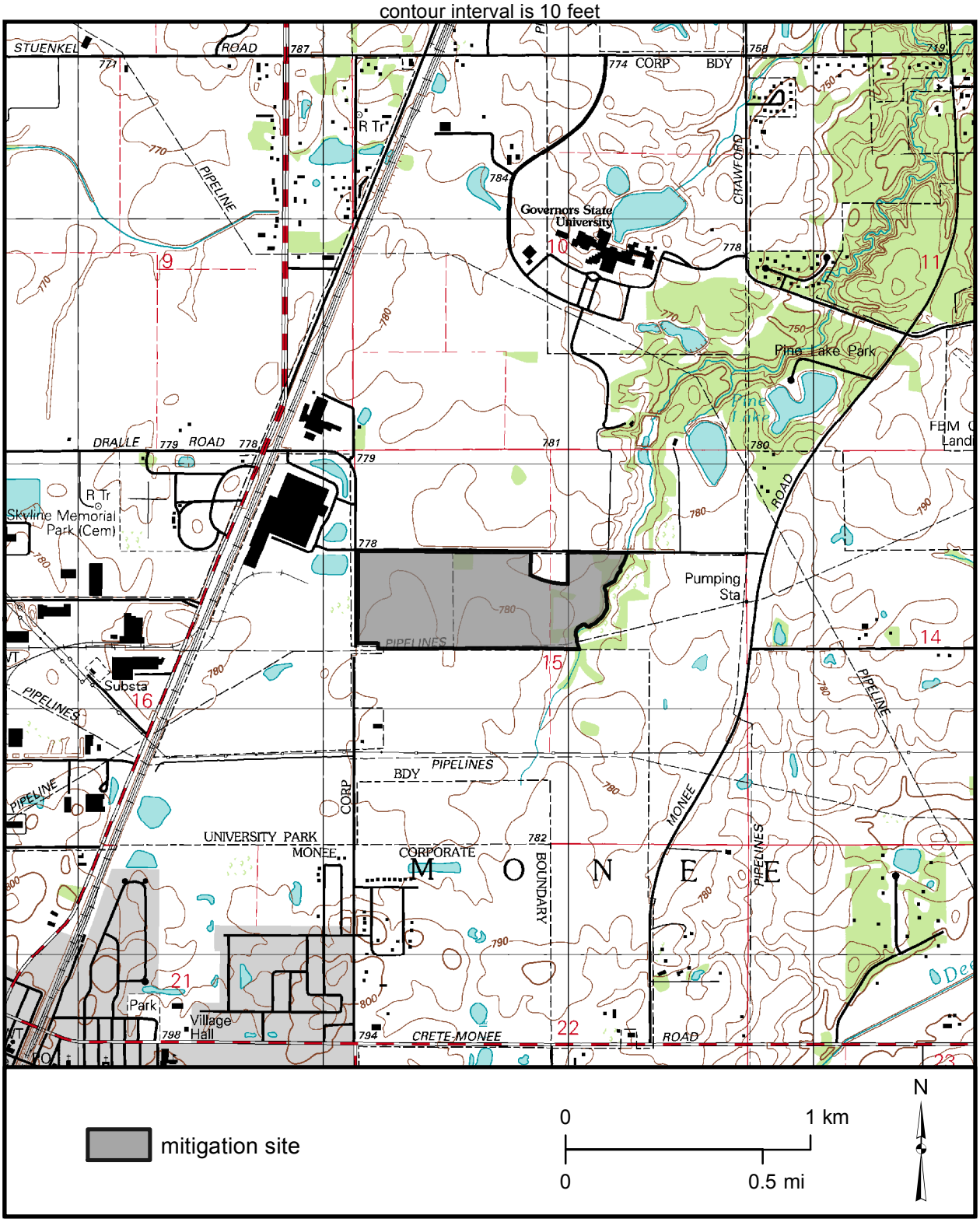
PLANNED FUTURE ACTIVITIES

- Will County Forest Preserve District has planned to deactivate drainage tiles at the site during late Fall 2013 or Winter 2013-14. The ISGS plans to install additional monitoring instruments in Fall 2013 after the harvest season.

- Monitoring will continue until no longer required by IDOT.

# Thorn Creek Headwaters Preserve Wetland Mitigation Site
# (I-57 at Stuenkel Road, FAI 57)
## General Study Area and Vicinity

from the USGS Topographic Series, Steger, IL, 7.5-minute Quadrangle (ISGS 2013b)
contour interval is 10 feet



# Thorn Creek Headwaters Preserve Wetland Mitigation Site
# (I-57 at Stuenkel Road, FAI 57)
## Estimated Areal Extent of 2013 Wetland Hydrology
**September 1, 2012 through August 31, 2013**

Map based on 2012 Farm Service Agency digital orthophotography, Will County, Illinois (USDA-FSA 2012)


**2013 Wetland Hydrology**

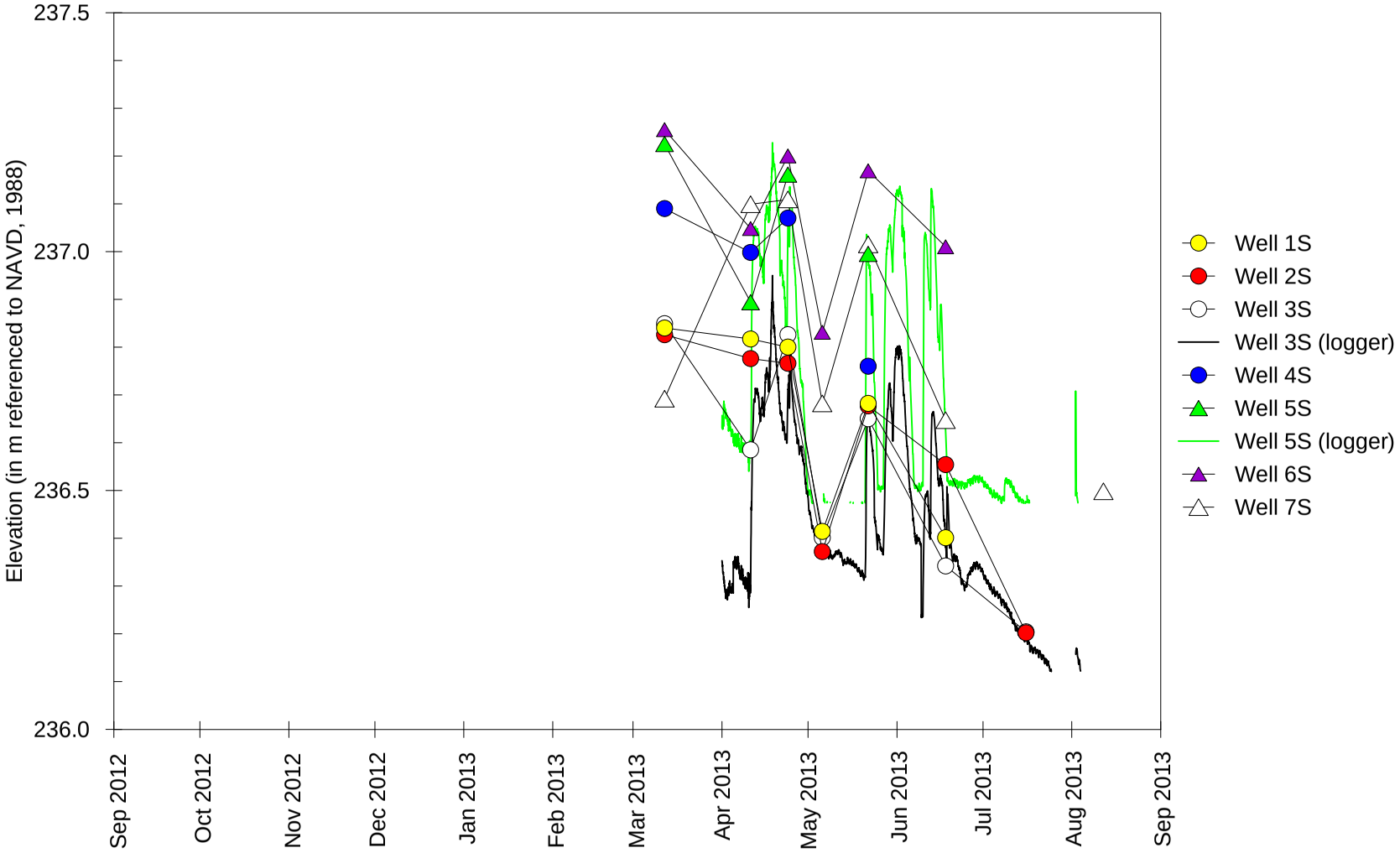
- >5% of growing season (1987 Manual)
- >12.5% of growing season (1987 Manual)
- 14 days or more (2010 Midwest Region Supplement)
- monitoring well
- surface-water gauge
- rain gauge
- mitigation site

0 100 m
0 300 ft

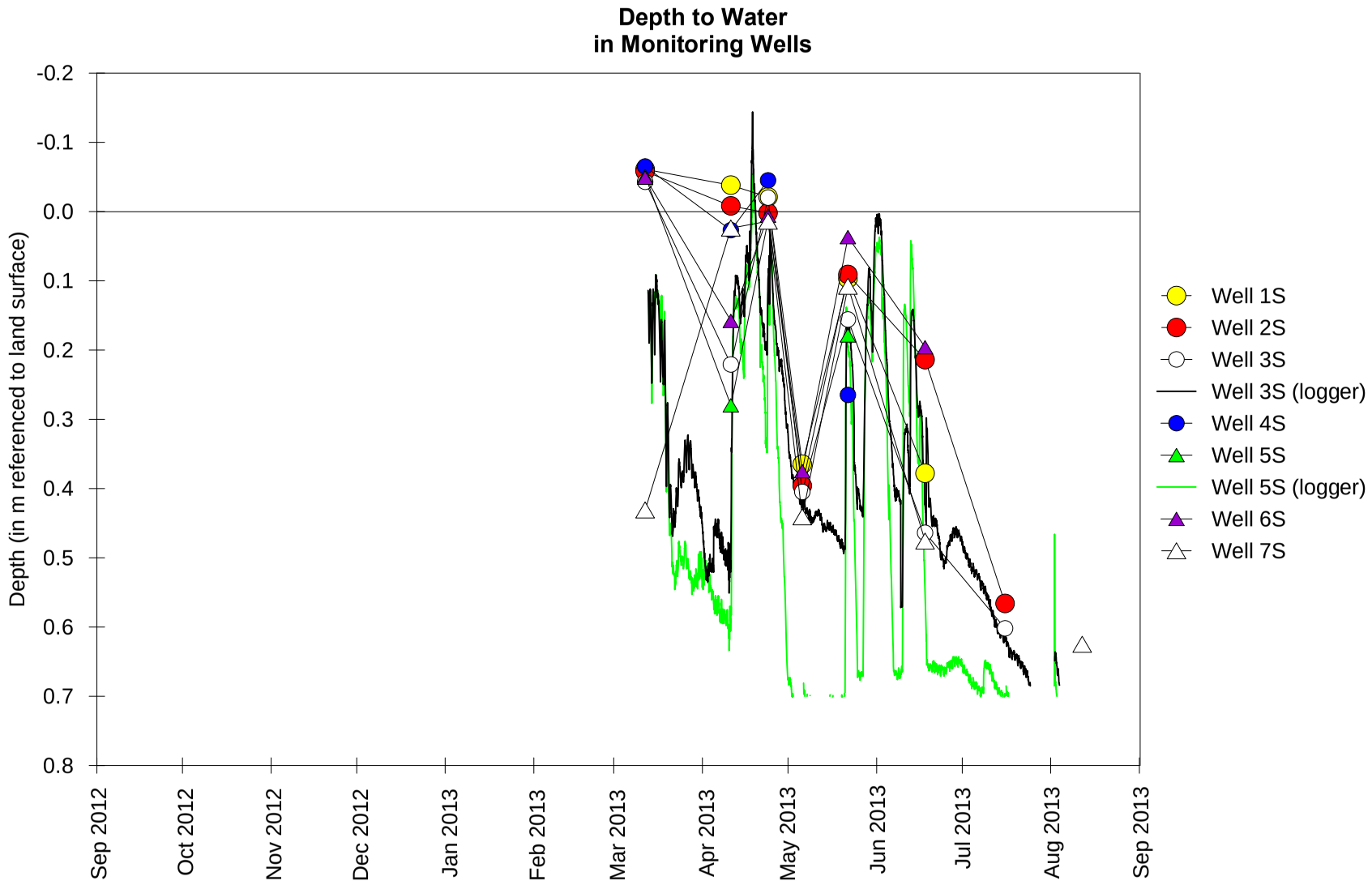
N

# Thorn Creek Headwaters Preserve Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

### Water-Level Elevation in Monitoring Wells

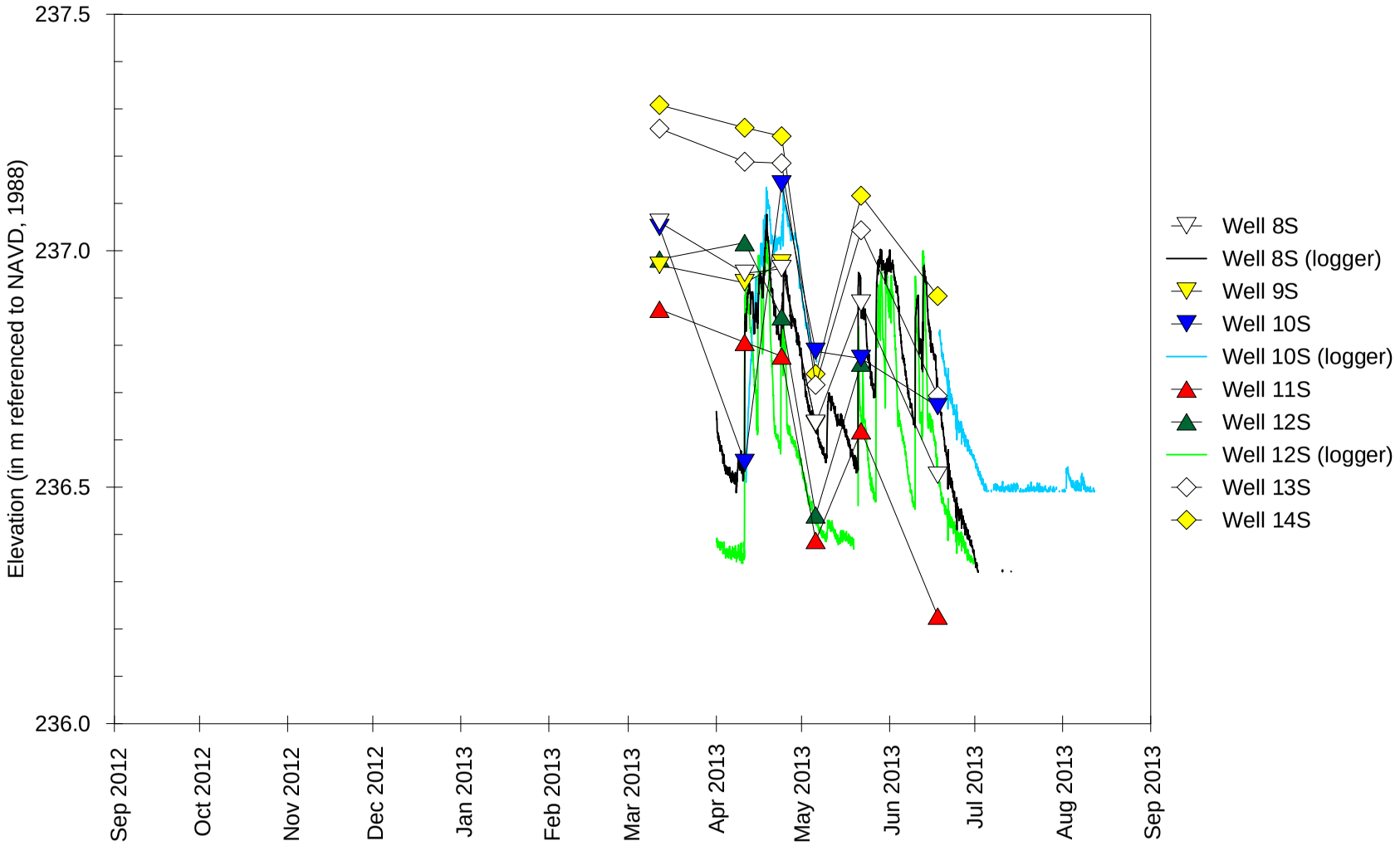


# Thorn Creek Headwaters Preserve Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

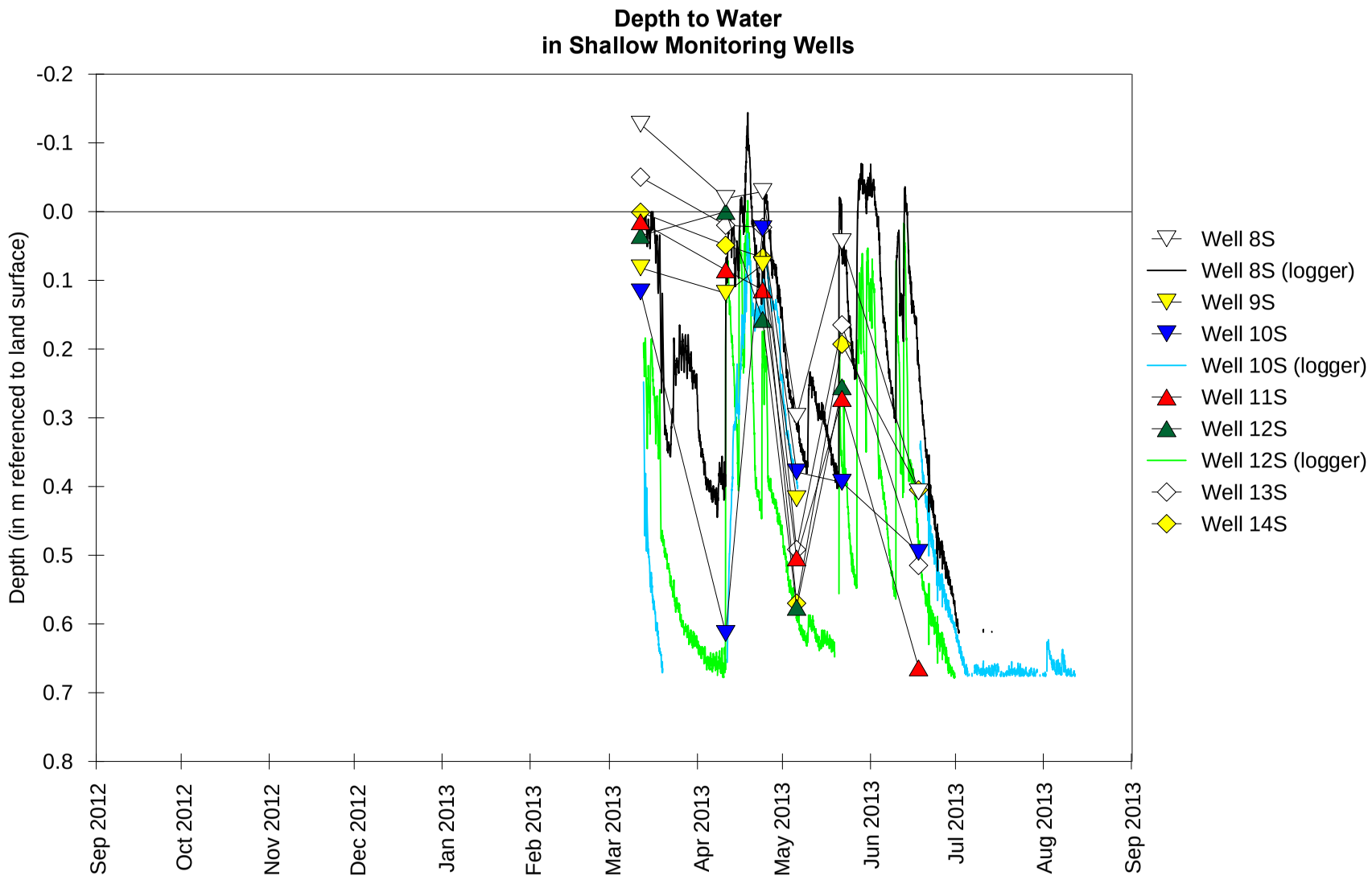


# Thorn Creek Headwaters Preserve Wetland Mitigation Site
## September 1, 2012 through August 31, 2013

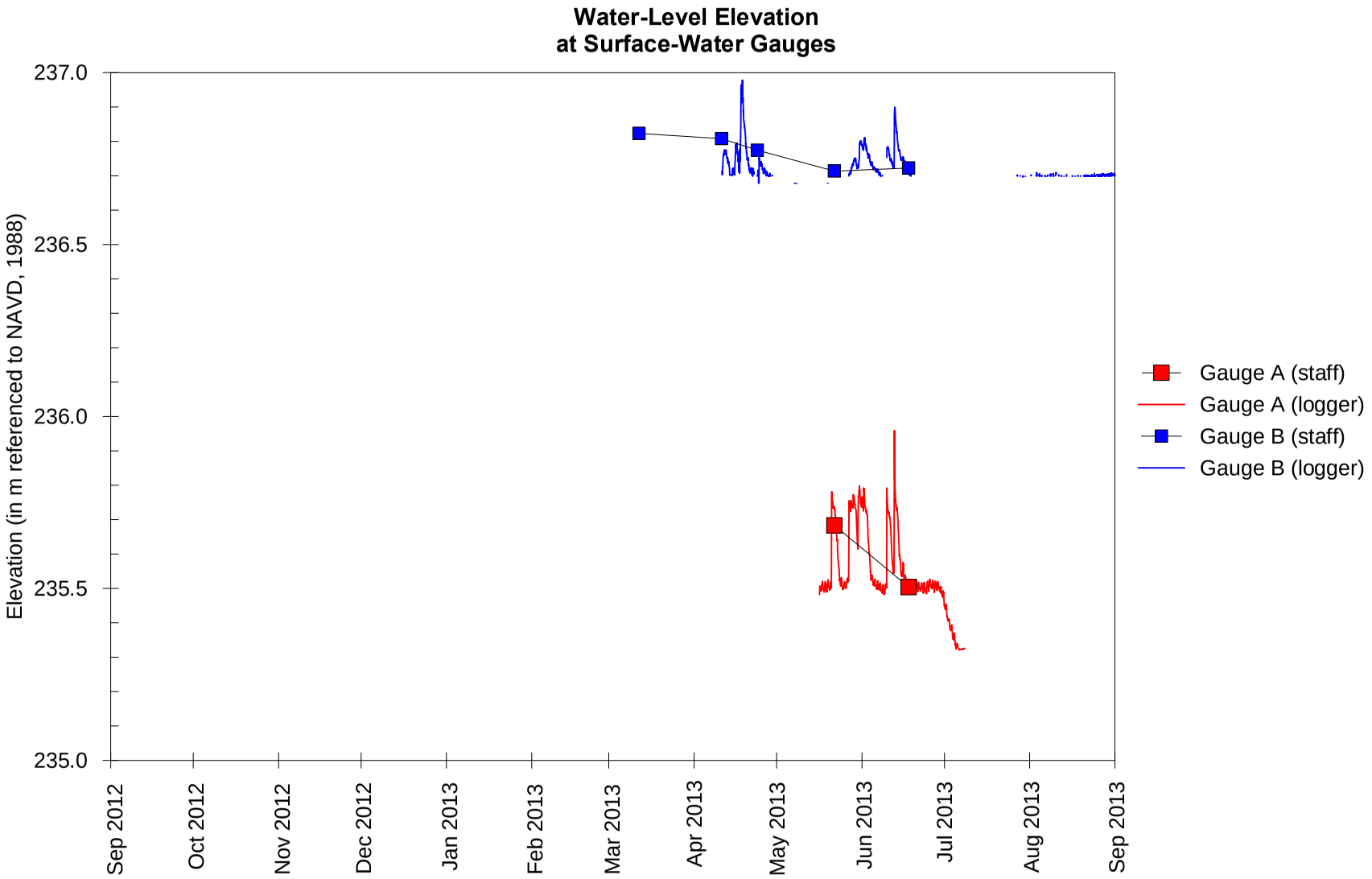
### Water-Level Elevation in Monitoring Wells



# Thorn Creek Headwaters Preserve Wetland Mitigation Site
## September 1, 2012 through August 31, 2013



# Thorn Creek Headwaters Preserve Wetland Mitigation Site
## September 1, 2012 through August 31, 2013



# Thorn Creek Headwaters Preserve Wetland Mitigation Site
## September 2012 through August 2013

**Total Monthly Precipitation Recorded on Site and at Park Forest, IL (MRCC station #116616)**