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Annual Report for Active IDOT Wetland Mitigation and Hydrologic Monitoring Sites: September 1, 2019 through August 31, 2020

Geoffrey E. Pociask, Audra M. Noyes, Steven E. Benton, Eric T. Plankell, Katharine L. Schleich, Jessica L. B. Monson, Lindsey A. Schafer, Keith W. Carr, Nicolette A. Sheffield, Nicholas A. Legut, Mackenzie K. Marti, and Piotr Szocinski

A beaver pond at the Herrin Road Wetland Mitigation Site, Williamson County, Illinois.
Photo credit: Audra Noyes

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

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

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ILLINOIS
Illinois State Geological Survey
PRAIRIE RESEARCH INSTITUTE

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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 monitored for IDOT under grants for FY19 and FY20 (grant code D6099), 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 (Environmental Laboratory 1987), 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. Other hydrologic monitoring activities performed under this contract, such as water-quality monitoring, are also included in this report but may not include wetland hydrology determinations. Other site observations that may affect site hydrology or water quality are included where appropriate.

Summaries of 13 wetland mitigation sites are included in this report. Each summary contains a location map, a site map showing field instruments and the extent of area satisfying wetland hydrology criteria as appropriate, a table indicating whether well locations met wetland hydrology criteria, a table providing gauged surface-water levels that met wetland hydrology criteria, hydrographs from active wells and surface-water gauges, and graphs of local precipitation data for the period. Locations of wetland mitigation sites 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, 2019, through August 31, 2020, at IDOT's request. Due to restrictions on field travel due to the Covid-19 pandemic some sites do not have a complete data record. The data retrieved subsequent to the delivery of this report with the reporting year will be sent to IDOT as an addendum.

METHODS

The primary purpose of this report is to present the area within each wetland mitigation site that met wetland hydrology criteria listed in the 1987 Manual and the 2010 Midwest Region Supplement. Areas meeting wetland hydrology criteria were delineated using both methods as some mitigation sites reported here originated using the former method. Further, comparing these methods provides consistency and continuity for monitoring long-term changes in site conditions and characterization of wetland function. In addition to meeting wetland hydrology criteria, an area must also satisfy soil and vegetation criteria to be considered a wetland. Thus, 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 separately. The total wetland area determined by INHS may differ from the area 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 meet wetland hydrology criteria using the 1987 Manual, or a minimum of 14 consecutive days when using the 2010 Midwest Region Supplement. These areas are 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 meet 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 wetland restoration/creation activities. 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.

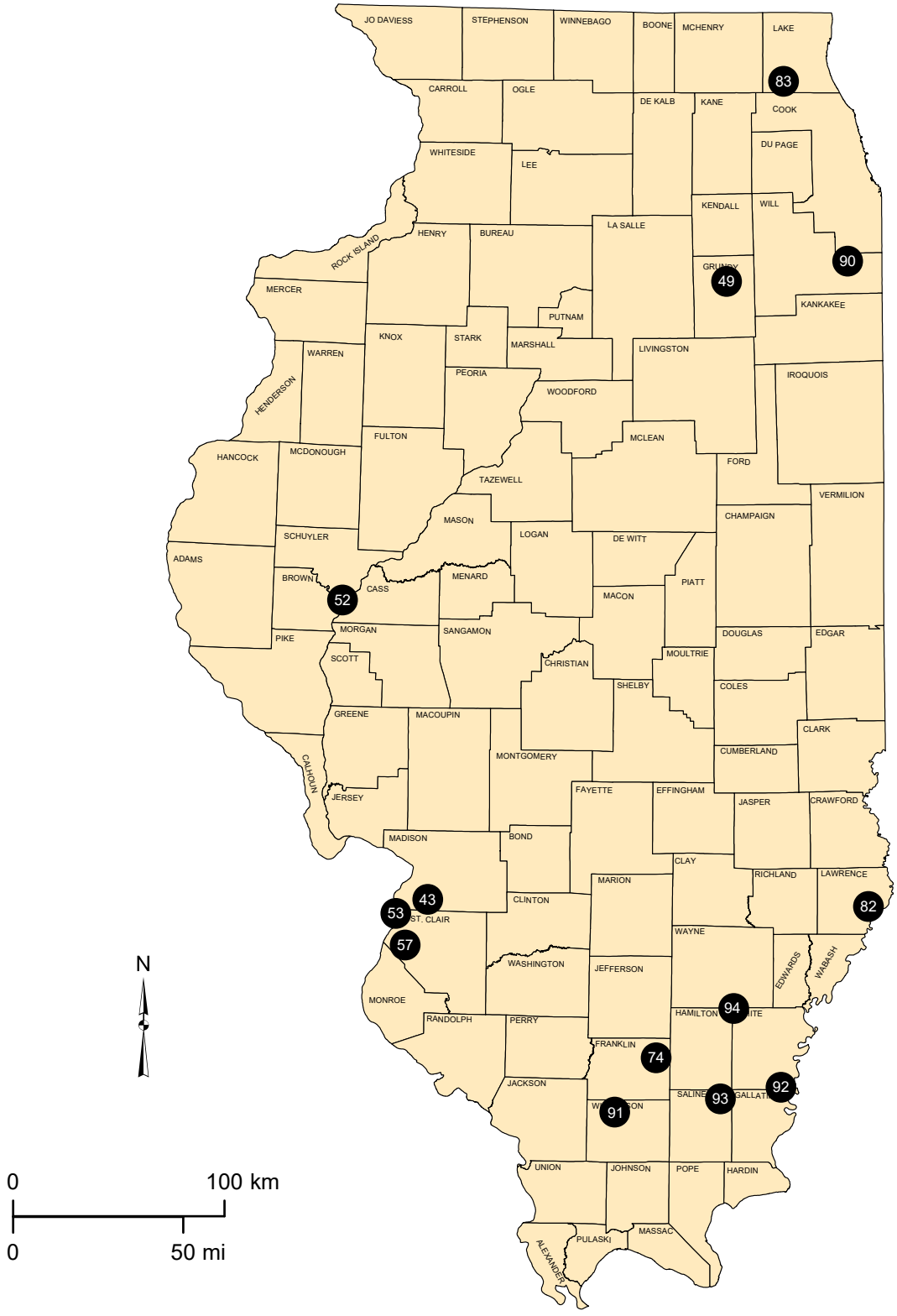

Figure 1. General locations of sites monitored by the ISGS for IDOT from September 1, 2019, through August 31, 2020. Numbers are the ISGS project numbers listed in Table 1.

Table 1. ISGS project numbers and active IDOT wetland mitigation sites monitored by ISGS from September 1, 2019, through August 31, 2020.

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
74	Sugar Camp Creek	Wetland and Stream Mitigation Bank	N/A	N/A	9282	Franklin
82	Lawrence County	Wetland Mitigation Bank	N/A	N/A	14912	Lawrence
83	Eastern Prairie Fringed Orchid	Hydrologic Monitoring Site	IL 22	FAP 337	9121	Lake
90	Thorn Creek Headwaters Preserve	Wetland Mitigation Site	I-57/Stuenkel Road	FAI 57	12558	Will
91	Herrin Road	Wetland Mitigation Site	Herrin to Johnson City Rd	FAS 903/FAU 9588	9891B	Williamson
92	New Haven	Wetland Mitigation Site	IL 141	FAP 877	18257	White
93	Former Garner Property	Wetland Mitigation Site	US 45	FAP 332	14105	Saline
94	Boyd Creek	Proposed Wetland Mitigation Bank	N/A	N/A	N/A	Wayne

Table 2. Summary of wetland hydrology area estimates for the 2020 growing season for active IDOT wetland mitigation sites monitored by the ISGS from September 1, 2019, through August 31, 2020.

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	24.28	60.00	24.28	60.00	24.28	60.00
49	Morris	44.11	109.00	45.86	113.33	8.70	21.50	11.00	27.17
52	La Grange	414.40	1,024.00	571.20	1,411.47	552.42	1,365.06	571.20	1,411.47
53	Fairmont City	10.93	27.00	18.13	44.80	17.90	44.23	18.13	44.80
57	Former Tiernan Property	17.04	42.10	16.75	41.38	14.36	35.48	17.24	42.60
74	Sugar Camp Creek	28.00	69.20	29.02	71.72	27.18	67.16	29.74	73.50
82	Lawrence County	13.62	33.65	13.36	33.01	6.18	15.27	14.14	34.95
90	Thorn Creek Headwaters Preserve	12.02	29.70	18.96	46.85	10.81	26.71	19.88	49.13
91	Herrin Road	3.20	7.90	1.15	2.85	1.15	2.83	1.25	3.08
92	New Haven	2.57	6.36	3.01	7.44	0.05	0.12	2.98	7.36
93	Former Garner Property	11.69	28.89	7.30	18.05	6.60	16.31	8.22	20.31
94	Wayne County	N/A	N/A	NR		NR		NR	

NR: Wetland hydrology area not reported, see individual site summary for details.

This table does not include the Eastern Prairie Fringed Orchid Preserve as wetland hydrology area is not being assessed for this site.

The Midwestern Regional Climate Center (MRCC) at the Illinois State Water Survey (ISWS) provides data on the length and beginning and end dates of the growing season (MRCC 2019). In the 1987 Manual, the growing season is defined as the 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, 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 during site visits using analog bimetal thermometers at a depth of 30 cm (12 inches [in.]), 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 2020).

Wells and surface-water gauges where water levels satisfied wetland hydrology criteria are indicated in tables within the summary 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, topography, vegetation, soils, and other site features. The areas that satisfied wetland hydrology criteria were mapped using ArcGIS 10 geographic information system software. Areas were calculated in acres [ac] in the GIS and converted to hectares [ha] (see Table 2).

The error of each area measurement varies depending on the quality, precision, and 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), base map imagery provided by Esri (2020), or satellite imagery (Landsat/Copernicus) provided by Google Earth (2017, 2020). For most sites, digital elevation models produced from LiDAR measurements (ISGS 2020) were used to guide delineation of wetland hydrology polygons. In some cases, topographic data 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. The locations of monitoring instruments were measured 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.

For sites presented in this report, 5% of the growing season is 10 to 12 days, and 12.5% of the growing season ranges from about 25 to 30 days using the methods of the 1987 Manual. Due to stay-at-home orders and restrictions on field travel due to the Covid-19 pandemic, manual water-level measurements during the spring wet period (March through May) were not collected.

Therefore, wetland hydrology area estimates in this report rely solely on water level data from various data loggers deployed at each site. The data loggers were used to determine the timing of hydrologic events, such as precipitation or flooding, that occurred instead of customary manual water level measurements. Data loggers were set to record at intervals ranging from daily to hourly. Various types of loggers were used, and each type of instrument has different operations and default offset values. We have removed 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 U.S. Geological Survey (USGS), or USACE were obtained from online or other sources (USGS 2020, USACE 2020) and used to supplement ISGS data in evaluations of hydrologic conditions.

Covid-19 pandemic travel restrictions prevented the collection of manual water level measurements during peak hydrology season in spring of 2020 and therefore limited the ability to make unambiguous interpretation of depth and duration of water levels. To address this problem, we applied a multivariate statistical method, partial least squares regression (PLS), to estimate water levels in selected locations. In general, this method was applied to estimate water levels 1) in wells without data loggers or 1) during periods where data loggers had failed. The PLS models were trained with historical manual water level elevation readings at the site and logger data from the 2019-2020 year was applied to create a continuous hydrograph.

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, and 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 2019). Normal and range threshold values were based on a 30-year period, 1971-2000 or 1981-2010. 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 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.

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 directly but provide information on hydrologic process and wetland function.

Graphs for each site show water-level elevations at wells and surface-water gauges, 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 graphs 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 graphs 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). For sites with water-quality monitoring, supplemental graphs are provided to show parameter or constituent levels and summary statistics.

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.

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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: Lindsey A. Schafer

SITE HISTORY

- A Level II hydrogeologic investigation was conducted from 2000 to 2004.
- March 2009: IDOT tasked ISGS to resume monitoring of the site.
- April 2009: ISGS installed a monitoring network at the site and resumed data collection.

WETLAND HYDROLOGY CALCULATION FOR 2020

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), 24.28 ha (60.00 ac) of the total site area of 24.28 ha (60.00 ac) satisfied wetland hydrology criteria for greater than 5% of the growing season and 24.28 ha (60.00 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 24.28 ha (60.00 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 4 and the season lasts 204 days (MRCC 2019); 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 2 was the starting date of the 2020 growing season based on soil temperatures measured at the Belleville SIU WARM Station.
- Total precipitation for the monitoring period, recorded at Belleville, Illinois (MRCC station #110510), was 127% of normal, precipitation in spring 2020 (March through May) was 110% of normal. The wettest period during the period was July and August with 265% of normal precipitation.
- Inundation or saturation occurred continuously over almost the entire site from March 2 through June 10, a total of 101 days. Beaver dams in Schneider Ditch cause long-term inundation on the entire former Eckmann property, and long-term inundation and saturation on most of the former Bischoff property. During the 2019-20 monitoring period, surface water was detected for long periods at well 1S, which is near the base of the levee along the Cahokia Canal.
- In 2020, water levels measured in 10 of 10 soil-zone monitoring wells satisfied wetland hydrology criteria for greater than 5% of the growing season, and water levels measured in 10 of 10 soil-zone monitoring wells 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 10 of 10 soil-zone monitoring wells satisfied wetland

hydrology criteria for 14 or more consecutive days of the growing season. See the tables at the end of this summary for details.

PLANNED FUTURE ACTIVITIES

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

WETLAND HYDROLOGY TABLES FOR 2020

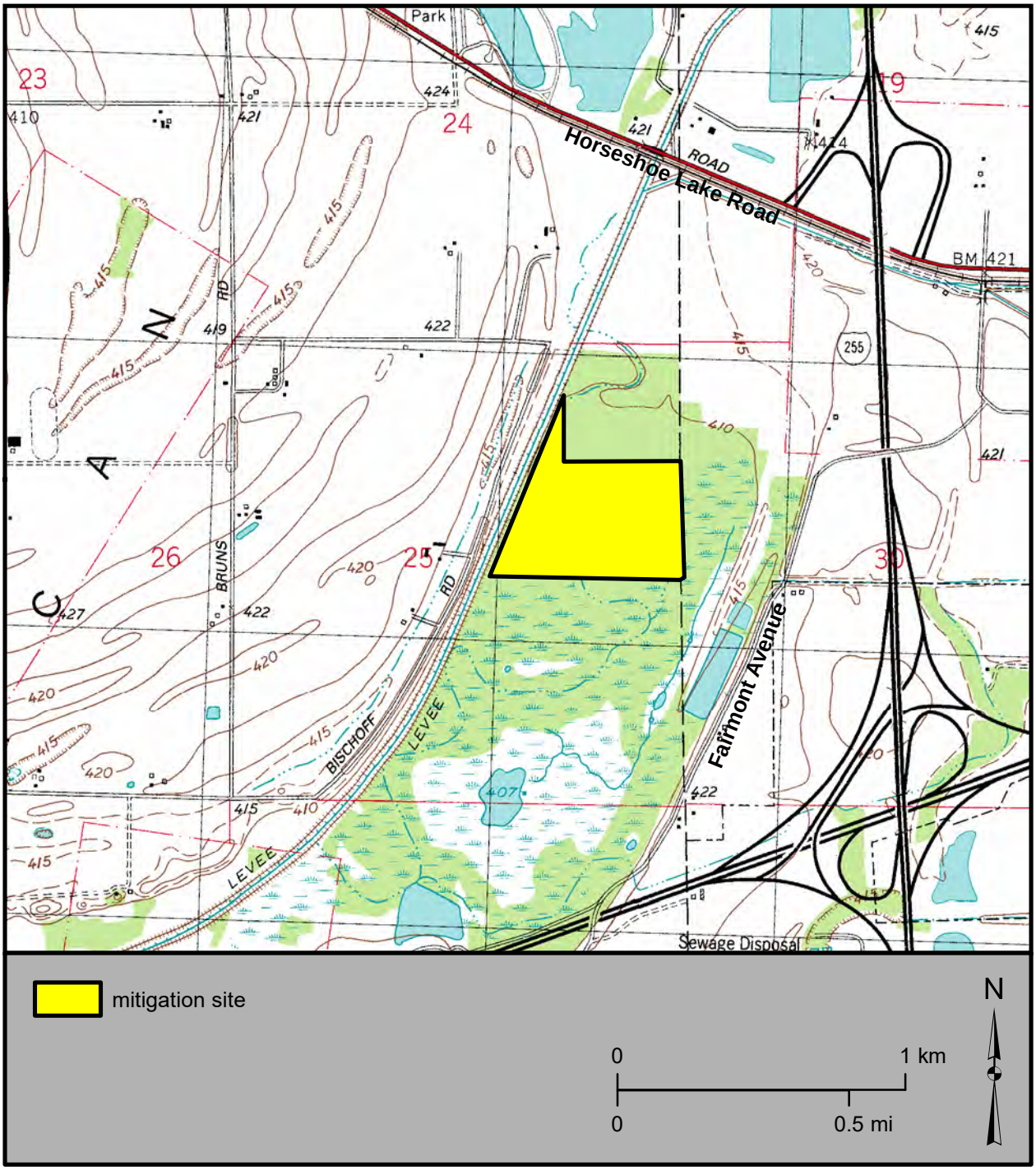
Well locations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
1S	Y	Y	Y
2S	Y	Y	Y
3S	Y	Y	Y
4S	Y	Y	Y
5S	Y	Y	Y
6S	Y	Y	Y
7S	Y	Y	Y
8S	Y	Y	Y
9S	Y	Y	Y
10S	Y	Y	Y

Y – met wetland hydrology criteria
N – did not meet wetland hydrology criteria

Surface-water gauge elevations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
B	n/a	n/a	n/a
C	n/a	n/a	n/a
D	n/a	n/a	n/a
F	n/a	n/a	n/a
SW2	n/a	n/a	n/a

n/a – insufficient data to determine an elevation

Eckmann/Bischoff Wetland Mitigation Site
(FAP 14)
General Study Area and Vicinity
from the USGS Topographic Series, Monks Mound, IL, 7.5-minute quadrangle (USGS 1954b)



Eckmann/Bischoff Wetland Mitigation Site
(FAP 14)
Estimated Areal Extent of 2020 Wetland Hydrology
September 1, 2019 through August 31, 2020

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

2020 Wetland Hydrology

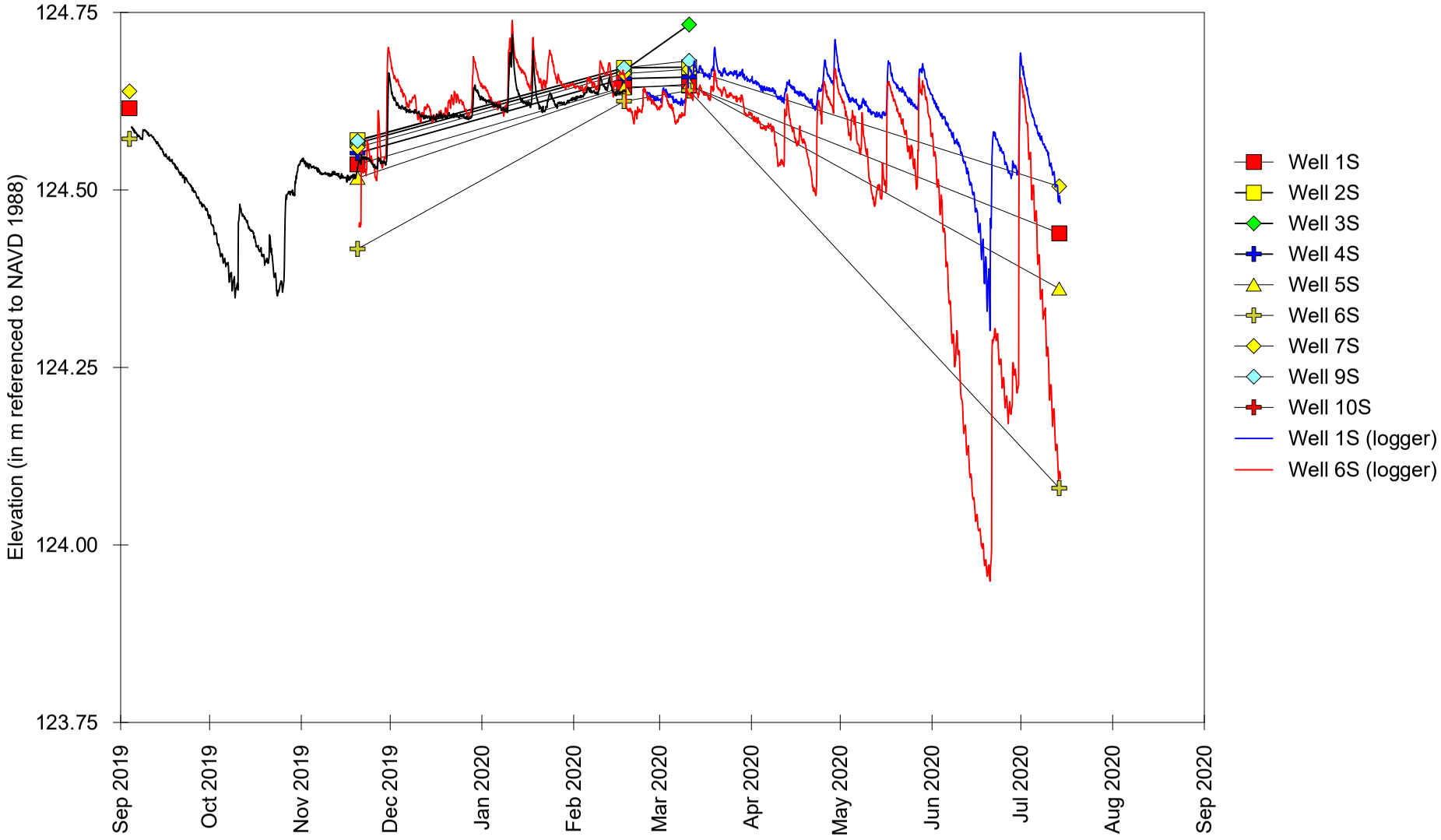
- >5% of growing season (1987 Manual)
- >12.5% of growing season (1987 Manual)
- 14 days or more (2010 Midwest Region Supplement)

- monitoring wells
- surface-water gauge
- rain gauge
- site boundary

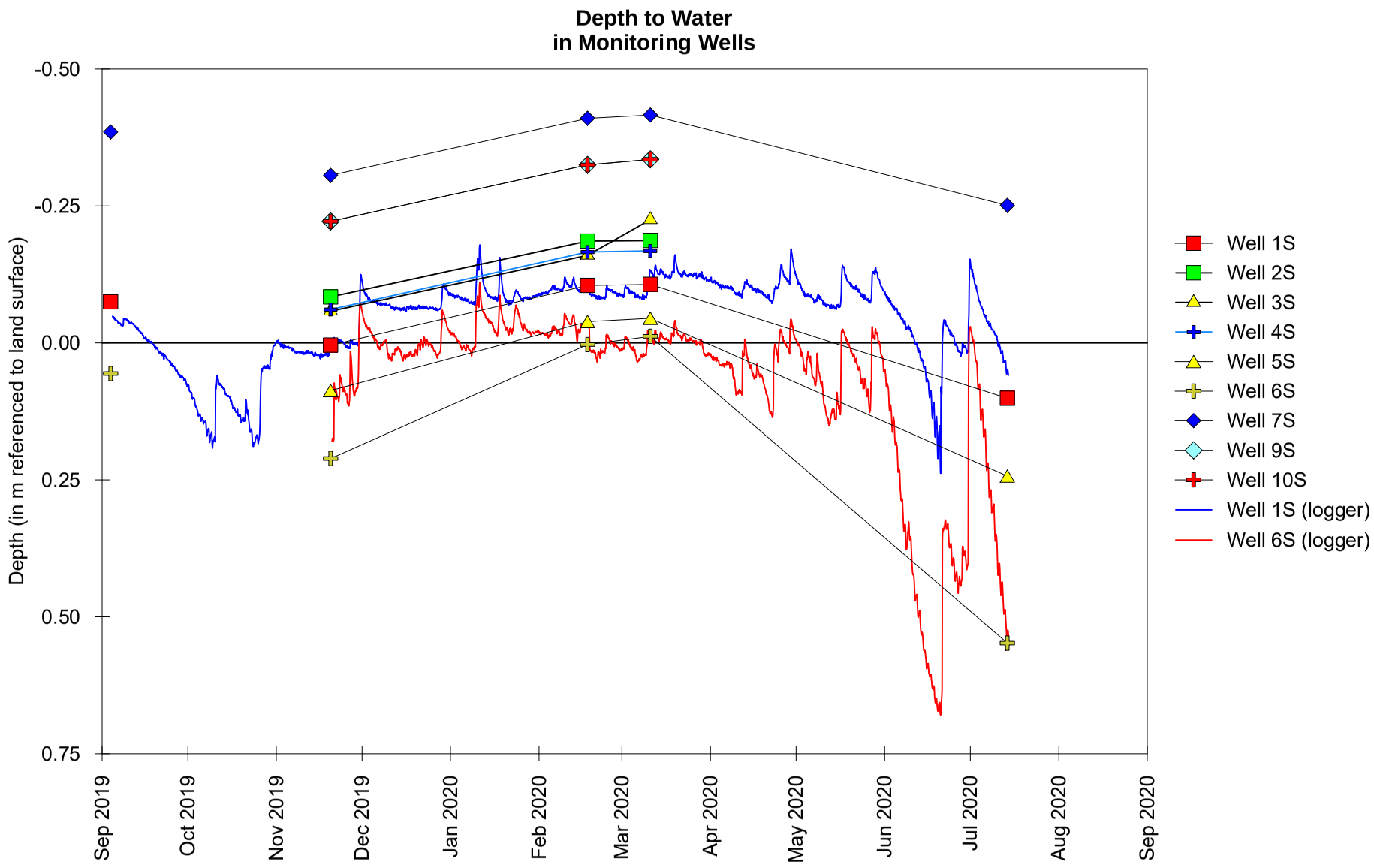
Eckmann/Bischoff Wetland Mitigation Site

September 1, 2019 through August 31, 2020

Water-Level Elevation in Monitoring Wells

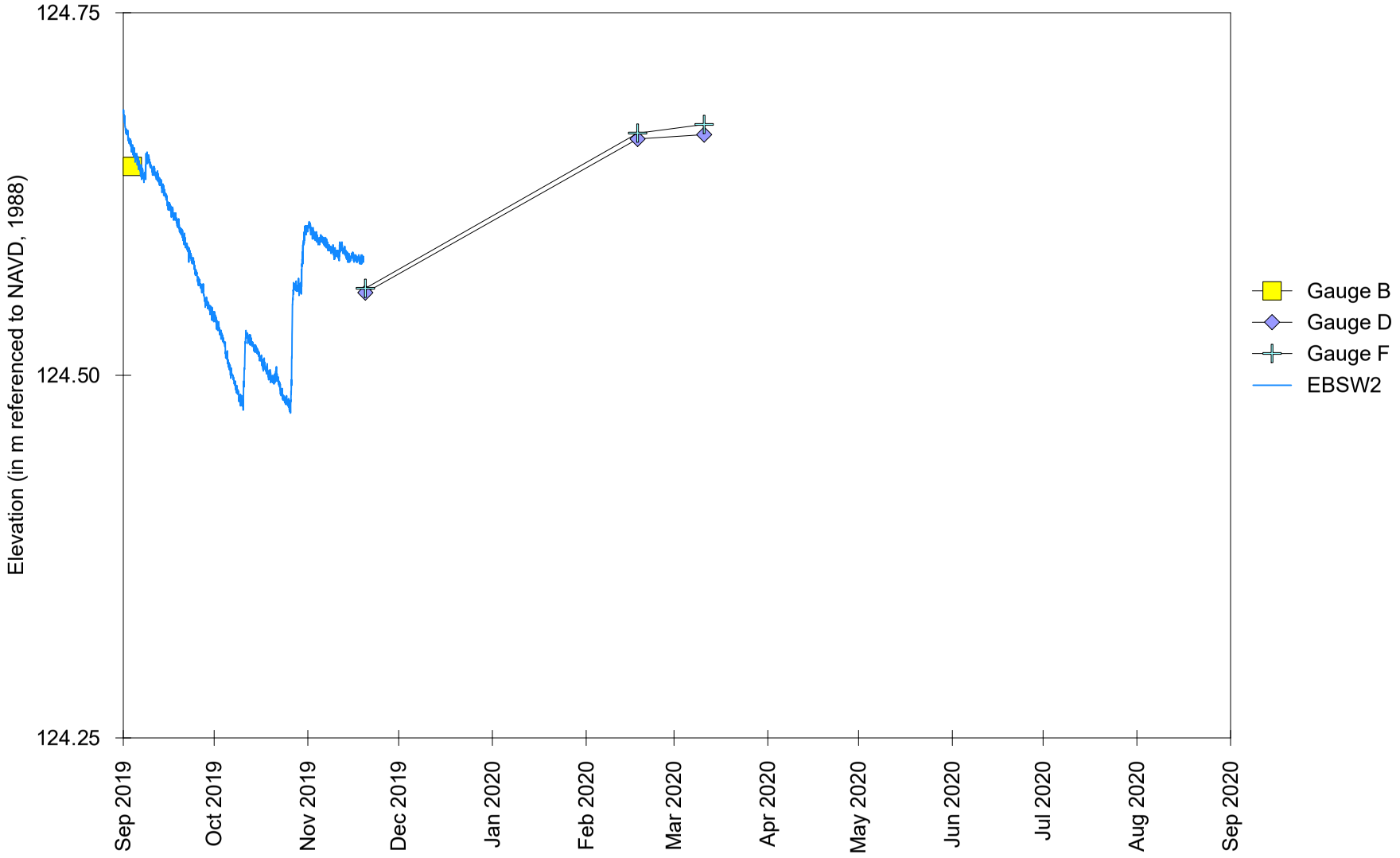


Eckmann/Bischoff Wetland Mitigation Site
September 1, 2019 through August 31, 2020

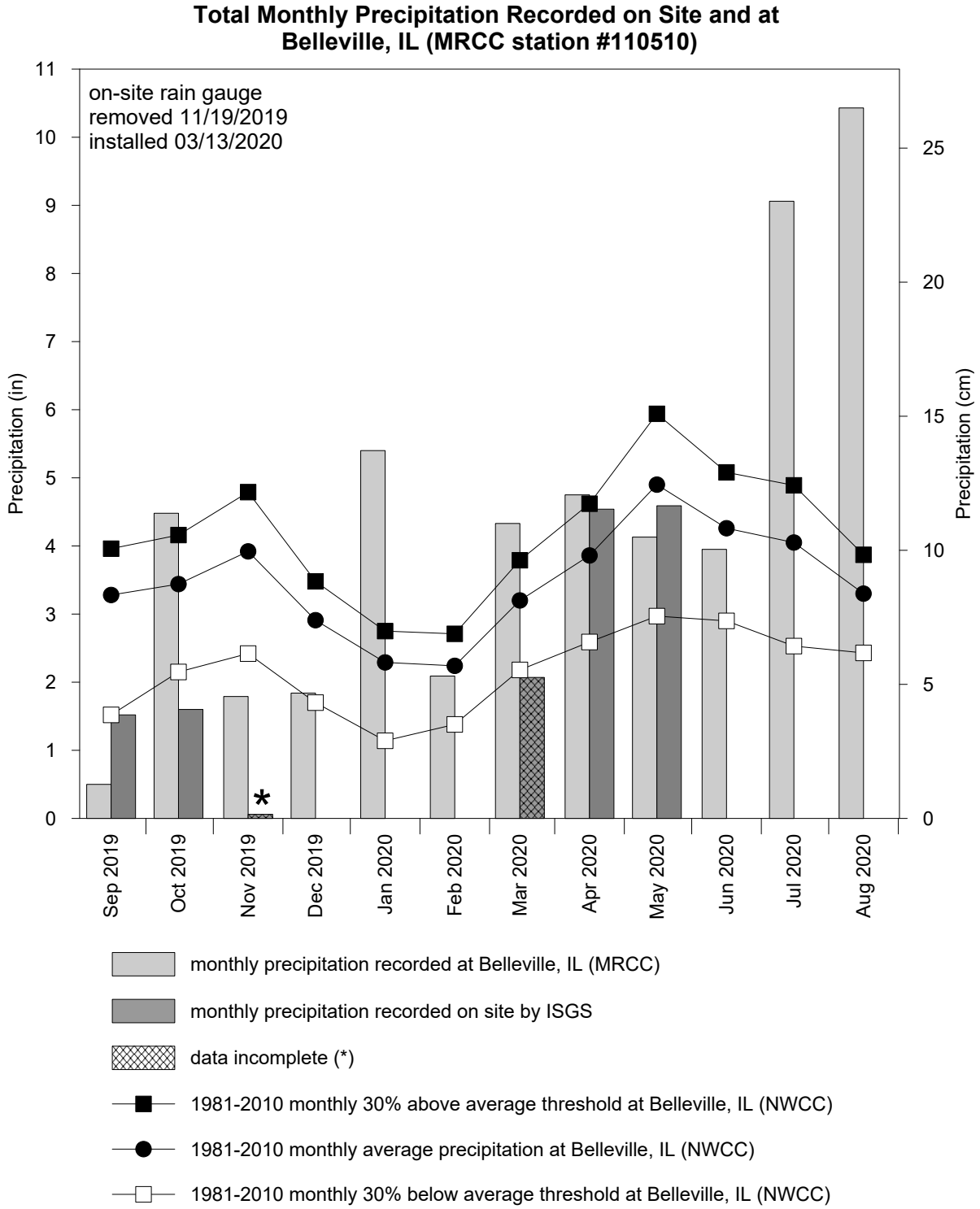


Eckmann/Bischoff Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Water-Level Elevation
at Surface-Water Gauges



Eckmann/Bischoff Wetland Mitigation Site
September 2019 through August 2020



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

SITE HISTORY

- March 1999: ISGS was tasked by IDOT to begin monitoring for a potential wetland 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 on-site data loggers.

WETLAND HYDROLOGY CALCULATION FOR 2020

The target compensation area for the Morris wetland mitigation bank is 44.11 ha (109.00 ac). Using the 1987 Manual (Environmental Laboratory 1987), 45.86 ha (113.33 ac) of the total site area of 341.56 ha (844.00 ac) satisfied wetland hydrology criteria for greater than 5% of the growing season, and 8.70 ha (21.50 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 11.00 ha (27.17 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 Morris, Illinois, is April 12, and the season lasts 200 days (MRCC 2020). 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, March 26 was the starting date of the 2020 growing season based on soil temperatures measured on site.

- Total precipitation for the monitoring period at Morris, Illinois (MRCC station #115825), was 136% of normal, and during spring 2020 (March through May), precipitation was 134% of normal. Precipitation in September 2019 was 486% of normal and resulted in the area surrounding Well 42S meeting the 5% and 14-day wetland hydrology criteria for the 2019-2020 monitoring period.

- The Illinois River flooded portions of the site five times during the 2019-2020 monitoring period.

- The period of maximum inundation and saturation during the growing season occurred from late April to late May, following an initial 9.58 cm (3.77 in.) of rainfall recorded at the Morris 1 NW weather station between April 25 and April 30, and sustained by an additional 15.3 cm (6.04 in.) of rainfall recorded during the month of May.

- The table at the end of this summary lists surface-water gauge elevations that met wetland hydrology criteria.

PLANNED FUTURE ACTIVITIES

- Monitoring of surface water via on-site ISGS data loggers and the off-site USACE river gauge at Morris will continue until no longer required by IDOT.

- Access to the “Spider Field” has become increasingly difficult over the past several years. Regular flooding on the Mazon River results in piles of flood debris and washouts that block vehicular travel beyond the bridge near Mud Slough for much of the year. In summertime impenetrable stands of giant ragweed render foot travel between the Mud Slough bridge and the “Spider Field” impossible. And lastly, the “Spider Field” bridge has severely deteriorated and will likely be impassable in the next year or two. The IDNR typically clears the Mud Slough bridge of debris and mows a path back to the “Spider Field” to allow hunter access in the fall, but they currently have no plan to replace the final bridge to the field (Chris Jones, Acting Site Superintendent, IDNR – personal communication). Because of the difficulties accessing the “Spider Field” the ISGS is investigating the feasibility of purchasing and installing a telemetry network to allow remote access of data from the site.

WETLAND HYDROLOGY TABLES FOR 2020

Well locations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
42S	Y	Y	Y
44S	Y	Y	Y
64S	Y	Y	Y

Y – met wetland hydrology criteria
N – did not meet wetland hydrology criteria

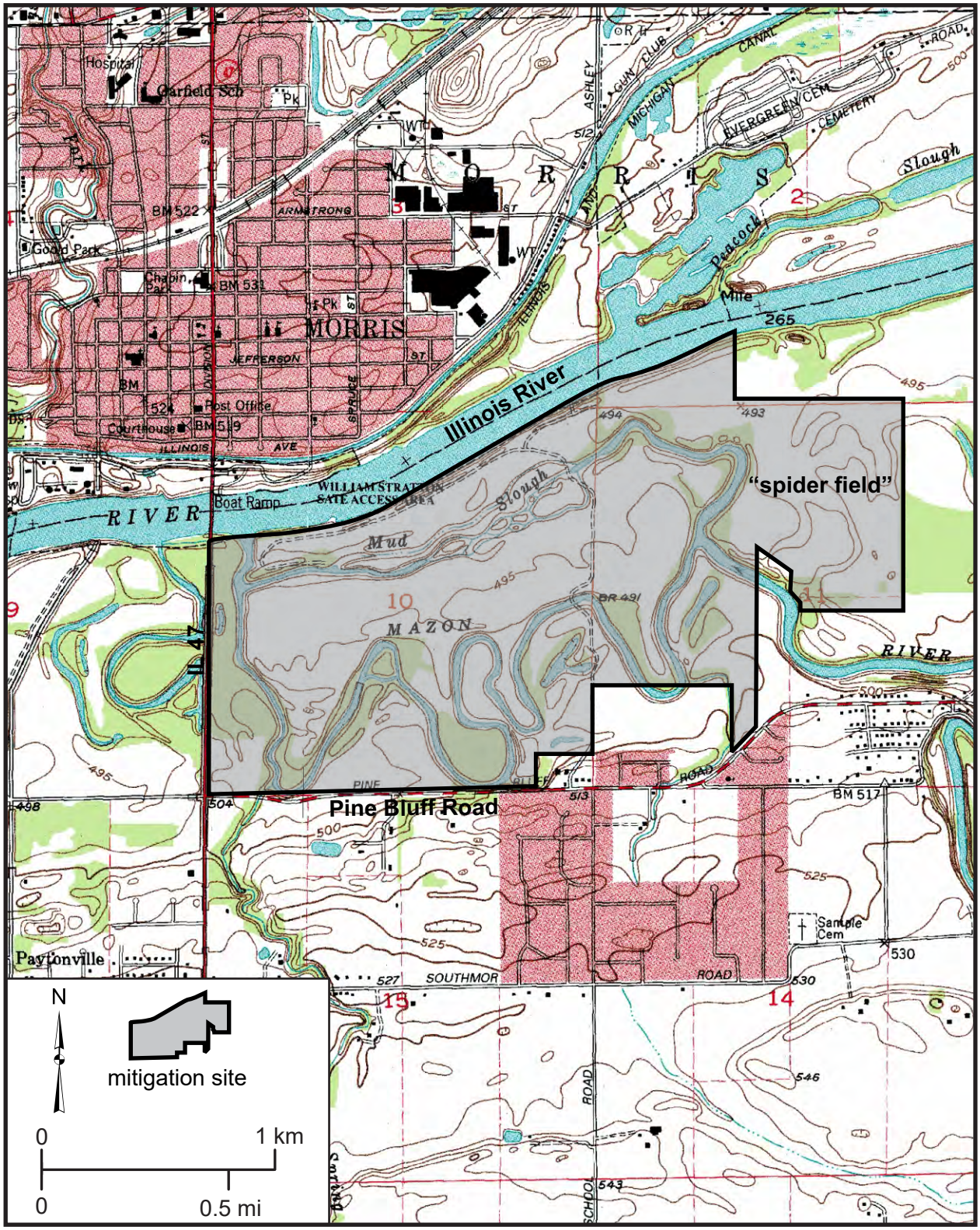
Surface-water gauge elevations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
SW2A*	n/a	n/a	n/a
SW8	150.61 m (494.13 ft)	150.51 m (493.80 ft)	150.57 m (494.00 ft)
SW43	150.69 m (494.39 ft)	150.56 m (493.96 ft)	150.64 m (494.23 ft)
IL River**	149.83 m (491.57 ft)	147.83 m (485.01 ft)	148.66 m (487.73 ft)

n/a – insufficient data to determine an elevation
*-Mazon River at ISGS Gauge SW2A.
** - Illinois River at Morris (USACE 2020). Elevations listed for the Illinois River reflect minimum river stages recorded at the 5%, 12.5%, and 14-day thresholds, all of which were insufficient to cause flooding of the site.

Morris Wetland Mitigation Bank

General Study Area and Vicinity

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

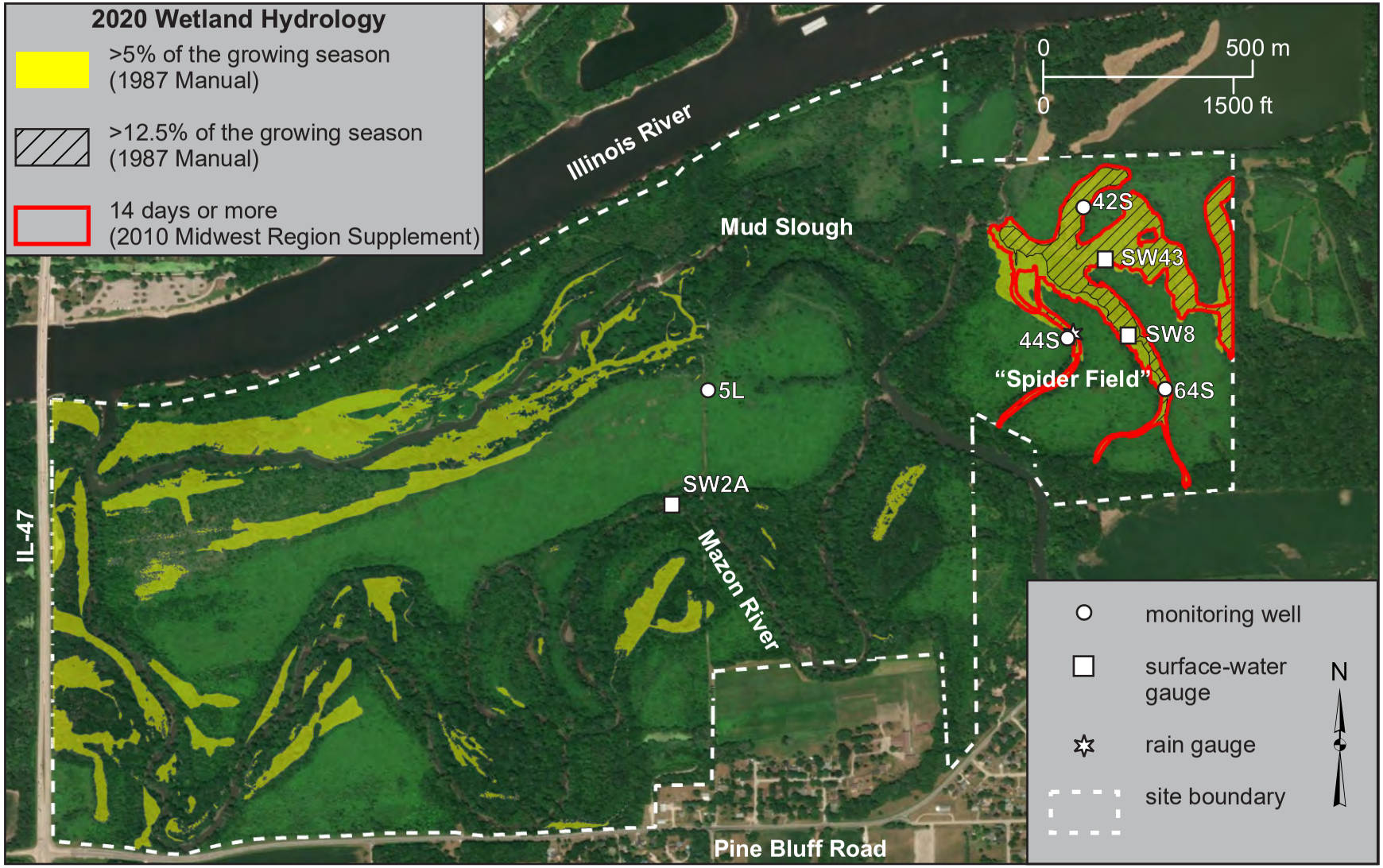


Morris Wetland Mitigation Bank

Estimated Areal Extent of 2020 Wetland Hydrology

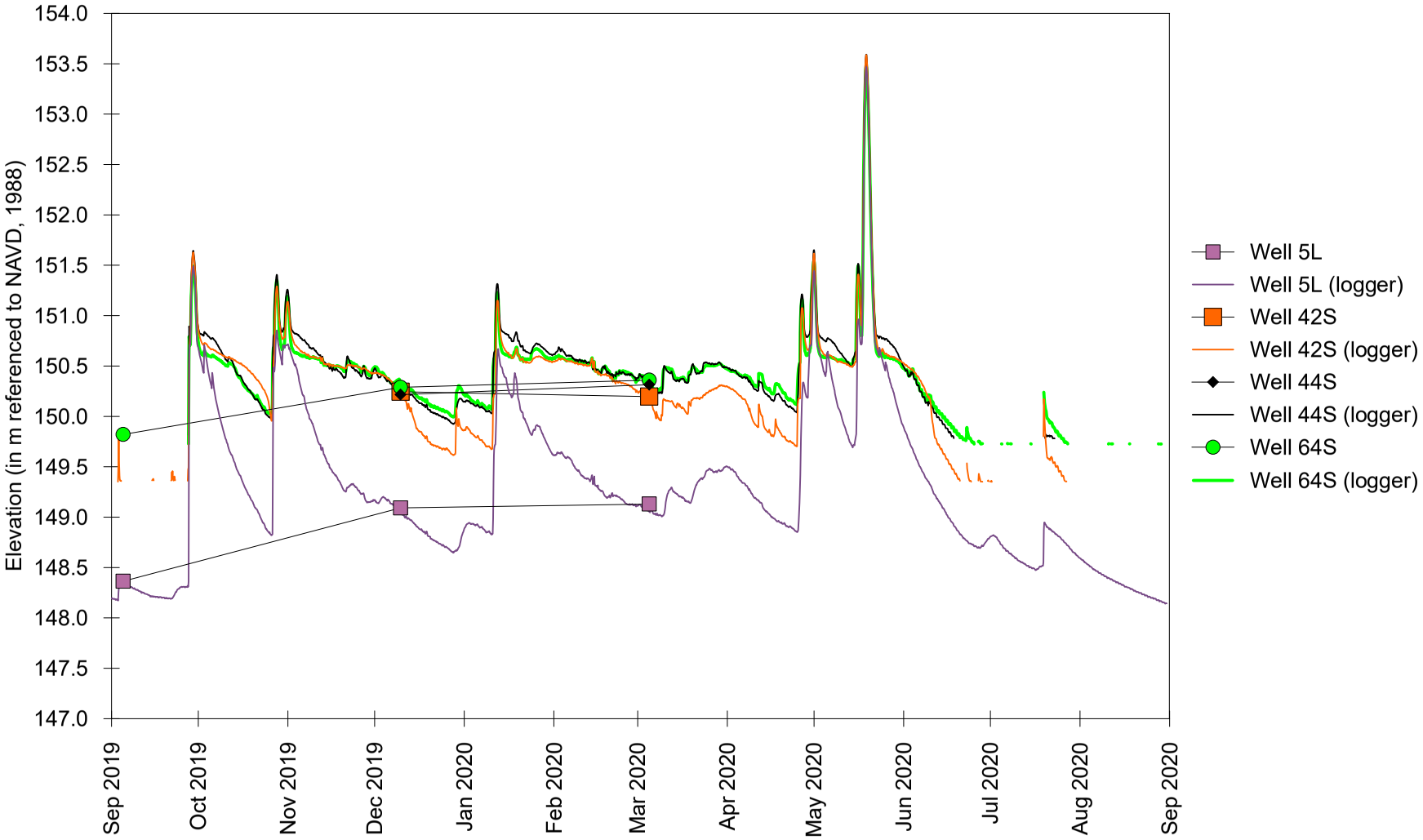
September 1, 2019 through August 31, 2020

Map based on imagery available from Esri (Esri 2020)

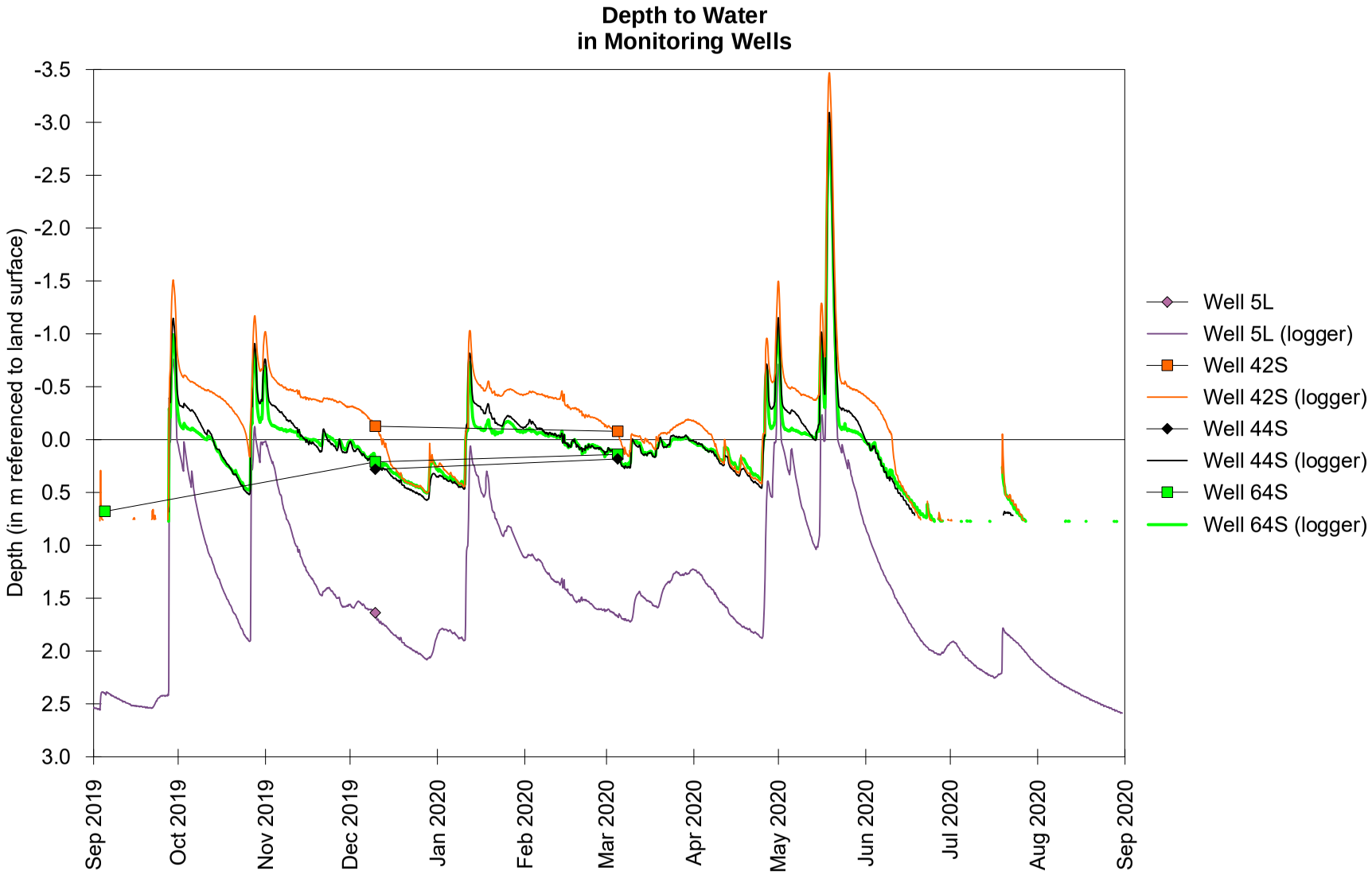


Morris Wetland Mitigation Bank
September 1, 2019 through August 31, 2020

Water-Level Elevation in Monitoring Wells

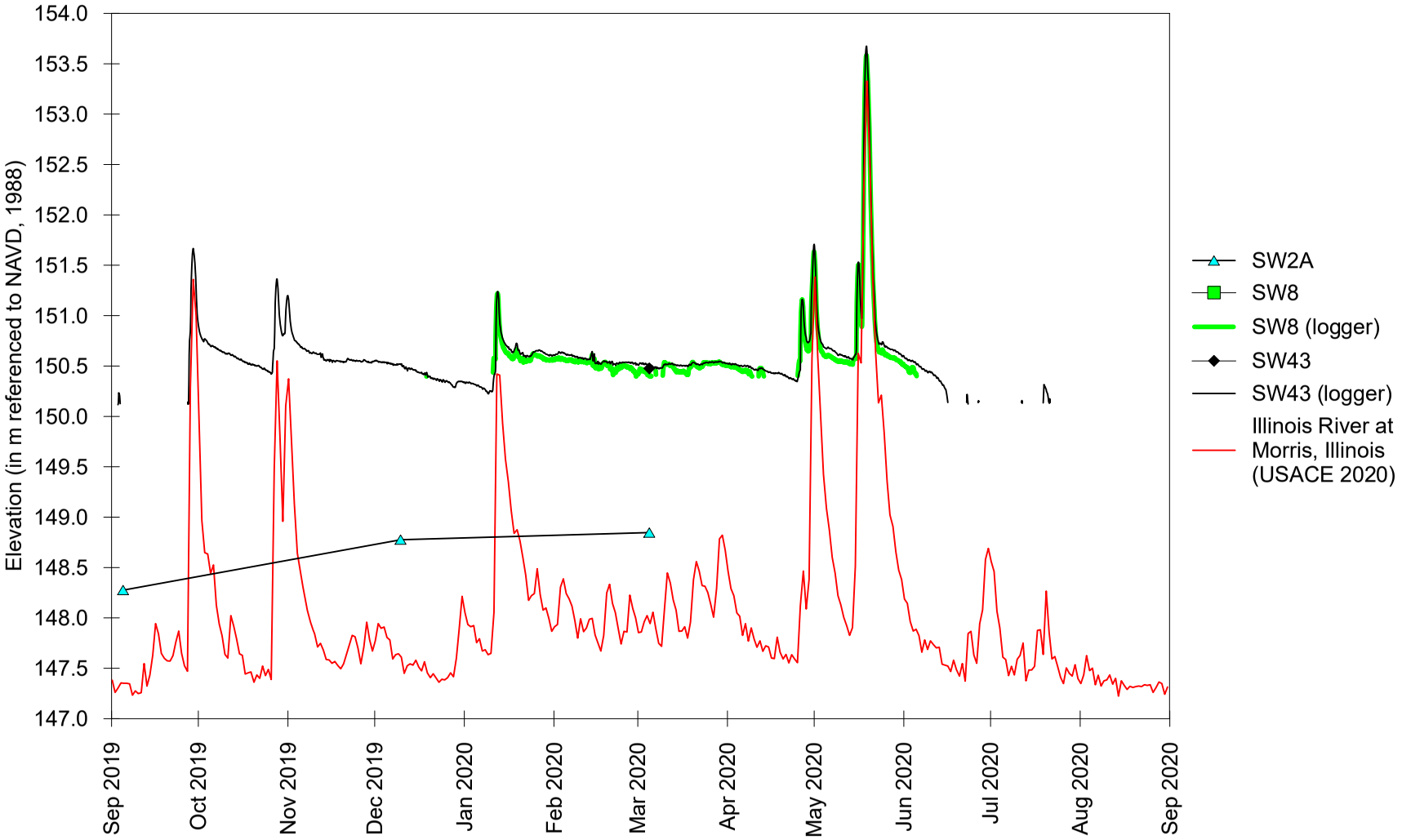


Morris Wetland Mitigation Bank
September 1, 2019 through August 31, 2020



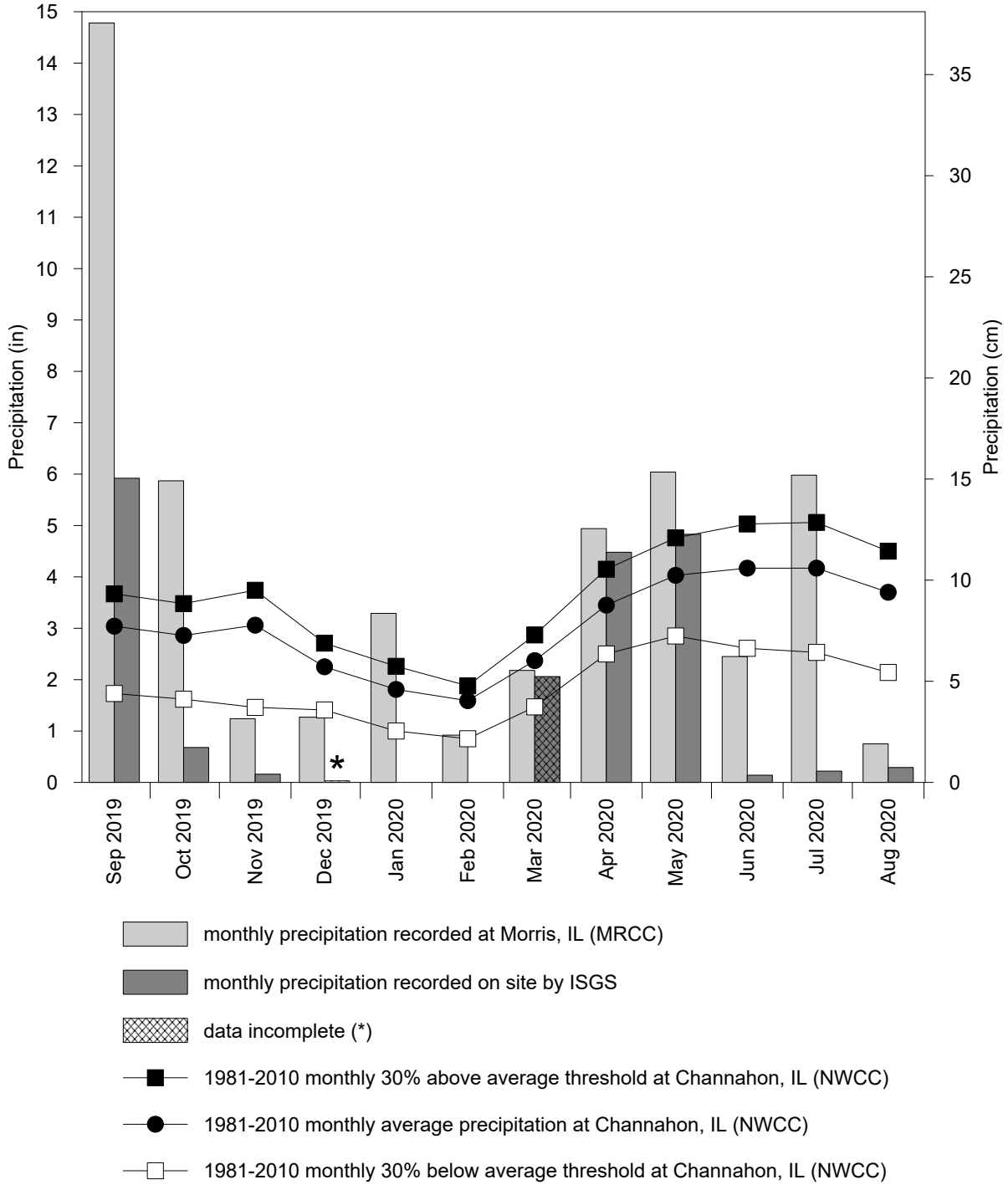
Morris Wetland Mitigation Bank
September 1, 2019 through August 31, 2020

Water-Level Elevation at Surface-Water Gauges



Morris Wetland Mitigation Bank
September 2019 through August 2020

Total Monthly Precipitation Recorded at Morris, IL (MRCC station #115825)



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

- January 2003: 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: Construction began at the site.
- Summer/Fall 2011: Additional construction was completed at the site. Trees were planted in portions of Fields 12, 13, 14, and 15 and in areas surrounding Amelia Barker Lake.
- Fall 2015: Trees were re-planted in portions of Fields 12 and 13.

WETLAND HYDROLOGY CALCULATION FOR 2020

The target compensation area for the La Grange wetland mitigation bank is 414.40 ha (1,024.00 ac). Using the 1987 Manual (Environmental Laboratory 1987), 571.20 ha (1,411.47 ac) of the total site area of 665.72 ha (1,645.00 ac) satisfied wetland hydrology criteria for greater than 5% of the growing season and 552.42 ha (1,365.06 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 571.20 ha (1,411.47 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 Rushville, Illinois, is April 5, and the season lasts 212 days (MRCC 2020); 5% of the growing season is 11 days, and 12.5% of the growing season is 27 days, using the 1987 Manual. Using the 2010 Midwest Region Supplement, March 8 was the starting date of the 2020 growing season based on soil temperatures measured on site.
- Total precipitation for the monitoring period at Jacksonville, Illinois (MRCC station #114447), was 110% of normal. During spring 2020 (March through May), precipitation was 134% of normal. Rainfall during July 2020 was particularly excessive with 149% of monthly normal precipitation.
- Three flood events inundating portions of the site during the 2019-20 monitoring year occurred during mid-January through early February, late March into early April and from late April through late June. The period of maximum inundation and saturation during the 2020 growing season occurred from late April through late June.

- In 2020, water levels measured in 9 of 11 soil-zone monitoring wells satisfied wetland hydrology criteria for greater than 5% and 12.5% of the growing season, using the 1987 Manual. In addition, using the 2010 Midwest Region Supplement, water levels in 9 of 11 soil-zone monitoring wells satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season. See the tables at the end of this summary for details.

PLANNED FUTURE ACTIVITIES

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

WETLAND HYDROLOGY TABLES FOR 2020

Well locations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
2S	N	N	N
14S	N	N	N
41S	Y	Y	Y
45S	Y	Y	Y
46S	Y	Y	Y
47S	Y	Y	Y
48S	Y	Y	Y
49S	Y	Y	Y
50S	Y	Y	Y
51S	Y	Y	Y
52S	Y	Y	Y

Y – met wetland hydrology criteria
N – did not meet wetland hydrology criteria

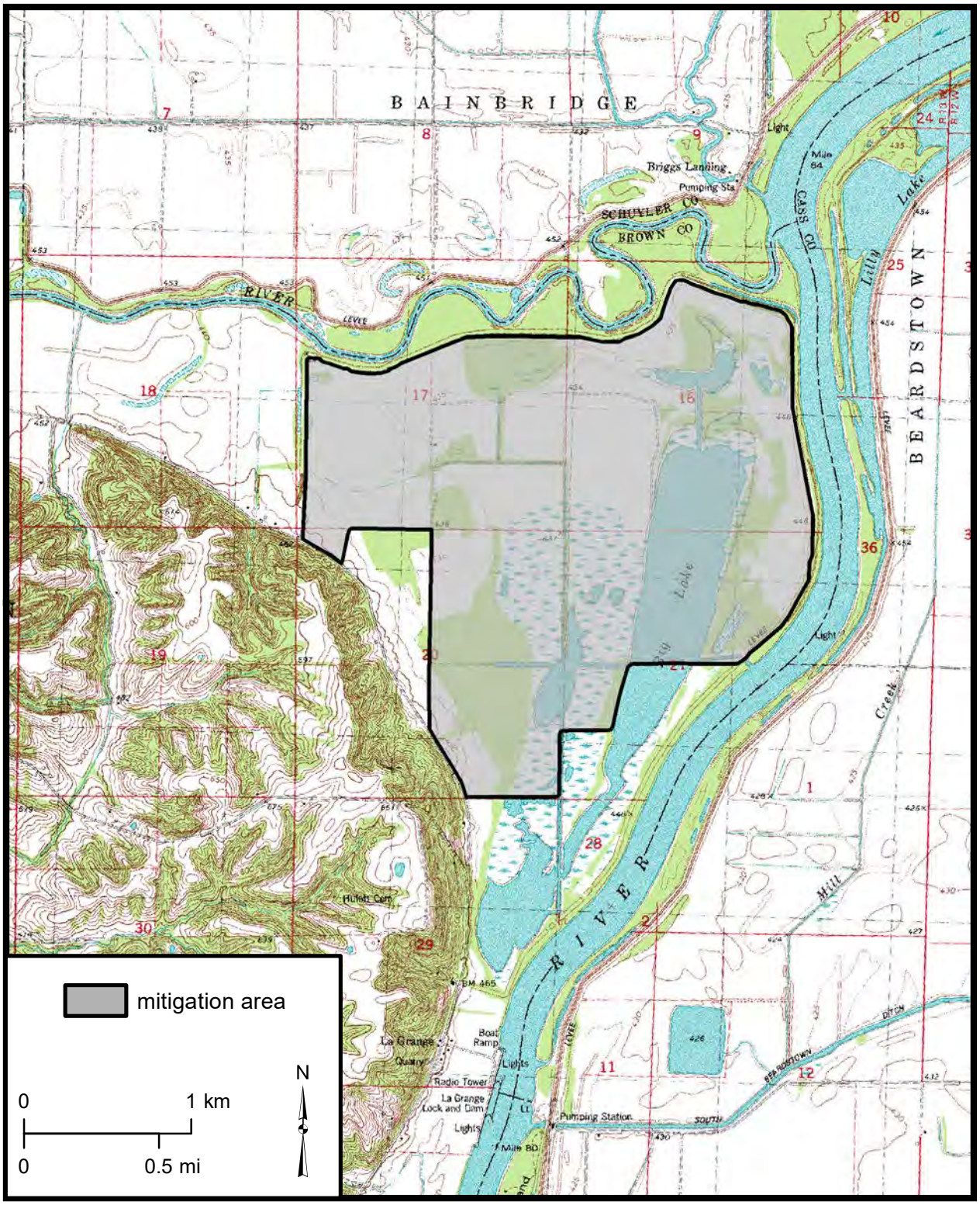
Surface-water gauge elevations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
SW19	134.48 m (441.21 ft)	133.14 m (443.20 ft)	134.46 m (441.14 ft)
IL River*	134.48 m (441.21 ft)	133.14 m (443.20 ft)	134.46 m (441.14 ft)

* - off-site gauge, Illinois River at New La Grange Lock and Dam (USACE 2020)

La Grange Wetland Mitigation Bank

General Study Area and Vicinity

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

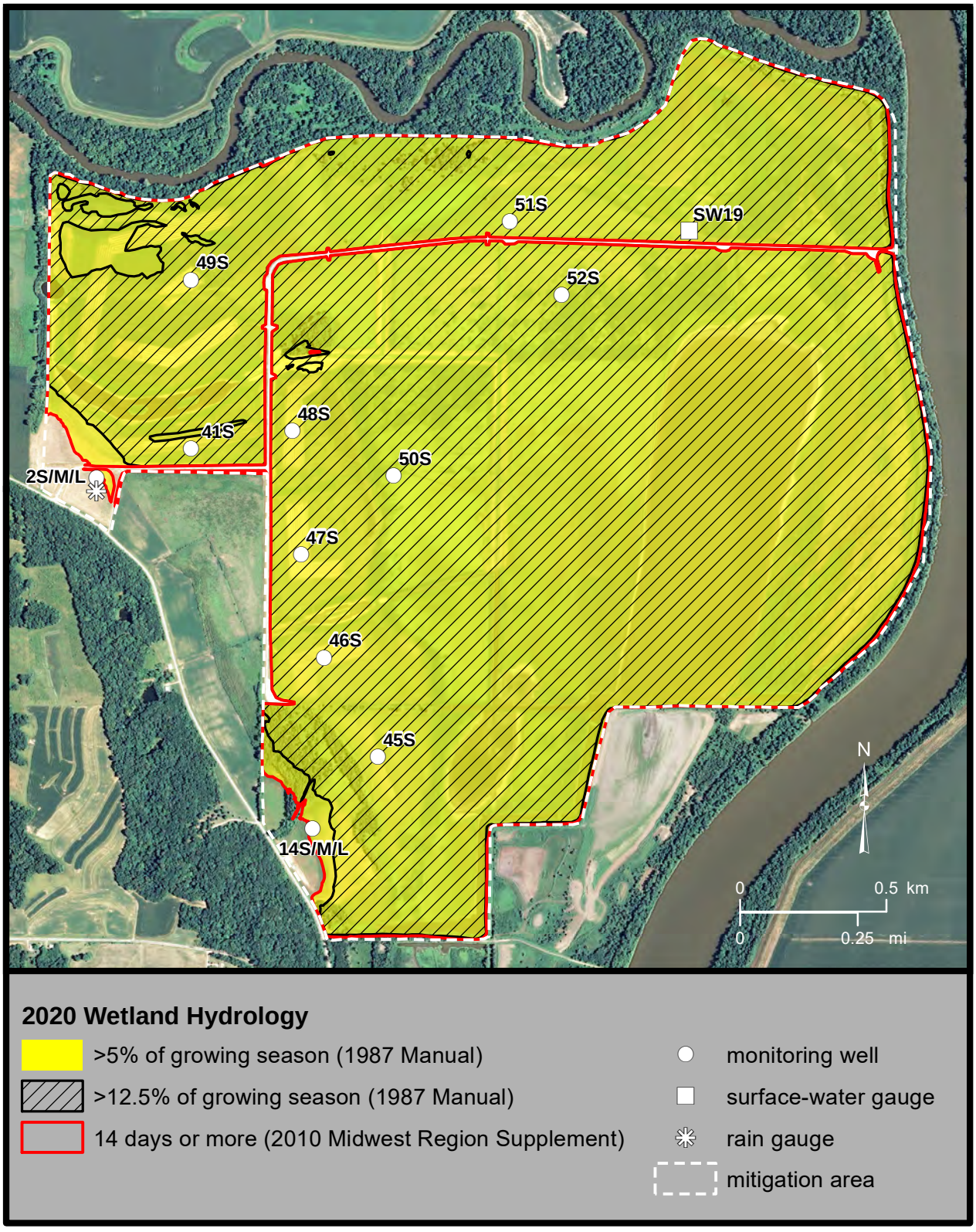


La Grange Wetland Mitigation Bank

Estimated Areal Extent of 2020 Wetland Hydrology

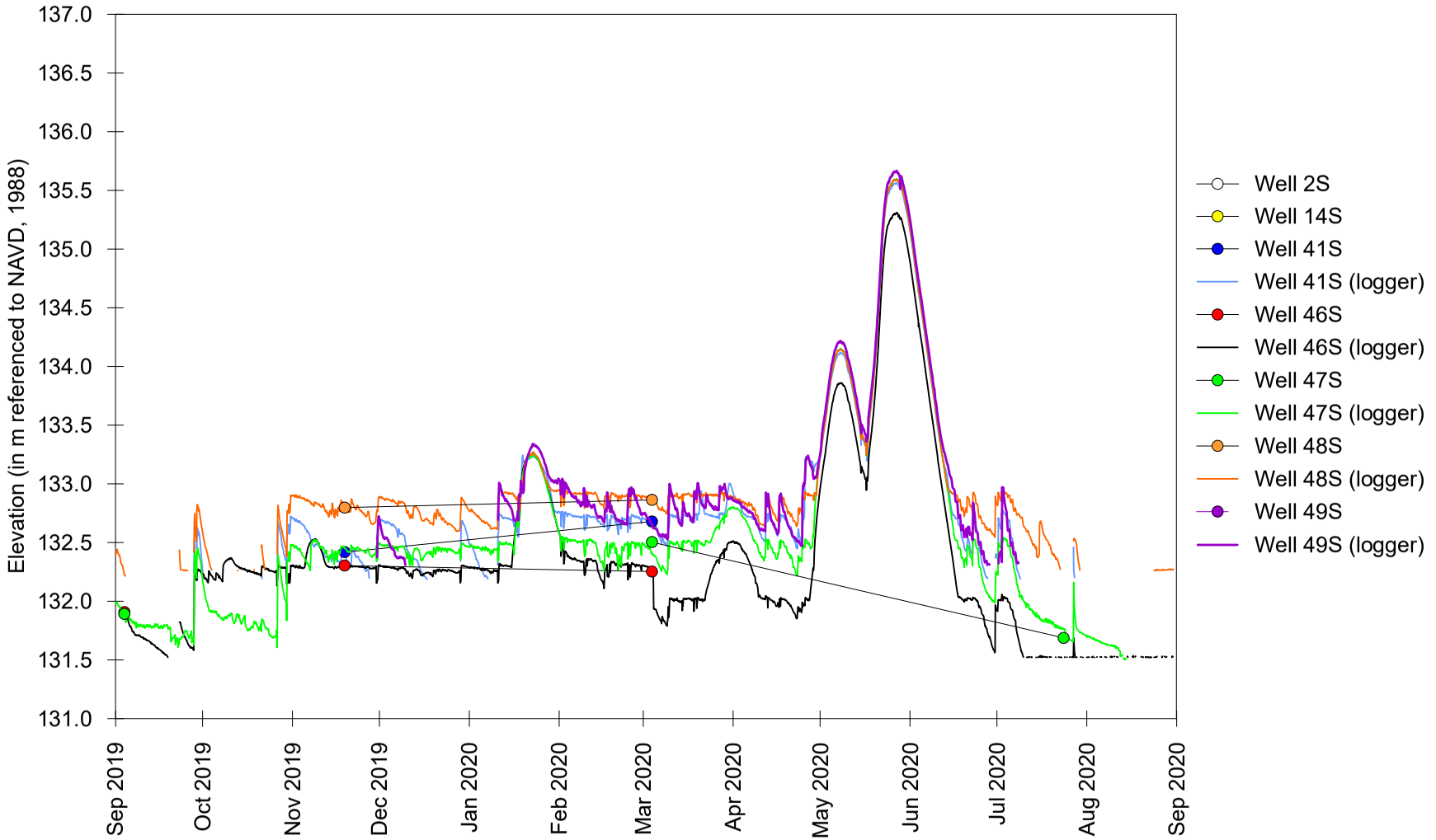
September 1, 2019 through August 31, 2020

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



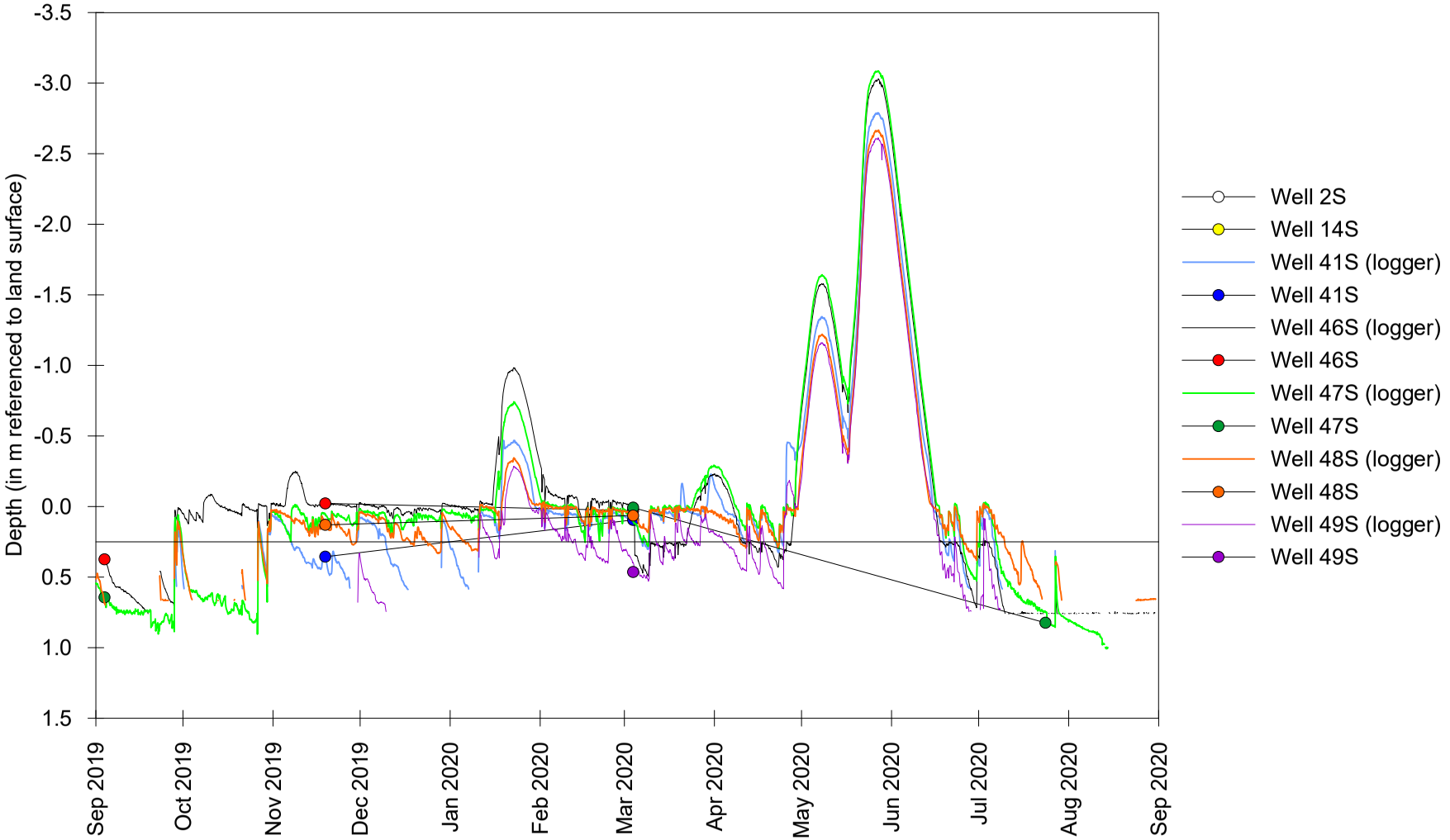
La Grange Wetland Mitigation Bank
September 1, 2019 through August 31, 2020

Water-Level Elevation in Monitoring Wells



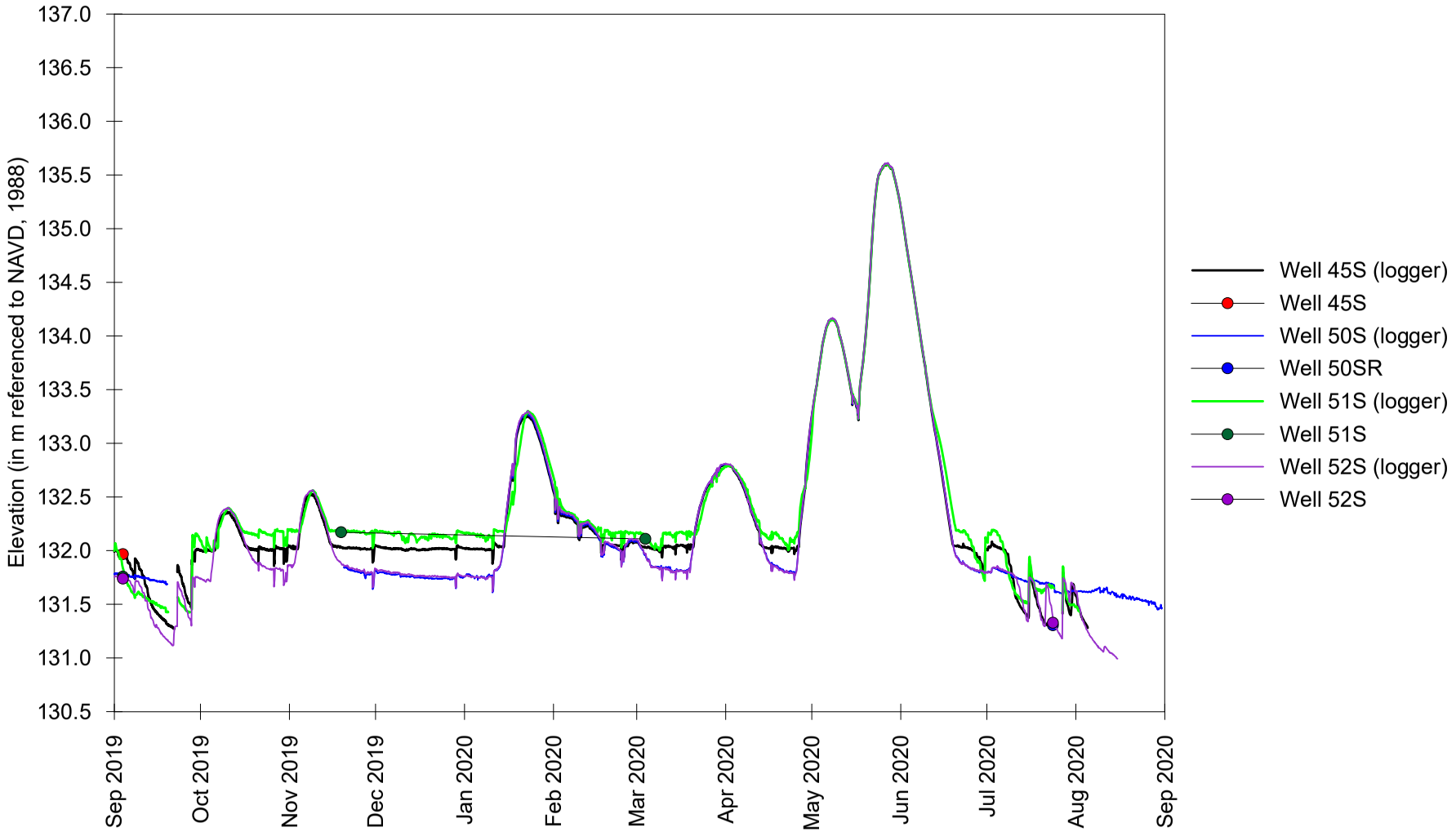
La Grange Wetland Mitigation Bank
September 1, 2019 through August 31, 2020

Depth to Water
in Monitoring Wells



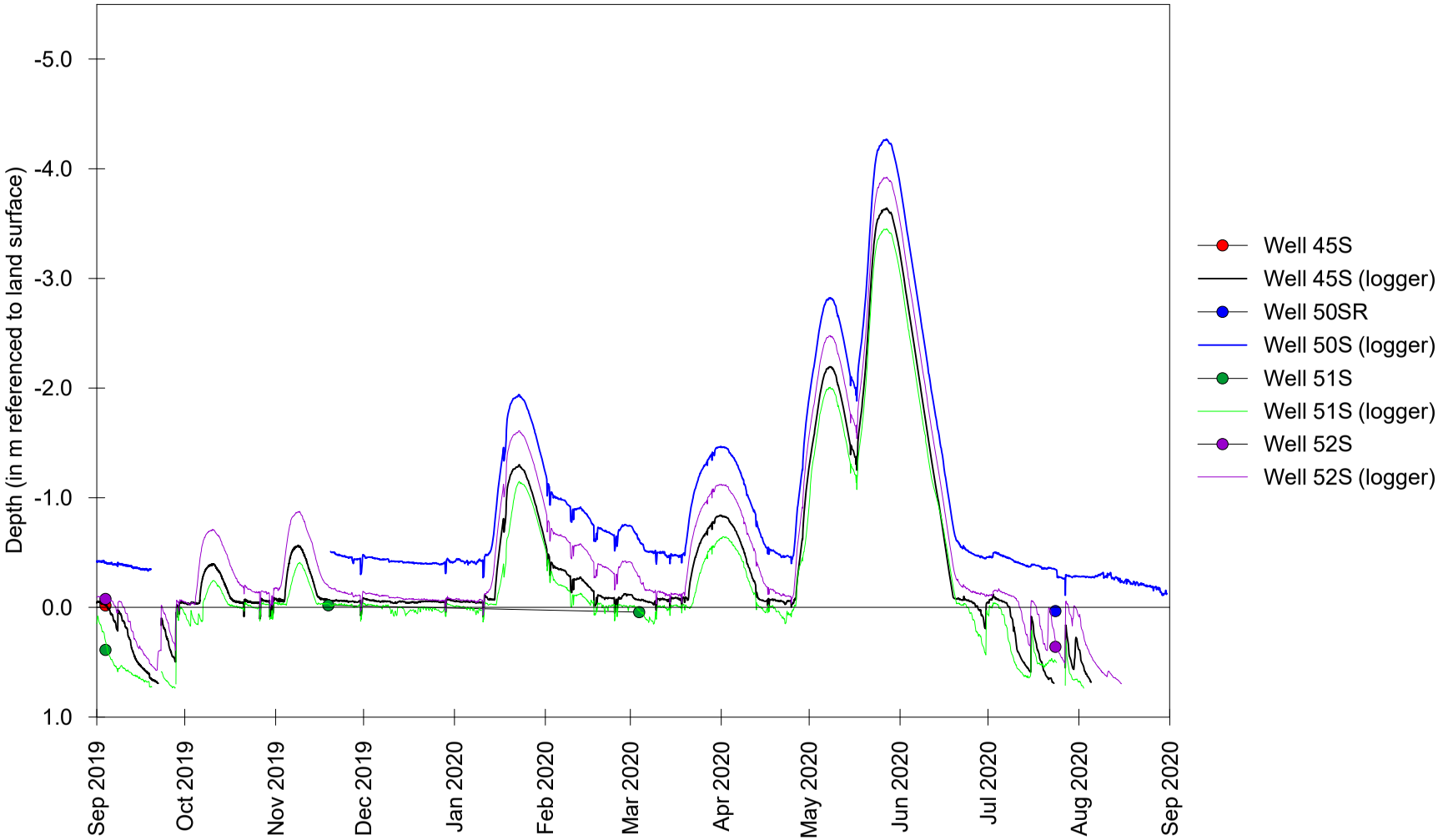
La Grange Wetland Mitigation Bank
September 1, 2019 through August 31, 2020

Water-Level Elevation in Monitoring Wells

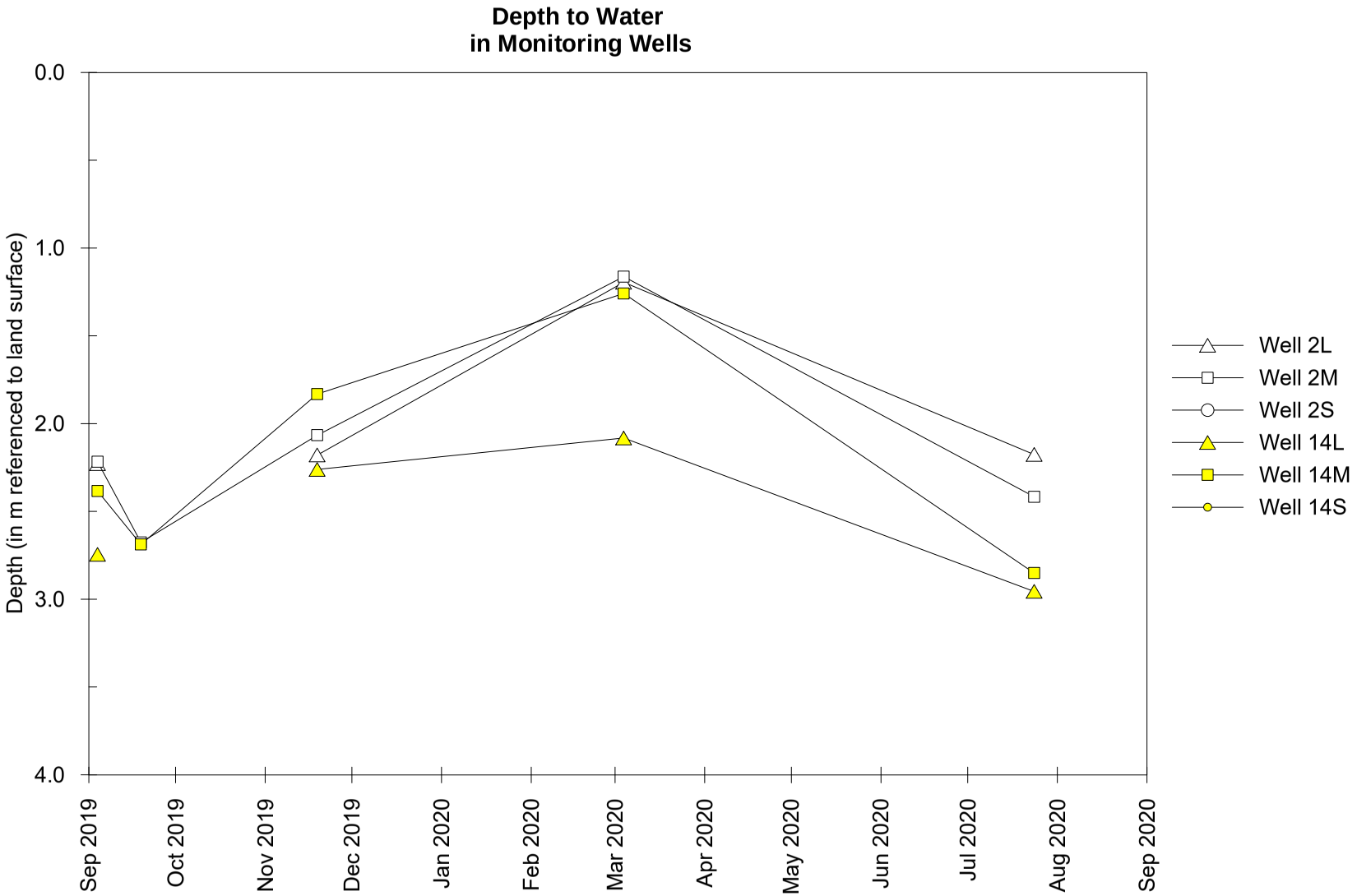


La Grange Wetland Mitigation Bank
September 1, 2019 through August 31, 2020

Depth to Water in Monitoring Wells

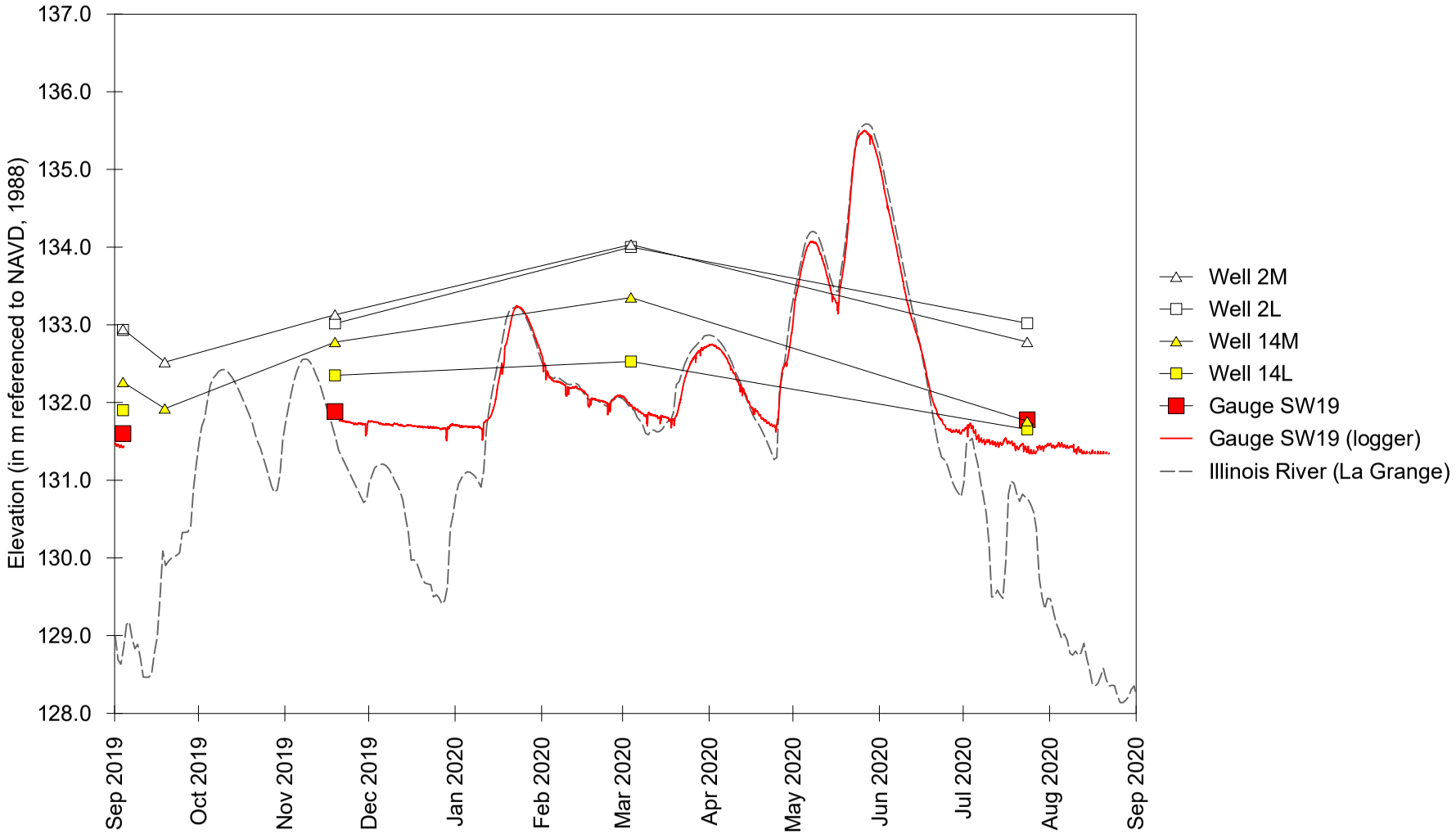


La Grange Wetland Mitigation Bank
September 1, 2019 through August 31, 2020

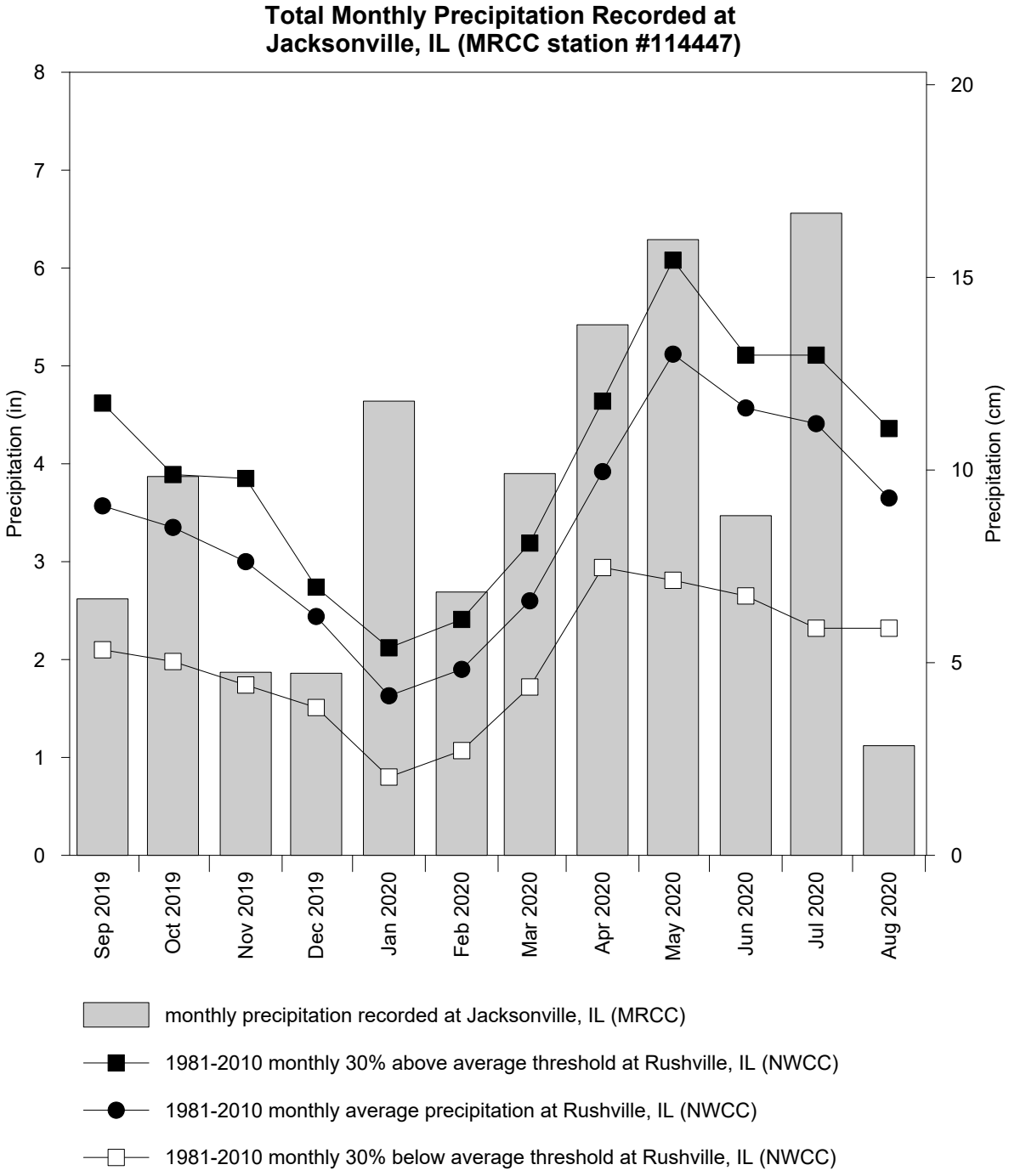


La Grange Wetland Mitigation Bank
September 1, 2019 through August 31, 2020

Water-Level Elevation
in Deeper Wells and at Surface-Water Gauges



La Grange Wetland Mitigation Site
September 2019 through August 2020



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: Lindsey A. Schafer

SITE HISTORY

- August 1999: ISGS conducted an initial site evaluation.
- September 2000: 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 2014: Ownership of the site was transferred from IDOT to Fairmont City, Illinois.

WETLAND HYDROLOGY CALCULATION FOR 2020

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), 18.13 ha (44.80 ac) of the total site area of 27.11 ha (67.00 ac) satisfied wetland hydrology criteria for greater than 5% of the growing season and 17.90 ha (44.23 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 18.13 ha (44.80 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 4 and the season lasts 204 days (MRCC 2019); 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 2 was the starting date of the 2020 growing season based on soil temperatures measured at the Belleville SIU Research Station.
- Total precipitation for the monitoring period, recorded at Belleville, Illinois (MRCC station #110510), was 127% of normal, precipitation in spring 2020 (March through May) was 110% of normal. The wettest period during the period was July and August with 265% of normal precipitation.
- The period of maximum inundation and saturation during the 2020 growing season occurred from March through May, though inundation and saturation continued to occur intermittently until the end of the monitoring period.
- In 2020, water levels measured in 17 of 20 soil-zone monitoring wells satisfied wetland hydrology criteria for greater than 5% of the growing season, and water levels measured in 16 of 20 soil-zone monitoring wells 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 17 of 20 soil-zone monitoring wells satisfied wetland

hydrology criteria for 14 or more consecutive days of the growing season. See the tables at the end of this summary for details.

PLANNED FUTURE ACTIVITIES

- Monitoring will continue until no longer required by IDOT.

WETLAND HYDROLOGY TABLES FOR 2020

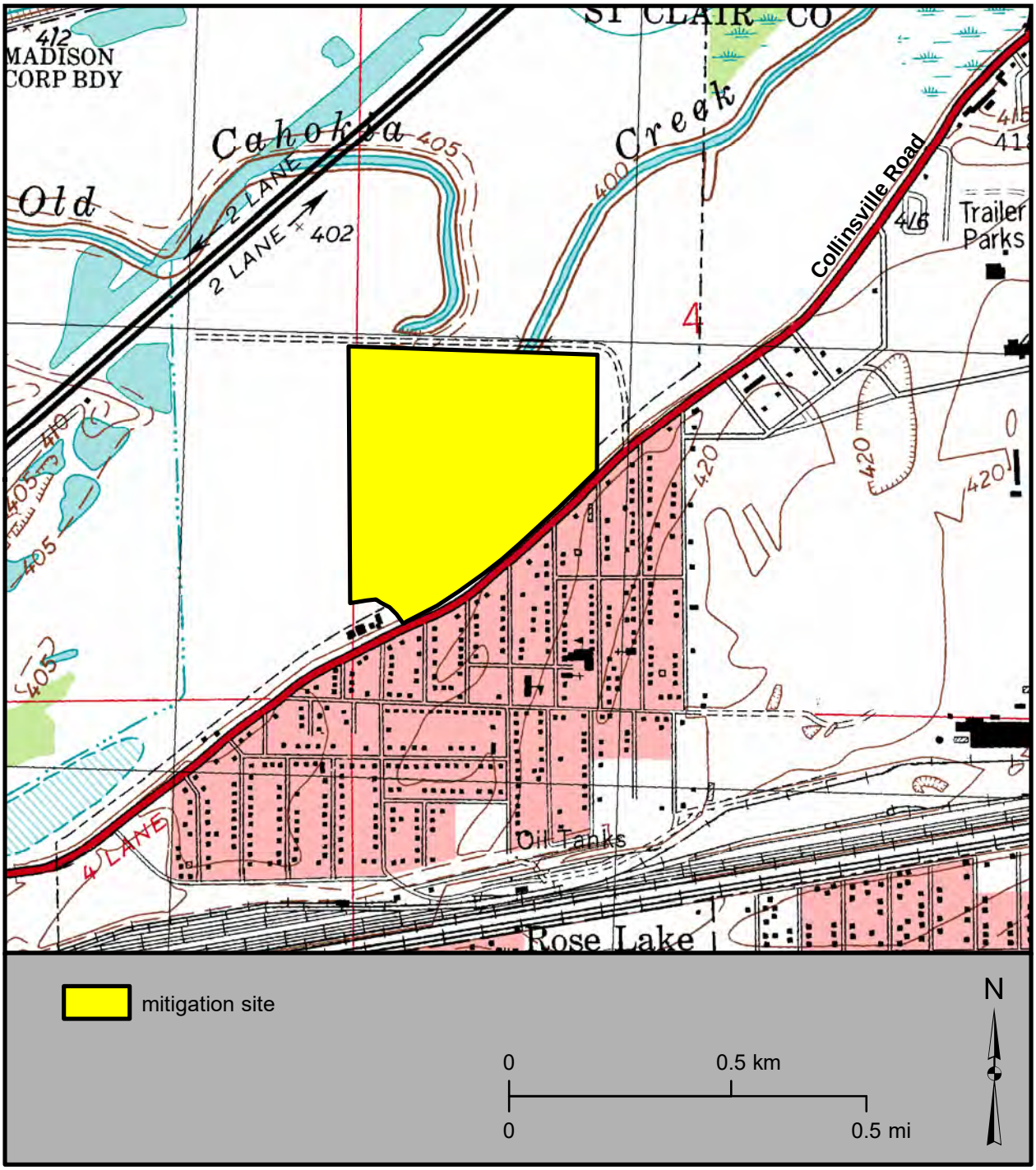
Well locations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
4S	Y	Y	Y
5S	Y	Y	Y
6S	Y	Y	Y
6VS	Y	Y	Y
7S	Y	Y	Y
9SR	Y	Y	Y
14S	Y	Y	Y
16S	Y	Y	Y
17SR	Y	Y	Y
19S	N	N	N
23S	Y	Y	Y
24S	Y	Y	Y
25S	Y	Y	Y
25VS	Y	Y	Y
26S	Y	Y	Y
27S	Y	Y	Y
28S	N	N	N
29S	Y	Y	Y
30S	Y	N	Y
31S	n/a	n/a	n/a
32S	n/a	n/a	n/a

Y – met wetland hydrology criteria
N – did not meet wetland hydrology criteria

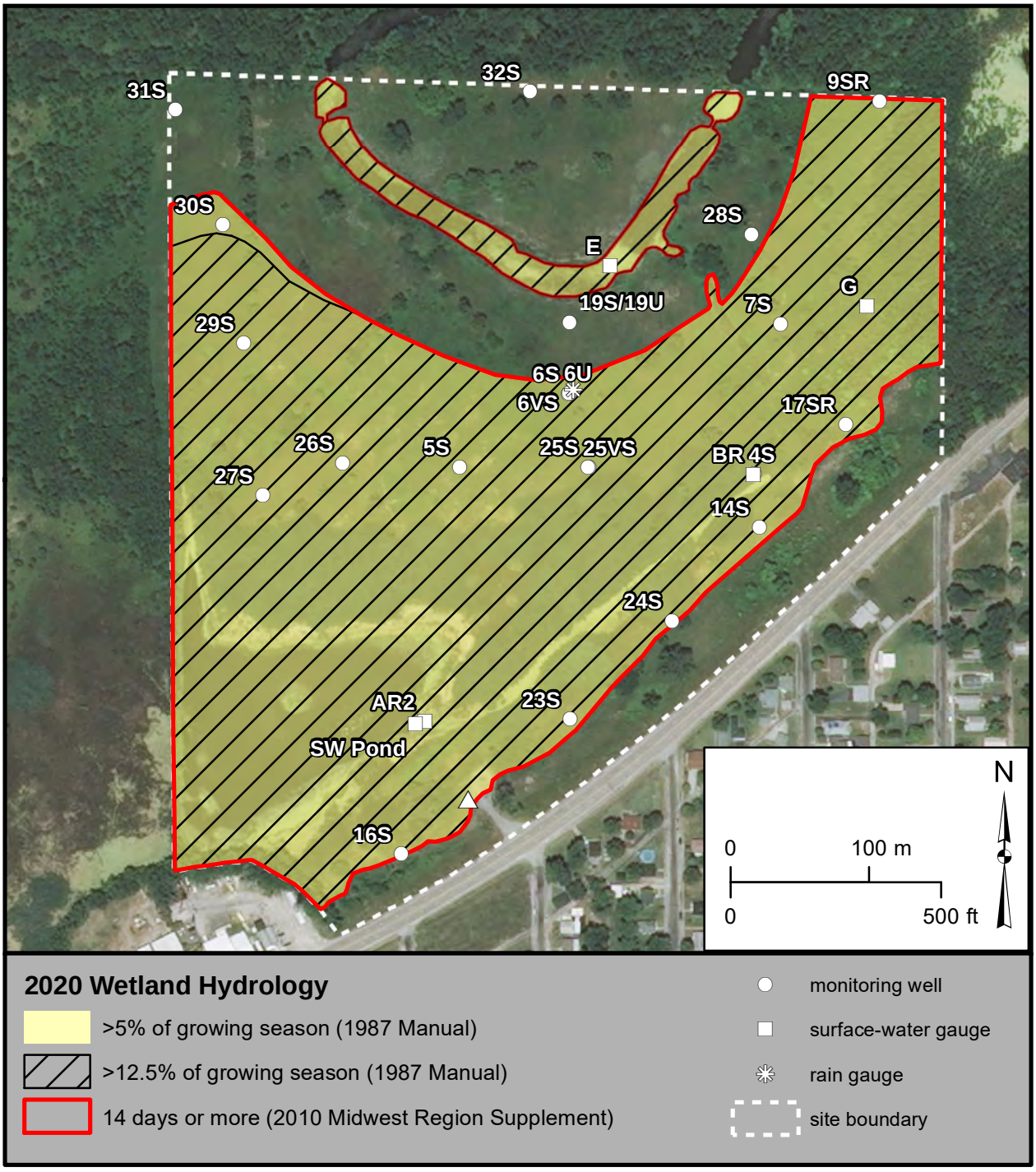
Surface-water gauge elevations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
AR3	n/a	n/a	n/a
BR	n/a	n/a	n/a
E	n/a	n/a	n/a
G	n/a	n/a	n/a
SW Pond	122.54 m (402.03 ft)	122.52 m (401.97 ft)	122.53 m (402.00 ft)

n/a – insufficient data to determine an elevation

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 (USGS 1954b)

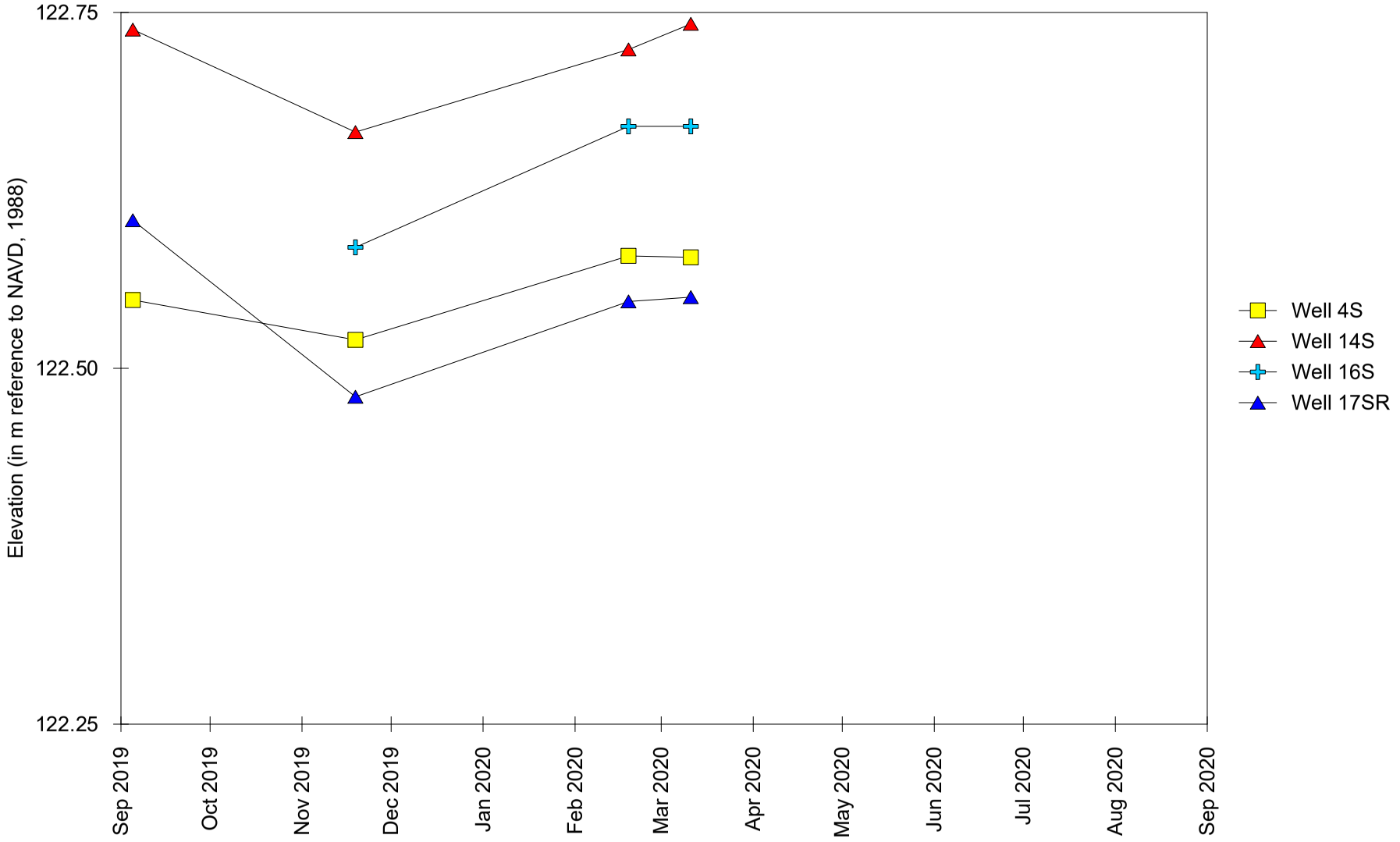


Fairmont City Potential Wetland Mitigation Site
(FAP 14)
Estimated Areal Extent of 2020 Wetland Hydrology
September 1, 2019 through August 31, 2020
Map based on 2012 Farm Service Agency digital orthophotography, St. Clair County, Illinois (USDA-FSA 2012)

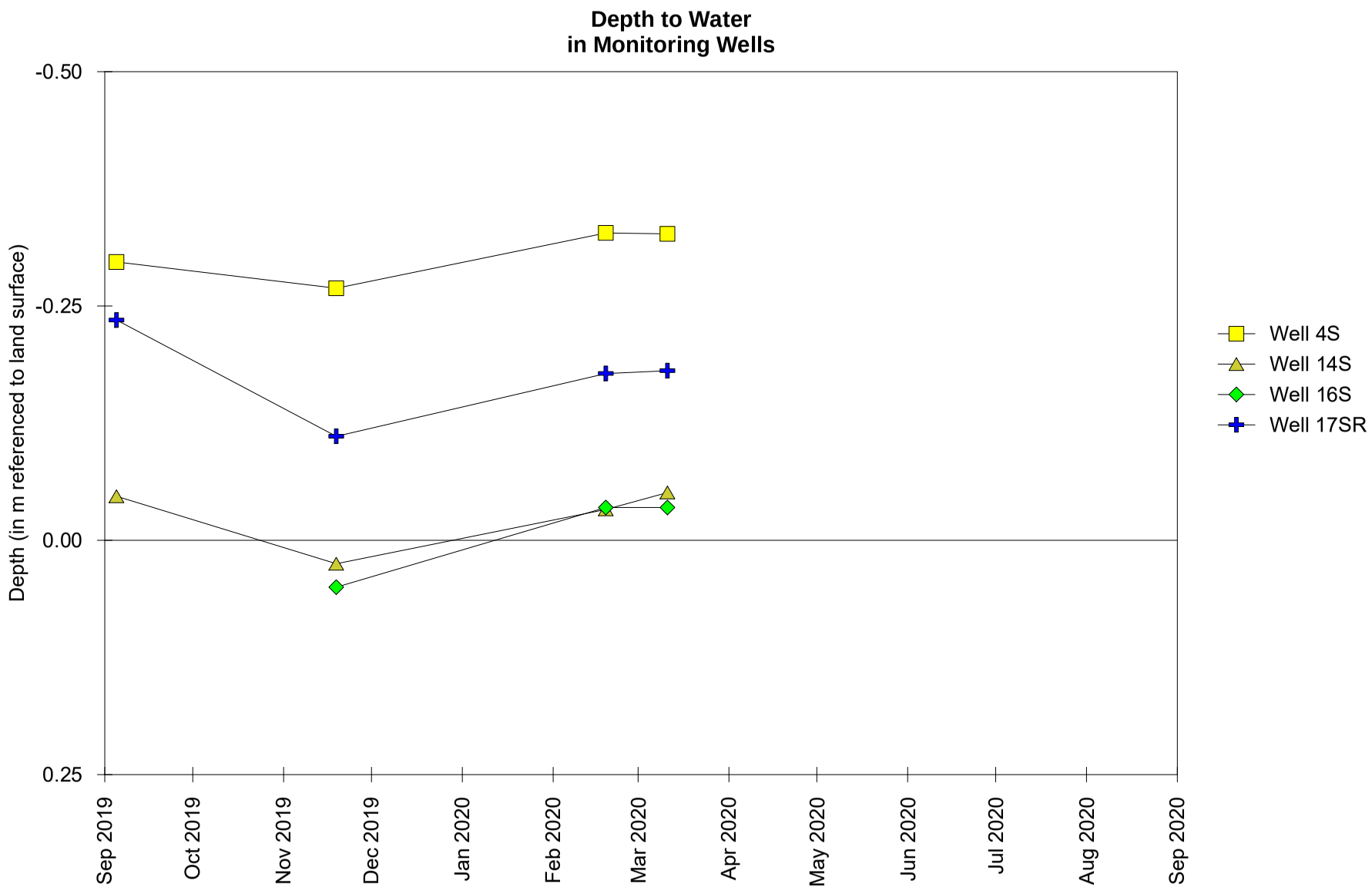


Fairmont City Potential Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Water-Level Elevation in Monitoring Wells

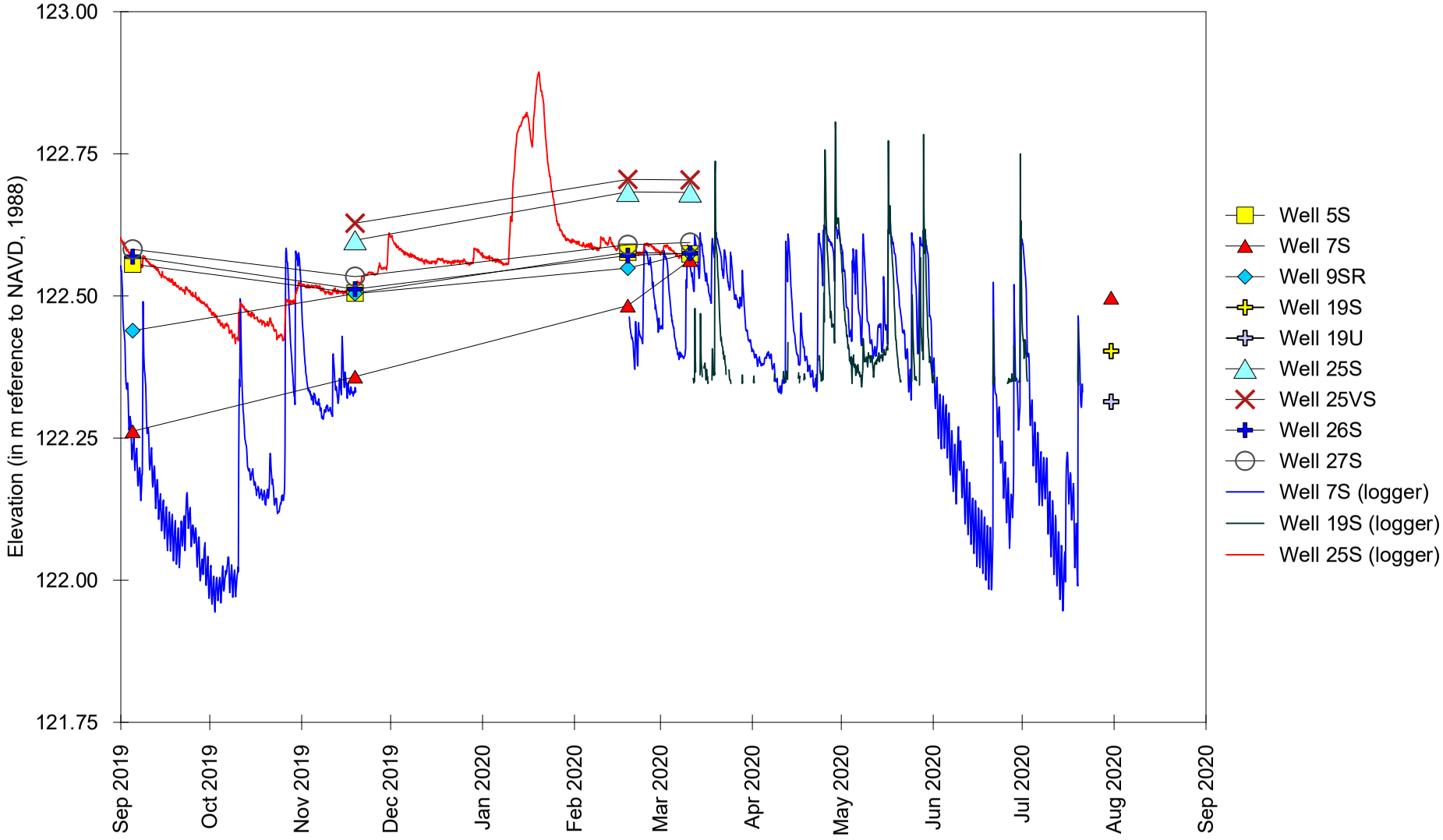


Fairmont City Potential Wetland Mitigation Site
September 1, 2019 through August 31, 2020

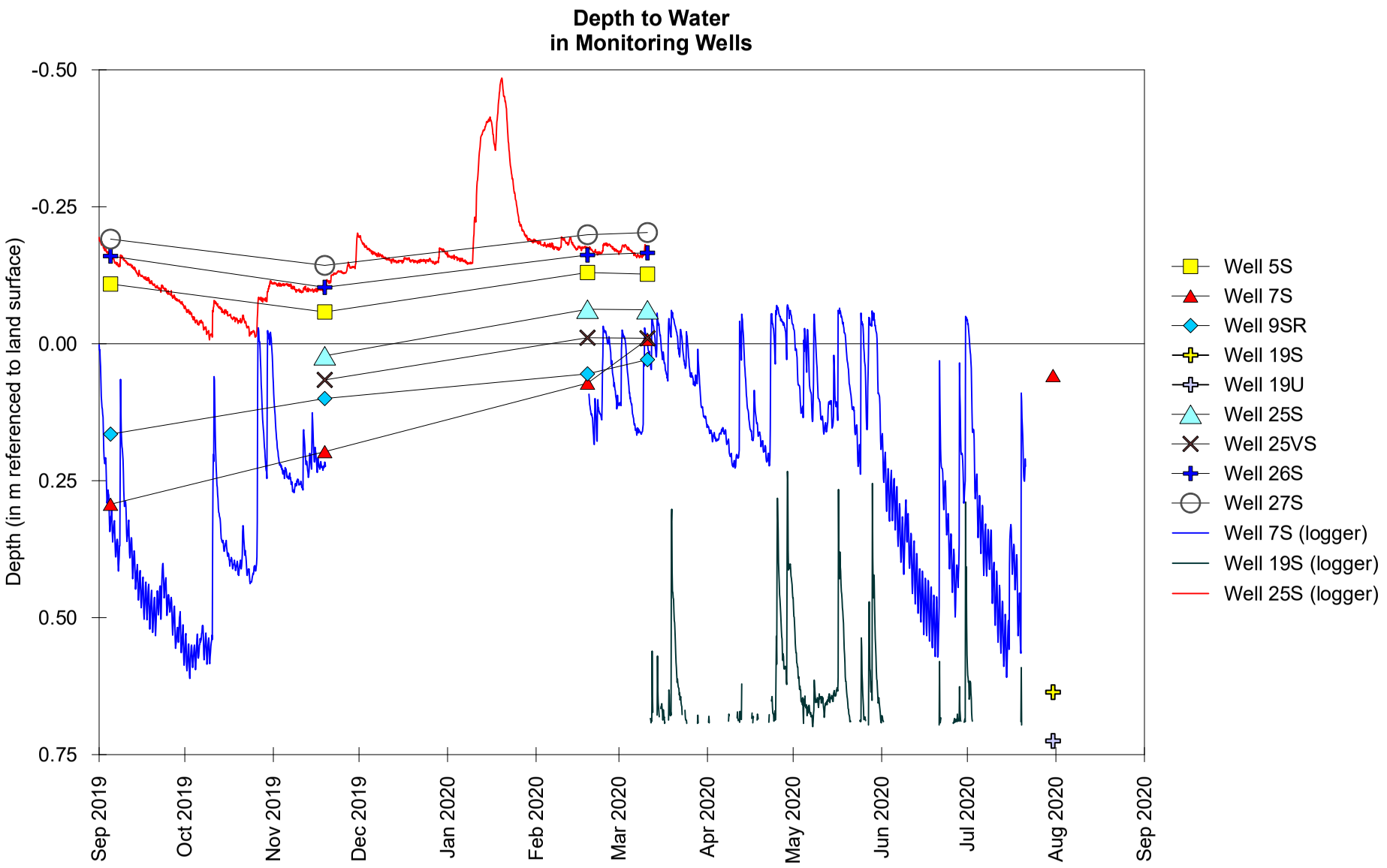


Fairmont City Potential Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Water-Level Elevation in Monitoring Wells

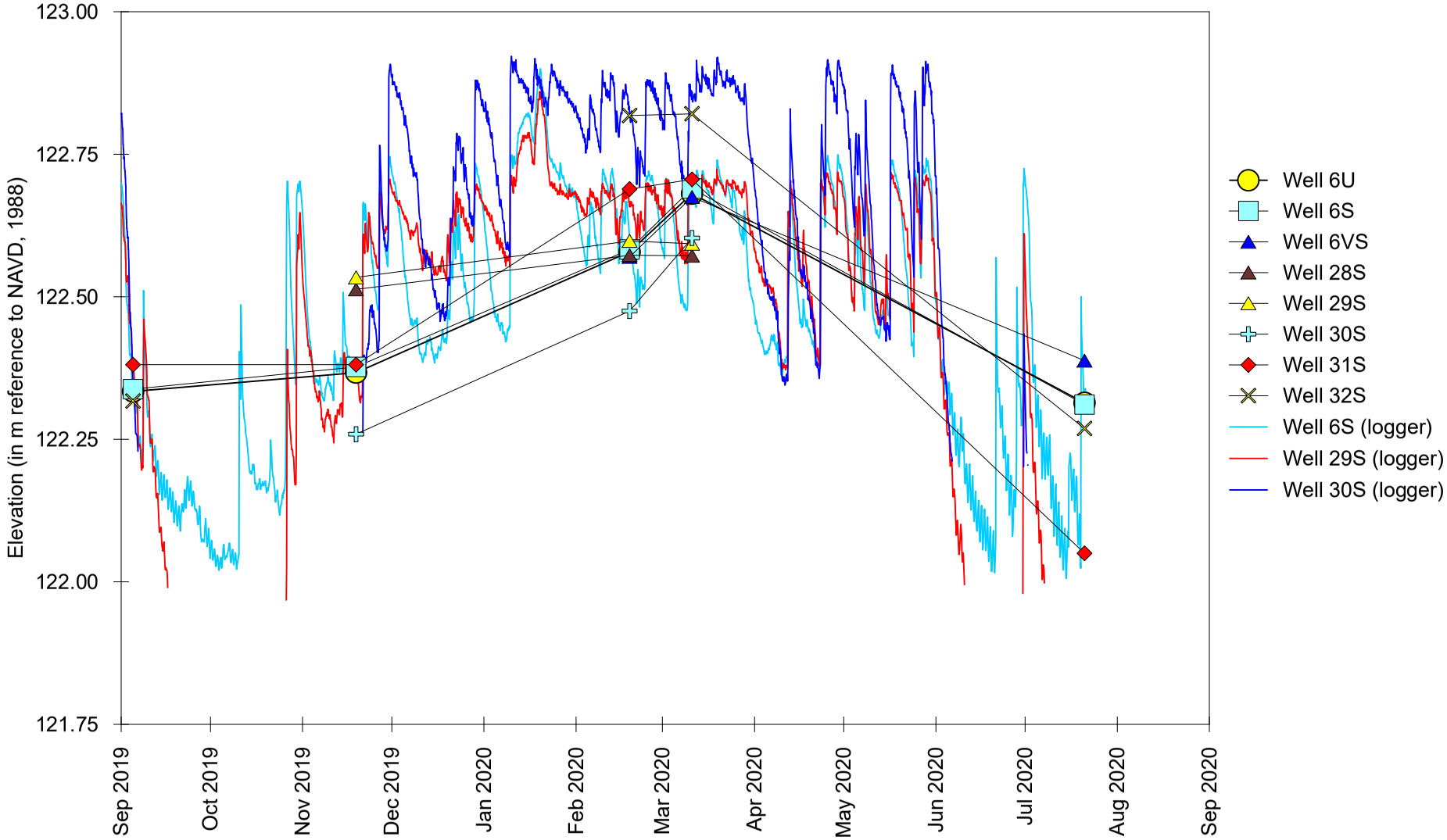


Fairmont City Potential Wetland Mitigation Site
September 1, 2019 through August 31, 2020



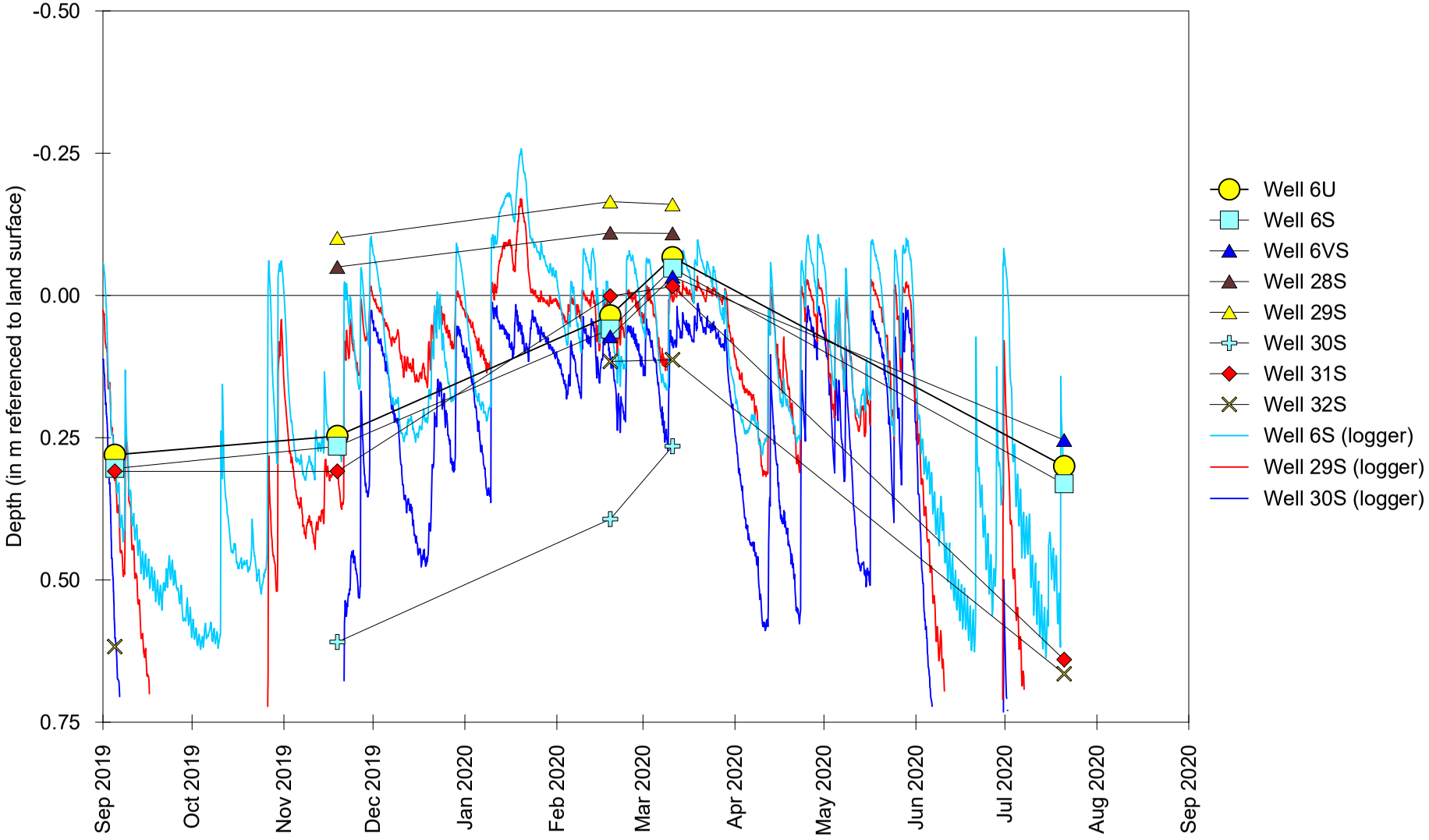
Fairmont City Potential Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Water-Level Elevation in Monitoring Wells



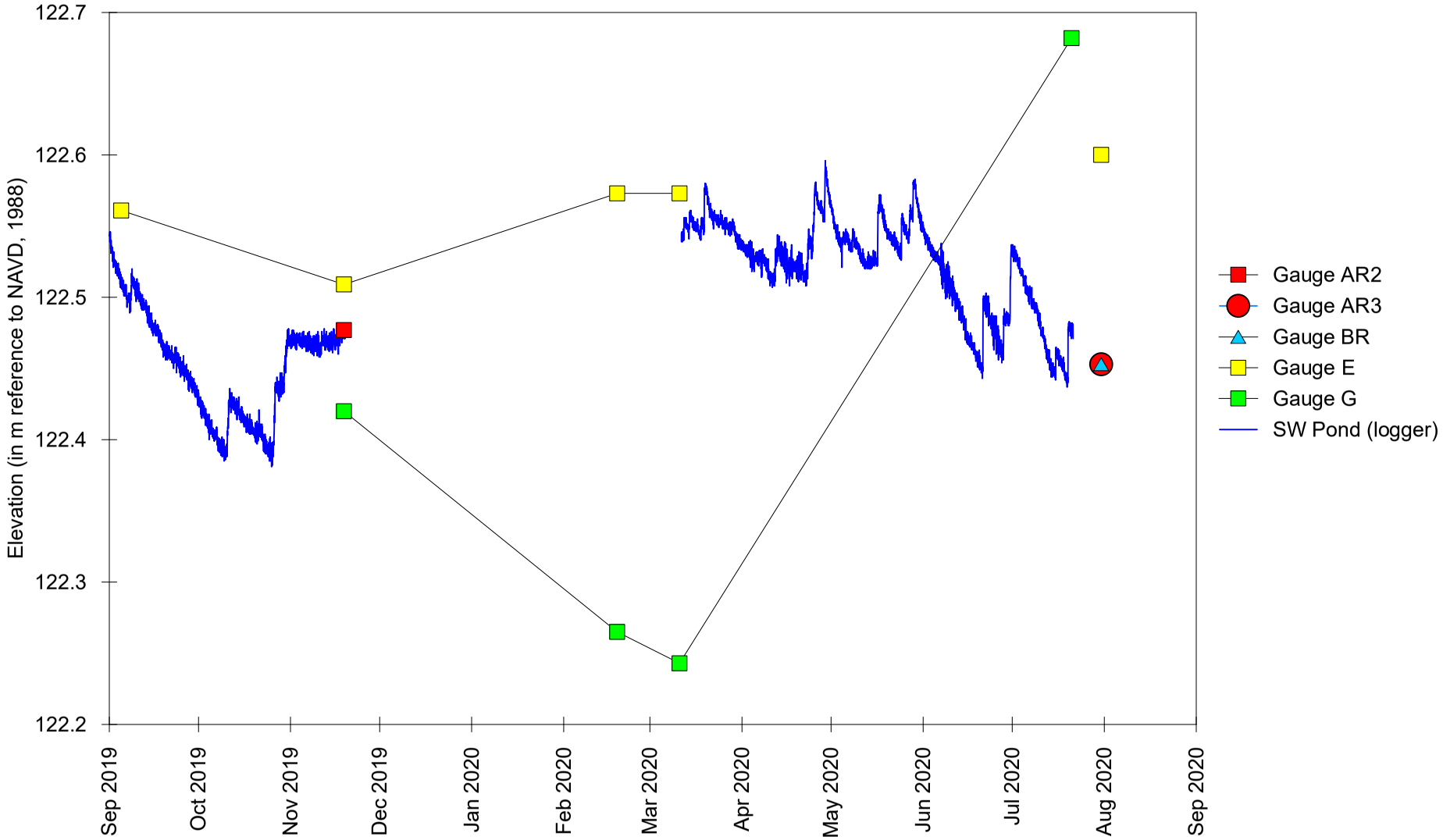
Fairmont City Potential Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Depth to Water
in Monitoring Wells

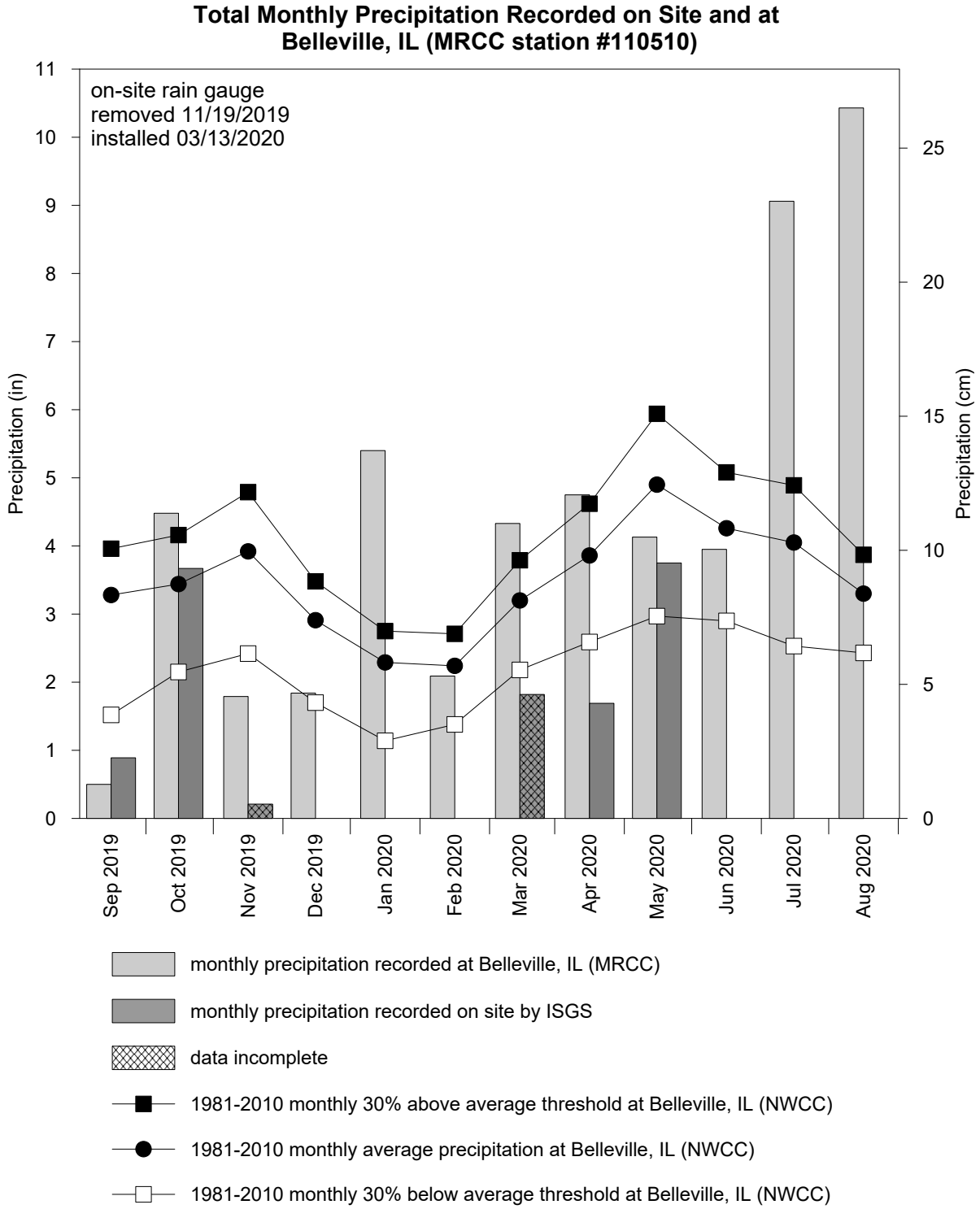


Fairmont City Potential Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Surface-Water Elevation
at Surface-Water Gauges



Fairmont City Potential Wetland Mitigation Site
September 2019 through August 2020



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: Lindsey A. Schafer

SITE HISTORY

- July 2000: 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 2020

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), 16.75 ha (41.38 ac), out of a total site area of 26.43 ha (65.30 ac), satisfied wetland hydrology criteria for greater than 5% of the 2020 growing season and 14.36 ha (35.48 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 17.24 ha (42.60 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 4 and the season lasts 204 days (MRCC 2019); 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 2 was the starting date of the 2020 growing season based on soil temperatures measured at the Belleville SIU Research Station.

- Total precipitation for the monitoring period, recorded at Belleville, Illinois (MRCC station #110510), was 127% of normal, precipitation in spring 2020 (March through May) was 110% of normal. The wettest period during the period was July and August with 265% of normal precipitation.

- The northern and southern portions of the site have different water sources, which usually results in different periods of maximum inundation and saturation during the growing season. In the portion of the site north of well cluster 23, the maximum occurred from the second week April to the second week of June due to precipitation and perched groundwater. In the portion of the site south of well cluster 23, the maximum occurred in June and July. In this portion of the site inundation typically occurs when the Mississippi River at St. Louis reaches a stage of about 6.1 m (20.0 ft), and the river was at or above that stage from March 11, 2020 to June 27, 2020. The highest river stages occurred from May 29, 2020 to June 4, 2020, when the river was as much as 1.5 ft. above flood stage (30 ft.).

- In 2020, water levels measured in 23 of 36 soil-zone monitoring wells satisfied wetland hydrology criteria for greater than 5% of the growing season, and water levels measured

in 15 of 36 soil-zone monitoring wells satisfied wetland hydrology criteria for greater than 12.5% of the growing season, using the 1987 Manual. In addition, using the 2010 Midwest Region Supplement, water levels in 25 of 36 soil-zone monitoring wells satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season. See the tables at the end of this summary for details.

PLANNED FUTURE ACTIVITIES

- Monitoring will continue until no longer required by IDOT.

WETLAND HYDROLOGY TABLES FOR 2020

Well locations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
1S	N	N	N
2S	Y	Y	Y
4S	Y	N	Y
5S	N	N	N
6S	N	N	N
7S	N	N	N
10S	Y	Y	Y
11SR	N	N	N
12SR	N	N	N
13S	Y	Y	Y
16S	Y	Y	Y
17S	Y	Y	Y
18S	N	N	N
19SR	Y	Y	Y
22S	Y	Y	Y
23S	N	N	N
23VS	N	N	N
24S	Y	N	Y
24VS	Y	N	Y
25S	Y	N	Y
25VS	Y	N	Y
26SR	Y	N	Y
26VS	Y	N	Y
27SR2	Y	Y	Y
27VS	Y	Y	Y
28S	N	N	Y
28VS	N	N	Y
29S	Y	Y	Y
29VS	Y	Y	Y
30S	Y	Y	Y
30VS	Y	Y	Y
31S	Y	Y	Y
31VS	Y	Y	Y
32SR	N	N	N
33S	N	N	N
34S	Y	N	Y

Y – met wetland hydrology criteria
N – did not meet wetland hydrology criteria

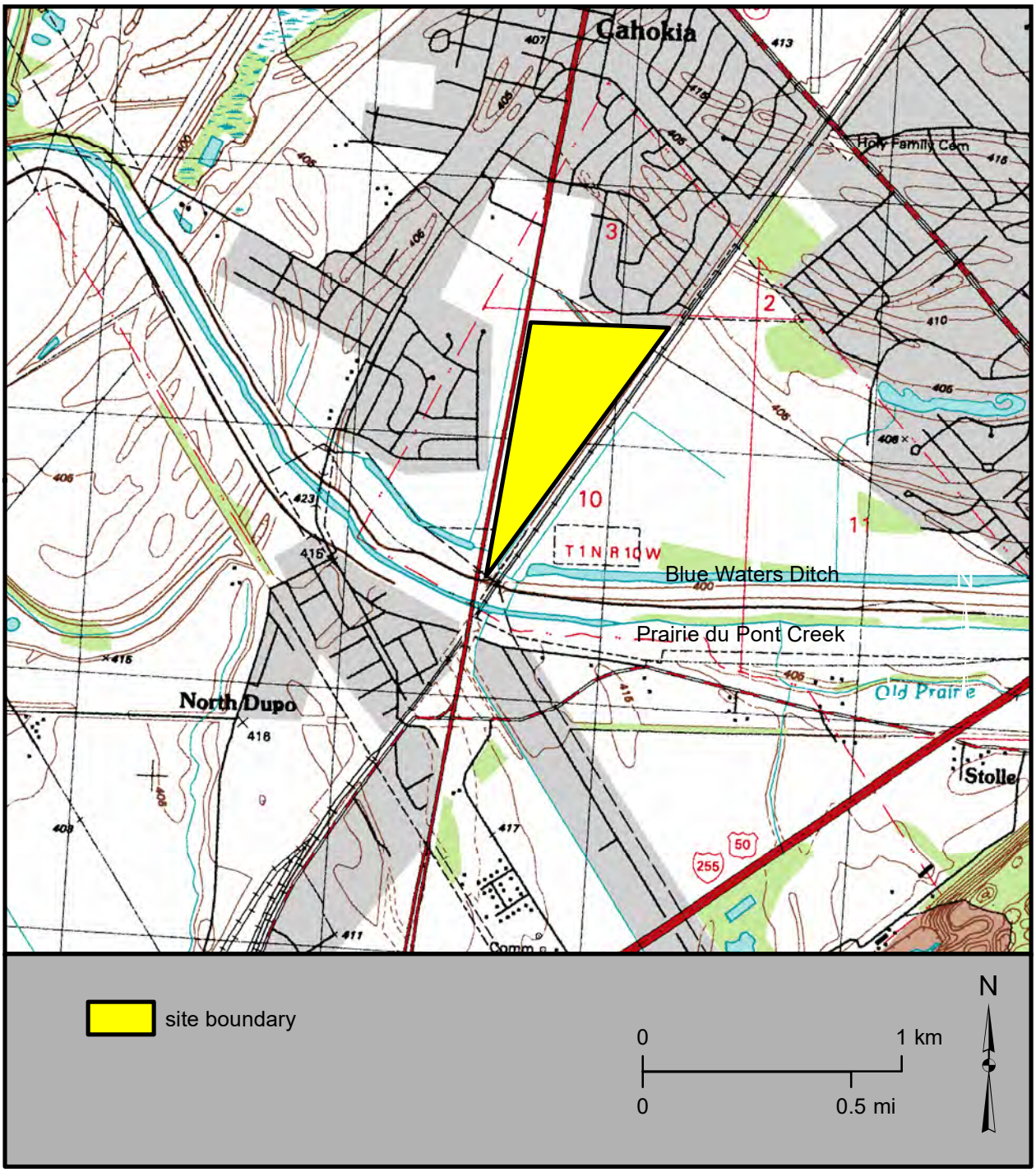
Surface-water gauge elevations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
E	n/a	n/a	n/a
F	n/a	n/a	n/a
G	121.33 m (398.06 ft)	121.32 m (398.03 ft)	121.32 m (398.03 ft)
H	121.83 m (399.70 ft)	121.73 m (399.38 ft)	121.83 m (399.70 ft)

n/a – insufficient data to determine an elevation

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 (USGS 1954a)

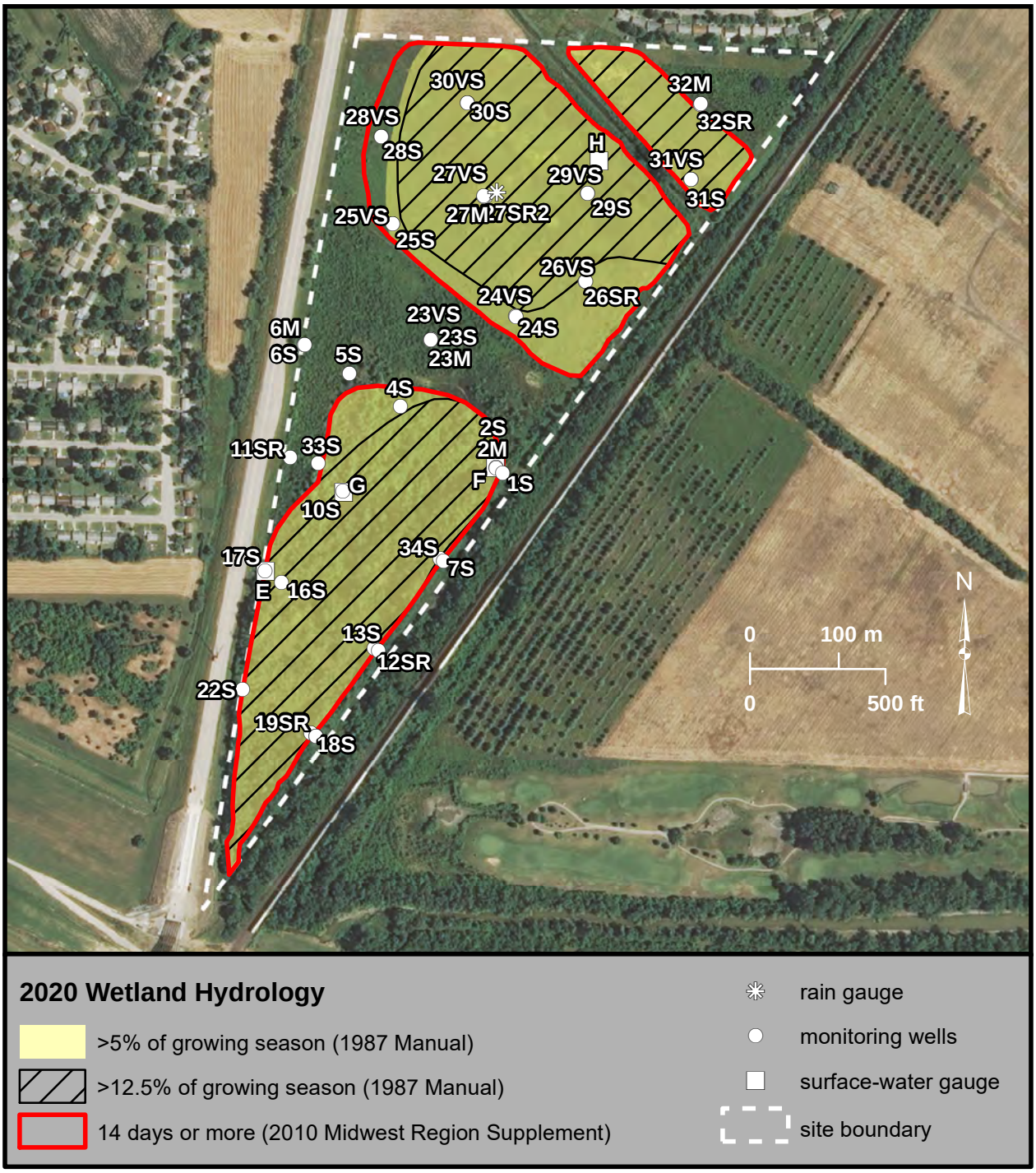


Former Tiernan Property, Potential Wetland Mitigation Site (FAP 14)

Estimated Areal Extent of 2020 Wetland Hydrology

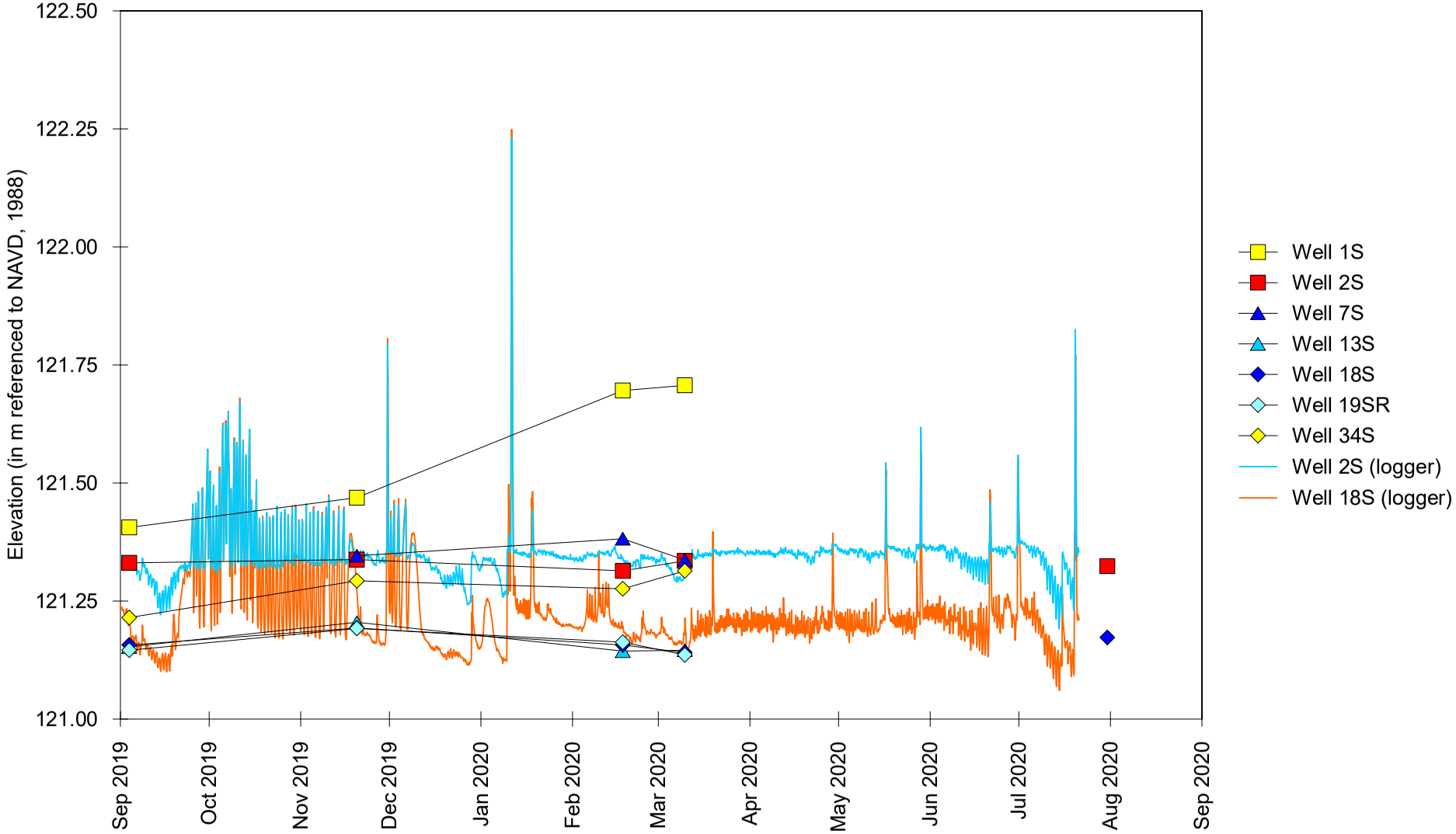
September 1, 2019 through August 31, 2020

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

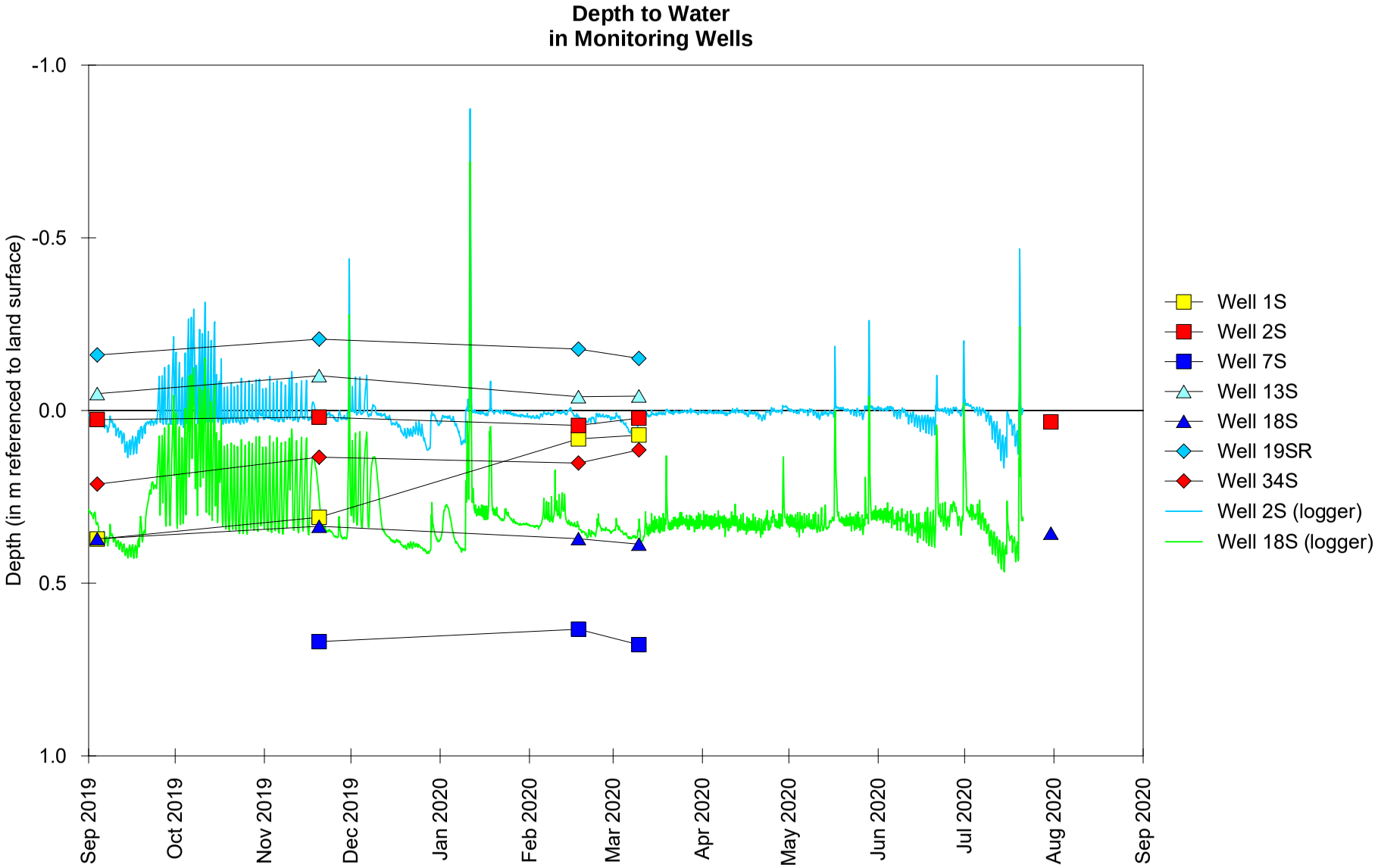


Former Tiernan Property, Potential Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Water-Level Elevation in Monitoring Wells

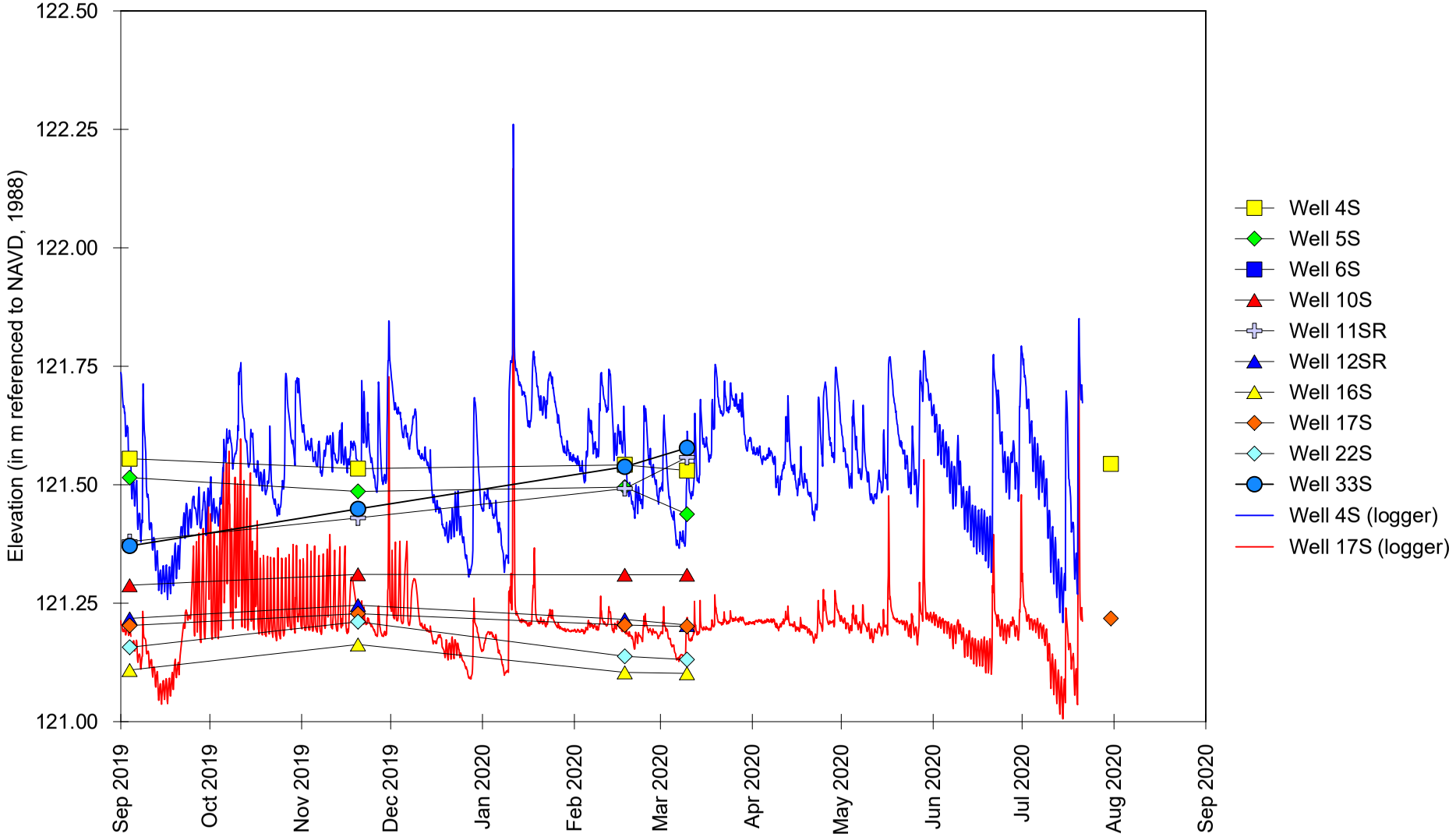


Former Tiernan Property, Potential Wetland Mitigation Site
September 1, 2019 through August 31, 2020

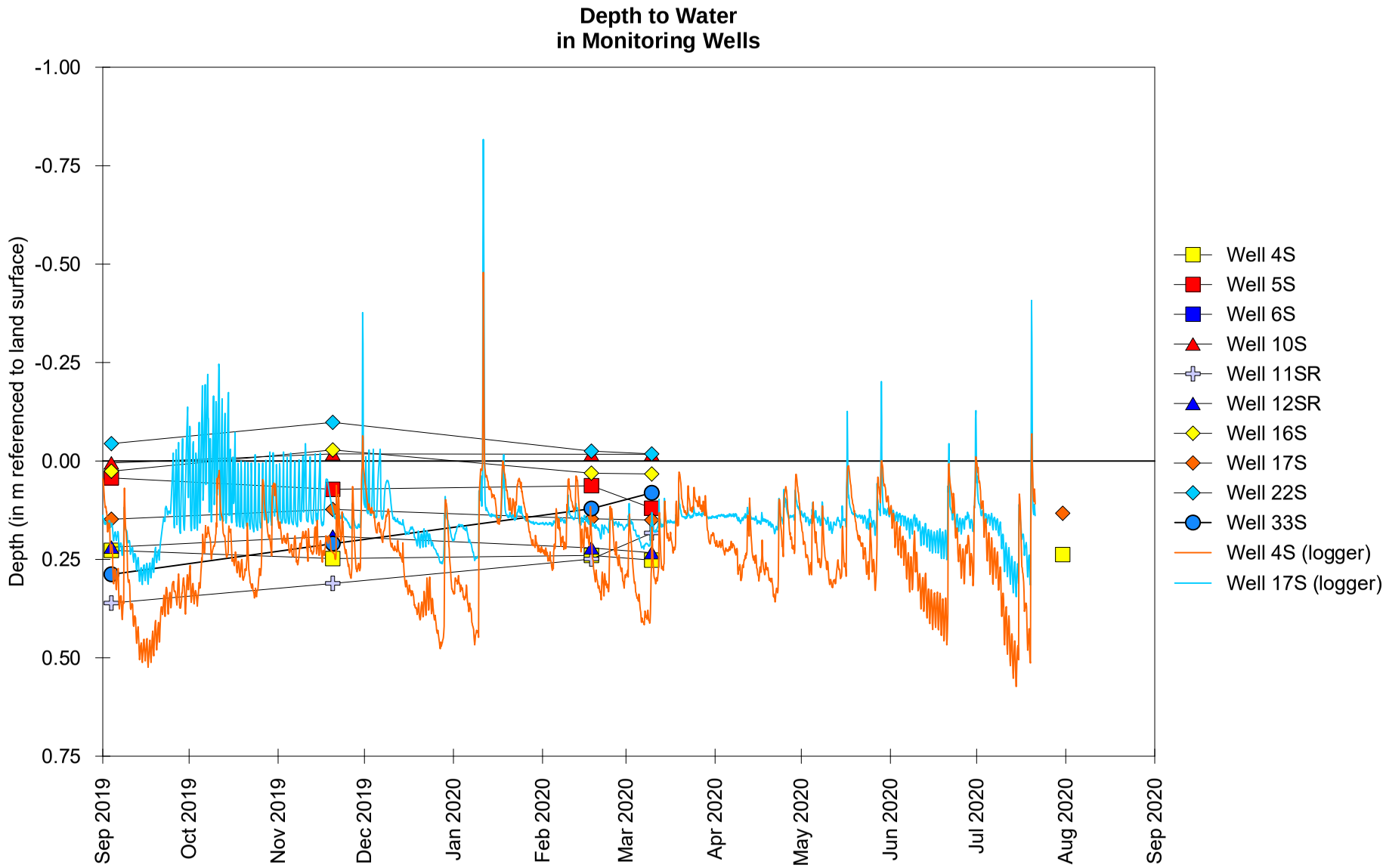


Former Tiernan Property, Potential Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Water-Level Elevation in Monitoring Wells

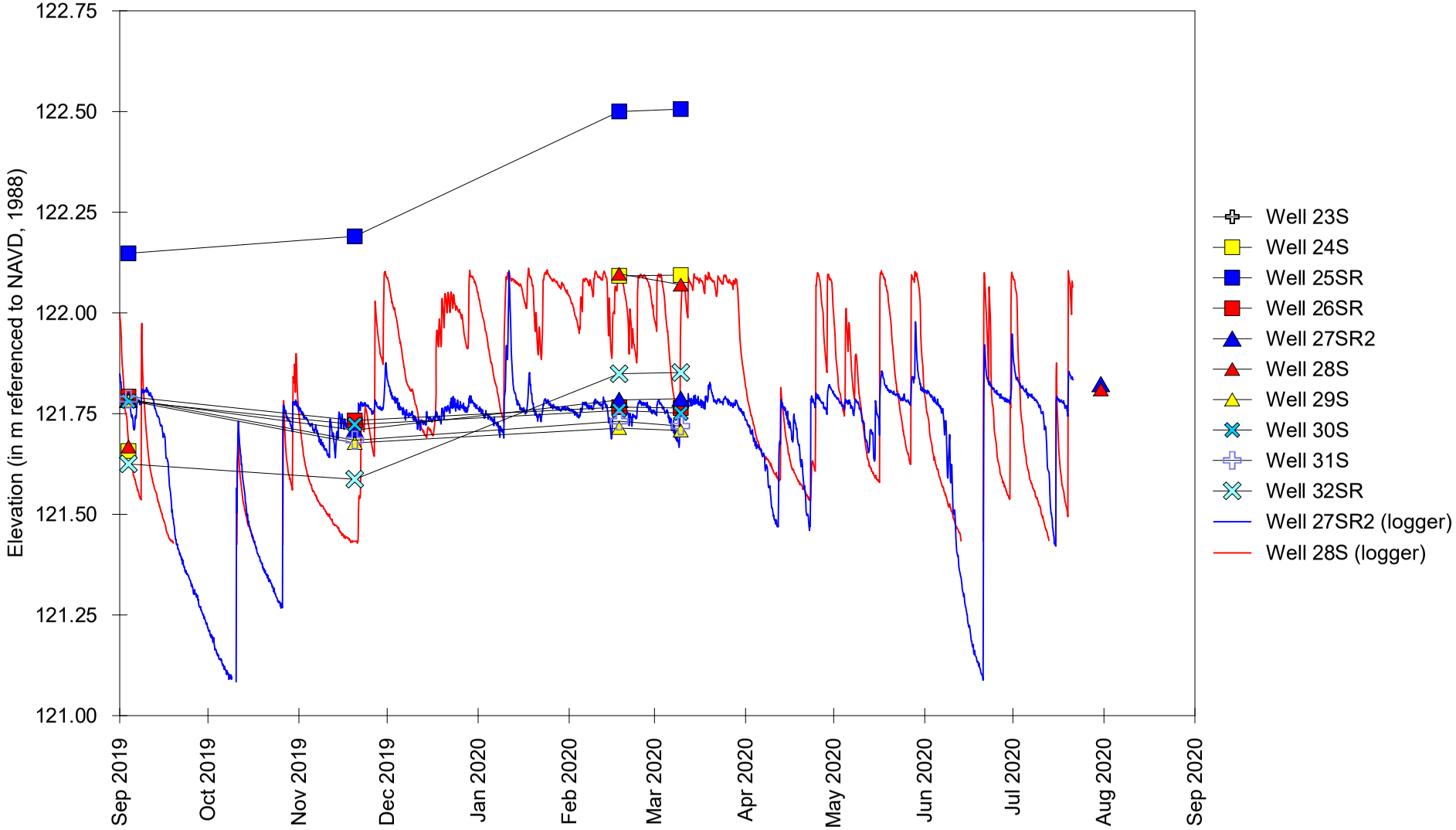


Former Tiernan Property, Potential Wetland Mitigation Site
September 1, 2019 through August 31, 2020



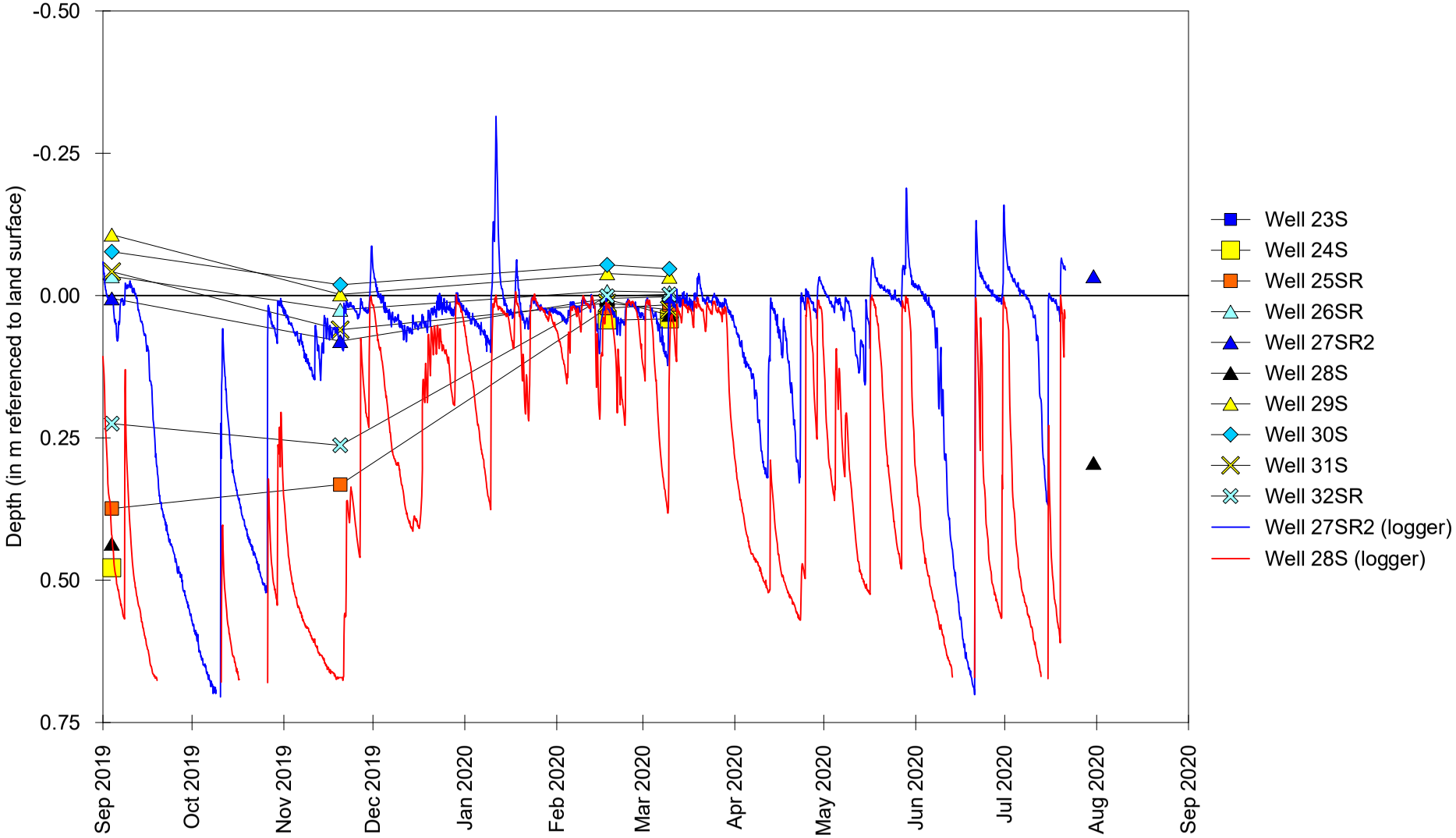
Former Tiernan Property, Potential Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Water-Level Elevation in Monitoring Wells



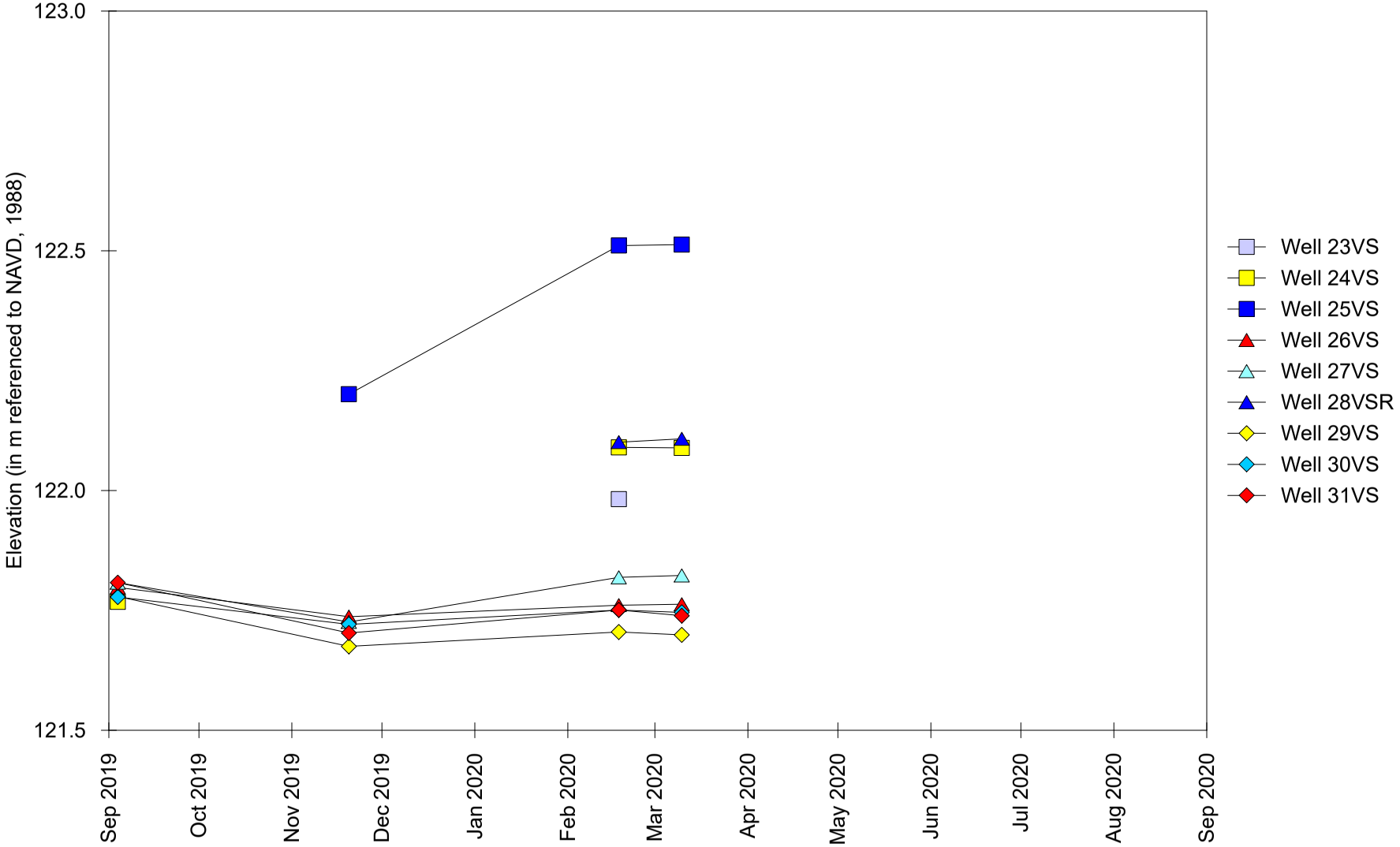
Former Tiernan Property, Potential Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Depth to Water in Monitoring Wells

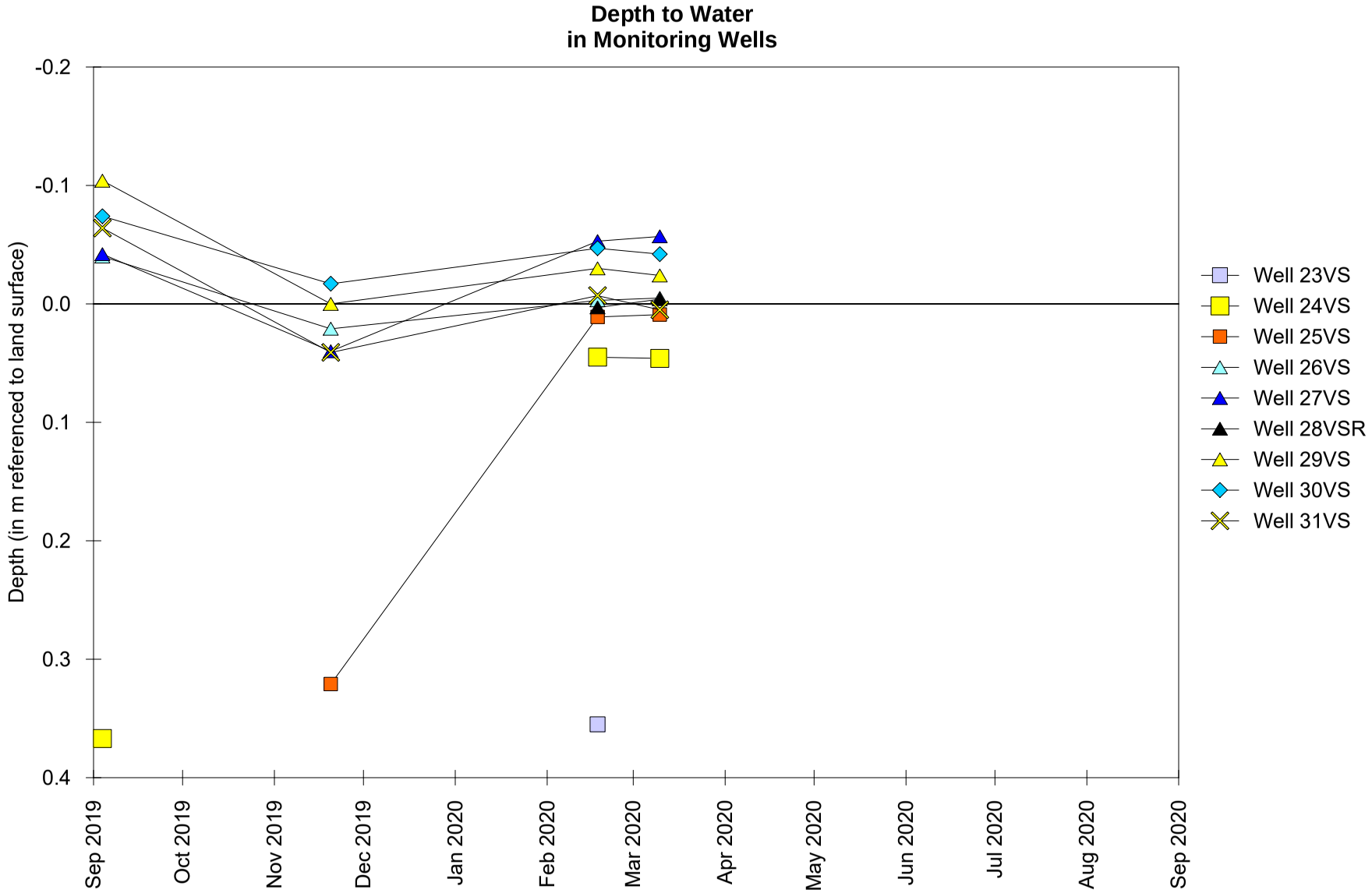


Former Tiernan Property, Potential Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Water-Level Elevation in Monitoring Wells

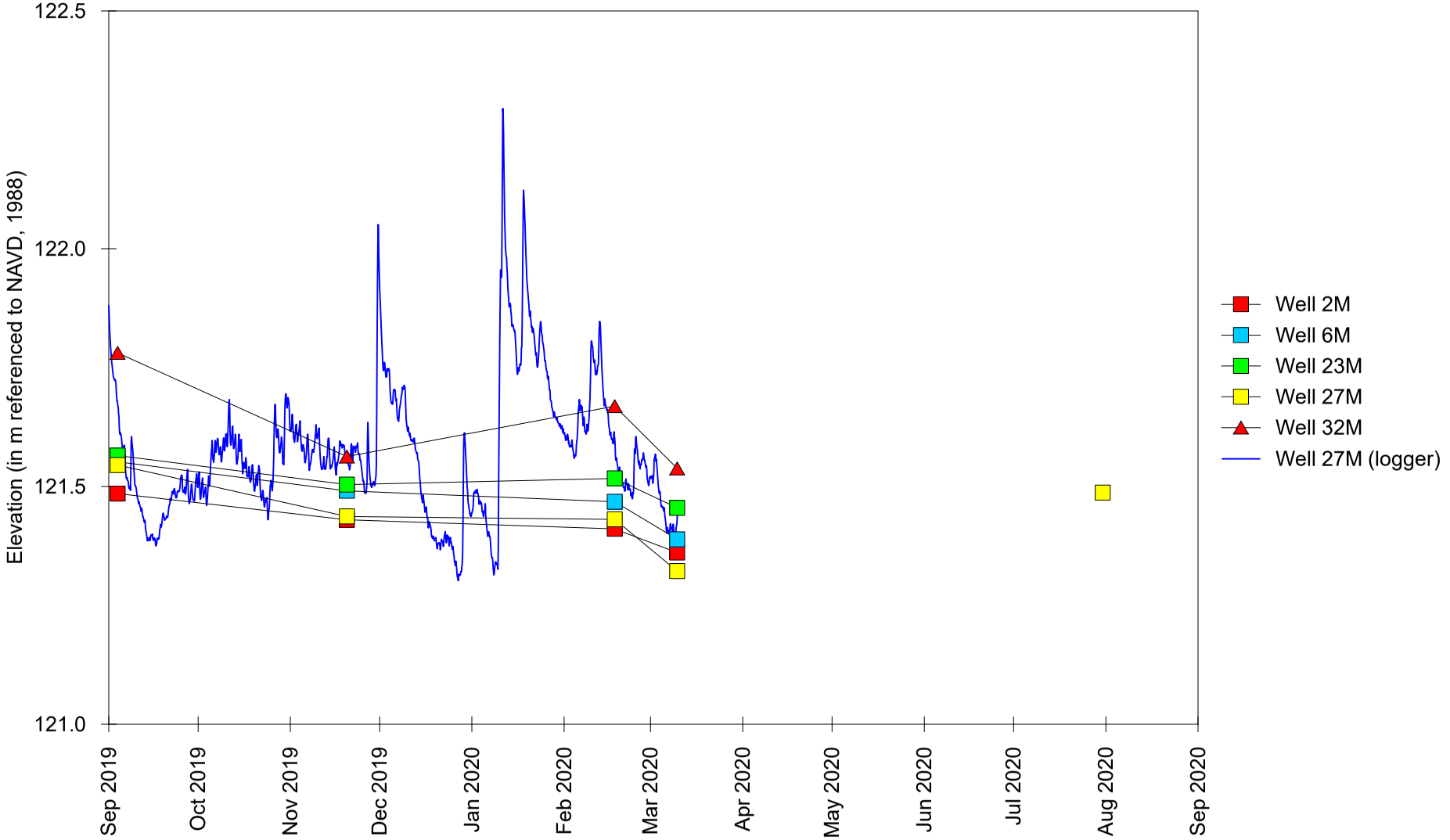


Former Tiernan Property, Potential Wetland Mitigation Site
September 1, 2019 through August 31, 2020



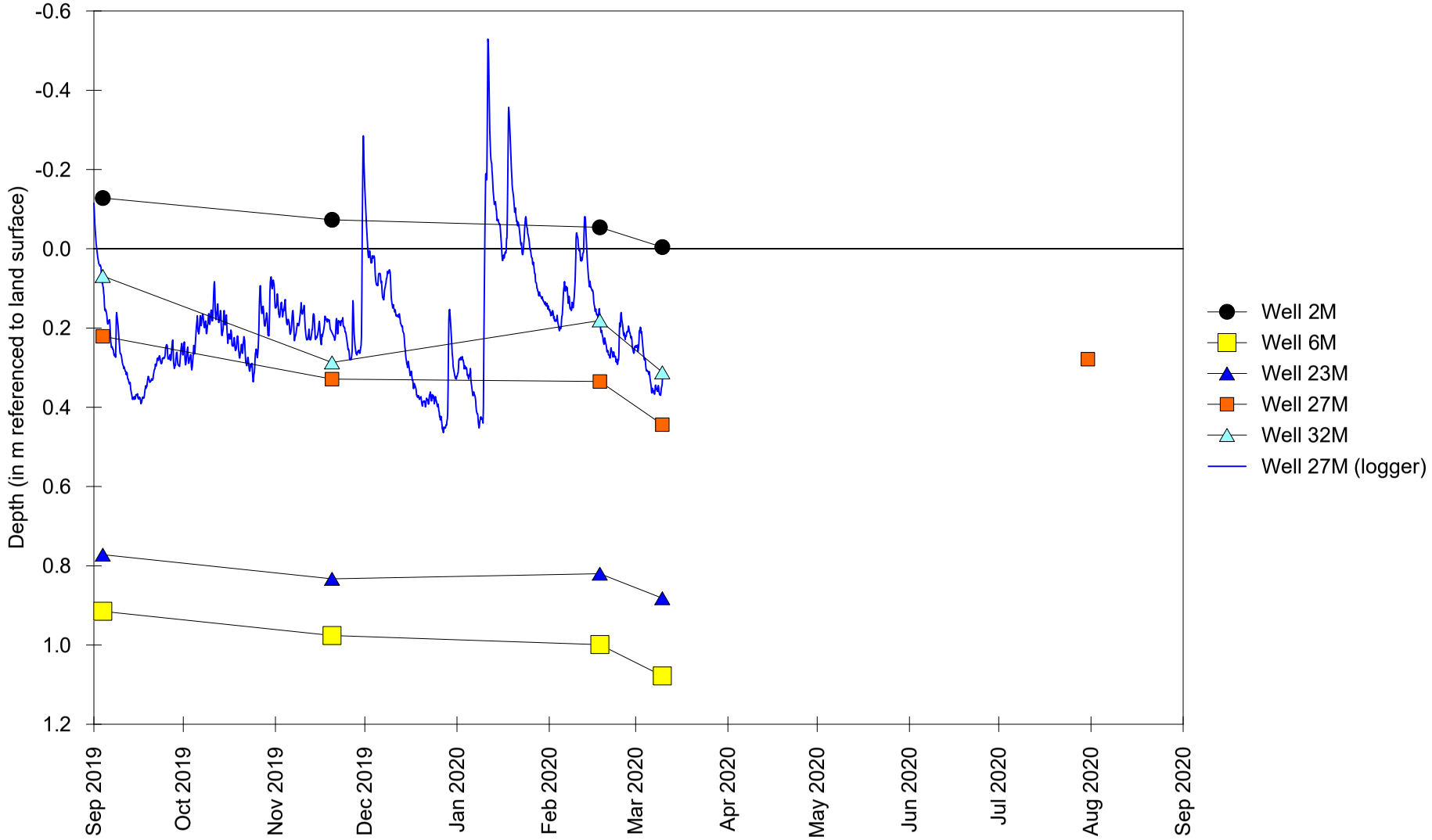
Former Tiernan Property, Potential Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Water-Level Elevation in Deeper Monitoring Wells



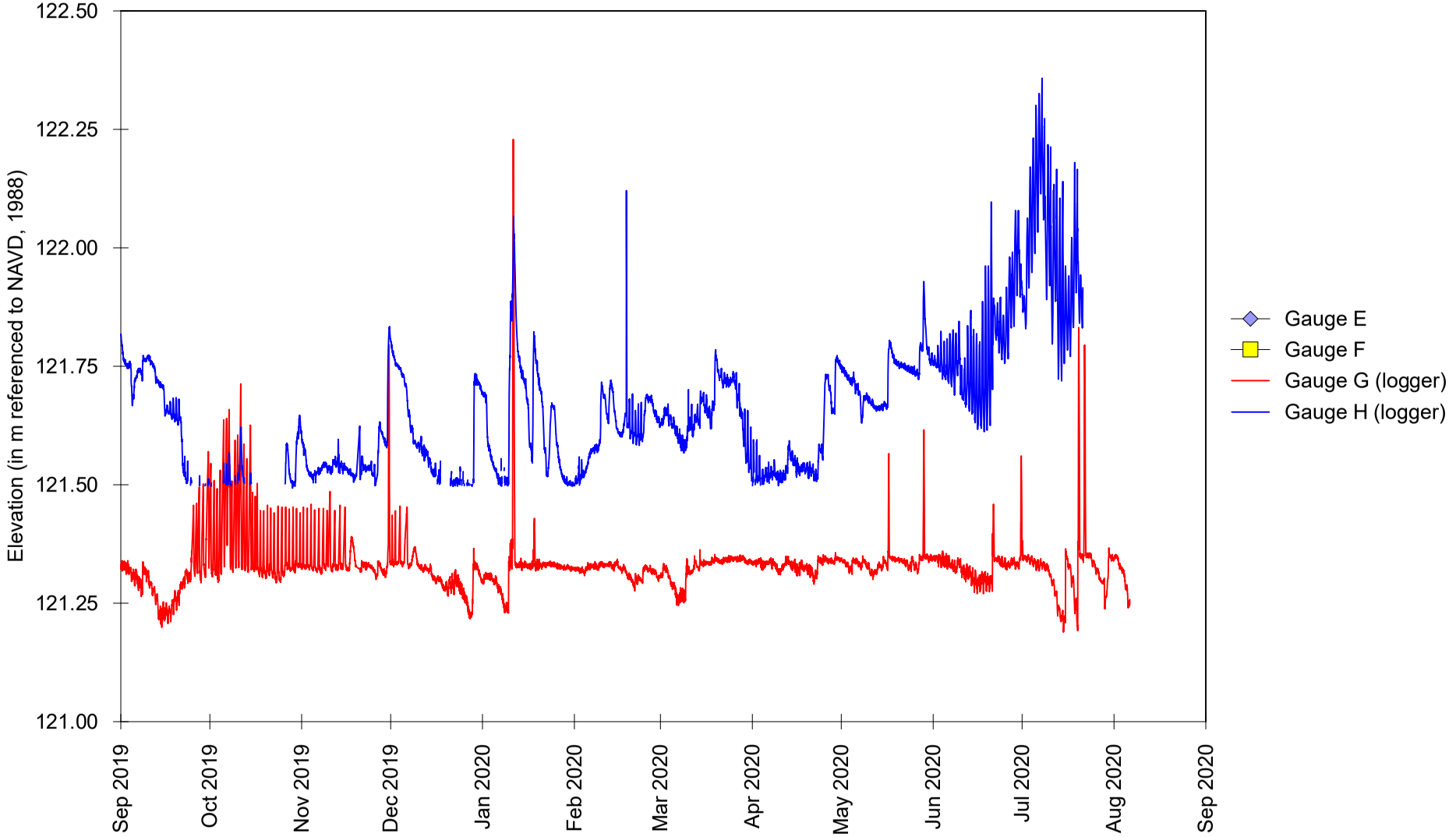
Former Tiernan Property, Potential Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Depth to Water in Deeper Monitoring Wells

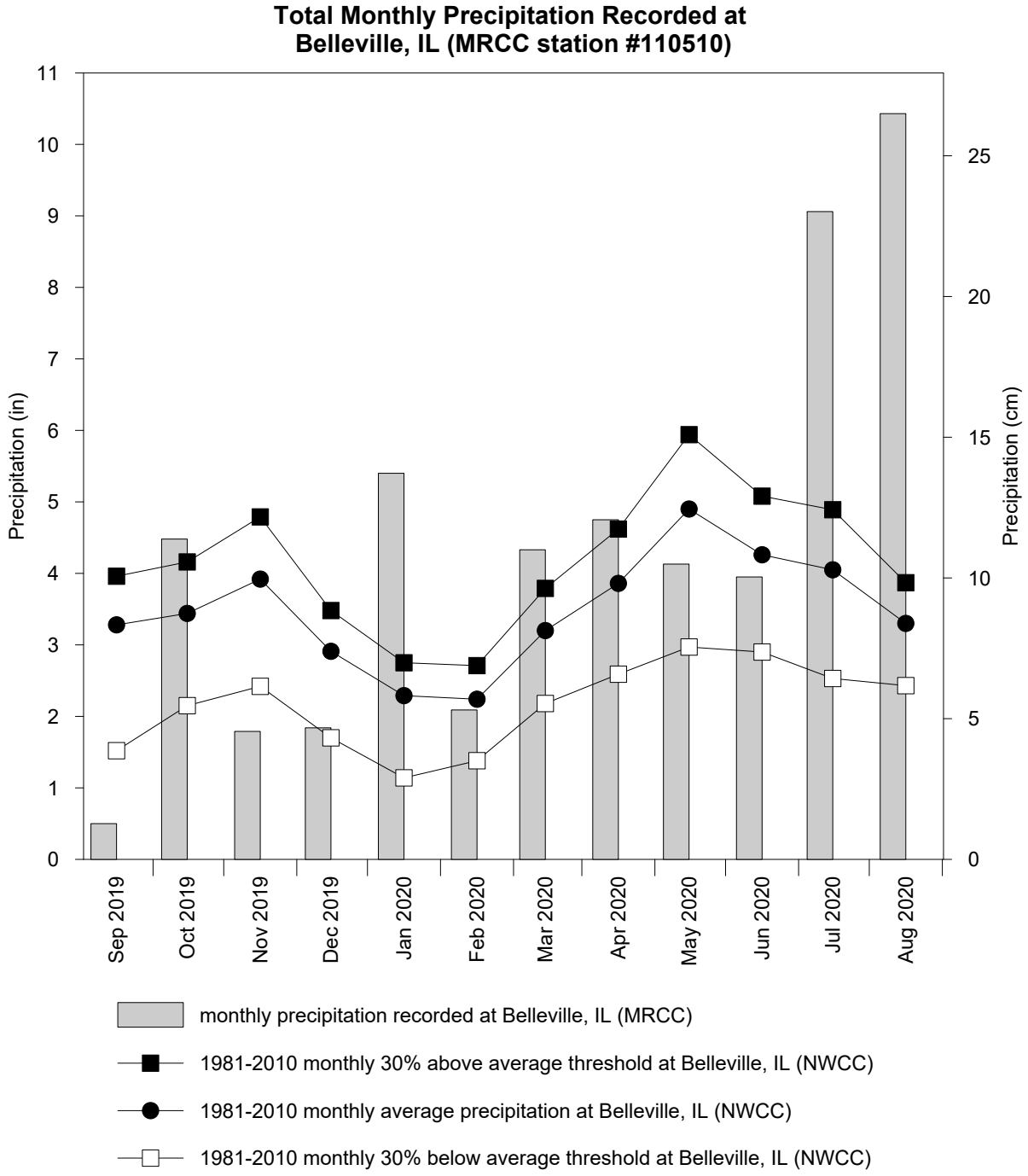


Former Tiernan Property, Potential Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Water-Level Elevation
at Surface Water Gauges



Former Tiernan Property Potential Wetland Mitigation Site
September 2019 through August 2020



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: Nicolette A. Sheffield

SITE HISTORY

- December 2004: ISGS submitted an initial site evaluation report to IDOT.
- March 2007: ISGS submitted a 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: IDOT tasked ISGS to monitor Phase 1 of the Sugar Camp Creek Wetland and Stream Mitigation Bank for performance standards.
- Summer 2013: Trees were planted in Phase 2.

WETLAND HYDROLOGY CALCULATION FOR 2020

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), 29.02 ha (71.72 ac) of the total bank area of 42.57 ha (105.20 ac) satisfied wetland hydrology criteria for greater than 5% of the 2020 growing season, and 27.18 ha (67.16 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 29.74 ha (73.50 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 March 30, and the season lasts 217 days (MRCC 2020). 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 2 was the starting date of the 2020 growing season based on soil temperatures measured on site and at the nearby Herrin Road, wetland mitigation site (ISGS #91).
- Total precipitation for the monitoring period at nearby West Frankfort, Illinois (MRCC #119148), was 113% of normal, and spring 2020 (March through May) precipitation was 112% of normal. Precipitation in June 2020 was particularly excessive with 170% of normal.
- Sugar Camp Creek flooded portions of the site 12 times during the monitoring period. None of these floods lasted long enough to satisfy wetland hydrology criteria.

- The period of maximum inundation and saturation during the 2020 growing season occurred from mid-April to late May in response to frequent precipitation at the site. During this time, only one very brief flood event covered a minimal portion of the site.

- In 2020, water levels measured in 27 of 29 soil-zone monitoring wells satisfied wetland hydrology criteria for greater than 5% of the growing season, and water levels measured in 25 of 29 soil-zone monitoring wells 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 29 of 29 soil-zone monitoring wells satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season. See the tables at the end of this summary for details.

ADDITIONAL INFORMATION

- Phase 1 of the wetland mitigation bank is in year 8 and Phase 2 is in year 6 of post-construction monitoring. Therefore, we present wetland hydrology acreage separately for each phase in this section. Using the 1987 Manual (Environmental Laboratory 1987), 14.74 ha (36.42 ac) of Phase 1 and 14.28 ha (35.29 ac) of Phase 2 satisfied wetland hydrology criteria for greater than 5% of the growing season, and 14.07 ha (34.76 ac) of Phase 1 and 13.11 ha (32.04 ac) of Phase 2 satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement, 15.00 ha (37.08 ac) of Phase 1 and 14.74 ha (36.42 ac) of Phase 2 satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season.

PLANNED FUTURE ACTIVITIES

- Monitoring will continue until no longer required by IDOT.

WETLAND HYDROLOGY TABLES FOR 2020

Well locations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
11S	Y	Y	Y
19S	Y	Y	Y
33S	Y	Y	Y
36VS	Y	Y	Y
37S	Y	N	Y
38S	Y	Y	Y
39S	Y	Y	Y
40S	Y	Y	Y
41S	Y	Y	Y
42S	Y	Y	Y
43S	Y	Y	Y
44S	Y	Y	Y
45S	Y	Y	Y
47S	Y	Y	Y
48S	Y	Y	Y
49S	Y	Y	Y
50S	Y	Y	Y
51S	Y	Y	Y
52S	Y	Y	Y
53S	Y	Y	Y
54S	Y	Y	Y
55S	N	N	Y
56S	Y	Y	Y
57S	Y	Y	Y
58S	Y	Y	Y
59S	Y	Y	Y
61S	Y	Y	Y
62S	Y	N	Y
63S	N	N	Y

Y – met wetland hydrology criteria
N – did not meet wetland hydrology criteria

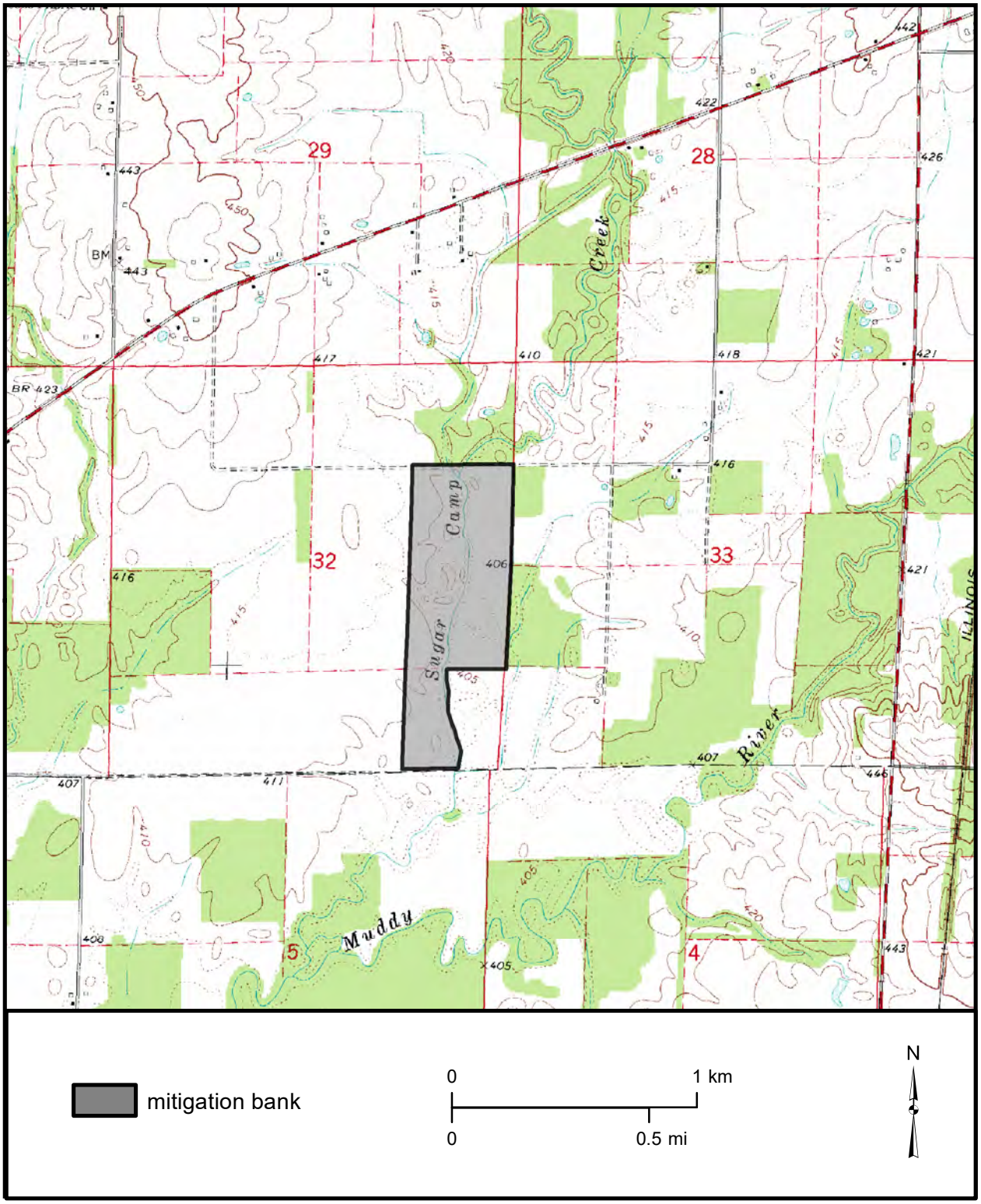
Surface-water gauge elevations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
A	n/a	n/a	n/a
L	124.05 m (406.99 ft)	124.02 m (406.89 ft)	124.05 m (406.99 ft)
O	124.05 m (406.99 ft)	124.02 m (406.89 ft)	124.03 m (406.92 ft)
P	n/a	n/a	n/a

n/a – insufficient data to determine an elevation

Sugar Camp Creek Wetland and Stream Mitigation Bank

General Study Area and Vicinity

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

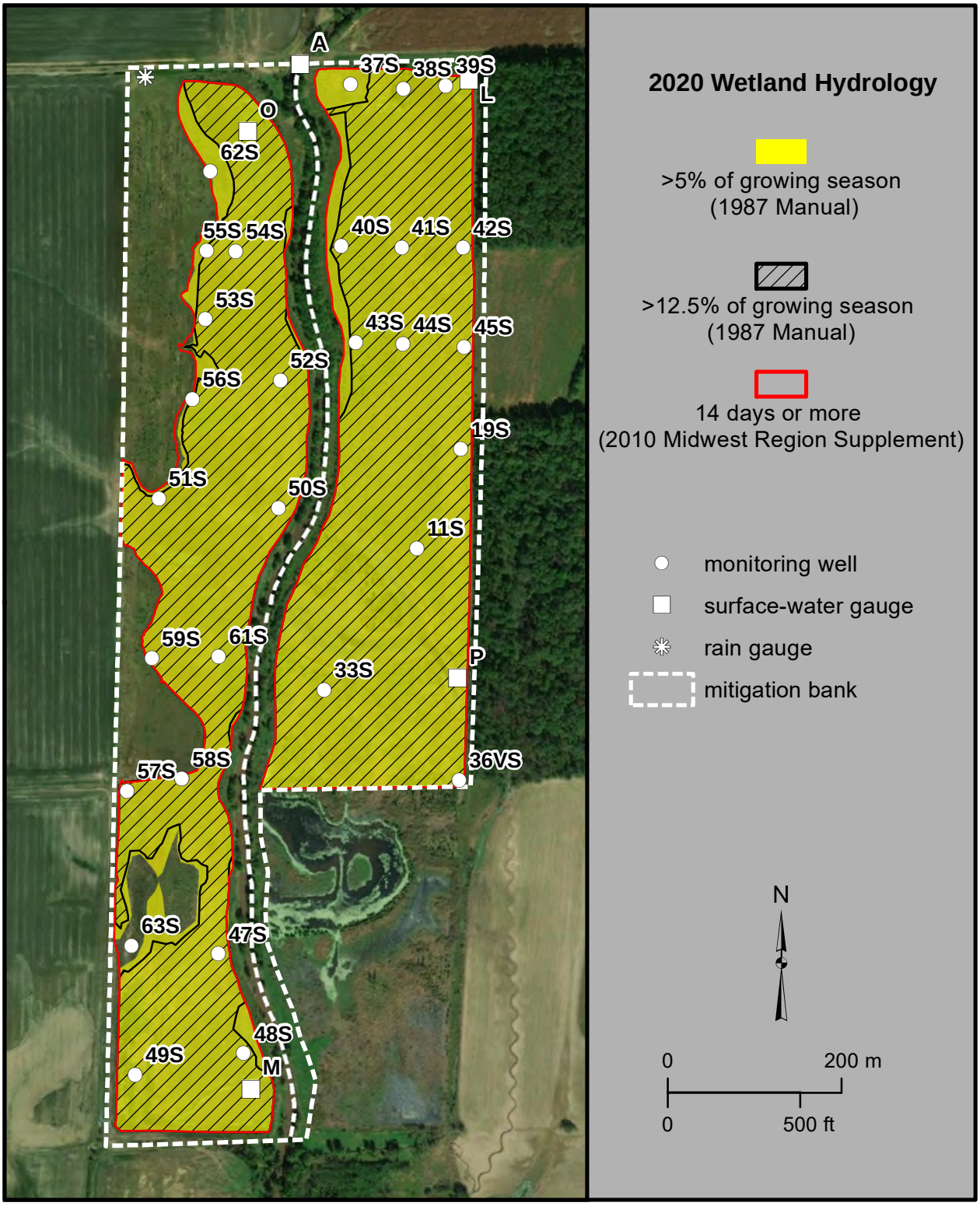


Sugar Camp Creek Wetland and Stream Mitigation Bank

Estimated Areal Extent of 2020 Wetland Hydrology

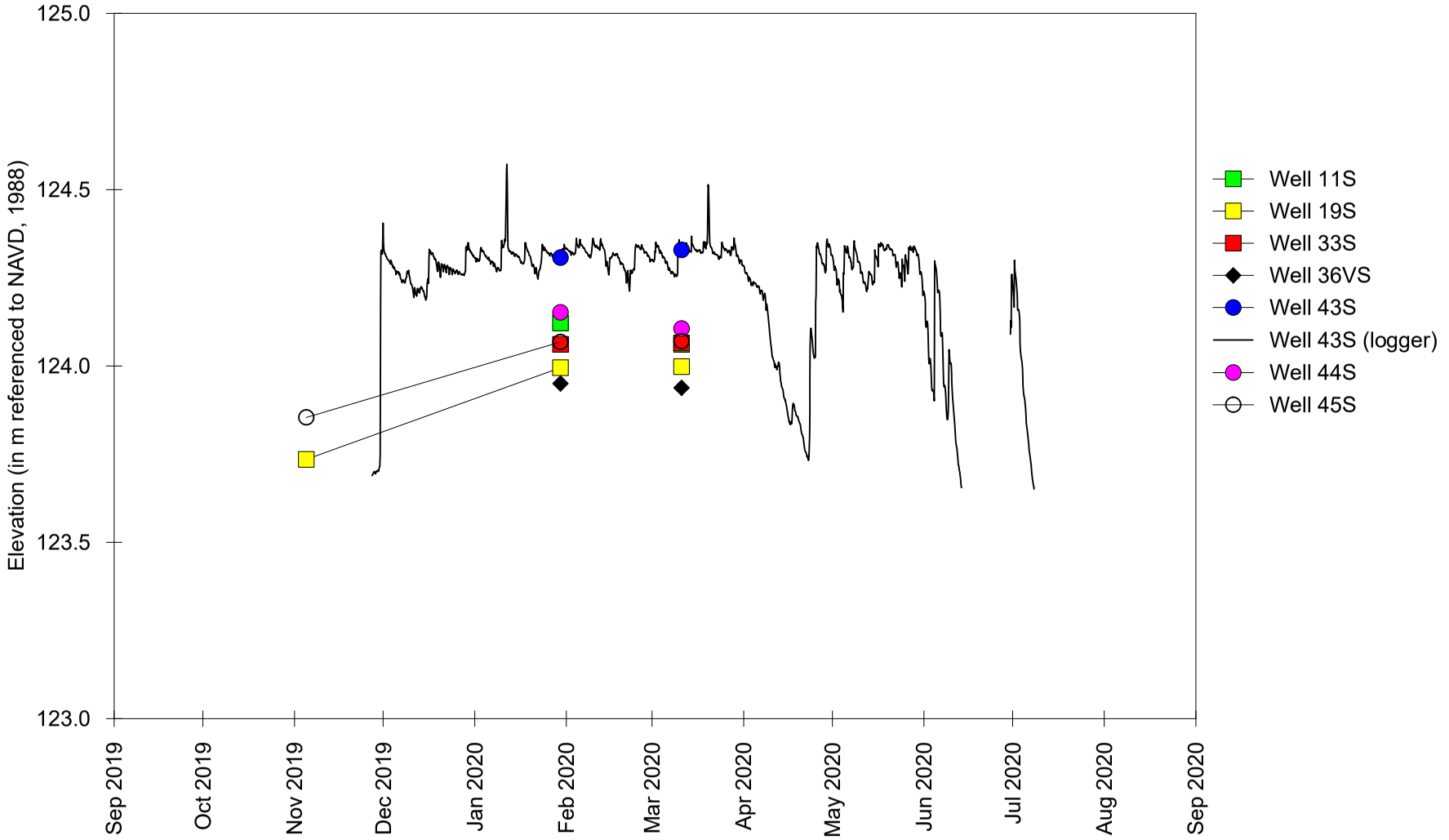
September 1, 2019 through August 31, 2020

Map based on imagery available from Esri (Esri 2020)



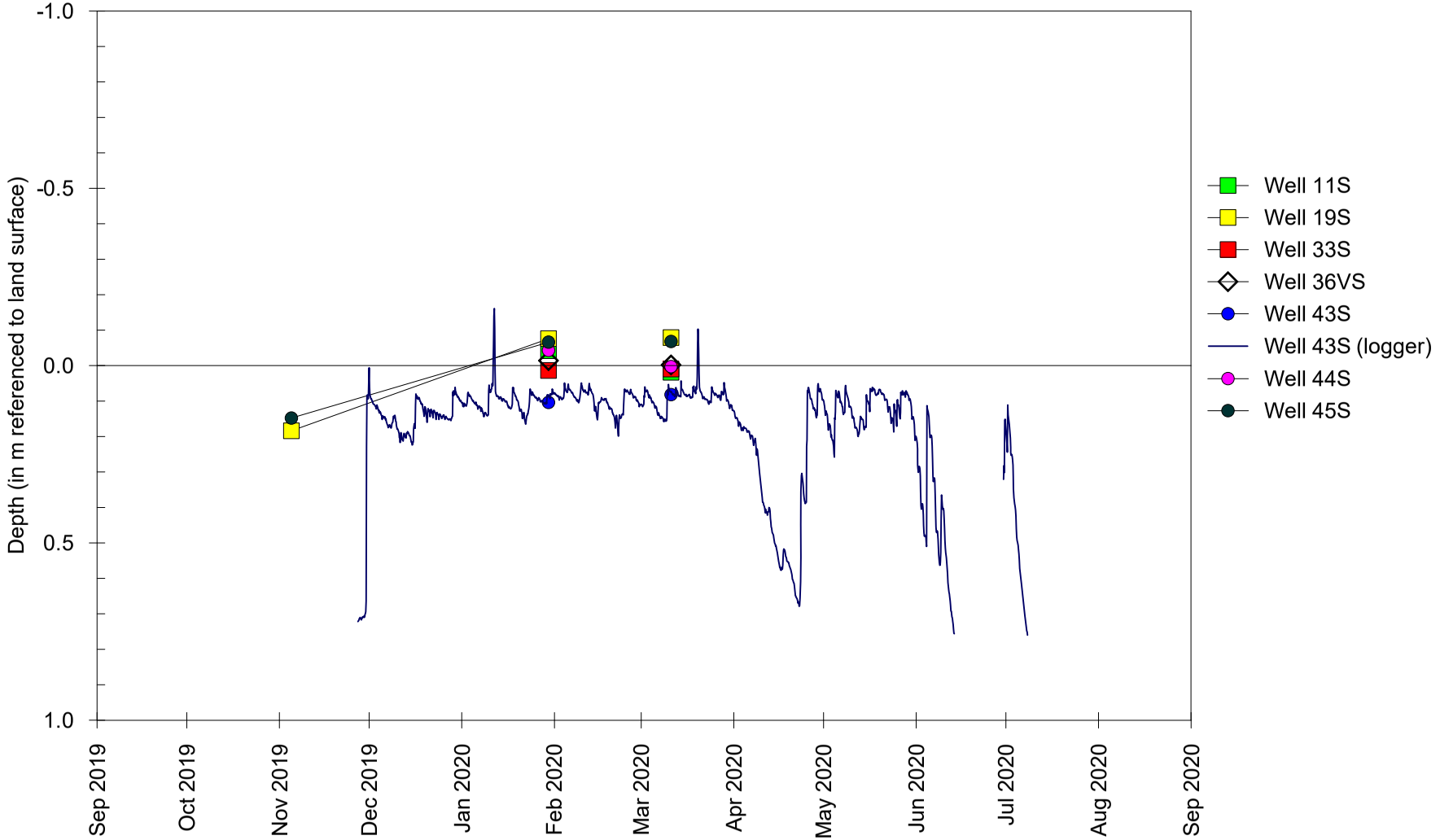
Sugar Camp Creek Wetland and Stream Mitigation Bank
September 1, 2019 through August 31, 2020

Water-Level Elevation in Monitoring Wells in Phase I



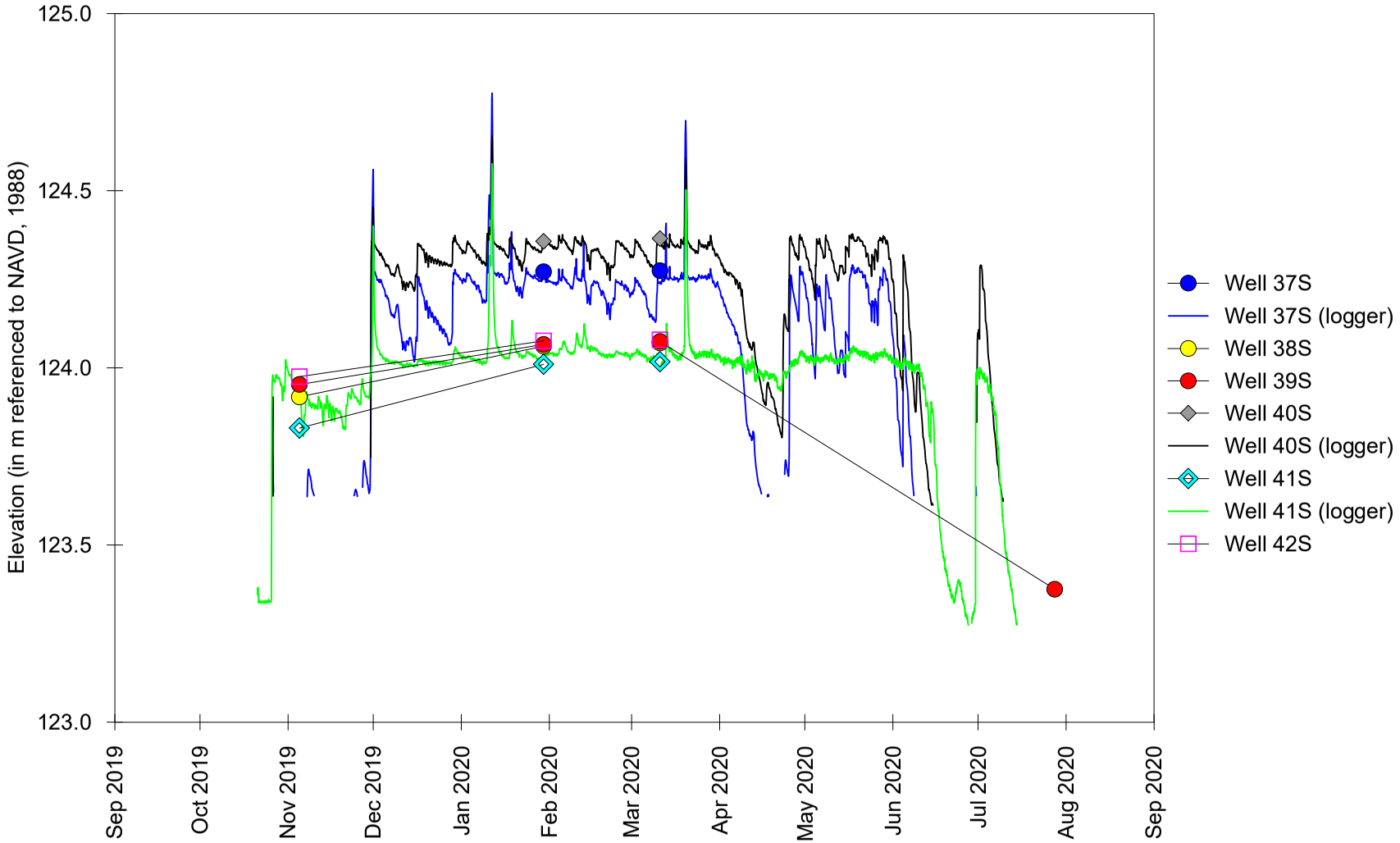
Sugar Camp Creek Wetland and Stream Mitigation Bank
September 1, 2019 through August 31, 2020

Depth to Water
in Monitoring Wells in Phase I



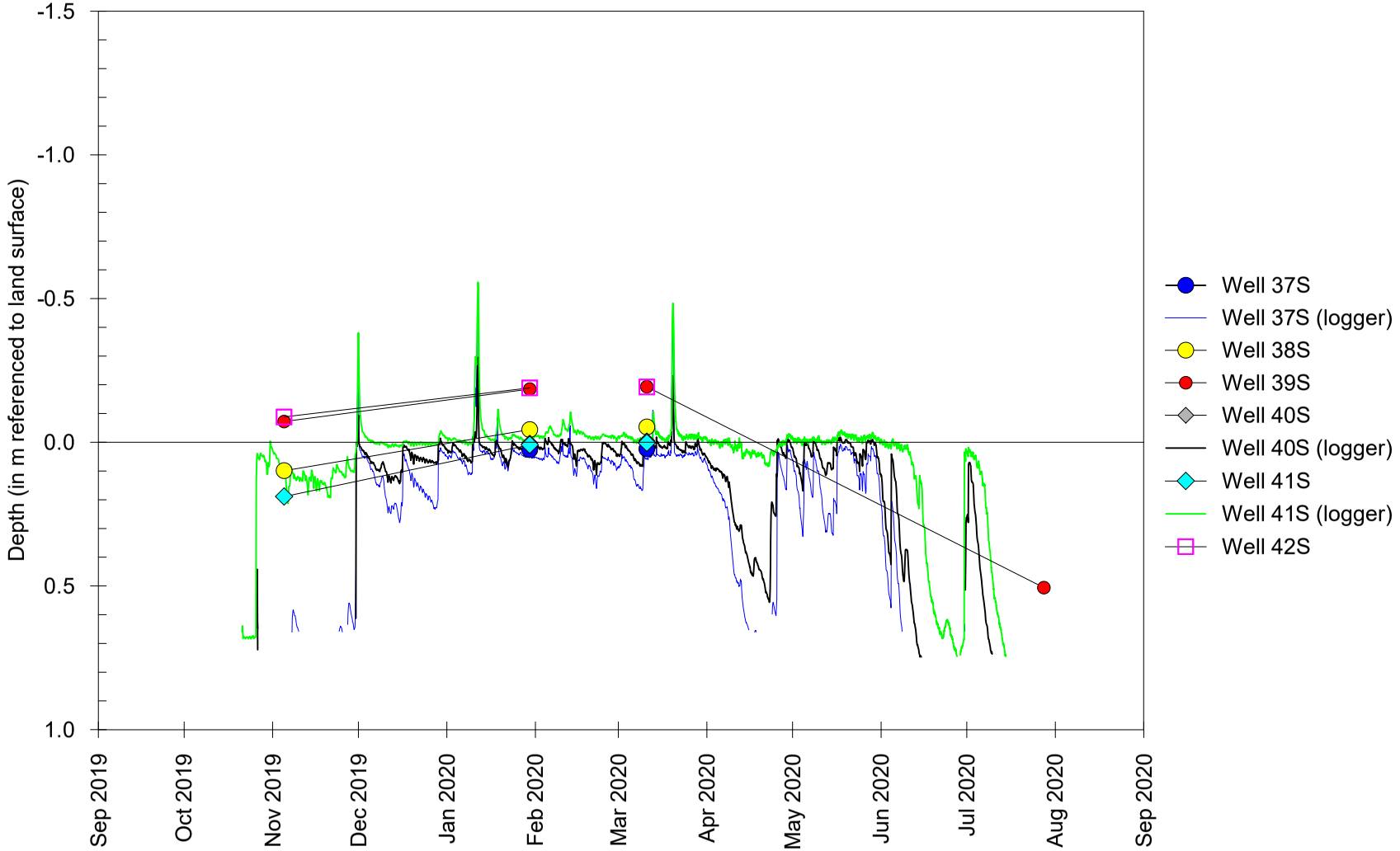
Sugar Camp Creek Wetland and Stream Mitigation Bank
September 1, 2019 through August 31, 2020

Water-Level Elevation in Monitoring Wells in Phase I



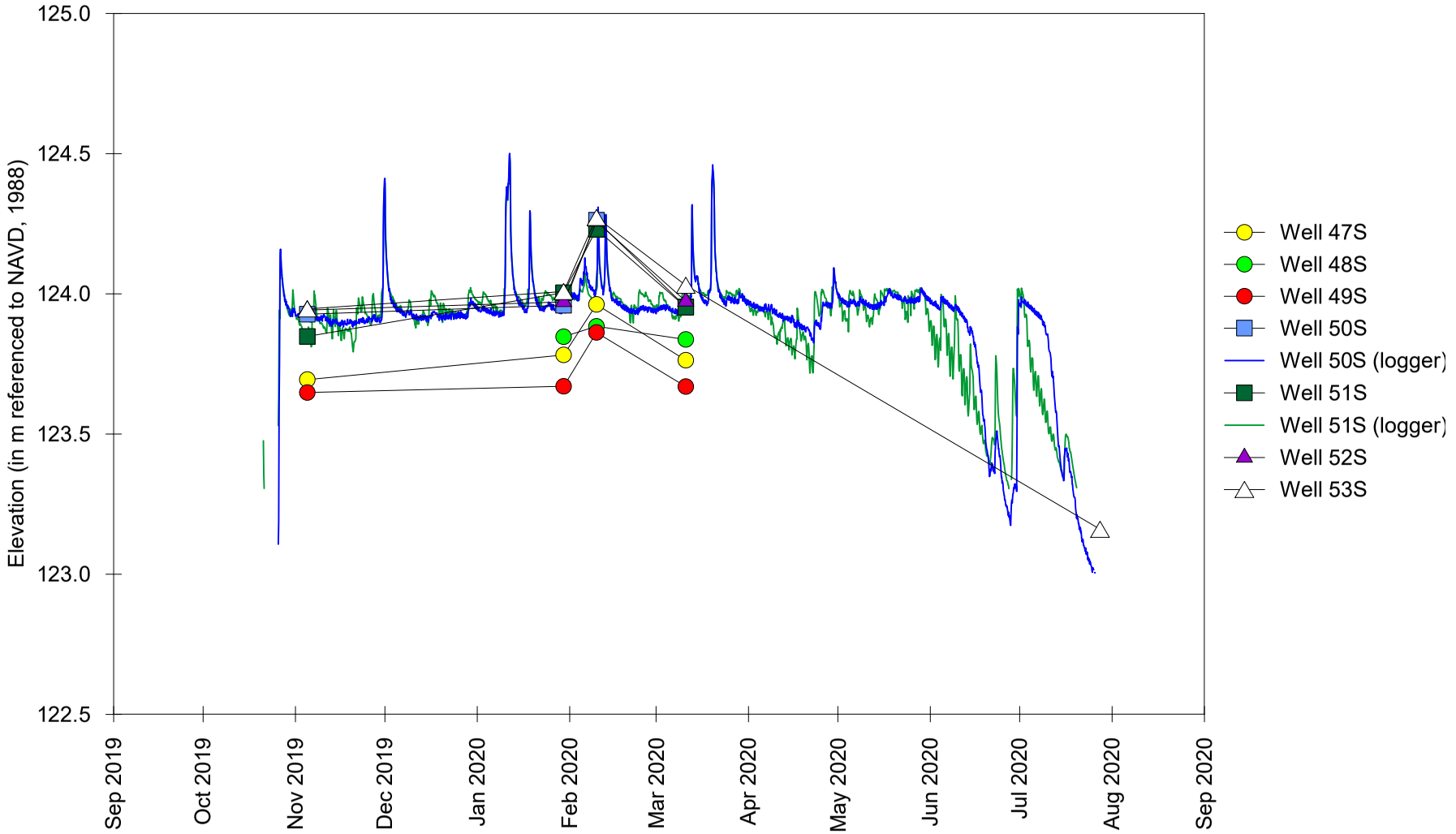
Sugar Camp Creek Wetland and Stream Mitigation Bank
September 1, 2019 through August 31, 2020

Depth to Water
in Monitoring Wells in Phase I



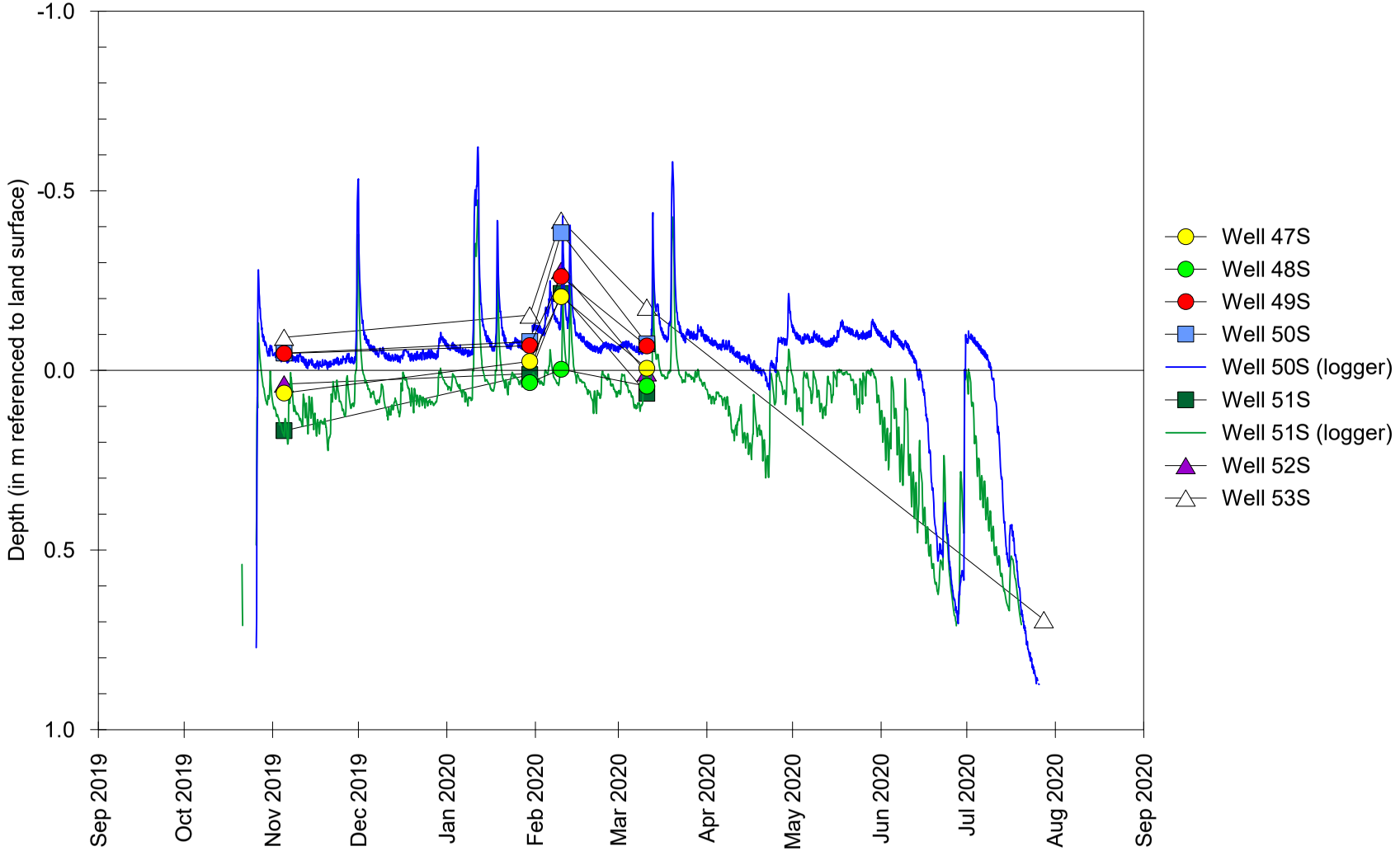
Sugar Camp Creek Wetland and Stream Mitigation Bank
September 1, 2019 through August 31, 2020

Water-Level Elevation in Monitoring Wells in Phase II



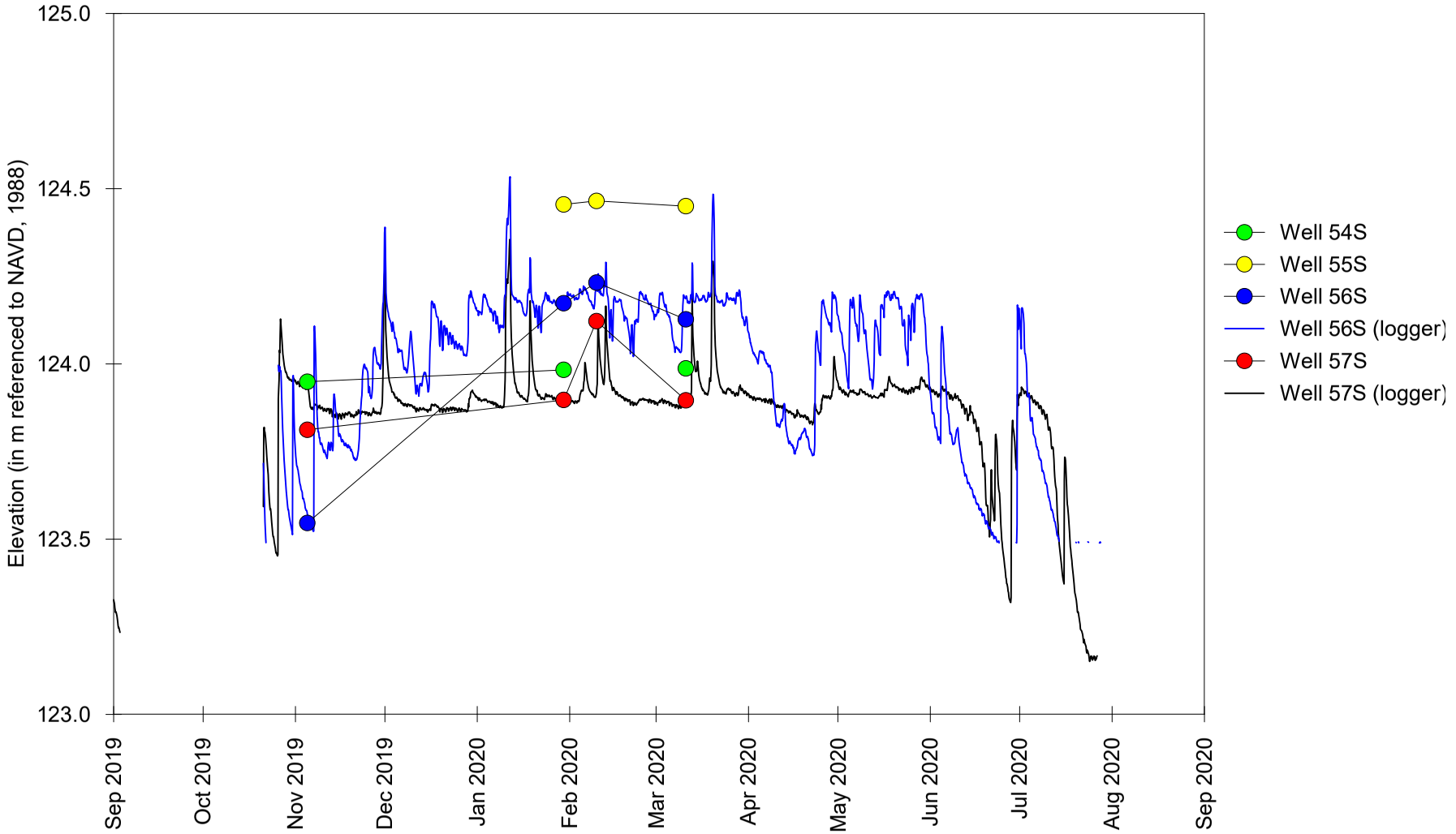
Sugar Camp Creek Wetland and Stream Mitigation Bank
September 1, 2019 through August 31, 2020

Depth to Water
in Monitoring Wells in Phase II



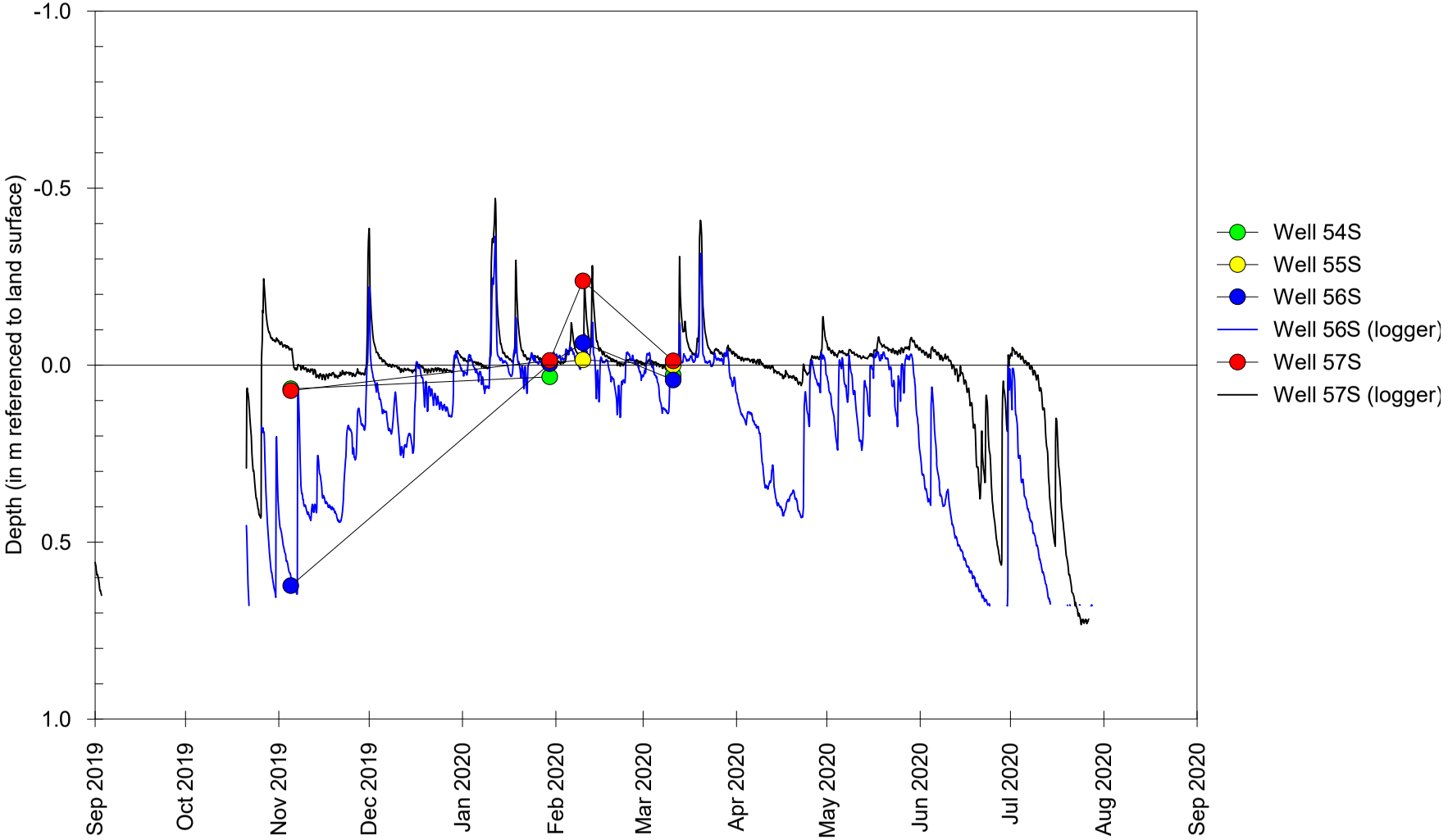
Sugar Camp Creek Wetland and Stream Mitigation Bank
September 1, 2019 through August 31, 2020

Water-Level Elevation
in Monitoring Wells in Phase II



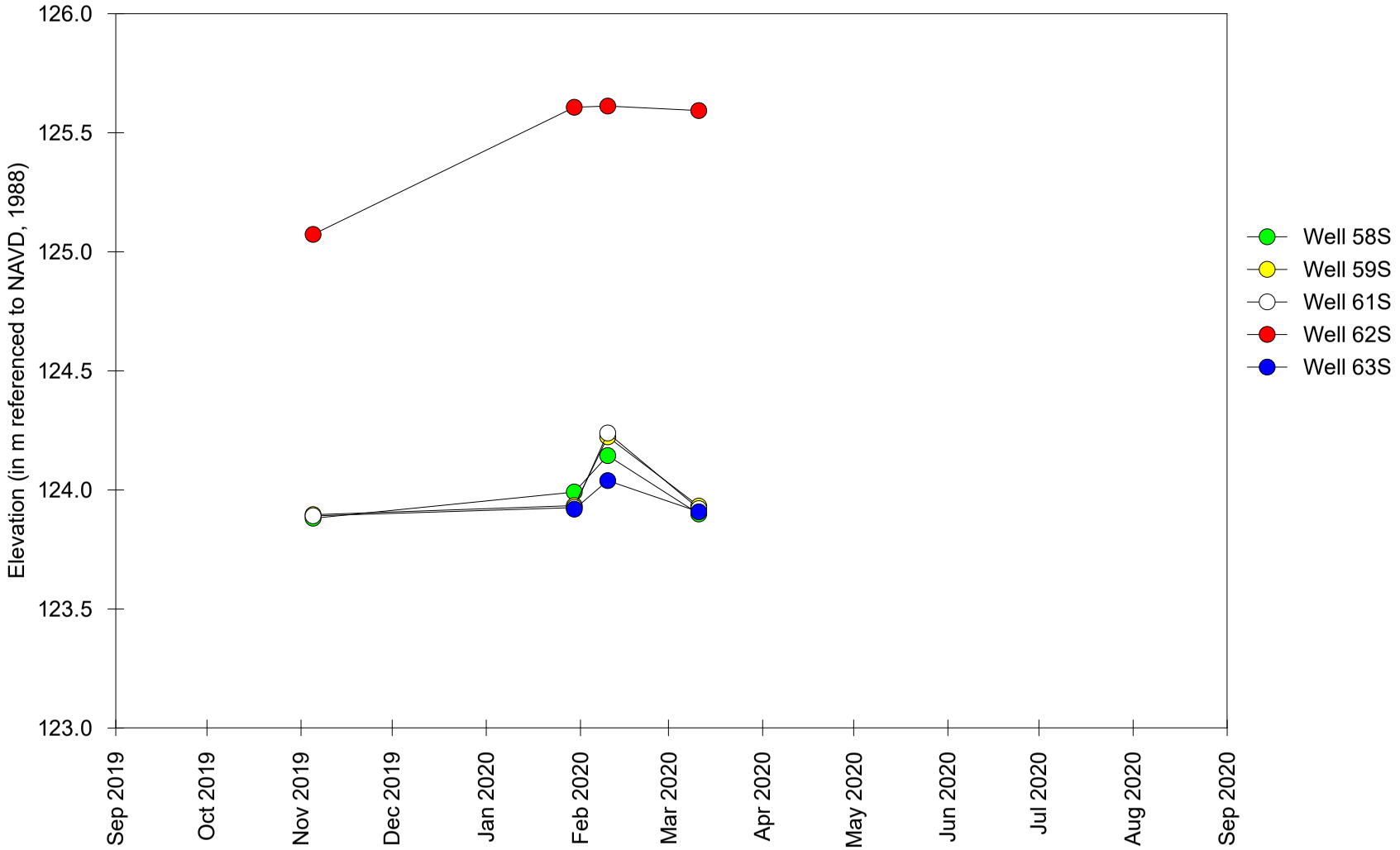
Sugar Camp Creek Wetland and Stream Mitigation Bank
September 1, 2019 through August 31, 2020

Depth to Water
in Monitoring Wells in Phase II



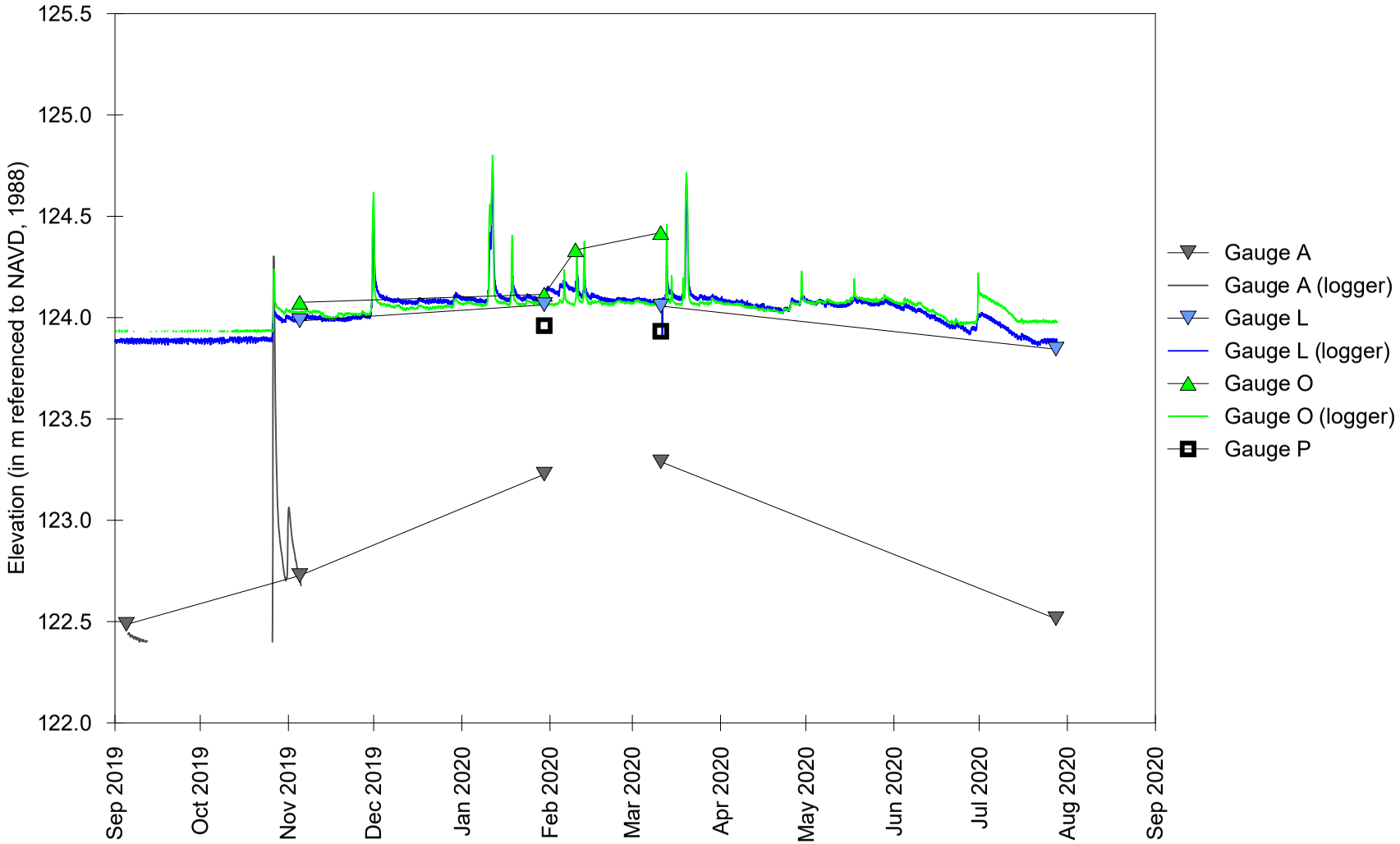
Sugar Camp Creek Wetland and Stream Mitigation Bank
September 1, 2019 through August 31, 2020

Water-Level Elevation in Monitoring Wells in Phase II

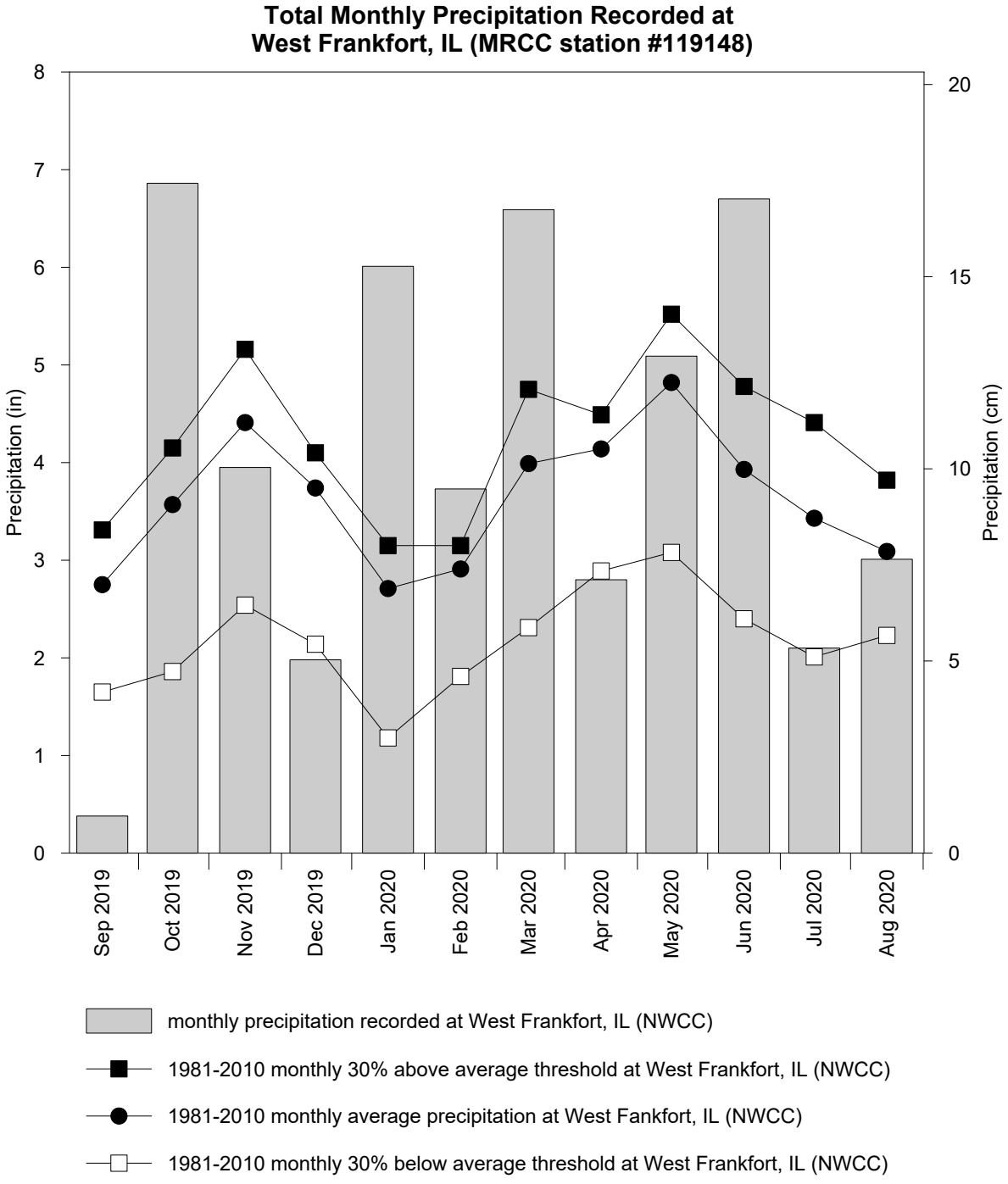


Sugar Camp Creek Wetland and Stream Mitigation Bank
September 1, 2019 through August 31, 2020

Water-Level Elevation at Surface-Water Gauges



Sugar Camp Creek Wetland and Stream Mitigation Bank
September 2019 through August 2020



LAWRENCE COUNTY **ISGS #82**
WETLAND MITIGATION BANK
Sequence #14912
Lawrence County, near Lawrenceville, Illinois
Primary Project Manager: Steven E. Benton
Secondary Project Manager: Audra M. Noyes

SITE HISTORY

- June 2009: An Initial Site Evaluation report was submitted to IDOT on June 18, 2009.
- 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 Wetland Mitigation Bank was approved.
- November 2013: Construction of the wetland bank was completed.

WETLAND HYDROLOGY CALCULATION FOR 2020

The target compensation area for the Lawrence County Wetland Mitigation Bank is 13.62 ha (33.65 ac). Using the 1987 Manual (Environmental Laboratory 1987), 13.36 ha (33.01 ac) of a total site area of 25.71 ha (63.52 ac), satisfied wetland hydrology criteria for greater than 5% of the 2020 growing season, and 6.18 ha (15.27 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 14.14 ha (34.95 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 Lawrenceville, Illinois is March 30, and the season lasts 221 days (MRCC 2020); 5% of the growing season is 11 days, and 12.5% of the growing season is 28 days, using the 1987 Manual. Using the 2010 Midwest Region Supplement, March 1 was the starting date of the 2020 growing season based on soil temperatures measured at Olney, Illinois WARM Station.
- Total precipitation for the monitoring period, recorded at Lawrenceville International Airport (MRCC station #13809), was 103% of normal. Precipitation in spring 2020 (March through May) was 90% of normal. The wettest period was January through March with 188% of normal precipitation.
- The period of maximum inundation and saturation during the 2020 growing season occurred in March due to a flood event on the Embarras River that lasted a total of about seven days (3/20/20-3/26/20), and the river peaked at more than 4.0 ft above flood stage. This flood caused Beaver Pond Ditch to back-flood the site.
- In 2020, water levels measured in 13 of 23 soil-zone monitoring wells satisfied wetland hydrology criteria for greater than 5% of the growing season, and water levels measured in 6 of 23 soil-zone monitoring wells satisfied wetland hydrology criteria for greater than 12.5% of the growing season, using the 1987 Manual. In addition, using the 2010 Midwest Region Supplement, water levels in 14 of 23 soil-zone monitoring wells satisfied

wetland hydrology criteria for 14 or more consecutive days of the growing season. See the tables at the end of this summary for details.

PLANNED FUTURE ACTIVITIES

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

WETLAND HYDROLOGY TABLES FOR 2020

Well locations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
1S	Y	Y	Y
3S	Y	Y	Y
4SR	Y	N	Y
6S	Y	N	Y
7S	Y	N	Y
9S	Y	Y	Y
13S	Y	N	Y
15S	Y	Y	Y
17S	N	N	N
19S	N	N	N
20SR	Y	N	Y
21S	N	N	N
22S	N	N	N
23S	N	N	N
24S	Y	N	Y
25S	N	N	N
26S	Y	Y	Y
27SR	N	N	N
29S	N	N	N
30S	N	N	N
31S	N	N	Y
32S	Y	Y	Y
33S	Y	N	Y

Y – met wetland hydrology criteria
N – did not meet wetland hydrology criteria

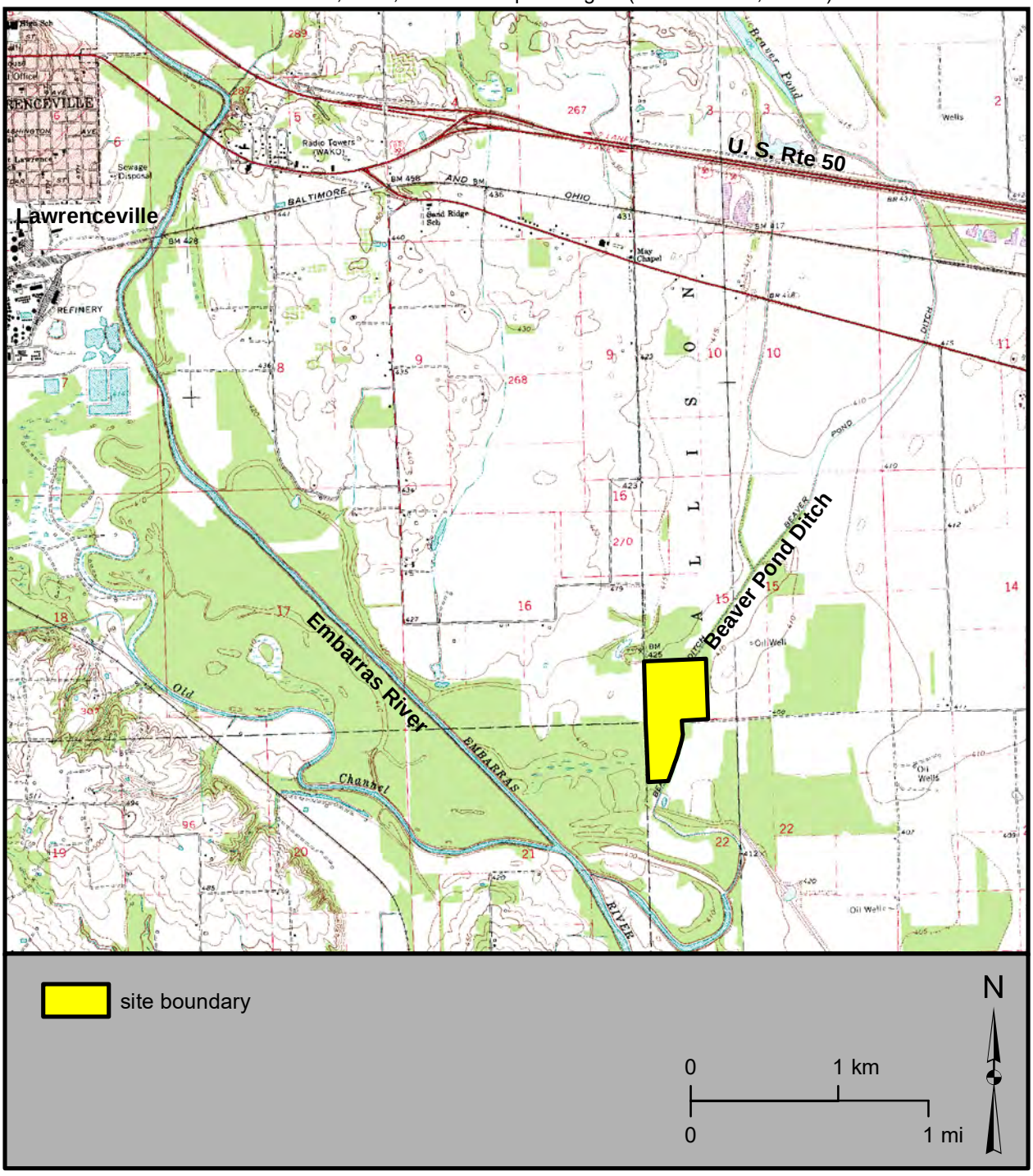
Surface-water gauge elevations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
B	n/a	n/a	n/a
D	n/a	n/a	124.61 m (408.83 ft)
E	n/a	n/a	n/a
F	124.55 m (408.63 ft)	n/a	124.56 m (408.66 ft)
G	124.69 m (409.09 ft)	124.65 m (408.96 ft)	124.70 m (409.12 ft)
H	n/a	n/a	n/a

n/a – insufficient data to determine an elevation

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 (USGS 1965a, 1965b)

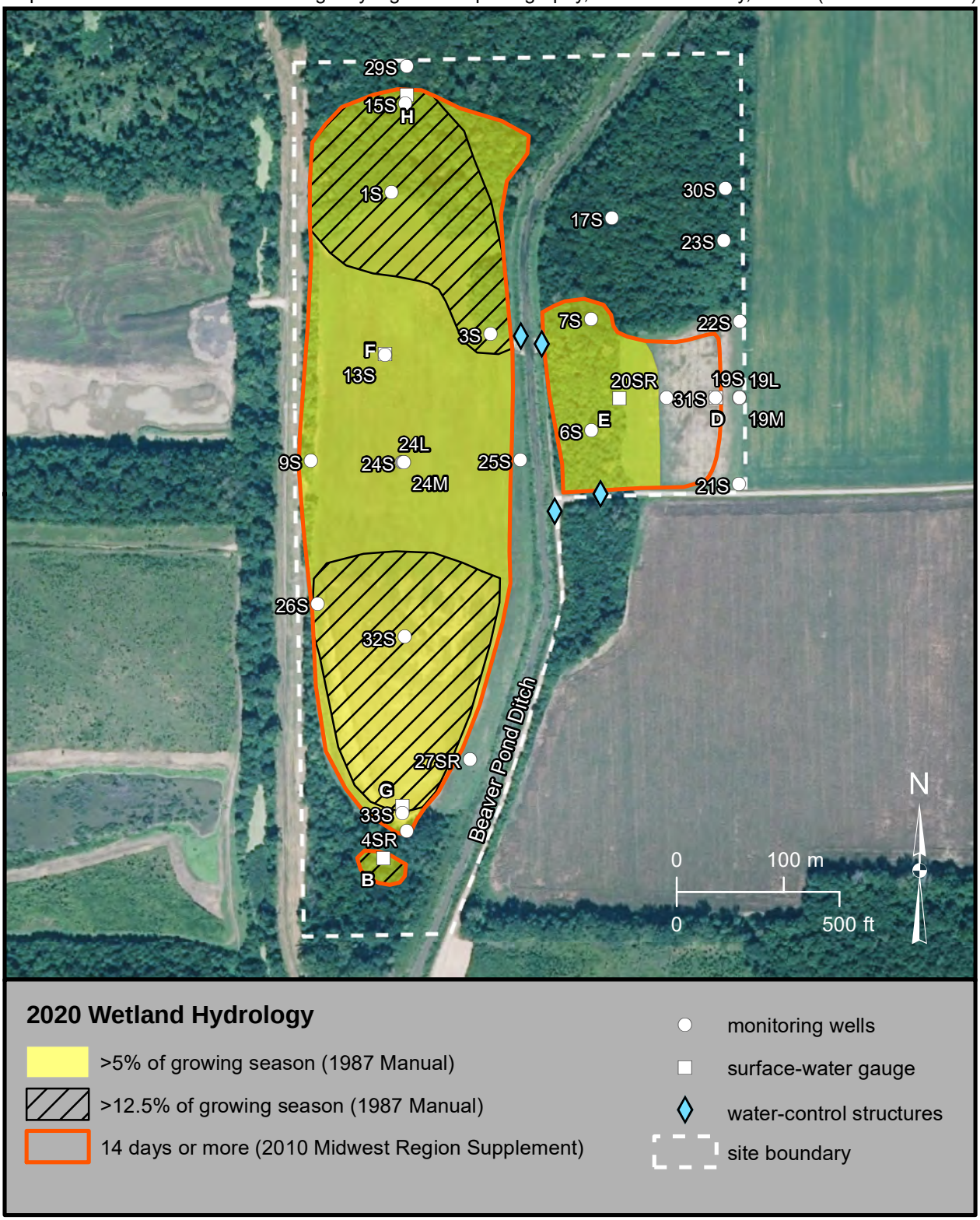


Lawrence County Wetland Mitigation Bank

Estimated Areal Extent of 2020 Wetland Hydrology

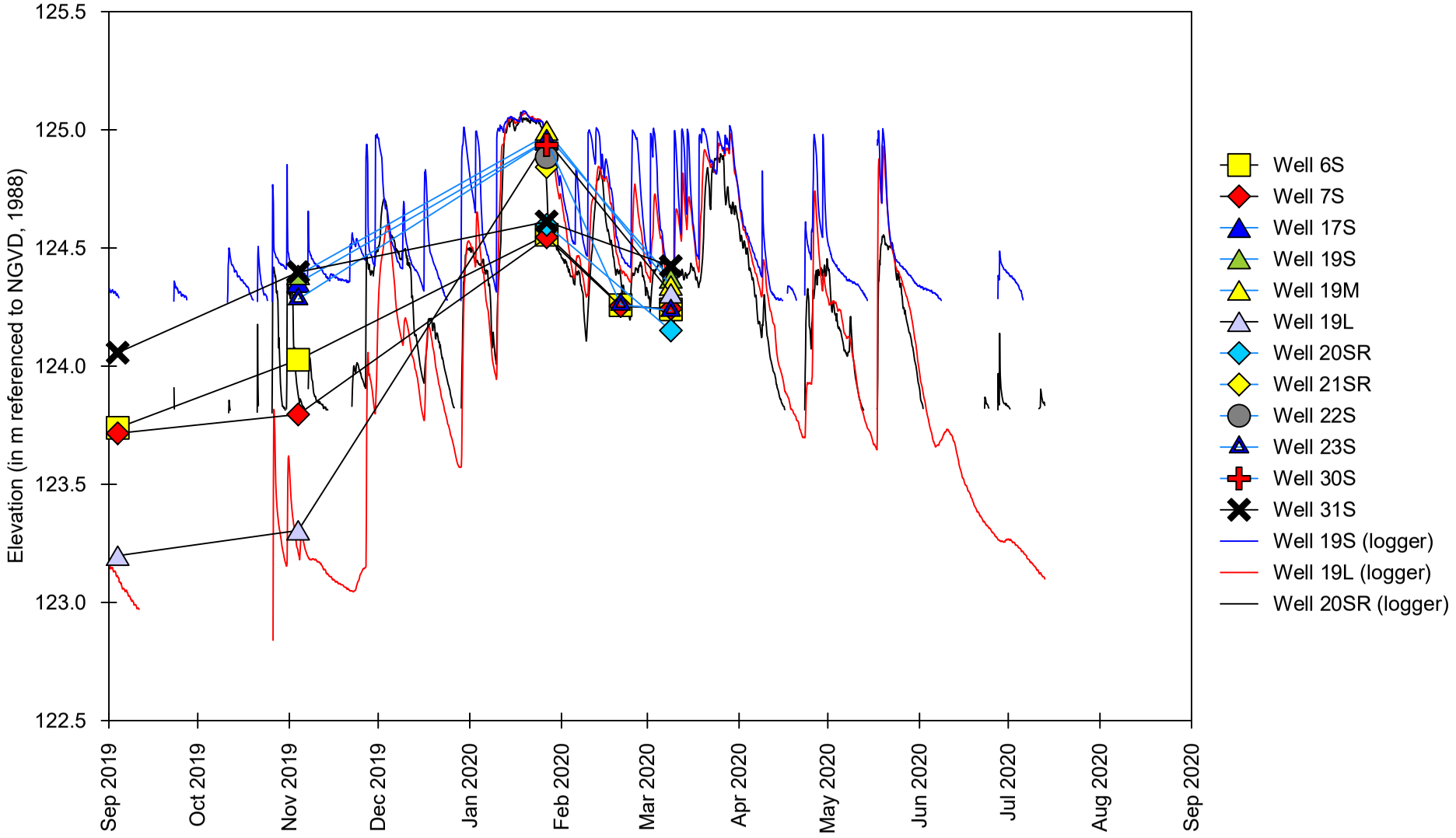
September 1, 2019 through August 31, 2020

Map based on 2014 Farm Service Agency digital orthophotography, Lawrence County, Illinois (USDA-FSA 2014)



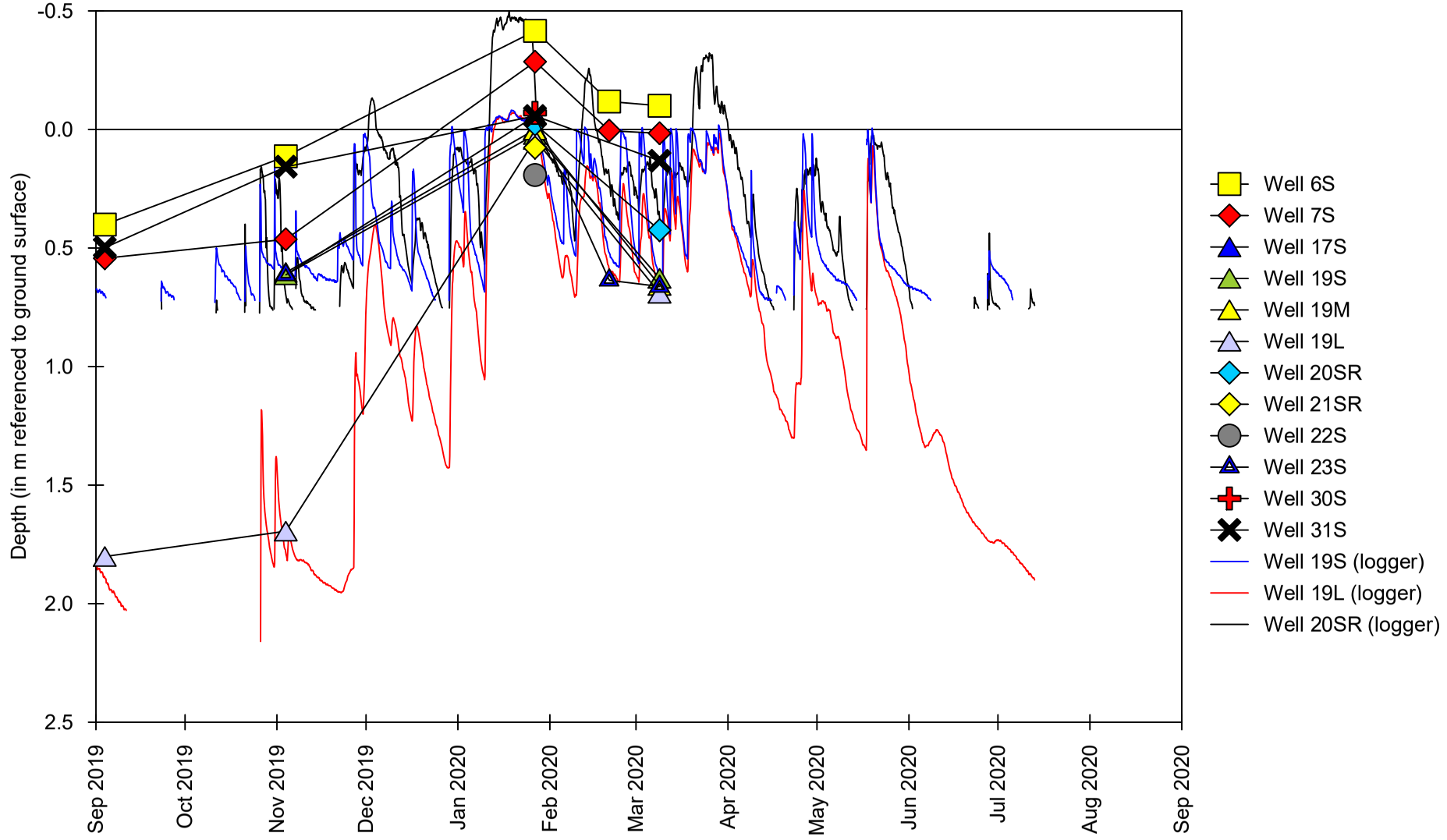
Lawrence County Wetland Bank
September 1, 2019 through August 31, 2020

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



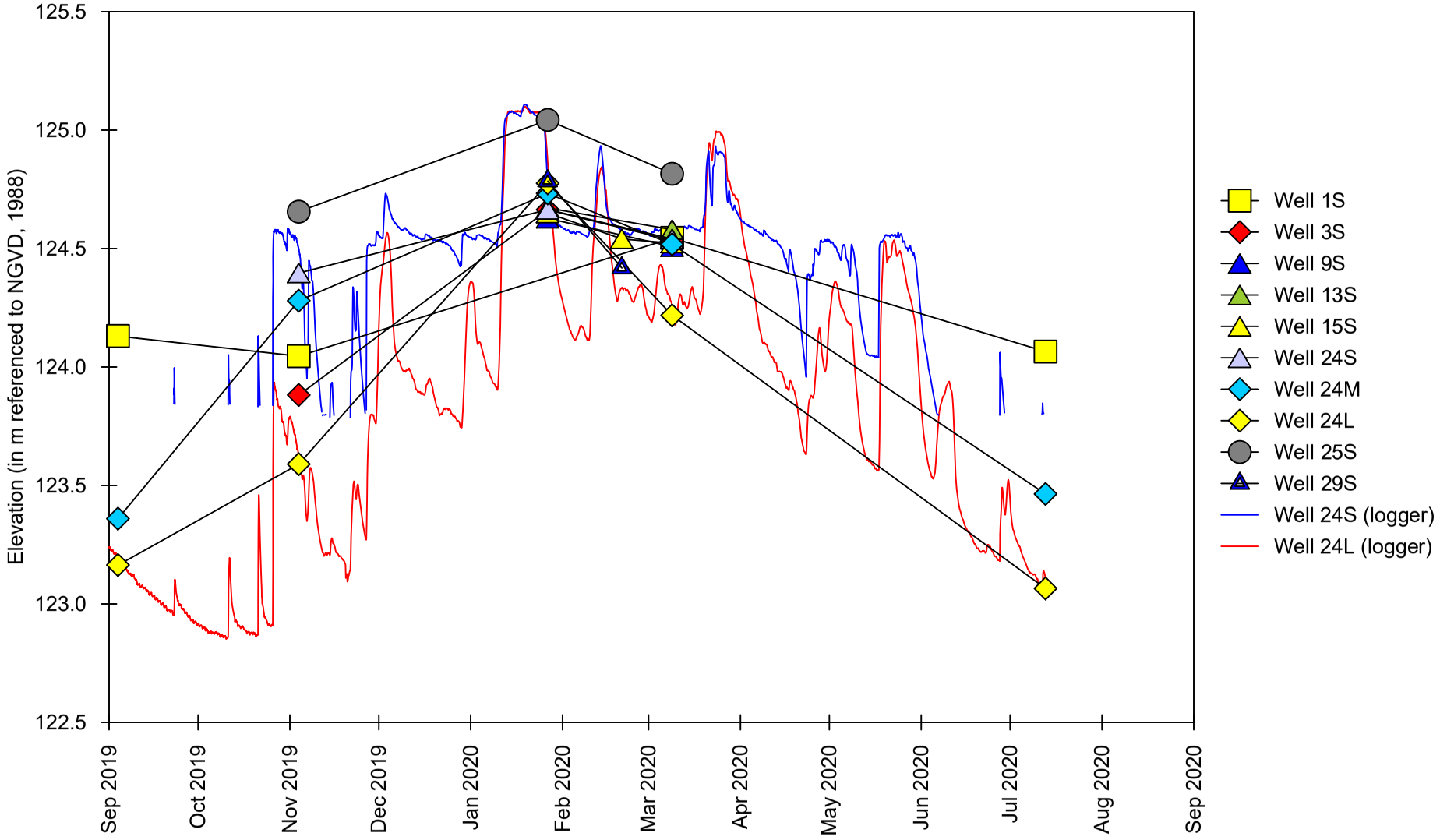
Lawrence County Wetland Bank
September 1, 2019 through August 31, 2020

Depth to Water
in Monitoring Wells East of Beaver Pond Ditch



Lawrence County Wetland Bank
September 1, 2019 through August 31, 2020

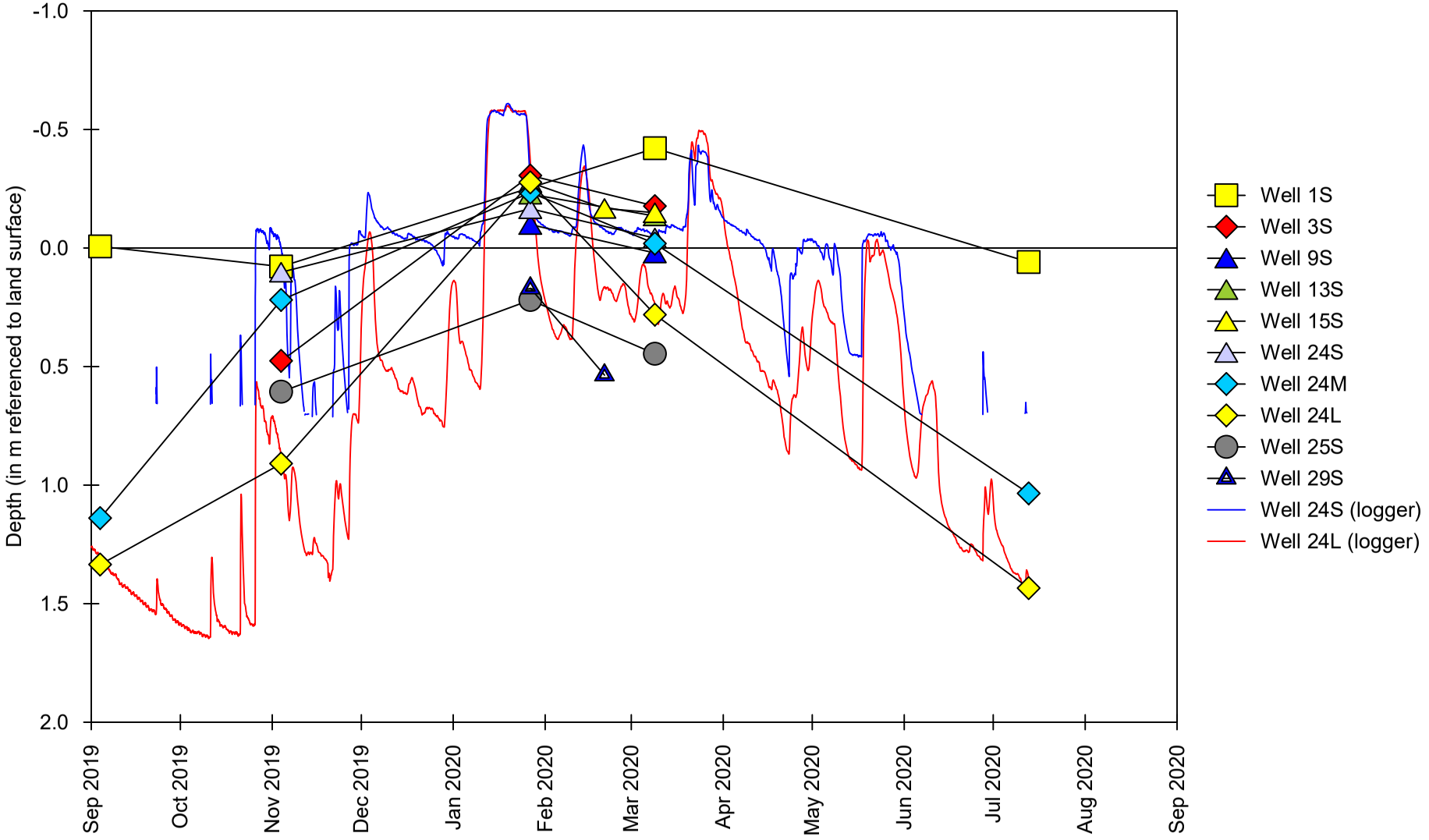
Water-Level Elevations
in Monitoring Wells West of Beaver Pond Ditch



Lawrence County Wetland Bank

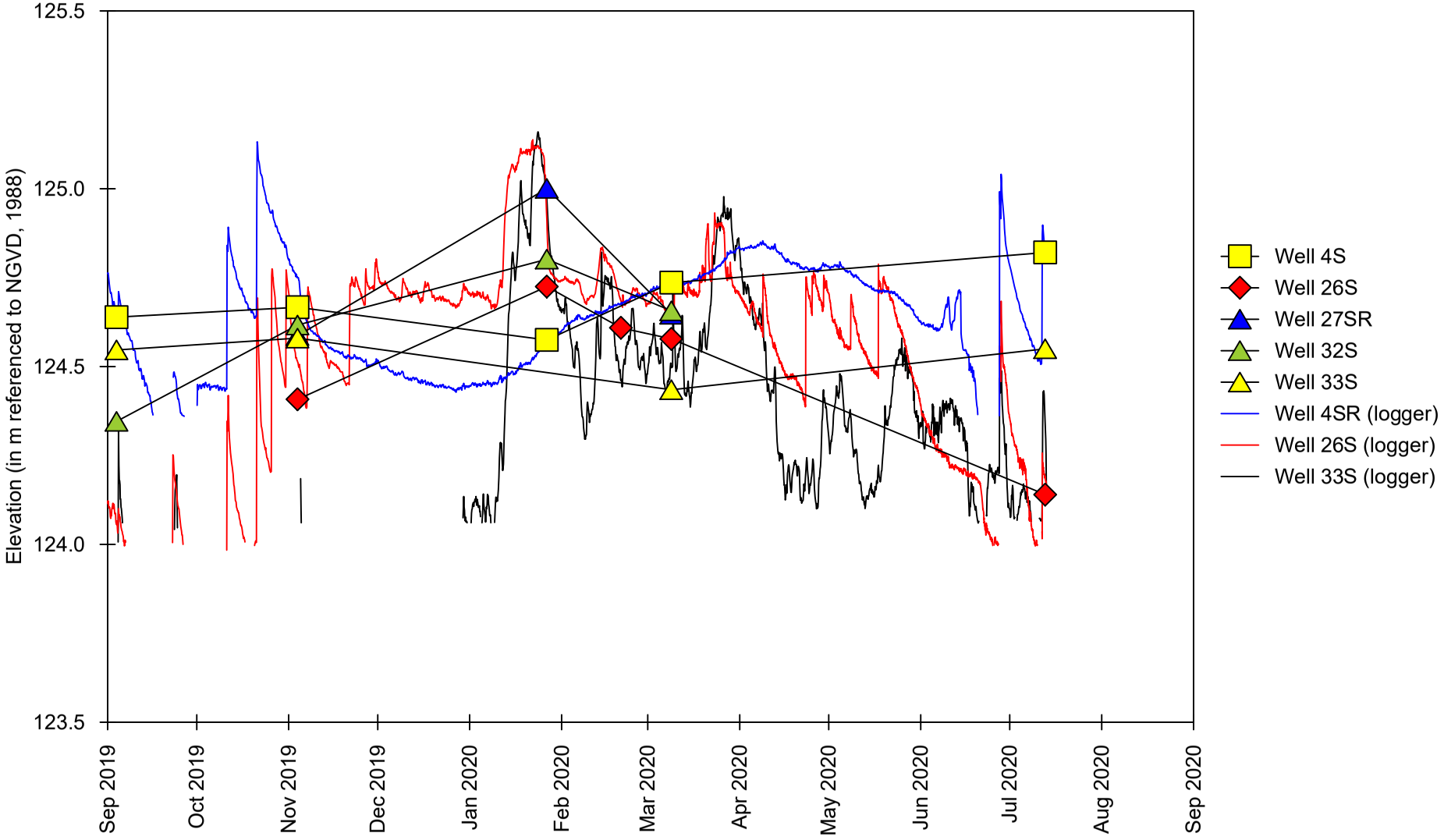
September 1, 2019 through August 31, 2020

Depth to Water
in Monitoring Wells West of Beaver Pond Ditch



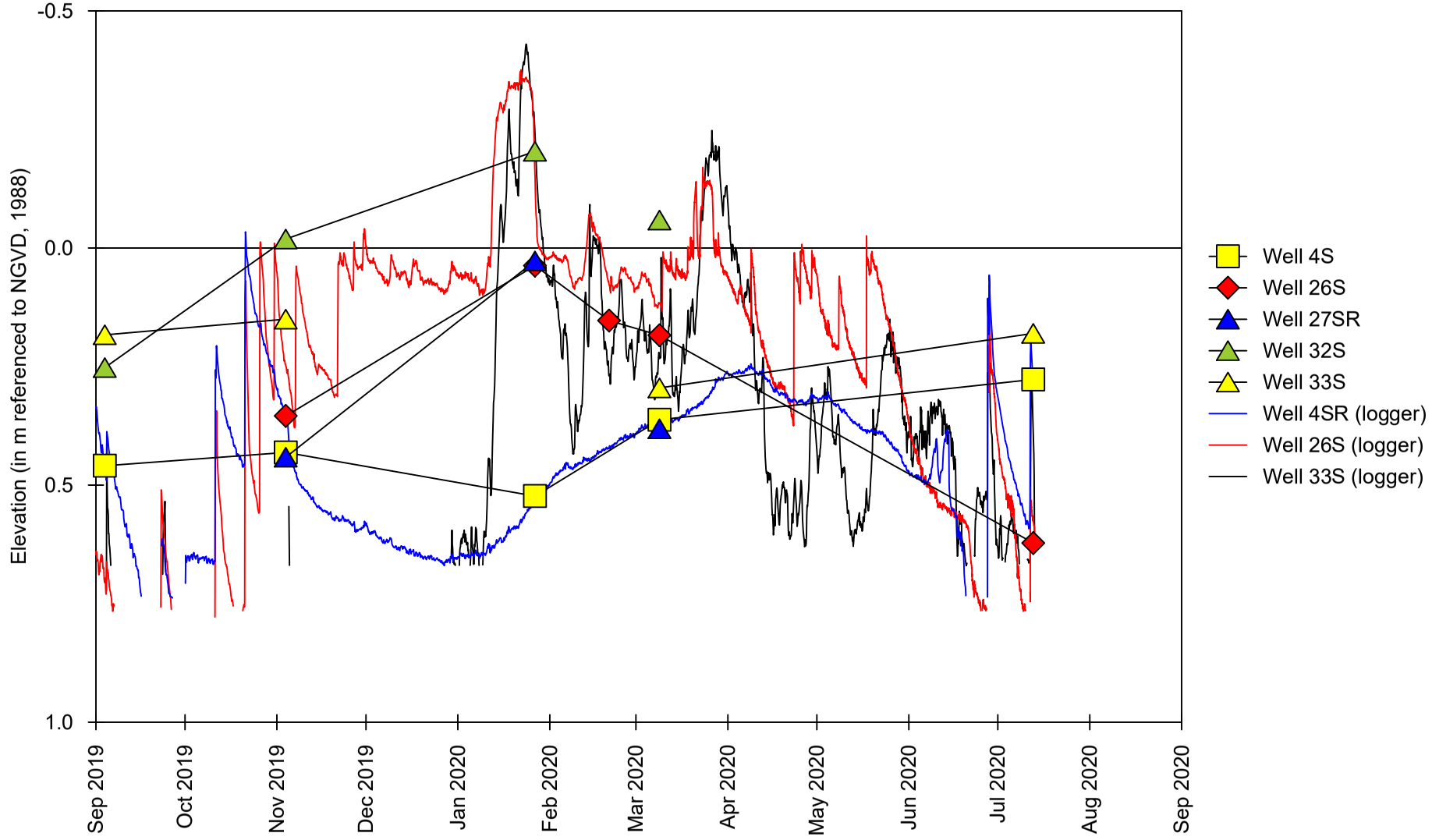
Lawrence County Wetland Bank
September 1, 2019 through August 31, 2020

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



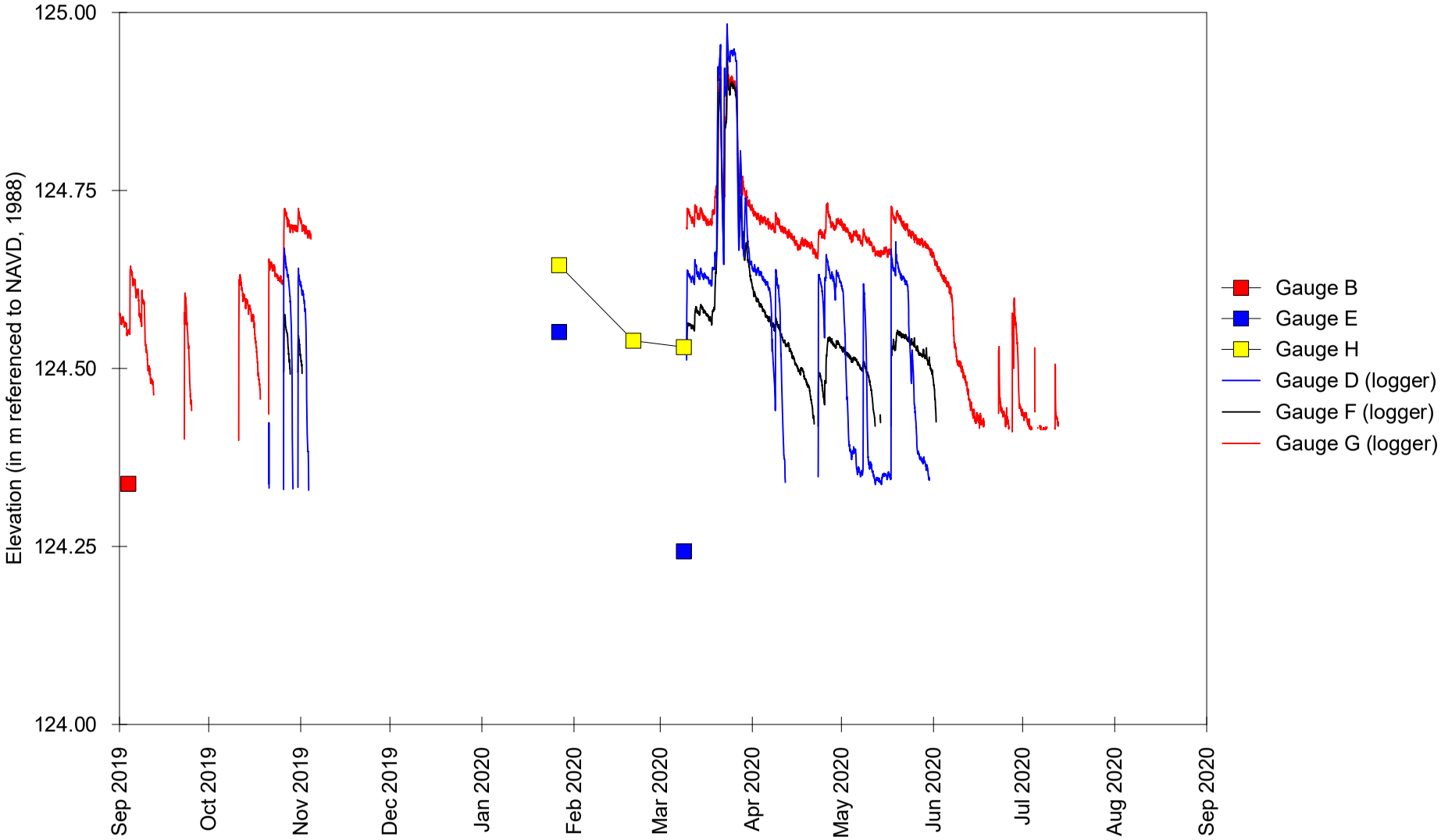
Lawrence County Wetland Bank
September 1, 2019 through August 31, 2020

Depth to Water
in Monitoring Wells West of Beaver Pond Ditch

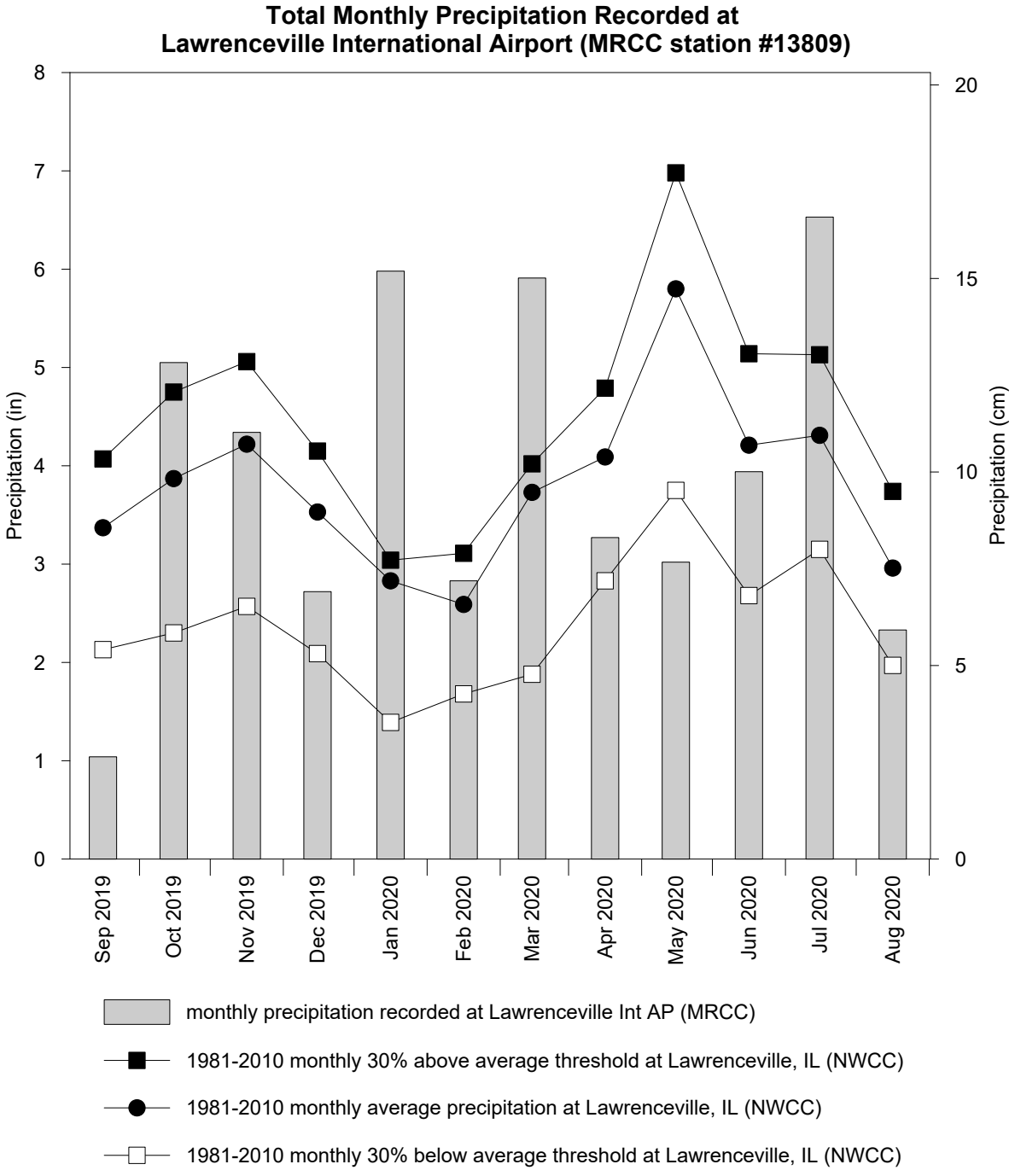


Lawrence County Wetland Bank
September 1, 2019 through August 31, 2020

Water-Level Elevation
at Surface-Water Gauges



Lawrence County Wetland Mitigation Bank
September 2019 through August 2020



EASTERN PRAIRIE FRINGED ORCHID NATURE PRESERVE HYDROLOGIC MONITORING SITE **ISGS #83**

IL 22
FAP 337
Sequence 9121
Lake County, Long Grove, Illinois
Primary Project Manager: Katharine L. Schleich
Secondary Project Manager: Keith W. Carr

SITE HISTORY

- November 2009: ISGS was tasked to monitor pre-construction water quality.
- December 2009: Pre-construction monitoring was initiated.
- June 2010: Pre-construction interim report submitted to IDOT.
- November 2011: Pre-construction final report submitted to IDOT.
- April 2018: Nature Preserve purchased by IDOT.
- June 2019: ISGS was tasked to monitor hydrology and water quality prior to, during, and after construction.
- August 2019: INPC Special-Use Permit was approved to monitor surface and groundwater on and adjacent to the preserve.
- October 2019: Current monitoring of the nature preserve was initiated.

HYDROLOGIC CONDITIONS

- Total precipitation for the current monitoring period at Mundelein 4, Illinois (MRCC station # 115961), was 141% of normal, and spring 2020 (March through May) precipitation was 193% of normal. Precipitation for May 2020 was particularly excessive totaling 189% of normal.
- During the current monitoring period, 5 flood events resulting in inundation were observed at Wells 1S and 2S, 10 events were observed at Well 3S, and 9 events were observed at Well 4S. While three flood events occurred in January at Wells 3S and 4S, most flood events on site occurred between March and June. In general, the winter events were shorter in duration, lasting less than a day. The spring flood events were generally longer, lasting between two and three days. The peak flood event at all wells occurred between May 15th and 16th, 2020.
- Median specific conductivity values increased downstream along Willowbrook Drain. Median values were 789 µS/cm at Site C, upstream of IL 22; 895 µS/cm at Site B, downstream of IL 22; and 922 µS/cm at Site A, further downstream in the pond adjacent to the preserve. A similar pattern was observed in previous monitoring of Willowbrook Drain (Campbell et al. 2011). At Sites B and C, peak levels were observed in early spring. This timing is consistent with road de-icing activities and seasonal increases in

runoff just prior to observation of these peak levels. At Site A, peak levels were observed during the summer months, likely due to decreasing water-levels in the pond and/or groundwater inputs leading to higher concentration of solutes in the pond.

- Median specific conductivity values in groundwater at the nature preserve ranged from 649 µS/cm at Well 1S to 1218 µS/cm at Well 3S. Higher specific conductivity values observed in the wells closer to Willowbrook Drain (Wells 3S and 4S) likely result from conveyance of higher conductivity water from the creek either through the subsurface flow, flooding, or both. Specific conductivity values observed in Well 1S (closest to the pond) were higher than in Well 2S as Well 1S is likely affected by water from the pond during high flow. Well 2S has the lowest range and overall specific conductivity. This location is further from the creek and is less likely to be influenced by flooding and thus has limited exposure to higher conductivity water in Willowbrook Drain. Specific conductivity levels at each well were less variable relative to levels in Willowbrook Drain. Further, conductivity levels in the wells were relatively consistent despite changes in water level and did not show large seasonal changes.

- Turbidity was measured at stream stations B and C. While median turbidity was slightly higher at upstream Site C than at downstream Site B, values at both sites were in a similar range. The tendency of higher upstream turbidity was also observed in previous monitoring (Campbell et al. 2011) and was likely due to sediment deposition as a result of instream ponding and localized instream variation.

Summary statistics of specific conductivity (µS/cm) at wells and surface water stations

ID	*Count*	*Mean*	*Minimum*	*Median*	*Maximum*
1S	1957	929	328	954	1002
2S	1921	649	603	641	723
3S	1953	1218	569	1219	1408
4S	1932	1026	723	1025	1157
A	7145	909	121	922	1771
B	3508	904	234	895	1725
C	3773	801	158	789	1564

Summary statistics of turbidity (NTU) at surface water stations

ID	*Count*	*Mean*	*Minimum*	*Median*	*Maximum*
B	14522	29	0.5	16	1353
C	11766	39	0.5	20	1596

Summary statistics of specific confuctivity (µS/cm) at wells and surface water stations					
ID	*Count*	*Mean*	*Minimum*	*Median*	*Maximum*
1S	1957	929	328	954	1002
2S	1921	649	603	641	723
3S	1953	1218	569	1219	1408
4S	1932	1026	723	1025	1157
A	7145	909	121	922	1771
B	3508	904	234	895	1725
C	3773	801	158	789	1564

Summary statistics of turbidity (NTU) at surface water stations					
ID	*Count*	*Mean*	*Minimum*	*Median*	*Maximum*
B	14522	29	0.5	16	1353
C	11766	39	0.5	20	1596

ADDITIONAL INFORMATION

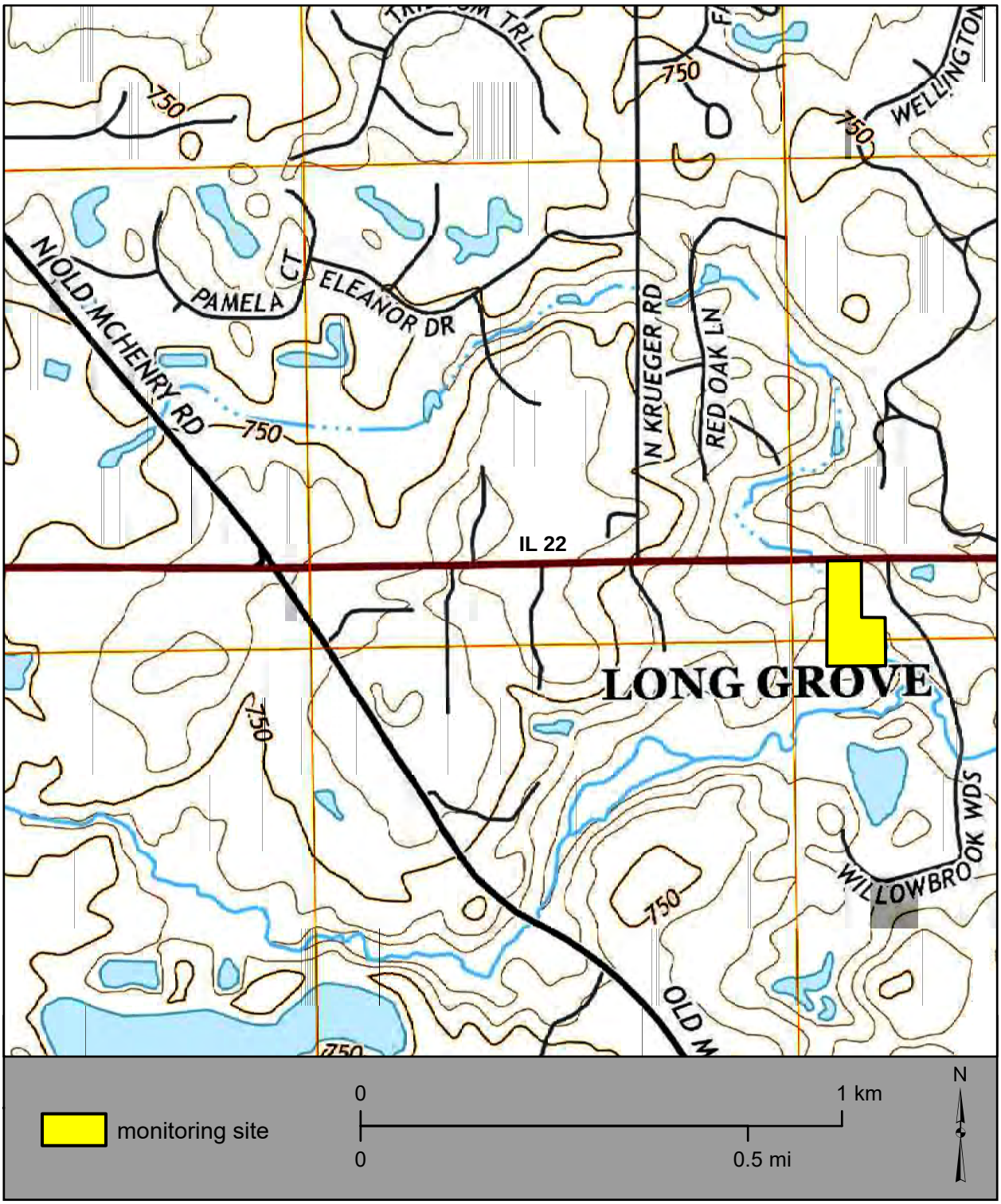
- Data for this monitoring period were collected between October 30th, 2019 and September 10th, 2020.
- Gauges B and C were not surveyed and therefore water level data for these gauges could not be calculated. No measuring point offset was measured for Gauge A so water-level elevations are based off an estimated offset.
- In the figures at the end of this summary, box plot whiskers represent minimum and maximum data values. Labeled center lines show median data values.

PLANNED FUTURE ACTIVITIES

- Ground and surface-water sampling will commence Winter 2020/Spring 2021.
- Monitoring will continue until one year after completion of highway improvement.

Eastern Prairie Fringed Orchid Nature Preserve
Hydrologic Monitoring Site
(IL 22, FAP 337)
General Study Area and Vicinity

from the USGS Topographic Series, Lake Zurich, IL 7.5-minute Quadrangle (USGS 2015)
contour interval is 10 feet

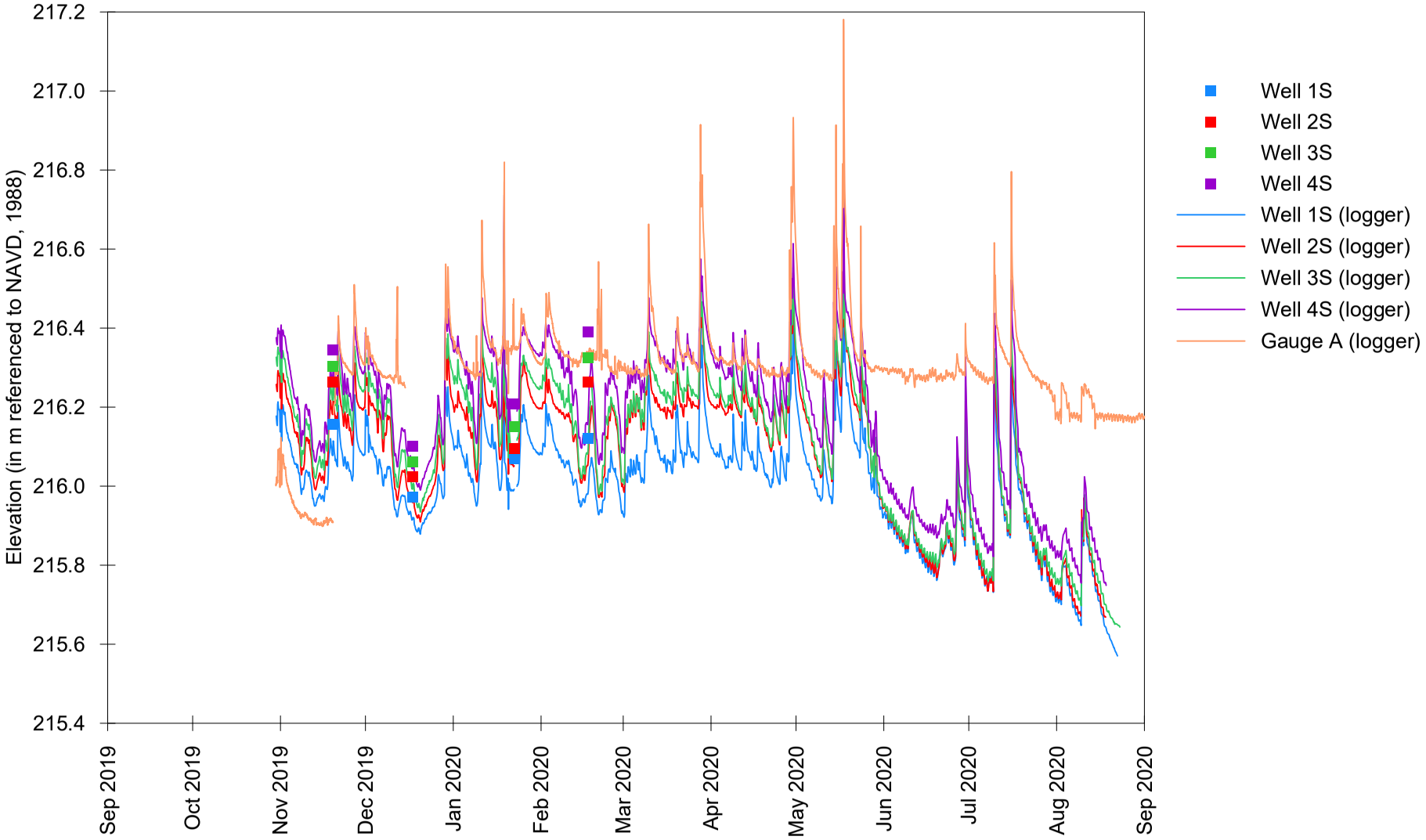


Eastern Prairie Fringed Orchid Nature Preserve
Hydrologic Monitoring Site
(IL 22, FAP 337)
Median Specific Conductivity Values at Monitoring Locations

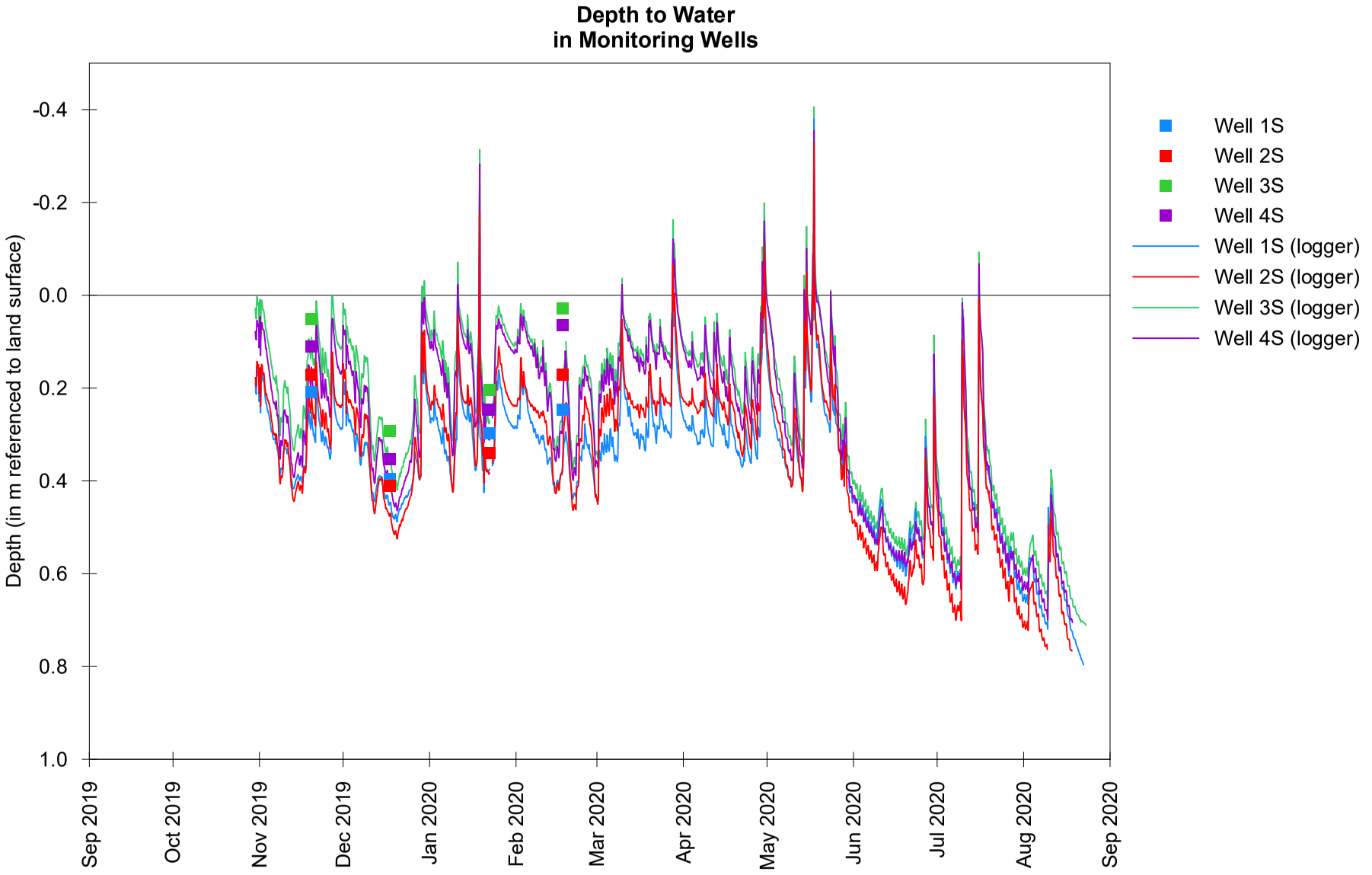
Map based on imagery available from Esri (Esri 2020)
Gauges B and C are not surveyed. Locations displayed are approximate.

Eastern Prairie Fringed Orchid Hydrologic Monitoring Site
September 1, 2019 through August 31, 2020

Water-Level Elevation at Monitoring Stations

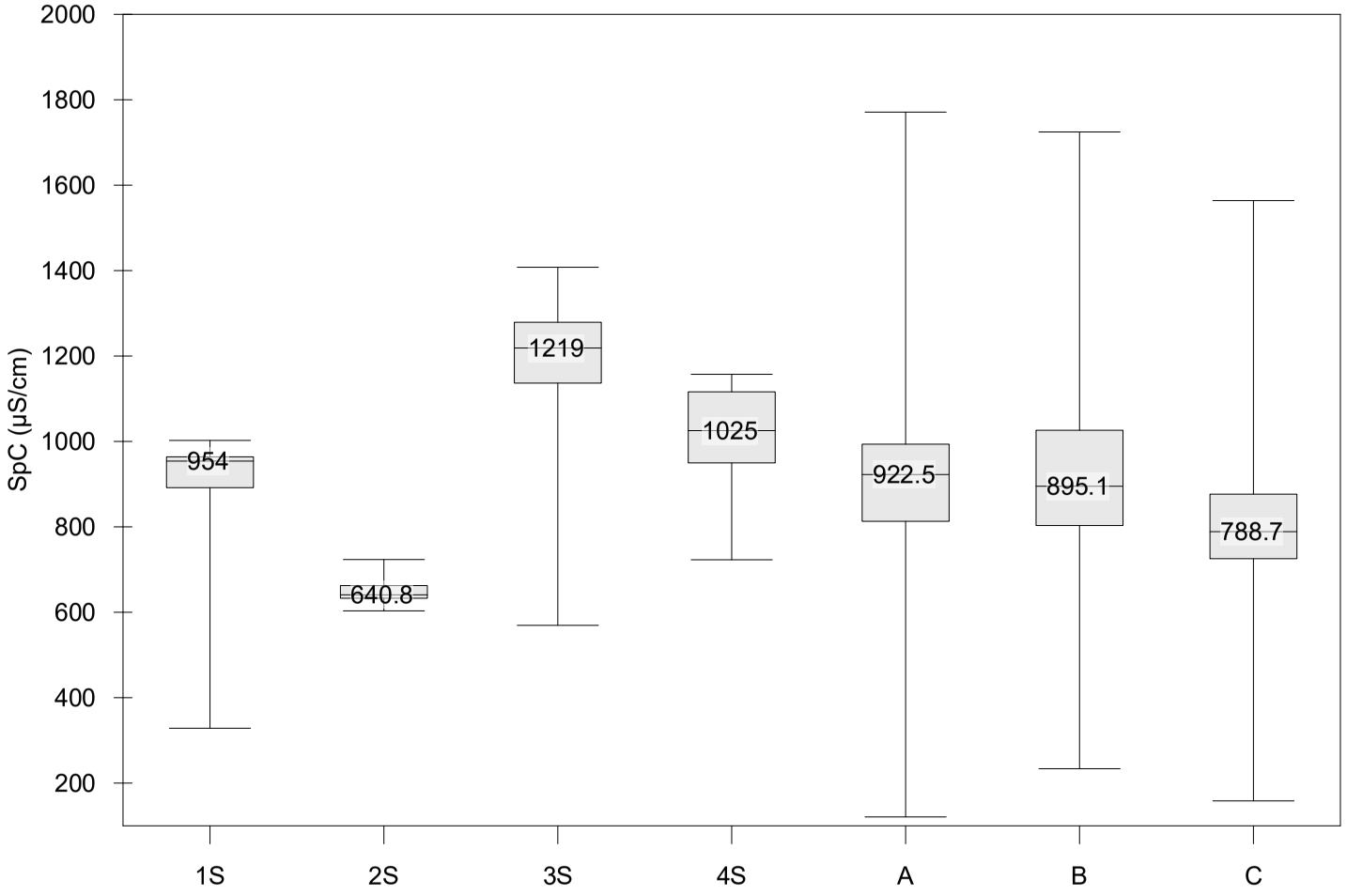


Eastern Prairie Fringed Orchid Hydrologic Monitoring Site
September 1, 2019 through August 31, 2020

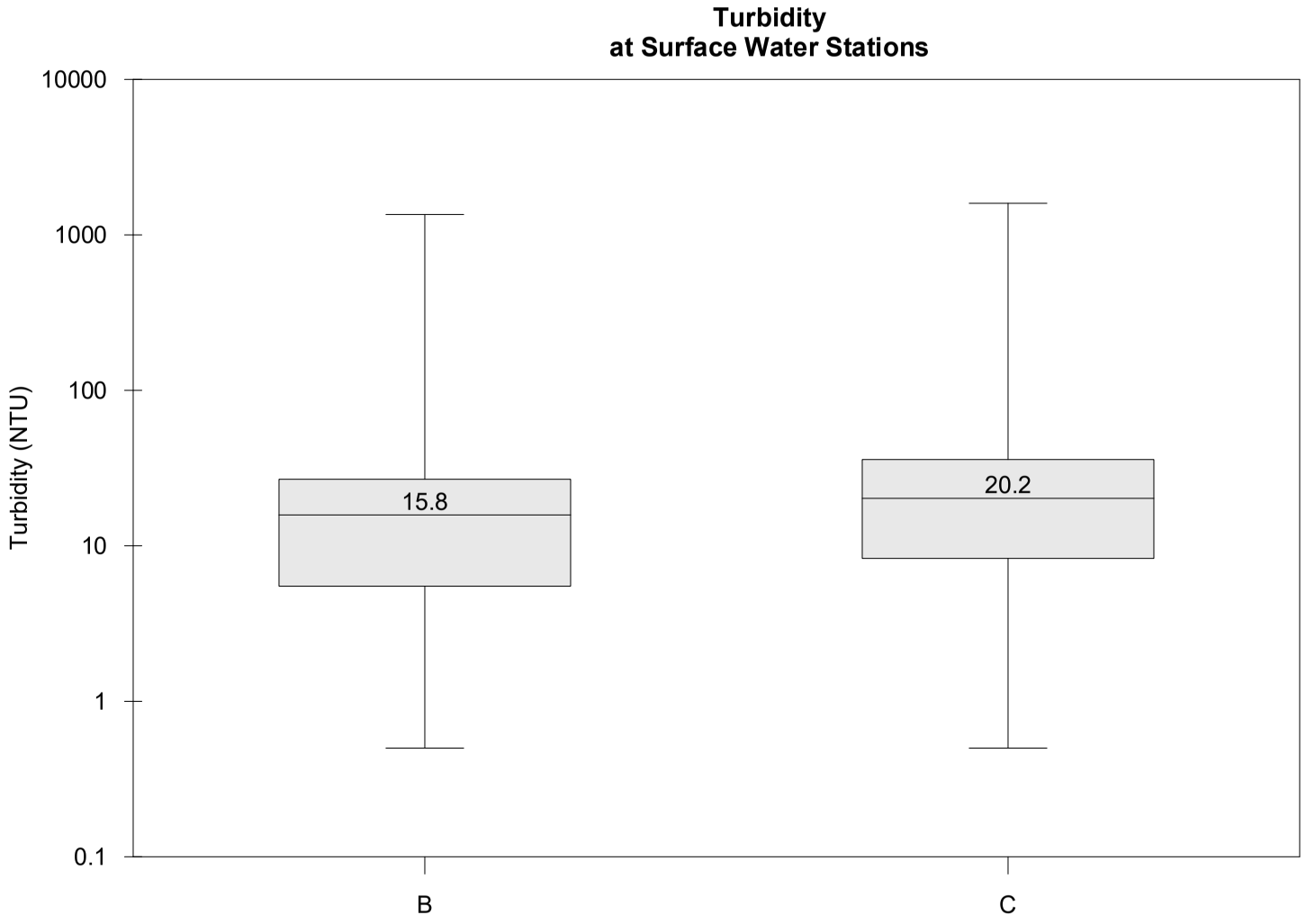


Eastern Prairie Fringed Orchid Hydrologic Monitoring Site
October 30, 2019 through September 10, 2020

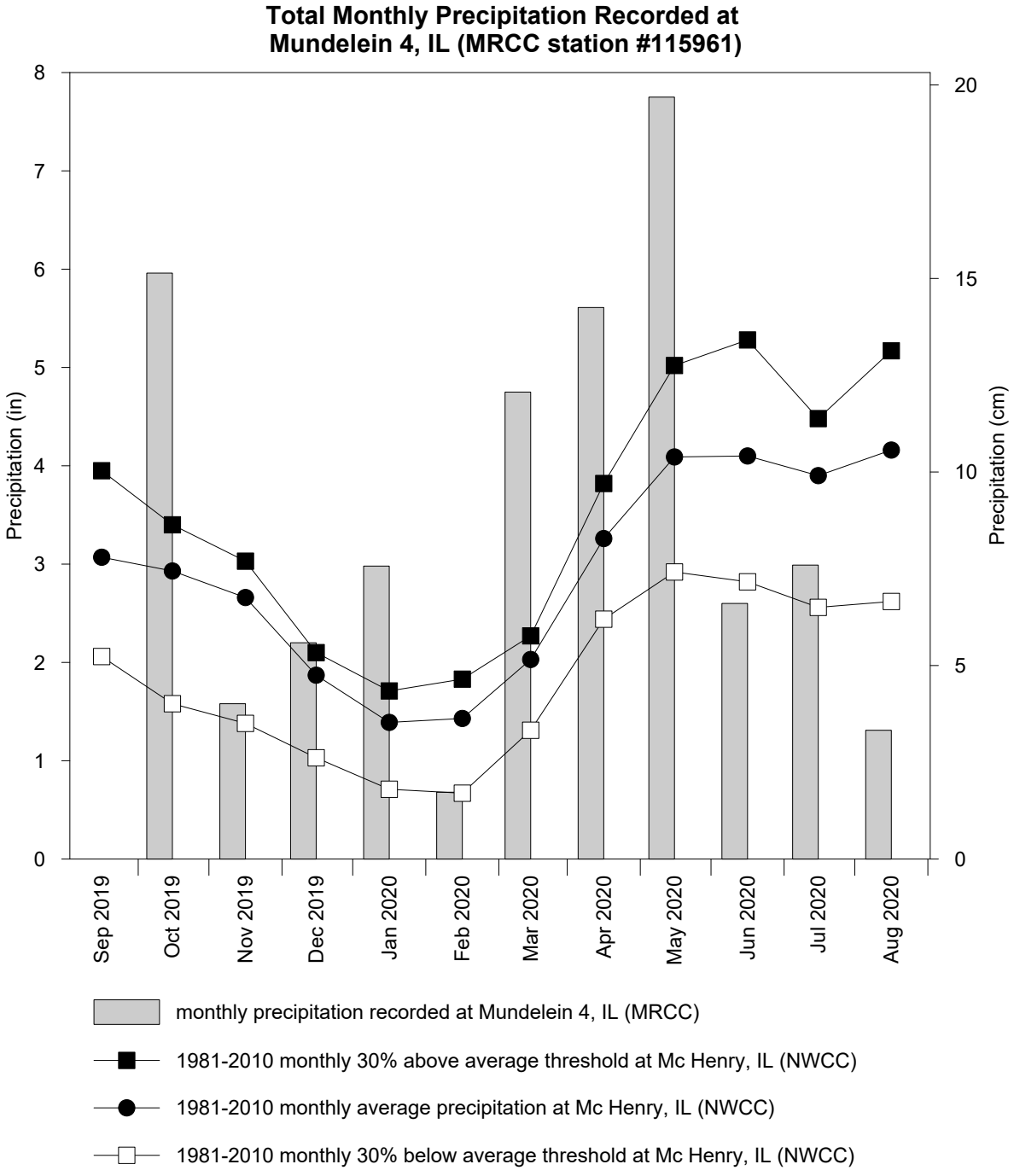
Specific Conductivity
at Groundwater and Surface-Water Stations



Eastern Prairie Fringed Orchid Hydrologic Monitoring Site
March 4, 2020 through September 10, 2020



Eastern Prairie Fringed Orchid Hydrologic Monitoring Site
September 2019 through August 2020



THORN CREEK HEADWATERS PRESERVE **ISGS #90**
WETLAND MITIGATION SITE
I-57/Stuenkel Road
FAI 57
Sequence #12558
Will County, near University Park, Illinois
Primary Project Manager: Lindsey A. Schafer
Secondary Project Manager: Geoffrey E. Pociask

SITE HISTORY

- September 2012: ISGS was tasked by IDOT to monitor wetland hydrology.
- March 2013: ISGS installed a monitoring network at the site.
- Winter 2013-14: Drainage tiles were broken and the site was broadcast seeded.
- Winter 2016-17: A drainage tile blowout was filled in the eastern portion of the site.

WETLAND HYDROLOGY CALCULATION FOR 2020

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), 18.96 ha (46.85 ac) of the total site area of 37.54 ha (92.77 ac) satisfied wetland hydrology criteria for greater than 5% of the 2020 growing season, and 10.81 ha (26.71 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), 19.88 ha (49.13 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 8, and the season lasts 209 days (MRCC 2020). 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, March 8 was the starting date of the 2020 growing season based on soil temperatures measured at the St. Charles weather station (WARM 2020).
- Total precipitation for the monitoring period at Park Forest, Illinois (MRCC station #116616), was 113% of normal, and spring 2020 (March through May) precipitation was 134% of normal.
- The period of maximum inundation and saturation during the 2020 growing season at the site occurred during early April through May which had 7.16 and 4.35 inches of rain, respectively.
- In 2020, water levels measured in 25 of 31 soil-zone monitoring wells satisfied wetland hydrology criteria for greater than 5% of the growing season, and water levels measured in 14 of 31 soil-zone monitoring wells satisfied wetland hydrology criteria for greater than

12.5% of the growing season, using the 1987 Manual. In addition, using the 2010 Midwest Region Supplement, water levels in 26 of 31 soil-zone monitoring wells satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season. See the tables at the end of this summary for details.

ADDITIONAL INFORMATION

- Surface water currently drains from the western portion of the site through a storm sewer located along the west margin of the site (between wells 1S and 30S) and a small swale that has been partially blocked (between wells 30S and 3S). Blocking these outlets would prolong and expand ponding in the western portion of the site. However, appropriate threshold elevations should be determined before outlets are blocked.

PLANNED FUTURE ACTIVITIES

- Monitoring will continue until no longer required by IDOT.

WETLAND HYDROLOGY TABLES FOR 2020

Well locations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
1SR*	Y	Y	Y
3S*	Y	N	Y
4SR*	N	N	N
5SR	Y	N	Y
6SR	Y	N	Y
7SR	Y	N	Y
10SR	Y	Y	Y
11S*	Y	N	Y
12SR	Y	N	Y
13S	Y	Y	Y
15SR*	Y	N	Y
16SR	Y	Y	Y
17S	N	N	Y
18S*	Y	N	Y
19S*	Y	Y	Y
20S*	Y	Y	Y
21S*	N	N	N
22SR	Y	Y	Y
23S	N	N	N
24SR	Y	N	Y
25S*	Y	Y	Y
26S	N	N	N
27S*	Y	N	Y
28S*	Y	N	Y
29S*	N	N	N
30S*	Y	Y	Y
31SR*	Y	Y	Y
32S*	Y	Y	Y
33SR*	Y	Y	Y
34S	Y	Y	Y
35S	Y	Y	Y

Y – met wetland hydrology criteria
N – did not meet wetland hydrology criteria
* - wetland hydrology determination based on PLS model estimate

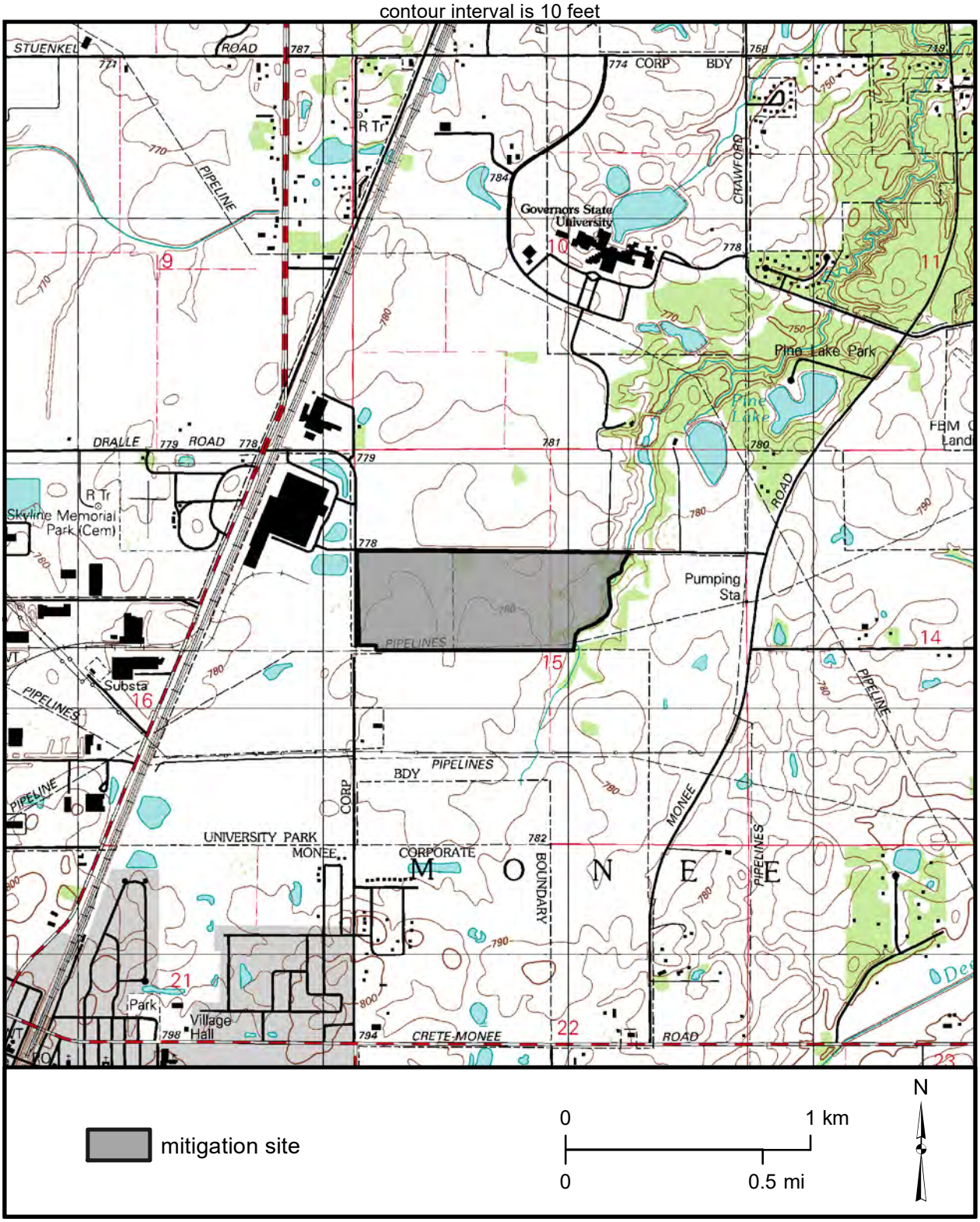
Surface-water gauge elevations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
B	236.73 m (776.67 ft)	236.69 m (776.55 ft)	236.92 m (777.30 ft)
C	n/a	n/a	n/a

n/a – insufficient data to determine an elevation

Thorn Creek Headwaters Preserve Wetland Mitigation Site
(I-57 at Stuenkel Road, FAI 57)

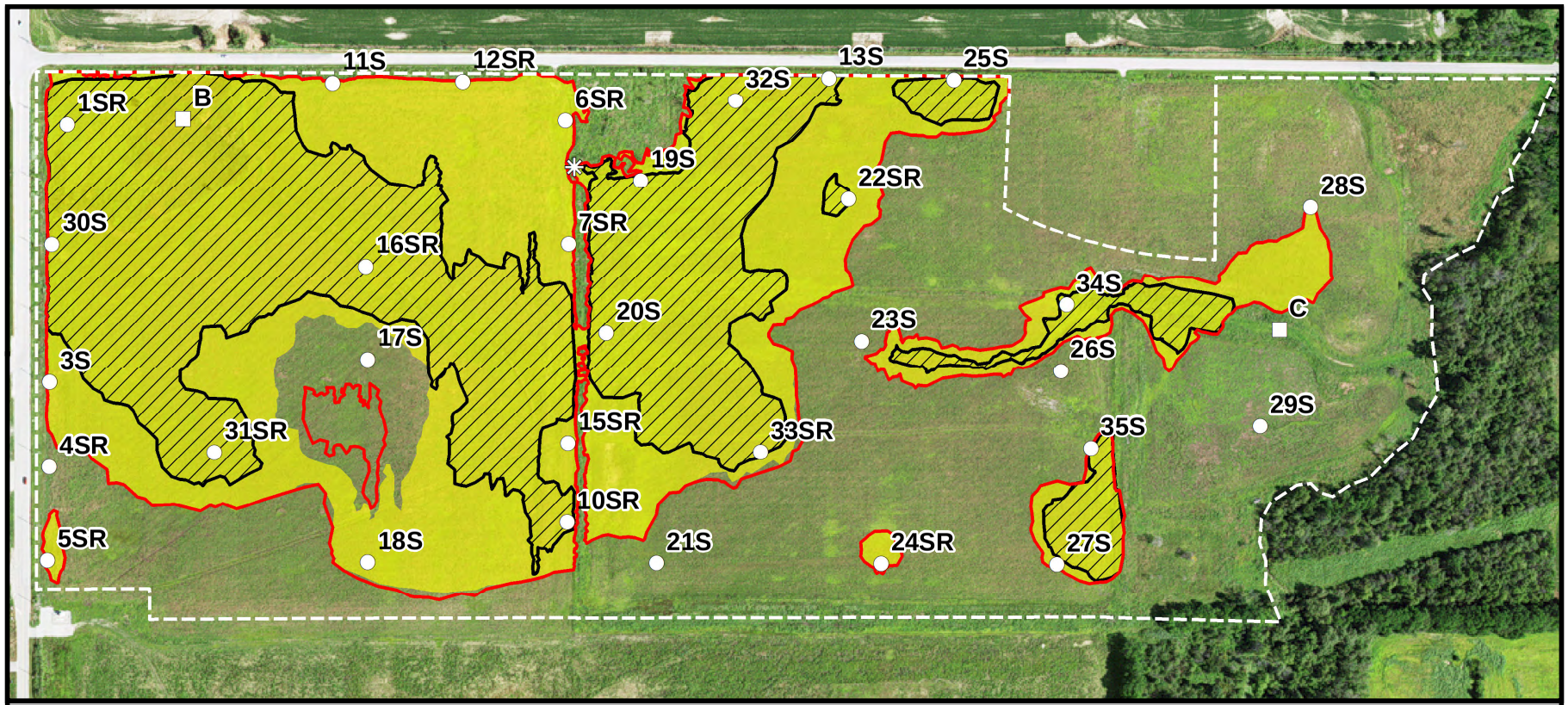
General Study Area and Vicinity

from the USGS Topographic Series, Steger, IL, 7.5-minute Quadrangle (USGS 1990)
contour interval is 10 feet



Thorn Creek Headwaters Preserve Wetland Mitigation Site
(I-57 at Stuenkel Road, FAI 57)
Estimated Areal Extent of 2020 Wetland Hydrology
September 1, 2019 through August 31, 2020

Map based on 2015 Farm Service Agency digital orthophotography, Will County, Illinois (USDA-FSA 2015)



2020 Wetland Hydrology

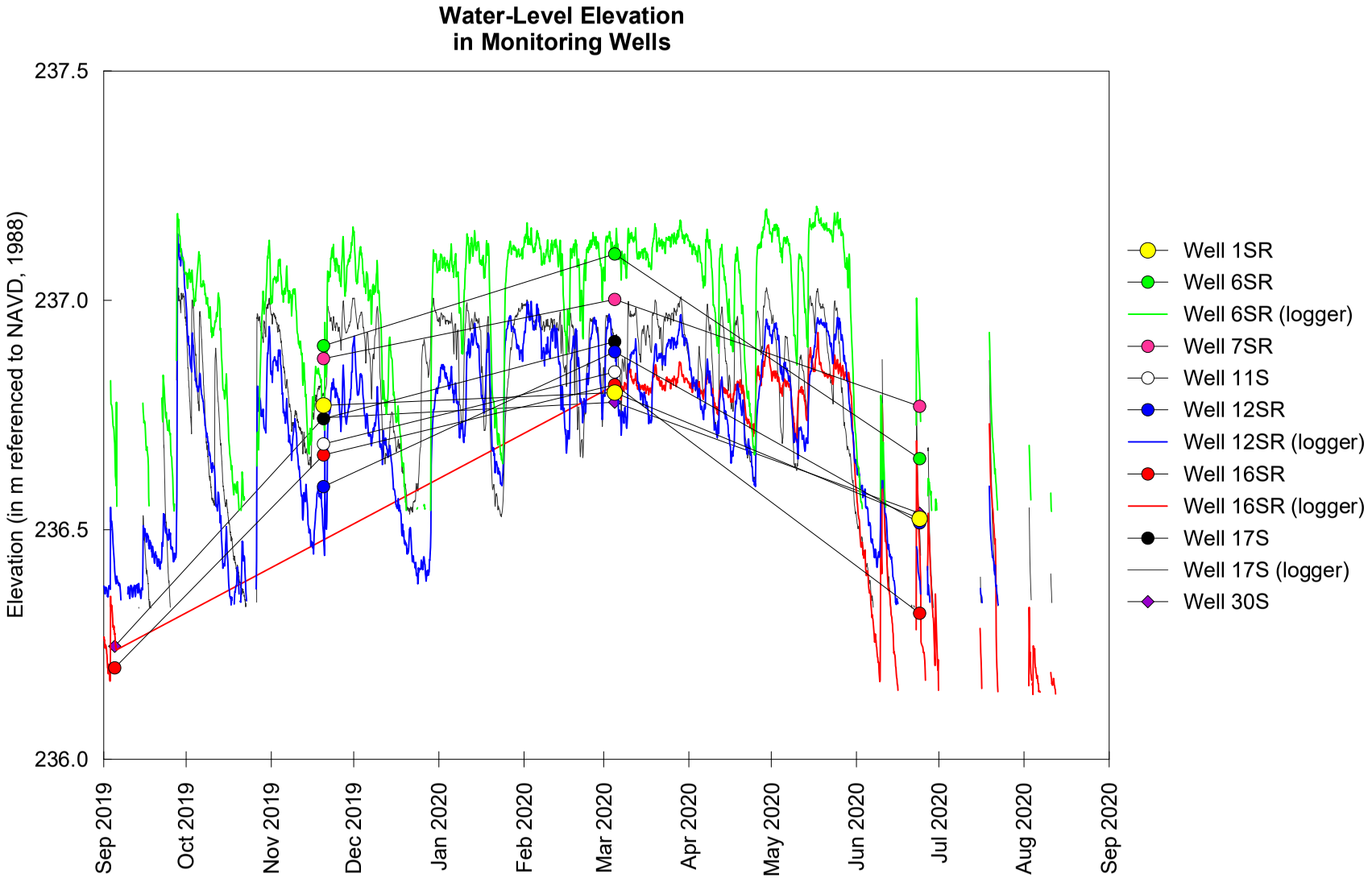
- >5% of growing season (1987 Manual)
- >12.5% of growing season (1987 Manual)
- 14 days or more (Midwest Region Supplement 2010)

- monitoring well
- surface-water gauge
- rain gauge
- mitigation site

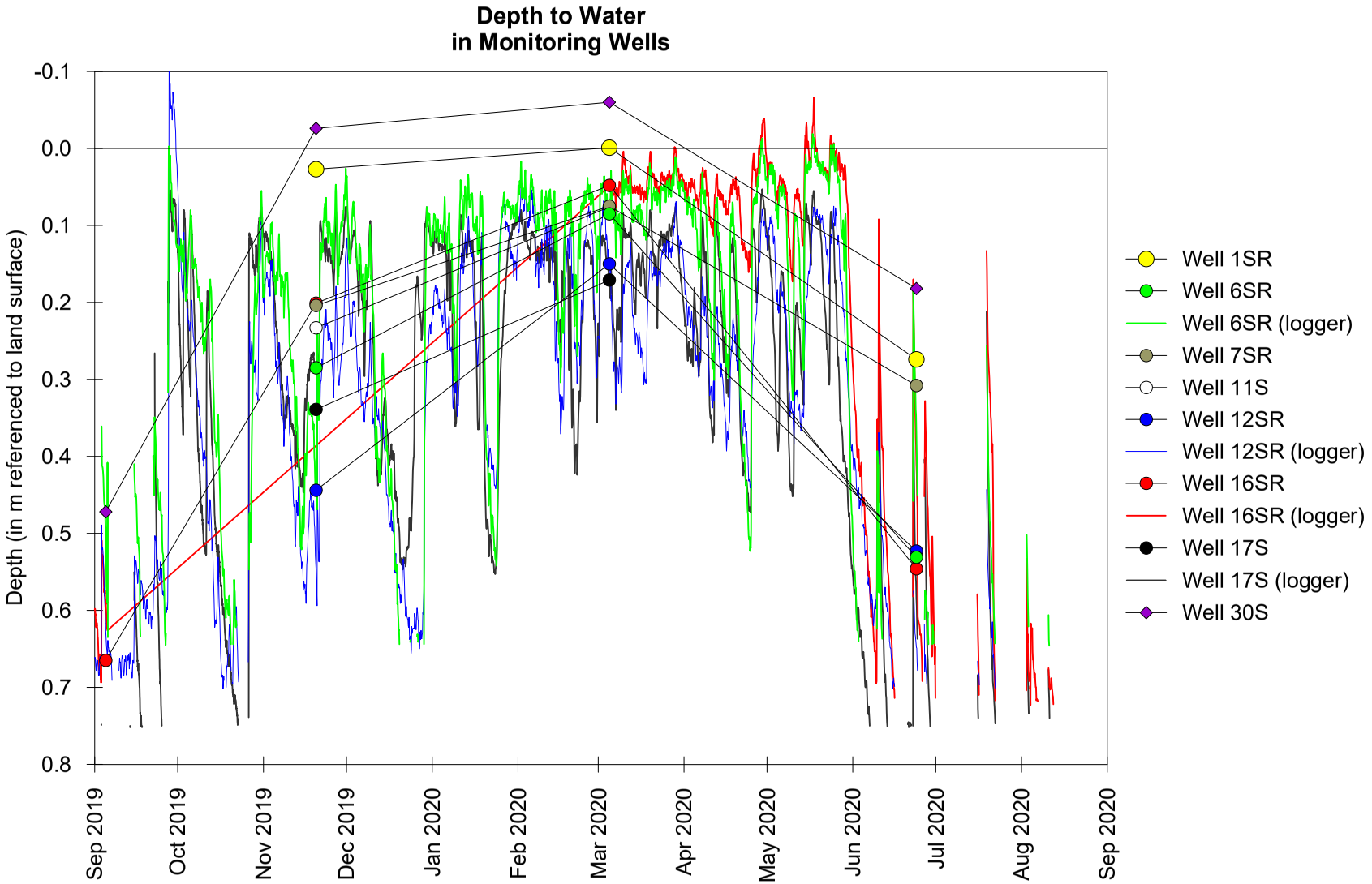
0 100 m
0 300 ft

N

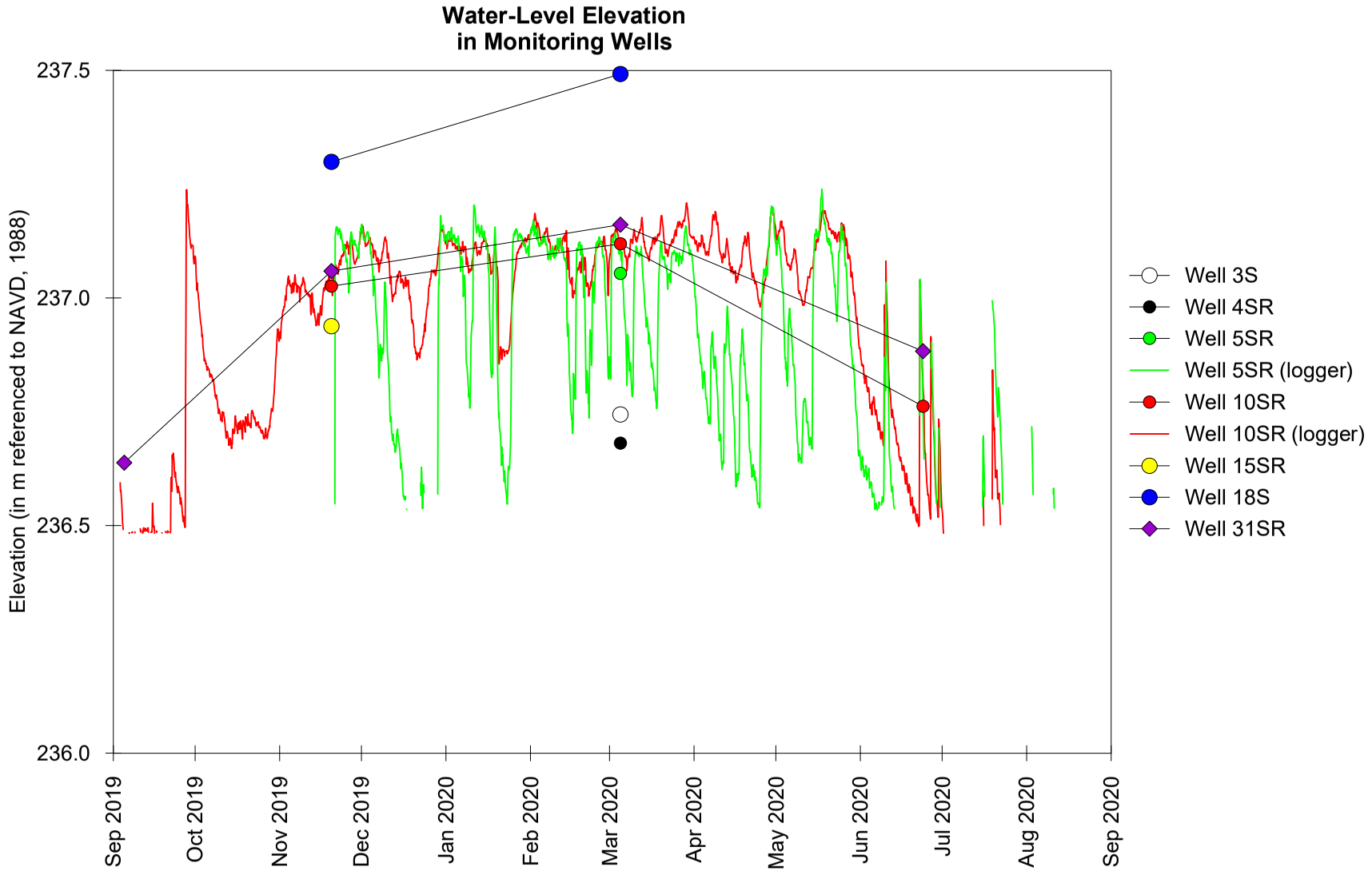
Thorn Creek Headwaters Preserve Wetland Mitigation Site
September 1, 2019 through August 31, 2020



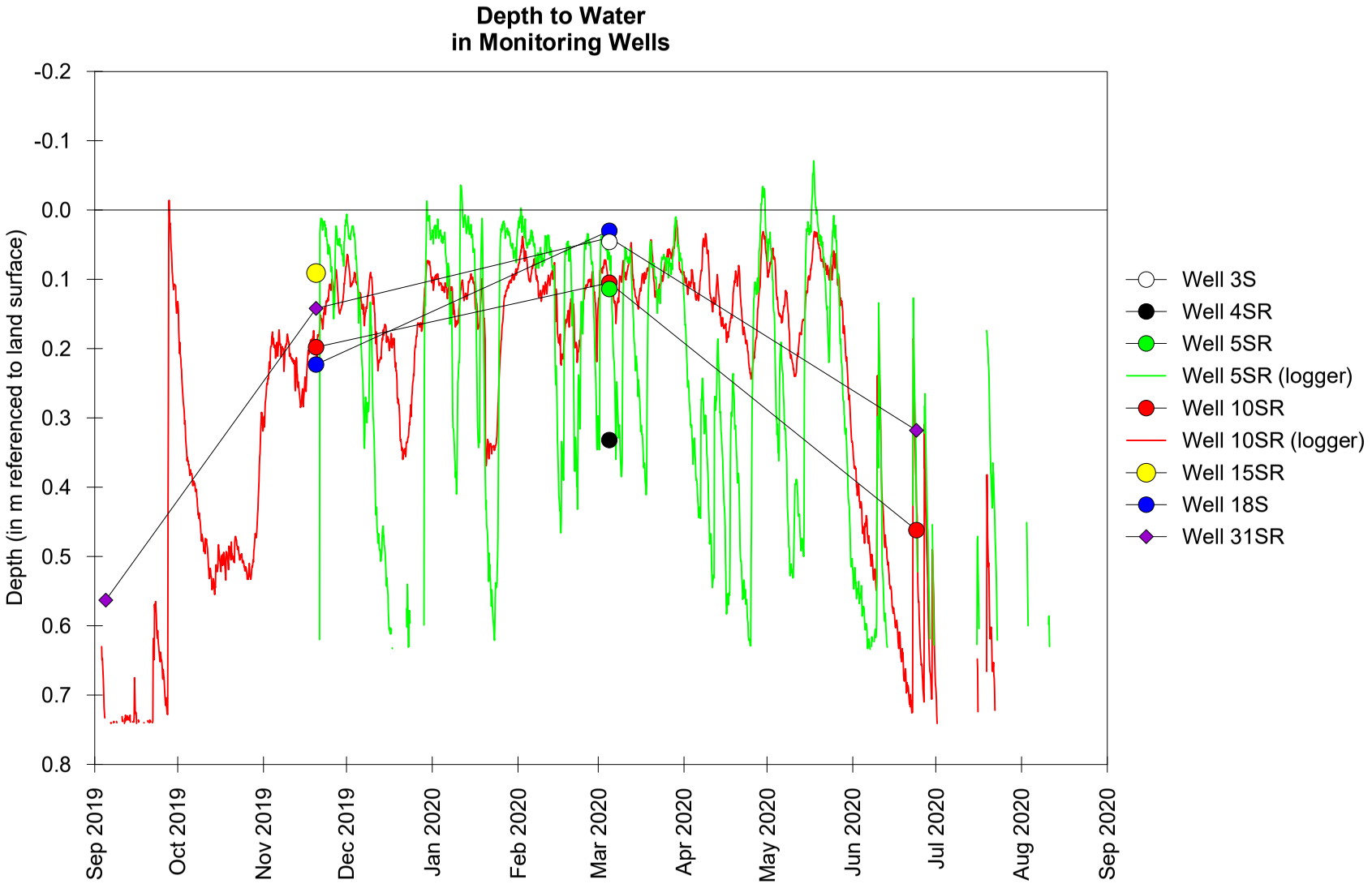
Thorn Creek Headwaters Preserve Wetland Mitigation Site
September 1, 2019 through August 31, 2020



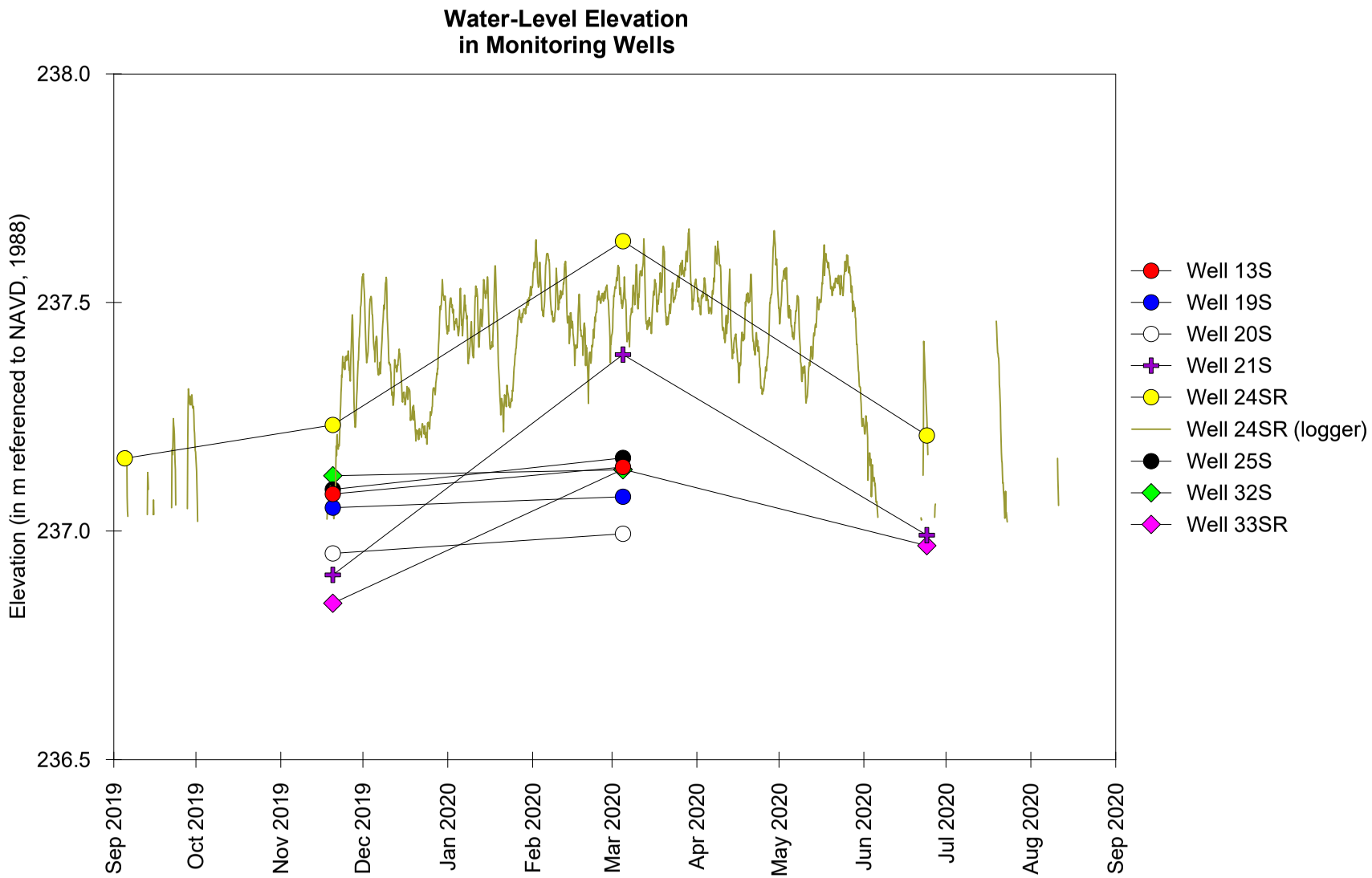
Thorn Creek Headwaters Preserve Wetland Mitigation Site
September 1, 2019 through August 31, 2020



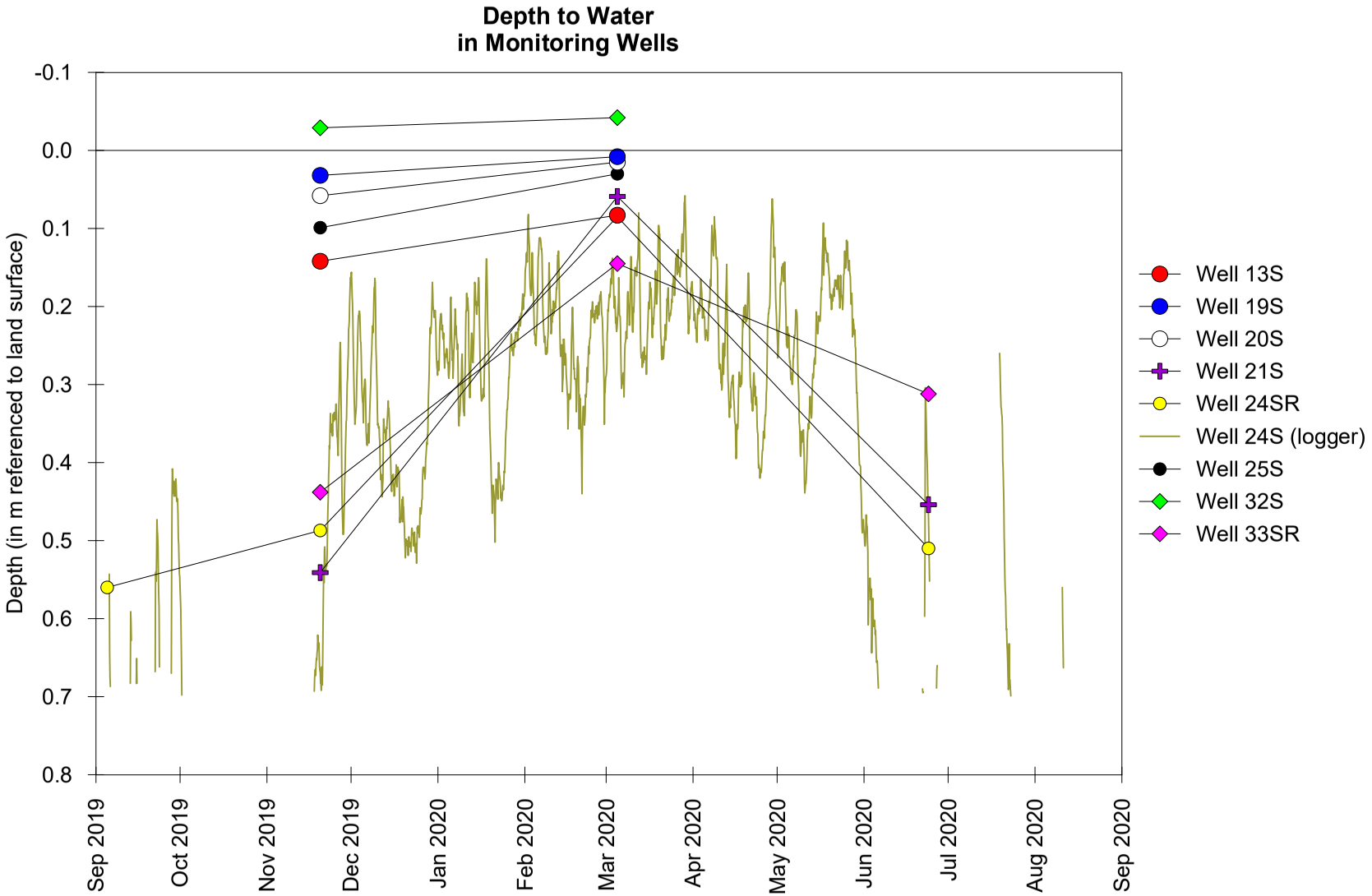
Thorn Creek Headwaters Preserve Wetland Mitigation Site
September 1, 2019 through August 31, 2020



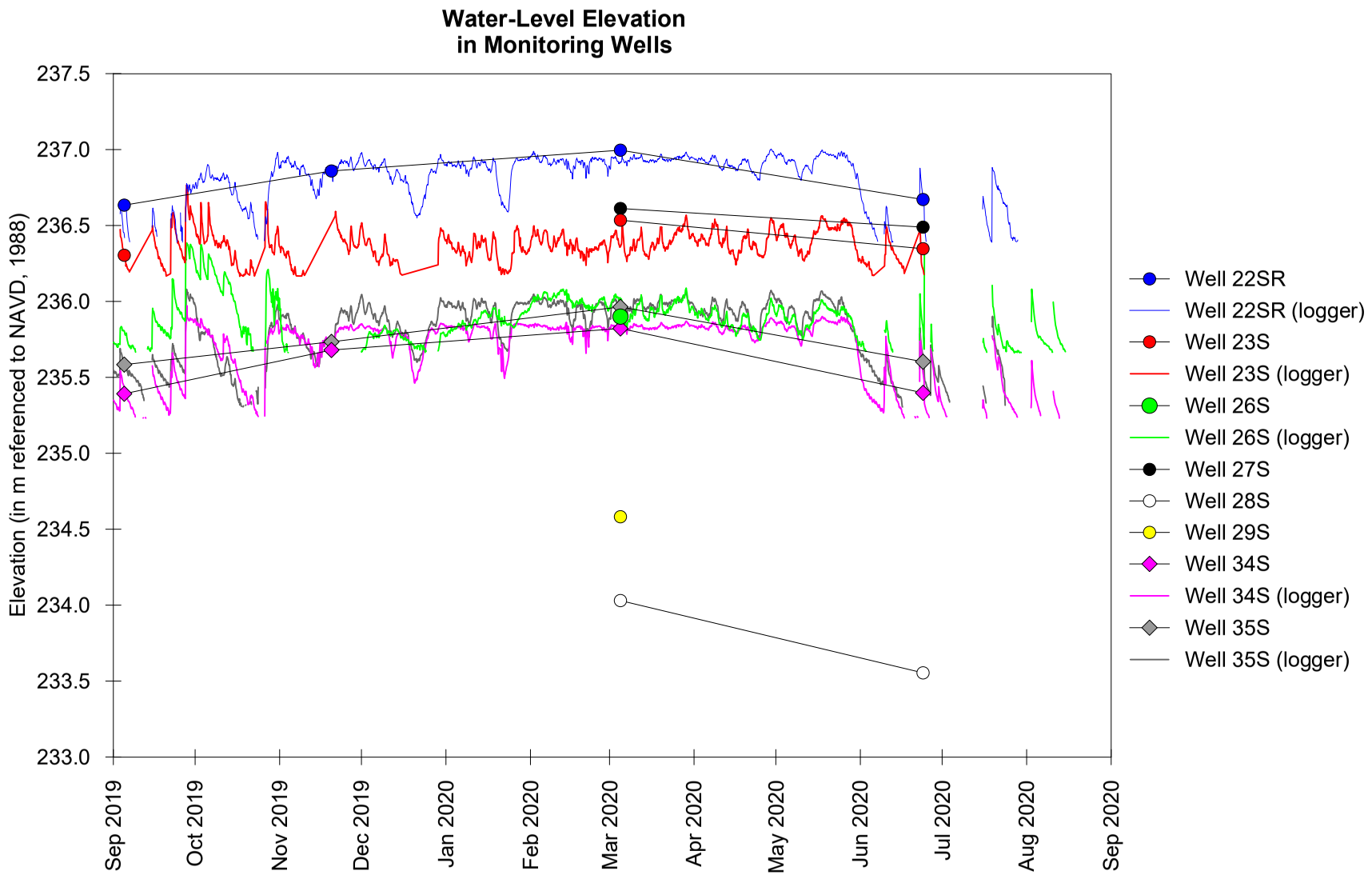
Thorn Creek Headwaters Preserve Wetland Mitigation Site
September 1, 2019 through August 31, 2020



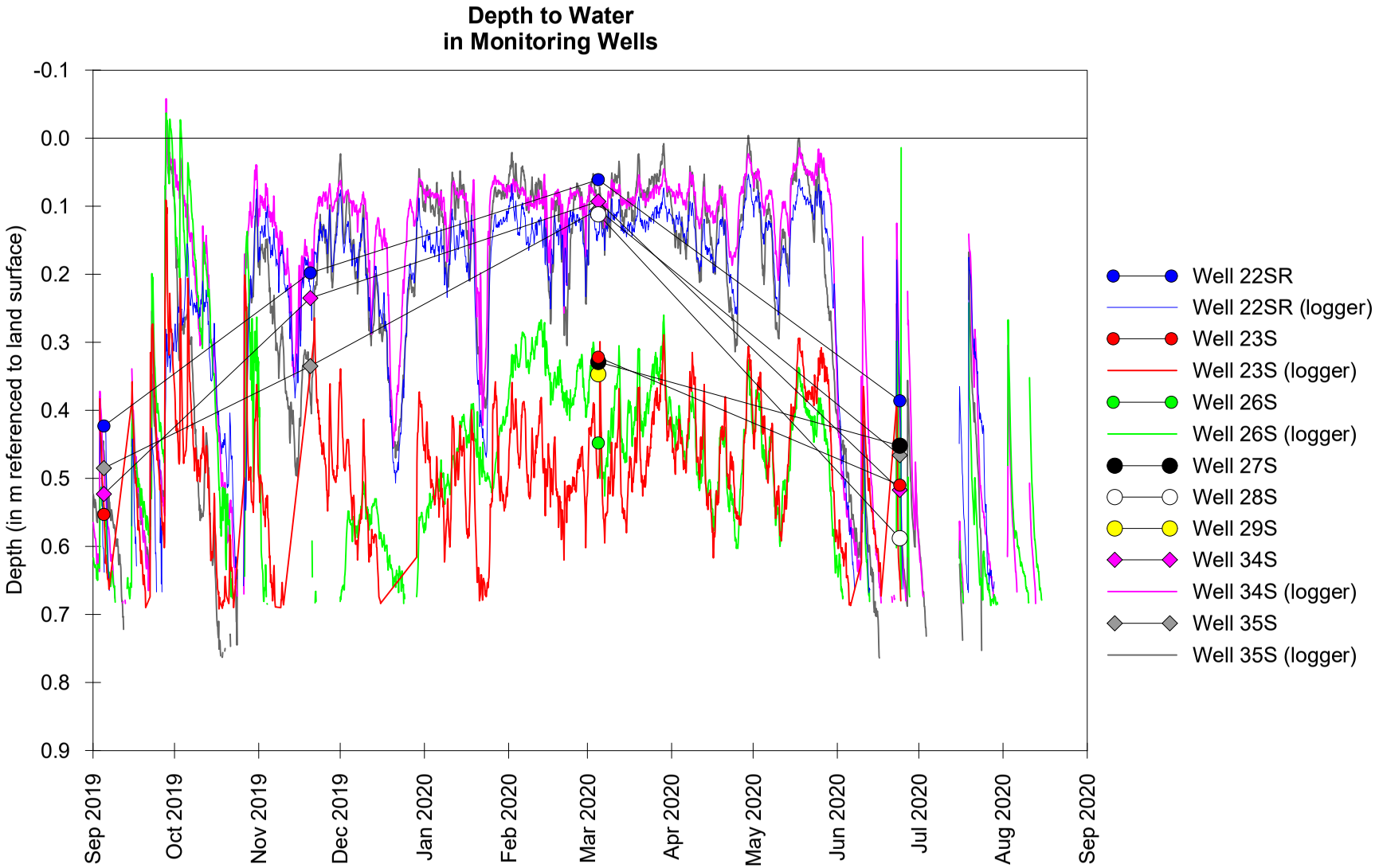
Thorn Creek Headwaters Preserve Wetland Mitigation Site
September 1, 2019 through August 31, 2020



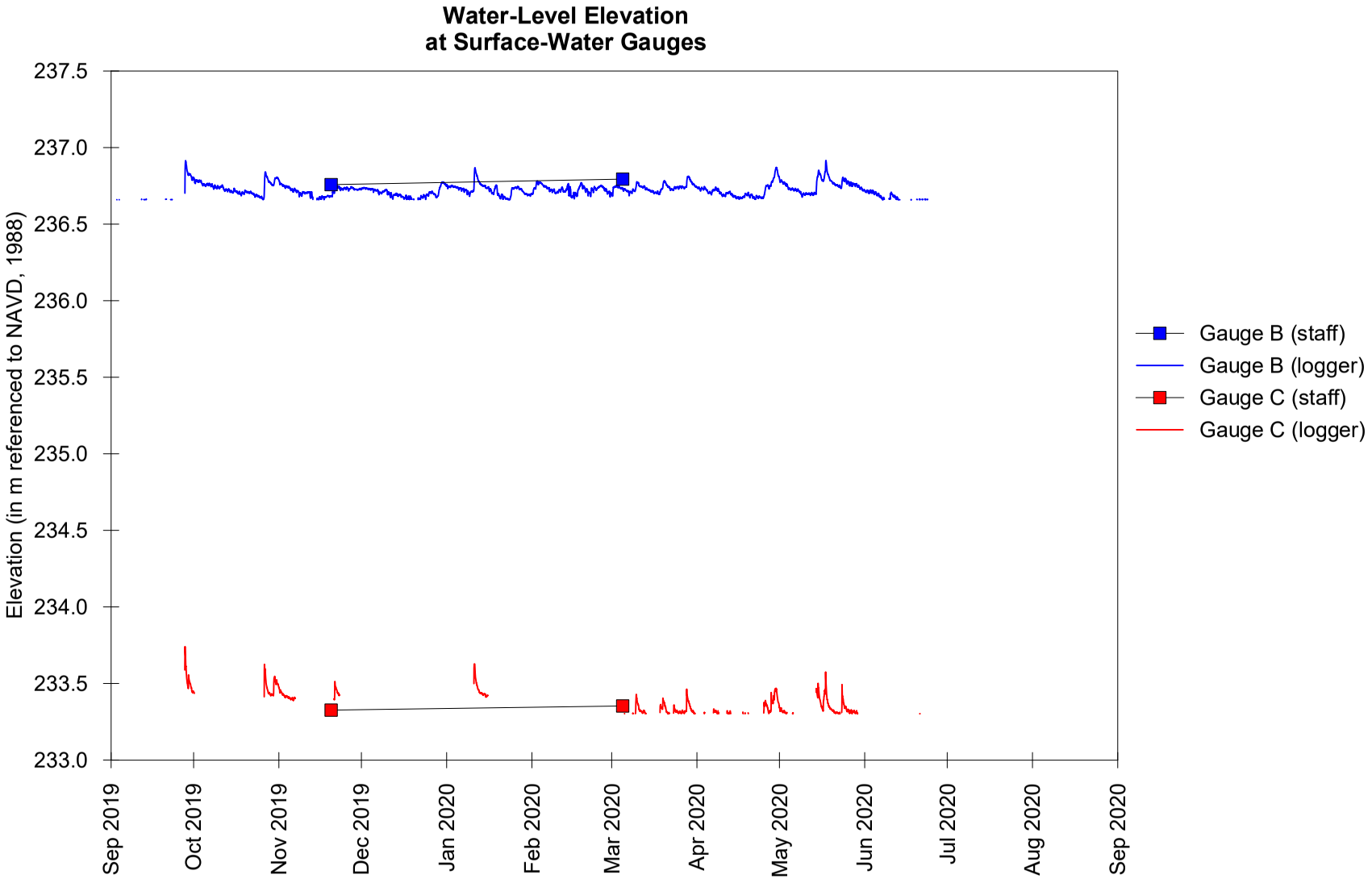
Thorn Creek Headwaters Preserve Wetland Mitigation Site
September 1, 2019 through August 31, 2020



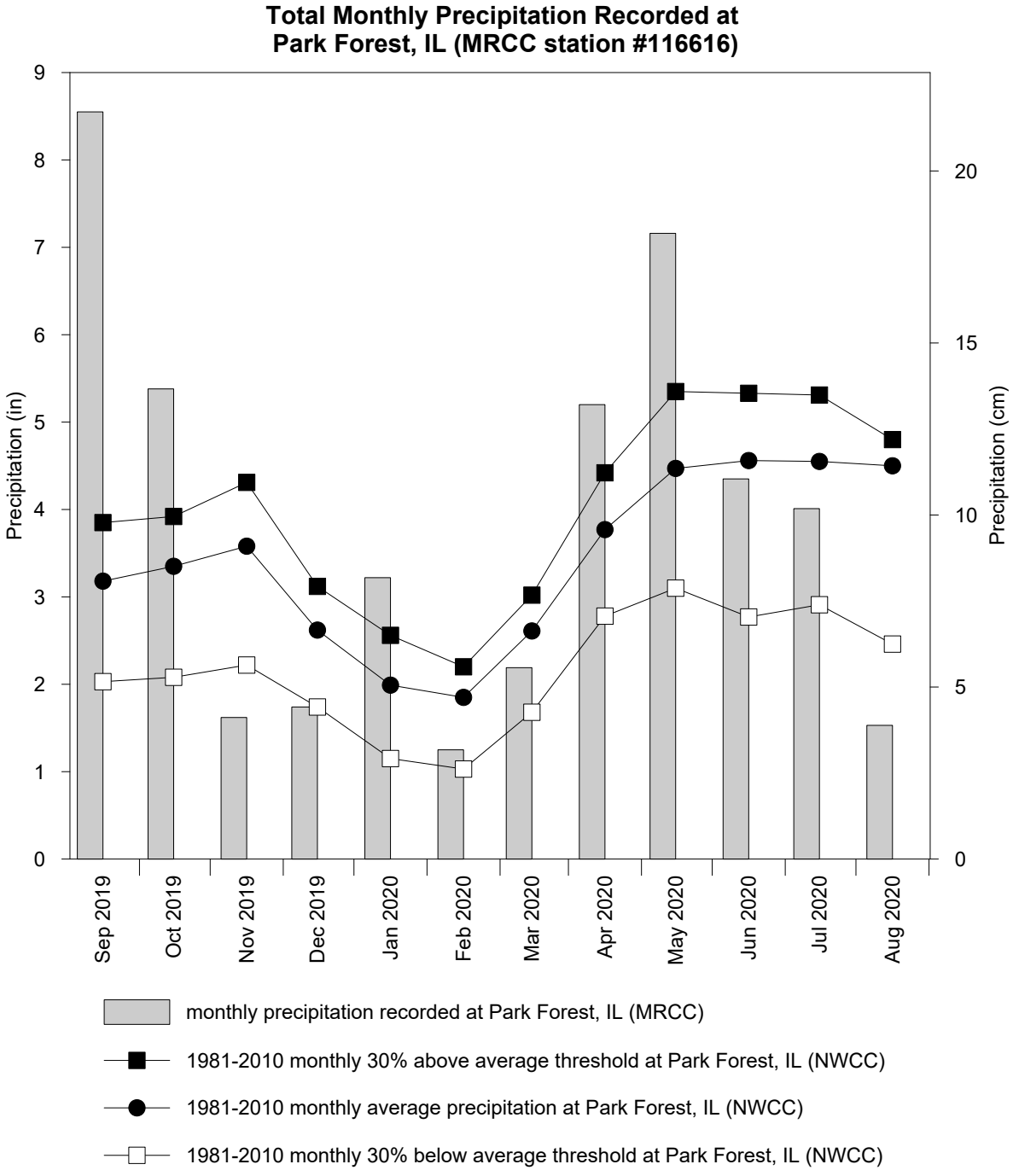
Thorn Creek Headwaters Preserve Wetland Mitigation Site
September 1, 2019 through August 31, 2020



Thorn Creek Headwaters Preserve Wetland Mitigation Site
September 1, 2019 through August 31, 2020



Thorn Creek Headwaters Preserve Wetland Mitigation Site
September 2019 through August 2020



HERRIN ROAD **ISGS #91**
WETLAND MITIGATION SITE
FAS 903/FAU 9588, Herrin to Johnston City Road
Sequence #9891B
Williamson County, near Herrin, Illinois
Primary Project Manager: Audra M. Noyes
Secondary Project Manager: Lindsey A. Schafer

SITE HISTORY

- June 2017: ISGS was tasked by IDOT to monitor wetland hydrology.
- November 2017: The ISGS installed a monitoring network at the site.

WETLAND HYDROLOGY CALCULATION FOR 2020

The target compensation area for the Herrin Road wetland mitigation site is 3.20 ha (7.90 ac). Using the 1987 Manual (Environmental Laboratory 1987), 1.15 ha (2.85 ac) of the total site area of 2.52 ha (6.23 ac) satisfied wetland hydrology criteria for greater than 5% of the 2020 growing season, and 1.15 ha (2.83 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), 1.25 ha (3.08 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 Du Quoin, Illinois, is March 30, and the season lasts 217 days (MRCC 2019). 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 2 was the starting date of the 2020 growing season based on on-site soil temperatures.
- Total precipitation for the monitoring period at West Frankfort, Illinois (MRCC station #119148), was 113% of normal, and spring 2020 (March through May) precipitation was 112% of normal.
- The period of maximum inundation and saturation during the 2020 growing season occurred in March due to several precipitation events.
- In 2020, water levels measured in 10 of 16 soil-zone monitoring wells satisfied wetland hydrology criteria for greater than 5% of the growing season, and water levels measured in 10 of 16 soil-zone monitoring wells satisfied wetland hydrology criteria for greater than 12.5% of the growing season, using the 1987 Manual. In addition, using the 2010 Midwest Region Supplement, water levels in 11 of 16 soil-zone monitoring wells satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season. See the tables at the end of this summary for details.

ADDITIONAL INFORMATION

- Beaver dams continue to alter the hydrology of Wetland Area 1. In September 2020, beaver dams were located upstream and downstream of Gauge BR, and inside the ditch

that previously drained Wetland Area 1 to the unnamed creek, near Well 15S. This increased wetland hydrology acreage by ponding water in the vicinity of 15S.

PLANNED FUTURE ACTIVITIES

- Monitoring will continue until no longer required by IDOT.

WETLAND HYDROLOGY TABLES FOR 2020

Well locations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
1S	N	N	N
2S	N	N	Y
3S	Y*	Y*	Y*
4S	Y	Y	Y
5S	Y	Y	Y
6S	Y	Y	Y
7S	Y	Y	Y
8S	Y*	Y*	Y*
9S	Y	Y	Y
10S	N	N	N
11S	N*	N*	N*
12S	N	N	N
13S	Y	Y	Y
14S	N	N	N
15S	Y	Y	Y
16S	Y*	Y*	Y*

Y – met wetland hydrology criteria
N – did not meet wetland hydrology criteria
* -- met/did not meet wetland hydrology criteria based on experimental modeled results

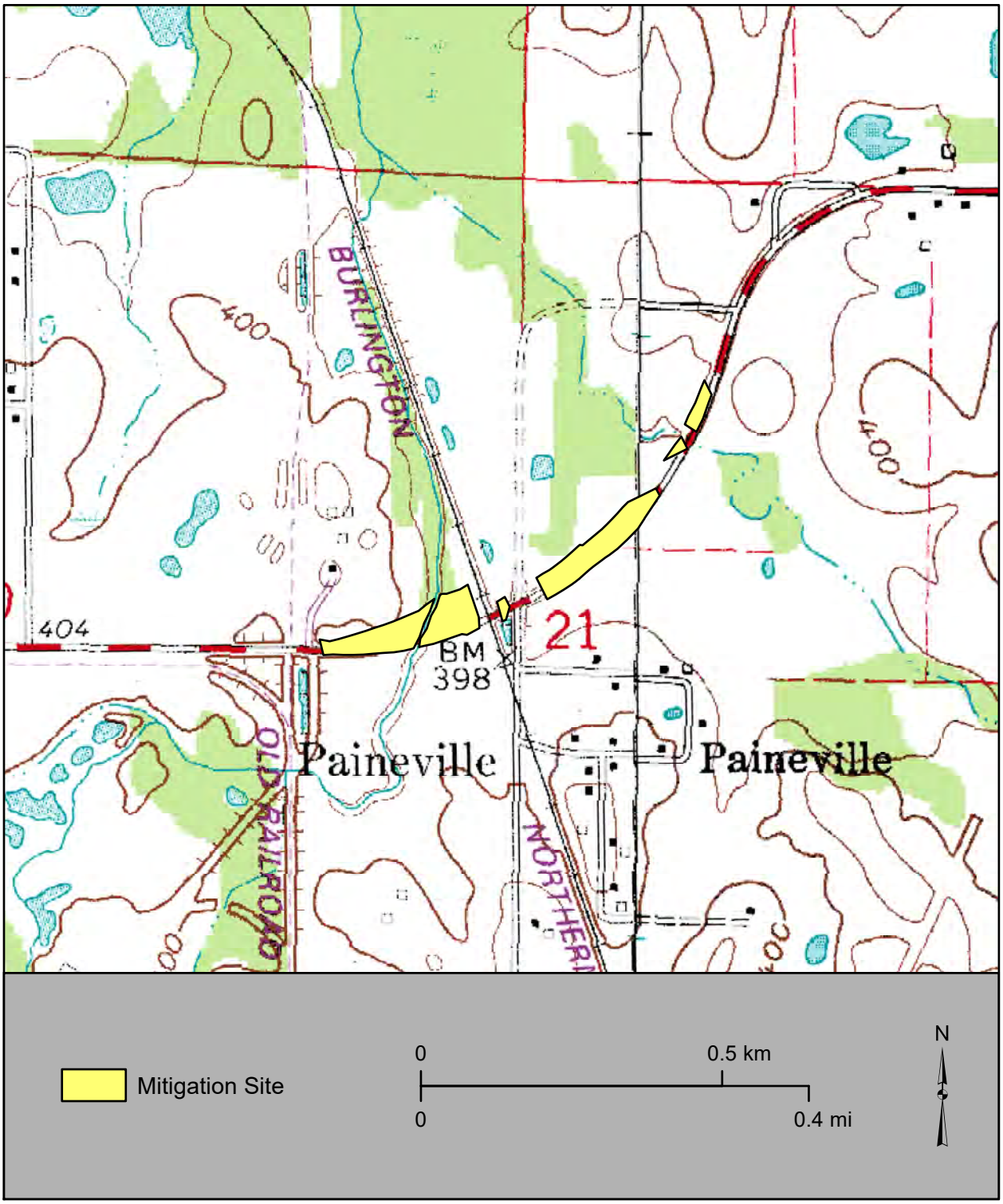
Surface-water gauge elevations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
A	116.74 m (383.01 ft)	116.70 m (382.86 ft)	116.84 m (383.33 ft)
BR	n/a	n/a	n/a

n/a – insufficient data to determine an elevation

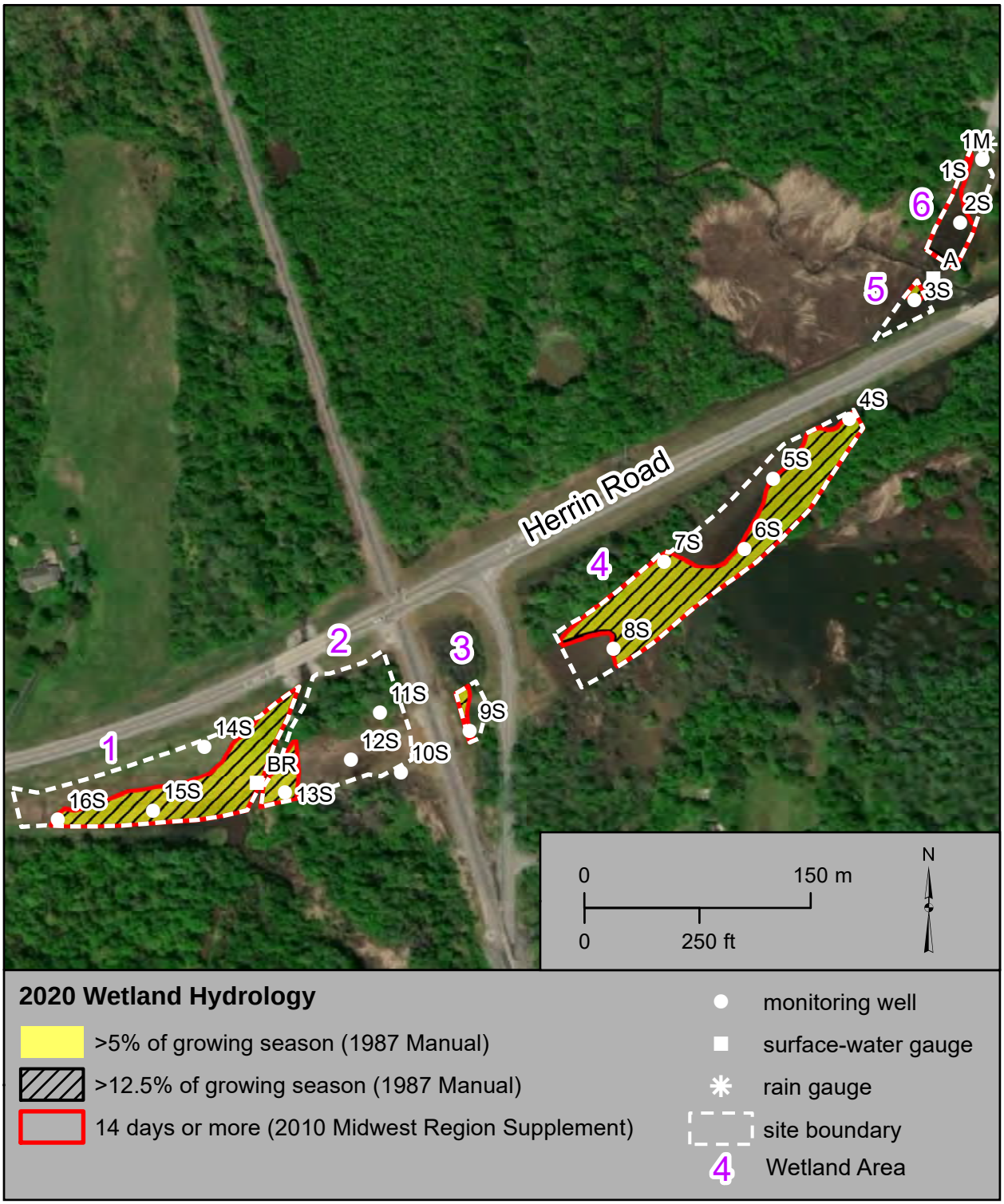
Herrin Road Wetland Mitigation Site
(FAS 903/FAU 9588)

General Study Area and Vicinity

from the USGS Topographic Series, Herrin, IL 7.5-minute Quadrangle (USGS 1968)
and Johnston City, IL 7.5-minute Quadrangle (USGS 1963c)
contour interval is 10 feet

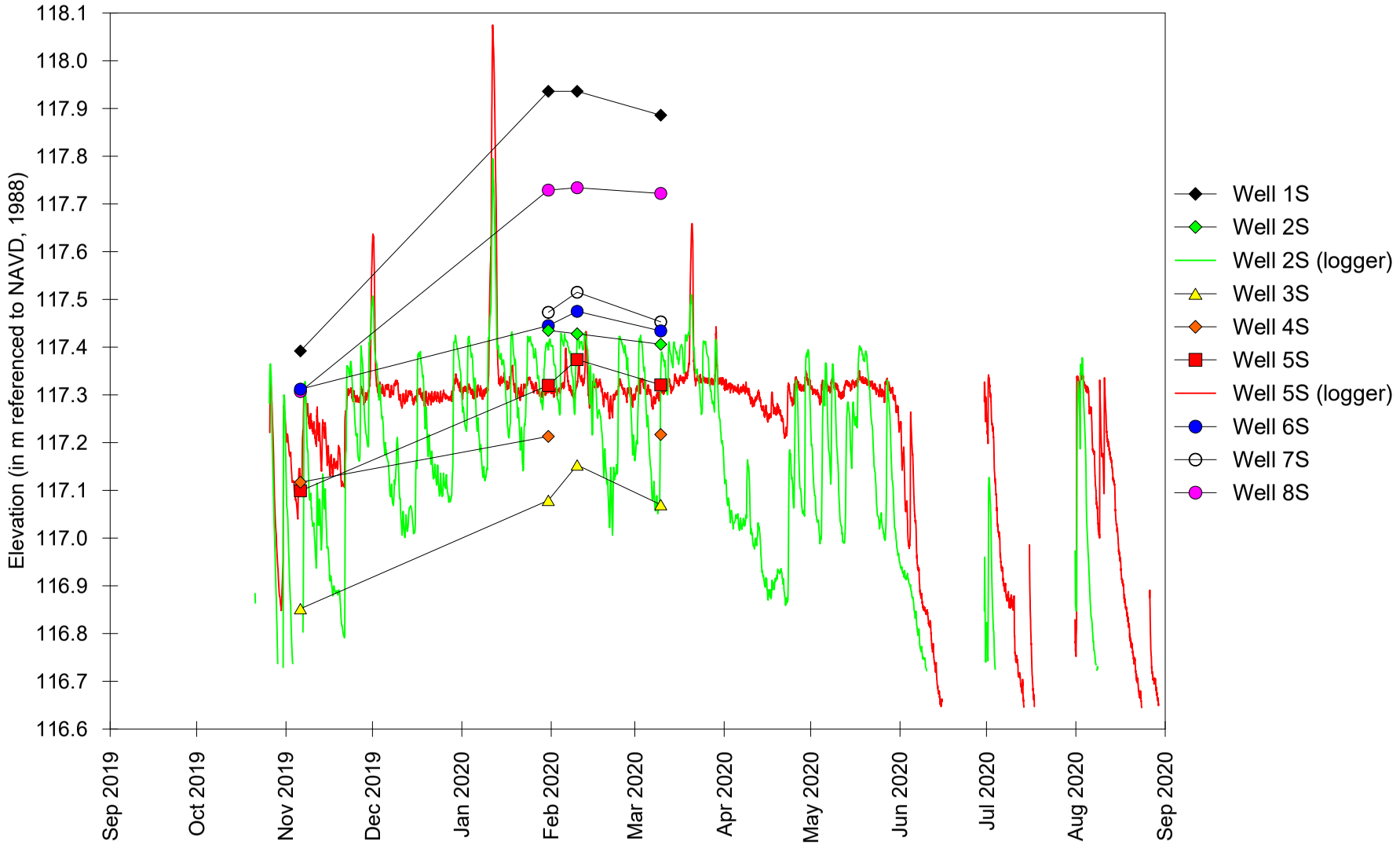


Herrin Road Wetland Mitigation Site
(FAS 903/FAU 9588)
Estimated Areal Extent of 2020 Wetland Hydrology
September 1, 2019 through August 31, 2020
Map based on imagery available from Esri (Esri 2020)



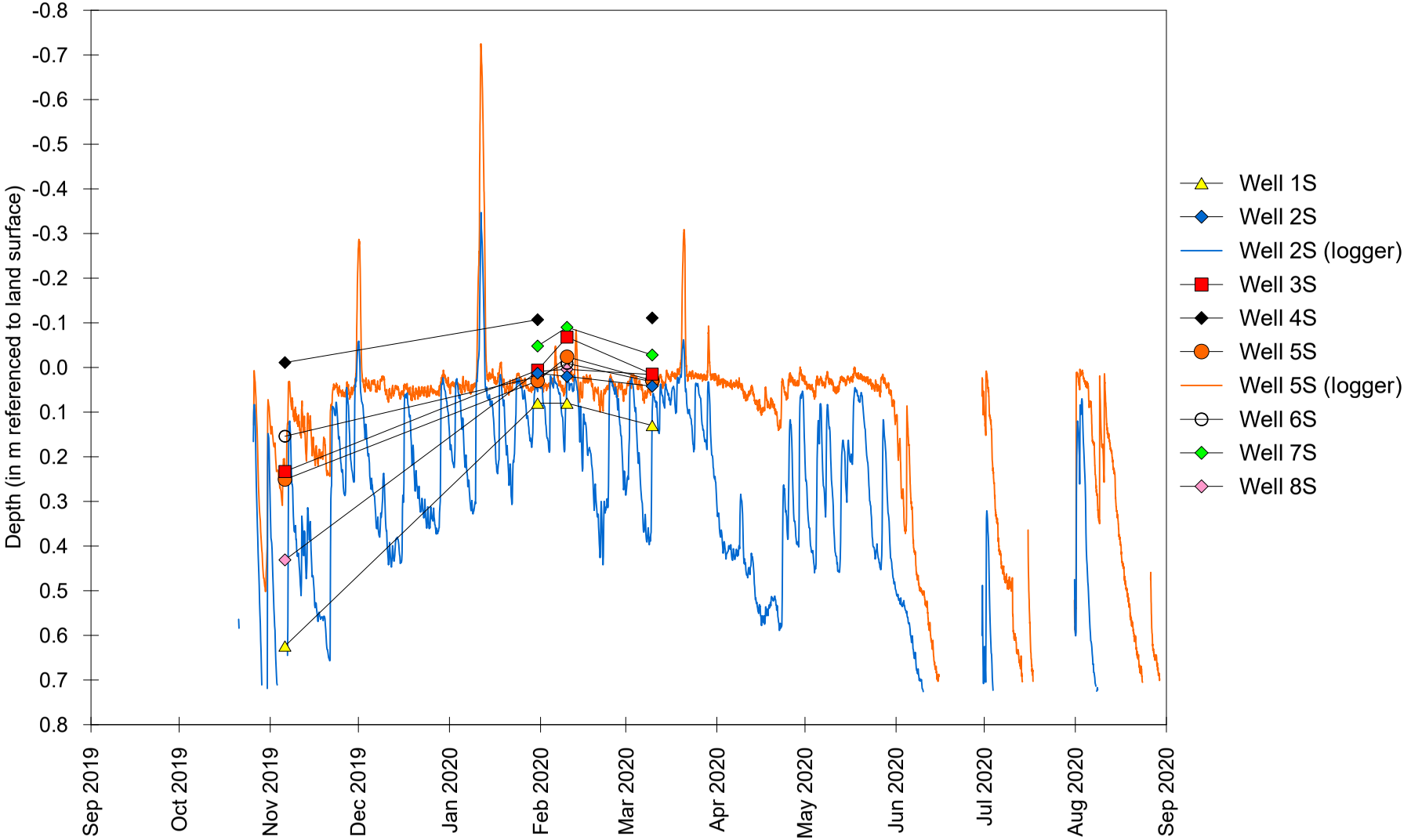
Herrin Road Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Water-Level Elevation
in Monitoring Wells - East (Wetland Areas 4, 5, 6)



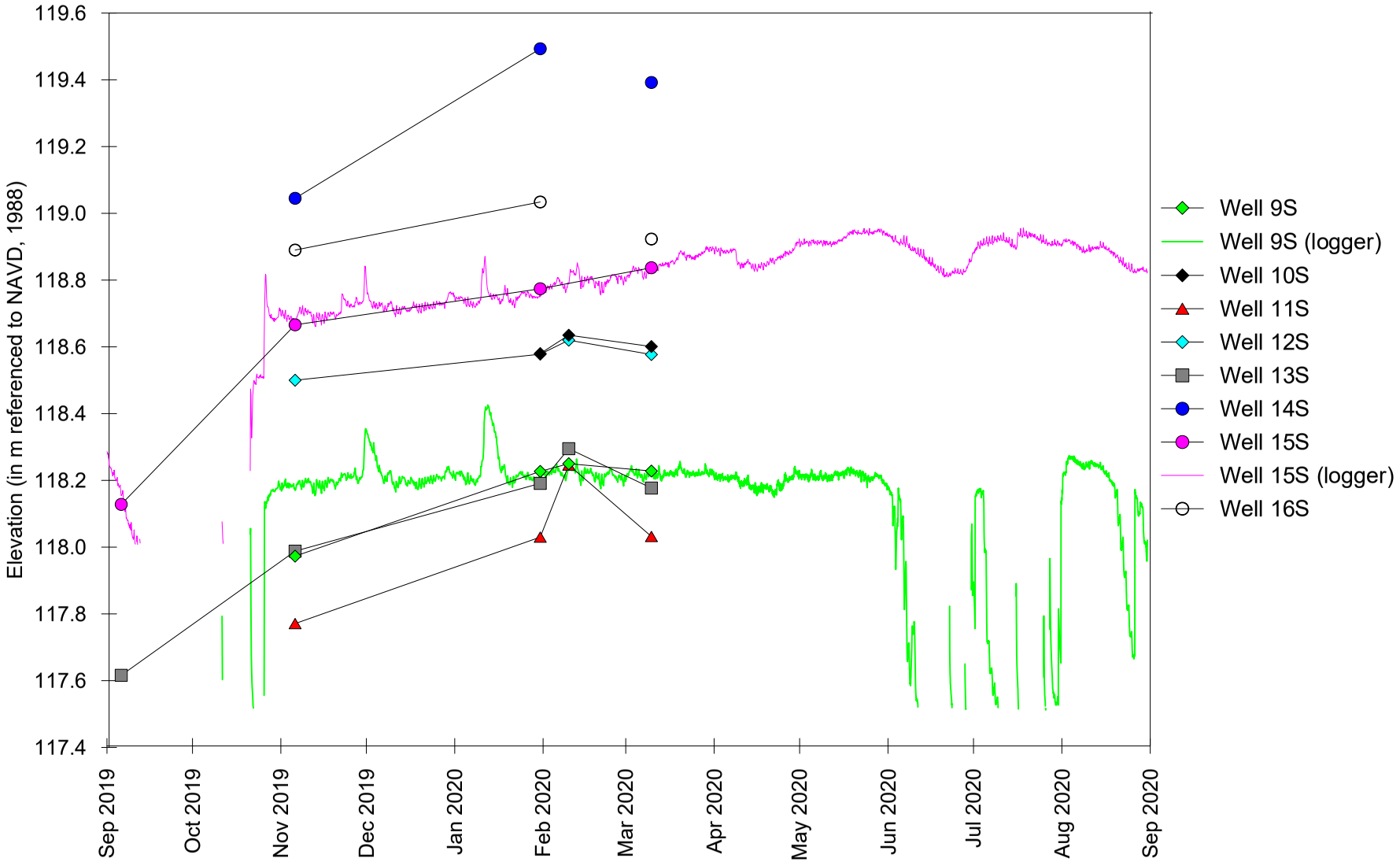
Herrin Road Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Depth to Water
in Monitoring Wells - East (Wetland Areas 4, 5, 6)



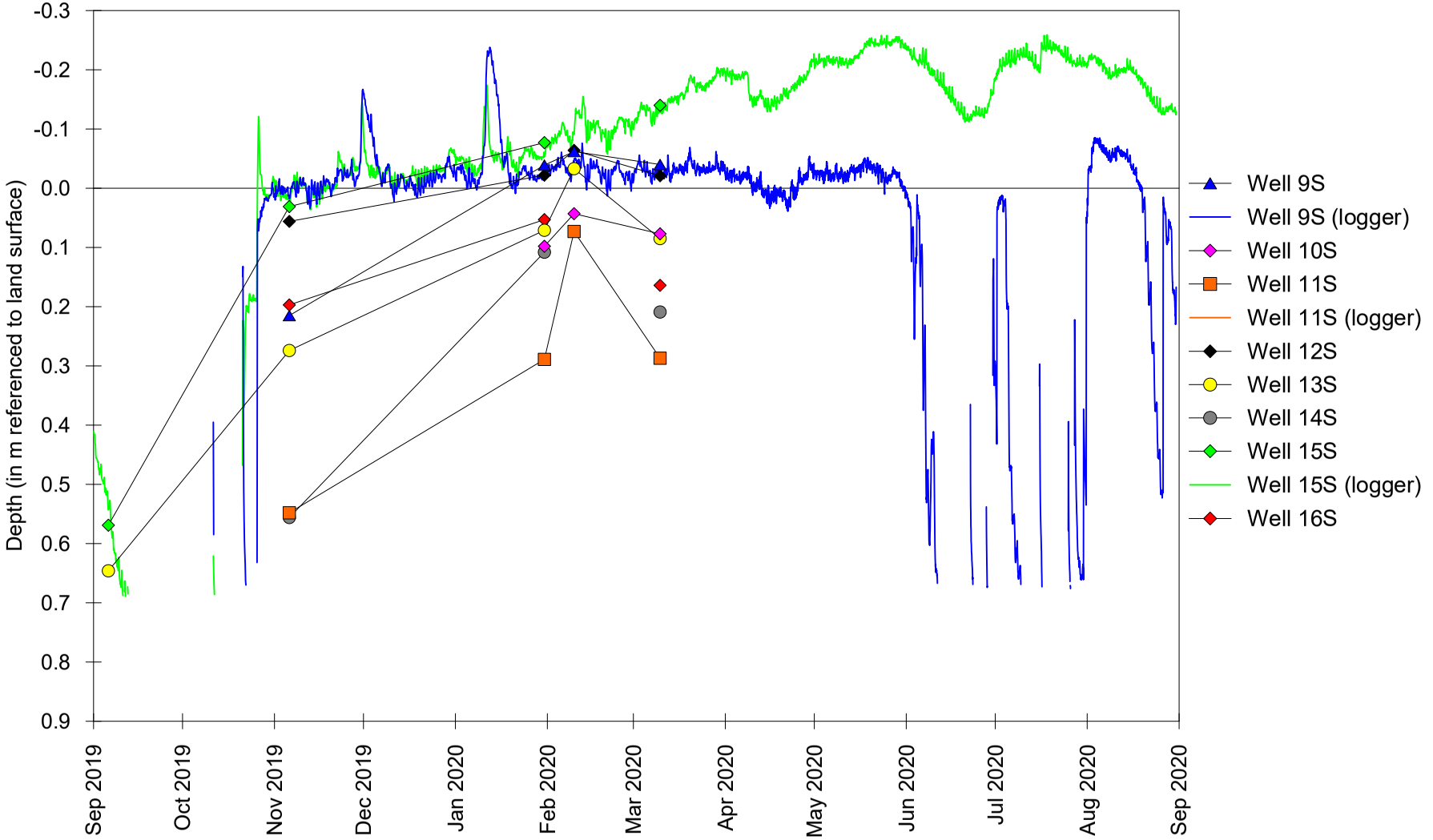
Herrin Road Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Water-Level Elevation
in Monitoring Wells - West (Wetland Areas 1, 2, 3)



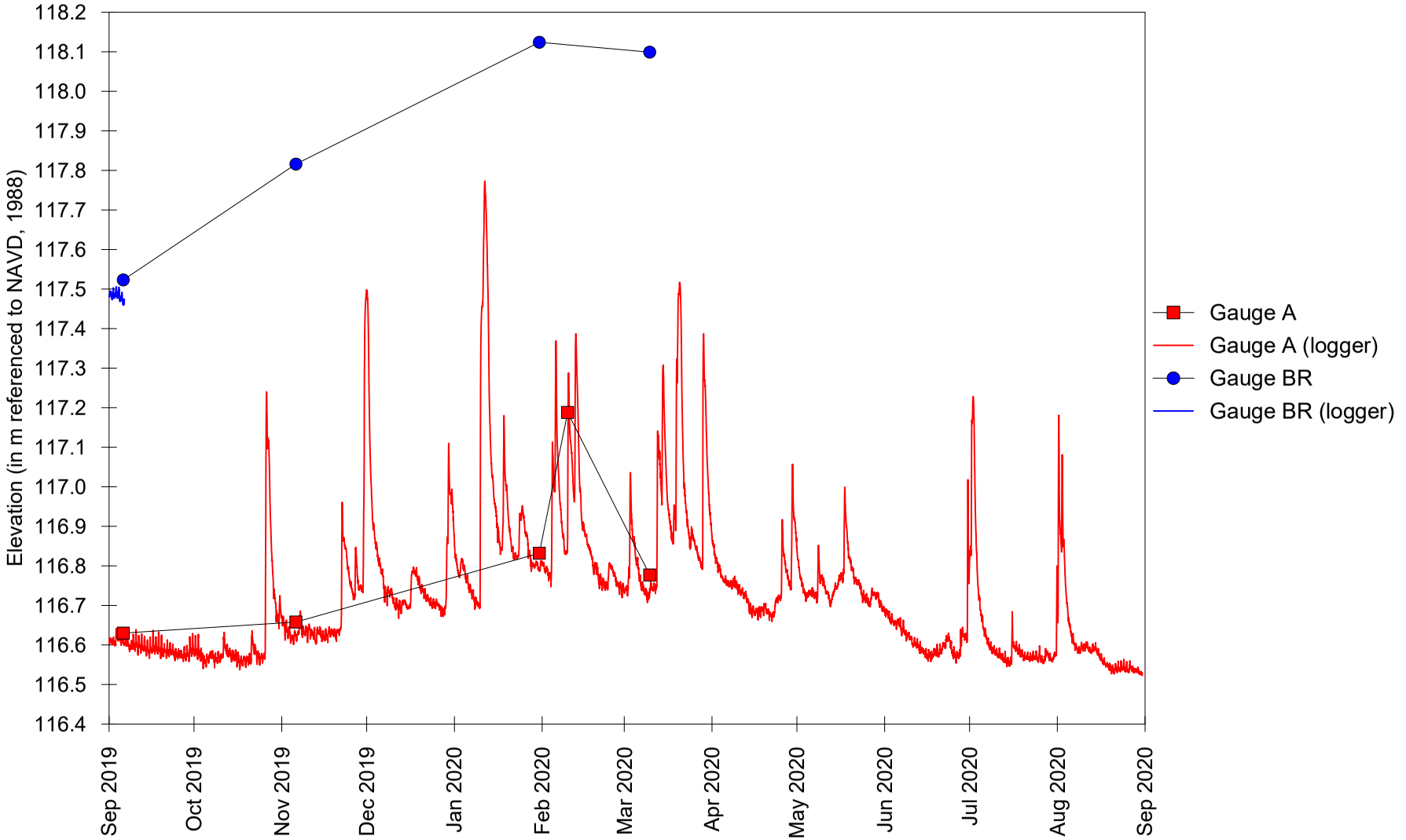
Herrin Road Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Depth to Water
in Monitoring Wells - West (Wetland Areas 1, 2, 3)



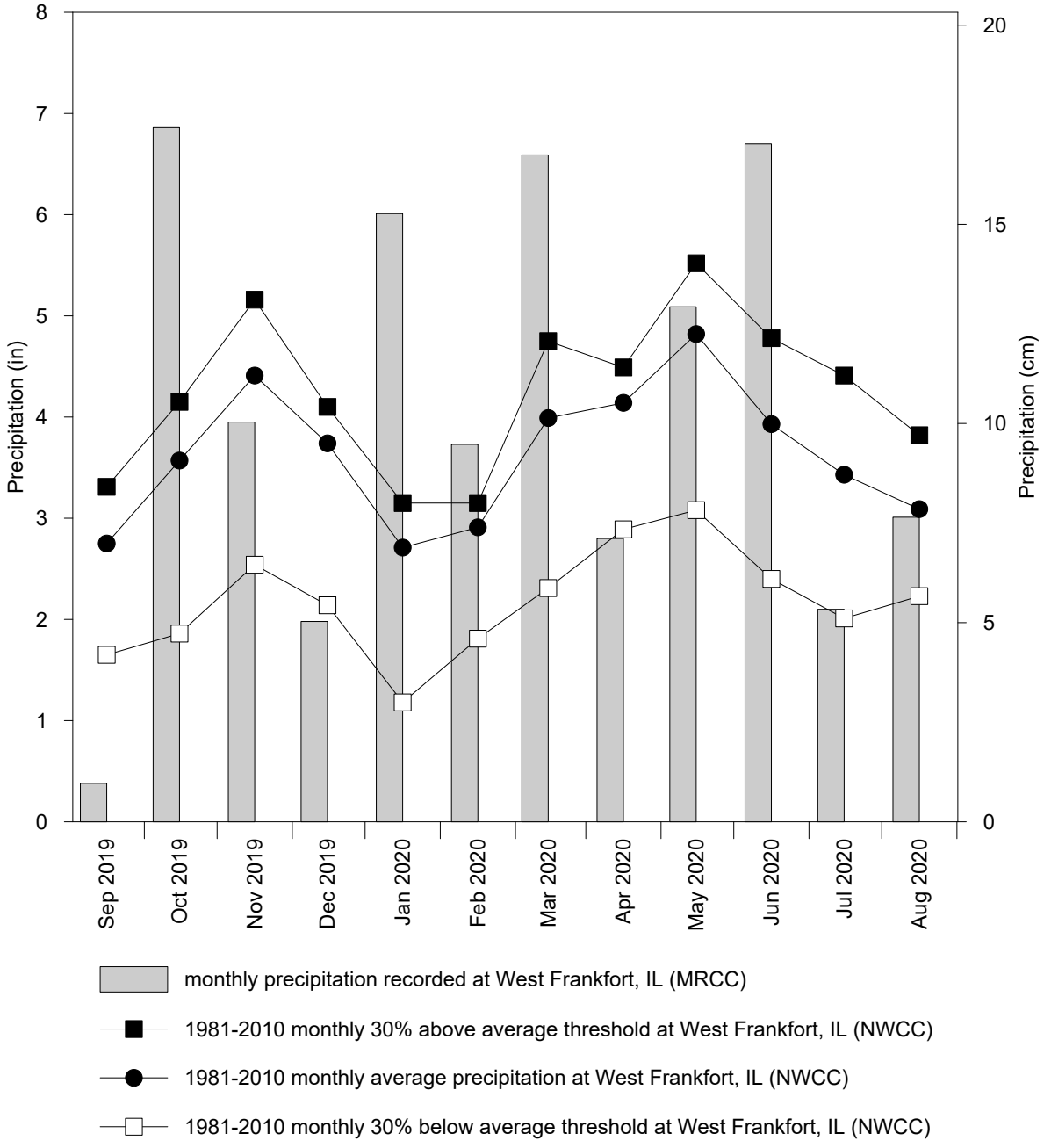
Herrin Road Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Water-Level Elevation at Surface-Water Gauges



Herrin Road Wetland Mitigation Site
September 2019 through August 2020

Total Monthly Precipitation Recorded at West Frankfort, IL (MRCC station #119148)



NEW HAVEN **ISGS #92**
WETLAND MITIGATION SITE
FAP 877, IL 141
Sequence #18257
White County, near New Haven, Illinois
Primary Project Manager: Audra M. Noyes
Secondary Project Manager: Jessica L.B. Monson

SITE HISTORY

- November 2018: The ISGS installed a monitoring network at the site.

WETLAND HYDROLOGY CALCULATION FOR 2020

The target compensation area for the New Haven wetland mitigation site is 2.57 ha (6.36 ac). Using the 1987 Manual (Environmental Laboratory 1987), 3.01 ha (7.44 ac) of the total site area of 3.18 ha (7.87 ac) satisfied wetland hydrology criteria for greater than 5% of the 2020 growing season, and 0.05 ha (0.12 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), 2.98 ha (7.36 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 Mt. Vernon, Indiana, is March 23, and the season lasts 236 days (MRCC 2020). Using the 1987 Manual, 5% of the growing season is 12 days, and 12.5% of the growing season is 30 days. Using the 2010 Midwest Region Supplement, February 23 was the starting date of the 2020 growing season based on on-site soil temperatures.

- Total precipitation for the monitoring period at Carmi 3, Illinois (MRCC station #111302), was 114% of normal, and spring 2020 (March through May) precipitation was 120% of normal.

- The period of maximum inundation and saturation during the 2020 growing season occurred between late March and early April, due to frequent rainfall resulting in a flood that covered much of the site.

- In 2020, water levels measured in 12 of 12 soil-zone monitoring wells satisfied wetland hydrology criteria for greater than 5% of the growing season, and water levels measured in 2 of 12 soil-zone monitoring wells satisfied wetland hydrology criteria for greater than 12.5% of the growing season, using the 1987 Manual. In addition, using the 2010 Midwest Region Supplement, water levels in 12 of 12 soil-zone monitoring wells satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season. See the tables at the end of this summary for details.

PLANNED FUTURE ACTIVITIES

- Monitoring will continue until no longer required by IDOT.

WETLAND HYDROLOGY TABLES FOR 2020

Well locations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
1S	Y	N	Y
2S	Y	Y	Y
3S	Y	N	Y
4S	Y	N	Y
5S	Y	N	Y
6S	Y	N	Y
7S	Y	Y	Y
8S	Y	N	Y
9S	Y	N	Y
10S	Y	N	Y
11S	Y	N	Y
12S	Y	N	Y

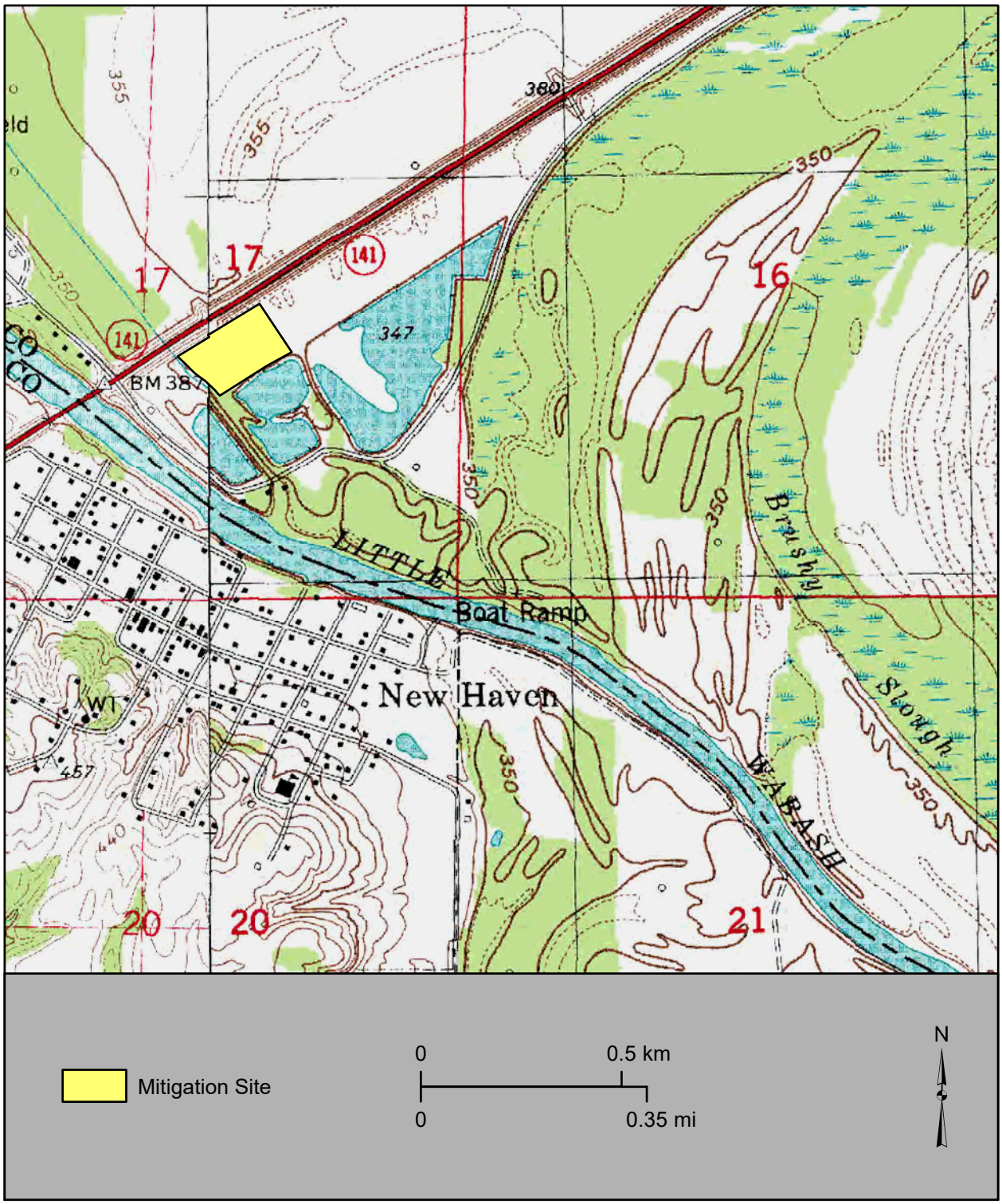
Y – met wetland hydrology criteria
N – did not meet wetland hydrology criteria

Surface-water gauge elevations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
A	n/a	n/a	n/a

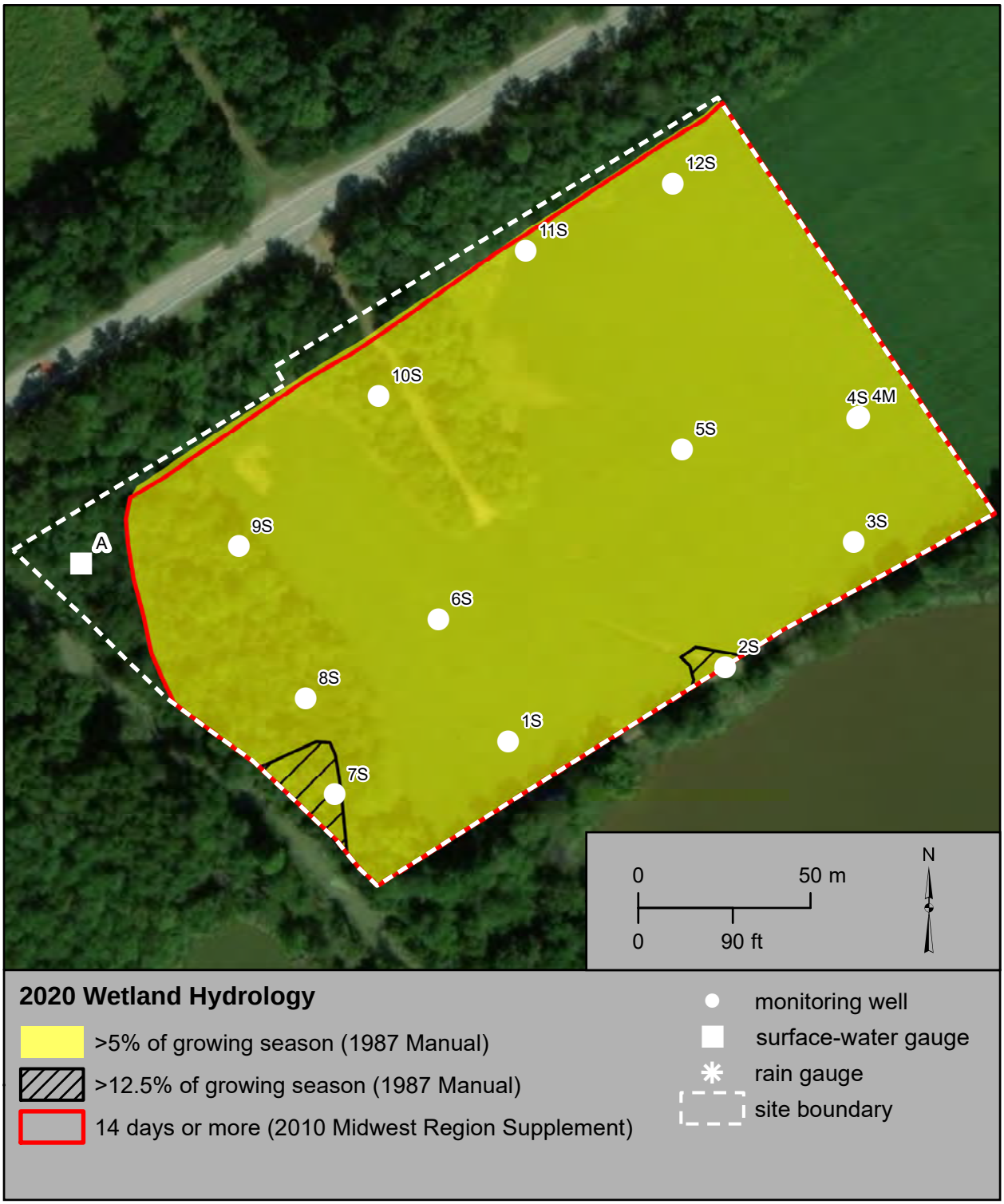
n/a – insufficient data to determine an elevation

New Haven Wetland Mitigation Site
(FAP 877)
General Study Area and Vicinity

from the USGS Topographic Series, New Haven, IL 7.5-minute Quadrangle (USGS 1964)
and Emma, IL 7.5-minute Quadrangle (USGS 1978)
contour interval is 10 feet

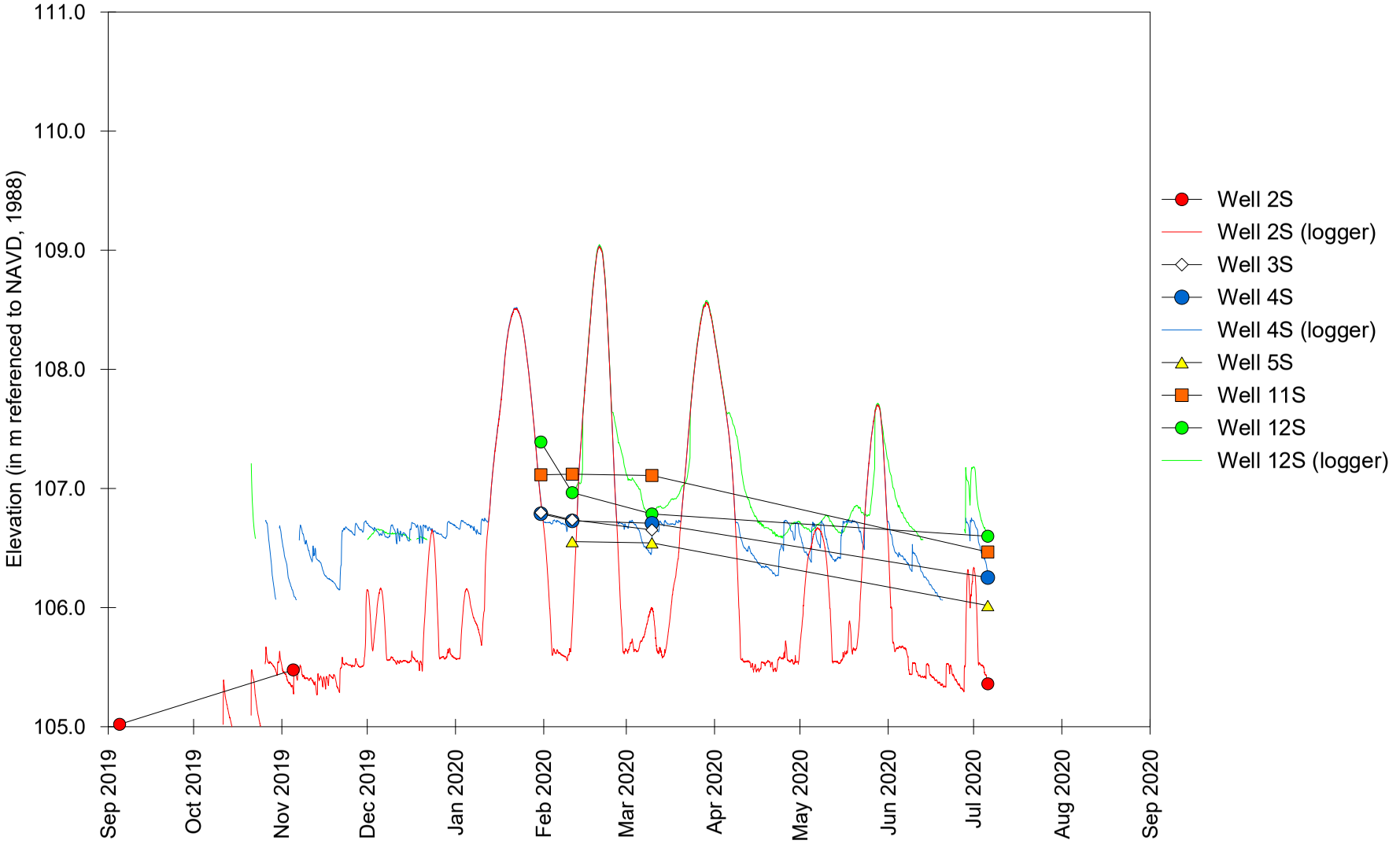


New Haven Wetland Mitigation Site
(FAP 877)
Estimated Areal Extent of 2020 Wetland Hydrology
September 1, 2019 through August 31, 2020
Map based on imagery available from Esri (Esri 2020)



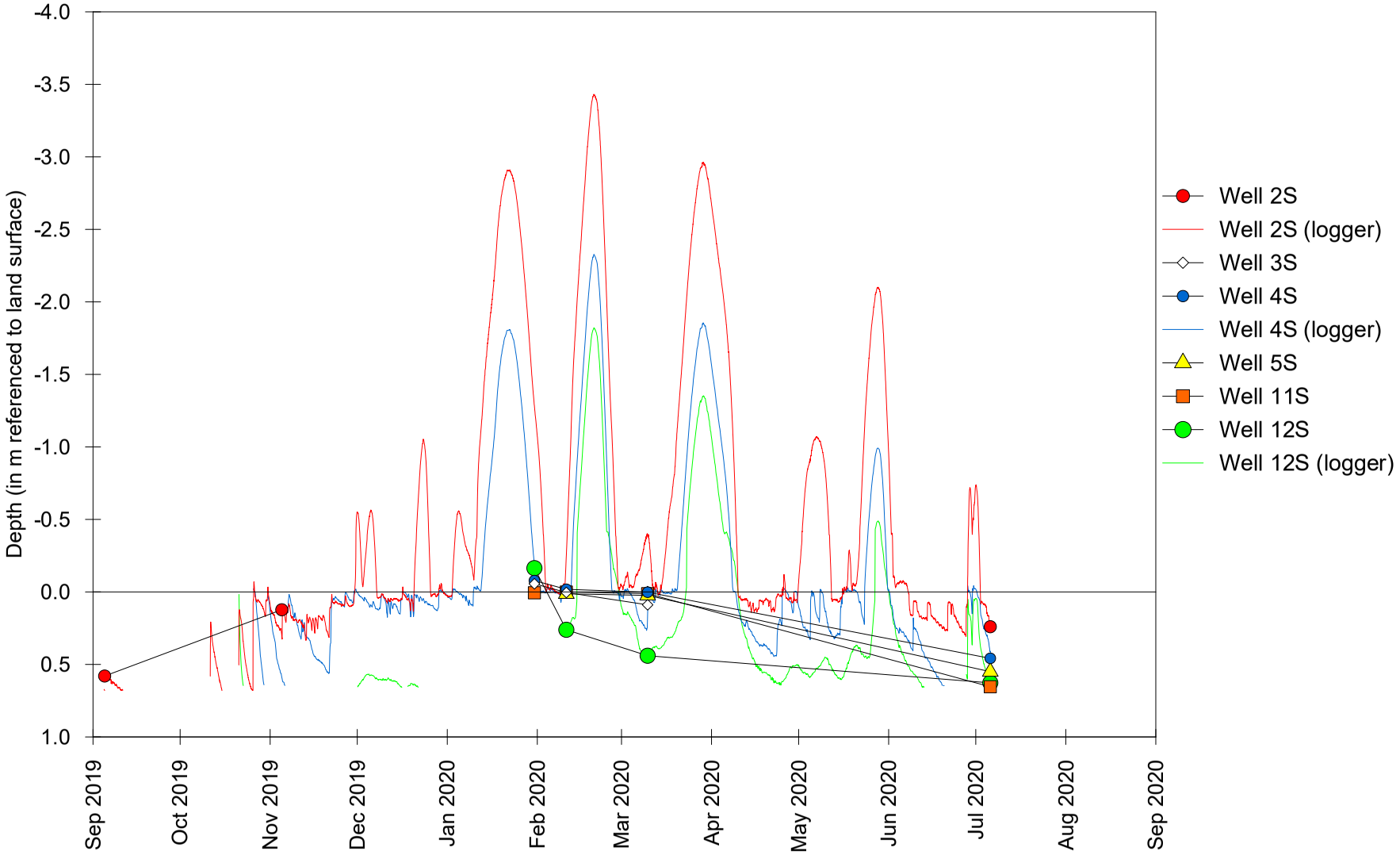
New Haven Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Water-Level Elevation in Monitoring Wells - East



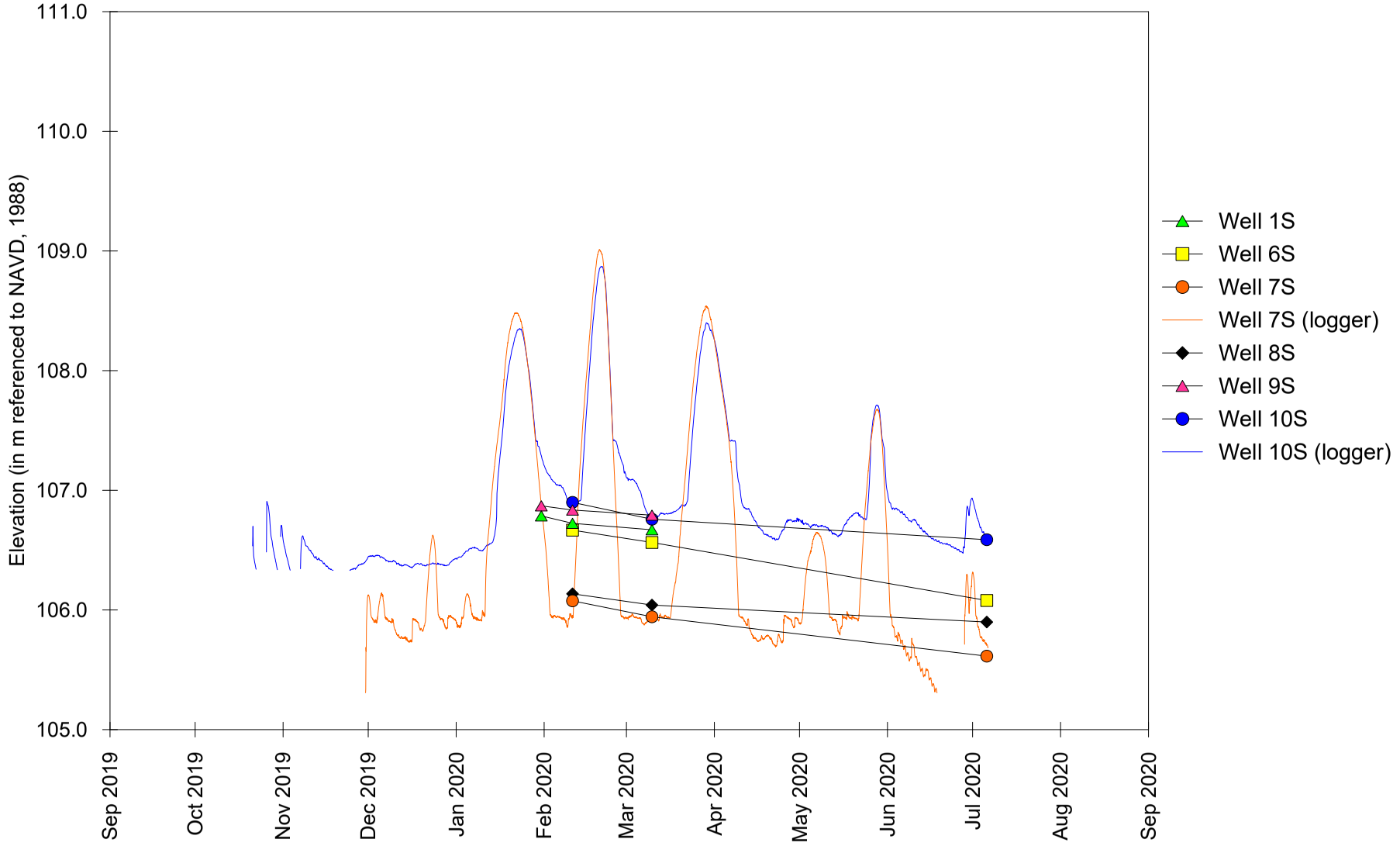
New Haven Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Depth to Water
in Monitoring Wells - East



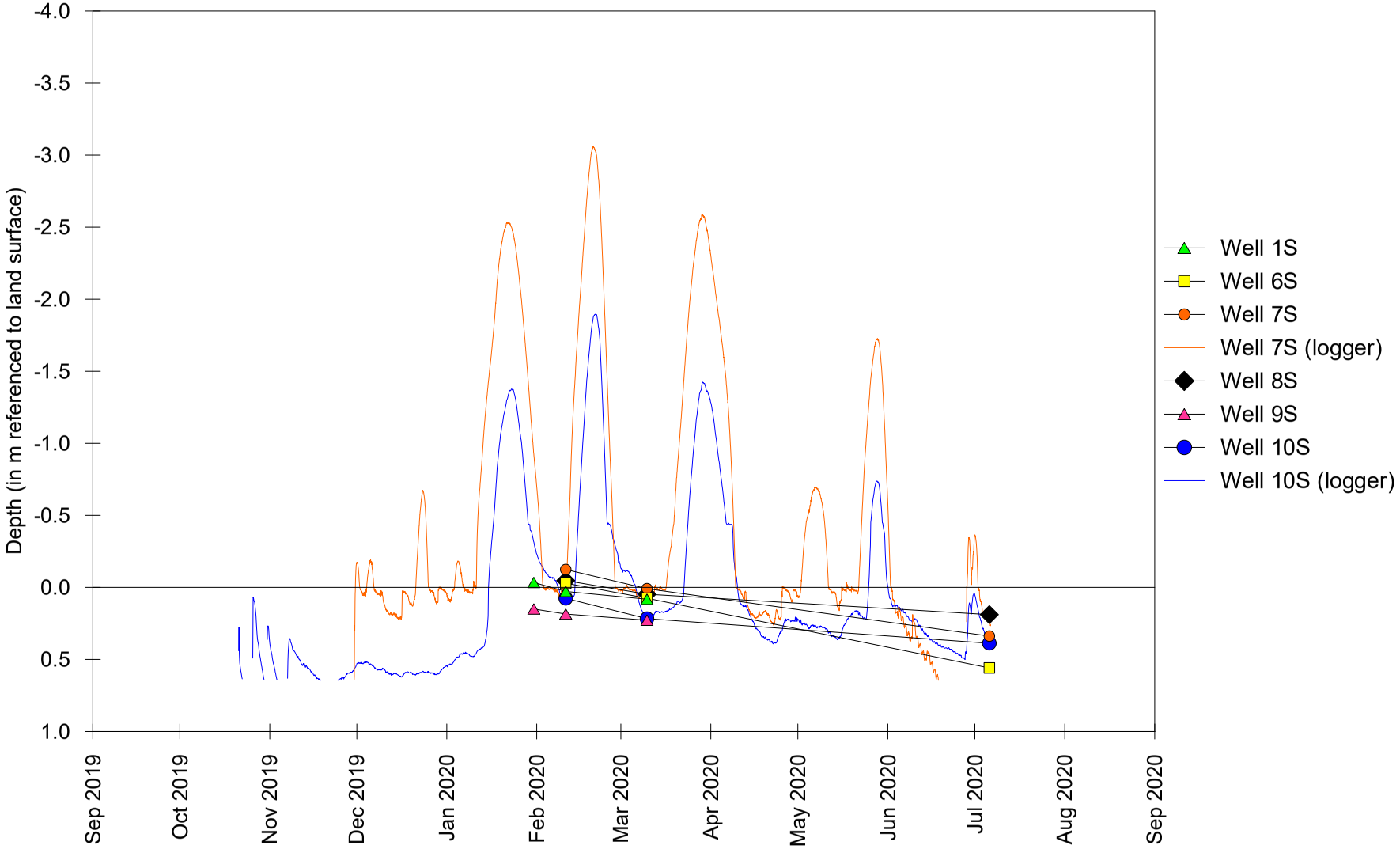
New Haven Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Water-Level Elevation in Monitoring Wells - West



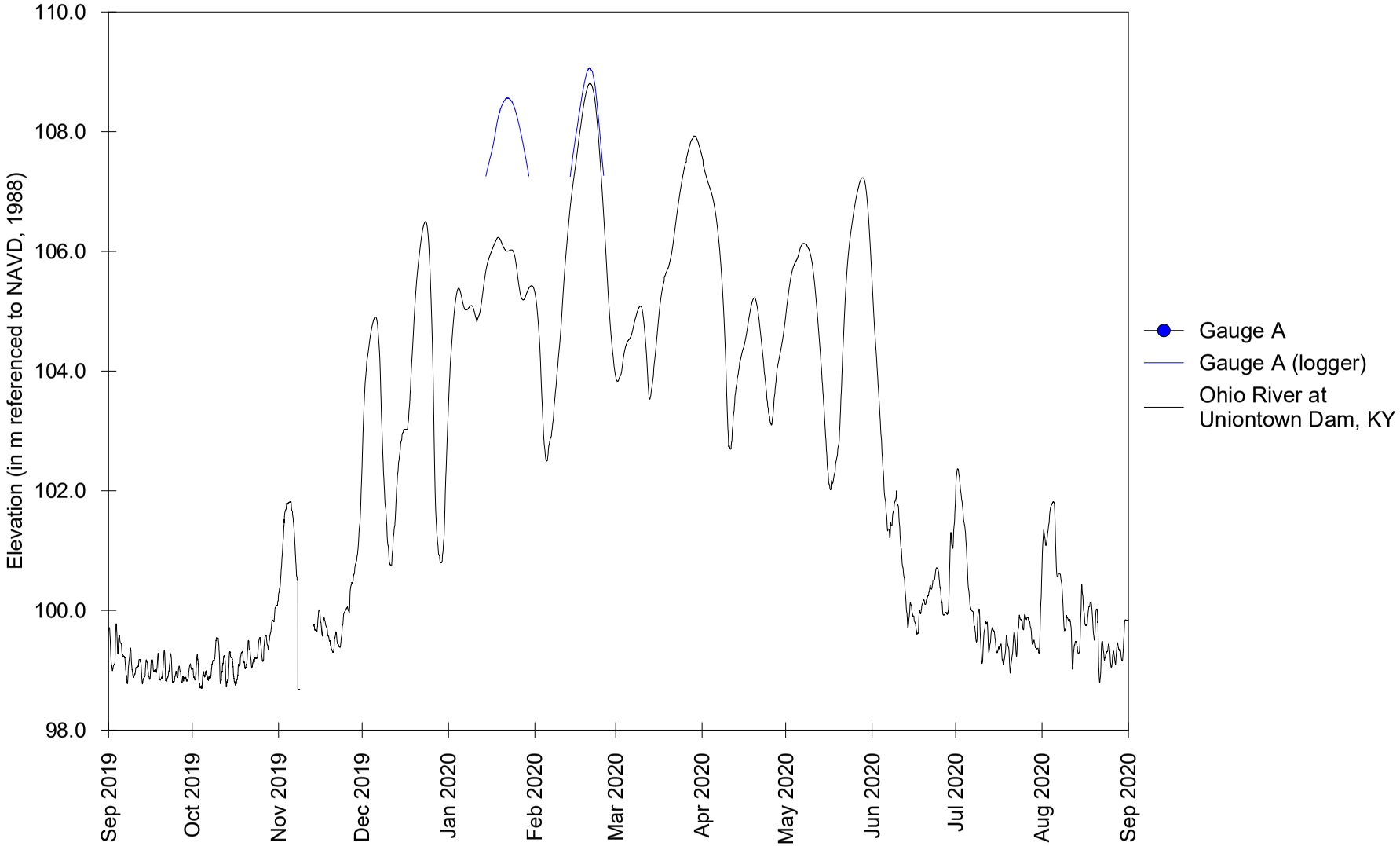
New Haven Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Depth to Water
in Monitoring Wells - West

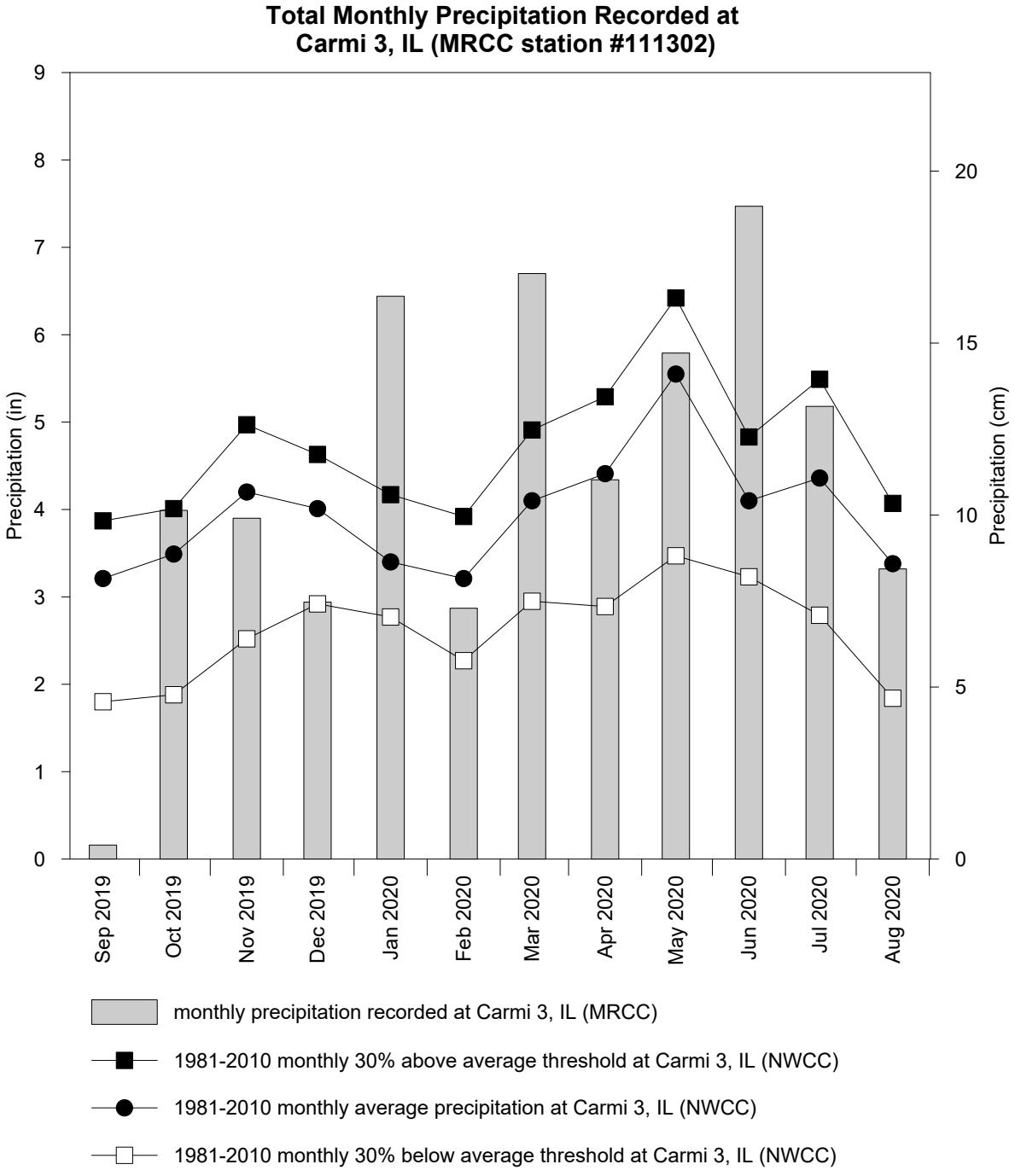


New Haven Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Water-Level Elevation in Surface Water Gauges



New Haven Wetland Mitigation Site
September 2019 through August 2020



FORMER GARNER PROPERTY **ISGS #93**
WETLAND MITIGATION SITE
US 45
FAP 332
Sequence #14105
Saline County, near Texas City, Illinois
Primary Project Manager: Jessica L. B. Monson
Secondary Project Manager: Audra M. Noyes

SITE HISTORY

- May 2019: The ISGS was tasked by IDOT to monitor wetland hydrology.

- June 2019: ISGS began on-site monitoring.

WETLAND HYDROLOGY CALCULATION FOR 2020

The target compensation area for the Former Garner Property wetland mitigation site is 11.69 ha (28.89 ac). Using the 1987 Manual (Environmental Laboratory 1987), 7.30 ha (18.05 ac) of the total site area of 11.69 ha (28.89 ac) satisfied wetland hydrology criteria for greater than 5% of the growing season and 6.60 ha (16.31 ac) satisfied wetland hydrology criteria for greater than 12.5% of the growing season. Using the 2010 Midwest Region Supplement (USACE 2010), 8.22 ha (20.31 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 Mount Vernon, Indiana, is March 23, and the season lasts 236 days (MRCC 2020). Using the 1987 Manual, 5% of the growing season is 12 days, and 12.5% of the growing season is 30 days. Using the 2010 Midwest Region Supplement, February 23 was the starting date of the 2020 growing season based on soil temperatures measured at the nearby New Haven wetland mitigation site (ISGS #92).

- Total precipitation for the monitoring period at Carmi, Illinois (MRCC station #111302), was 114% of normal. During spring 2020 (March through May), precipitation was 120% of normal.

- The period of maximum inundation and saturation during the period of monitoring for the 2020 growing season occurred between late February and late March due to frequent rainfall.

- In 2020, water levels measured in 2 of 5 soil-zone monitoring wells satisfied wetland hydrology criteria for greater than 5% of the growing season, and water levels measured in 1 of 5 soil-zone monitoring wells satisfied wetland hydrology criteria for greater than 12.5% of the growing season, using the 1987 Manual. In addition, using the 2010 Midwest Region Supplement, water levels in 4 of 5 soil-zone monitoring wells satisfied wetland hydrology criteria for 14 or more consecutive days of the growing season. See the tables at the end of this summary for details.

PLANNED FUTURE ACTIVITIES

- Monitoring will continue through 2023 or until no longer required by IDOT.

WETLAND HYDROLOGY TABLES FOR 2020

Well locations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
1S	N	N	Y
2S	N	N	Y
3S	N	N	N
4S	Y	Y	Y
5S	Y	N	Y

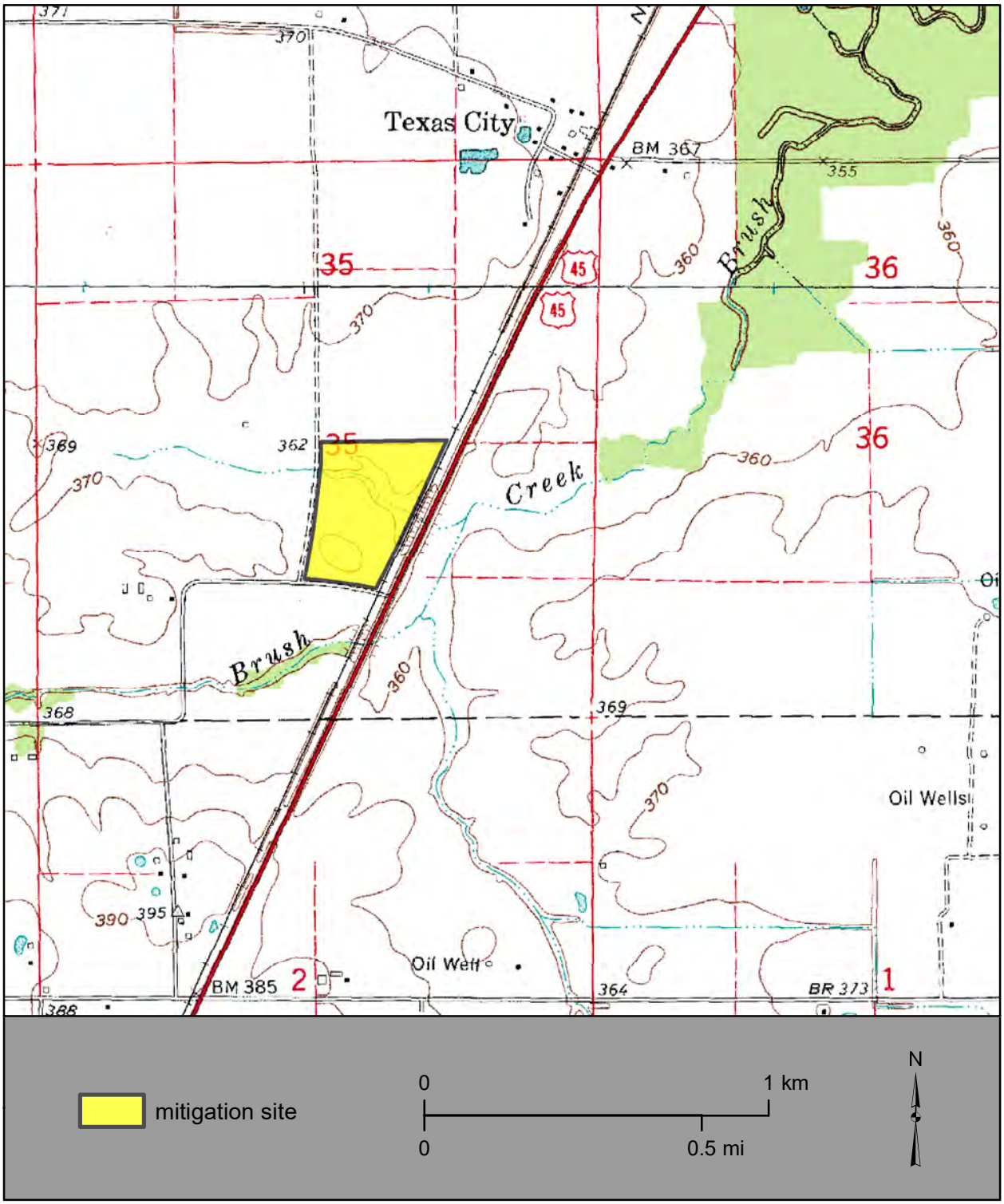
Y – met wetland hydrology criteria
N – did not meet wetland hydrology criteria

Surface-water gauge elevations meeting wetland hydrology criteria			
ID	***5% of growing season***	***12.5% of growing season***	***14 days during growing season***
A	108.84 m (357.08 ft)	108.83 m (357.05 ft)	108.86 m (357.15 ft)
B	108.60 m (356.30 ft)	108.60 m (356.29 ft)	108.60 m (356.31 ft)
C	109.13 m (358.04 ft)	109.13 m (358.02 ft)	109.13 m (358.05 ft)
D	n/a	n/a	n/a
E	109.08 m (357.86 ft)	n/a	109.09 m (357.92 ft)
F	108.83 m (357.06 ft)	108.82 m (357.02 ft)	108.85 m (357.10 ft)

n/a – insufficient data to determine an elevation

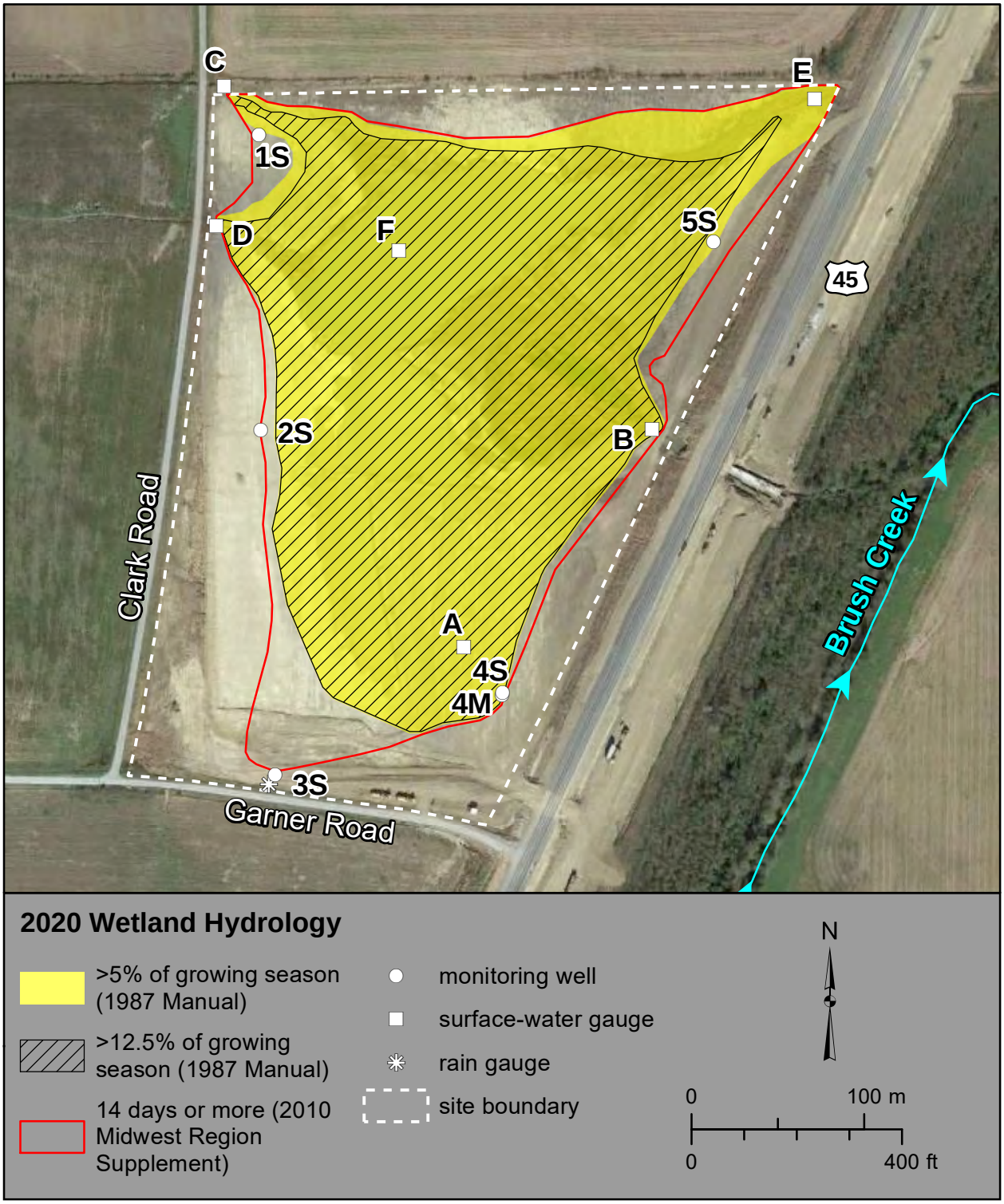
Former Garner Property Wetland Mitigation Site
(US 45, FAP 332)
General Study Area and Vicinity

from the USGS Topographic Series, Broughton, IL 7.5-minute Quadrangle (USGS 1963a)
and Eldorado, IL 7.5-minute Quadrangle (USGS 1963b)
contour interval is 10 feet



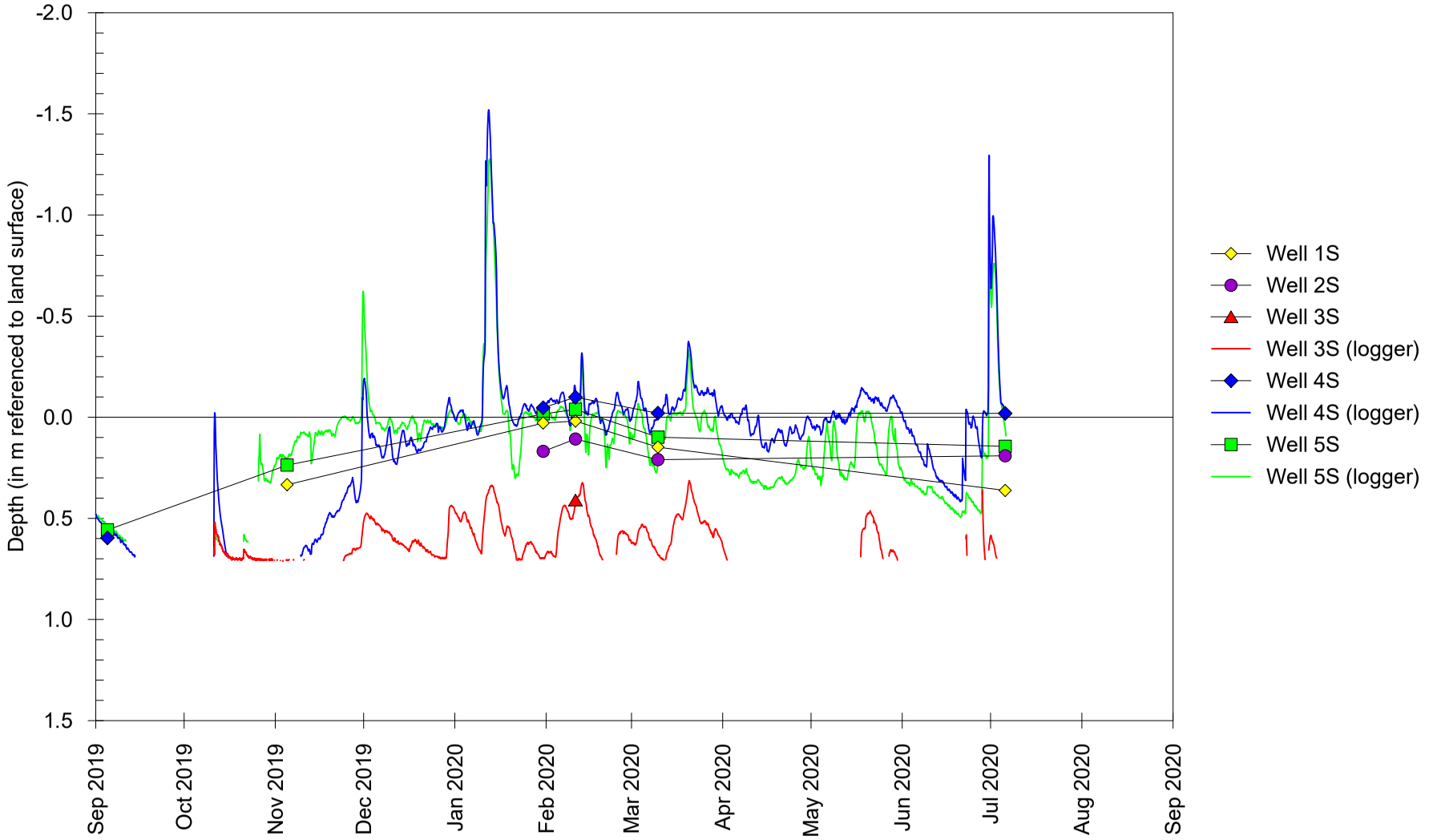
Former Garner Property Wetland Mitigation Site
(US 45, FAP 332)
Estimated Areal Extent of 2020 Wetland Hydrology
September 1, 2019 through August 31, 2020

Map based on 2016 imagery available from Google Earth (Google 2019)



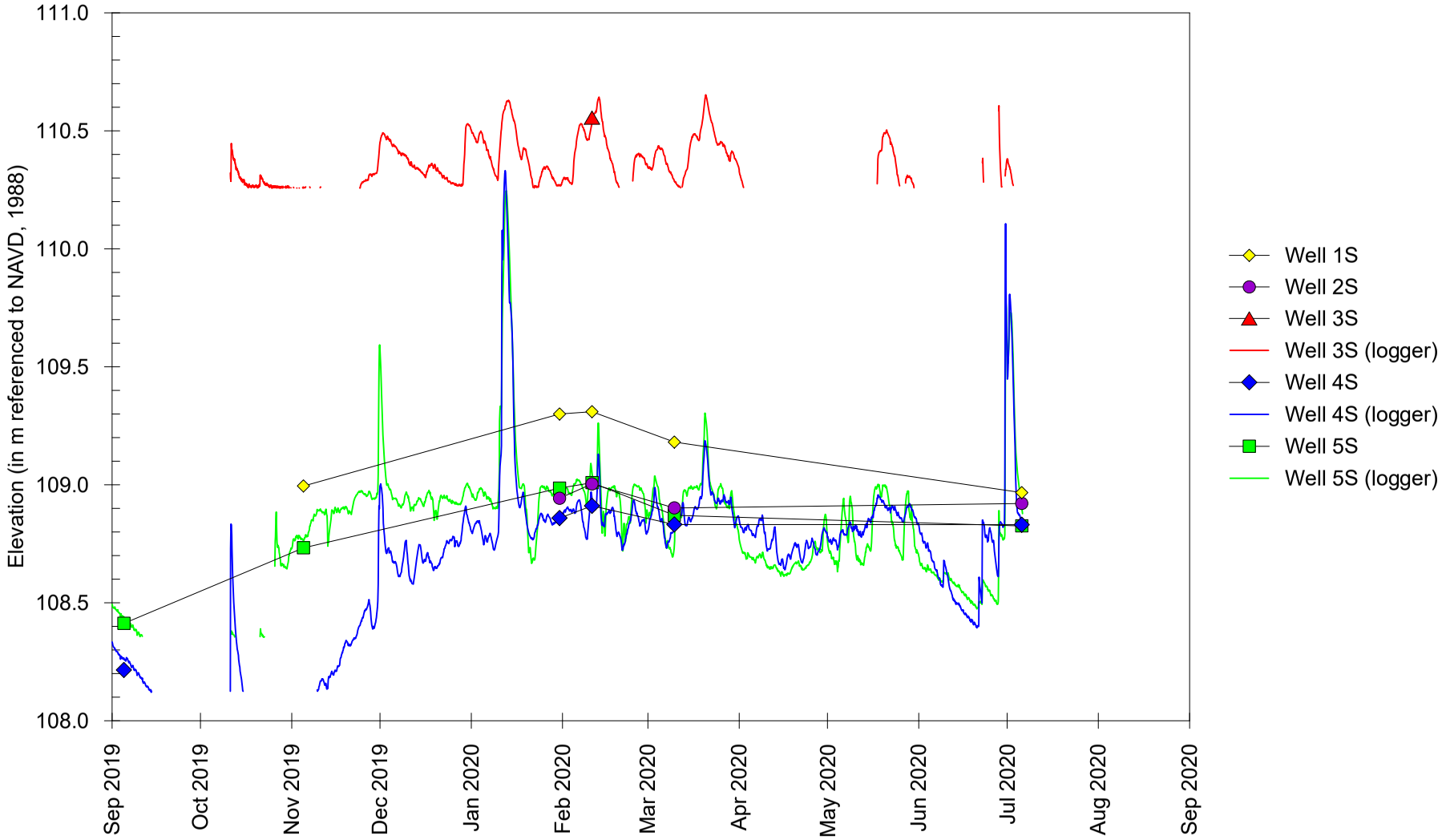
Former Garner Property Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Depth to Water
in Monitoring Wells



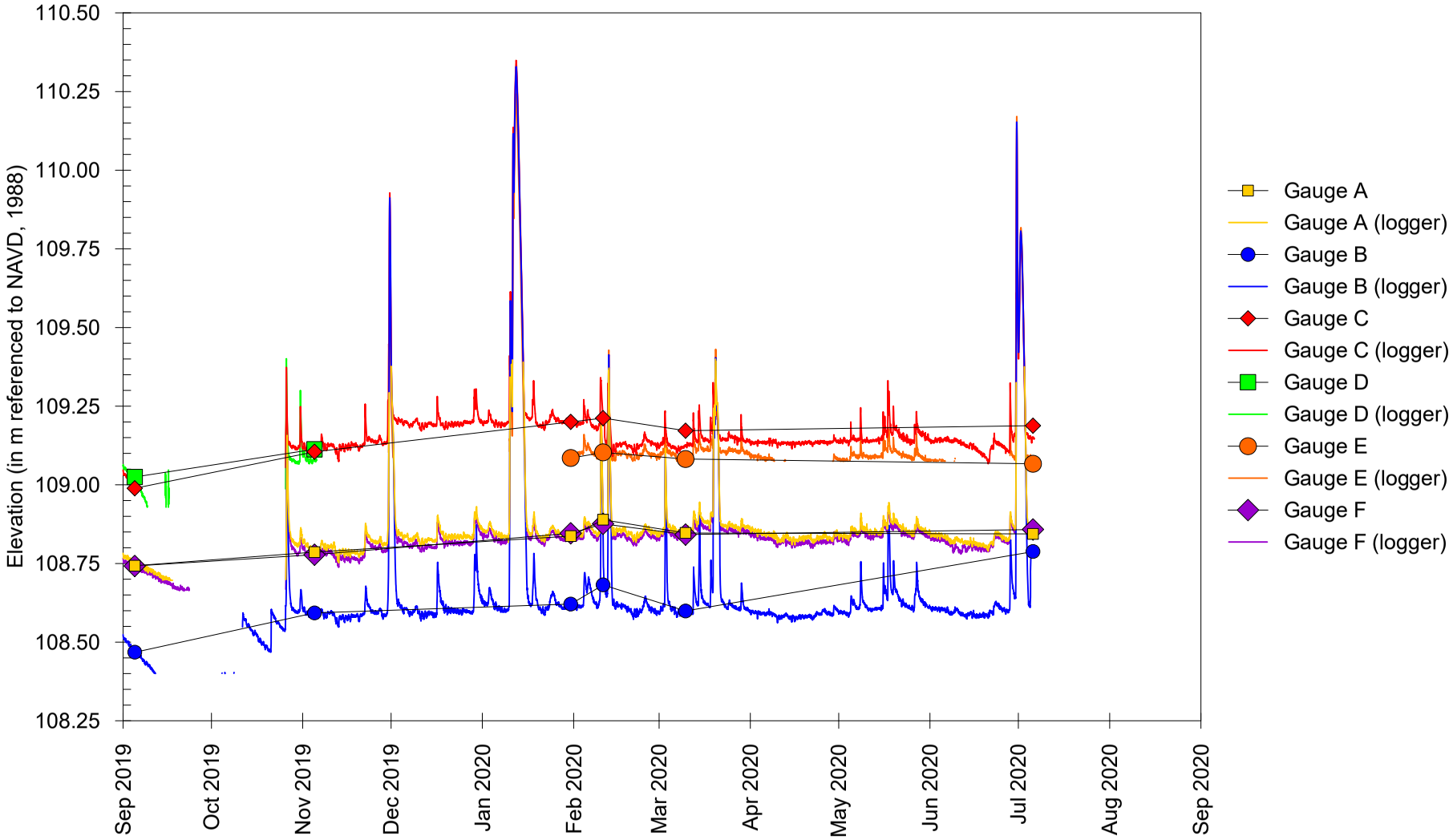
Former Garner Property Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Water-Level Elevation in Monitoring Wells



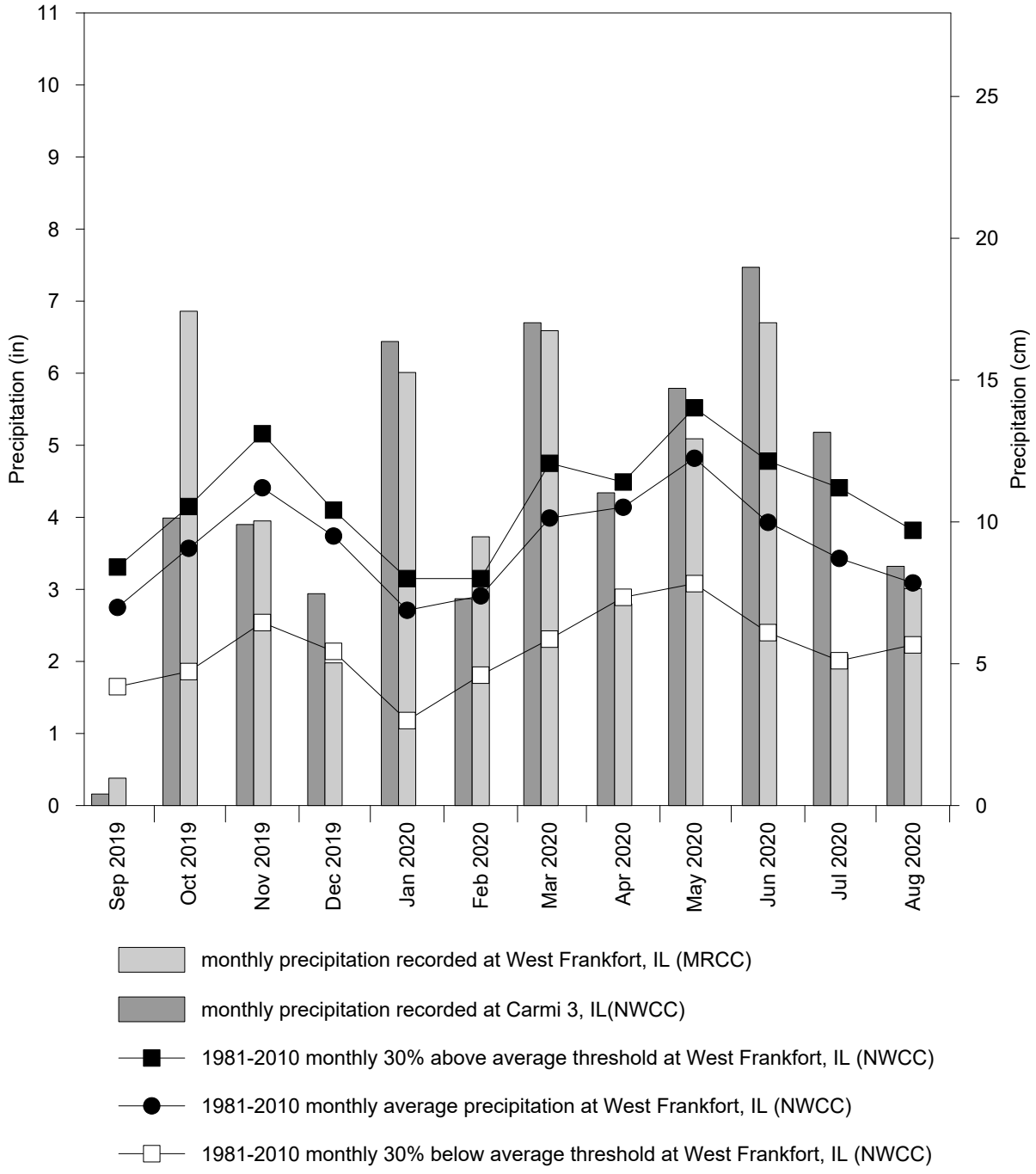
Former Garner Property Wetland Mitigation Site
September 1, 2019 through August 31, 2020

Water-Level Elevation
at Surface-Water Gauges



Former Garner Property Wetland Mitigation Site
September 2019 through August 2020

Total Monthly Precipitation Recorded at Carmi 3, IL (MRCC station #111302) and at West Frankfort, IL (MRCC station #119148)



BOYD CREEK **ISGS #94**
PROPOSED WETLAND MITIGATION BANK
Wayne County, near Mill Shoals, Illinois
Primary Project Manager: Audra M. Noyes
Secondary Project Manager: Steven E. Benton

SITE HISTORY

- March 2020: ISGS was tasked by IDOT to begin Level II hydrological assessment.
- May 2020: ISGS installed a preliminary monitoring network.

WETLAND HYDROLOGY CALCULATION FOR 2020

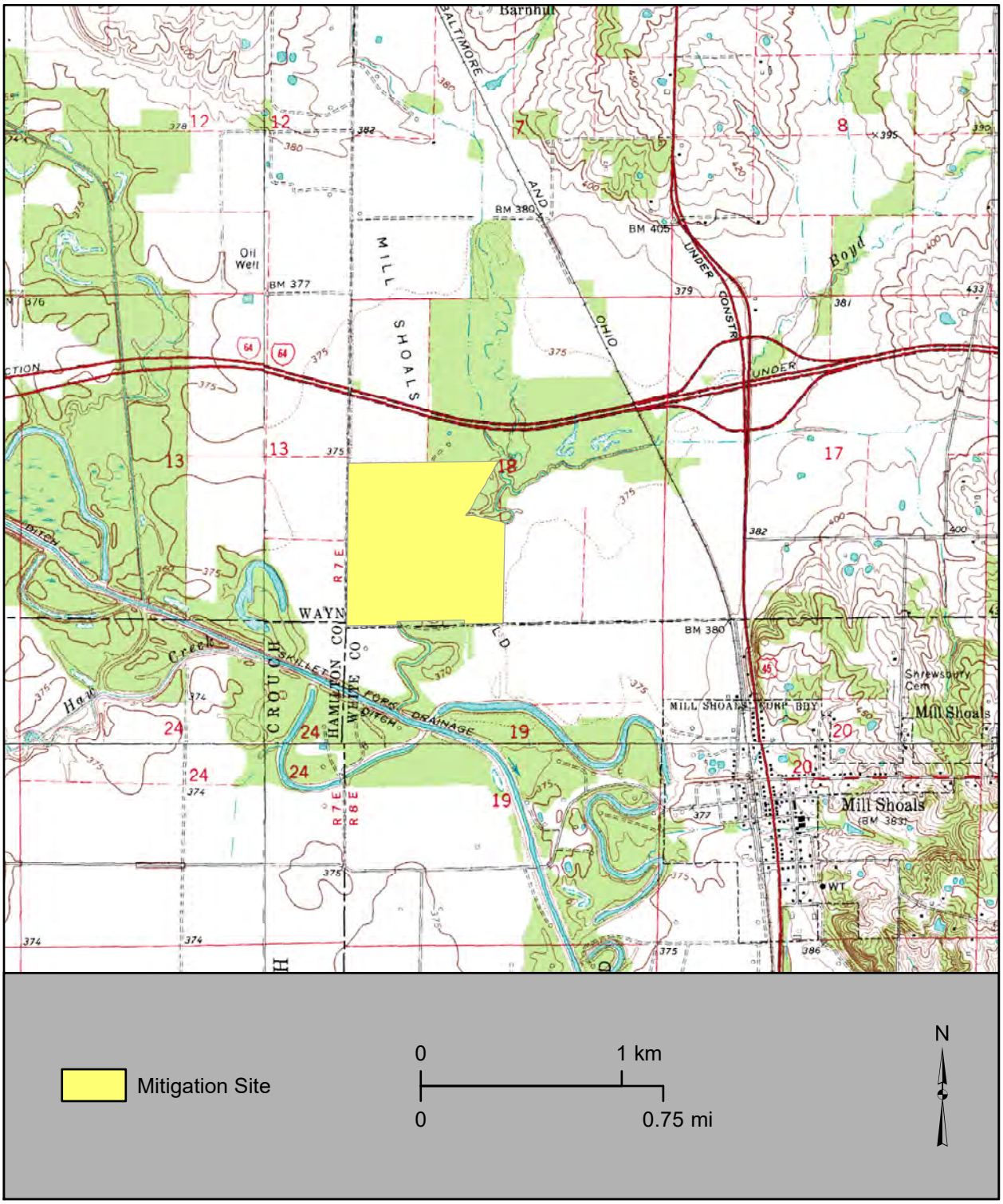
No estimate was made of the area of the site that satisfied jurisdictional wetland hydrology criteria in 2020. Monitoring locations were installed in May 2020, after the start of the growing season, so a full growing season was not monitored. However, based on estimated depth to water using well specifications with no elevation measurement taken, Well 1 water levels satisfied wetland hydrology criteria for 5% and 12.5% of the growing season, and met the 14 or more consecutive day criteria.

PLANNED FUTURE ACTIVITIES

- The monitoring network will be expanded as time allows.

Boyd Creek Proposed Wetland Mitigation Bank
General Study Area and Vicinity

from the USGS Topographic Series 7.5-minute quadrangles:
Boyleston, IL (USGS 1971a), Burnt Prairie (1971b), Bungay, IL (USGS 1974a),
and Springerton, IL (USGS 1974c),
contour interval is 5 feet except in Burnt Prairie quadrangle (NE portion, 10 feet contour interval)

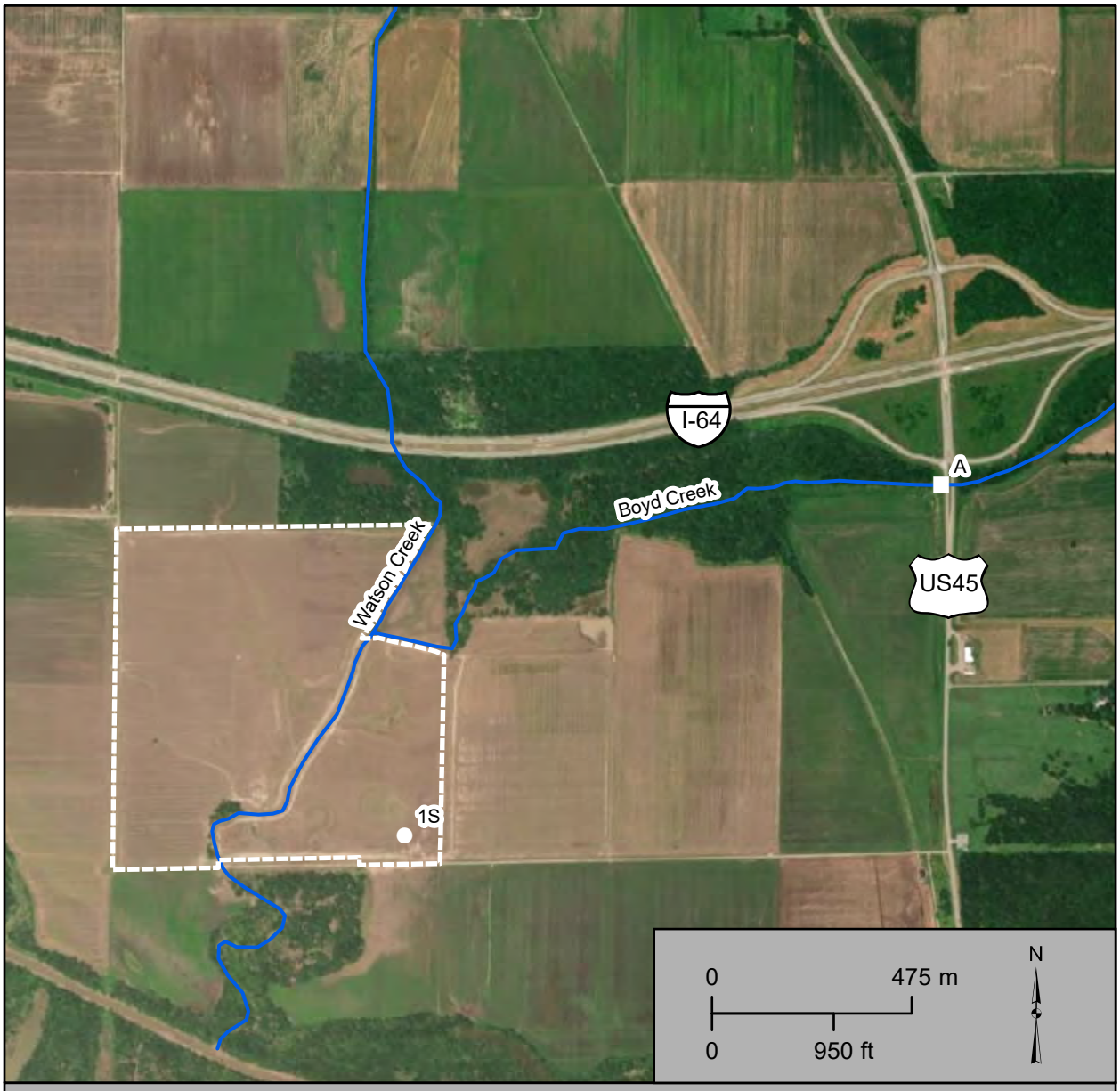


Boyd Creek Proposed Wetland Mitigation Bank

2020 Monitoring Network

September 1, 2019 through August 31, 2020

Map based on imagery available from Esri (Esri 2020)



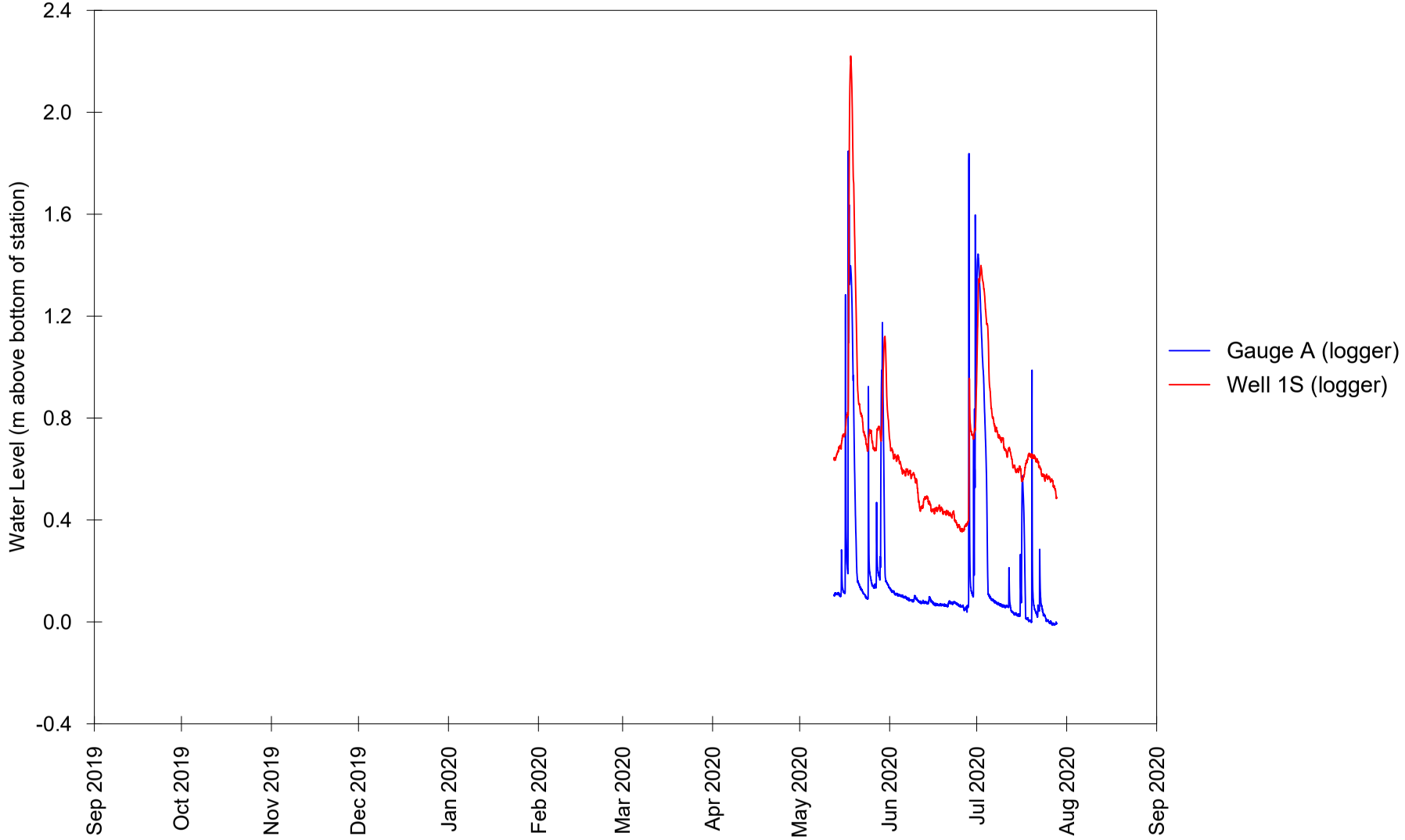
2020 Monitoring Network

- Project Boundary
- monitoring well
- surface-water gauge

Boyd Creek Proposed Wetland Mitigation Bank

September 1, 2019 through August 31, 2020

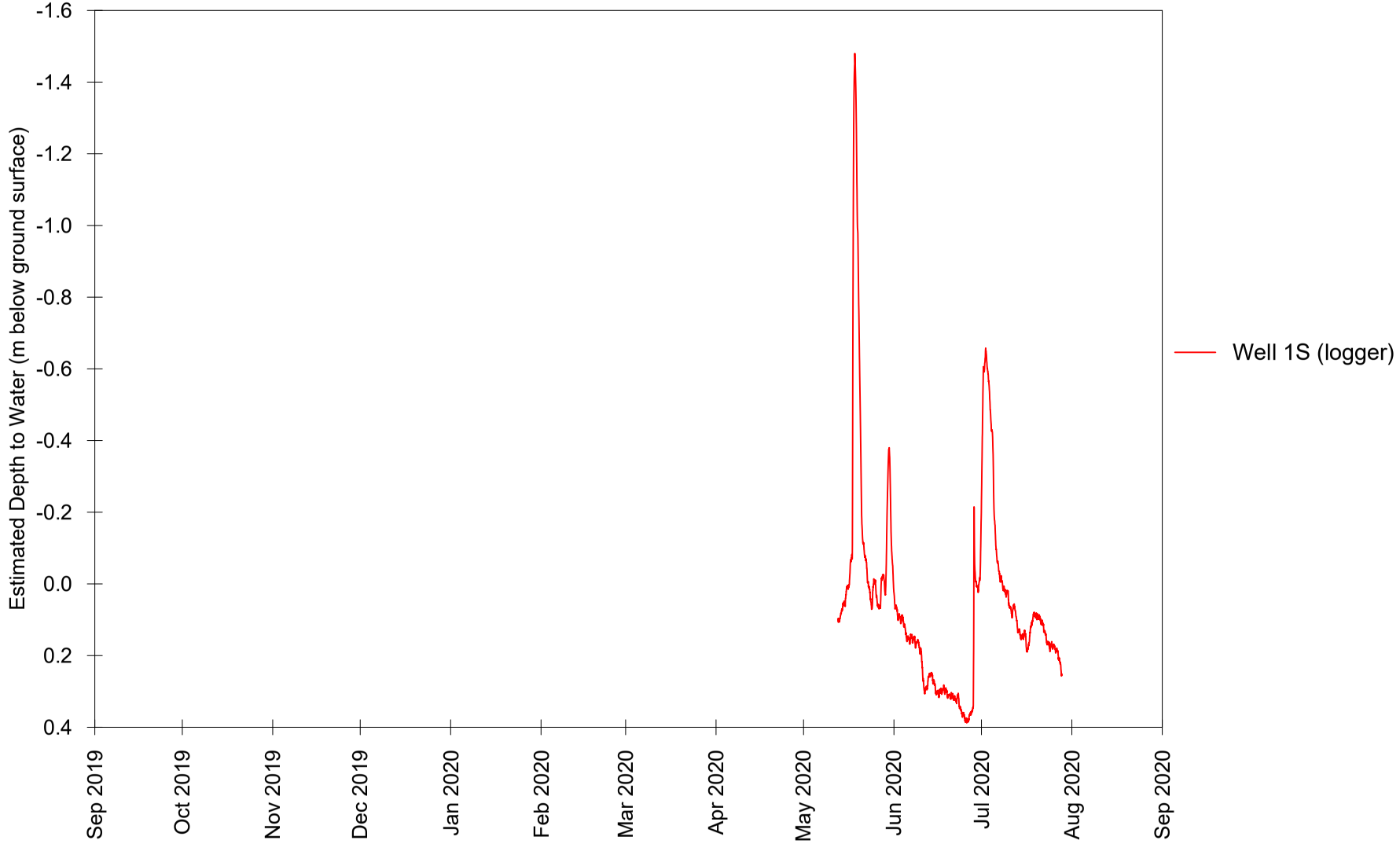
Water Level (no elevation measurements taken) in Monitoring Well and Surface-Water Gauge



Boyd Creek Proposed Wetland Mitigation Bank

September 1, 2019 through August 31, 2020

Estimated Depth to Water (no elevation measurement taken) in Monitoring Well



Boyd Creek Proposed Wetland Mitigation Site
September 2019 through August 2020