2012-2016 Sterling Data Summary

This document summarizes the groundwater, climate, and diversion and recharge data collected in the Sterling study area from 2012-2016. From 2012-2016, DWR prepared monthly reports for the Sterling High Groundwater Study. Links to former reports can be found here. In this report, each section includes summary observations and information to aid in graph and data comprehension.

Study Area

This study focused on the Country Club Hills and Pawnee Ridge subdivisions, west of Sterling, Colorado. Two study area maps depict the monitoring network.

Groundwater Level Data

The piezometer (shallow groundwater monitoring well) network is focused in and near the Country Club Hills and Pawnee Ridge subdivisions. Project-specific groundwater level information has been collected since 2012, and the latest piezometers were installed in 2013. All wells depicted on the study area map by triangles are equipped with electronic pressure transducers that record **daily** water levels. SGW-01, the N. Sterling piezometers, and cooperator wells are denoted with squares and are monitored on a **monthly** basis by staff with the DWR. We greatly appreciate the ongoing assistance and the cooperation from local well owners and landowners.

Hydrographs of water levels measured between 2012-2016 are included in this report. **All** (historic and recent) groundwater level data for the Sterling study wells can be viewed and downloaded using the Colorado Decision Support System's (CDSS) groundwater levels tool. On the tool's website, the wells in this study can be found under the Publication "Sterling High Groundwater Area". Well names listed on graphs can be searched for in the CDSS tool, under the "Well Name" filter. Some cooperator wells are not included in the CDSS tool.

Climate Data

Precipitation and climate are major facets of the hydrologic cycle and groundwater recharge and provide environmental perspective for the groundwater level data. The Northern Colorado Water Conservancy District (NCWCD) provides comprehensive climate data collected at local weather stations in the Sterling area. If interested, one can visit NCWCD's weather page, found here. Data can be viewed in graph or tabular form, and data tables can be exported to excel. The station closest to Sterling is the Sterling #108 station, located between US Highway 6 and the South Platte River just south of Sterling.

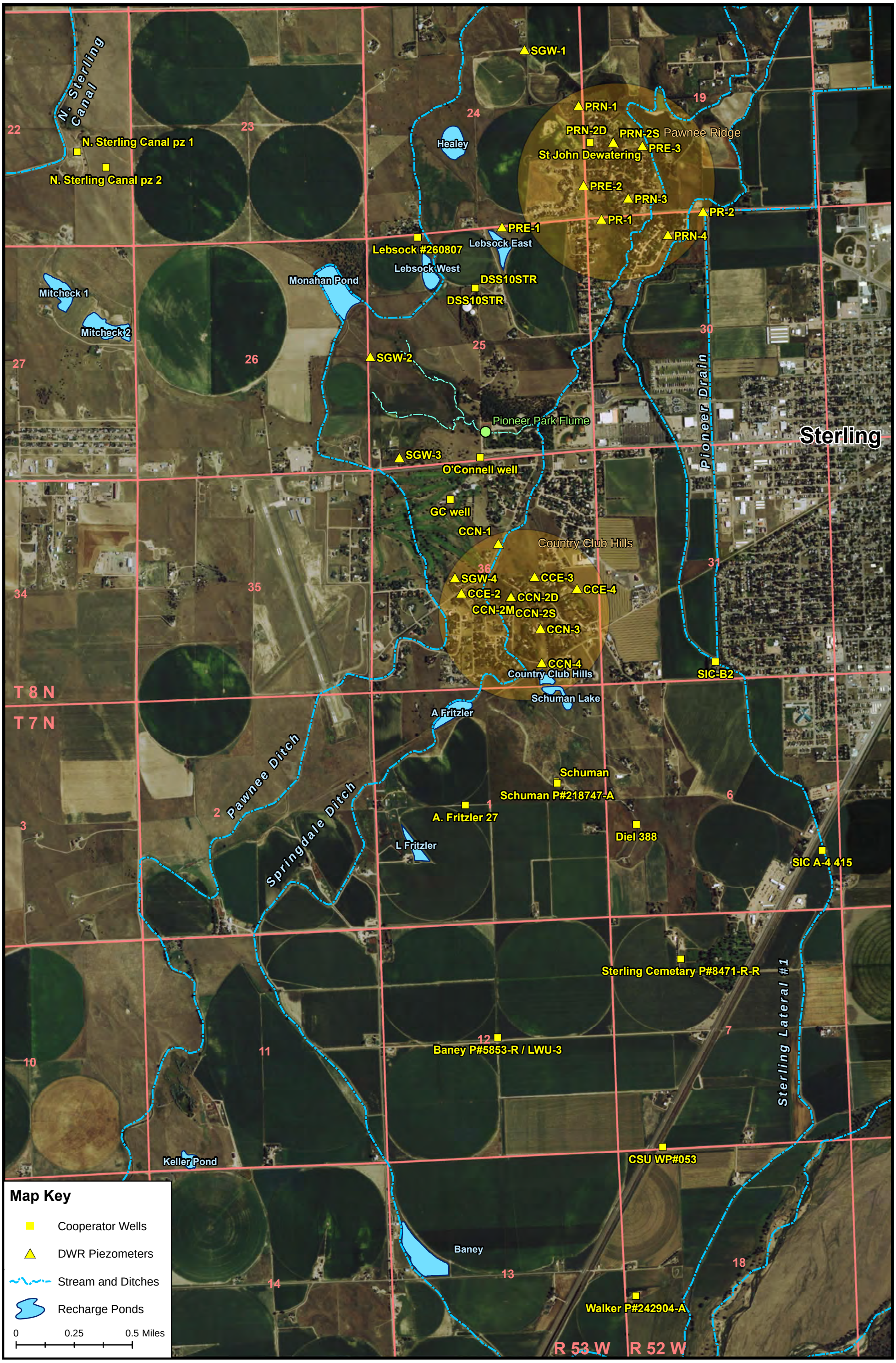
Diversion and Recharge Data

Seepage from both the recharge ponds and ditches influence groundwater recharge and thus the groundwater levels. There are a number of diversion and recharge ditches located in the study area. The study area maps display all of these structures. From west to east, the ditches include the North Sterling Canal, Pawnee, Springdale, and Sterling Lateral No. 1 (Sterling Irr Co Ditch 1). Summaries of recharge data for water years 2012-2016 are included in this study summary. The 2012 water year began November 1, 2011 and ended on October 31, 2012, and the 2016 water year began November 1, 2015 and ended on October 31, 2016.

For additional recharge inquiries, please contact the water commissioner for District 64.

Bruce Phillips | Water Commissioner, WD 64
Email: Bruce.Phillips@state.co.us
Phone: (970) 552-5390 Ext. 1264 |Alt. Phone: (970) 370-0296

Study Area Maps



Map Key

- Cooperator Wells
- DWR Piezometers
- Stream and Ditches
- Recharge Ponds

0 0.25 0.5 Miles

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Sterling Groundwater Pilot Project
Groundwater Level Monitoring Network

Projection: UTM Zone 13N
Datum: NAD 1983
Scale: 1:24,000
Printed: 1/20/16

SGW-1
PRN-1
19
24
Healey
PRN-2D
PRN-2S
PRE-3
St John Dewatering
Pawnee Ridge
PRE-2
PRN-3
PR-2
PR-1
PRE-1
PRN-4
Lebsock #260807
Lebsock East
Lebsock West
Monahan Pond
DSS10STR
30
25
SGW-2
T 8 N
T 7 N
Pioneer Park Flume
Springdale Ditch
Pioneer Drain
SGW-3
O'Connell well
GC well
CCN-1
Country Club Hills
Sterling Lateral #1
31
36
SGW-4
CCE-3
CCE-2
CCN-2S
CCN-2M
CCN-2D
CCE-4
CCN-3
Pawnee Ditch
CCN-4
SIC-B2
Country Club Hills
Schuman Lake
A Fritzler
R 53 W
R 52 W

Map Key

- Cooperator Wells
- DWR Piezometers
- Stream and Ditches
- Recharge Ponds

0 0.125 0.25 Miles

COLORADO
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Department of Natural Resources

N W E S

State of Colorado -- Division of Water Resources

Sterling Groundwater Pilot Project
Groundwater Level Monitoring Network

Projection: UTM Zone 13N
Datum: NAD 1983
Scale: 1:13,000
Printed: 2/12/16

2012-2016 Groundwater Level Data

Notes on the monitoring network

To provide perspective for the groundwater level data presented herein, we include a regional map that shows the locations of approximately 36 wells with groundwater level measurements. Piezometers in and around the Country Club Hills and Pawnee Ridge subdivisions are equipped with electronic dataloggers that recorded hourly water levels between 2012-2016 and are denoted by yellow triangles on the study map. Between 2012 and 2016, other cooperator wells, shown as yellow squares on the regional map, were measured manually on a monthly basis by staff with the Division of Water Resources (DWR) or by staff of the Lower South Platte Water Conservancy District (LSPWCD).

Project-specific groundwater level information has been collected since May 2012, when loggers were initially deployed in most wells. The newest piezometers (SGW-01 to SGW-04) were drilled and installed in March 2012 and instrumented in with dataloggers in early June 2013. These new observation sites were created to better understand water levels up-gradient of the impacted areas. Additionally, two uninstumented monitoring wells, a piezometer installed by the LSPWCD just downslope (east) of the North Sterling Canal (PZ-1), and an old, out-of-serivce windmill well (PZ-2) were monitored manually between 2013-2016.

Notes on the included graphs

For each well, data are graphed as depths to the water table below ground surface. This groundwater level may not represent the regional water table as the study piezometers are not completed through the entire aquifer interval. The presence of significant clay layers in this area indicate that some of the measured water levels may represent locally perched water. The data presented herein are best used to evaluate local trends in groundwater levels and responses to rain or other inputs to the aquifer system.

1. On the following graphs, small circles depict datalogger measurements (daily), and triangles indicate manual measurements (monthly and quarterly).
2. The groundwater elevation contour map developed from the July 2013 water level measurements. The groundwater elevation contour map displays absolute elevation of the groundwater table, ***not*** depth relative to the ground surface.
3. Hydrograph data are broken up by piezometer location (Country Club Hills Subdivision or Pawnee Ridge Subdivision) and by transect (N-S or E-W).
4. Hydrographs for the SGW piezometers are plotted with data collected from piezometers located near N. Sterling Canal.
5. Due to equipment issues, the following wells (CCN-1, CCN-2S, PRN-3, and PRN-2S) are missing data from April-August 2016. Data of unknown certainty are not included.

The hydrographs are grouped geographically, with nearby wells shown on the same graph. Water level data are shown as depth below ground surface so that the graph directly mimics rises or drops in the water table. The Country Club Hills, Pawnee Ridge, and SGW hydrographs have the same time scale and depth range to facilitate comparison across the study area. Hydrographs of the cooperator wells are scaled to show the most amount of detail. Early data for well PRN-3 are limited due to a data logger malfunction requiring replacement of the device. On May 1, 2014, the datalogger in SGW-01 fell into the well, and since then, there are only manual measurements rather than daily data.

Notes on water trends between 2012-2016

Between 2012 and 2016, groundwater levels rose over much of the study area, with minor declines throughout the fall and winter. Review of the groundwater level data indicates:

1. Prolonged rainfall events of several inches or more are required to detect a response in groundwater levels. Additionally, water table response to significant precipitation is a very short-term rise with levels, which return to ambient equilibrium conditions within days.
2. In the Country Club Hills area, the highest groundwater level was <3 feet below the ground (CCN-2S) and the lowest groundwater was approximately 29 feet below the ground surface (CCN-1).
    - Water levels in all wells within Country Club Hills display seasonal fluctuations, but the timing and intensity of this variation is not consistent.
    - A comparison of the wells' deepest water levels in each year indicates a rising trend in wells CCN-2, CCN-3, CCE-3, and CCE-4. This rise suggests that the aquifer in this area, the eastern part of Country Club Hills subdivision, was not completely draining back to its previous year's low.
3. In the Pawnee Ridge area, groundwater levels vary from less than 1 foot below ground surface (PRN-3) to approximately 25 feet (PRE-1). North of CR-30, the wells display multiple fluctuations per year, with the highest groundwater levels in late spring and late fall, and the lowest groundwater levels in early fall and late winter. Although the wells are hundreds of feet apart, the wells show similar seasonal patterns in their data. The magnitude of the seasonal fluctuations are likely related to local pumping for irrigation and to the wells' locations relative to recharge ditches and ponds.
    - Many of the hydrographs for monitoring wells in the Pawnee Ridge area show a steady trend of rising water levels over the study period.
    - Water levels in SGW-02 and SGW-03 also rose consistently during the study period. These rises correspond with diversions into the Monahan Recharge Pond (see Diversion and Recharge Data section).
    - Over the study period, the greatest rise in the N. Sterling piezometers (PZ-1 and PZ-2) occurred in PZ-2 during spring 2015. This increase can be attributed, in part, to additional diversion through the North Sterling Canal in early 2015. However, PZ-1 did not rise as much as PZ-2, but did increase to higher levels in 2016.

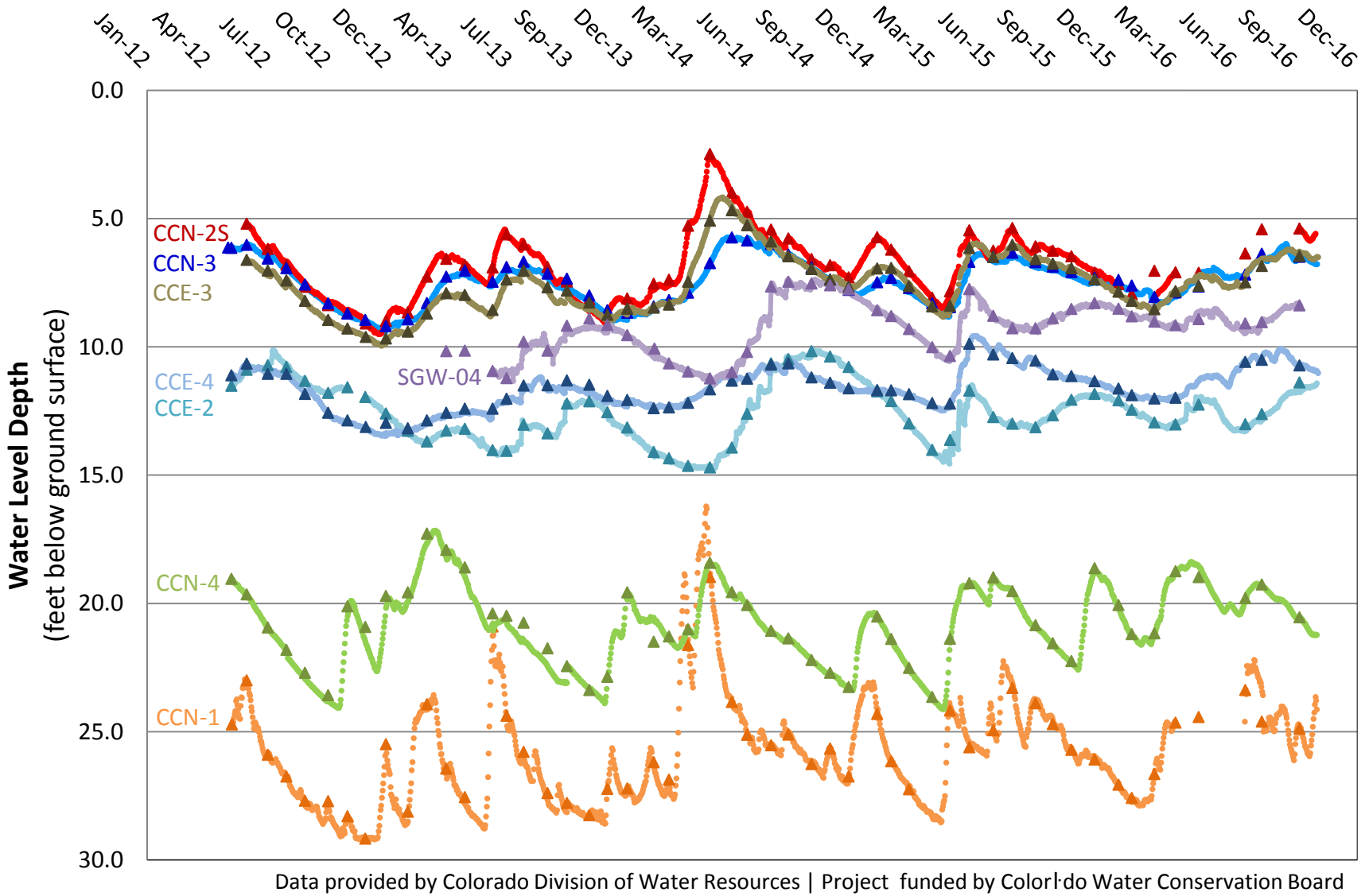
The groundwater elevation contour map was developed from the July 2013 water level measurements. Utilizing a well's location, DWR staff extracted ground surface elevations from the USGS digital elevation model with a 10-meter resolution. In general, contours indicate that groundwater flow in this area of interest, west of the Town of Sterling, is to the east/southeast. Areas with greater well control, such as the Country Club Hills and Pawnee Ridge subdivisions, provide more detail and indicate variability in the groundwater flow directions from northeast to southeast.

Hydrographs for Piezometers Installed in Country Club Hills

Sterling Groundwater Pilot Project

Country Club Hills --- Groundwater Levels

Period of Record: May 9, 2012 - October 31, 2016

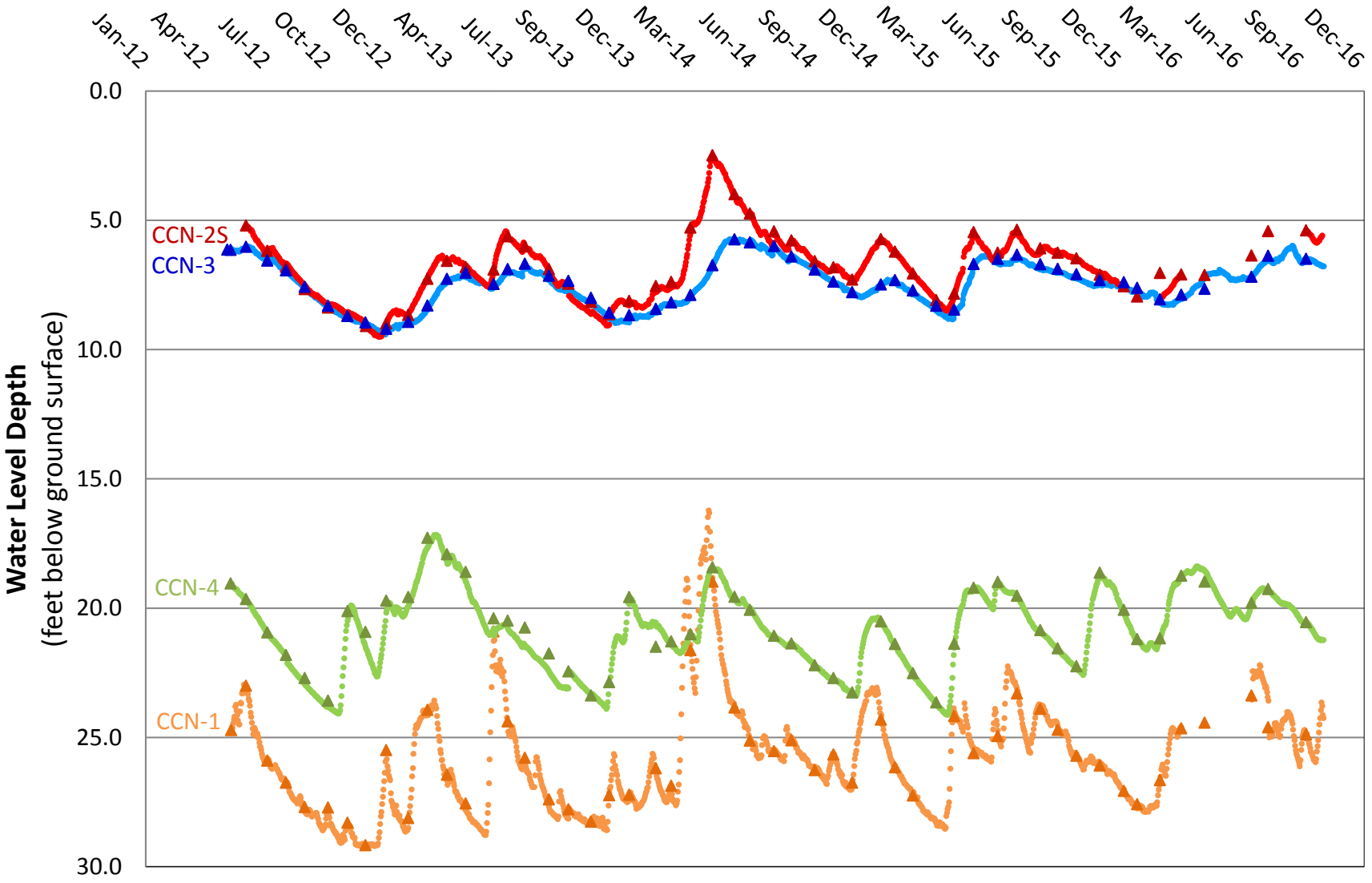


Data provided by Colorado Division of Water Resources | Project funded by Colorado Water Conservation Board

Sterling Groundwater Pilot Project

Country Club Hills NORTH --- Groundwater Levels

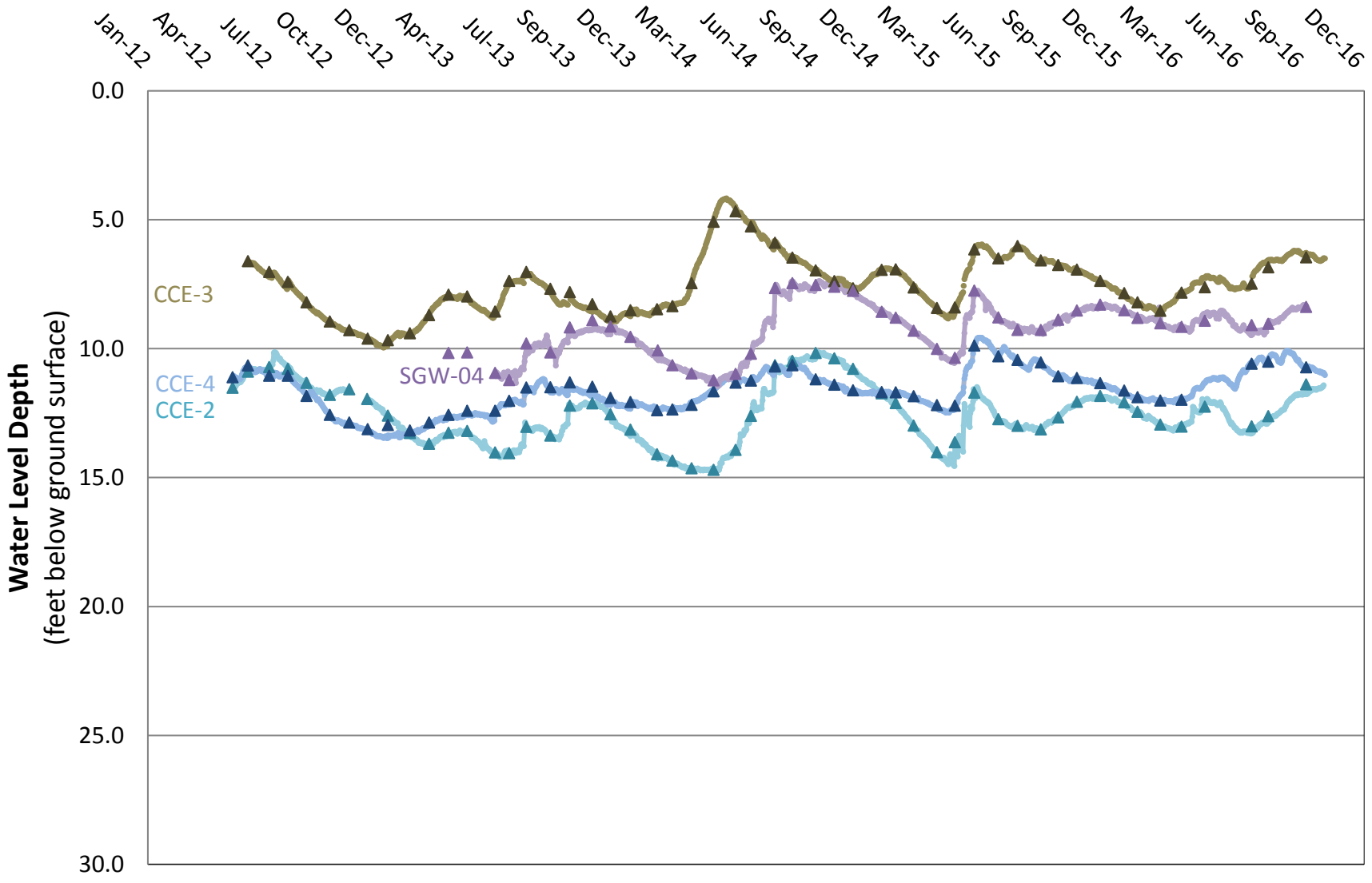
Period of Record: May 9, 2012 - October 31, 2016



Sterling Groundwater Pilot Project

Country Club Hills EAST --- Groundwater Levels

Period of Record: May 9, 2012 - October 31, 2016



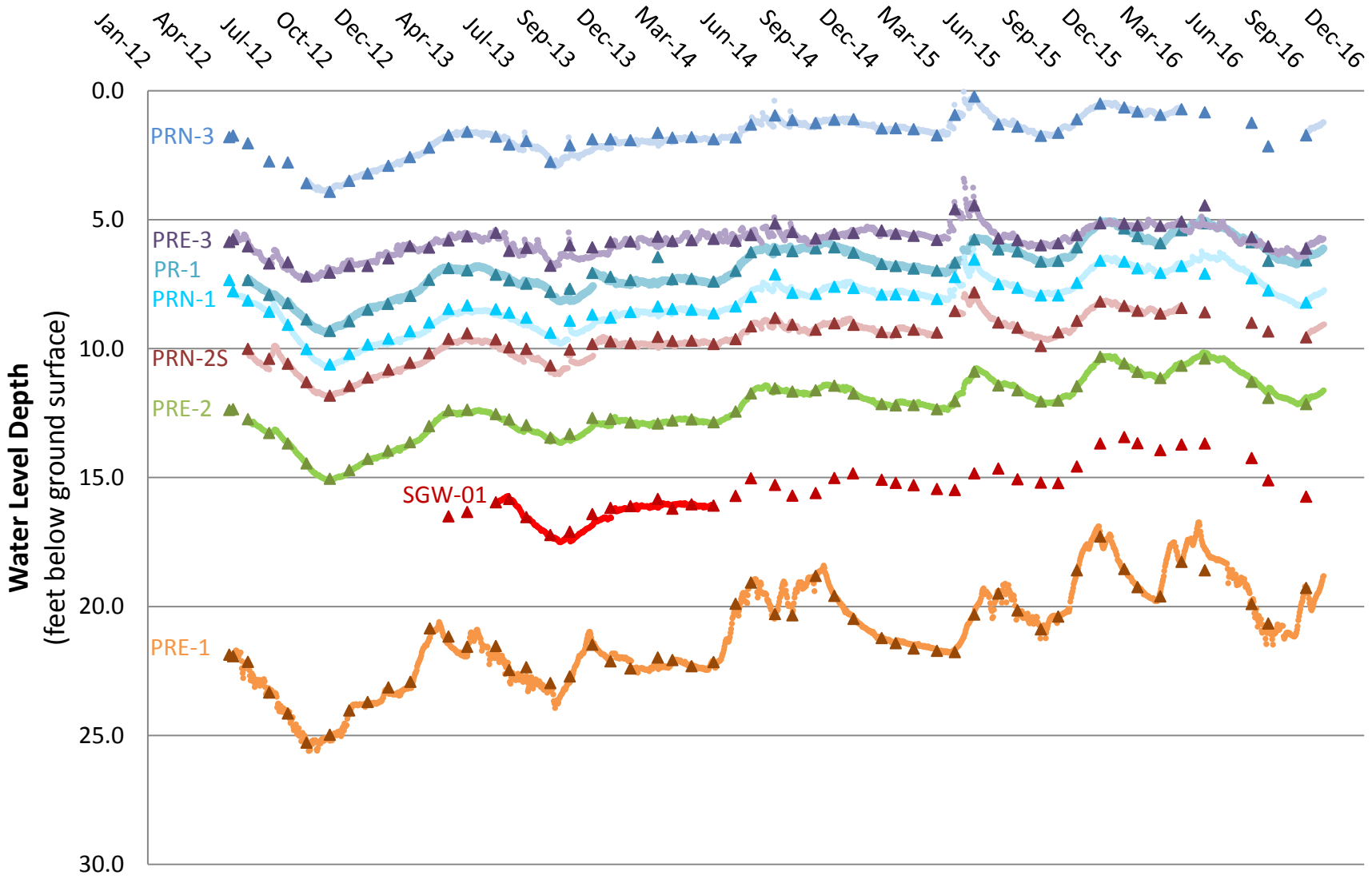
Data provided by Colorado Division of Water Resources | Project funded by Colorado Water Conservation Board

Hydrographs for Piezometers Installed in Pawnee Ridge

Sterling Groundwater Pilot Project

Pawnee Ridge, North of CR 30 and SGW-01 --- Groundwater Levels

Period of Record: May 9, 2012 - October 31, 2016

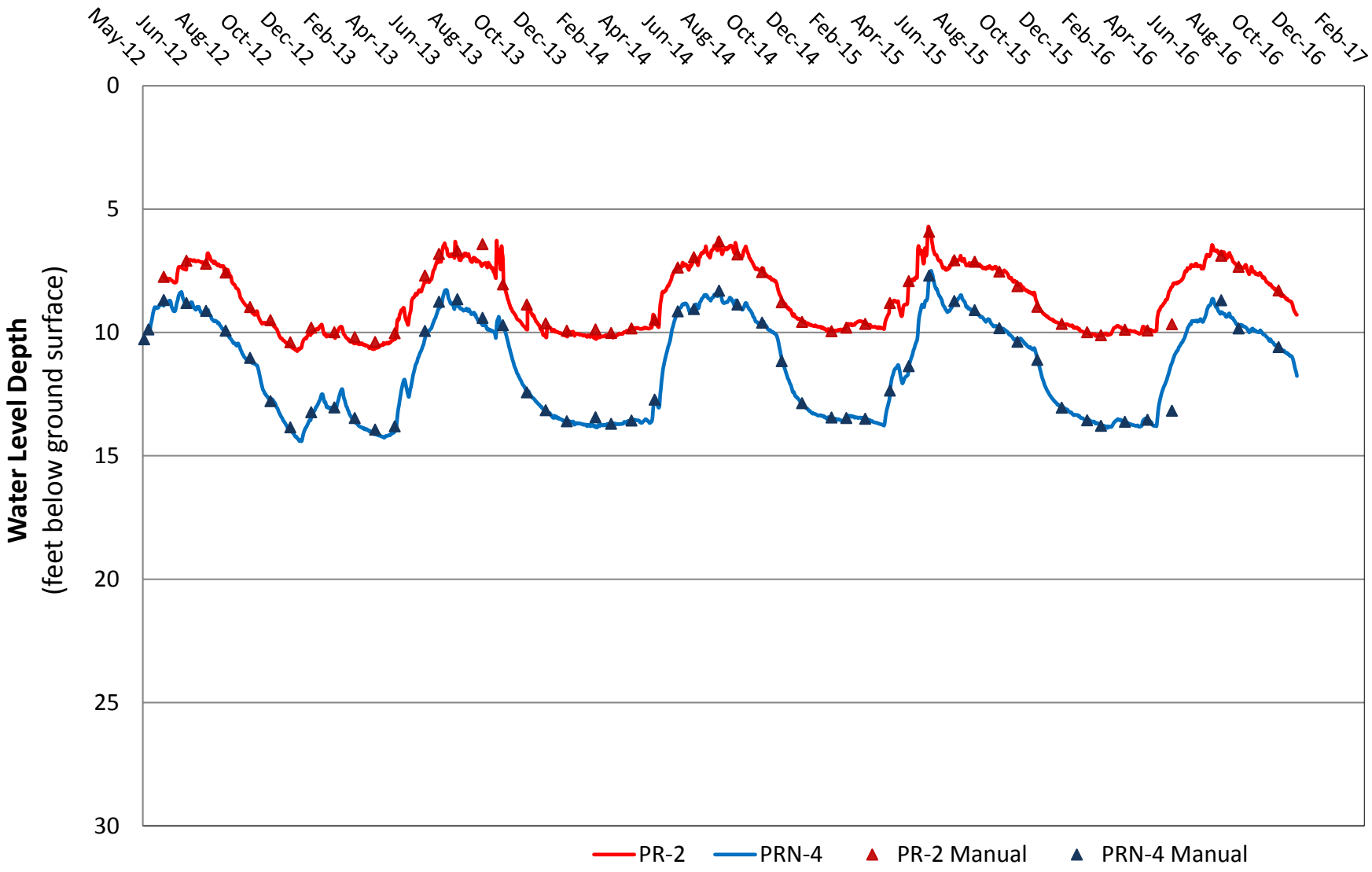


Data provided by Colorado Division of Water Resources | Project funded by Colorado Water Conservation Board

Sterling Groundwater Pilot Project

Pawnee Ridge Wells South of CR 30 Groundwater Level

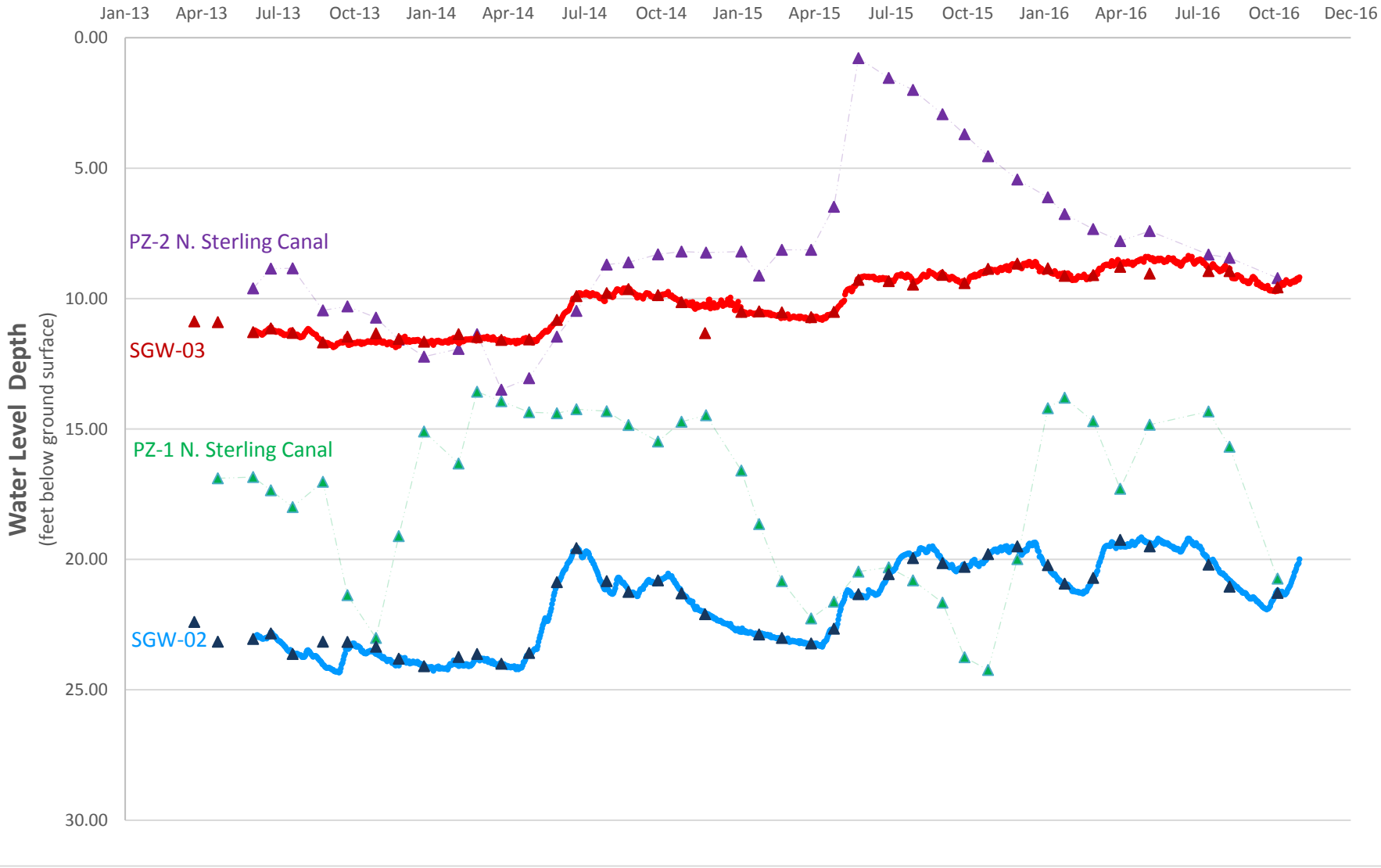
Period of Record: May 9, 2012 - October 31, 2016



Data provided by Colorado Division of Water Resources | Project funded by Colorado Water Conservation Board

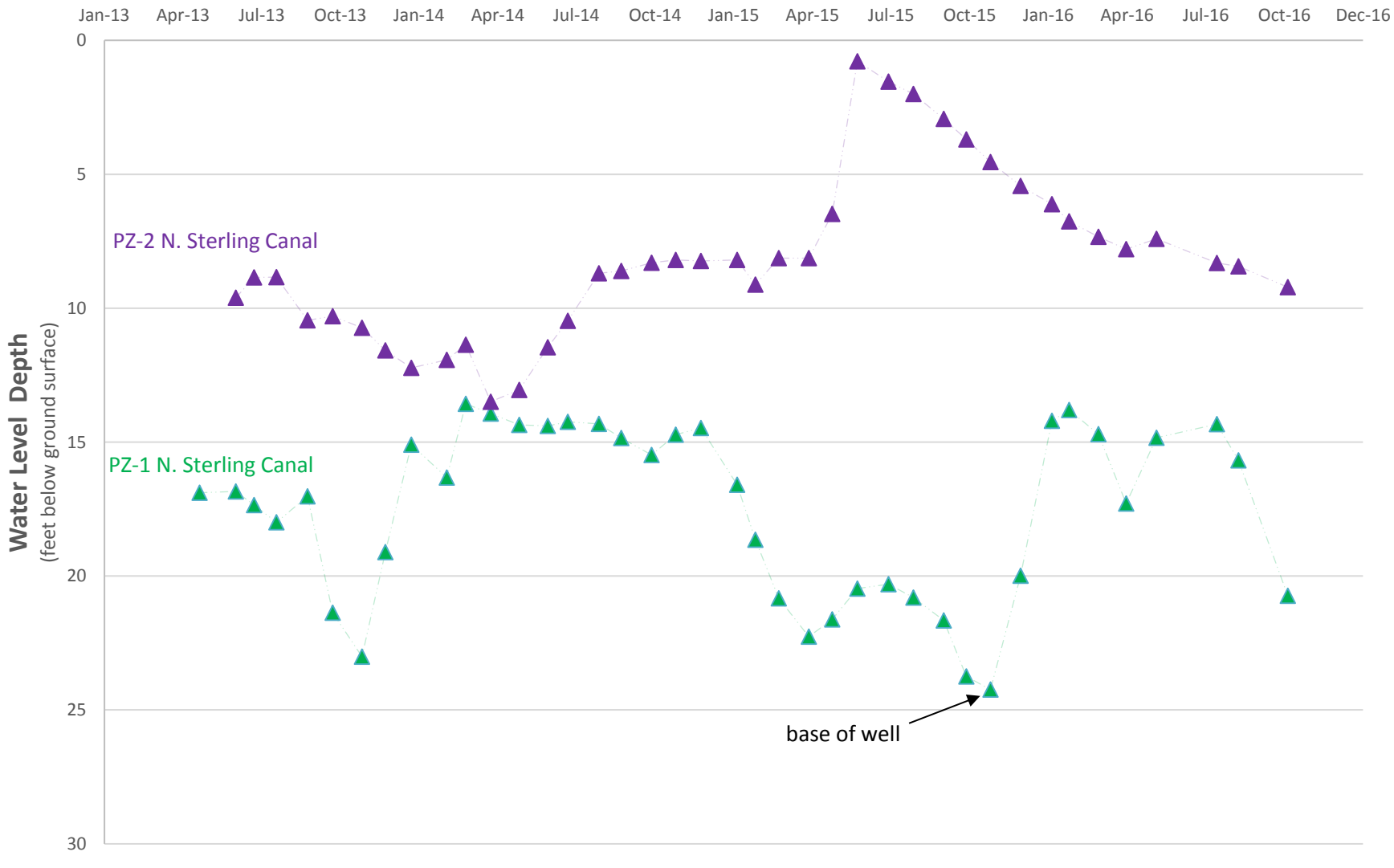
Hydrographs for SGW Piezometers near Sterling

Sterling Groundwater Pilot Project
SGW-2, SGW-3, and N. Sterling Piezometers Groundwater Levels
Period of Record: March 28, 2013 - October 31, 2016



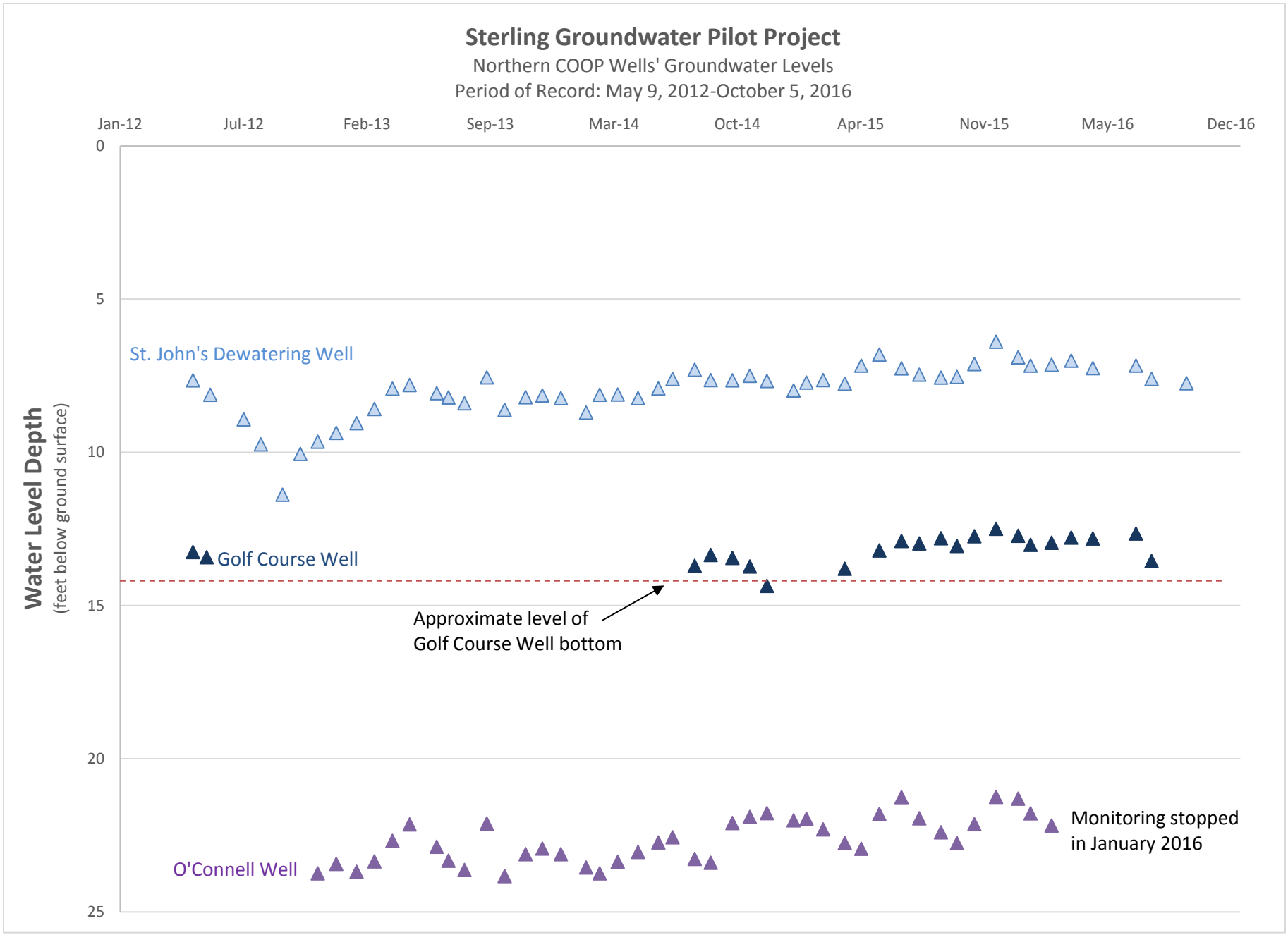
Data provided by Colorado Division of Water Resources | Project funded by Colorado Water Conservation Board

Sterling Groundwater Pilot Project
N. Sterling Canal Piezometers: Groundwater Levels
Period of Record: March 28, 2013 - October 31, 2016

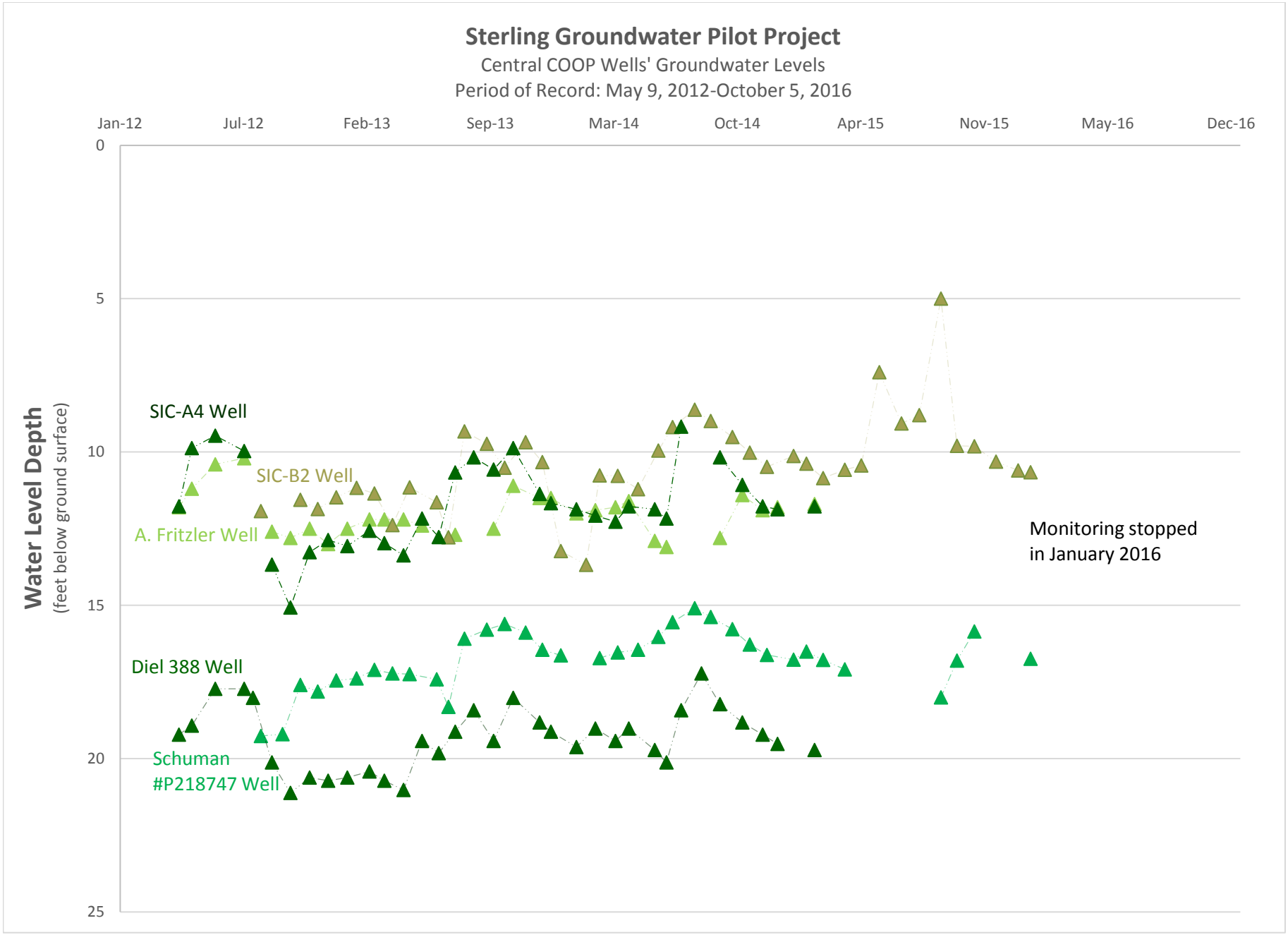


Data provided by Colorado Division of Water Resources | Project funded by Colorado Water Conservation Board

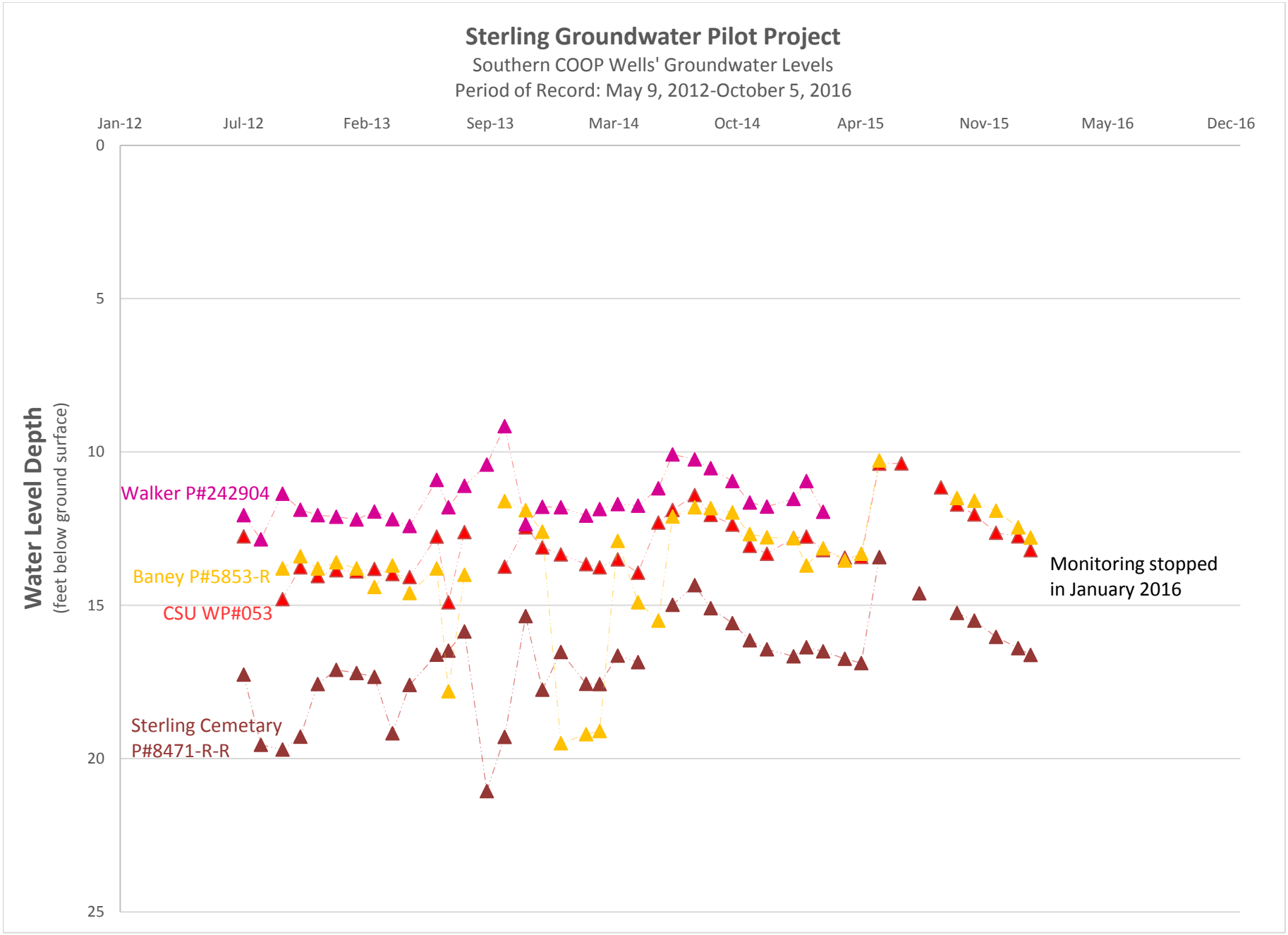
Hydrographs for Cooperator Wells near Sterling



Data provided by Colorado Division of Water Resources | Project funded by Colorado Water Conservation Board



Data provided by Colorado Division of Water Resources | Project funded by Colorado Water Conservation Board



Data provided by Colorado Division of Water Resources | Project funded by Colorado Water Conservation Board

Sterling Groundwater Pilot Project

LSP-063 DSS10STR/Sterling #13 2880-F Groundwater Levels

Period of Record: October 26, 2009- October 31, 2016

Data provided by Colorado Division of Water Resources | Project funded by Colorado Water Conservation Board

North Sterling Canal

N. Sterling Canal PZ 1

N. Sterling Canal PZ 2

Healey

SGW-1

PRN-1

St. John Dewatering

PRE-3

PRN-2S

PRE-2

PRN-3

PR-2

PR-1

PRE-1

PRN-4

Lebsock

Lebsock East

Lebsock West

Monahan Pond

DSS10STR

Mitcheck 1

Mitcheck 2

SGW-2

SGW-3

O'Connell

Sterling

CCN-1

SGW-4

CCE-3

CCE-4

CCE-2

CCN-2D

CCN-2M

CCN-2S

CCN-3

CCN-4

SIC B-2

Country Club Hills

Schuman Lake

A Fritzler

T 8 N

T 7 N

Pawnee Ditch

Springdale Ditch

Sterling Lateral #1

Schuman

A. Fritzler

Diel 388

SIC A-4

L Fritzler

Sterling Cemetary

Baney LWU-3

Keller Pond

Baney

Walker

CSU WP #053

3990 3970 3950 3930 4000 3940 3980 3960

R 53 W

R 52 W

0 1,000 2,000 4,000 Feet

LEGEND

- DWR Piezometers
- Cooperator Wells
- Water Table Elevation Contour July 2013
- Stream and Ditches
- Recharge Ponds

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Sterling Groundwater Pilot Project
July 2013 Groundwater Elevation Contours

Projection: UTM Zone 13N
Datum: NAD 1983
Scale: 1:24,000
Printed: 3/4/2016
Produced By: MRH
Checked By: RT

2012-2016 Climate Data

Precipitation is one of the main hydrologic inputs that influence groundwater recharge in the Sterling Area, both as direct infiltration and available water for diversion. The Northern Colorado Water Conservancy District (NCWCD) provides comprehensive climate data collected at local weather stations in the Sterling area. To provide some perspective for the groundwater level data presented, we include graphs of precipitation from the Colorado Climate Center Sterling 1.8 NW station in the Pawnee Ridge area and the Northern Colorado Water Conservancy District's Sterling #108 station located between US Highway 6 and the South Platte River just south of Sterling. If interested, one can visit NCWCD's weather page, found here. Data can be viewed in graph or tabular form, and data tables can be exported to CSV. The scale of all precipitation graphs is the same to allow for comparison of precipitation events at the different locations.

Throughout the study period, the wettest year was 2013 (20.1 in), and the driest years was 2012 (8.7 in). The impact of the larger precipitation events, in excess of one inch per day, was noticeable in some of the groundwater hydrographs, particularly the wells with shallow groundwater levels. Local rises in groundwater levels from precipitation events dissipated quickly.

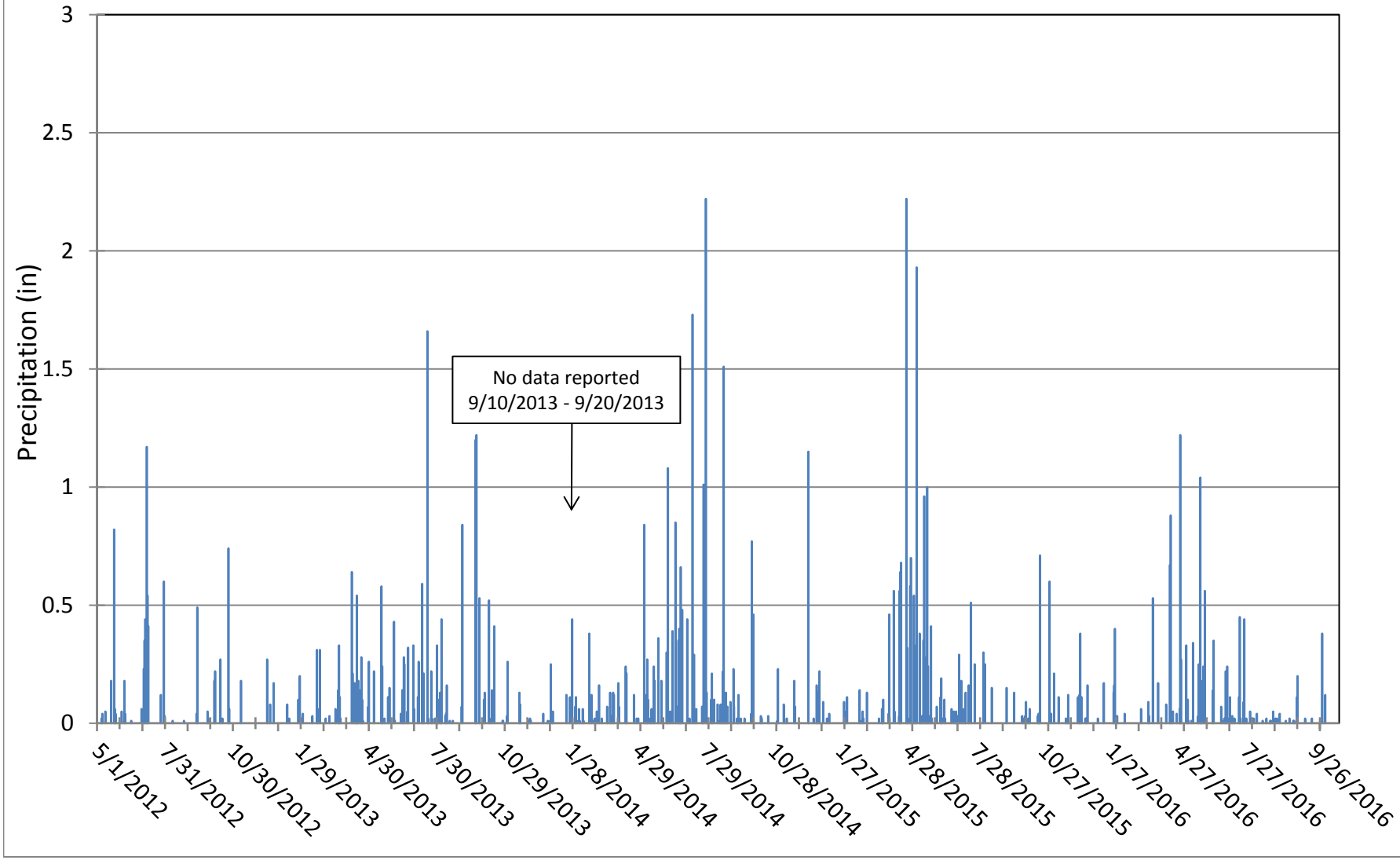
To provide a broader perspective, we include annual precipitation data for the past two decades (1996-2016). The wettest year in this dataset was 2011, the year before the study began, with 22.6 inches of precipitation. Prior to the 2012-2016 study period, there were three wet years (2009, 2010, and 2011) with annual precipitation totals greater than 17 inches. During the study period, 2013, 2014, and 2015 had similarly high levels of precipitation. 2009-2011 had total precipitation (all three years' precipitation totals summed together) of 59.1 inches, and 2013-2015 of 58.7 inches. Unlike single precipitation events, compounding of successive wet years may affect groundwater levels and impact local water decisions.

Sterling Groundwater Pilot Project

CoCoRaHS Total Daily Precipitation

Station Number: CO-LG-2/ Sterling 1.8 NW Station

Period of Record: May 1, 2012 - October 31, 2016

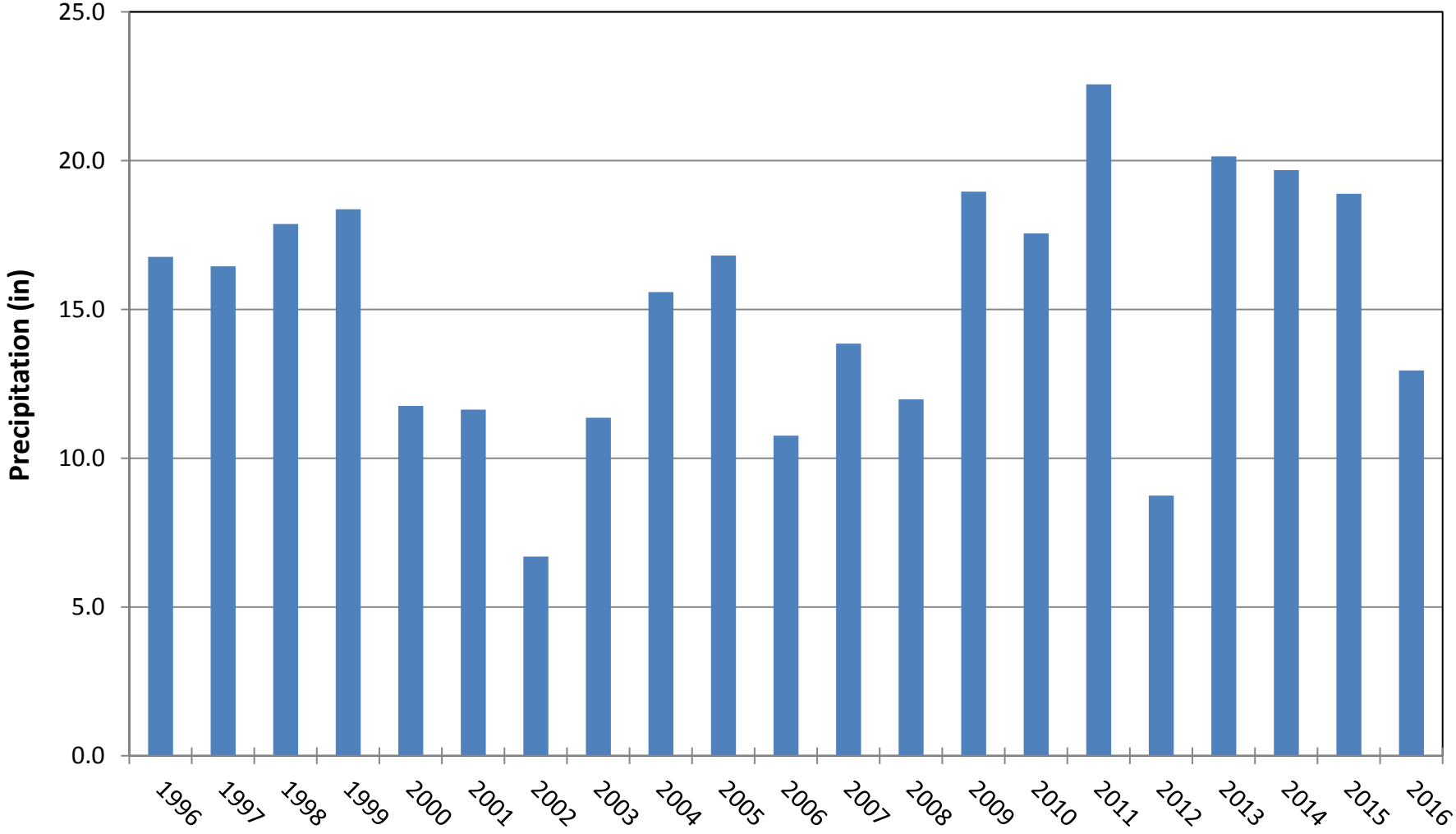


Sterling Groundwater Pilot Project

NCWCD Annual Precipitation

NCWCD Sterling 108 Station

Period of Record: 1996-2016*



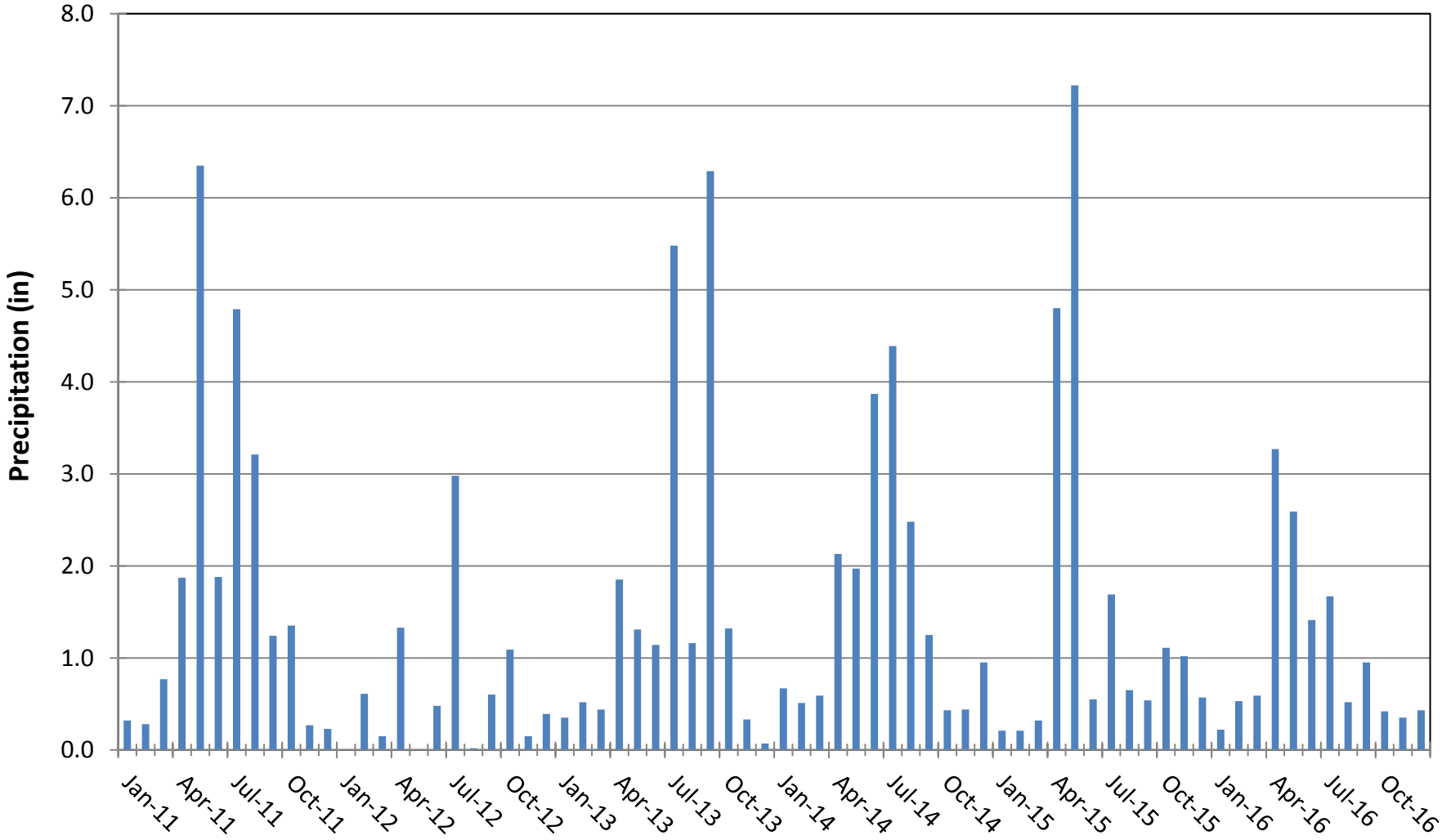
*2016 total precipitation data include Nov and Dec data.

Sterling Groundwater Pilot Project

NCWCD Monthly Total Precipitation

NCWCD Sterling 108 Station

Period of Record: January, 2011- October, 2016

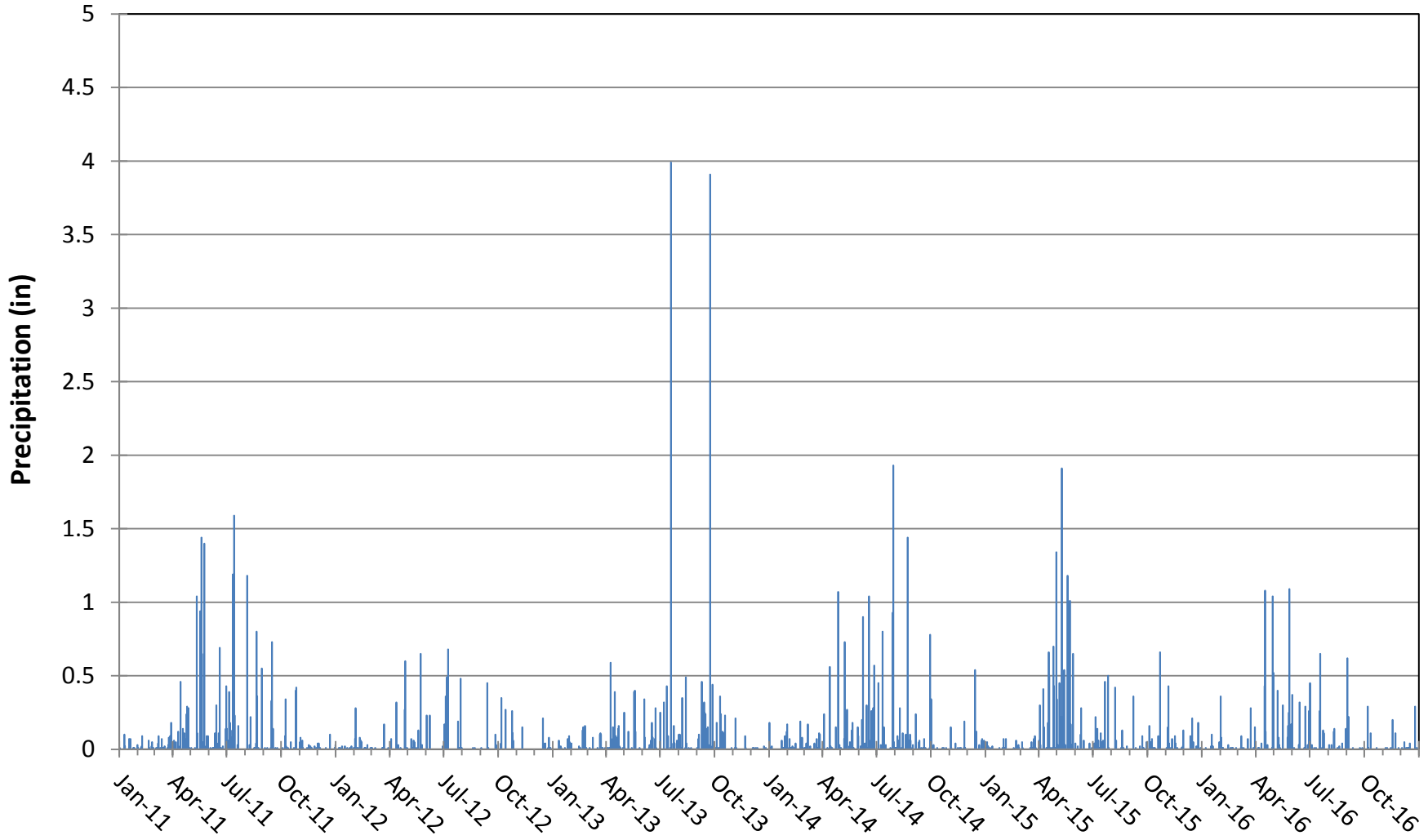


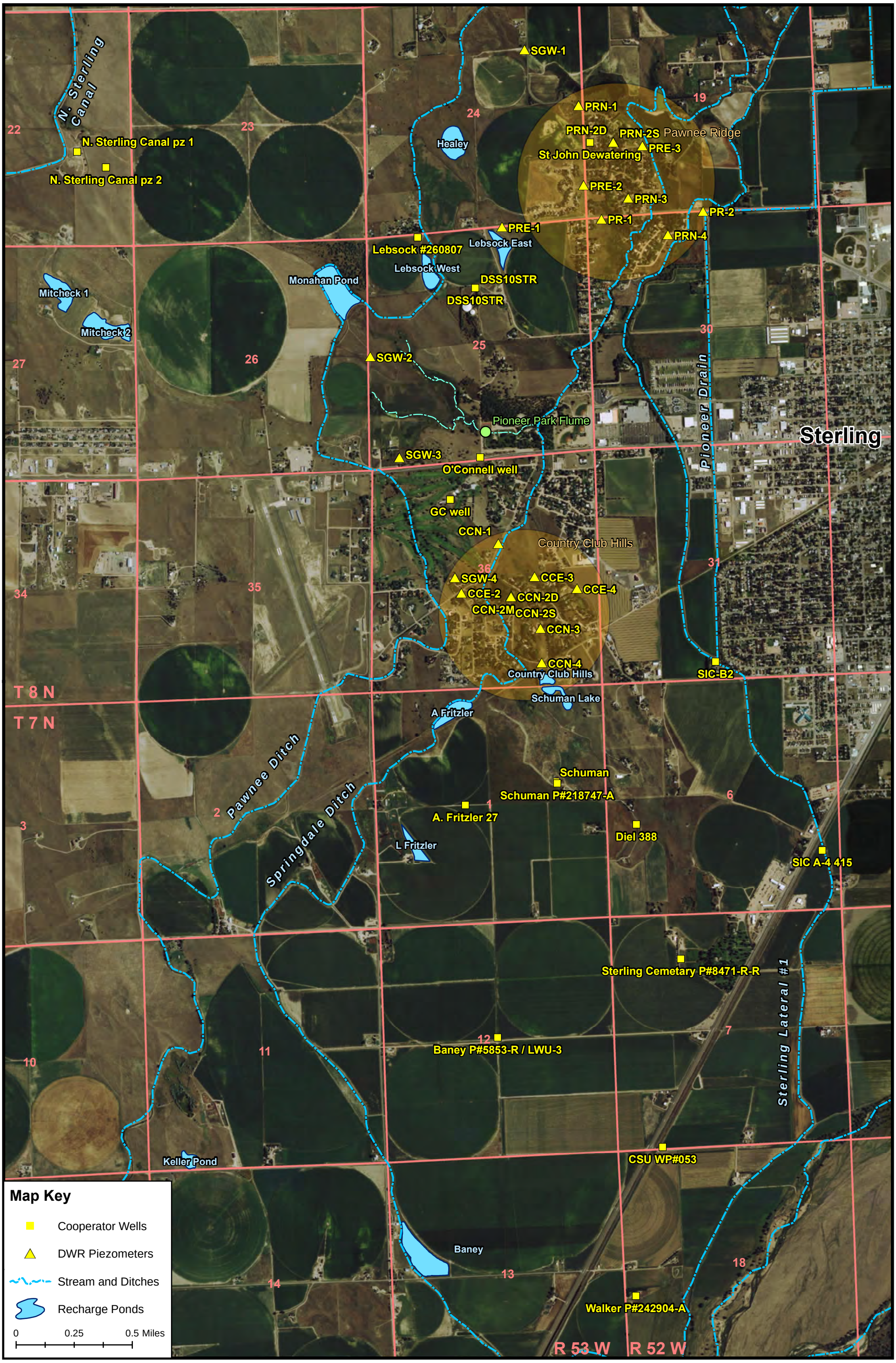
Sterling Groundwater Pilot Project

NCWCD Total Daily Precipitation

NCWCD Sterling 108 Station

Period of Record: January 1, 2011 - October 31, 2016





Map Key

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- Stream and Ditches
- Recharge Ponds

0 0.25 0.5 Miles

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State of Colorado -- Division of Water Resources

Sterling Groundwater Pilot Project
Groundwater Level Monitoring Network

Projection: UTM Zone 13N
Datum: NAD 1983
Scale: 1:24,000
Printed: 1/20/16

2012-2016 Diversion and Recharge Data

Notes on data source

CDSS provides information related to diversion and recharge structures. In this section we provide charts of 2012-2016 daily and monthly diversion and recharge through structures in the study area. If interested, the CDSS online tool provides records related to historical daily (cfs) or monthly (acre-feet) diversion data and general water-rights information for dates outside the 2012-2016 study period.

Diversion and recharge estimates are measured using man-made flumes equipped with either staff-gauges or pressure transducers. Seepage from both the recharge ponds and ditches influence groundwater recharge and thus the groundwater levels. Unfortunately, the water commissioner does not measure return flows (seepage) from ditches, unless that seepage is specifically credited for recharge. Consequently, these data only provide a partial picture of recharge.

To use the CDSS diversion records tool, follow the Help File instructions. Sterling data can be found under Division 1 (South Platte) and under District 64 (South Platte: Balzac to Stateline). Diversion ditches located in the Sterling study area are listed in the table below. Search by Structure ID or Structure Name.

Structure ID	Structure Name
687	North Sterling Inlet
533	Pawnee Ditch
530	Springdale Ditch
528	Sterling Irr Co Ditch 1

Diversions records provided by the CDSS online diversion records page are updated annually. More recent, but ***provisional*** diversion and recharge data can be found at Colorado's Surface Water Conditions webpage. Features relevant to the Sterling study Area are listed in the table below. To search for structures, use the structure abbreviation.

Structure Abbreviation	Structure Name
NSTINLCO	North Sterling Inlet at Reservoir
PAWDITCO	Pawnee Ditch near Messex
SPRDITCO	Springdale Ditch
STECANCO	North Sterling Canal

Notes on the 2012-2016 data

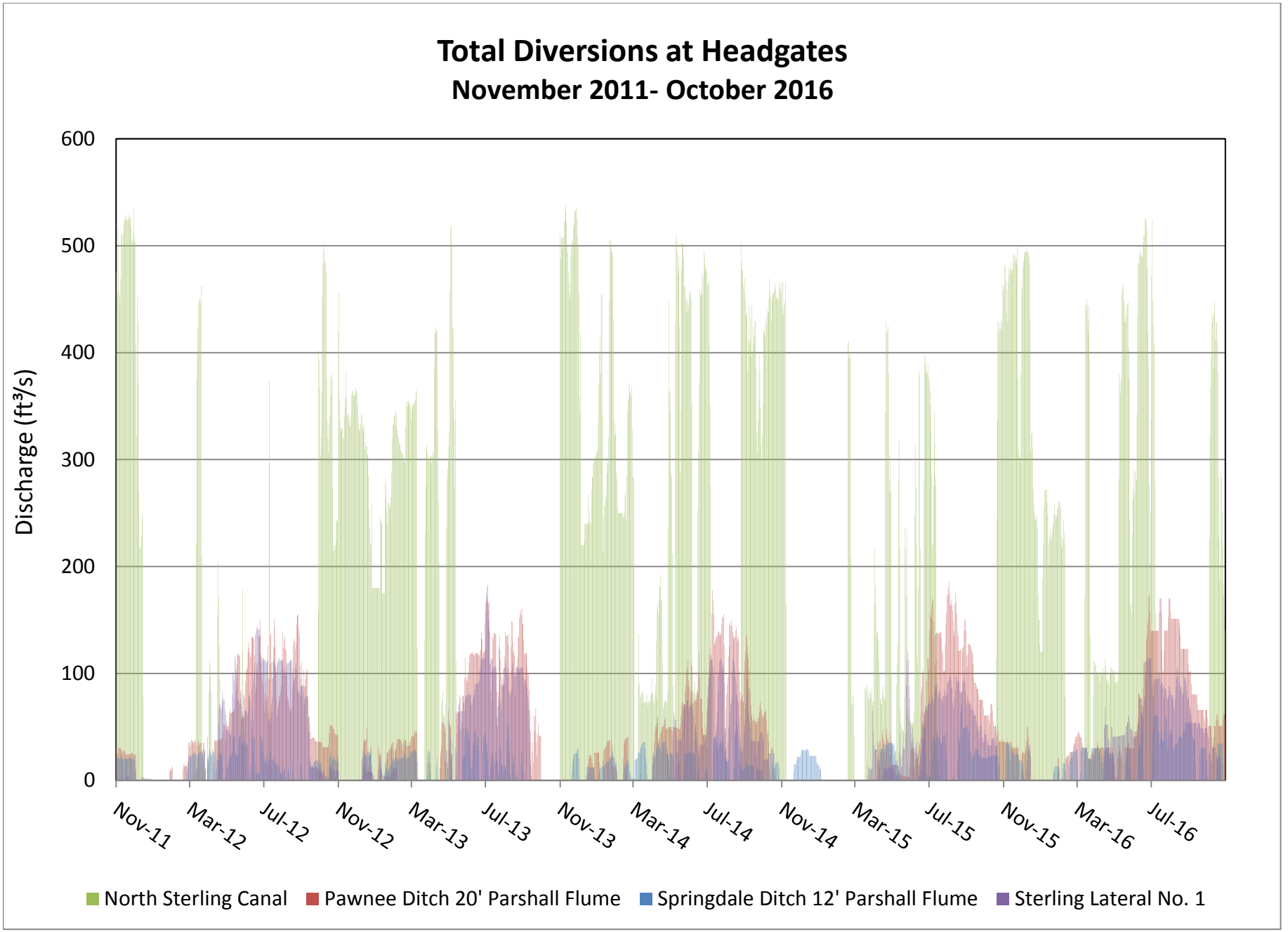
The 2012-2016 data summary includes the following: 1) daily composite graphs of total diversions at the headgates of respective ditches, 2) daily composite graphs of estimates of diversion credited as ditch recharge, 3) bar charts of annual ditch recharge estimates, 4) daily recharge estimates to ponds of respective ditches, 5) a cumulative pond recharge charts, and 6) volumetric flow rates (cfs) of Sand Creek in Pioneer Park.

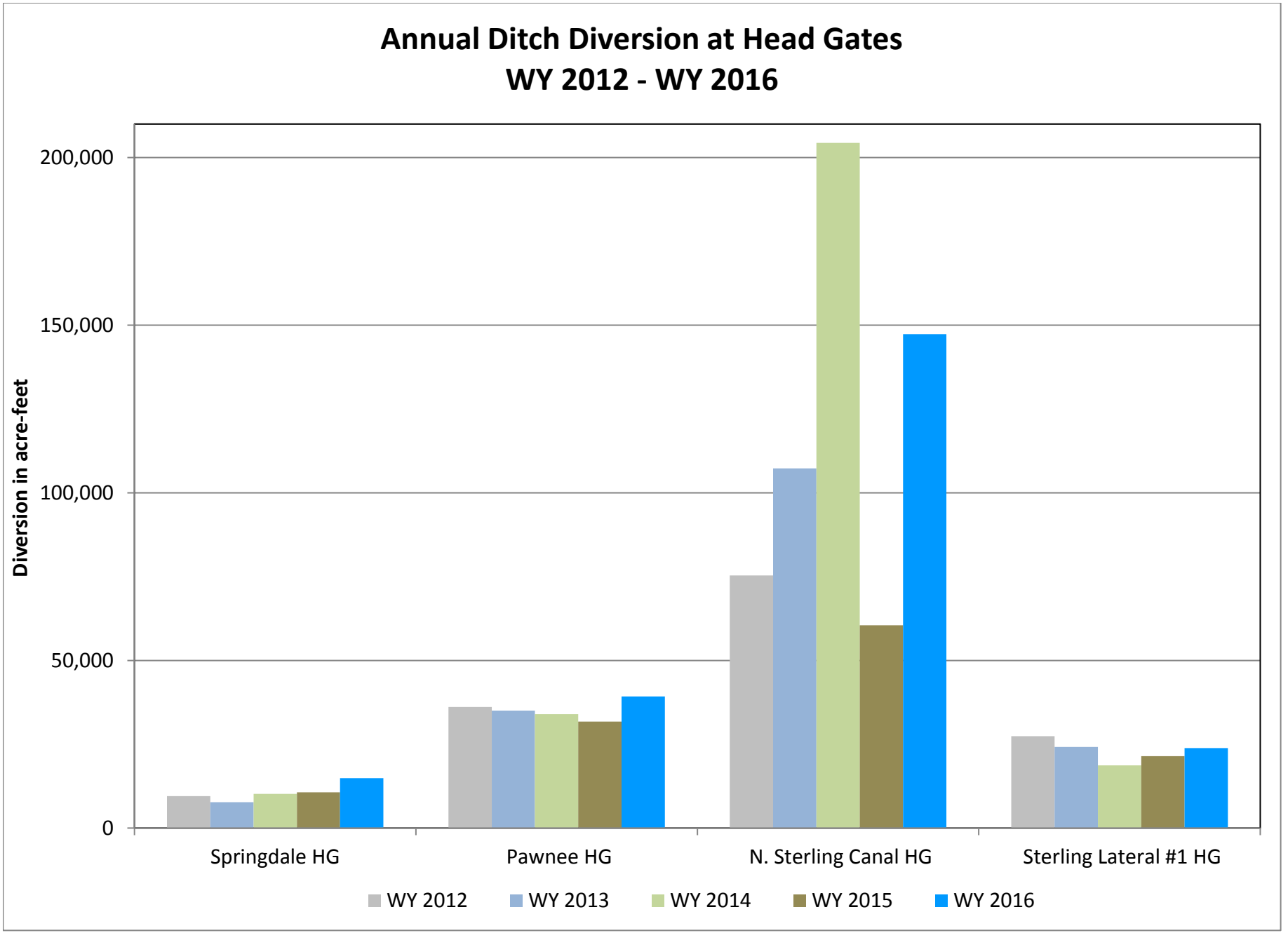
The study area contains a number of recharge ponds and diversion ditches. From west to east, the ditches include the North Sterling Canal, Pawnee, Springdale, and Sterling Lateral No. 1. These structures are shown and labeled on the following map of the Sterling Groundwater Pilot Project.

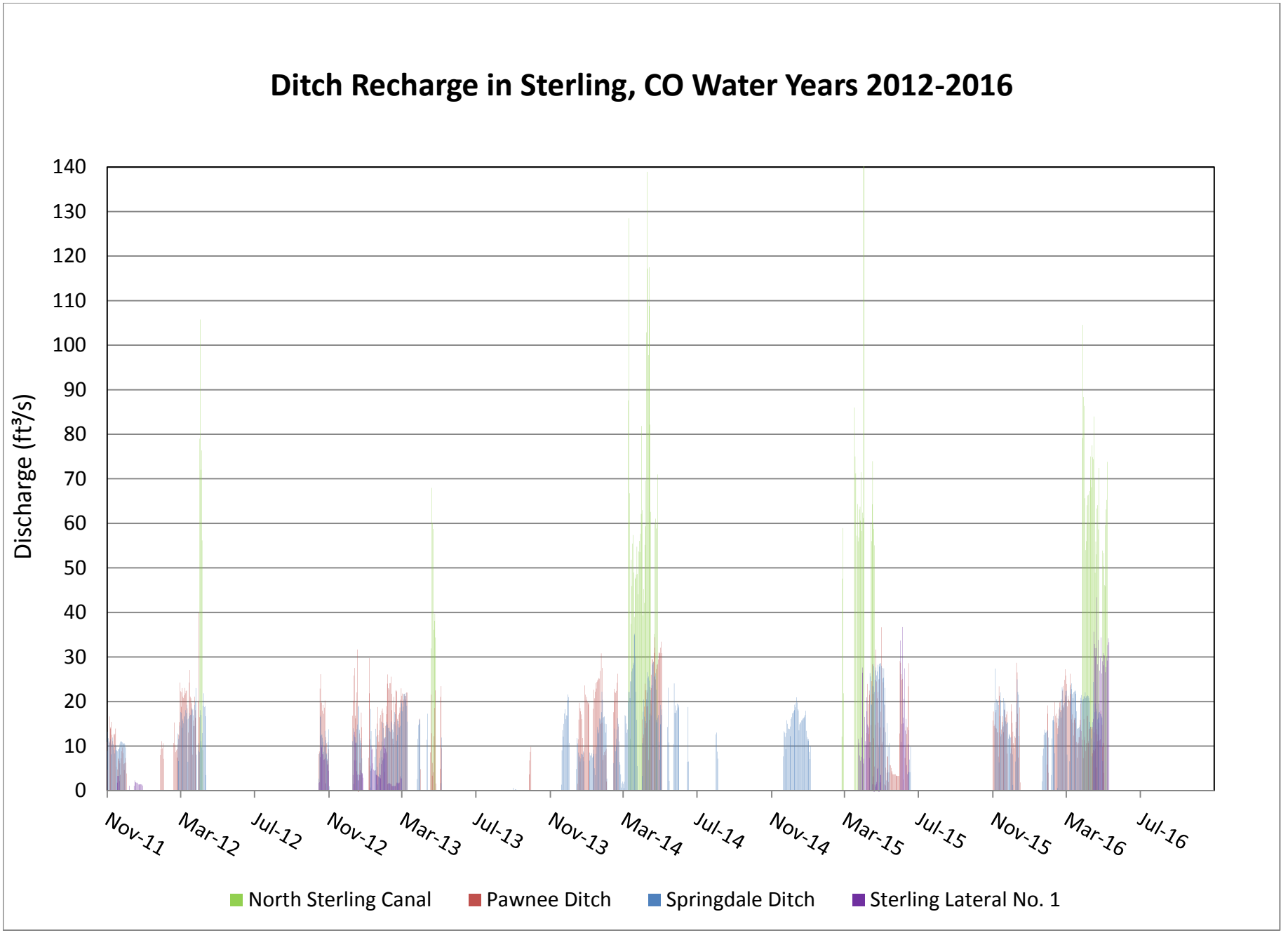
Key observations:

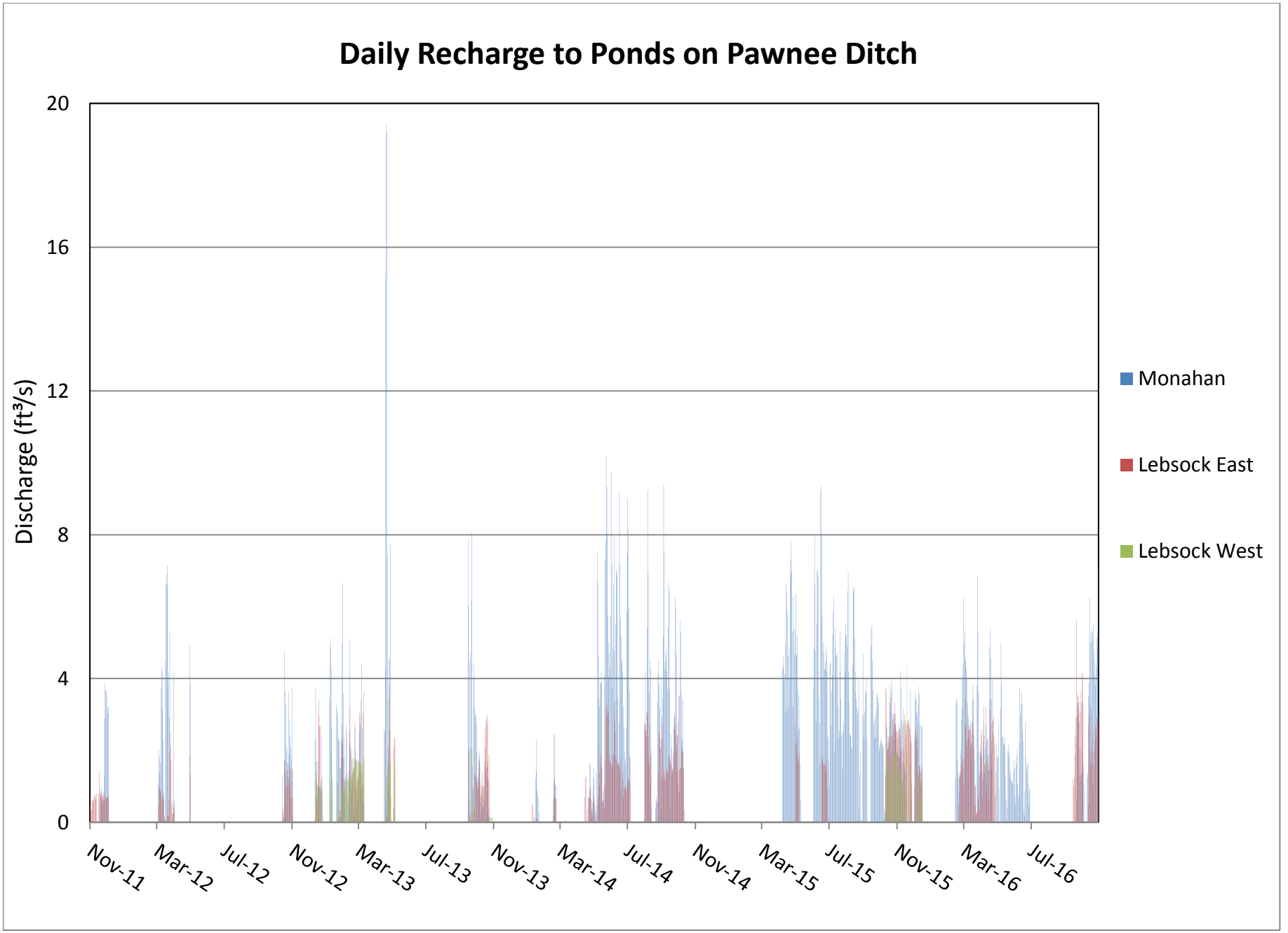
1. Daily seepage values for ditches and canals are not available; the total amount of diverted water at their headgate provides a qualitative assessment of both timing and amount of seepage. The annual diversion comparison clearly shows that the North Sterling Canal carries significantly more water than the other ditches. Generally, diversions to ditches occurred between November and July.
2. The recharge credit value for ditch seepage applies to the entire length of the ditch, which may be several miles long. The actual amount and location of ditch seepage within the study area of interest is uncertain. Ditch recharge graphs, also provided, give timeframes for ditch seepage credit and groundwater recharge for a specific ditch reach. Recharge credit is not applied when the ditch is flowing for irrigation.
3. Daily recharge to ponds on both the Pawnee and Springdale ditches provides timing of when these recharge ponds filled. Data on the volume of water within the structure, or the amount of water lost to evaporation are not available, but the flow rates provide a proxy of the amount of water diverted to recharge.
    a. A cumulative pond recharge graph is provided that indicates that the Monahan pond is the largest contributor to recharge along the Pawnee Ditch.
    b. Recharge ponds along the Springdale ditch contribute more equally to recharge along the Springdale Ditch, with the Schuman pond contributing slightly more when active. The Schuman pond was inactive between spring of 2013 and spring of 2015.
4. A Parshall flume was installed within the Sand Creek drainage at the western edge of Pioneer Park in December 2012. Sand Creek is an ephemeral drainage that only flows in direct response to periods of heavy precipitation or groundwater discharge. As such, continuous flow in Sand Creek and its routed ditch through Pioneer Park is the result of groundwater discharge (baseflow). Barring any significant precipitation, changes in the flow as measured by the flume can served as a proxy for changes in groundwater levels. Flow through the flume at Pioneer Park steadily increased throughout the study period. The greatest flows occurred in spring 2016, with sustained flow around 2.5 ft^3/s. After this increase, sustained flows lowered but remained above 1.5 ft^3/s, more than double flows at the beginning of the study period (0.5 ft^3/s).

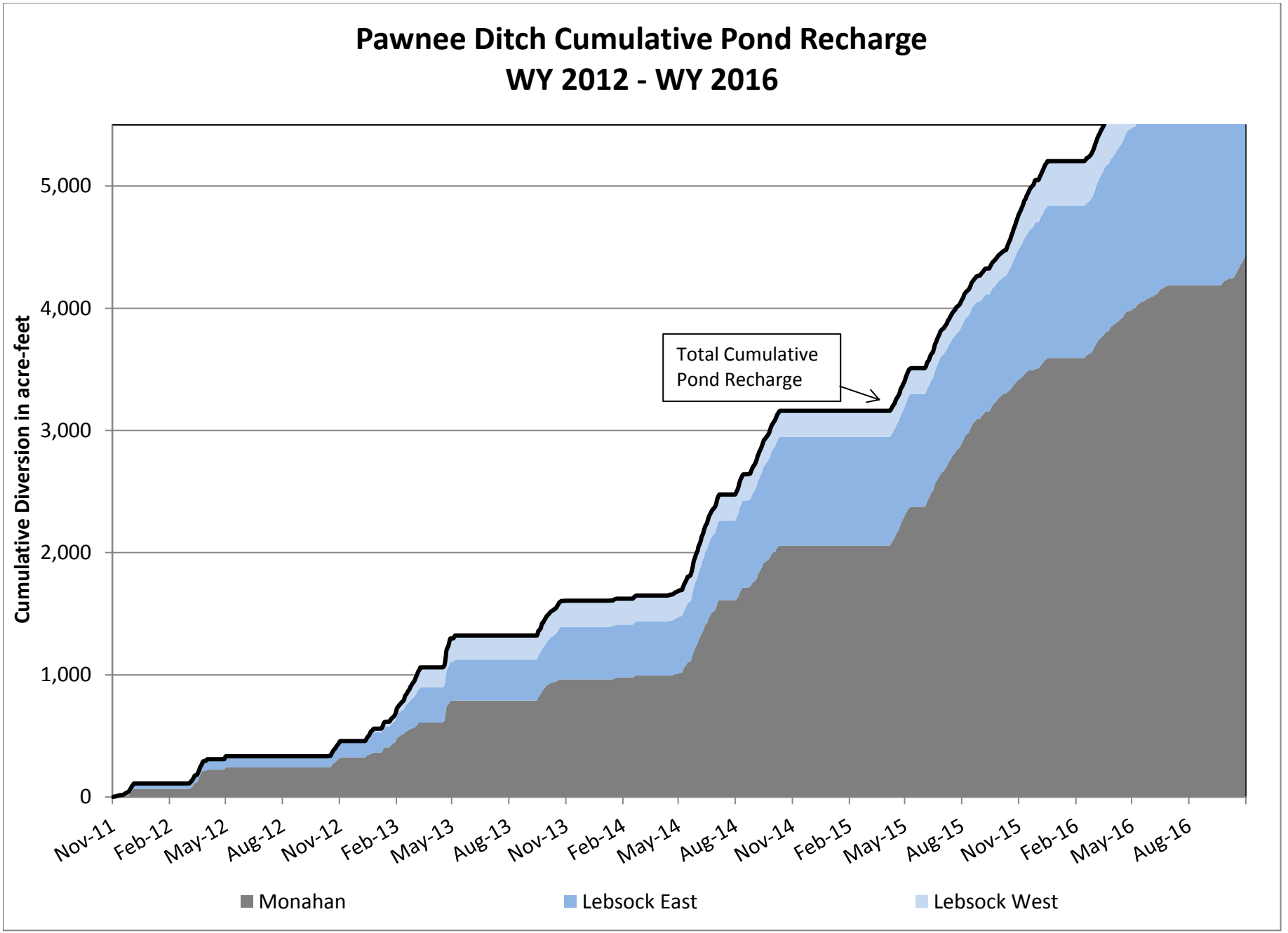
5. In May 2015 the north side of the Pioneer Park flume was breached, presumably due to excessive precipitation received that month. The flume was quickly repaired, but the flume continues to leak. Additionally, DWR staff has observed local children playing in the park the flume and clogging the flume with rocks, disrupting the flow and changing the stage through the flume. Therefore, the Pioneer Park flume data serve best as an estimate of discharge, and longer term trends, such as inter-annual trends are likely more reliable than daily or monthly events.

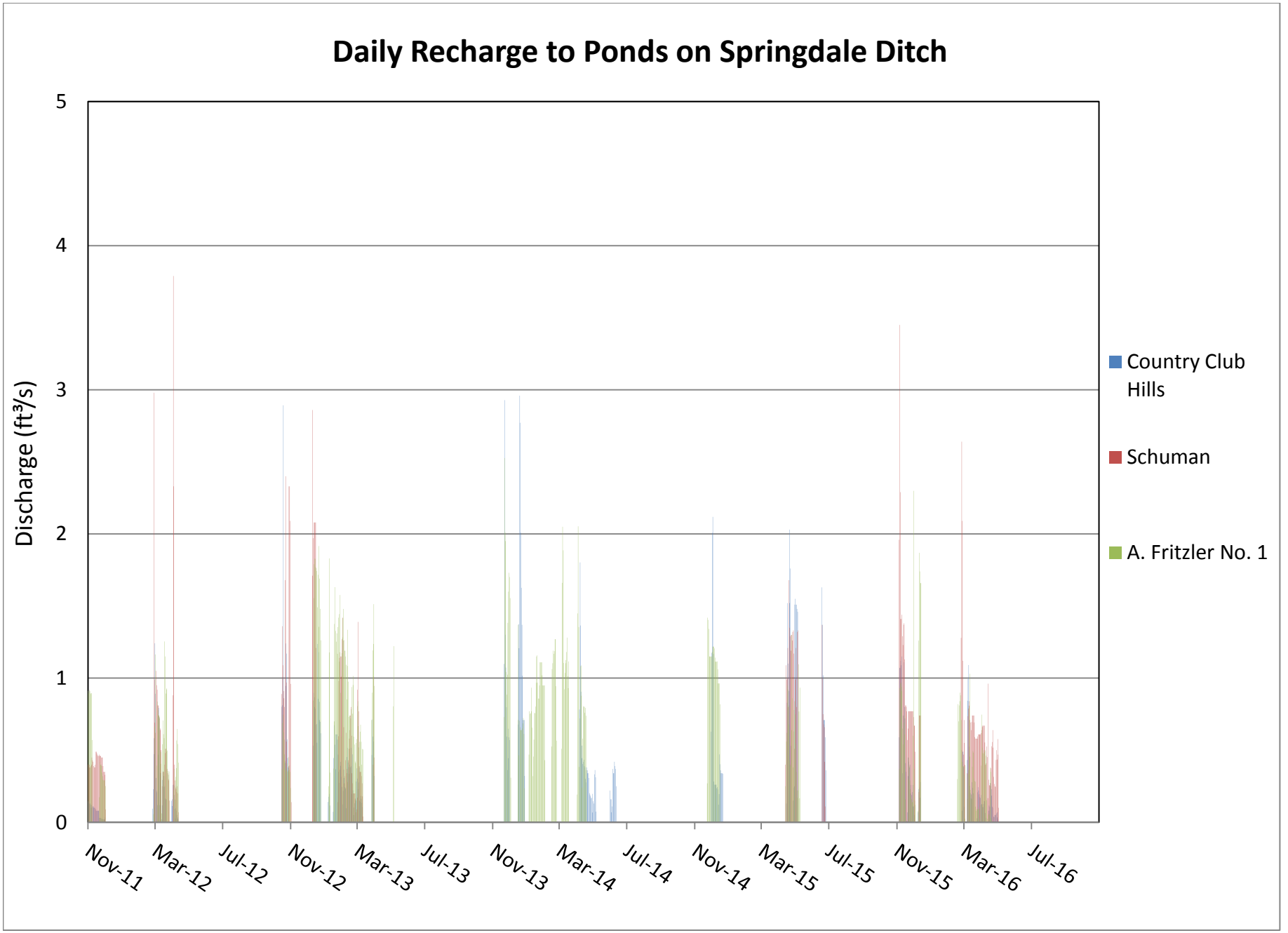

Total Diversions at Headgates
November 2011- October 2016
Discharge (ft³/s)
600
500
400
300
200
100
0
Nov-11
Mar-12
Jul-12
Nov-12
Mar-13
Jul-13
Nov-13
Mar-14
Jul-14
Nov-14
Mar-15
Jul-15
Nov-15
Mar-16
Jul-16
North Sterling Canal
Pawnee Ditch 20' Parshall Flume
Springdale Ditch 12' Parshall Flume
Sterling Lateral No. 1

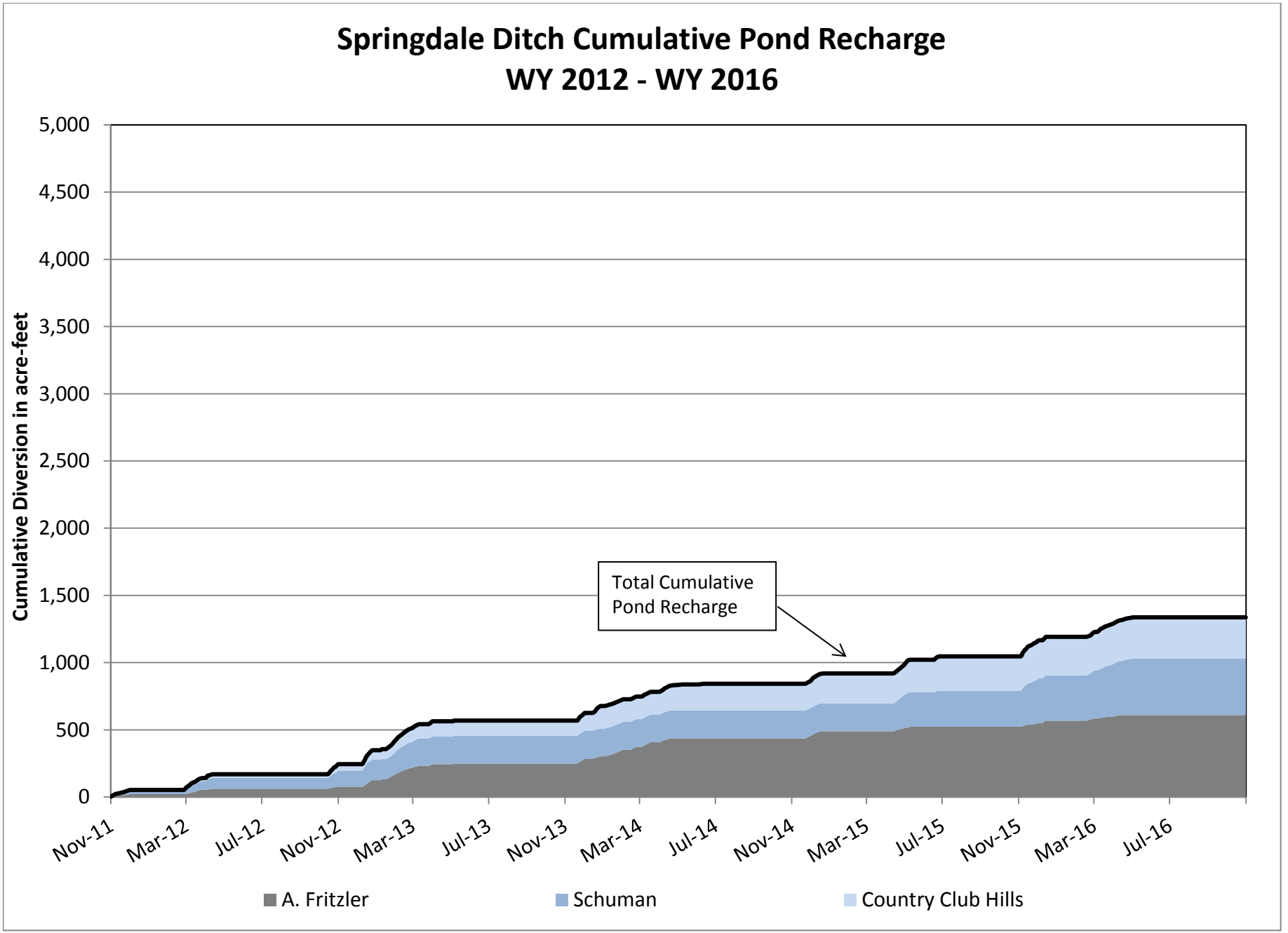

Annual Ditch Diversion at Head Gates
WY 2012 - WY 2016
Diversion in acre-feet
200,000
150,000
100,000
50,000
0
Springdale HG
Pawnee HG
N. Sterling Canal HG
Sterling Lateral #1 HG
WY 2012
WY 2013
WY 2014
WY 2015
WY 2016

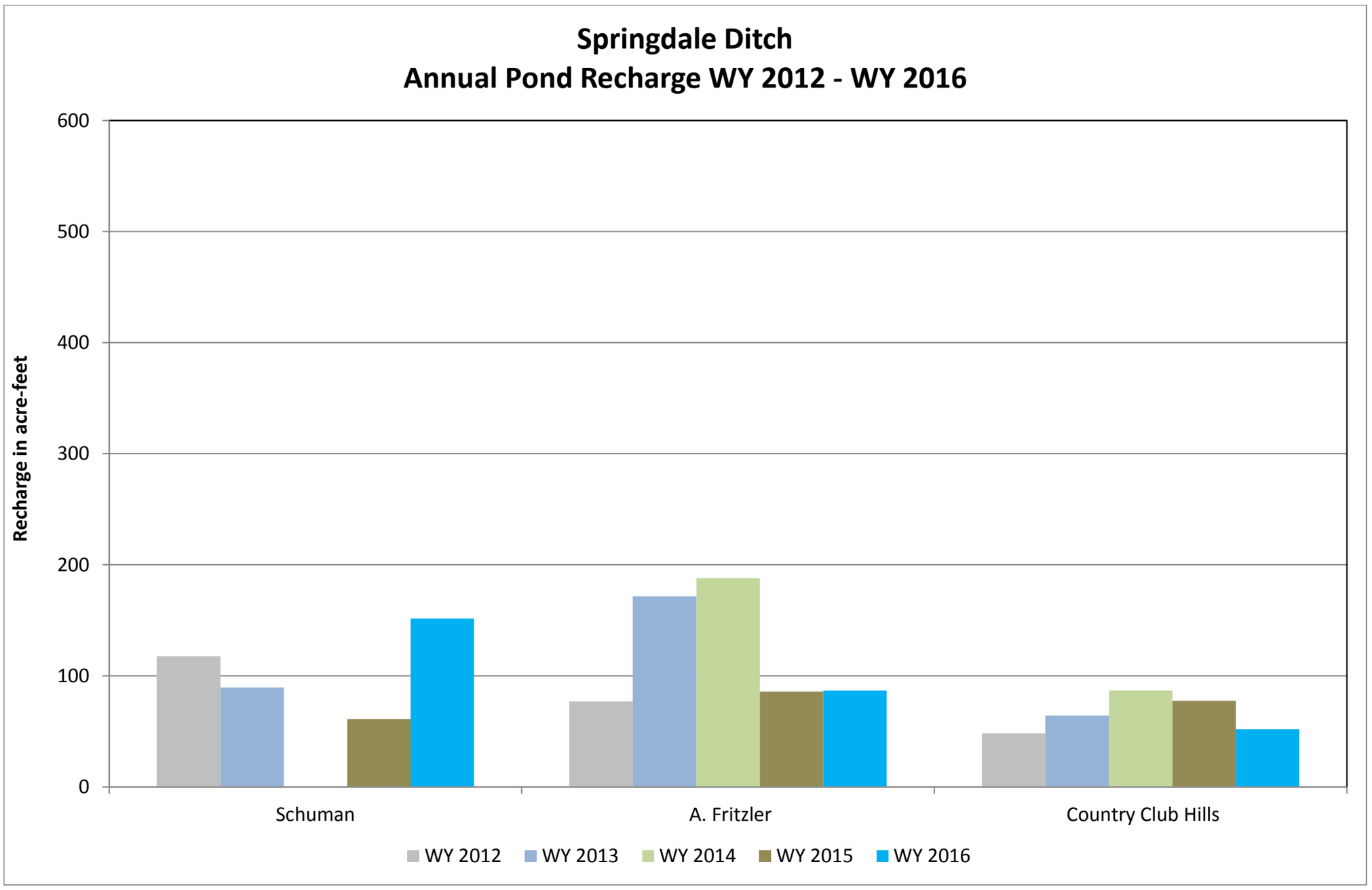

Ditch Recharge in Sterling, CO Water Years 2012-2016
Discharge (ft³/s)
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
Nov-11
Mar-12
Jul-12
Nov-12
Mar-13
Jul-13
Nov-13
Mar-14
Jul-14
Nov-14
Mar-15
Jul-15
Nov-15
Mar-16
Jul-16
North Sterling Canal
Pawnee Ditch
Springdale Ditch
Sterling Lateral No. 1

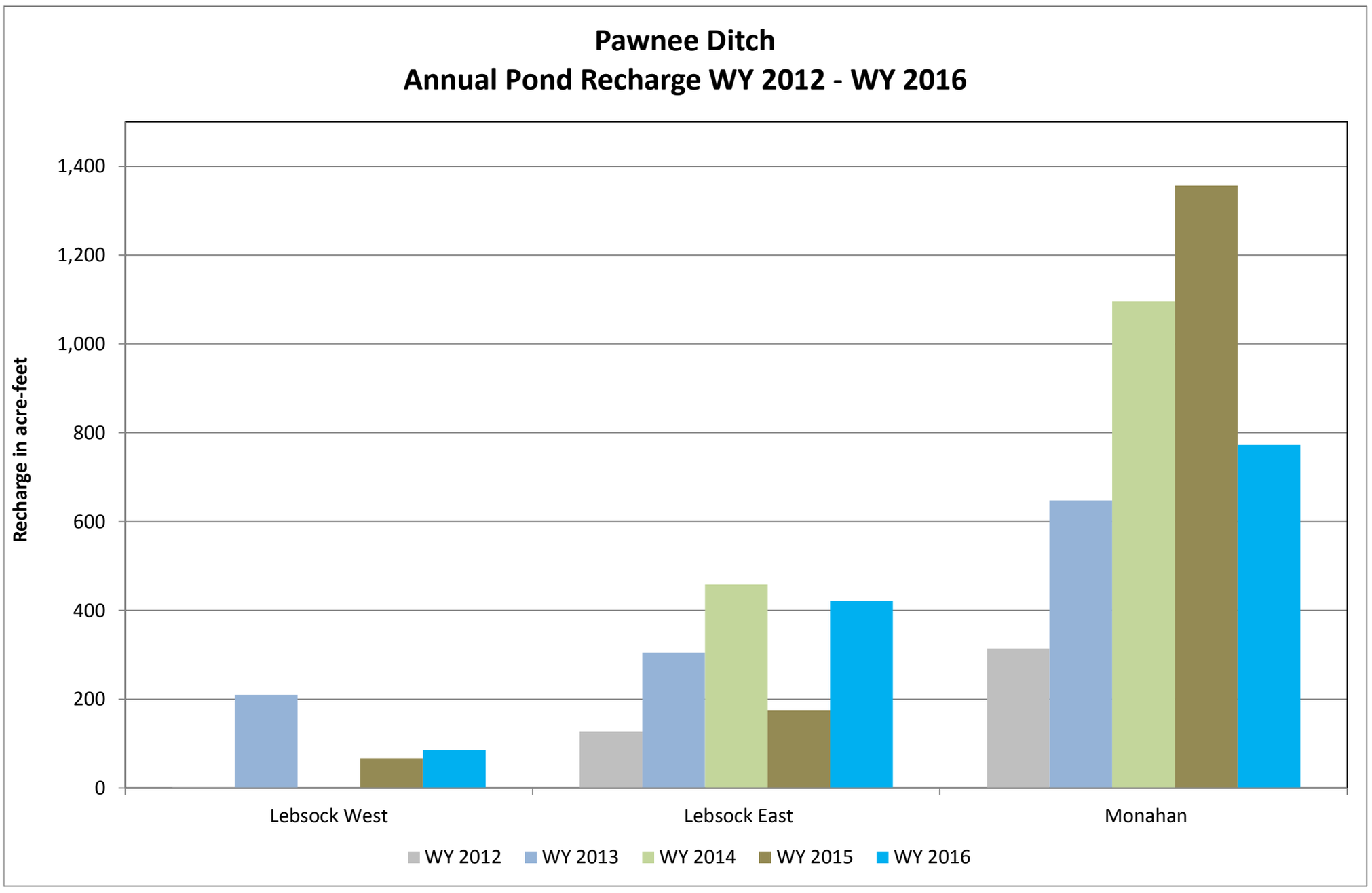

Daily Recharge to Ponds on Pawnee Ditch
Discharge (ft³/s)
20
16
12
8
4
0
Nov-11
Mar-12
Jul-12
Nov-12
Mar-13
Jul-13
Nov-13
Mar-14
Jul-14
Nov-14
Mar-15
Jul-15
Nov-15
Mar-16
Jul-16
Monahan
Lebsock East
Lebsock West


Pawnee Ditch Cumulative Pond Recharge
WY 2012 - WY 2016
Cumulative Diversion in acre-feet
5,000
4,000
3,000
2,000
1,000
0
Total Cumulative Pond Recharge
Nov-11
Feb-12
May-12
Aug-12
Nov-12
Feb-13
May-13
Aug-13
Nov-13
Feb-14
May-14
Aug-14
Nov-14
Feb-15
May-15
Aug-15
Nov-15
Feb-16
May-16
Aug-16
Monahan
Lebsock East
Lebsock West


Daily Recharge to Ponds on Springdale Ditch
Discharge (ft³/s)
5
4
3
2
1
0
Nov-11
Mar-12
Jul-12
Nov-12
Mar-13
Jul-13
Nov-13
Mar-14
Jul-14
Nov-14
Mar-15
Jul-15
Nov-15
Mar-16
Jul-16
Country Club Hills
Schuman
A. Fritzler No. 1


Springdale Ditch Cumulative Pond Recharge
WY 2012 - WY 2016
Cumulative Diversion in acre-feet
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
Total Cumulative Pond Recharge
Nov-11
Mar-12
Jul-12
Nov-12
Mar-13
Jul-13
Nov-13
Mar-14
Jul-14
Nov-14
Mar-15
Jul-15
Nov-15
Mar-16
Jul-16
A. Fritzler
Schuman
Country Club Hills

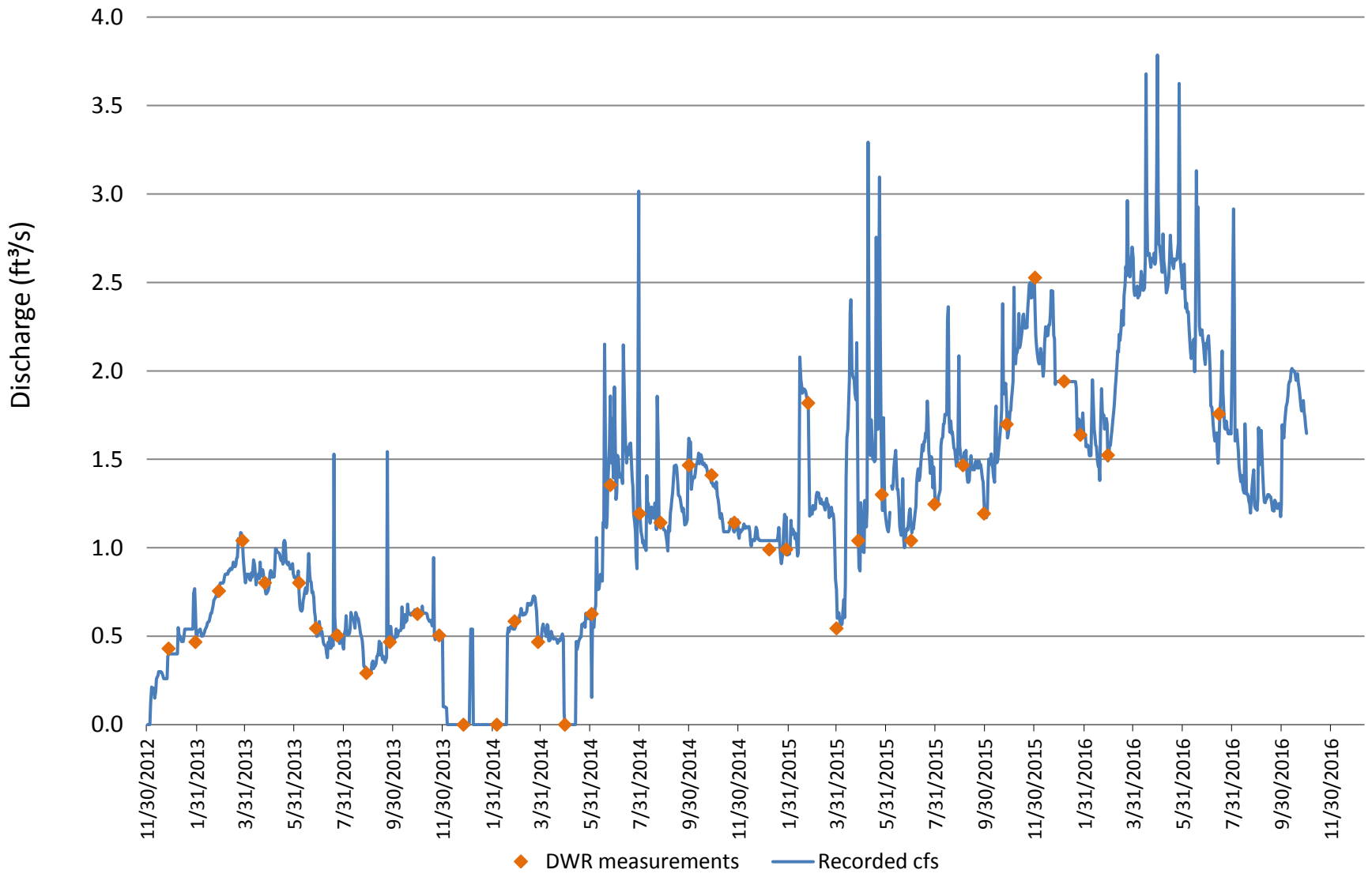

Springdale Ditch
Annual Pond Recharge WY 2012 - WY 2016
Recharge in acre-feet
600
500
400
300
200
100
0
Schuman
A. Fritzler
Country Club Hills
WY 2012
WY 2013
WY 2014
WY 2015
WY 2016


Pawnee Ditch
Annual Pond Recharge WY 2012 - WY 2016
Recharge in acre-feet
1,400
1,200
1,000
800
600
400
200
0
Lebsock West
Lebsock East
Monahan
WY 2012
WY 2013
WY 2014
WY 2015
WY 2016

Sterling Groundwater Pilot Project

Sand Creek Discharge at Pioneer Park

Period of Record: December 5, 2012 - October 31, 2016



Data provided by Colorado Division of Water Resources | Project funded by Colorado Water Conservation Board