Water Resources Review Committee

Update of South Platte Basin Roundtable

Groundwater Technical Committee

September 20, 2016

Overview for Today

- GWTC Members and Contributors
- GWTC Background
  - Previous Studies/Related Activities
- Current Activities
  - HB 15-1178
    - Gilcrest Area Pilot Project
  - Other Activities
  - HB 15-1166
- Next Steps

Groundwater Technical Committee

Committee Members

- Randy Ray, CCWCD
- Joe Frank, LSPWCD
- Luke Shawcross, Northern Water
- Jim Hall, SPBRT
- Cortney Brand, Metro Roundtable
- Willem Schreuder, Consultant
- Andy Moore, CWCB
- Kevin Rein, DWR
- John Stulp, Governor's Office

Support Staff

- Matt Sares, DWR
- Kevin Donegan, DWR
- Erik Skeie, CWCB

Groundwater Technical Committee Credentials

- Randy Ray, CCWCD
  - Executive Director CCWCD
  - B.S. Agronomy – Colorado State University
- Joe Frank, LSPWCD
  - P.E., General Manager LSPWCD
  - B.S. Civil Engineering – Colorado School of Mines
- Luke Shawcross, Northern Water
  - P.E., Water Resources Engineer NCWCD
  - B.S. Civil Engineering – Colorado School of Mines
  - M.S. Water Resources Engineering – Colorado State University
- Jim Hall, SPBRT
  - P.E., Senior Water Resources Engineer NCWCD
  - B.S. Civil Engineering - Colorado State University
- Cortney Brand, Metro Roundtable
  - P.G., Vice President Leonard Rice Engineering
  - B.S. Geology – Lafayette College
  - M.S. Geology – Arizona State University
  - M.B.A. University of Colorado
- Willem Schreuder, Consultant
  - President, Principia Mathematica, Inc.
  - B.S. University of Stellenbosch
  - Hons. B.S. University of Stellenbosch
  - M.S. University of Stellenbosch
  - Ph.D University of Stellenbosch
  - M.S. University of Colorado
  - Ph.D University of Colorado
- Andy Moore, CWCB
  - P.E., Water Resources Engineer CWCB
  - B.S. Civil Engineering
  - M.S. Civil Engineering
- Kevin Rein, DWR
  - P.E., Deputy State Engineer, Colorado State Engineer's Office
  - B.S. Civil Engineering – Colorado State University
- John Stulp, Governor's Office
  - Special Policy Advisor to the Governor for Water
  - Chairman, IBCC

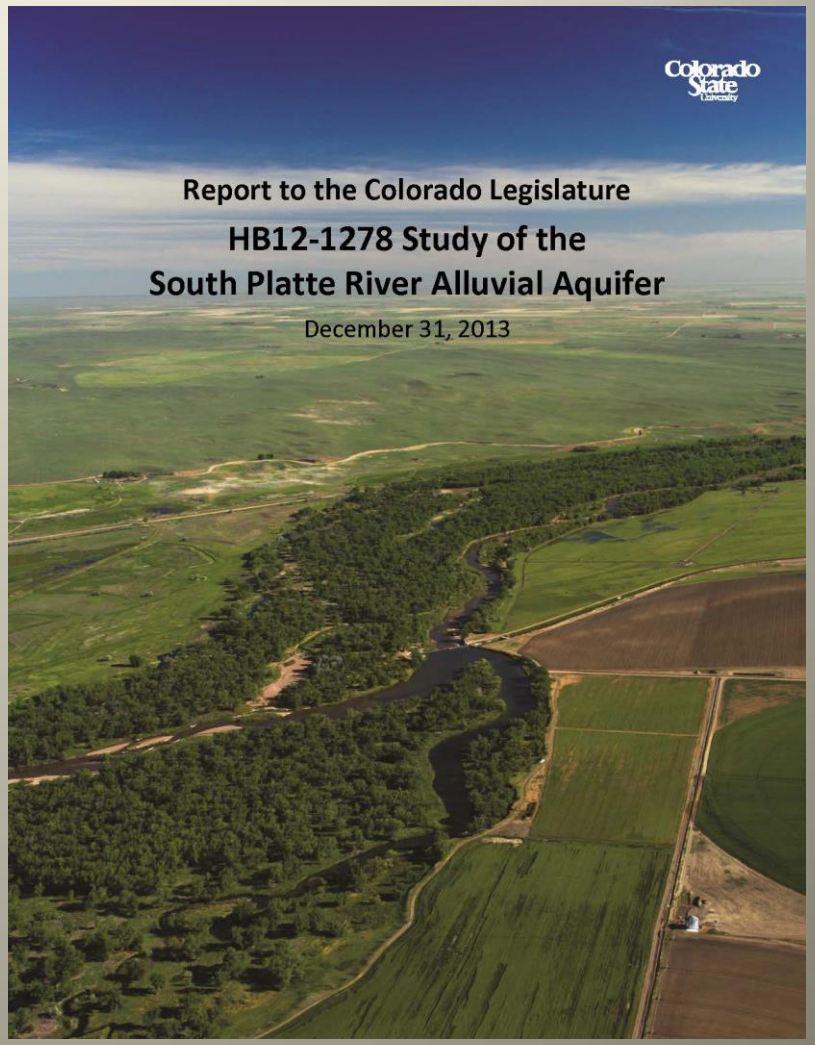
Groundwater Technical Committee Participants

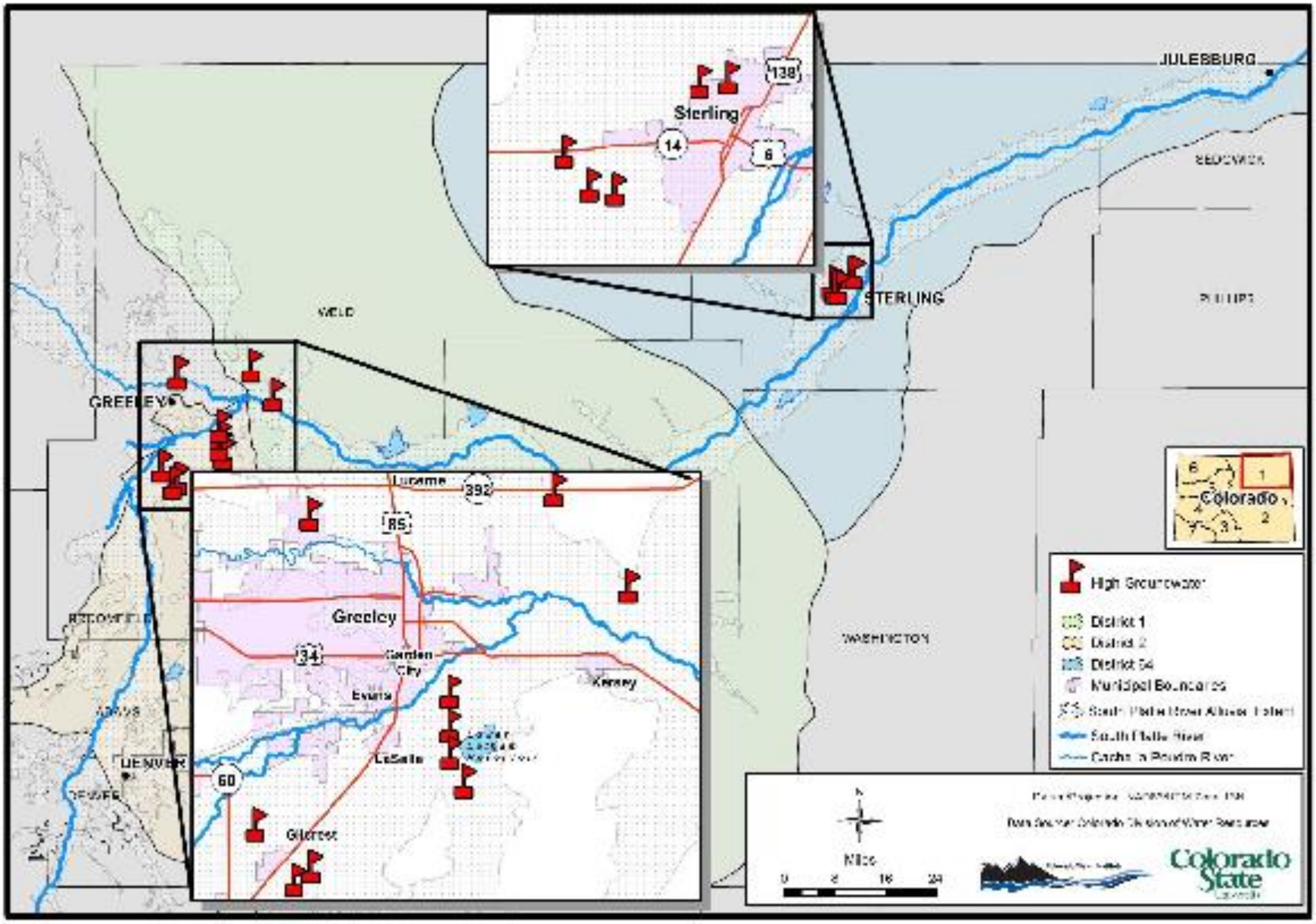
Other Contributors

- Trudy Peterson – Town of Gilcrest
- Liz Schneider - West Greeley Conservation District
- Emily LoDolce - CWCB
- Bob Longenbaugh – Retired Consultant
- Ryan Bailey - CSU
- Dave Nettles - Division 1
- Andy Hansen – 4Rivers Equipment
- Brown & Caldwell
- Weld County
- Legislators
- Local Agricultural Producers
- Ralf Topper - DWR
- Reagan Waskom - CWI

GWTC Background

- **HB 12-1278** Study of the South Platte River Alluvial Aquifer
  - CWCB Funded
  - Completed by Colorado Water Institute
- South Platte Basin Roundtable
  - Created the Groundwater Technical Committee to review 1278 Recommendations



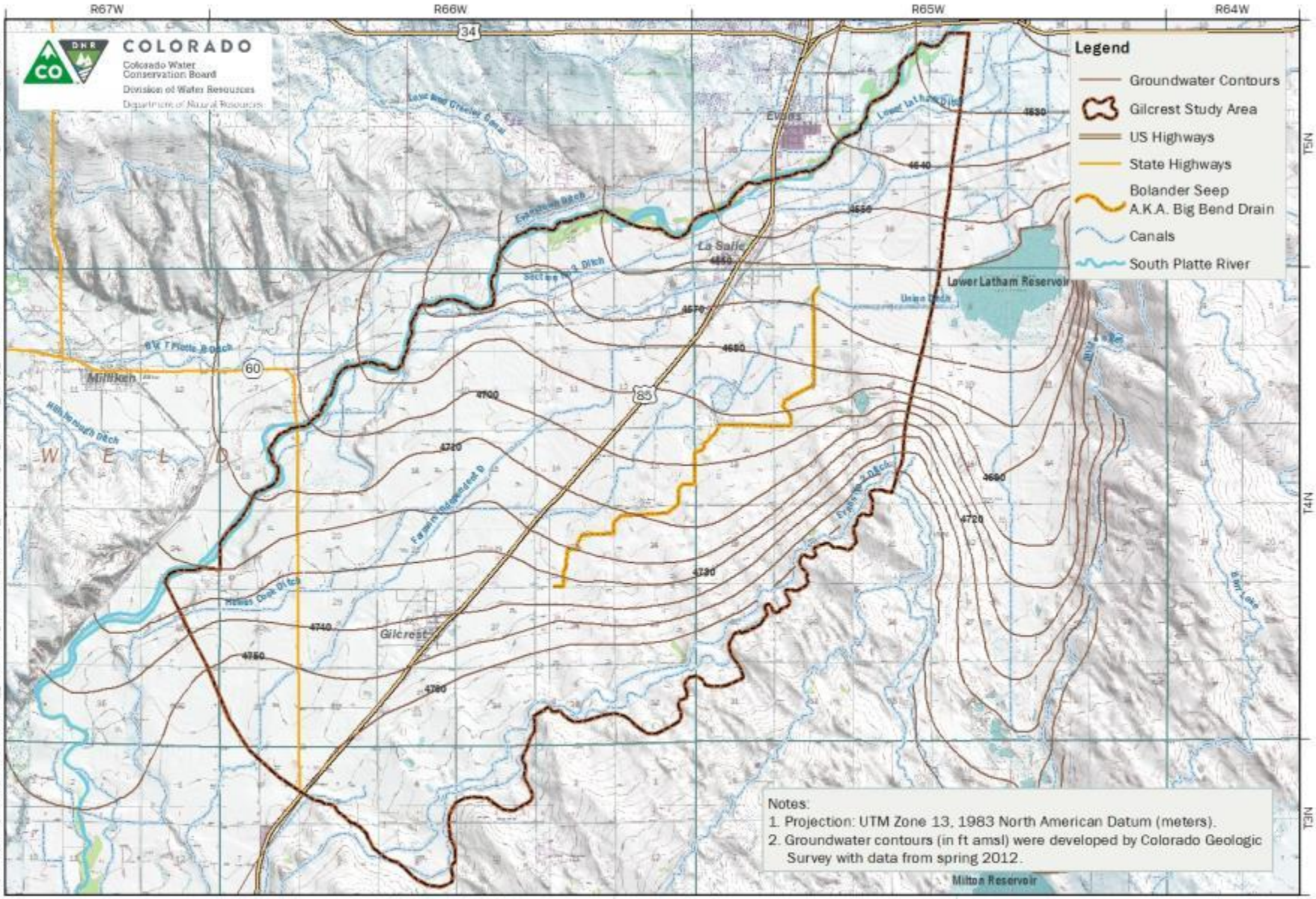


Map 3a.2. High Groundwater Areas from South Platte Adverse Impact Reports.

Data Source: High groundwater locations were derived from South Platte Adverse Impact Reports and markers were placed near the location but not at the exact address to protect the identities of those affected.

Previous Studies/Related Activities

- DWR Monitoring effort
  - Ralf Topper
- Colorado State University begins refinement on SPDSS GW Model for Gilcrest-LaSalle area
- HB 12-1278
- South Platte Alluvial Aquifer Groundwater Monitoring Network Document
- Colorado Geologic Survey Gilcrest LaSalle Hydrogeologic Characterization Report



Brown AND Caldwell

CWCB and DWR

Gilcrest/LaSalle High Groundwater Study

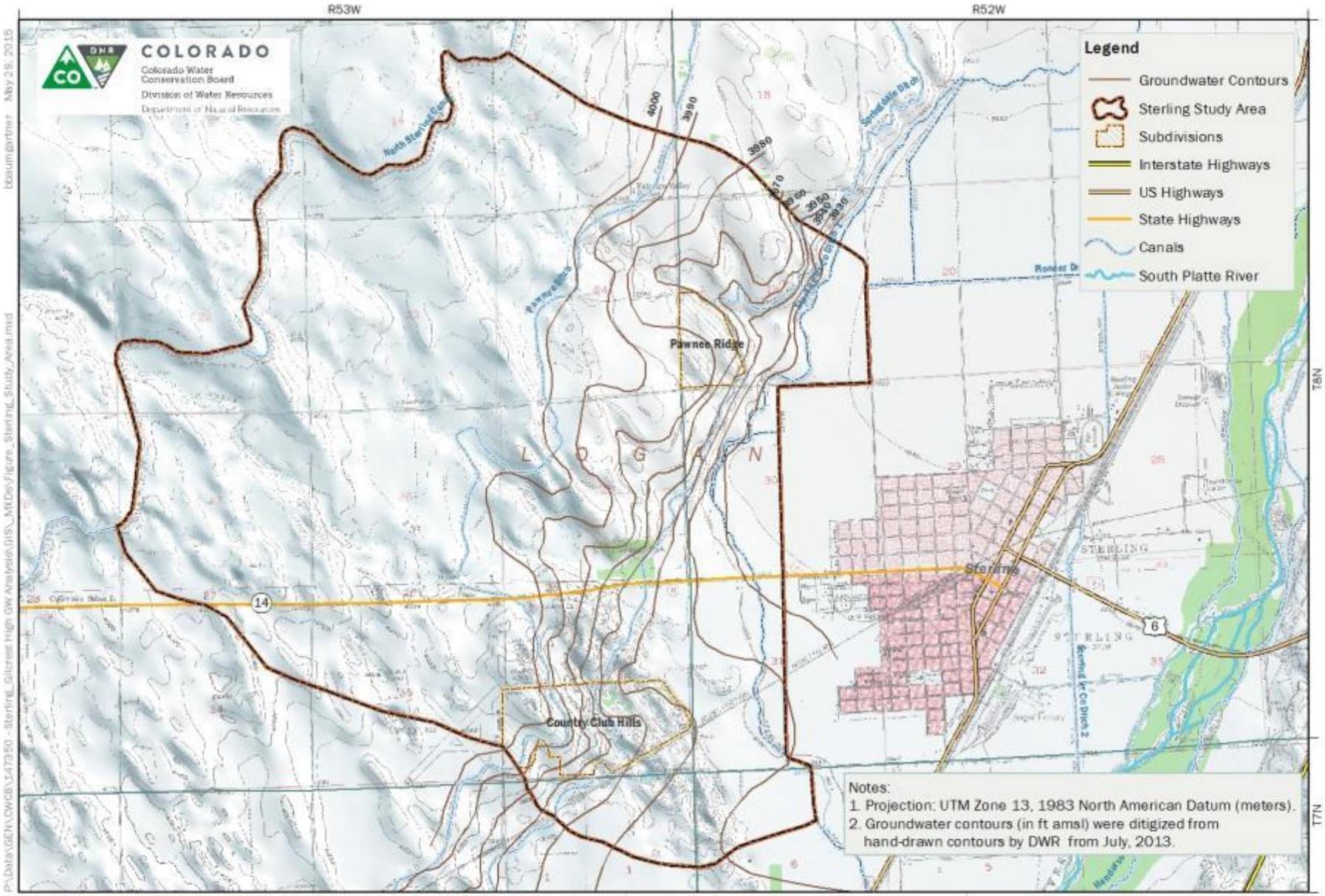
Date: May 2015
147350

N

0 8,500 17,000 Feet

Figure 1

Gilcrest/LaSalle Study Area



Brown AND Caldwell

CWCB and DWR

Sterling High Groundwater Study

Date: May 2015
147350

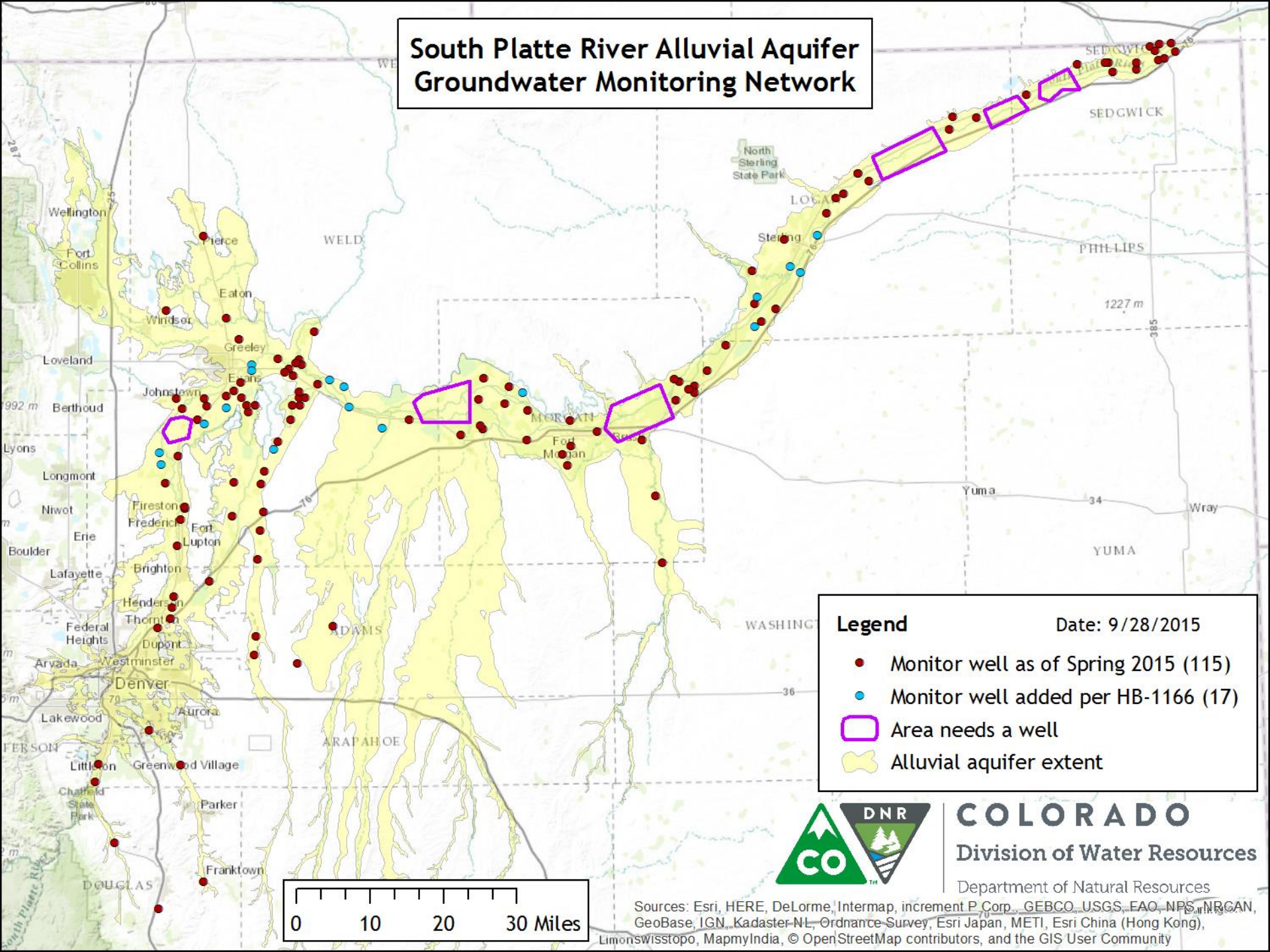
N

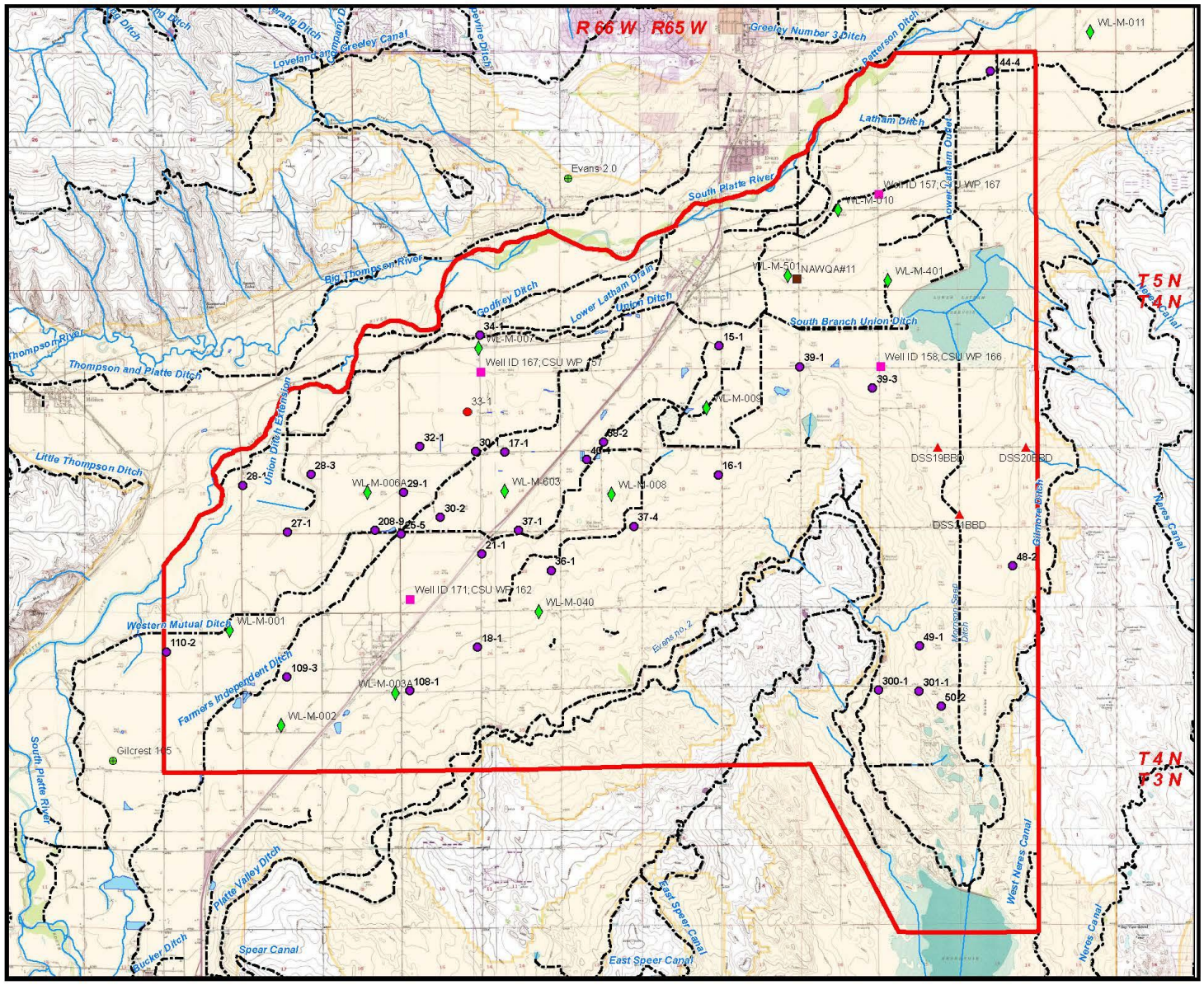
0 3,500 7,000 Feet

Figure 2

Sterling Study Area

South Platte River Alluvial Aquifer Groundwater Monitoring Network





State of Colorado
Division of Water Resources

La Salle/Gilcrest Study Area

- CSU 2005 wells with pre 1960 data
- DWR monitoring wells
- CCWCD inactive wells
- CCWCD Monitoring Wells
- USGS Active monitoring sites
- CDA monitoring sites
- Climate Stations
- Recharge
- Study boundary
- Extent of Alluvium
- Canal/Ditch
- Stream/River

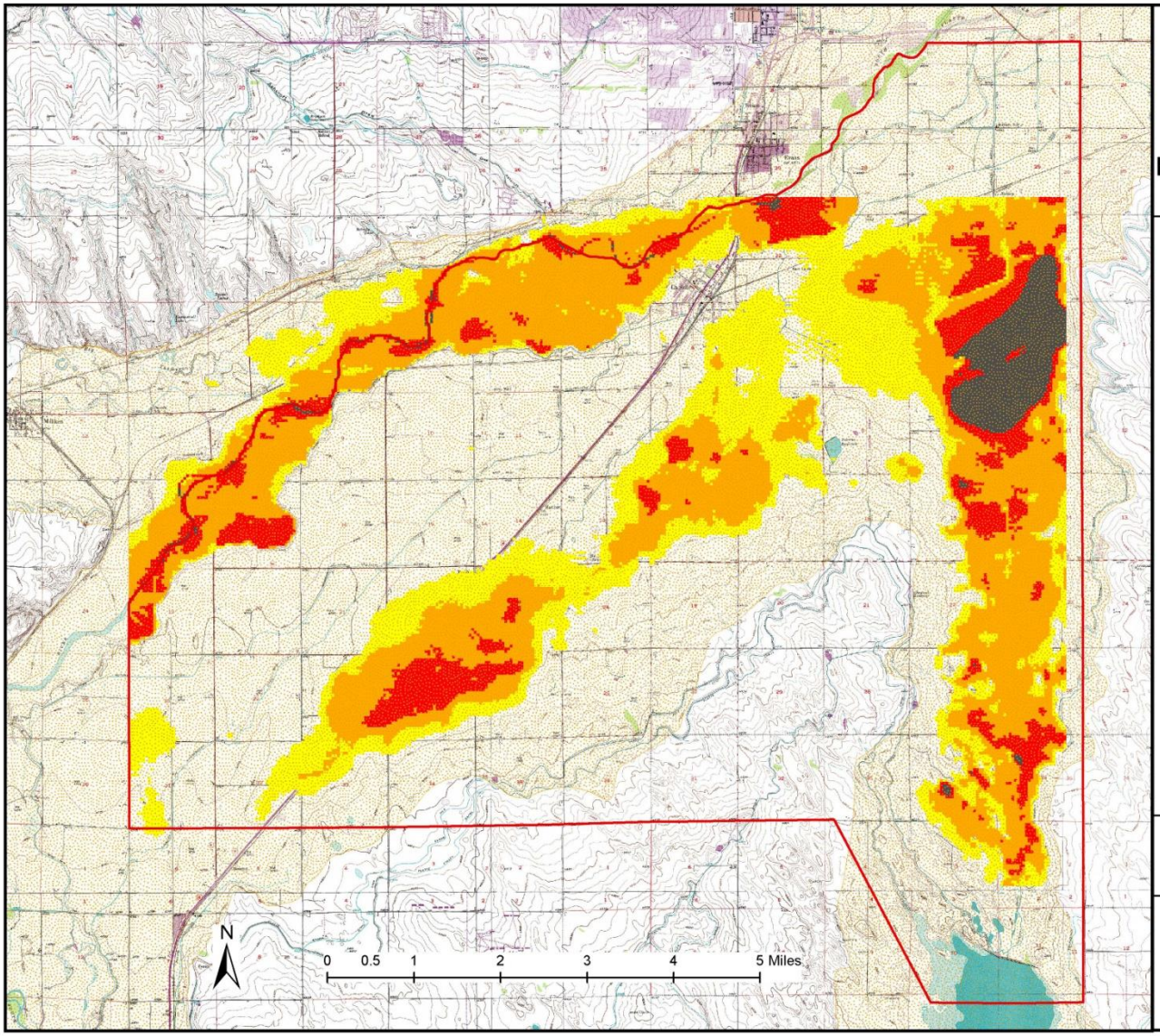
N
W E
S

0 0.5 1 2 Miles

Printed July 2013

HB 15-1166

- 25 wells added to the network
- 25 transducers with data loggers purchased
  - 20 equipped with telemetry units
  - 14 have been installed
  - Remaining 11 to be installed this fall



Gilcrest/LaSalle Pilot Project Hydrogeologic Characterization Report

Legend

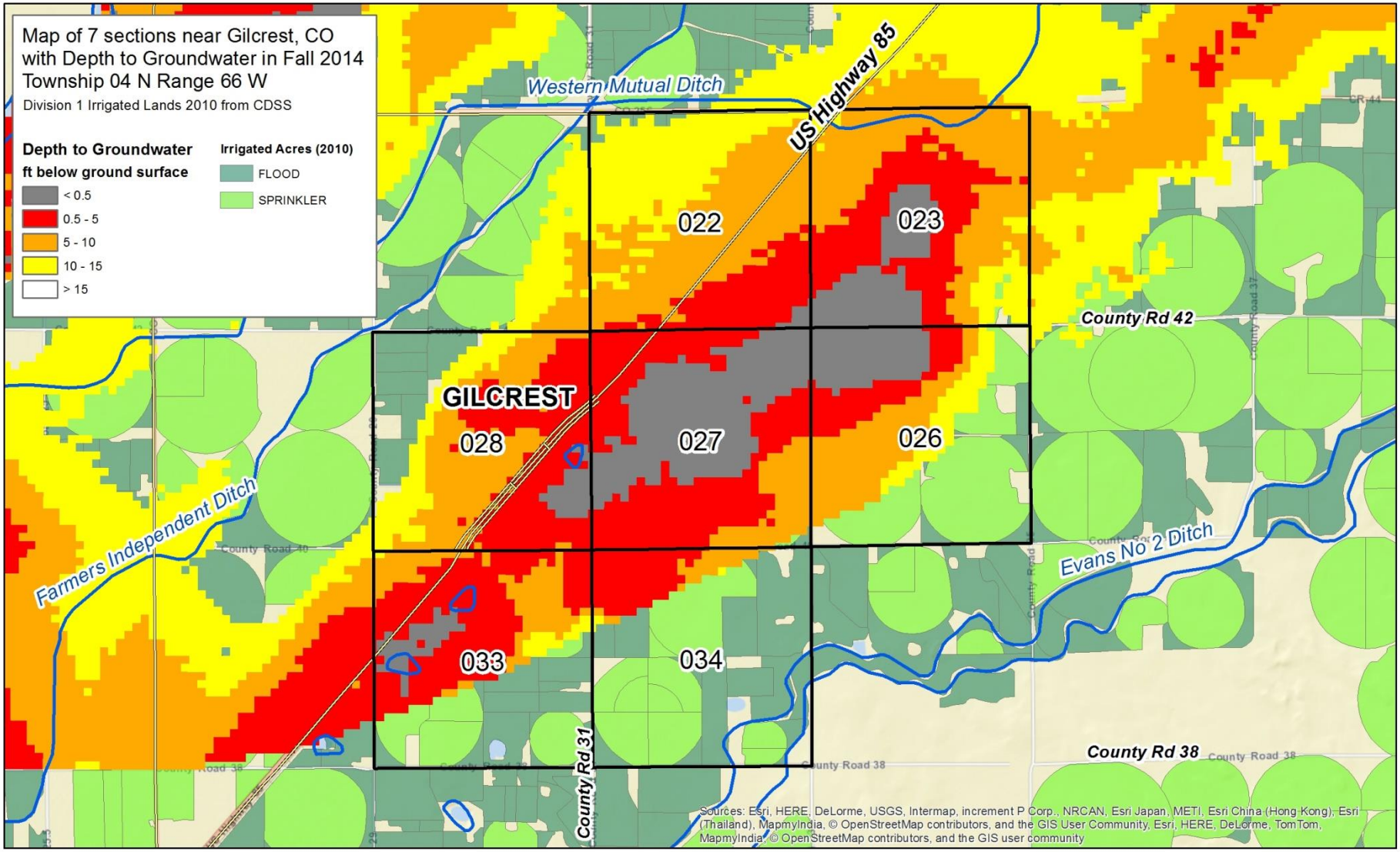
- StudyBoundary
- Extent of saturated alluvium

Depth to Groundwater

feet from surface

- < 0.5
- 0.5 - 5
- 5 - 10
- 10 - 15
- > 15

Figure 18
Depth to Groundwater Map for Spring 2012

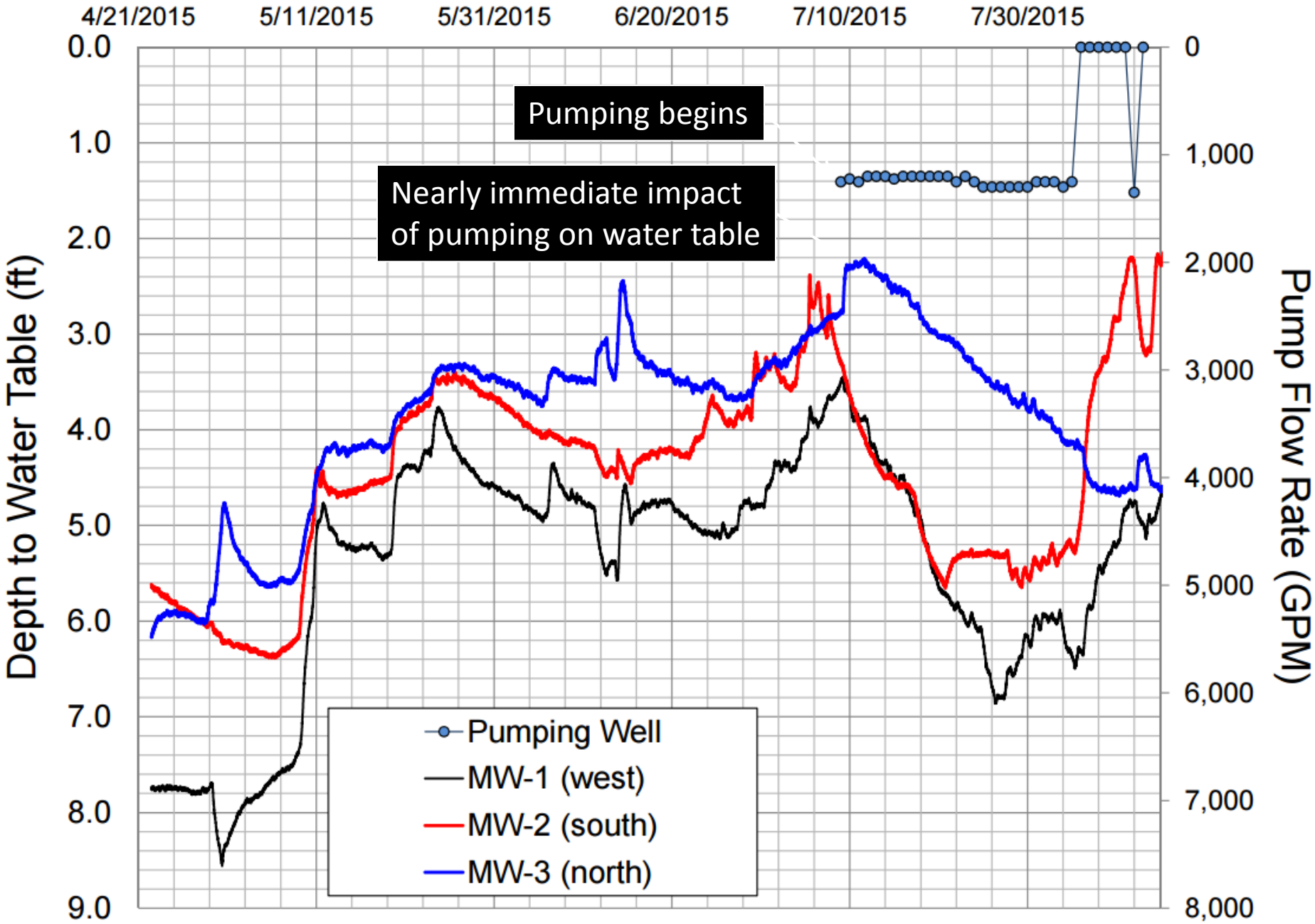

Map of 7 sections near Gilcrest, CO
with Depth to Groundwater in Fall 2014
Township 04 N Range 66 W
Division 1 Irrigated Lands 2010 from CDSS
Depth to Groundwater
ft below ground surface
< 0.5
0.5 - 5
5 - 10
10 - 15
> 15
Irrigated Acres (2010)
FLOOD
SPRINKLER
Western Mutual Ditch
US Highway 85
022
023
County Rd 42
GILCREST
028
027
026
Farmers Independent Ditch
Evans No 2 Ditch
033
034
County Rd 31
County Rd 38
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community, Esri, HERE, DeLorme, TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

HB 15-1178 Grants

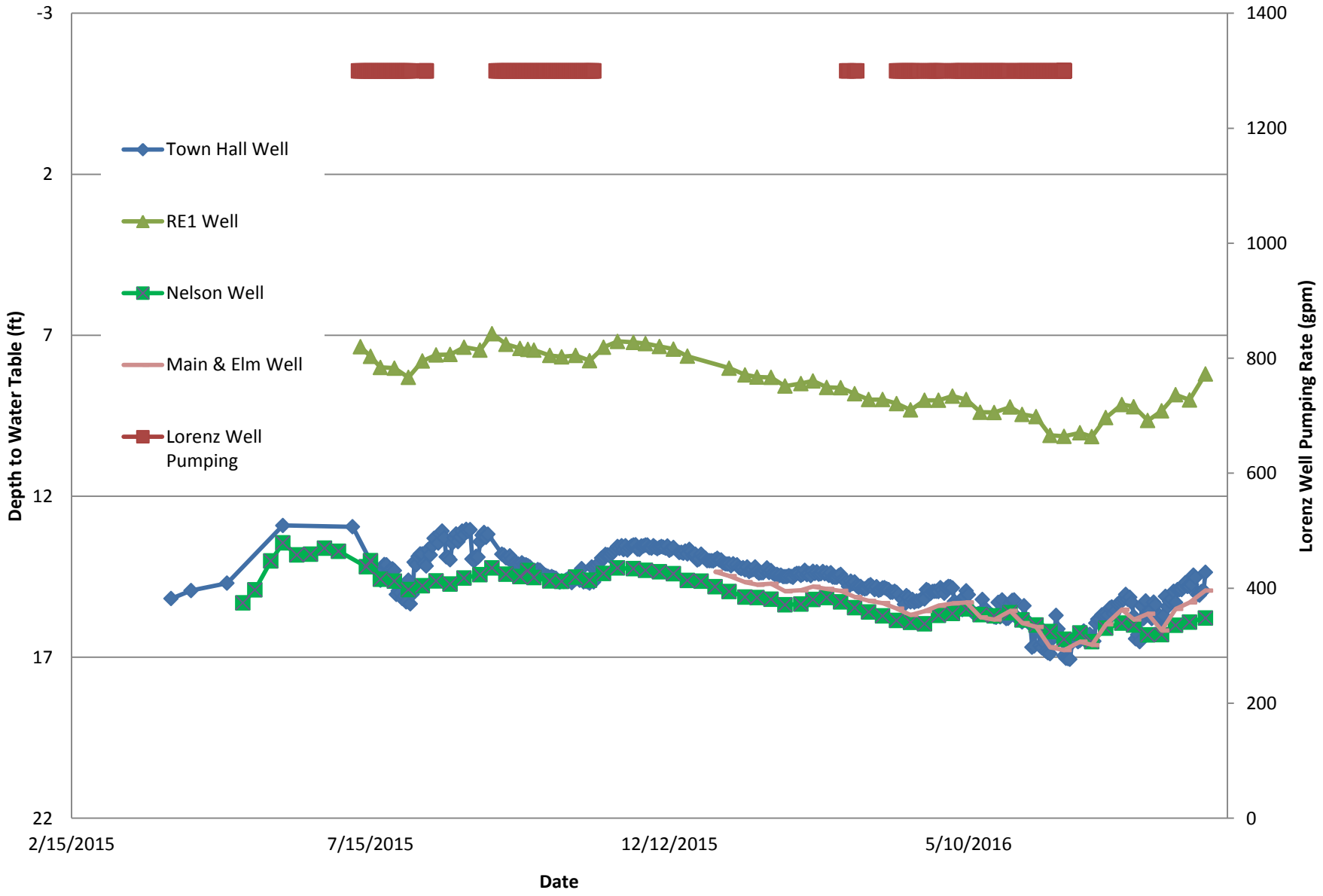
- Gilcrest: School Well Dewatering System
  - $90,000 – Did not Receive FIDCo Permission
- Gilcrest: Dewatering and Conveyance Improvement Study - JVA
  - $139,800 - to be Completed in October
- West Greeley Conservation District: Pilot Project in the Gilcrest Area
  - $140,329.50 - Year one to be completed in November
- Pawnee Ridge Homeowner's Association: Pawnee Ridge Dewatering System
  - Sterling Area
  - $128,407 – Pending CWCB Board Approval (9/22/16)

Other Activities

- DWR Special Monitoring Efforts – Began in 2012
  - Gilcrest/LaSalle
  - Sterling
  - HB 15-1166
- Colorado State University Monitoring
- Town of Gilcrest Monitoring
- 4 Rivers/John Deere Field Instrumentation
- Lorenz dewatering well - 300 acre feet plus in 2015
- Big Bend Drain survey – AGPROfessionals (Greeley)
- Brown and Caldwell – Gilcrest Modeling Scenarios
- Brown and Caldwell – Sterling and Gilcrest/LaSalle High Groundwater Analysis
- Investigation of other Augmentation sources for Pilot Area


4/21/2015
5/11/2015
5/31/2015
6/20/2015
7/10/2015
7/30/2015
Depth to Water Table (ft)
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
Pump Flow Rate (GPM)
0
1,000
2,000
3,000
4,000
5,000
6,000
7,000
8,000
Pumping begins
Nearly immediate impact of pumping on water table
Pumping Well
MW-1 (west)
MW-2 (south)
MW-3 (north)

Gilcrest Depth to Water Table



Field Monitor | Admin

Organization Preferences

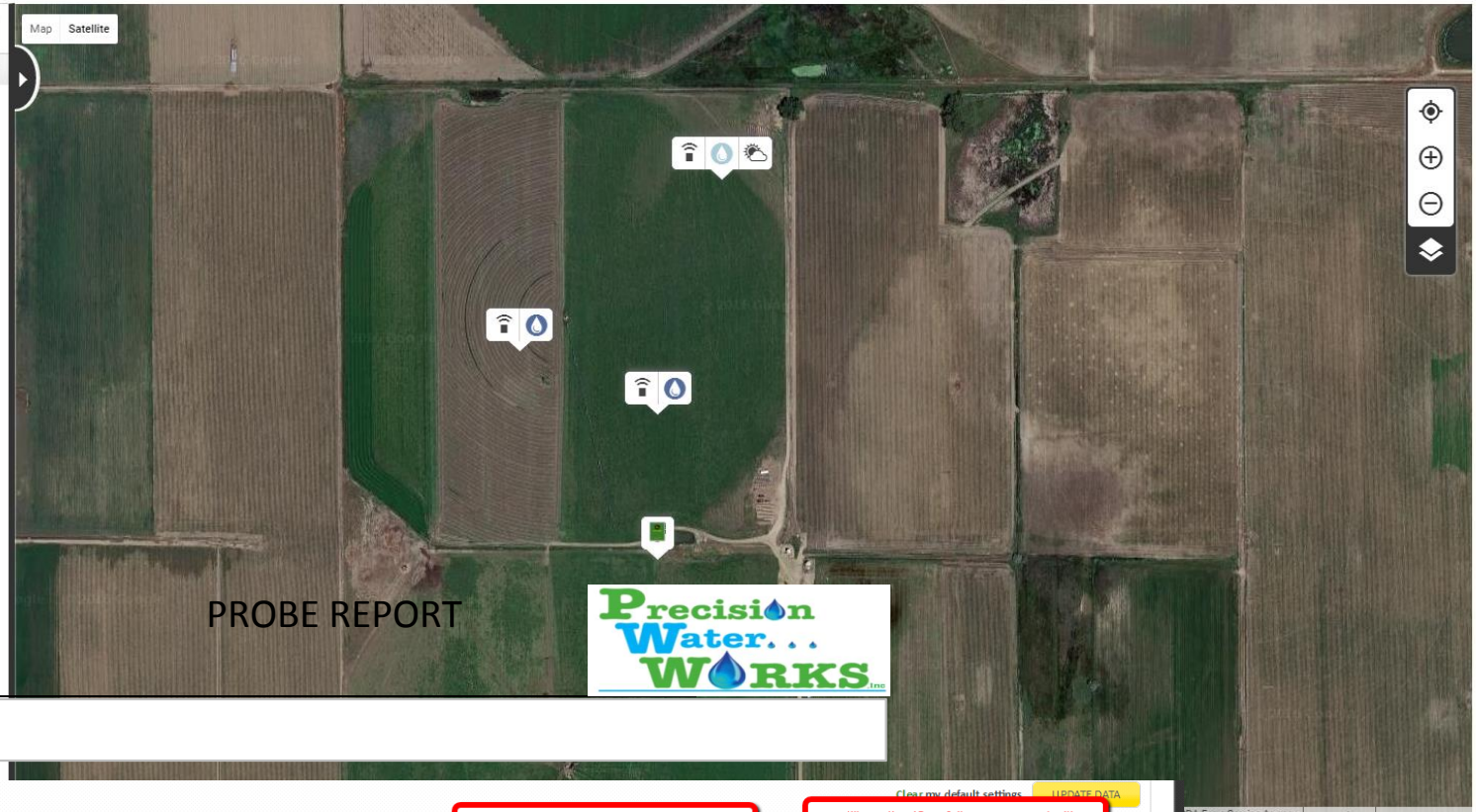
Filters

Golden Eagle Farm

High | PCPB02B301891
318.75 mm — Full Point Warning
PCGW01B302248 — As of Sep 15 at 2:39 PM

Low | PCPB02B301913
164.12 mm — Full Point
PCGW01B302248 — As of Sep 15 at 2:39 PM

Mid | PCPB02B302095
337.79 mm — Full Point
PCGW01B302248 — As of Sep 15 at 2:39 PM

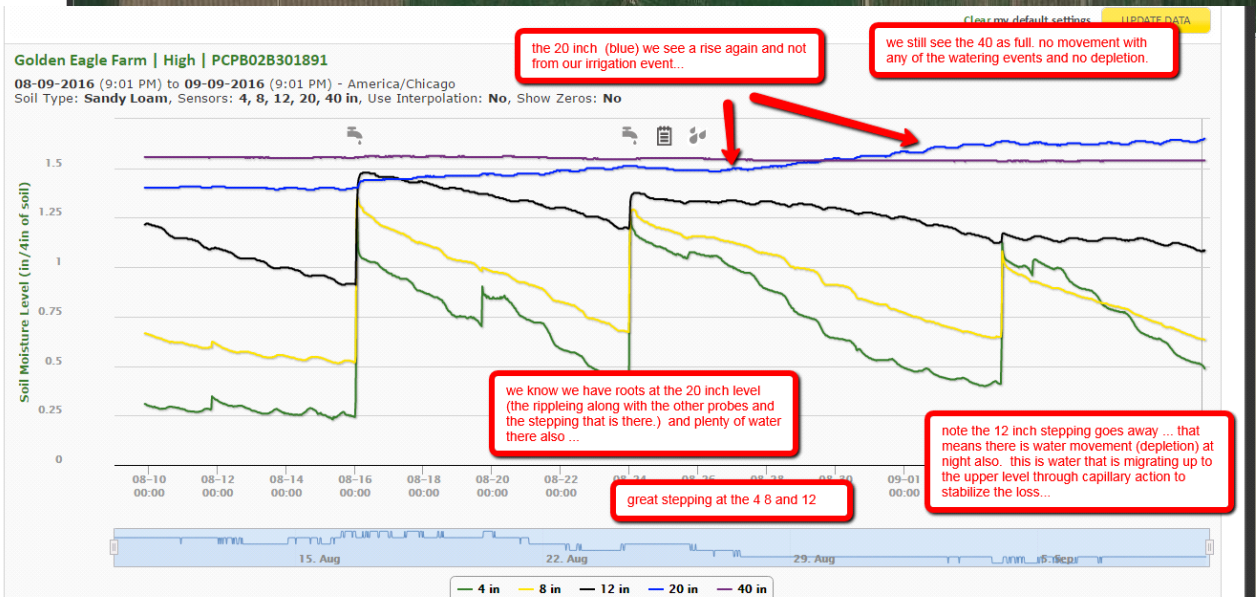


PROBE REPORT

Precision Water... WORKS Inc

Probe

Notes:



Future Activities

- Lorenz dewatering well – to extent practical
- Big Bend Drain Improvements
- JVA-BBA Gilcrest Analysis Recommendations
- 4 Rivers/John Deere Field Instrumentation
- HB15-1178
  - $171,463.50 remaining (if Pawnee Ridge Application Approved)
  - Potential Applications
    - Town of Gilcrest
    - Pilot Project Year 2
    - City of Sterling
- HB 16-1256 - South Platte Storage Study

Pilot Project

- HB 15-1178 Grant - $140,329.50
  - Inspired by HB 15-1013
- Option A – pump 2016 allotment from Central (50% for GMS, 55% for WAS) and be reimbursed $60/AF above historical 2013-2015 pumping
  - 2 Participants
- Option B – pump above 2016 allotment from Central, up to 100%, with no cash reimbursement
  - 4 Participants
- Total of 745 AF of additional Pumping
  - 490 AF consumptive use

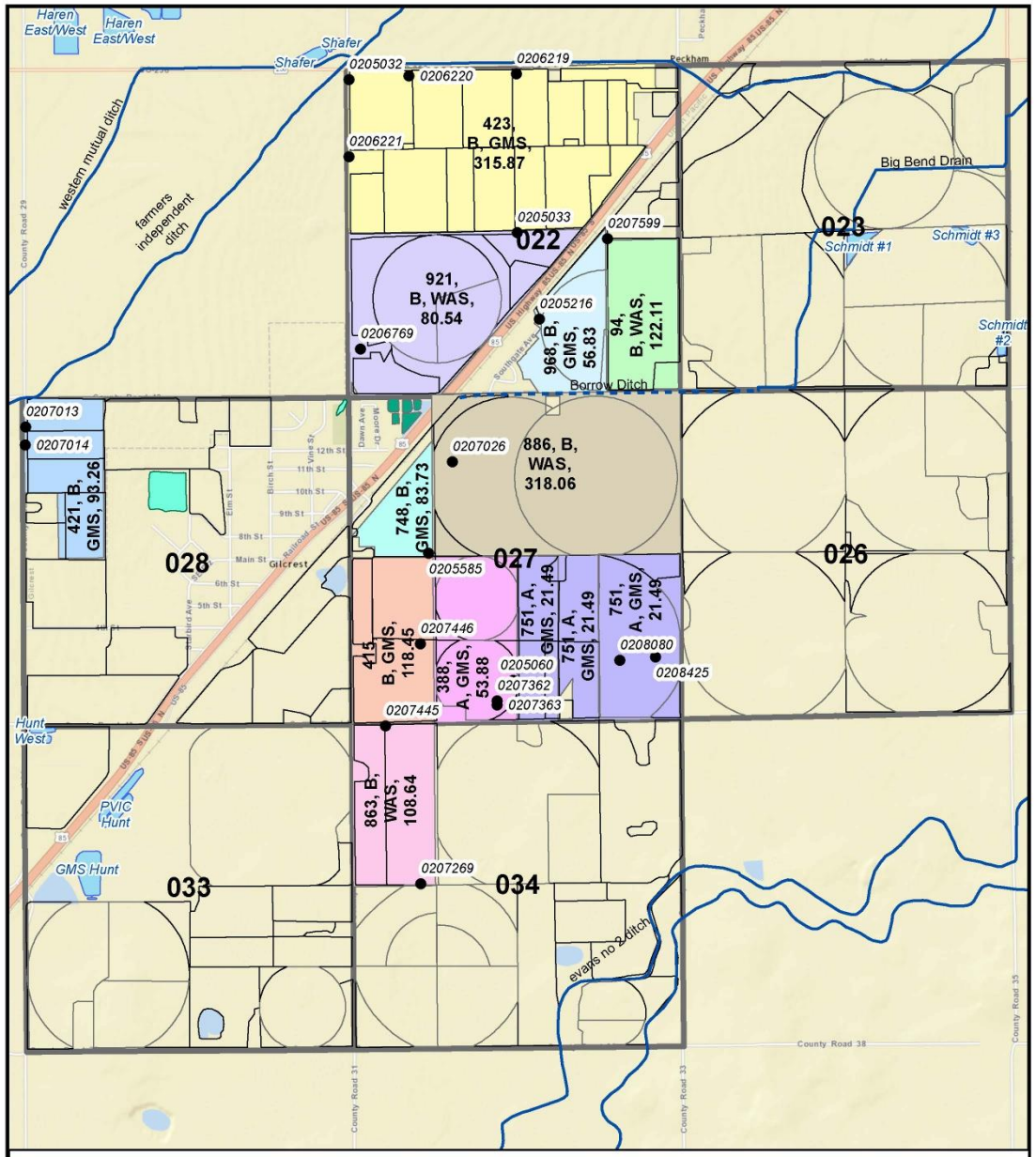


Figure 1. Pilot Project Area and Participant Details.

The label on participating fields is as follows:
Contract #, Option, Subdistrict, and Total Estimated Pumping (AF) for 2016

- Participating wells (WDID)
- 7 Section Pilot Area
- Recharge Ponds
- Gilcrest Muni WWTP
- Gilcrest Det Pond

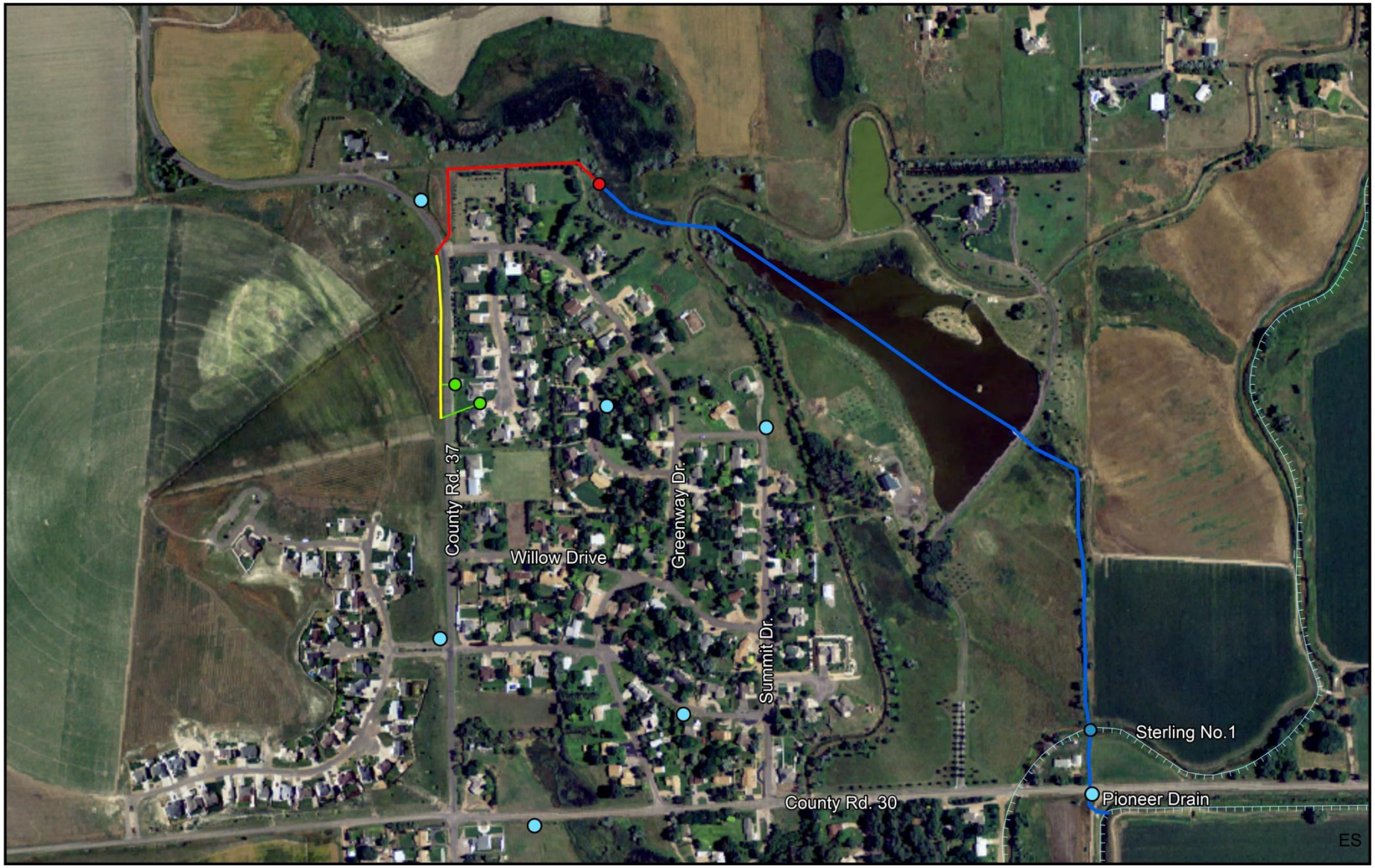
Participating Field by Contract

421, 423, 748, 751, 863, 886, 921, 968, 94, 388, 415

N

0 0.25 0.5 1 Miles

Pawnee Ridge Dewatering System: Figure 1



DWR Monitoring Wells
Dewatering Well
Flowmeter
New Headgate
Ditch
4" Bore
6" Bore
Free Flow
Open Trench, 6" Pipe

0 0.15 0.3 0.45 0.6 Miles

NAD 1983 Zone 13N
Data Provided by Pawnee Ridge HOA,
DWR, NAIP 2011 Imagery from CWCB

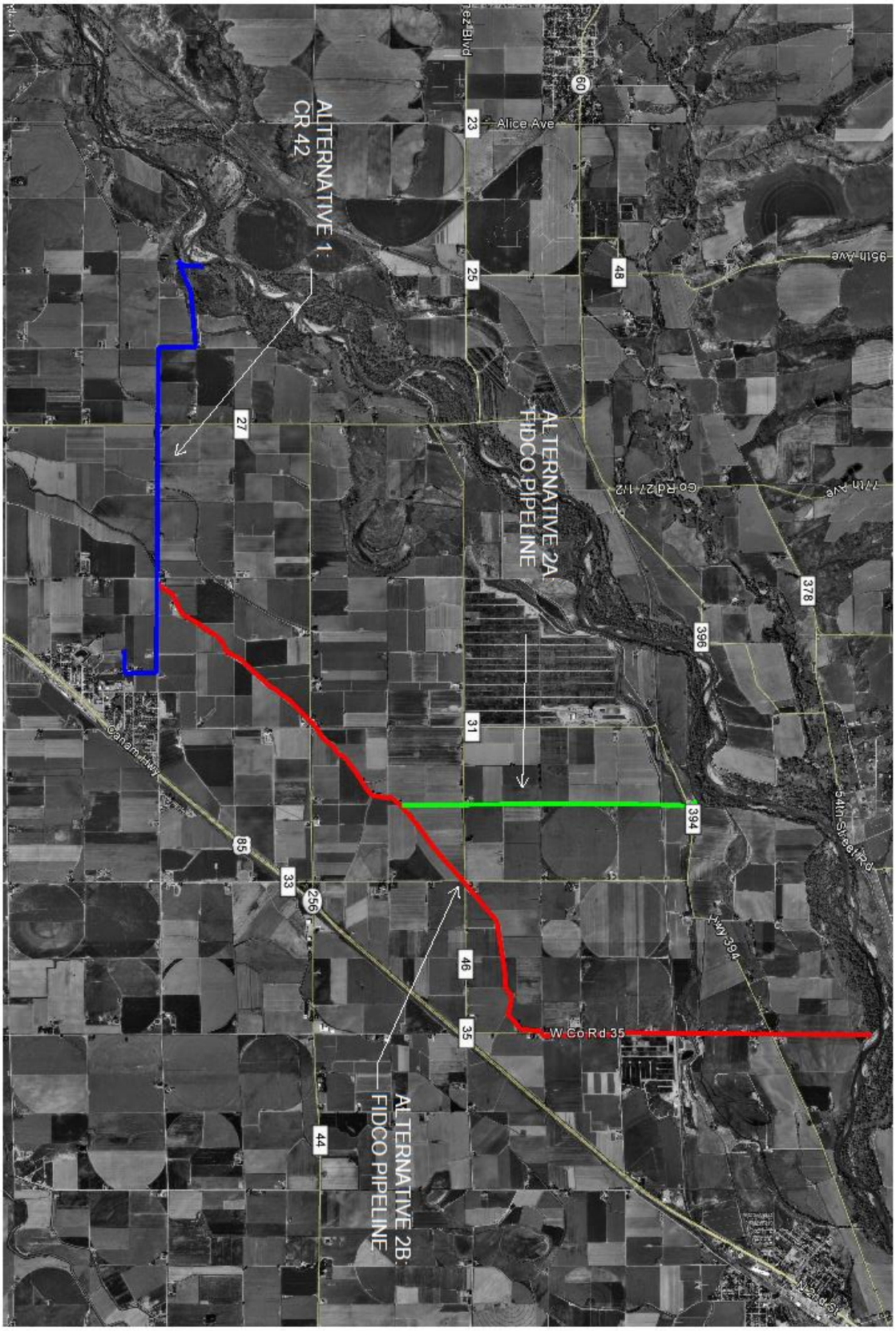


FIGURE 2 - DISCHARGE CONVEYANCE
TOWN OF GILCREST
AUGUST 2016

JVA, Incorporated
1319 Spruce Street
Boulder, CO 80302
Phone: 303.444.1951
E-mail: info@jvajva.com
CONSULTING ENGINEERS

For additional information

- South Platte Basin Groundwater Technical Committee – South Platte Roundtable
- Colorado Division of Water Resources
- Colorado Water Conservation Board
- Town of Gilcrest