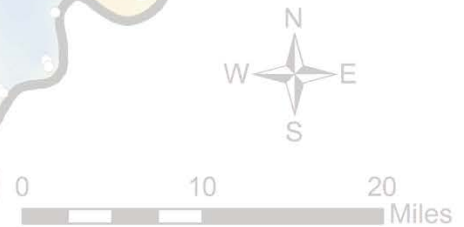


Addressing Groundwater Goals of the Missouri Regional Planning Area: Phase 2 Progress Report

September 20, 2018

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Objectives

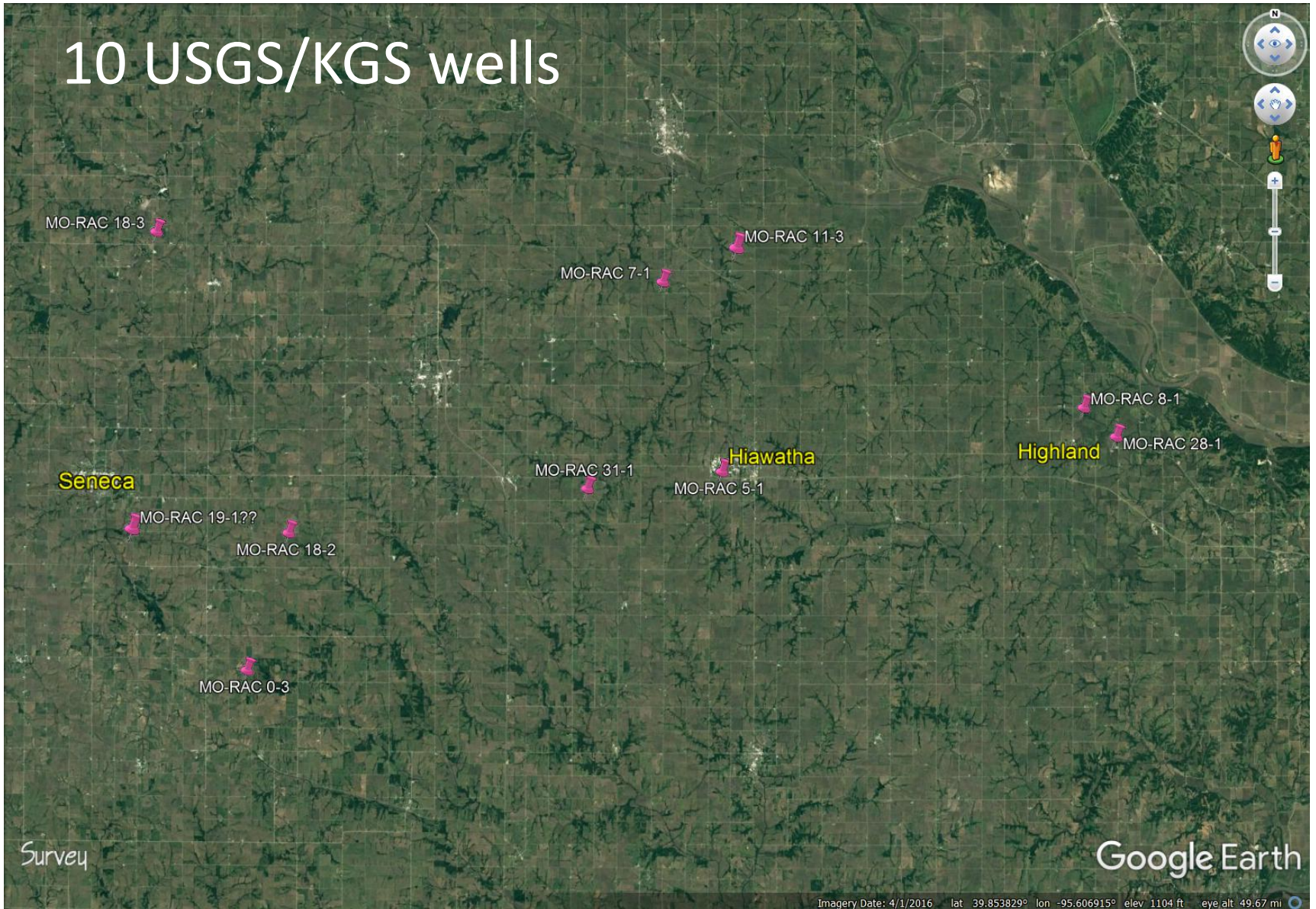
- Establish a groundwater level and groundwater quality monitoring network in the Missouri Regional Planning Area (MRPA)
- Provide improved estimates of safe yield and establish a groundwater quality baseline.

Progress

1. Water level monitoring and water sampling
2. Identification of public water supply wells for possible monitoring
3. QA / QC of coarse material thickness data
4. Development of project website

Water Level Monitoring & Sampling

10 USGS/KGS wells



Water Level Monitoring & Sampling

Of 10 USGS/KGS wells:

- Located 9
- Measured water levels in 8 wells (one well is on private property)
- Sampled water from 7 (one well went dry, one is on private property)



Active Public Water Supply Systems in or Partially in Missouri Regional Planning Area

County – Number of Systems	System	Purchased
Systems with 100% Groundwater – 27		
Brown – 10	4	6
Doniphan – 6	3	3
Leavenworth – 2	1	1
Marshall – 2	2	
Nemaha – 7	6	2
Systems with Partial Groundwater – 6		
Atchison – 1	1	1
Doniphan – 1		1
Leavenworth – 3	2	1
Systems with 100% Surface Water – 11		
Atchison – 5	1	4
Brown – 1		1
Doniphan – 1		1
Leavenworth – 3		3
Nemaha – 1	1	

Public Water Supply Systems with Their Own Wells Recent Nitrate-Nitrogen Concentration – Brown County

Public Water Supply	NO ₃ -N average, mg/L	Source	Years
Brown County Rural Water District 1	7.6	Wells 1-6 pump house	2017-2018
Hiawatha	10.1	Well 6	2017-2018
	10.6	North Clearwell	2017-2018
	11.5	Beckwith Well	2010-2011
	11.2	Well 3	2002-2003
Public Wholesale Water Supply District 27	5.3	Well water entry point	2018

Maximum contaminant level for NO₃-N for drinking water is 10 mg/L.

Public Water Supply Systems with Their Own Wells Recent Nitrate-Nitrogen Concentration – Nemaha County

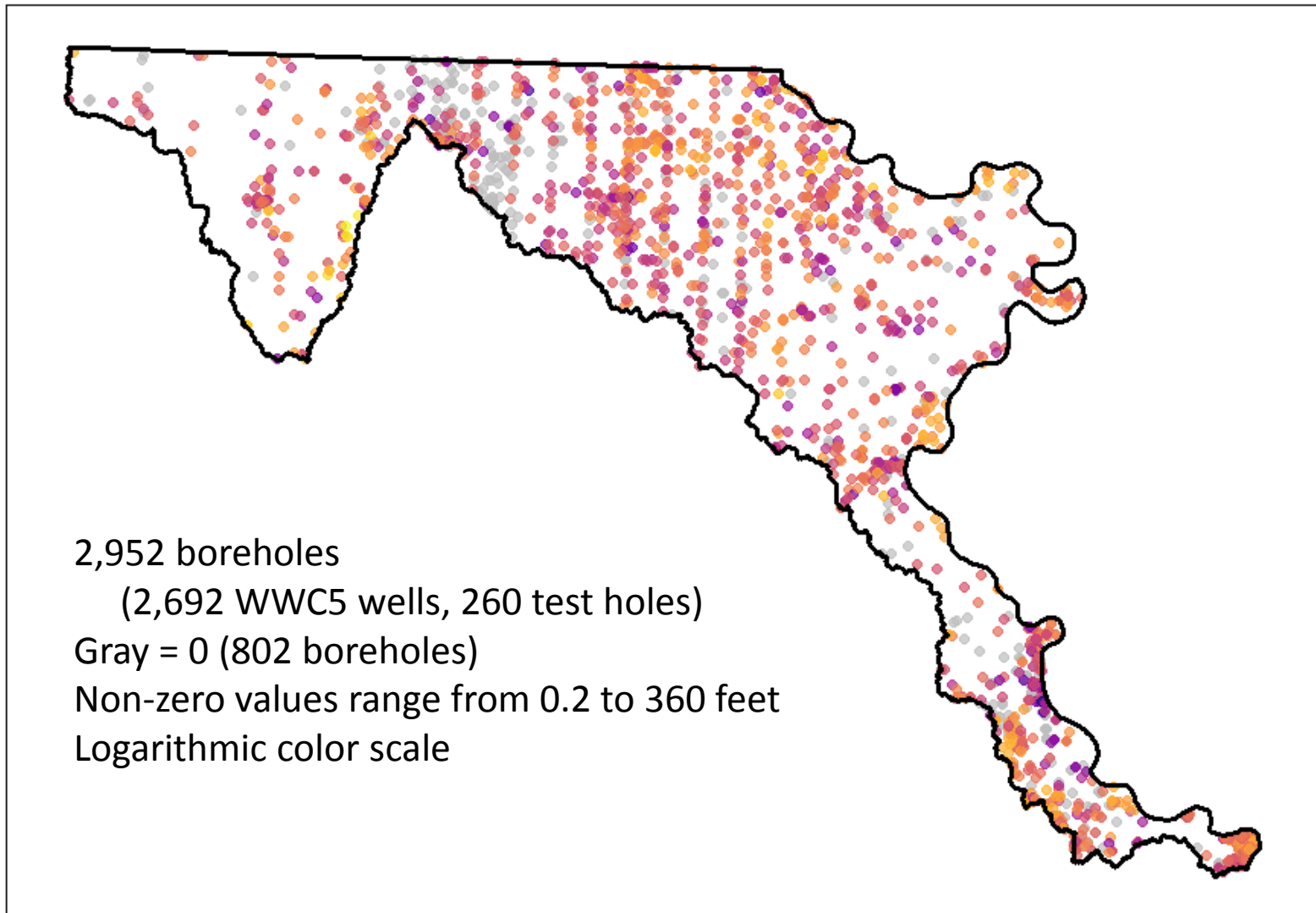
Public Water Supply	NO ₃ -N average, mg/L	Source	Years
Bern	1.2	Well 4	2017-2018
	1.8	Wells 5 & 6	2017-2018
Nemaha County Rural Water District 1	1.4	Wells 3 & 4	2017-2018
	3.7	Well 5	2017-2018
	4.6	Wells 6 & 7	2017-2018
Nemaha County Rural Water District 3	<0.1	Wells 2 & 3	2017-2018
	0.26	Wells 4 & 5	2017-2018
	0.3	Wells 6, 7, 8	2017-2018
Oneida	<0.1	Well	2017-2018
Seneca	3.6	Reservoir (of well water)	2017-2018

Public Water Supply Systems with Their Own Wells Recent Nitrate-Nitrogen Concentration

Public Water Supply	NO ₃ -N average, mg/L	Source	Years
Doniphan County			
Highland	9.8	Well 4	2017-2018
Troy	6.4	Well 3 water plant	2017-2018
	0.40	Wells 6 & 7 water plant	2017-2018
White Cloud	5.5	Pump house	2017-2018
Leavenworth County			
Fort Leavenworth	0.23	Water plant lab tap	2017-2018

Maximum contaminant level for NO₃-N for drinking water is 10 mg/L.

Thickness of Coarse Material (Feet)



Data compiled in Phase 1; just taking a closer look

Cross-Validation (for QC)

- Estimate *expected* coarse material thickness at each borehole location based on thicknesses in nearby boreholes
- Compare to coarse material thickness estimated from borehole's own log
- Investigate boreholes where that difference is abnormally large
 - Thicknesses out of keeping with nearby values
- *Work in progress*

Project Website

<http://www.kgs.ku.edu/Hydro/Missouri/index.html>

Can navigate to it:
KGS → Water → Other Projects

Contains all reports and
link to online mapping
tool

The screenshot shows the Kansas Geological Survey website. The header includes the KU logo and 'KANSAS GEOLOGICAL SURVEY The University of Kansas'. A search bar is in the top right. A left navigation menu lists categories: Water, Energy, Geology, Geophysics, Publications, Education, and About the KGS. The 'Water' category is expanded, showing sub-links like 'High Plains/Ogallala Aquifer', 'Other Projects, aquifers', 'WIMAS Database', 'WWC5 Database', 'Interactive Map', 'WIZARD Database', 'Master Inventory', 'Publications', 'Water Web Links', and 'Staff Listing'. The main content area features a landscape image and a section titled 'Addressing the Groundwater Goals of the Missouri Regional Planning Area'. Below this, there are sections for 'Reports' and 'Data'. The 'Reports' section lists three PDF reports: 'Phase I Progress Report 1—January 2017, Acrobat PDF, 12 MB', 'Phase I Progress Report 2—April 2017, Acrobat PDF, 2 MB', and 'Phase I Final Report—June 2017, Acrobat PDF, 185 KB'. The 'Data' section lists 'Online Mapping Tool', 'Overview and Description of Mapping Tool', and 'Glossary of Terms in Online Mapping Tool Layers, Acrobat PDF, 135 KB'. Arrows from the text on the left point to the 'Other Projects, aquifers' link in the menu and the 'Online Mapping Tool' link in the data section.