Water Use in Kentucky

Water Resources Board

August 29, 2016

Department for Environmental Protection
Energy and Environment Cabinet

To Protect and Enhance Kentucky's Environment

Kentucky UNBRIDLED SPIRIT™

KENTUCKY FARM BUREAU

WATERMANAGEMENT
WORKING GROUP

https://www.kyfb.com/federation/water/resources/

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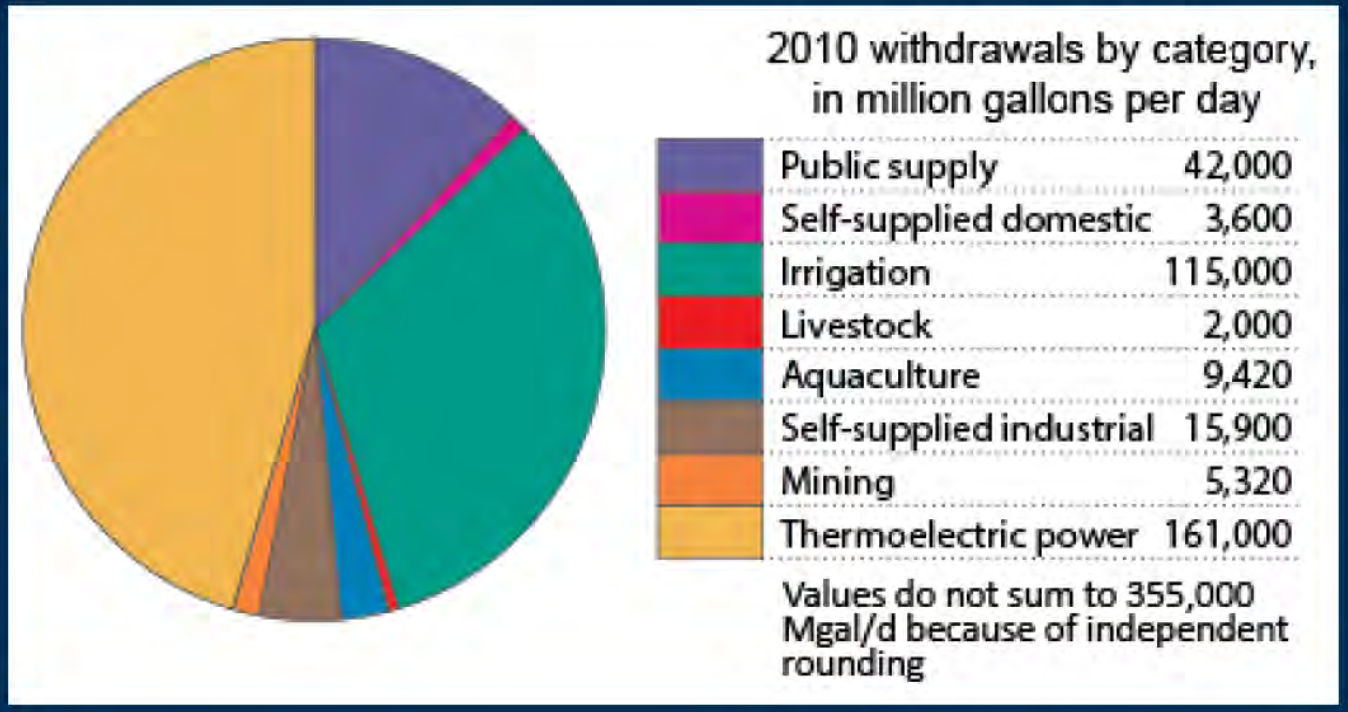
Where / How is water used?

National withdrawals by category



USGS

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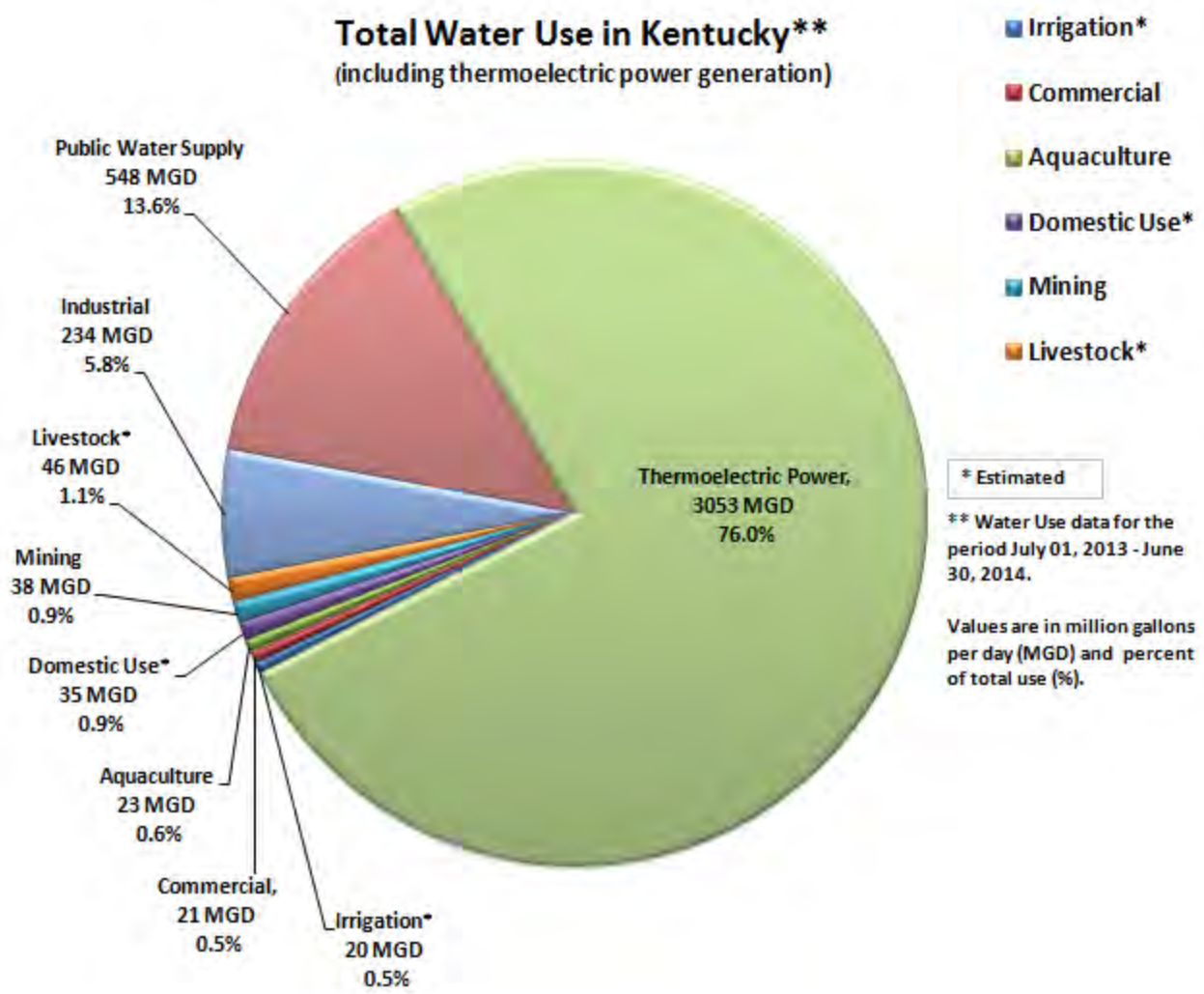
Total Water Use in Kentucky**



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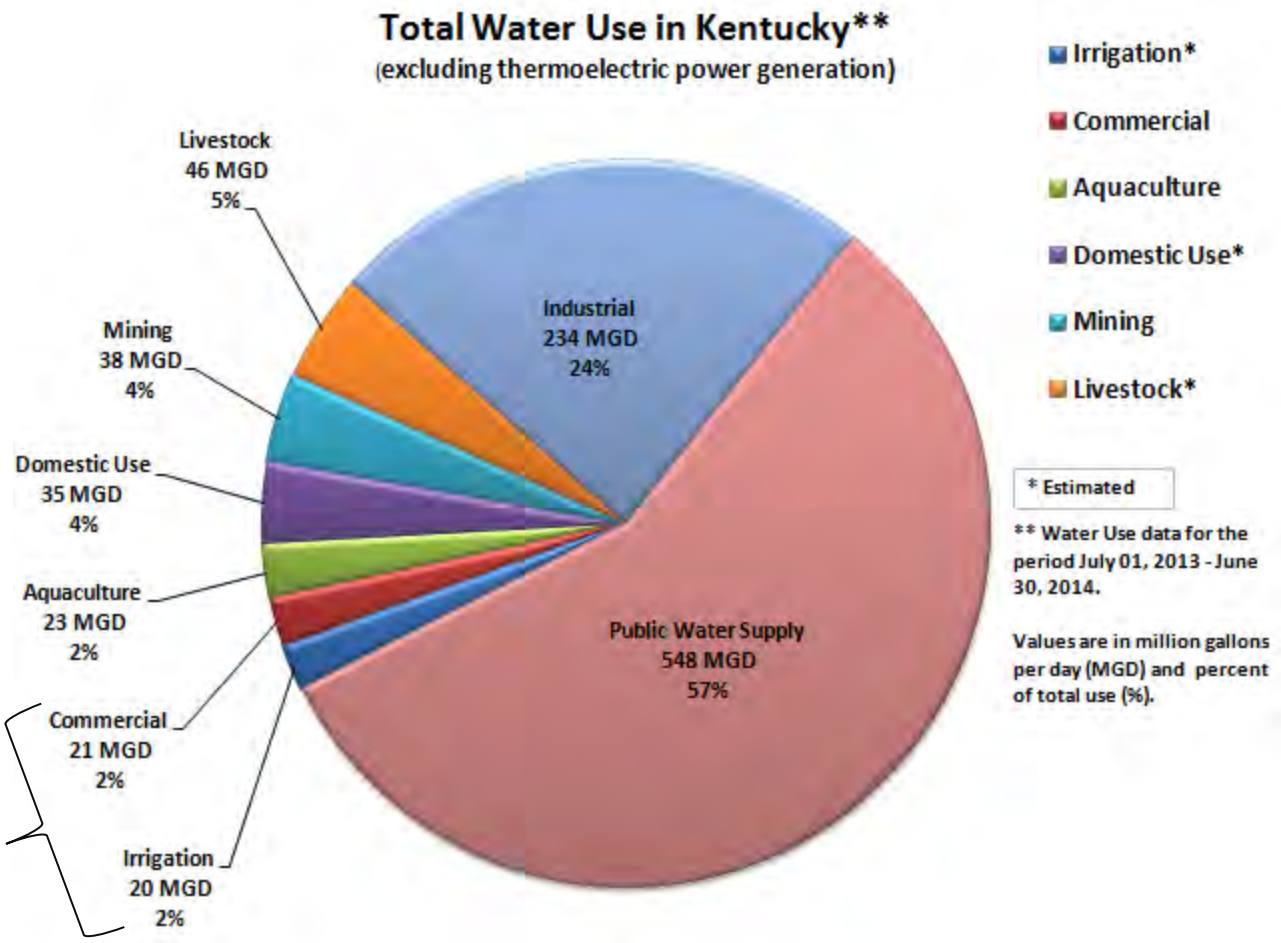
Total Water Use in Kentucky**
(excluding thermoelectric power generation)



Irrigation "Seasonal" Water Withdrawal
(90 – 120 days)

105 MGD to 145 MGD

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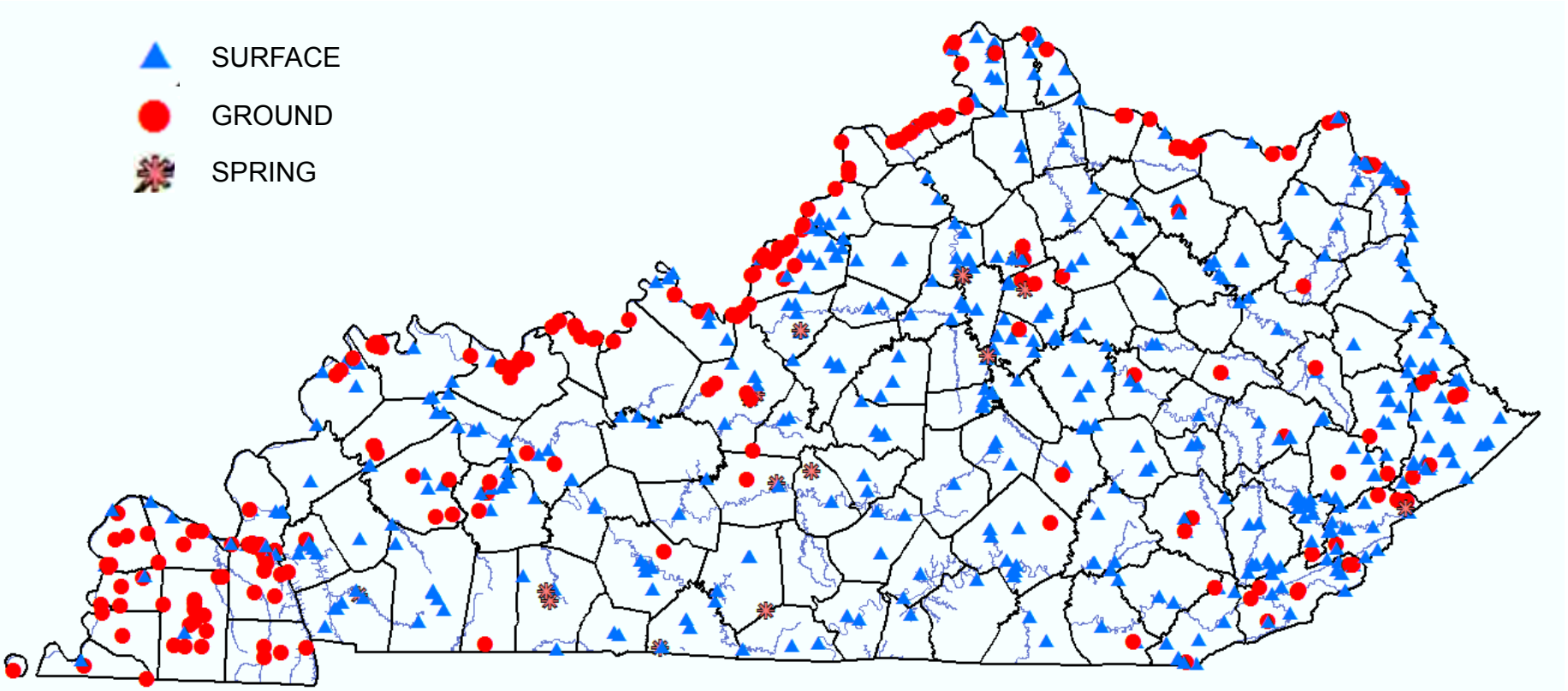
Regulated water withdrawals



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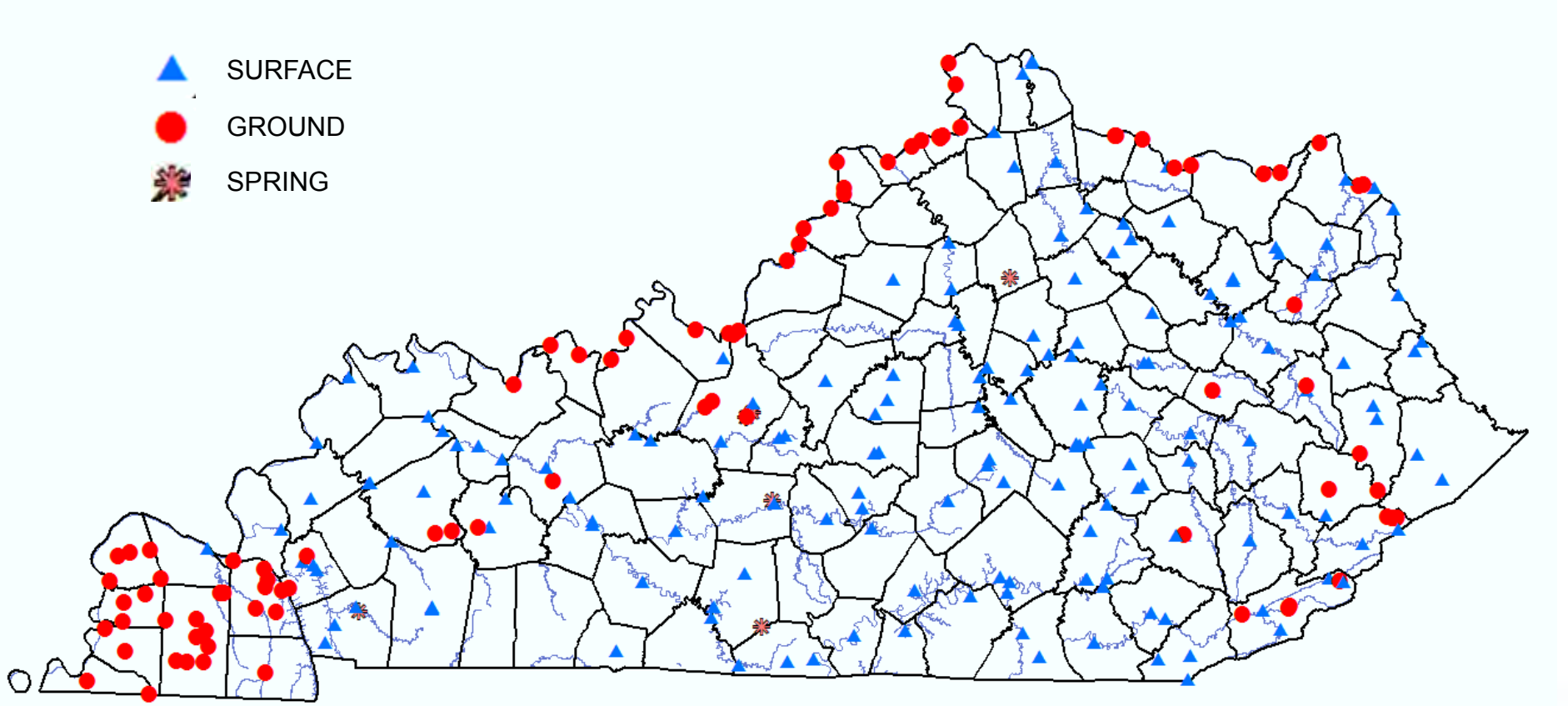
Regulated water supply withdrawals



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Total Water Use in Kentucky, 2014
(excluding thermoelectric power generation)

Water Use Sector (Based on reporting from permitted water users)	Average Daily Withdrawal (MGD)				
	Rivers and Streams	Lakes and Ponds	Wells and Springs	USACE Reservoirs	Underground Mines
Public Water Supply	323.1	89.3	99.0	34.8	1.30
Industrial	146.2	4.5	79.5	3.6	0.00
Aquaculture	15.2	0.0	1.7	6.2	0.00
Mining	8.9	15.0	13.4	0.0	0.82
Commercial	5.2	2.5	10.3	0.3	0.04
Total	**499**	**112**	**204**	**45**	**2**

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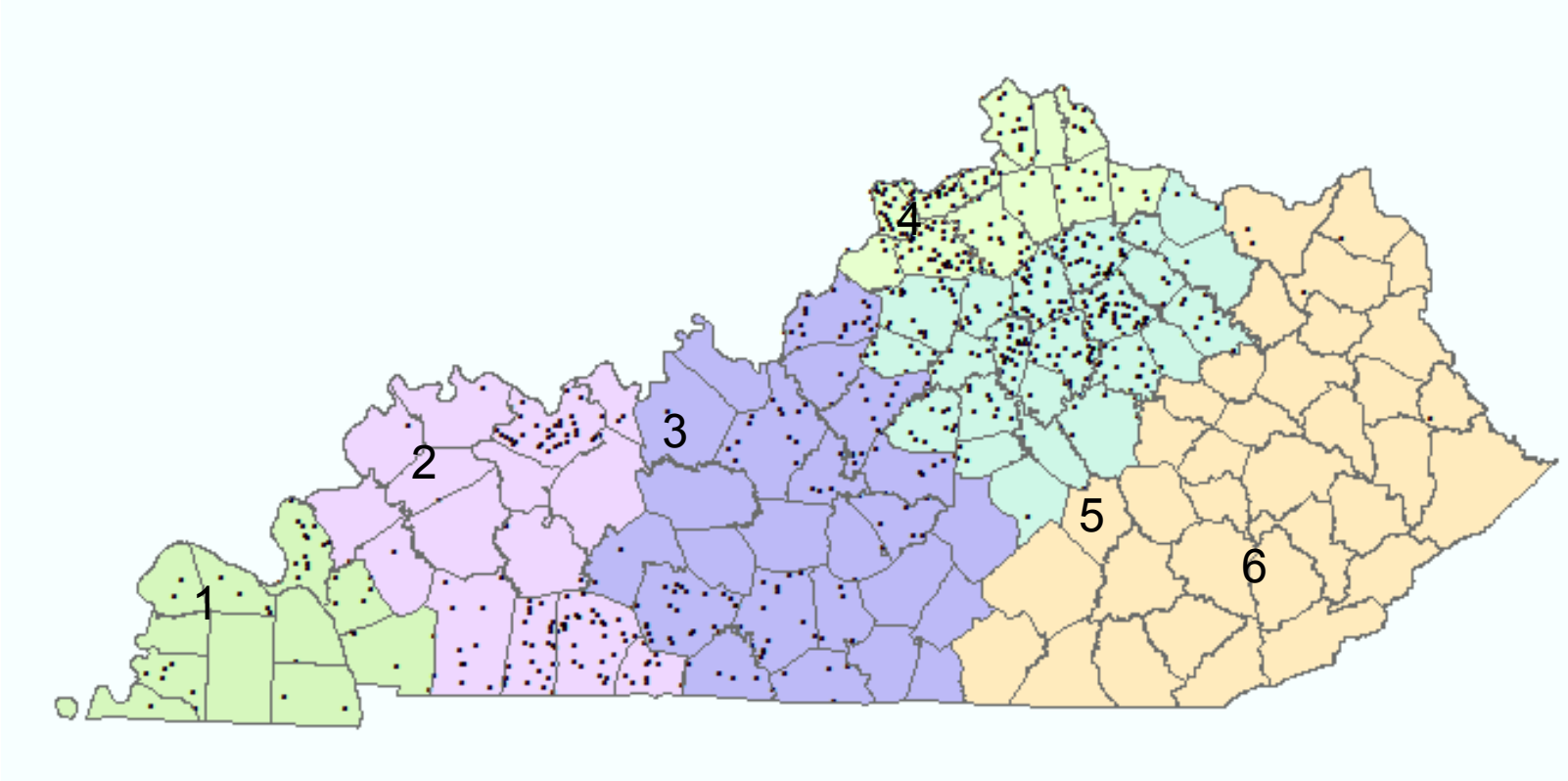
Agriculture: Irrigation

1964 Total Irrigated Acres

(across 6 agricultural districts)

Total Irrigated Acres = 14,500

Corn – 730 out of 981,000 (0.07%)
Tobacco – 10,230 out of 211,000 (4.8%)



One dot = 20 acres

Source: USDA Census of Agriculture

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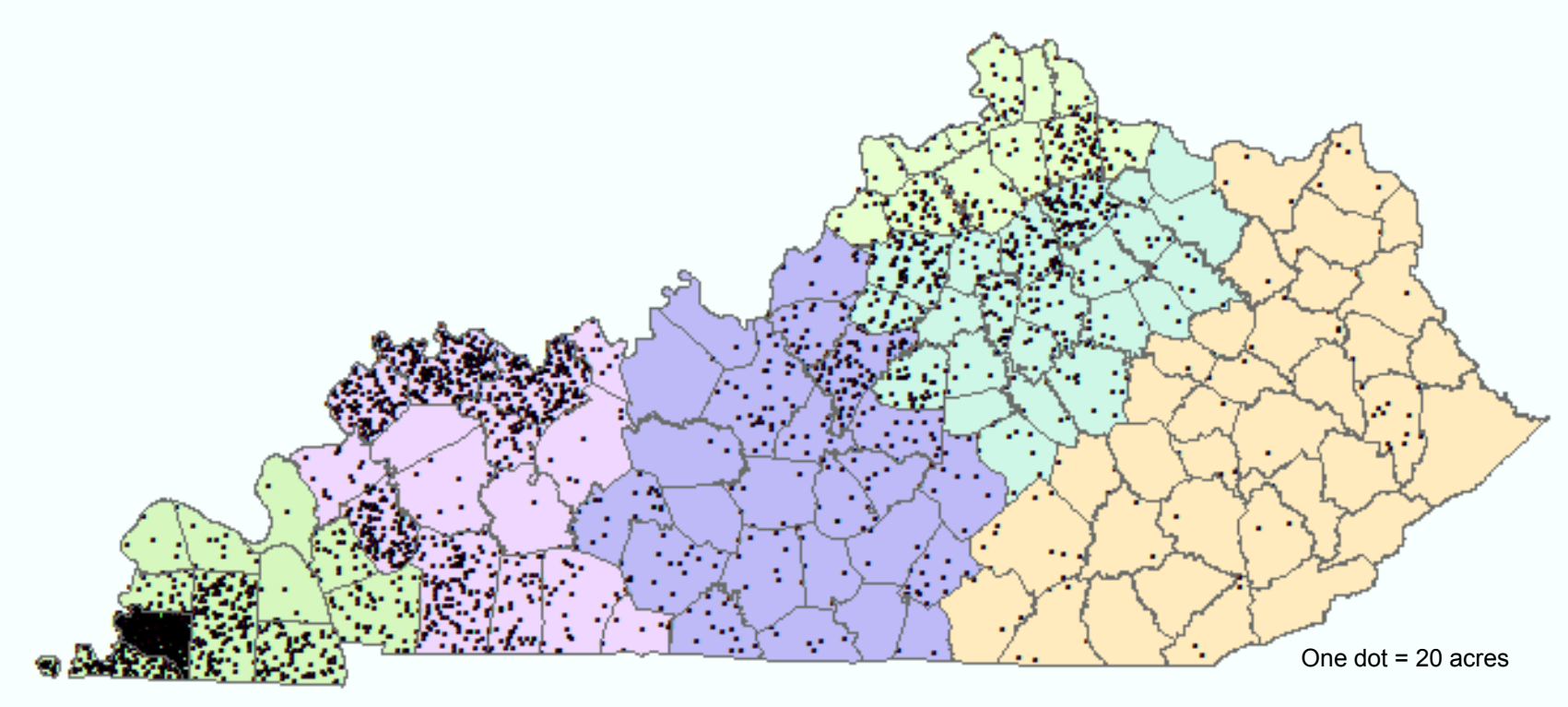
2007 Total Irrigated Acres

(across 6 agricultural districts)

Total Irrigated Acres = 58,700

Corn – 22,500 out of 1,310,000 (1.7% of Corn acreage)
Tobacco – 14,000 out of 87,000 (16.1% of Tobacco acreage)
Soybean – 10,000 out of 1,087,000 (0.92% of Soybean acreage)



Source: USDA Census of Agriculture

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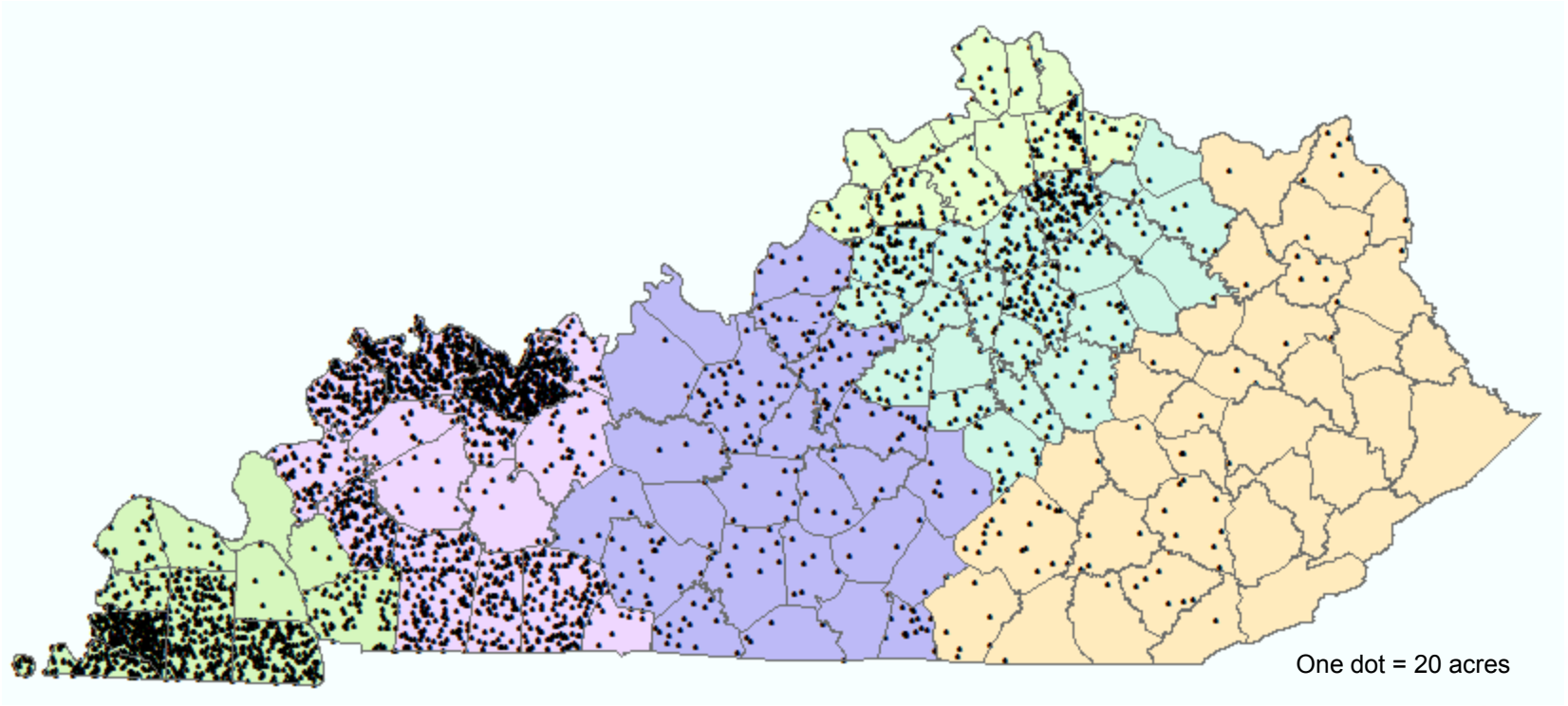
2012 Total Irrigated Acres

(across 6 agricultural districts)

Total Irrigated Acres = 73,573 (25 percent increase over 2007)

Corn – (2.1% of corn acreage) - increase of 41 percent over 2007
Tobacco – (14.5% of Tobacco acreage) – decrease of 9 percent from 2007
Soybean – (1.1% of Soybean acreage) – increase of 63 percent over 2007



Source: USDA Census of Agriculture

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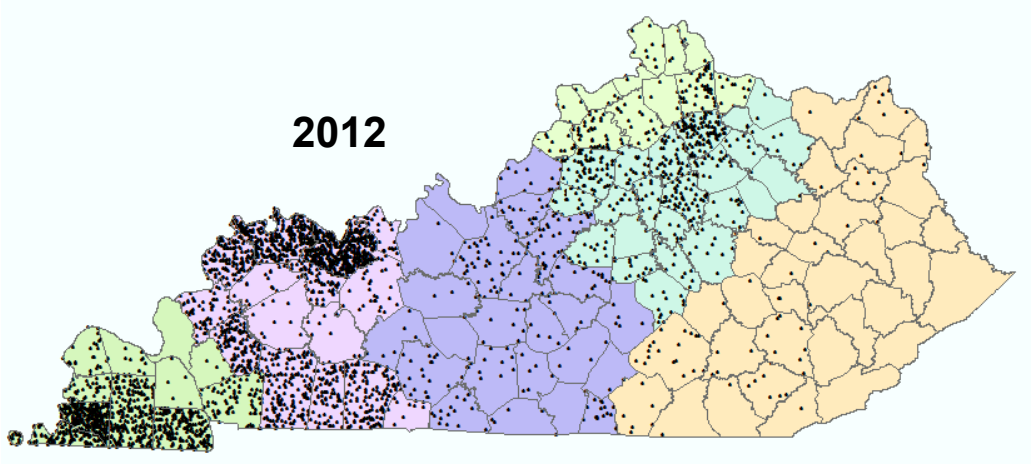
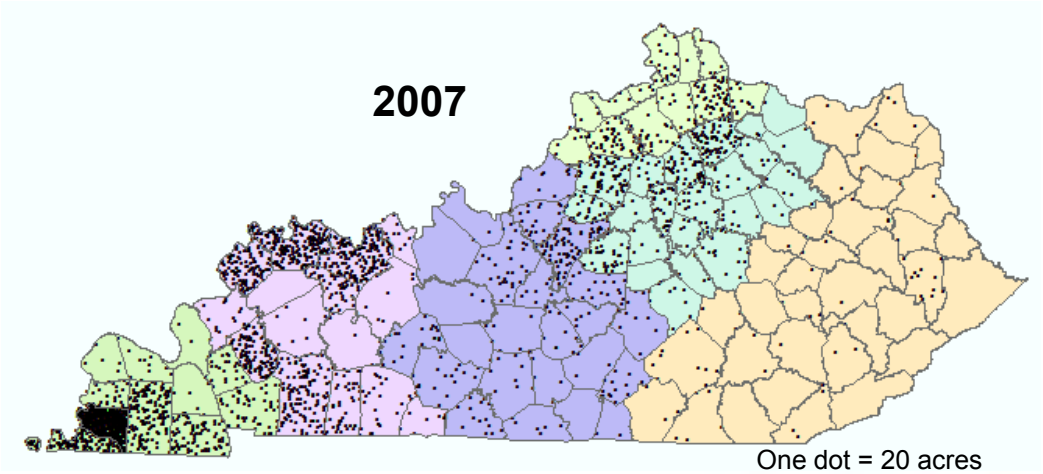
Total Irrigated Acres

(across 6 agricultural districts)





	Acre-feet Applied	
Survey Year	Wells	Surface
1954	849	11297
1955	657	4988
1960	422	5654
1969	916	7247
1982	4012	17122
1998	9336	10395
2003	5253	4082
2008	9586	4958
2013	9043	10574

Source: USDA Census of Agriculture

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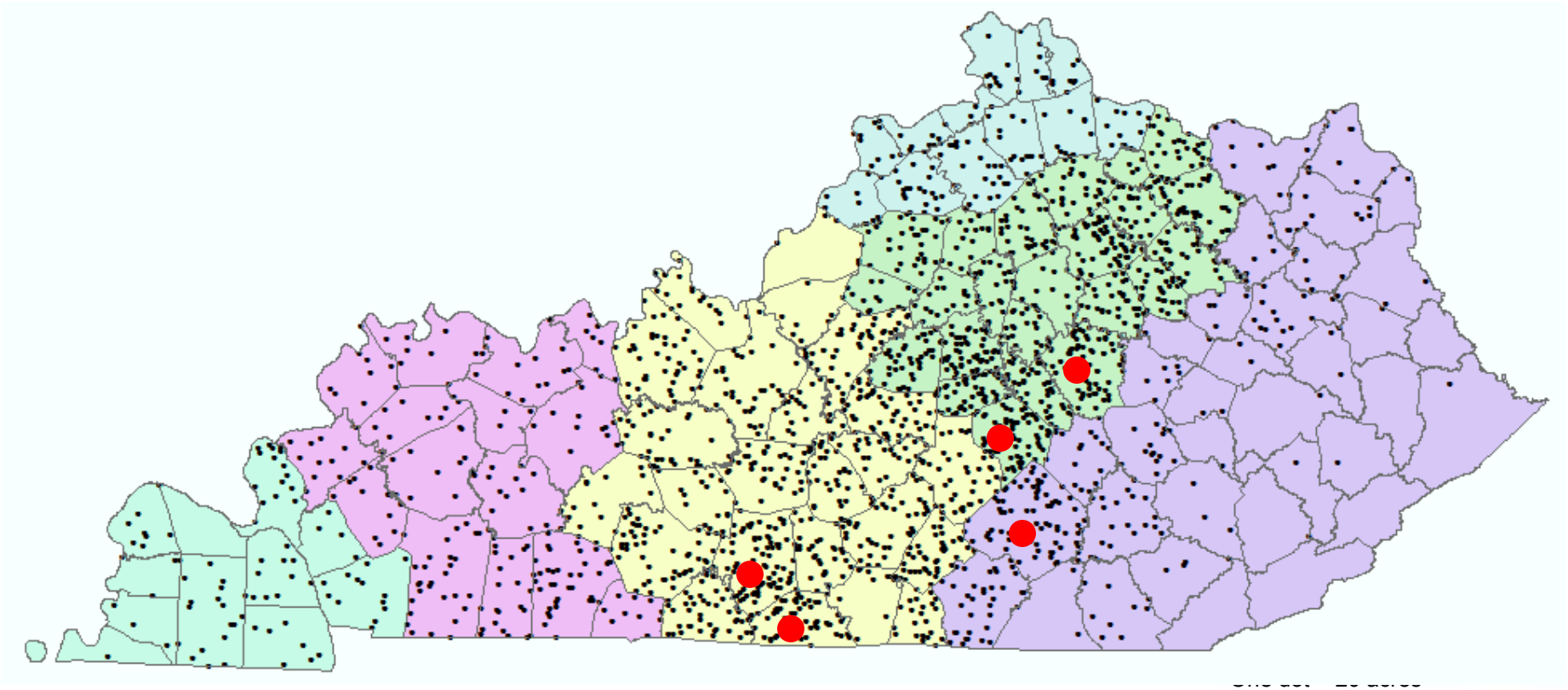
Agriculture: Livestock: Cattle

2012 Cattle Populations per County

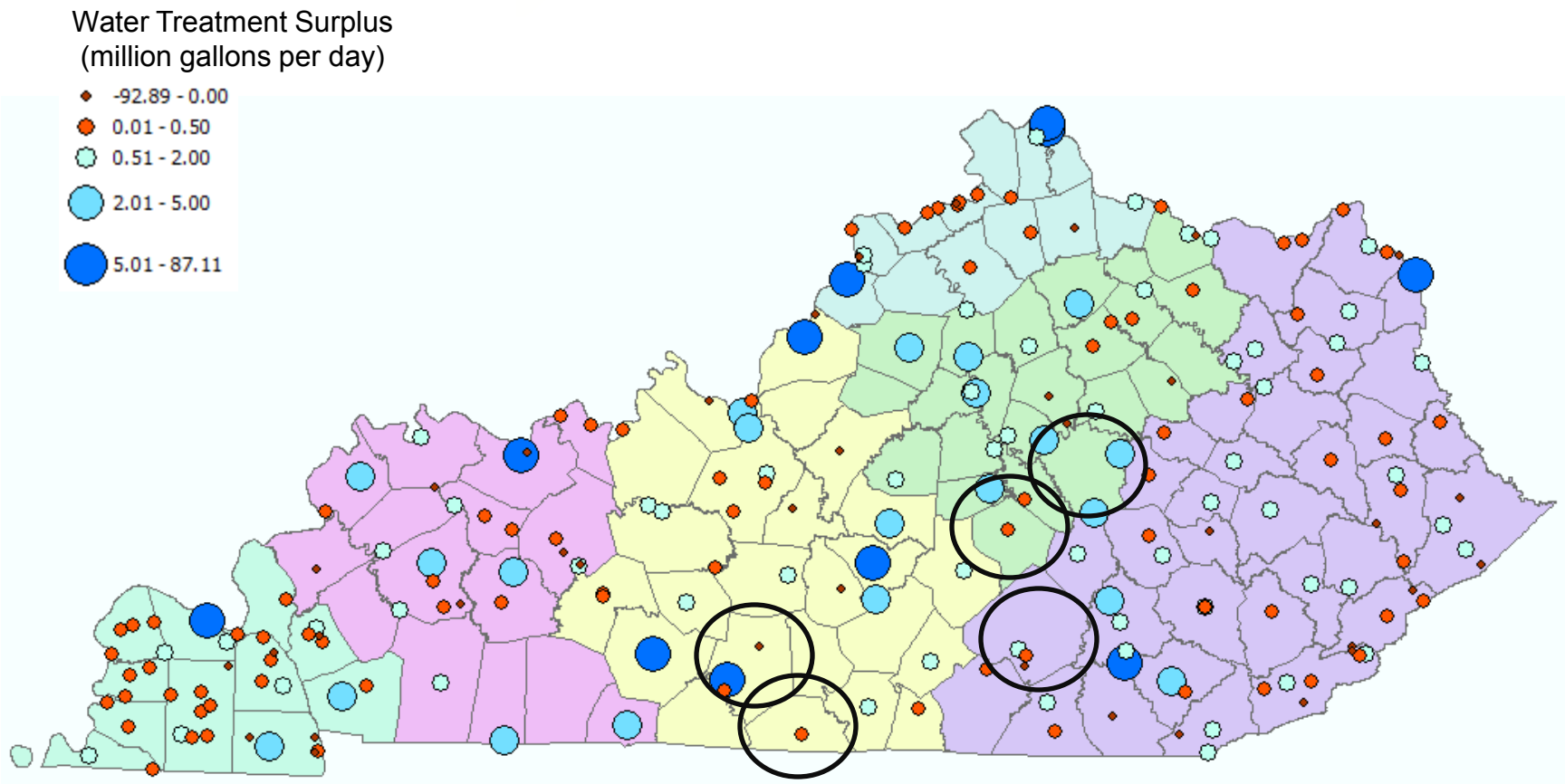
(across 6 agricultural districts)



One dot = 5000 Cattle

Source: USDA Census of Agriculture

Surplus of Kentucky Water Treatment Plants



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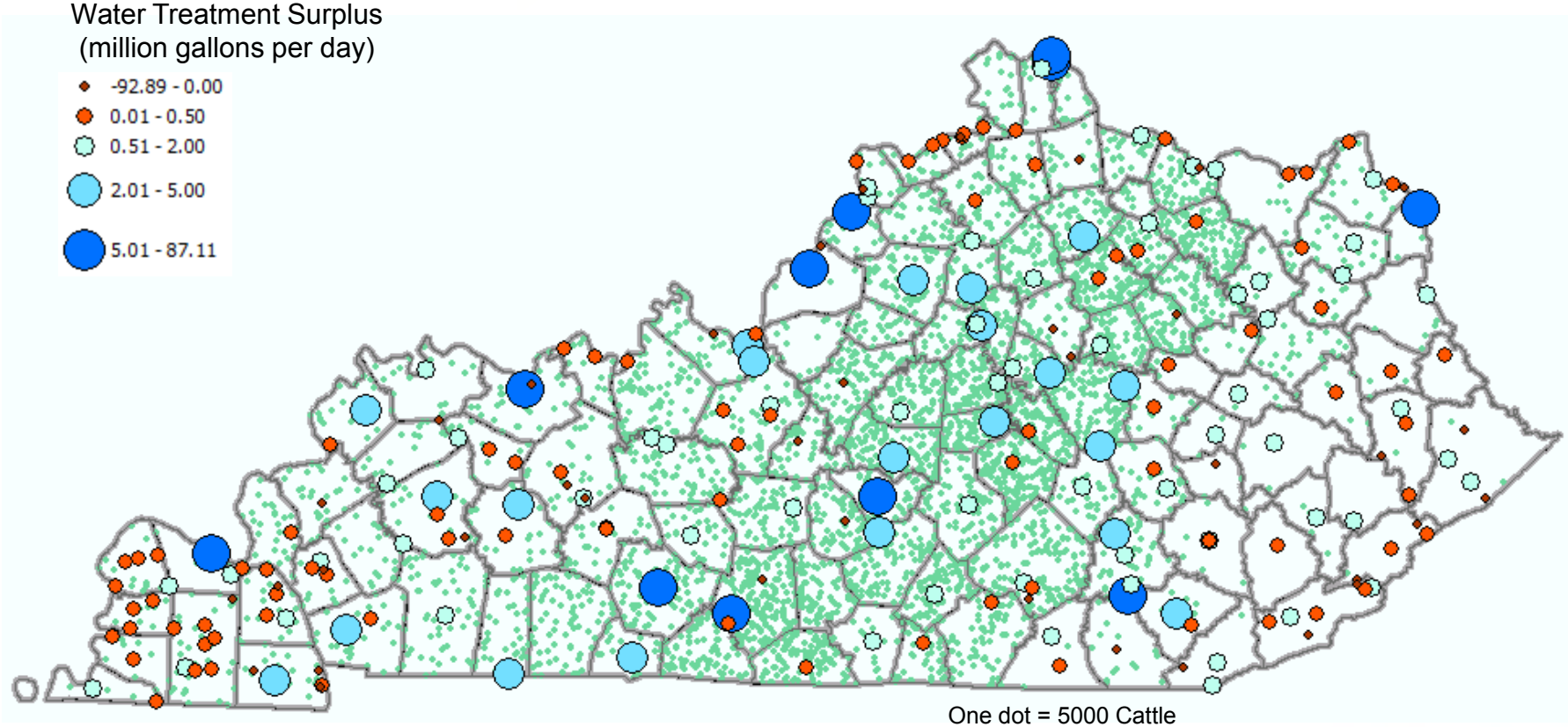
Water Surplus and Livestock Demand (Cattle)



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Difficult to project future increases in irrigation but a majority will likely occur in agricultural districts 1 and 2.

Potential for significant increase in agricultural uses of surface waters, not just wells.

Important to project future-growth sectors' needs (rural population changes or new poultry and dairy operations for example)

Monitoring and data collection should include assessments of

- water availability and **demand** – surface water, aquifer, springs, lakes
- potential conflicts – users upstream and downstream, nearby domestic or public water supply wells, recreation.
- impacts to source water bodies – special use waters, impaired waters, regional availability

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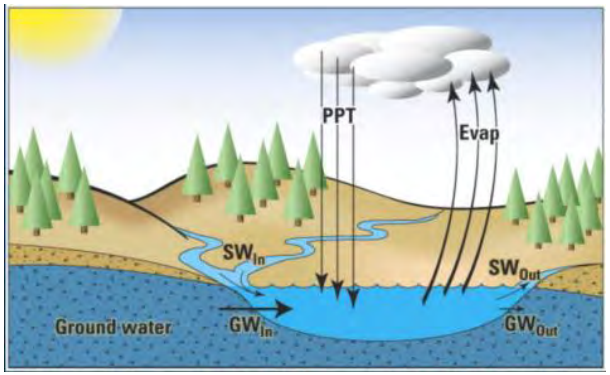
Water Resources Development
What do we need to know?



PUBLIC
AWARENESS,
EDUCATION
AND OUTREACH

FARM AND COMMUNITY
DECISION-SUPPORT SYSTEMS
AND TOOLS
-- DROUGHT EARLY WARNING
-- IRRIGATION MANAGEMENT
-- RURAL WATER RESILIENCY

VULNERABILITY
MITIGATION
PLANNING
ADDRESSING KNOWLEDGE GAPS

"why monitor if you don't fix the problem?"

WATER AVAILABILITY ⇄ WATER DEMANDS

MONITORING / RESEARCH / DATA COLLECTION

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State Drought Plan: Mitigation

- **Expand / Maintain data networks and provide long-term funding**
- **Inventory and quantify the state's available water resources**
- Identify and project drought vulnerabilities
- Pursue opportunities to increase available raw water supplies
- Improve state and local drought response
- Become more efficient in the use of the state's water resources
- Public education, awareness and outreach

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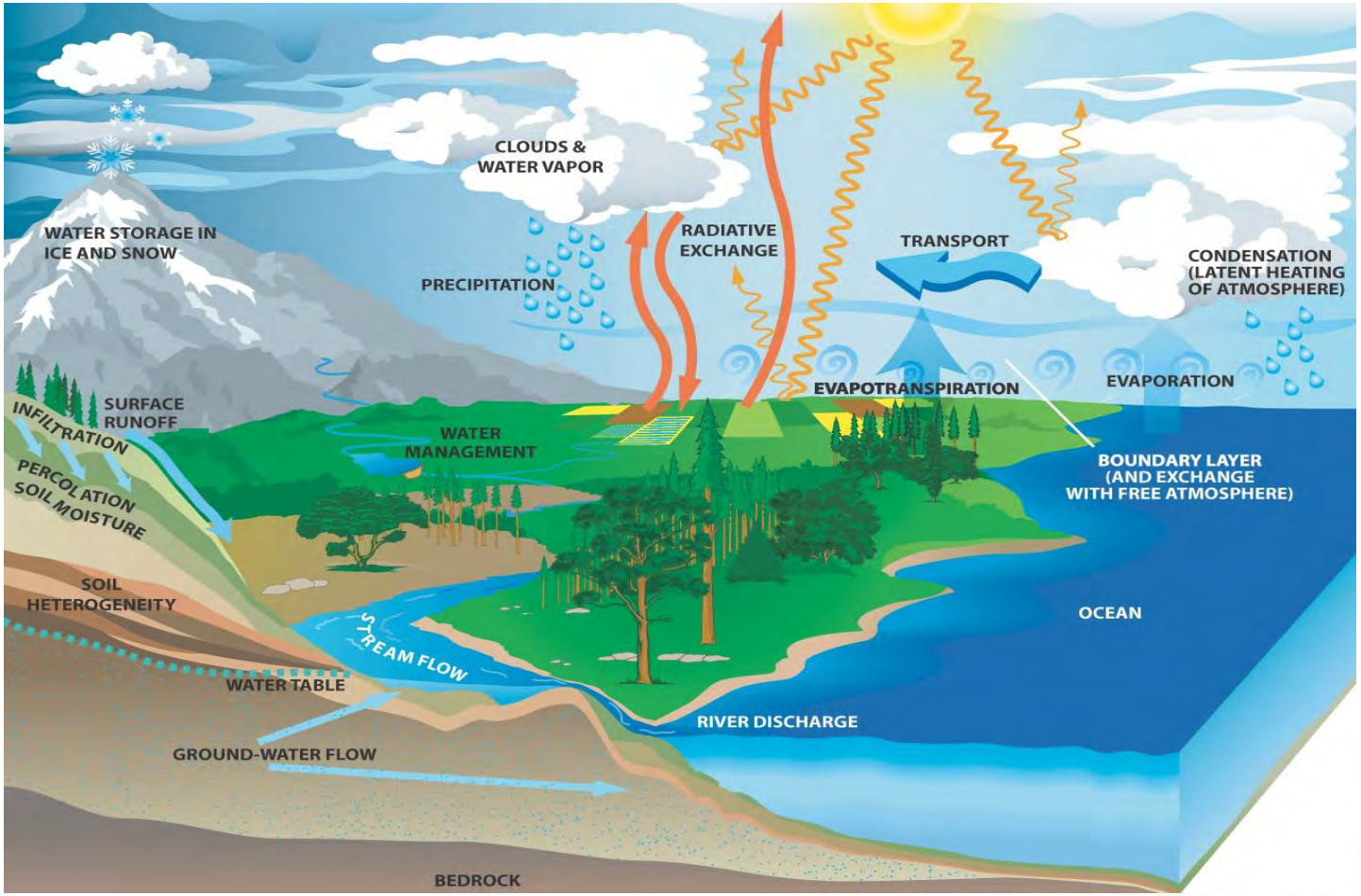
Water Resources Development
The next few meetings



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KENTUCKY MESONET | WKU

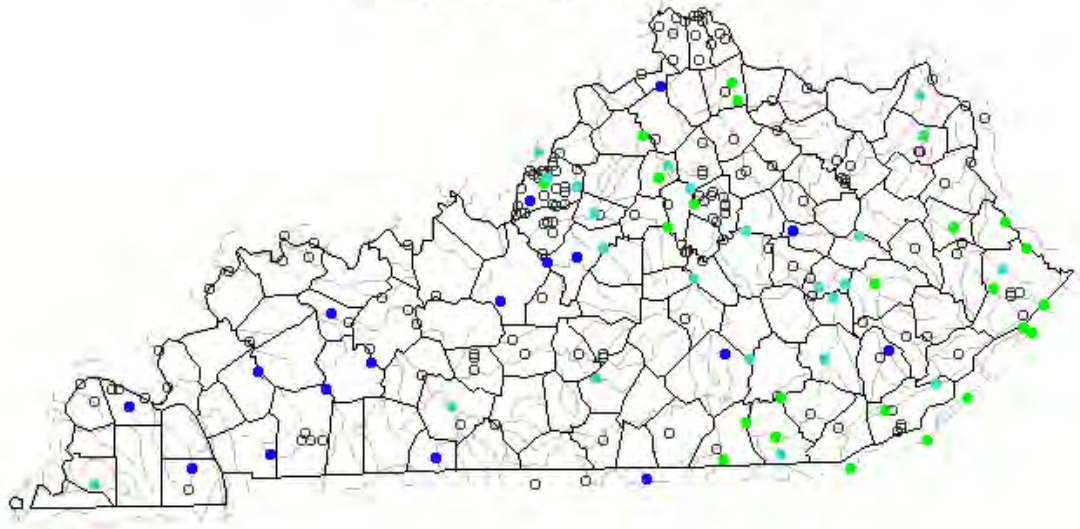
The Commonwealth's Official Source for Weather and Climate Data

Home | About | Live Data | Summary Data | Event Tracking | Outreach

Map of real-time streamflow compared to historical streamflow for the day of the year (Kentucky)

Kentucky or Water-Resources Regions

Monday, August 29, 2016 07:30ET



USGS

Choose a data retrieval option and select a location on the map

List of all stations **Single station** **Nearest stations** **Peak flow**

Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

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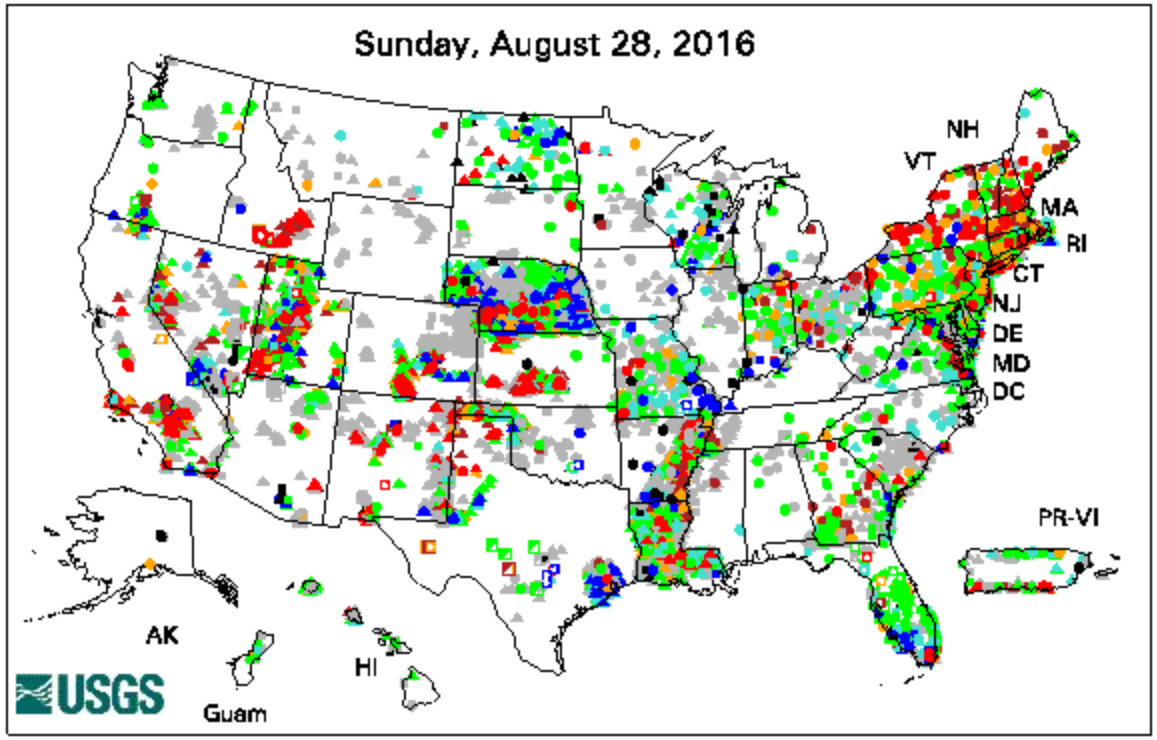
Active Groundwater Level Network



Explanation - Percentile classes (symbol color based on most recent measurement)							
Low	<10 Much Below Normal	10-24 Below Normal	25-75 Normal	76-90 Above Normal	>90 Much Above Normal	High	Not Ranked

Wells	Springs
Real-Time	
Continuous	
Periodic Measurements	

Active Well Count

Real-Time: 1,586 Daily: 1,189 Periodic: 16,049

Map generated 8/28/2016 11:36:17 AM

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