

Sustainable Water Resource Planning



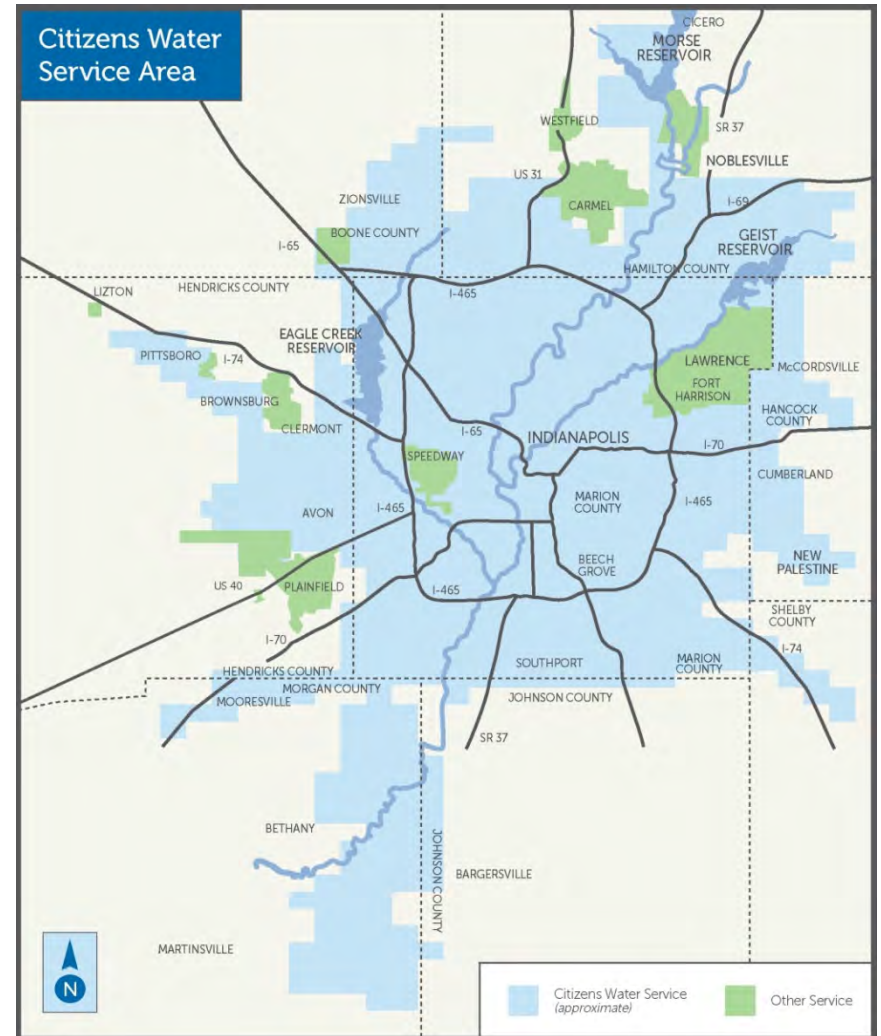
September 18, 2014

Discussion Topics

- Water System Background
- Water Resource Planning
- Regional Planning (Boone County)
- Water Conservation
- Discussion

Citizens Water Background

- Customers
 - Retail (305,000)
 - Wholesale (8)
- Resources
 - Surface Plants (4)
 - Groundwater Plants (5)
 - Well Fields (9)
 - Reservoirs (3)
 - Central Canal
- Demand
 - Average (143 MGD)
 - Peak (232 MGD)



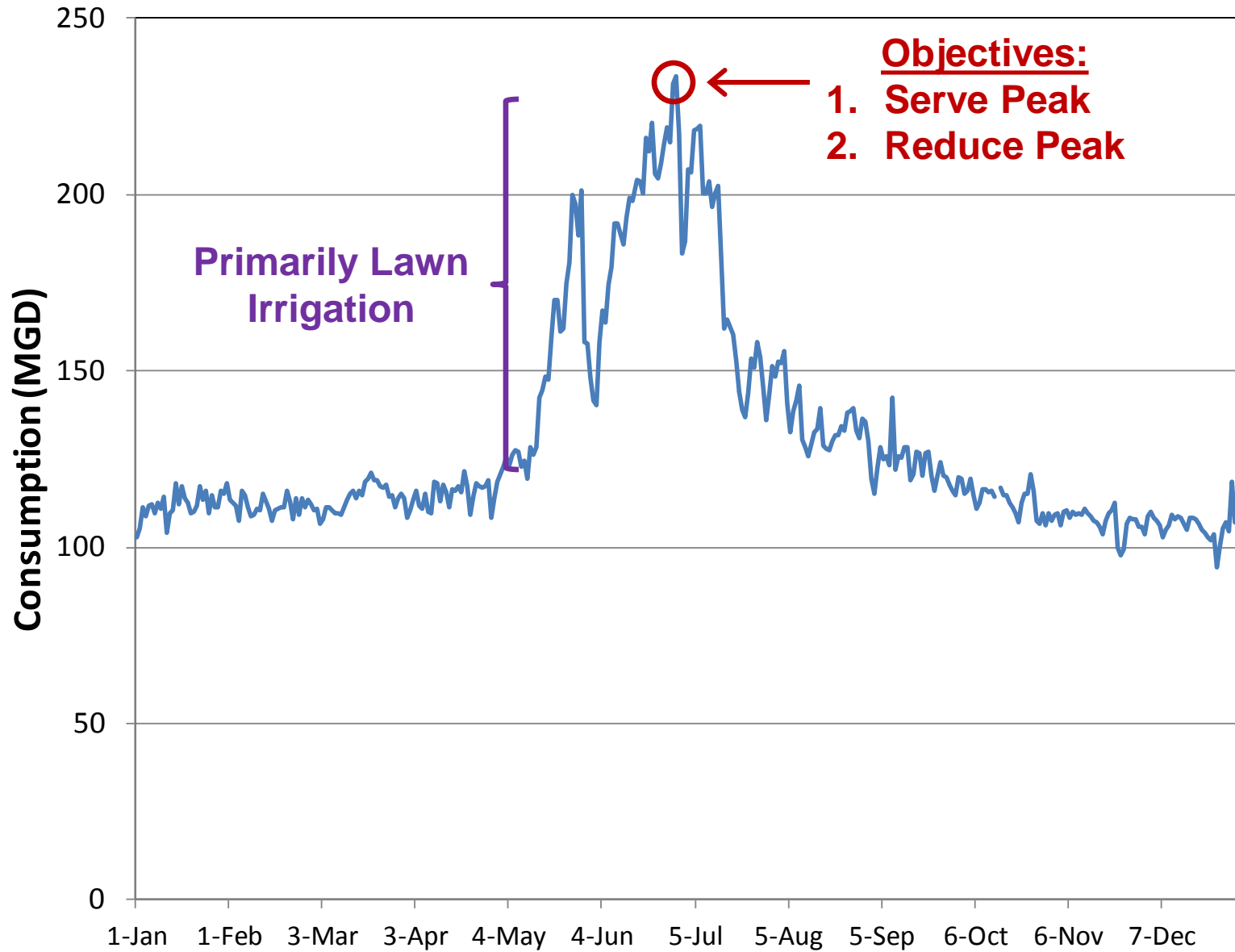
Map not to scale

Citizens Water System - Source and Supply

Citizens Water Sources	1	2	3	4
Water Source and Streams:	White River and Canal	Fall Creek	Eagle Creek	Ground Water
Reservoir Storage:	Morse	Geist	Eagle Creek	NA
Billion Gallons:	7.4	6.2	6.7	
Treatment Plants:	White River North White River	Fall Creek	TW Moses	5 Plants
Annual Production*:	60%	15%	9%	16%

* Includes plants, wells and distribution

Customer Demand (2012)



Supply and Demand are Weather Dependant

Weather Condition	System Supply	System Peak	Surplus/ (Deficit)
Normal Summer	254 MGD	200 MGD	54 MGD
Moderate Drought	217 MGD	232 MGD	(15 MGD)

Notes:

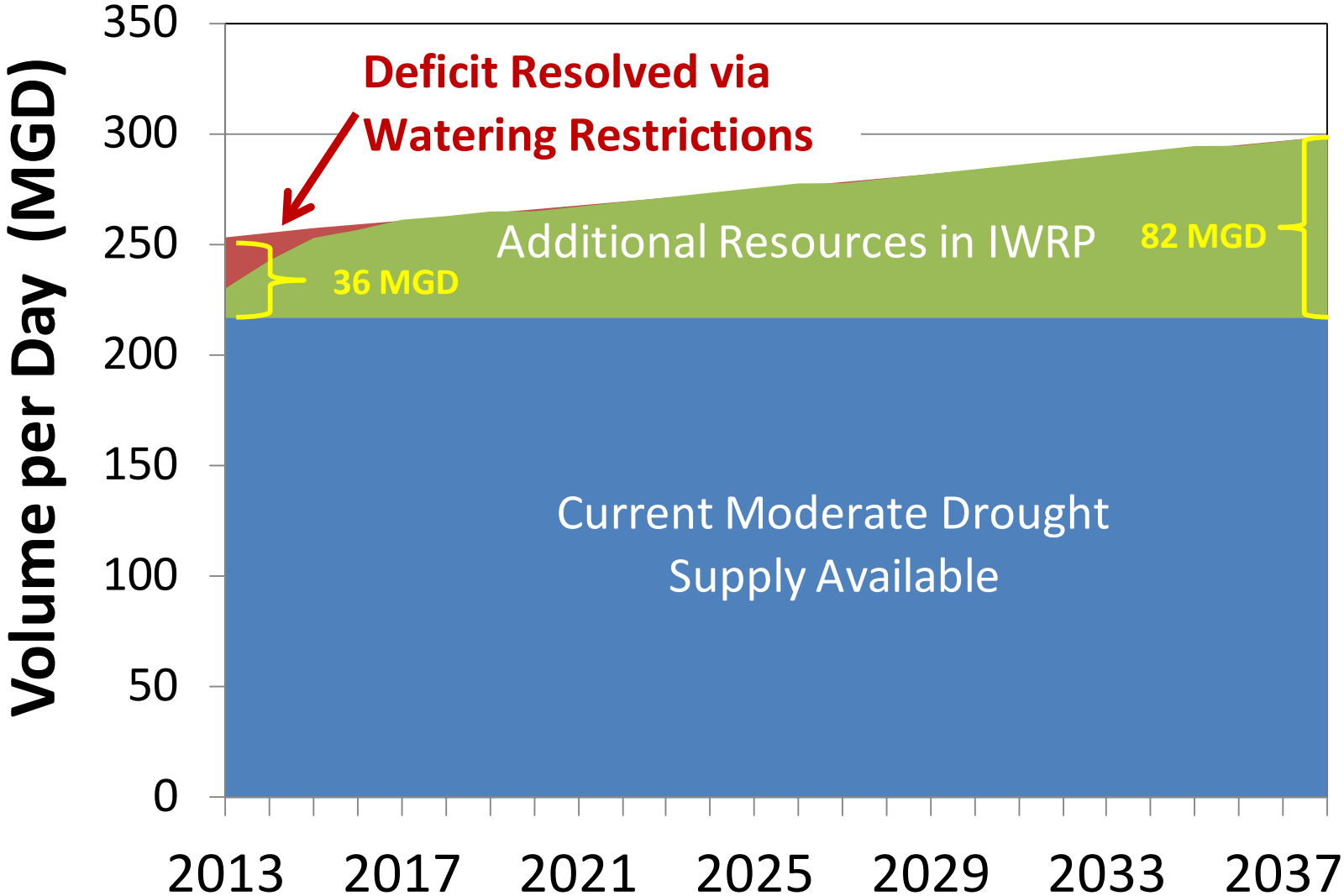
- Planning is driven by drought conditions
- Deficits addressed with reservoir storage, groundwater and water use restrictions (if necessary)

Integrated Water Resource Planning

- Framework
 - Citizens Retail & Wholesale Territories
 - Timeline (25 yrs)
 - Moderate Drought Condition (1 in 10 yrs)
 - Peak Demand (Plus 5% Reserve)
 - Demand Growth Rate (.65% annual)
- Evaluation
 - Low Cost Resources
 - Diverse Resource Mix

Citizens Resource Requirements (25 Yrs)

Integrated Water Resource Plan



Water Resources Options

Water Resource	Local MGD	Regional MGD	Total MGD
Conservation (Water Wise)	12		12
Voluntary Restrictions	10		10
System Optimization	8		8
Water Reuse	2		2
New Water Supply	45		45
New Water Storage	23		23
Purchased Water	3		3
Pipeline (Wabash or Ohio)		50	50
Regional Reservoir		50	50
Total	103	100	203

Local and Regional Cost Comparison

Resources	Capacity MGD	Cost \$	Cost \$/MGD
Local*	103	\$157M	\$1.5M
Regional**	100	\$800M	\$8.0M
Total	203	\$957M	\$4.7M

* Local resources are most cost effective options

** Regional resources may require partnerships or subsidies

- New Reservoir: Est. \$400M cost for 50 MGD
- New Pipeline (Ohio or Wabash): Est. \$400M for 50 MGD

Citizens Integrated Water Resource Plan (25 Yrs)

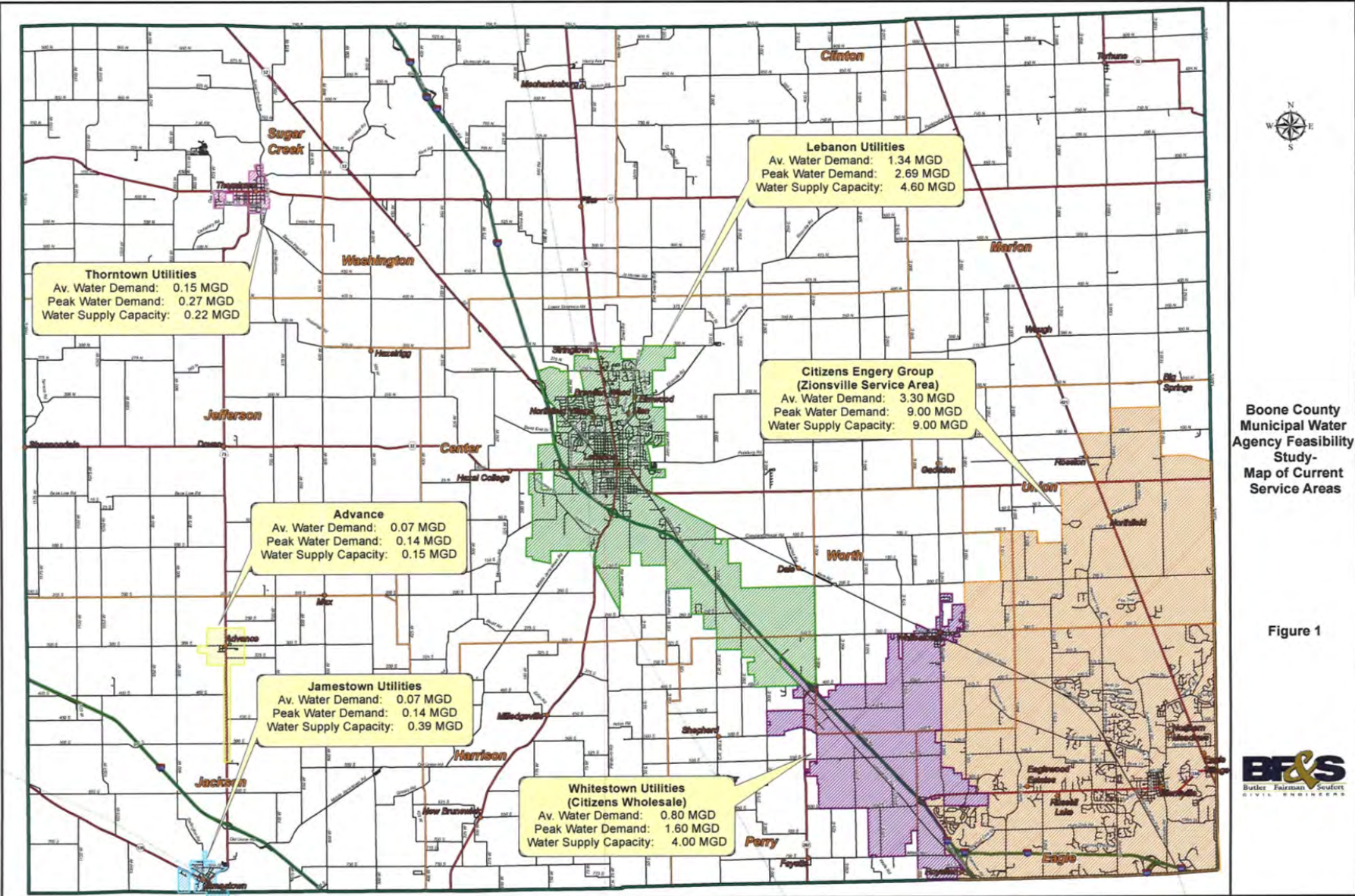
	Water Resources	Timeline	MGD	Est. Cost \$
	Water Wise (Conservation)	2014-2018	12	\$4,700,000
	Voluntary Water Use Restrictions	2014-2038	10	
	System Optimization	2013-2017	8	\$700,000
	Water Reuse	2014-2015	2	\$4,250,000
	New Storage Capacity	2014-2038	4	\$15,250,000
	New Local Supply			
	Expand Geist and WRN well fields	2013-2015	5	\$3,500,000
	New Harbor wells/treatment plant	2014-2018	6	\$12,000,000
	Expand Waverly and South well fields	2021-2025	10	\$20,000,000
	Waverly Riverbank Infiltration	2026-2038	22	\$55,000,000
	Purchased Water	2014-2038	3	
	Total - Citizens Water Resource		82	\$115,400,000

Capacity for Future Citizens Growth

Resource	Capacity	Growth *
Local	103 MGD	38 Yrs
Regional	100 MGD	37 yrs
Total	203 MGD	75 Yrs

* Assumes CEG Annual Peak Demand growth rate of 0.65% per yr

Boone County - Current Service Areas

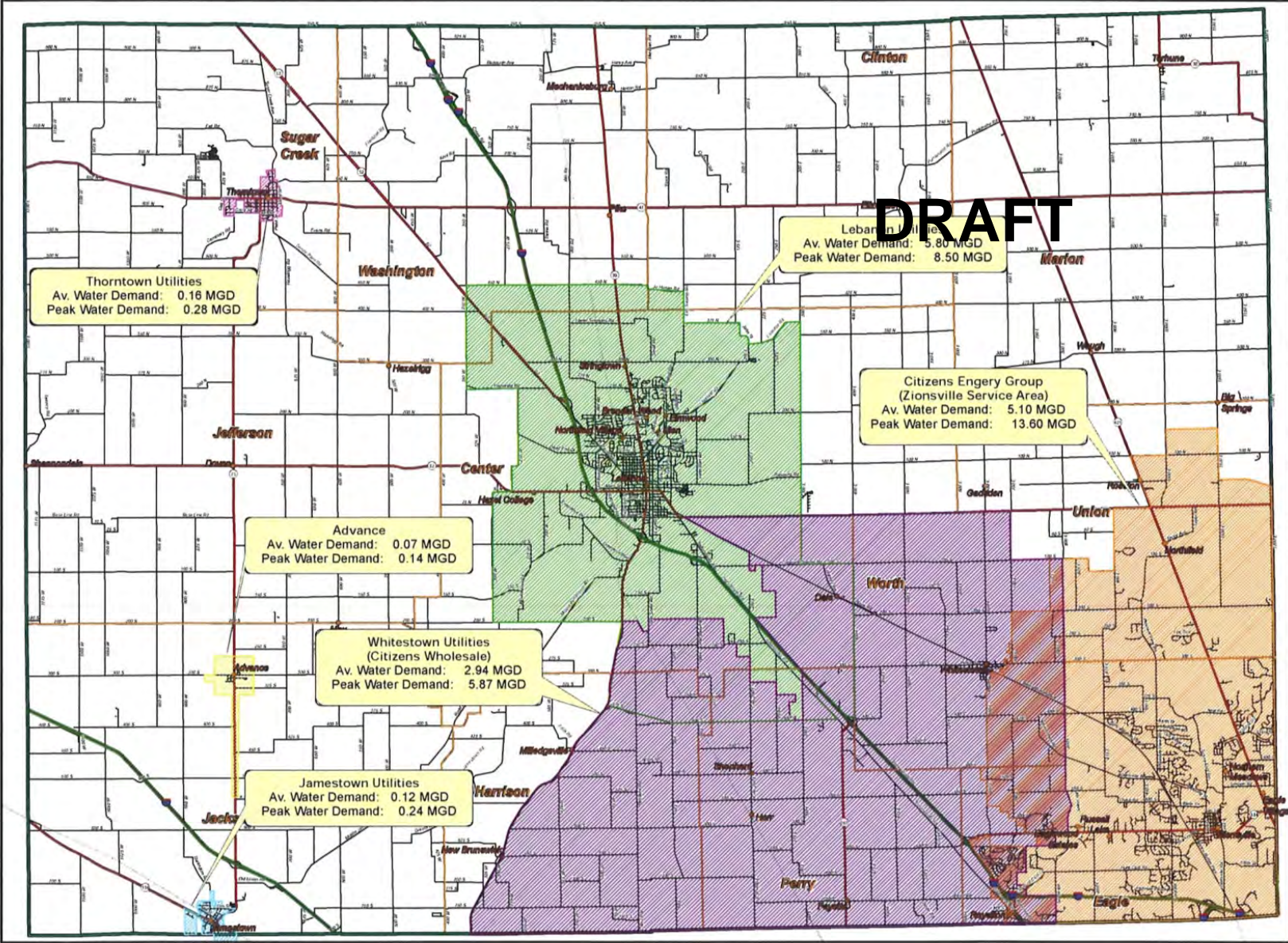


Boone County Municipal Water Agency Feasibility Study- Map of Current Service Areas

Figure 1



Boone County - Projected Service Area (20 Yrs)



Boone County
Municipal Water
Agency Feasibility
Study-
Map of Projected
20-Year
Service Areas
Figure 4

Boone County Findings (20 yrs)

- Adequate Groundwater Resources
 - Thorntown, Advance, Jamestown
- Need 10 MGD for I-65 Corridor Growth (Zionsville, Whitestown, and Lebanon)
- Options:
 - Sugar Creek Reservoir (\$75-125 Million)
 - Groundwater/Teays Aquifer (\$40-50 Million)
 - Citizens Retail/Wholesale (\$15-20 Million)
- Conclusion:
 - Zionsville (Citizens Retail)
 - Whitestown and Lebanon (Citizens Wholesale)

Water Conservation

- Per Capita Water Use is Declining
- Citizens Water Wise Program
 - Public Awareness/Education/Efficiency
 - Proper Rate Structure/Price Signals
 - Reduce Leaks/Replace Water Mains
- Drought Management (Local Ordinance)
 1. Watch (Voluntary Conservation)
 2. Alert (Lawn Irrigation - 2 days/wk)
 3. Warning (Lawn Irrigation Ban)
 4. Emergency (Ban Irrigation + Other Uses)

Conclusions and Observations

- Water Resource Planning > Local Process
 - Local Plans >>Regional Plans>>State Plan
- Citizens Water Resource Plan > 40+ yrs
- Central Indiana Region
 - More Collaborative Planning (Boone County)
- Lawn Irrigation Drives Peak Demands
 - Restrictions Possible During Droughts
 - Public Sacrifice >>> Green Grass
- Drought Management is Key (Be Prepared)
 - Public Communications Critical

Discussion