Lee's Summit Water Utilities Water Master Plan

Water Utilities Engineering

and

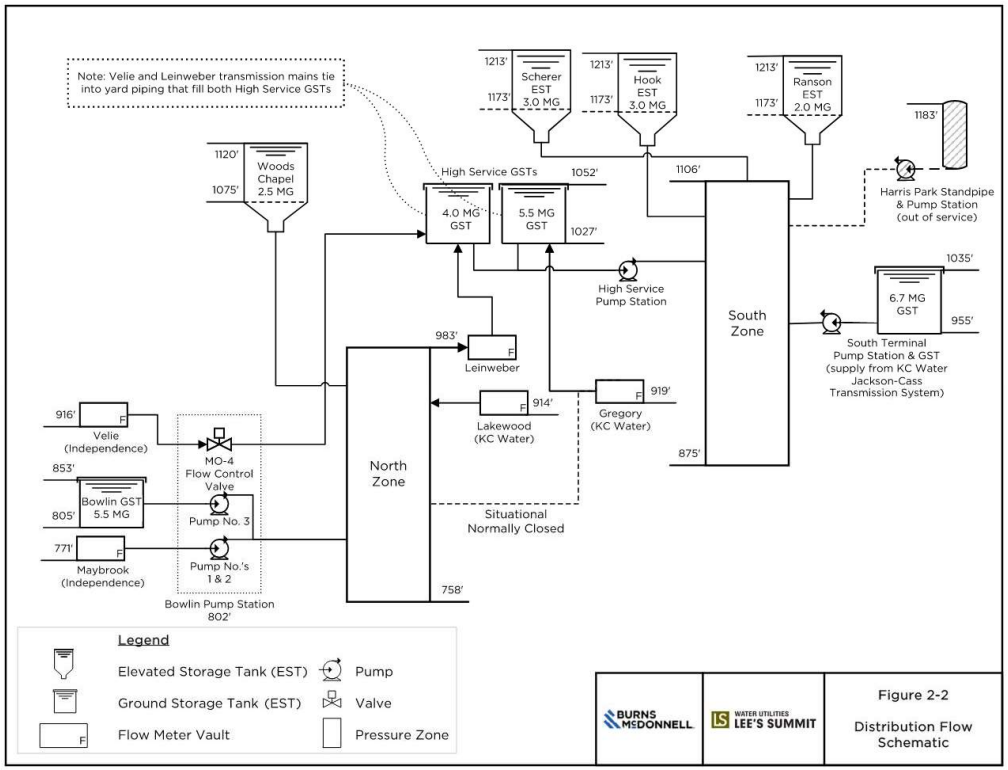
Burns and McDonnell

Planning History and Scope of 2023 Master Plan

- Prior Plan completed in 2006
- Scope of Master Plan Update
  - Model Creation and Calibration
  - Level of Service Review
  - Growth Projections
    - 5year and 20 year planning periods
  - Supply Projection
    - 50 year planning period
  - Distribution Planning
  - Storage Evaluation
  - Capital Improvement Planning

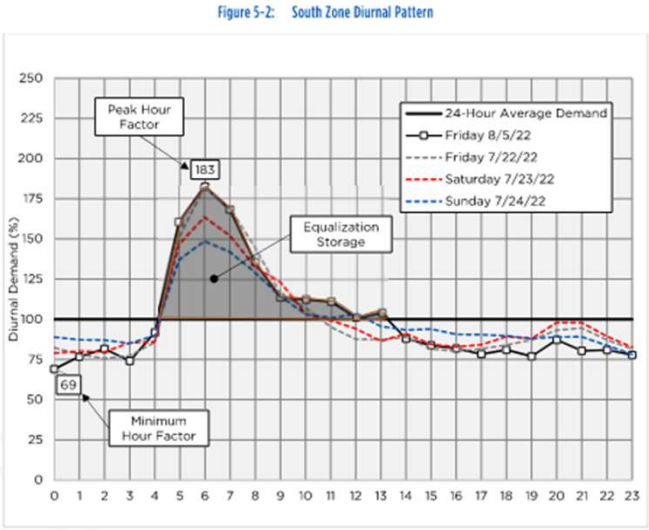
Master Planning Process

- Existing System Review
  - Flow data
  - Facilities
  - Build hydraulic model
    - Flow testing
    - Pumping
    - Storage
    - Operation modes



Master Planning Process

- Set Level of Service
  - Max-Min pressures
  - Storage
  - Contractual requirements
- Diurnal Analysis
  - Review data and model compare actual water usage, storage, pressures and flows to the model
- Model is calibrated to the existing system!



Master Planning Process

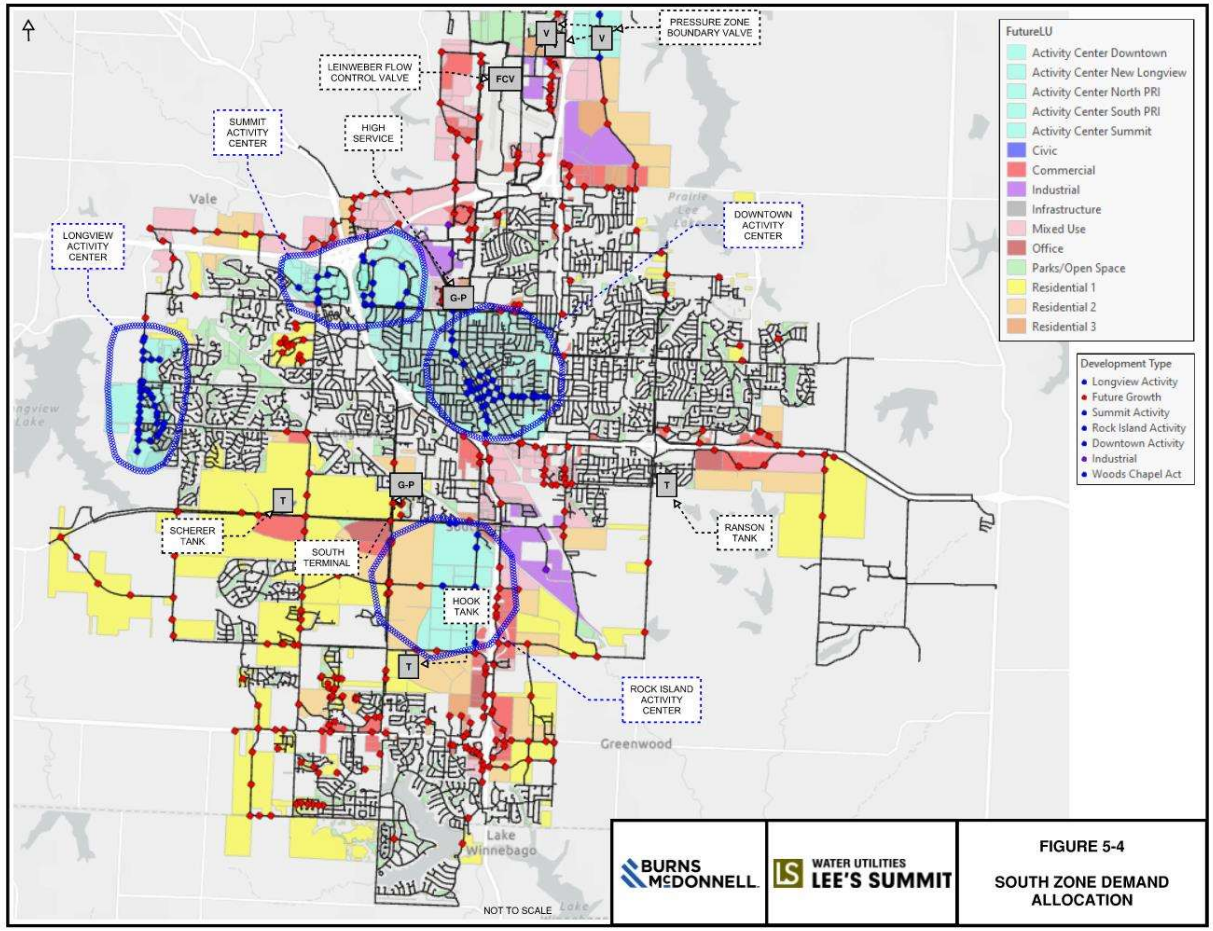
- Load Future Projections
  - Comprehensive Plan Data
  - Future population growth
  - Future water use

Table 5-3: 2025 Demands for Comprehensive Plan Growth Strategy

Growth Area	Land Use	Max Day Demand (MGD)		Population	Meters	
		Residential	Nonresidential		Residential	Nonresidential
Rock Island	Activity Center	0.24	0.12	1,448	499	45
Woods Chapel	Activity Center	0.14	0.07	828	285	26
Downtown	Activity Center	0.13	0.06	745	257	23
Longview	Activity Center	0.07	0.03	414	143	13
Summit	Activity Center	0.10	0.05	621	214	19
Residential Undeveloped Areas	Residential 1	0.44	--	2,405	534	--
	Residential 2	0.17	--	925	565	--
	Residential 3	0.02	--	107	193	--
Non-Residential Growth in Undeveloped Areas	Civic	--	0.002	2	--	1
	Commercial	--	0.11	111	--	42
	Mixed Use	--	0.18	175	--	66
	Office	--	0.02	21	--	8
Large User	Industrial	0.50		--	--	
Subtotal		2.46		7,800	2,931	
Existing Service Area		23.9		100,300	37,691	
Total		26.4		108,100	40,622	

- Review system improvements needed to support the future Lee's Summit

Demand Allocation



Water Supply Planning

32.5 MGD

Figure 4-2: Long-Term Demand Projections (MGD)

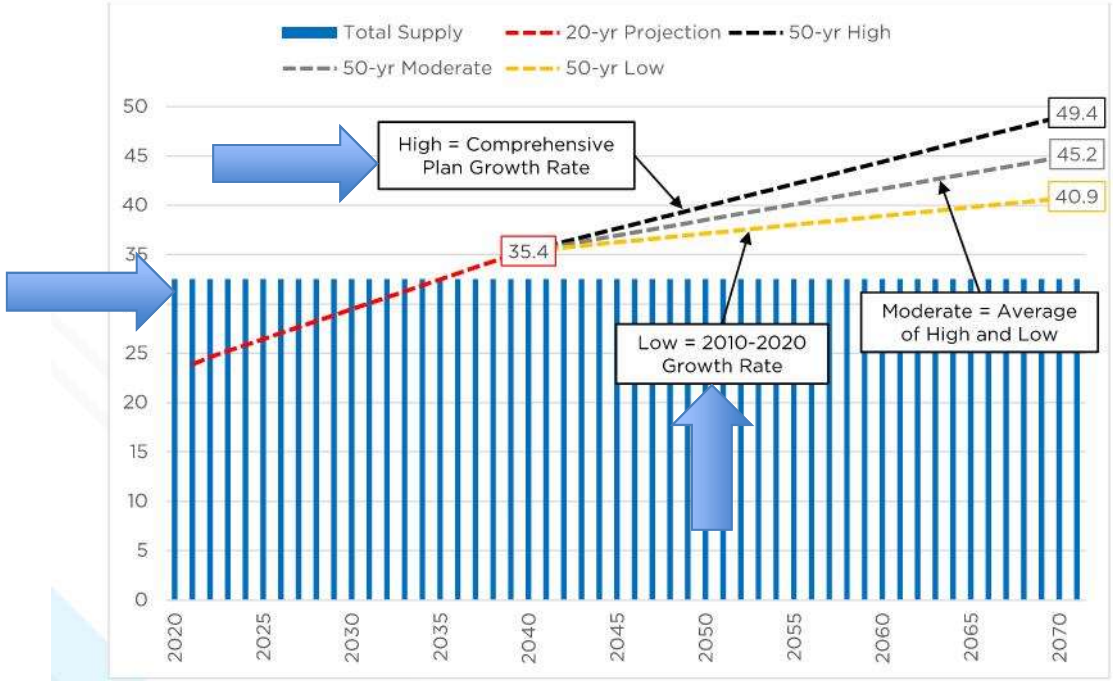


Table 4-1: Net Water Needs Analysis (MGD)

Year	Low Projection			Moderate Projection			High Projection		
	Max Day	Supply	Deficit	Max Day	Supply	Deficit	Max Day	Supply	Deficit
2035	32.5	32.5	0.0	32.5	32.5	0.0	32.5	32.5	0.0
2040	35.4	32.5	2.9	35.4	32.5	2.9	35.4	32.5	2.9
2071	40.9	32.5	8.4	45.2	32.5	12.7	49.4	32.5	16.9

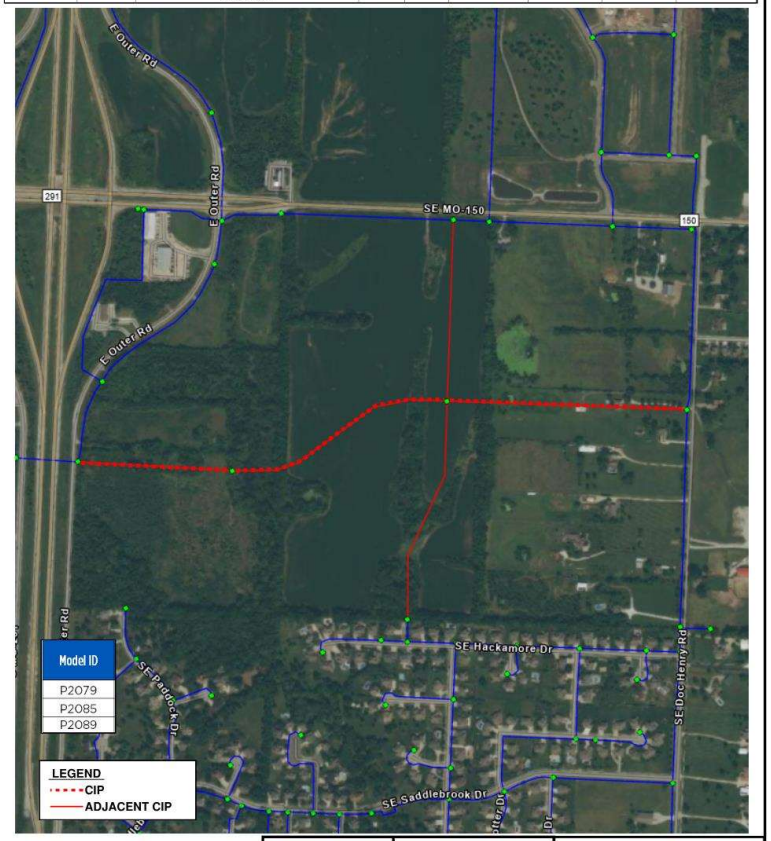
CIP Planning

Table 4-4: Water Supply Planning Options Summary

50-year Capital Improvement Cost Opinion Summary - Supply System					
Option 1					
Year	Demand Trigger (MGD)	CIP	CIP Capacity (MGD)	Total Supply Capacity (MGD)	Opinion of Probable Cost
2035	32.5	KC Water Phase IV[1,2]	8.0	40.5	$ 20,200,000
2056	40.5	S1-L1, S1-MV1,	2.0	42.5	$ 4,975,000
2062	42.5	S1-L2, S1-MV2	2.7	45.2	$ 1,865,000
Total					**$ 27,040,000**
Option 2 - Alternative A1[3]					
Year	Demand Trigger (MGD)	CIP	CIP Capacity (MGD)	Total Supply Capacity (MGD)	Opinion of Probable Cost
2035	32.5	KC Water Phase IV[1,2]	8.0	40.5	$ 20,200,000
2056	40.5	S2-PS1, S2-L1, S2-MV1	4.7	45.2	$ 19,488,000
Total					**$ 39,688,000**
Option 2 - Alternative A2[3]					
Year	Demand Trigger (MGD)	CIP	CIP Capacity (MGD)	Total Supply Capacity (MGD)	Opinion of Probable Cost
2035	32.5	KC Water Phase IV[1,2]	8.0	40.5	$ 20,200,000
2056	40.5	S2-L2, S2-L3, S2-L4, S2-MV2	4.7	45.2	$ 4,518,000
Total					**$ 24,718,000**

CIP Planning

CIP ID	Type	Project Description	Length Total (ft)	Diameter (in)	Opinion of Probable Cost Construction	Contingency	Engineering	Total
S-HD40-10	Hydraulic	Between E Outer Rd and SE Doc Henry Rd along future commercial/industrial collector.	4,066	12	$ 732,000	$ 147,000	$ 131,000	$ 1,010,000



NOT TO SCALE

BURNS McDONNELL

WATER UTILITIES LEE'S SUMMIT

PACKAGE C

CIP: S-HD40-10

SOUTH PRESSURE ZONE

Project Deliverables

- New Water Model Calibrated to our System
- Growth and Density Based on Comp Plan
- Water Supply needs projected for 50 Yrs
- CIP Projects Created to inform development, Cost of Service model and Tap Fees

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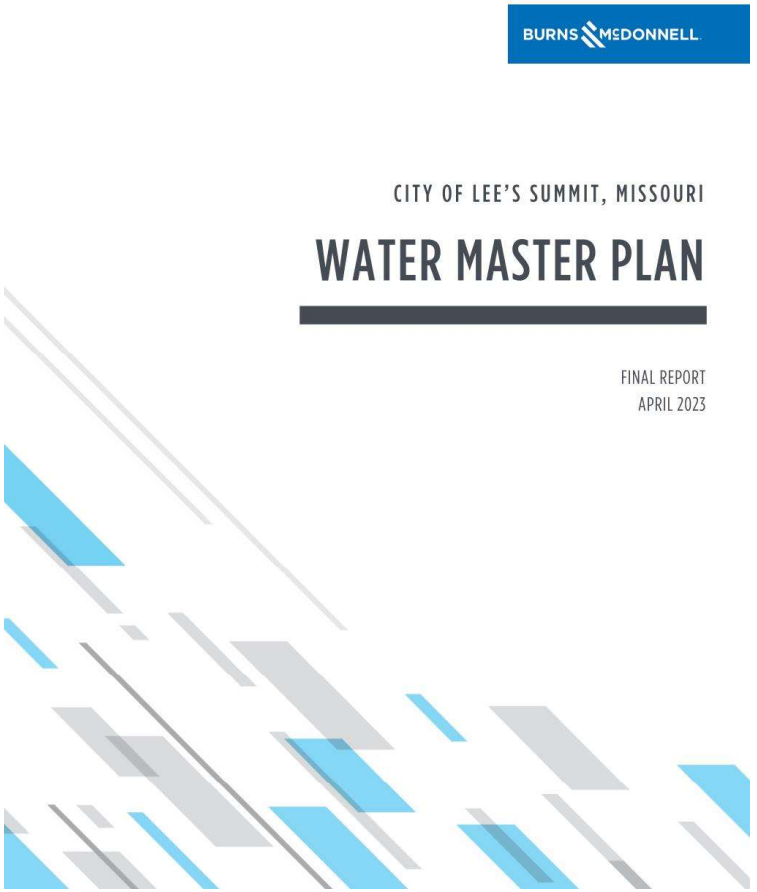
Questions?


BURNS McDONNELL
CITY OF LEE'S SUMMIT, MISSOURI
WATER MASTER PLAN
FINAL REPORT
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