RECOMMENDATIONS

Table 9, Figure 7 and Figure 8 (Appendix C) provide summary references for the priorities, descriptions, opinions of probable cost and locations of each recommended improvement. Table 9 lists the recommended in service date for each project. Other significant recommendations include:

1) Encourage water conservation through public education and rates.
2) Complete negotiations with Kansas City to develop the East Terminal supply projects. The transmission line, pump station and storage facilities are needed by 2013.
3) Complete these significant projects in the next 10 years (additional projects are included on Table 9):
    a. North System Supply Improvements by 2007
    b. South Terminal East Discharge by 2007
    c. KCMO Phase III by 2007
    d. Low Head Storage at South Terminal by 2008
    e. Phase IV by 2010
    f. East Leg and East Terminal by 2013
    g. Internal transmission projects by 2013
4) As the Lee's Summit Road corridor project develops, obtain easements for the transmission lines indicated on Figures 7 and 8.
5) Pursue additional water supplies for 2024. Evaluate three alternatives by the end of 2007. Select the best alternative by the end of 2008. Negotiate an agreement by 2010.
6) Leverage new and developing resources in the City's geographical information system and data management software to quantify and predict renewal needs.
7) Monitor the assumptions made in this analysis. Update the demand and population projections annually. Update this Master plan as necessary to

Table 9 - City of Lee's Summit Water Master Plan Proposed Projects

Figure 7/8 Reference	Project Description [1]	Facility Description	Opinion of Probable Cost 3				Year In Service	Justification
			Tap Fund		Construction Fund			
			LS	Dist. 14	Road	Maint.		
1	Hook Rd Tank (remaining cost)	3.0 MG Elev. Storage Tank	400				2006	Provides peaking storage and fire flow to the rapidly growing southwest portion of Lee's Summit.
2	North System Supply Improvements	Pipe Line Interconnects	1,300				2007	Improves supply reliability and efficiency by maximizing the water supply from Independence, City's most economical supply source.
3	Woods Chapel Rd Transmission Main (Lakewood Way to Georgian Dr)	4,800 feet of 12 inch pipe 2,800 feet of 16 inch pipe	1,229				2007	Improves fire flow and provides supply to future development along Woods Chapel Road.
4[9]	South Terminal East Discharge Main	3,900 feet of 36 inch pipe	1,685				2007	Necessary to utilize the increased supply resulting from the KCMO Phase III & IV improvements.
NA	KCMO Phase III Improvement (remaining cost, see Fig. 5)	36,000 feet of 54 inch pipe	3,100				2007	Increases supply to the South Terminal Pump Station by 6 MGD.
5	High Service Reservoir Rehabilitation (5.5 MG Steel Tank)					1,000	2007	Maintains investment in existing infrastructure.
6[9]	Low Head Storage at South Terminal Pump Station	9.0 MG Ground Storage	8,100				2008	Provides additional low head storage during the peak demand season. Contingent on KCMO delivery conditions.
Cr	Current CIP Projects (Road Construction)	Several Projects			1,320		2008	Replaces or constructs new water lines in association with road construction.
Cm	Current CIP Projects (Maintenance)	Several Projects				1,742	2008	Improves service to existing customers.
NA	KCMO Phase IV Improvement (see Fig. 5)	12,700 feet of 72 inch pipe	8,000				2010	Increases supply to the South Terminal Pump Station and completes the pipeline projects included in the cooperative agreement with KCMO.
7	Pryor Rd Transmission Main (Scherer Rd to Eagle View Dr.) [5]	4,000 feet of 16 inch pipe	384				2010	Transmits water to the rapidly growing southwest portion of Lee's Summit.
8	Woods Chapel Tank Recoating					300	2011	Maintains investment in existing infrastructure.
9	High Service Pumping	Additional Pump Capacity	80				2013	Maximizes High Service Pump Station capacity to 20 MGD.
10	East Terminal Transmission Main	17,500 feet of 36 inch pipe	7,560				2013	Transmits new 21 MGD supply from KCMO to East Terminal Pump Station.
11	East Terminal Pump Station and Storage [2]	21 MGD Pump Station 5 MG Storage Tank	13,650				2013	Pumps additional 21 MGD supply to Lee's Summit.
12	East Terminal Transmission Main	6,000 feet of 24 inch pipe	1,728				2013	Transmits new 21 MGD supply from KCMO to East Terminal Pump Station.
13	Bowlin Tank	2.0 MG Ground Storage				1,800	2013	Provides control volume
T	City's Share for Growth/Upsizing of Water Lines in Lee's Summit [6,7]	13,890 feet of 12 inch pipe	1,000				As Needed	Primarily 12" piping to be installed as development dictates
T14	WD 14's Share for Growth/Upsizing Along Hwy's in WD 14[6]							Primarily 12" piping to be installed as development dictates
	Hwy 50 Transmission Main (Church Rd. to Smart Rd.)	7,000 feet of 20 inch pipe		840			As Needed	Portion of the link to transmit water to WD 14 area and Hwy 7 Tank
	Hwy 50 Transmission Main (Smart Rd. to Hwy 7)	11,500 feet of 16 inch pipe		1,104			As Needed	Portion of the link to transmit water to WD 14 area and Hwy 7 Tank
	Hwy 7 Tank	1.5 MG Elevated Storage		1,125			As Needed	Provides peaking storage, fire protection and pressure stabilization (higher minimum pressures).
	Hwy 7 Transmission Main (Hwy 50 to Herring Rd.)	5,300 feet of 20 inch pipe		636			As Needed	Portion of the link to transmit water to WD 14 area and Hwy 7 Tank
	Miscelaneous 12" Water Lines	6,500 feet of 12 inch pipe		468			As Needed	Primarily 12" piping to be installed as development dictates
NA	Replacement/Repair[8]	12 inch pipe and smaller				500	As Needed	Replaces and/or repairs problematic small diameter piping.
NA	Water Lines Integral to Road Construction Projects	See Thoroughfare Master Plan			9,422		As Needed	Projects and costs are identified in the 2006 Thoroughfare Master Plan
NA	Annual Updates to the Water Master Plan					300	As Needed	Updates the planning criteria, projects and cost estimates.
		2016 Subtotals	**48,216**	**4,173**	**10,742**	**5,642**		
14	Lee's Summit Rd Transmission Main (Gregory to Lakewood Dr)	8,000 feet of 20 inch pipe	1,920				2018	Allows the capacity of East Terminal (21 MGD) to be recieved into the water system.
15	Pryor Rd Transmission Main (Scherer Rd to Longview Rd)	5,400 feet of 20 inch pipe	1,296				2020	Extends transmission capacity to the southwest.
NA	Tank Painting/Rehabilitation (Scherer, Hook, Ranson)					1,000	2021	Maintains investment in existing infrastructure.
16[9]	Hook Rd Transmission Main (Hook Tank to M-291)	7,000 feet of 30 inch pipe	2,520				2022	Transmits water from the Hook Road Tank to southeast.
17[9]	Blackwell Rd Transmission Main (Scruggs Rd to Coblem Rd)	5,300 feet of 36 inch pipe	2,290				2024	Transmits TCWA supply to the system.
18[9]	Scruggs Rd Transmission Main (Blackwell Rd to Jason Ave)	2,200 feet of 16 inch pipe	422				2024	Transmits TCWA supply to the system.
19[9]	Blackwell Rd Transmission Main (Langsford Rd to Scruggs Rd)	5,300 feet of 30 inch pipe	1,908				2024	Transmits TCWA supply to the system.
20[9]	Colbern Rd Pump Station	16.5 MGD Pump Station	6,600				2024	Pumps additional 16.5 MGD supply from TCWA into Lee's Summit.
21[9]	Colbern Rd Ground Storage	5.0 MG Ground Storage	4,500				2024	Stores the water that TCWA supplies.
22[9]	Langsford Rd Transmission Main (Todd George to Blackwell)	6,000 feet of 20 inch pipe	1,440				2024	Transmits TCWA supply to the system.
23[9]	Langsford Rd Transmission Main (Blackwell to Milton Thompson)	6,200 feet of 16 inch pipe	1,190				2024	Transmits TCWA supply to the system.
NA	TCWA Well Field and Treatment Plant	16.5 MGD Wells and Plant	46,200				2024	Provides raw water source for new 16.5 MGD supply from TCWA.
NA	TCWA Transmission Main upsizing	90,000 feet of 36 inch pipe	38,880				2024	Transmits 16.5 MGD from TCWA to I-70.
NA	TCWA Transmission Main	70,000 feet of 30 inch pipe	25,200				2024	Transmits 16.5 MGD from I-70 to Colbern Road Pump Station.
T	City's Share for Growth/Upsizing of Water Lines in Lee's Summit [6]	114,000 feet of 12 inch pipe	8,208				As Needed	Primarily 12" piping to be installed as development dictates.
T14	WD 14's Share for Growth/Upsizing in WD 14[6]	69,500 feet of 12 inch pipe		5,004			As Needed	Primarily 12" piping to be installed as development dictates
NA	Replacement/Repair[8]	12 inch pipe and smaller				1,700	As Needed	Replaces and/or repairs problematic small diameter piping 8" and less.[8]
NA	Water Lines Integral to Road Construction Projects	See Future Thoroughfare Master Plan			11,540		As Needed	Supports water line construction for new and existing roads.
NA	Annual Updates to the Water Master Plan					900	As Needed	Updates the planning criteria, projects and cost estimates.
		Ultimate Development Subtotals	**142,574**	**5,004**	**11,540**	**3,600**		

Notes

1. Projects are shown when needed to meet projected demand increases.
2. East Terminal adds 21 MGD but 7 MGD is lost at the Lee's Summit Rd. meters (Lakewood Blvd., Gregory Blvd., and Lee's Summit Rd.) for a net increase in supply of 14 MGD.
3. The opinions of probable cost are based on $12/inch/foot for pipe, $400,000/MGD for pumping, $0.90/gallon for ground storage and $1.50 /gallon for elevated storage. These include administration, land, engineering and construction.
4. September 2006 ENR Construction Cost Index for Kansas City is 8521.19. Future costs should be escalated using future ENR indexes.
5. Estimated cost is City's share of the upsizing from 8" to 16".
6. These projects are driven by the development market. The City or Water District 14 share is assumed at 50% of the total project cost. Values shown are just the City's or Water District 14's share of the total cost.
7. The value shown is based on historical upsizing costs from 1996 to 2006 of approximately $100,000 per year.
8. Cost shown is based on current budgetting of $50,000 per year.
9. Project is impacted if 2024 supply is different from TCWA near Colbern Road.

incorporate new information or deviations from the assumptions and projections.

8) Plan future projects using the typical time frames listed in Table 10.

Table 10 – Recommended Typical Schedule for Water System Projects (Months)

Project Type	Preliminary Design	Land Acquisition	Final Design	Construction[1]	Total Duration
Transmission Pipeline	3	9	3	8[1]	23
Tank or Pump Station	3	12	3	18[1]	36
Multi-jurisdictional	24	12	12	24[2]	72

Notes:

1. Includes 60 days for advertising and contract review.
2. Includes 90 days for advertising and contract review.