

## CONCLUSIONS

This Master Plan provides an orderly plan that accommodates growth, road construction, maintenance and replacement needs for the next ten years and beyond. Any changes in the assumptions, planning criteria or projections used for this plan will modify the resulting conclusions. Conclusions based on the stated assumptions, projections and analyses in this Master Plan include:

- 1) There are three viable water suppliers within reasonable proximity to Lee's Summit including the City of Kansas City, City of Independence and Tri-County Water Authority.
- 2) The existing supply and distribution systems are successfully and reliably meeting current demands, with the exception of District 14 where a few areas experience pressure below 40 pounds per square inch (psi) on the peak demand day and most of the area does not meet the fire flow criteria.
- 3) Additional supplies are anticipated to be needed by 2010, 2013 and 2024.
- 4) Lee's Summit has a Cooperative Agreement with Kansas City to develop the Jackson-Cass Transmission System through Phase IV. The Phase IV improvements to the Jackson-Cass Transmission System are needed by the year 2010.
- 5) The East Leg and East Terminal improvements to the Jackson-Cass Transmission System are being developed. These projects are needed to increase Lee's Summit's water supply by the year 2013.
- 6) Additional improvements are being developed by Kansas City for the Jackson-Cass Transmission System to achieve an ultimate capacity of 75 MGD to the South Terminal and East Terminal facilities.
- 7) Kansas City, Independence and Tri-County Water Authority continue to offer viable alternatives for meeting Lee's Summit's demand beyond the year 2024.

Tri-County Water Authority offers the advantage of providing a third supply source at a strategic point in the system.

- 8) Postponing development plans for the PRI properties in Lee's Summit defers about 3 MGD of average day demand and approximately 8 MGD of maximum day demand. The greatest impact is to delay the need for about 8 MGD of supply. Impacts to the distribution system are minimal.
- 9) Maximum day demands are projected to continue increasing by about 0.9 MGD per year. These maximum day demands are driving the need for capital improvements.
- 10) The Bowlin Road Storage Reservoir is nearing the end of its useful life. Replacement options include another ground storage tank or an elevated tank. The elevated tank has a higher capital cost and the ground tank has a higher energy cost for pumping. Assuming a new tank is constructed on the same site as the existing, the payback for the operational savings over the higher capital cost for an elevated tank is more than 45 years. A ground storage tank appears to be the best choice for life cycle cost and aesthetics. With increased maintenance, the existing tank may be kept in service for a few more years while the replacement project is developed.
- 11) Additional pumping capacity will be needed at the High Service Pump Station by 2013.
- 12) Several water system projects are needed to support growth, accommodate road construction projects (as described in the 2006 *Thoroughfare Master Plan*), maintain or replace existing facilities.
- 13) Every new development in Water District 14 has the potential to further degrade service to existing customers. Significant improvements are needed to accommodate future growth and to add fire flow protection.

14) The 10 year project costs in 2006 dollars are:

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|------------------------------------|----------------------------|
| a. Tap fee projects (Lee's Summit) | \$48.2 million (70%)       |
| b. Tap fee projects (WD 14)        | \$ 4.2 million (6%)        |
| c. Road projects                   | \$10.7 million (16%)       |
| d. Maintenance                     | <u>\$ 5.6 million (8%)</u> |
| e. <b>Total</b>                    | <b>\$68.7 million</b>      |

15) Among the \$48.2 million in tap fee projects, \$42.2 million is for supply related improvements and \$6 million is for distribution system.

16) Future decisions about water supply will impact the sizing of at least five major projects proposed to be constructed in the next 10 years. The total value of these projects is \$14.7 million. The two projects impacted before 2010 are the South Terminal Discharge Main and the 9 MG Low Head Storage Tank at South Terminal. Spending \$50,000 per year for replacement/repair of the existing system is a relatively low value for a system the size of Lee's Summit's. The estimated useful life of water system components is:

- Storage tanks at 40 to 50 years.
- Pump stations and electrical gear at 20 to 25 years.
- Ductile iron pipe at 40 to 80 years.
- Polyvinylchloride pipe at 40 plus years.