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MEMORANDUM

To: Public Works Committee and City Council

January 5, 2005

From: Public Works Director and Staff

**Re: Mall Ridge Area Sewer Status Report and Recommendations
Project SS03-1255 (CIP 50376)**

City Staff hereby recommends acceptance of the following reports by CETEC Engineering Services, Inc. entitled "Summary Report, Wastewater Flow Study, August 13, 2004", and "Summary Report, Preliminary Engineering Study- Mall Ridge Lift Station Improvements, November 19, 2004".

These reports provide data, analysis, and recommendations concerning the North Rapid (Haines Ave.) trunk sewer, odor control measures, and existing and proposed lift station and force main capacities and limitations within the Mall Ridge Area.

In summary, the reports provide the following observations, analysis and recommendations:

- 1) Flow studies performed indicate that I & I (inflow and infiltration) is within acceptable limits for the Mall Ridge area. No remediation of the existing sewer is necessary to prevent the transmission of storm water into the sanitary system.
- 2) Flow studies indicate that the North Rapid trunk sewer system has the potential for a peak hourly loading capacity of approximately 1800 gpm. Current peak loads within the system were measured at 950 gpm.
- 3) The current North Rapid sewer main is capacity-limited by two segments within the system near 1st and Philadelphia Streets, from 770 to 950 gpm. A project to correct this deficiency, and upgrade it to a minimum 1800 gpm capacity within these segments of the system, has been initiated. (CIP 50579).



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- 4) The downstream North Rapid trunk sewer system can receive no more than 750 gpm from the Mall Ridge area in order to avoid being overloaded. A 750 gpm pumping limit should be used as a guideline for designing an up-sized lift station and force main system.
- 5) The current pumping rate (290 gpm) at the lift station is at or near the instantaneous peak inflow rate measured. It is therefore currently adequate for the peak hour flow condition. However, based upon recommended DENR design criteria, the existing station is presently operating at or near its maximum capacity. At a minimum, a new or upgraded lift station will be needed in the near future.
- 6) A force main upsizing project to go from 6 inch to 8 inch from Viking to Northridge Drive is presently scheduled for the summer of 2005. Temporary throttling of the existing Mall Ridge pumps will be necessary to avoid electrical overload on the existing station pumps. A slight increase in lift station capacity will be realized with these changes.
- 7) It is important to note that less than 50% of the existing Mall Ridge basin area of 1800 acres can be served by an upgraded or replaced Lift Station system(s) (See item (4) above). Consideration for an enlarged basin can be discussed. However, the total number of dwelling units (2100 D.U.) which can be served by the system will remain the same. For comparison purposes, as of July, 2004, 728 D.U. have been constructed. The recommended peaking factor is in the consultant's report.
- 8) Master Plans call for a Northeast Area Interceptor to be constructed in the future to serve the Mall Ridge area by gravity service, all the way to the current Elk Vale Road Lift Station, at a cost of \$4-5 million. Subsequently, any lift station(s) and force mains within the Mall Ridge area would become obsolete and would be abandoned.
- 9) Growth rate projections for the area, based upon building permit data and other projections, indicate that the area that the lift station serves will likely be built out between the years 2017 to 2024. These dates coincide with the capacity limitations as identified within item 7) and 8) above. A comparison of a high growth rate (50% greater than the last 3 year average) versus a slower (or normal) growth rate can be seen in the attached charts provided by CETEC:
- 10) A design life of 20 years has been recommended by the consultant for an upgraded lift station.
- 11) Alternative Lift Station Sites Studied:
 - ✦ Five alternative Mall Ridge lift station sites were evaluated on the basis of capital cost, operating cost, compatibility with and cost of connection to the future Northeast Interceptor, service area size, and land use issues.
 - ✦ The vicinity of the Brookfield and West Nike No. 1 sites (sites 2 or 3) has been recommended for detailed evaluation and negotiation with the affected landowners. The total cost estimate for this location,

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including engineering fees, construction, oversize reimbursements, off-site improvements, start-up, and contingency is just under \$1 million. Value engineering will be performed to see where additional savings can be achieved during the final design stage of the project.

- ✚ Two sites evaluated further to the east, W. Nike Rd. No. 2 and LaCrosse (sites 4 or 5), have been determined to be not cost effective for further consideration (\$1.3 to 1.6 million).
- ✚ The existing Mall Ridge lift station (site 1) would not be upgraded but would be abandoned, upon start-up of a new facility, as part of this recommendation.

- 12) The expanded potential service area associated with sites 4 and 5 cannot be served if development within the existing Mallridge service area uses the available capacity. Council may choose to consider development restrictions if necessary in the future to allocate sewer service capacity equitably until construction of the Northeast Area Interceptor is completed.
- 13) Odor control efforts are underway as part of CETEC's recommendations to alleviate the formation of hydrogen sulfide within the City's force main systems. A pilot study (CIP 50583) has been approved and is in progress for the N. Elk Vale Lift station and force main systems. This technology will be incorporated into the Mall Ridge lift station upgrade project if the pilot study proves successful.