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August 25, 2004

Mr. Darryl Wong
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City of Milpitas
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Subject: City of Milpitas, Sewer Master Plan Revision

Dear Mr. Wong:

Raines, Melton & Carella, Inc. is pleased to submit this Sewer Master Plan Revision for the City of Milpitas. This Master Plan Revision documents a comprehensive evaluation of the capacity of the City's sanitary sewer system and recommends sanitary sewer system improvement projects, including estimated capital costs, and proposed priorities for construction.

We greatly appreciated the support and guidance that we received from the City's staff throughout the study. Your input and contributions was very important in developing the recommendations presented in this Sewer Master Plan Revision.

Sincerely,
RAINES, MELTON & CARELLA, INC.

Tom Richardson, P.E.
Principal

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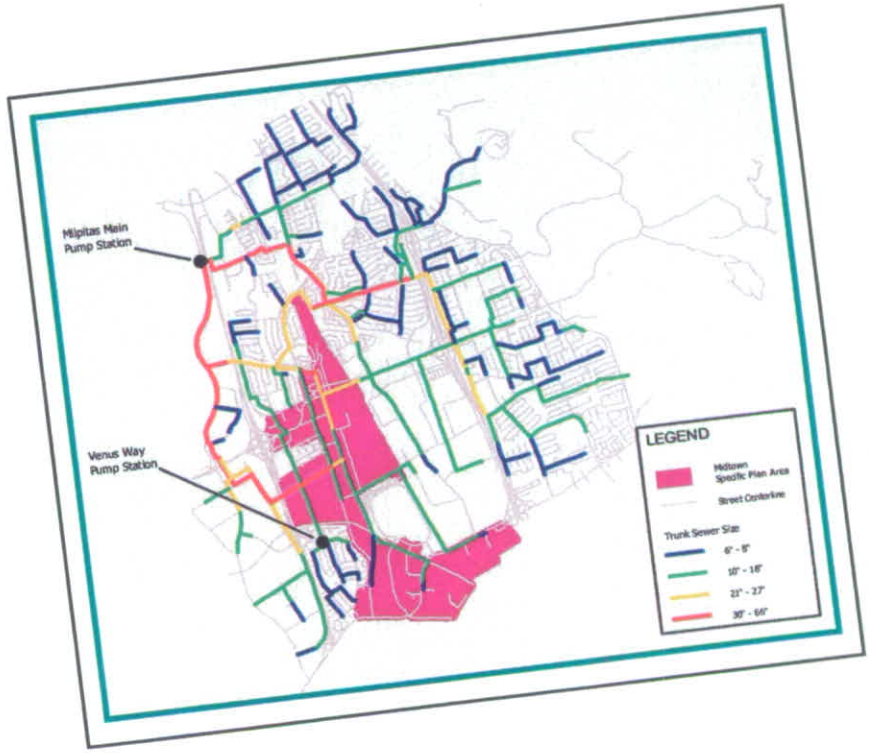

Sewer Master Plan

REPORT

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ABBREVIATIONS

ABAG	Association of Bay Area Government
ADWF	Average Dry Weather Flow
BWF	Base Wastewater Flow
CCI	Construction Cost Index
cfs	cubic feet per second
CIP	Capital Improvement Project
City	City of Milpitas
DU	Dwelling Unit
ENR	Engineering News Record
ft	feet
ft/s	feet per second
FY	Fiscal Year
gal	gallon
GIS	Geographical Information System
gpd	gallons per day
gpd/person	gallons per day per person
gpd/acre	gallons per day per acre
GWI	Groundwater Infiltration
in	inch
LF	Linear Feet
Main PS	Milpitas Main Pump Station
MG	million gallons
MGD	million gallons per day
NA	Not Applicable
PWWF	Peak Wet Weather Flow
RDI/I	Rainfall Dependent Infiltration and Inflow
sqft	square feet
SFPUC	San Francisco Public Utilities Commission
TM	Technical Memorandum
WPCP	San Jose/Santa Clara Water Pollution Control Plant

EXECUTIVE SUMMARY

The 2004 Sewer Master Plan Revision is a re-evaluation of the 2002 Sewer Master Plan (RMC, 2003) and provides information required for the City planning and financial efforts. The 2004 Sewer Master Plan Revision defines the sanitary sewer system improvements necessary to accommodate the City's future land use development plans to the year 2018 (buildout) including the Mid-town redevelopment as described in the 2001 Mid-town Specific Plan..

The objectives of the 2004 Sewer Master Plan Revision are fourfold:

1. Conduct a wet weather flow monitoring program,
2. Conduct a topographical survey of portions of the sewer system,
3. Update and calibrate the sewer system computer model under HYDRA Version 6.0, and,
4. Update the potential wet weather conveyance and pumping capacity deficiencies and associated 2002 Capital Improvement Program under existing (as of March 2004), near- (2008) and long- (2018) term conditions using the information from the wet weather flow monitoring and topographic survey data.

Capital Improvement Program

A summary of the sewer capital improvement projects that are recommended to correct potential wet weather conveyance and pumping capacity deficiencies under existing and future conditions is provided in Table ES-1 and is shown in Figure 7-1 on page 7-3. The specific timing and nature of improvement projects scheduled beyond FY 2008/2009 should be verified in future master plan updates or during preliminary design studies.

Table ES-1: Summary of Capital Improvement Projects

PROJECT	LOCATION	DESCRIPTION [a]	ESTIMATED CAPITAL COST ($1,000) [b]
IMMEDIATE (FY 04/05)			
10	Flow Diversion at Curtis Ave	• Construct diversion at N Main St and Curtis Ave • Construct 625 LF of 18-inch diameter sewer between S Main St and S Abel St	310
NEAR-TERM (FY 05/06 – FY 07/08)			
11 B	Great Mall Project (Great Mall Parkway)	• Replace 360 LF of 15-inch with 18-inch diameter sewer • Replace 1,820 LF of 10-inch with 18-inch diameter sewer • Replace 450 LF of 10-inch with 15-inch diameter sewer	1,250
11 C	Great Mall Project (Montague Expressway)	• Replace 885 LF of 10-inch with 12-inch diameter sewer • Replace 30 LF of 8-inch with 15-inch diameter sewer • Replace 325 LF of 8-inch with 12-inch diameter sewer	390
MID-TERM (FY 08/09 – FY09/10)			
11 A	Great Mall Project (South Main Street North of Great Mall Parkway)	• Replace 590 LF of 18-inch with 27-inch diameter sewer • Replace 370 LF of 12-inch with 27-inch diameter sewer	710
LONG-TERM (FY 10/11– FY 17/18)			
11 D	Great Mall Project (South Main Street south of Capitol Avenue)	• Replace 1,515 LF of 8-inch with 12-inch diameter sewer • Replace 270 LF of 8-inch with 10-inch diameter sewer	640
		GRAND TOTAL	**3,300**

a. Length of pipe is expressed in Linear Feet (LF) and is rounded to the nearest 5 feet
b. Expressed in FY 03/04 dollars. Rounded to the nearest $10,000.

The 2004 Master Plan Revision grand total CIP cost estimates are $3,300,000 in FY 03/04 dollars. The 2002 Master Plan had a grand total CIP cost estimates of $5,670,000 in FY 02/03 dollars which is equivalent to $6,000,000 in FY 03/04 dollars. By performing a flow monitoring program and conducting the topographic survey study (manhole rim and invert elevation survey), the City has been able to better define the projects needed and has saved a total of $2,700,000.

Additional Recommendations

Following are the recommendations that were developed related to the other objectives of this Master Plan Revision as well as recommendations relative to the capital improvement program implementation.

Dry Weather Capacity Needs at the WPCP

The City might exceed the capacity allotment at the WPCP in around 2015. Considering potential year-to-year peak dry weather flow variations of 10%, the capacity may be exceeded as early as 2010. Therefore, it is recommended that the City closely monitor its peak week dry weather flow. Depending on the peak week dry weather flow trend within the next ten years, the City should decide to engage negotiations with the WPCP and partner cities and districts on its allocated dry weather capacity.

Siphon Maintenance Issues

After comparing the costs of continued siphon cleaning to other solutions (e.g. lift stations, parallel pipelines, screw conveyors, grease trap/digesters), it is recommended that the City continue servicing the siphons according to the current maintenance schedule.

HYDRA Sanitary Sewer System Hydraulic Model

The HYDRA model should be updated periodically to reflect changes in the sewer system and revised flow information.

ACKNOWLEDGEMENT

The 2002 Sewer Master Plan and this 2004 Sewer Master Plan Revision represent a collaborative effort between RMC and the City of Milpitas. We would like to acknowledge and thank the following key personnel from the City whose invaluable knowledge, experience, and contributions were instrumental in the preparation of these Master Plans.

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