APPENDIX V

Mariposa Lakes Study on Sanitary Sewer Service

MARIPOSA LAKES
STUDY ON SANITARY
SEWER SERVICE

STOCKTON, CA

Prepared for:

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Job #2005 282201

August 8, 2006

MARIPOSA LAKES
STUDY ON SANITARY SEWER SERVICE
AUGUST 8, 2006

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MARIPOSA LAKES
STUDY ON SANITARY SEWER SERVICE
AUGUST 8, 2006

Introduction

Mariposa Lakes is a 3,810-acre project located in San Joaquin County, east of State Route 99 and south of State Route 4 (Farmington Road) on the eastern border of the City of Stockton. The development is bounded to the east by Kaiser Road and to the south by Mariposa Road. A variety of land use types is planned, including residential, educational, parks and recreation, commercial, and industrial. The development will include several lakes, a portion of Duck Creek and Little Johns Creek, an area dedicated to the Delta College, and an Amtrak Station. Exhibit 1 shows the designation areas and gross acreages for the proposed land uses, as provided by Randall Planning and Design, Inc.

At the request of the City of Stockton Municipal Utilities Department, this study will account for wastewater flows generated by the future development north of the project, totaling approximately 515 acres (refer to Exhibit 2). This area is located within San Joaquin County but is not included within the urban service boundary.

Purpose and Scope

This report has been prepared to present the findings of a study conducted by Stantec Consulting Inc. to identify existing and future City of Stockton (COS) wastewater facilities to provide service to the Mariposa Lakes project and to provide conceptual alignments of future collector and conveyance piping from the interior of the development to the City's existing sewer infrastructure and Regional Wastewater Control Facility (RWCF).

City of Stockton Wastewater Facilities

On February 18, 2005, Stantec Consulting Inc. staff met with COS staff to discuss the available capacity of the existing City wastewater collection system and to investigate possible connection points to the existing City infrastructure. At the meeting, it was determined that the nearest connection to existing City wastewater facilities is a 42-inch diameter collection System 8 sewer trunkline located south of the project area on Marfargoa Drive, as shown on Exhibit 2. The City has determined that the Mariposa Lakes project can use the available System 8 capacity as a temporary connection to the City collection system until the future collection System 12 is constructed. The existing trunk alignment and terminus at the COS RWCF are also shown on Exhibit 2. The available capacity of the 42-inch System 8 trunkline is unknown. Currently, the Stantec Sacramento office is conducting a modeling analysis to determine the available System 8 capacity with an estimated completion date in September 2006.

The current capacity of the RWCF is 42 MGD with a planned facility upgrade to a capacity of 48 MGD in 2006 (*City of Stockton 2035 General Plan, Draft Environmental Impact Report*). Estimated wastewater flows from buildout of the current City urban service boundary total approximately 52 MGD, per COS staff, not including the Mariposa Lakes project, as the project is outside of the urban service boundary. However, the urban service boundary is not presently developed to the intensity permitted by the existing General Plan. Ultimately, future improvements to the RWCF are necessary to service wastewater flows from the entire urban service boundary and the Mariposa Lakes project. The feasibility of the RWCF expansion is being considered in the *City of Stockton General Plan Update, 2035 Planning Horizon.*

New Wastewater Master Plans are currently being developed in conjunction with the current General Plan Update; however, these studies are not complete. Acceptance of wastewater flows into the existing City sewer collection system from the Mariposa Lakes project is contingent on a City Council-approved revision to the existing Sewer Master Plan (*Review of Preliminary Study on Water Service, Preliminary Study on Sanitary Sewer Service, and Preliminary Report for Master Storm Drainage Plan and Flood Control for the Mariposa Lakes Specific Plan*, City of Stockton, April 14, 2005).

Wastewater Generation Rates

The Mariposa Lakes project consist of 5 phases of development (refer to the Overall Phasing Plan by Randall Planning, Inc.) included in Appendix A. Ultimately, wastewater generated by the Mariposa Lakes project will be serviced by the future City collection System 12 that consists of a pumping station and force main system to the RWCF. For the interim, wastewater generated from initial phasing of the project will be collected by System 8. Phasing of the project will depend on the available collection System 8 capacity pending results from the current study being conducted by Stantec. Table 1 shows the wastewater generation rates for Phase 1 of the project. Refer to Exhibit 2 for the Phase 1 boundary and land use layout.

Table 1. Wastewater Generation Rates (Phase 1)

LAND USE	GROSS ACREAGE	NUMBER OF UNITS	AVERAGE FLOW DESIGN VALUE (GPD/UNIT)	AVERAGE FLOW PLANNING VALUE (GPD/AC)	I/I PLANNING VALUE (GPD/AC)	WASTEWATER FLOWS (MGD)		
						AVERAGE FLOW	I/I	Total PWWF
RESIDENTIAL DEVELOPMENT								
LOW DENSITY	358.5	1514	300	-	400	0.45	0.14	
MEDIUM DENSITY	237.4	2268	270	-	400	0.61	0.09	
HIGH DENSITY	30.6	765	270	-	400	0.21	0.01	
TOTAL	626.5	4,547				1.27	0.24	3.38
COMMERCIAL DEVELOPMENT								
OFFICE (30 PERCENT OF TOTAL)	17.7		-	2,400	400	0.04	0.01	
RETAIL (50 PERCENT OF TOTAL)	29.5		-	2,000	400	0.06	0.01	
EATING AND DRINKING (20 PERCENT OF TOTAL)	11.8		-	8,600	400	0.10	0.00	
TOTAL	59.0					0.20	0.02	0.49
EDUCATIONAL								
ELEMENTARY SCHOOL	33.0		-	1,800	400	0.06	0.01	
TOTAL	33.0					0.06	0.01	0.16
INDUSTRIAL								
INDUSTRIAL VILLAGE	9.8		-	3,000	400	0.03	0.00	
TOTAL	9.8					0.03	0.00	0.08
INSTITUTIONAL								
LIBRARY	3.3	-	-	2,400	400	0.01	0.00	
AMTRAK	13.1	-	-	2,400	400	0.03	0.01	
FIRE STATION	3.5	-	-	2,400	400	0.01	0.00	
TOTAL	19.9					0.05	0.01	0.14
PARKS/RECREATIONAL/OPEN SPACE								
COMMUNITY PARKS	22.6	-	-	-	400	-	0.01	
NEIGHBORHOOD PARKS	34.5	-	-	-	400	-	0.01	
SPORTS FACILITY/PARK	22.6	-	-	-	400	-	0.01	
CREEK	49.4	-	-	-	400	-	0.02	
GREENBELT	15.10	-	-	-	400	-	0.01	
EASEMENT	17.0	-	-	-	400	-	0.01	
TOTAL	161.1					0.00	0.07	0.16
MISCELLANEOUS								
LAKES	66.0	-	-	-	-	-	-	
ROADS	133.2	-	-	-	400	0.05	0.05	
EXISTING RESIDENTIAL	4.0	-	-	2,100	400	0.01	0.00	
TOTAL	203.2					0.06	0.05	0.25
TOTALS	1,112.5					1.67	0.40	4.66
					Peak Factor =	2.24		

Approximately 4.66 MGD PWWF will be generated by Phase 1 of the Mariposa Lakes project. It is anticipated that all or part of Phase 1 will utilize System 8, depending on results from the current capacity study.

Approximately 16.56 MGD PWWF will be generated by the Mariposa Lakes project and the future 515-acre residential development north of the project, as shown on Table 2.

Table 2. Wastewater Generation Rates

LAND USE	GROSS ACREAGE	NUMBER OF UNITS	AVERAGE FLOW DESIGN VALUE	AVERAGE FLOW PLANNING VALUE	I/I PLANNING VALUE (GPD/AC)	WASTEWATER FLOWS (MGD)		
						AVERAGE FLOW	I/I	Total PWWF
RESIDENTIAL DEVELOPMENT								
LOW DENSITY	1,072.5	4,360	300	-	400	1.31	0.43	
MEDIUM DENSITY	533.1	5,048	270	-	400	1.36	0.21	
HIGH DENSITY	57.3	1,406	270	-	400	0.38	0.02	
TOTAL	1,662.9	10,814				3.05	0.66	6.90
COMMERCIAL DEVELOPMENT								
OFFICE (30% OF TOTAL)	27.8	-	-	2,400	400	0.07	0.01	
RETAIL (50% OF TOTAL)	46.4	-	-	2,000	400	0.09	0.02	
EATING AND DRINKING (20% OF TOTAL)	18.5	-	-	8,600	400	0.16	0.01	
TOTAL	92.7					0.32	0.04	0.67
EDUCATIONAL								
ELEMENTARY SCHOOL	97.8	-	-	1,800	400	0.18	0.04	
HIGH SCHOOL	55.9	-	-	1,400	400	0.08	0.02	
DELTA COLLEGE	20.7	-	-	1,400	400	0.03	0.01	
TOTAL	174.4					0.29	0.07	0.67
INDUSTRIAL								
INDUSTRIAL VILLAGE	614.7	-	-	3,000	400	1.84	0.25	
BUSINESS/PROFESSIONAL	57.3	-	-	3,000	400	0.17	0.02	
TOTAL	672.0					2.01	0.27	4.24
PARKS/RECREATIONAL/OPEN SPACE								
COMMUNITY PARKS	119.0	-	-	-	400	-	0.05	
NEIGHBORHOOD PARKS	77.1	-	-	-	400	-	0.03	
SPORTS FACILITY/PARK	52.4	-	-	-	400	-	0.02	
CREEK	193.9	-	-	-	400	-	0.08	
GREENBELT	64.0	-	-	-	400	-	0.03	
EASEMENT	53.9	-	-	-	400	-	0.02	
TOTAL	560.3					0.00	0.23	0.43
INSTITUTIONAL								
LIBRARY	3.3	-	-	2,400	400	0.01	0.00	
AMTRAK	13.1	-	-	2,400	400	0.03	0.01	
FIRE STATION	3.5	-	-	2,400	400	0.01	0.00	
MAINTENANCE	5.2	-	-	2,400	400	0.01	0.00	
RELIGIOUS/INSTITUTIONAL	18.0	-	-	2,400	400	0.04	0.01	
TOTAL	43.1					0.10	0.02	0.22
MISCELLANEOUS								
LAKES	192.8	-	-	-	-	-	-	
ROADS	223.4	-	-	-	400	-	0.09	
RAILROAD	15.6	-	-	-	400	-	0.01	
PUBLIC UTILITIES	21.8	-	-	-	400	-	0.01	
EXISTING RESIDENTIAL (LOW DENSITY)	150.9	-	-	2,100	400	0.32	0.06	
FUTURE RESIDENTIAL (LOW DENSITY)	515.0	-	-	2,100	400	1.08	0.21	
TOTAL	1,119.5					1.40	0.38	3.32
TOTALS	**4,324.9**					**7.17**	**1.67**	**16.45**
					Peak Factor =	1.86		

Future Wastewater Facilities

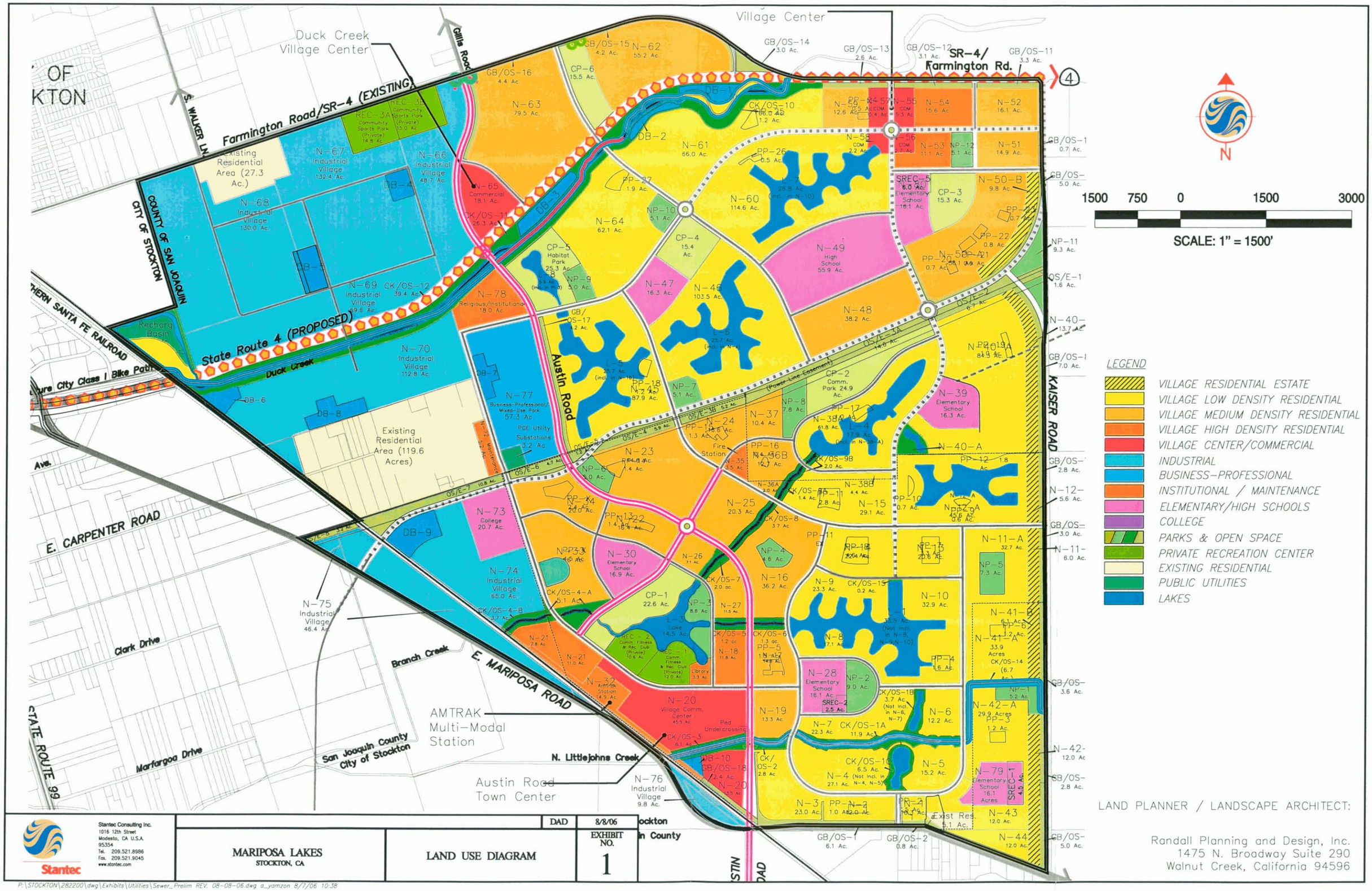
Future wastewater facilities for the project include interim collection and conveyance piping from initial phases of development, collection and conveyance piping for the entire development, and the future wastewater collection System 12 pumping station and dual force main system. It is estimated that an 18-inch interim trunkline will convey the interim wastewater flows to collection System 8 (anticipated to be all or part of the wastewater generated from the Phase 1 service area) from a junction located in the northwest boundary of the Phase 1 area. For the ultimate condition, the 18-inch interim trunkline will be terminated and wastewater flows from the initial phase of development will be conveyed to the future System 12. The final sewer plan and interim sewer layout are dependent on the final grading plan for the project. A sewer lift station may be required to convey wastewater plans from Phase 1 to the future collection System 12.

The proposed location of the future System 12 sewer pump station is at the northwest end of the project. The proposed alignment of the System 12 dual force main system to the COS RWCF is shown on Exhibit 2. It is estimated that the pump station will be sized to convey 16.56 MGD PWWF via two parallel 18-inch diameter force mains approximately 9 miles to the existing COS RWCF.

A tentative map for the project is currently in progress. The junction location and interim conveyance piping, as well as the location of the future System 12 pump station, is preliminary and the layout will depend on the final grading for the project. In addition, the proposed force main alignment is tentative and further site investigations are required to refine the alignment. A limited analysis on the future collection system will be conducted as part of the *City of Stockton General Plan Update, 2035 Planning Horizon.*

Conceptual pipeline alignments and sizes required to convey wastewater from the project to the existing COS wastewater collection System 8 (for the interim) and COS RWCF (ultimately), as well as the location of the interim connection point, are shown on Exhibit 3. Trunklines less than 10 inches in size are not shown on the exhibit. In accordance with City design standards, the minimum pipe size for gravity sewer will be 8 inches in diameter and the final design of gravity sewer lines will be of adequate depth to serve all future tributary areas.

EXHIBIT 1
LAND USE DIAGRAM



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	DAD	8/8/06	
MARIPOSA LAKES STOCKTON, CA	LAND USE DIAGRAM	EXHIBIT NO. 1	

LAND PLANNER / LANDSCAPE ARCHITECT:

Randall Planning and Design, Inc.
1475 N. Broadway Suite 290
Walnut Creek, California 94596

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EXHIBIT 2
EXISTING AND FUTURE WASTEWATER FACILITIES

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MARIPOSA LAKES STOCKTON, CA	EXISTING AND FUTURE WASTEWATER FACILITIES	DAD 8/8/2006 EXHIBIT NO. 2

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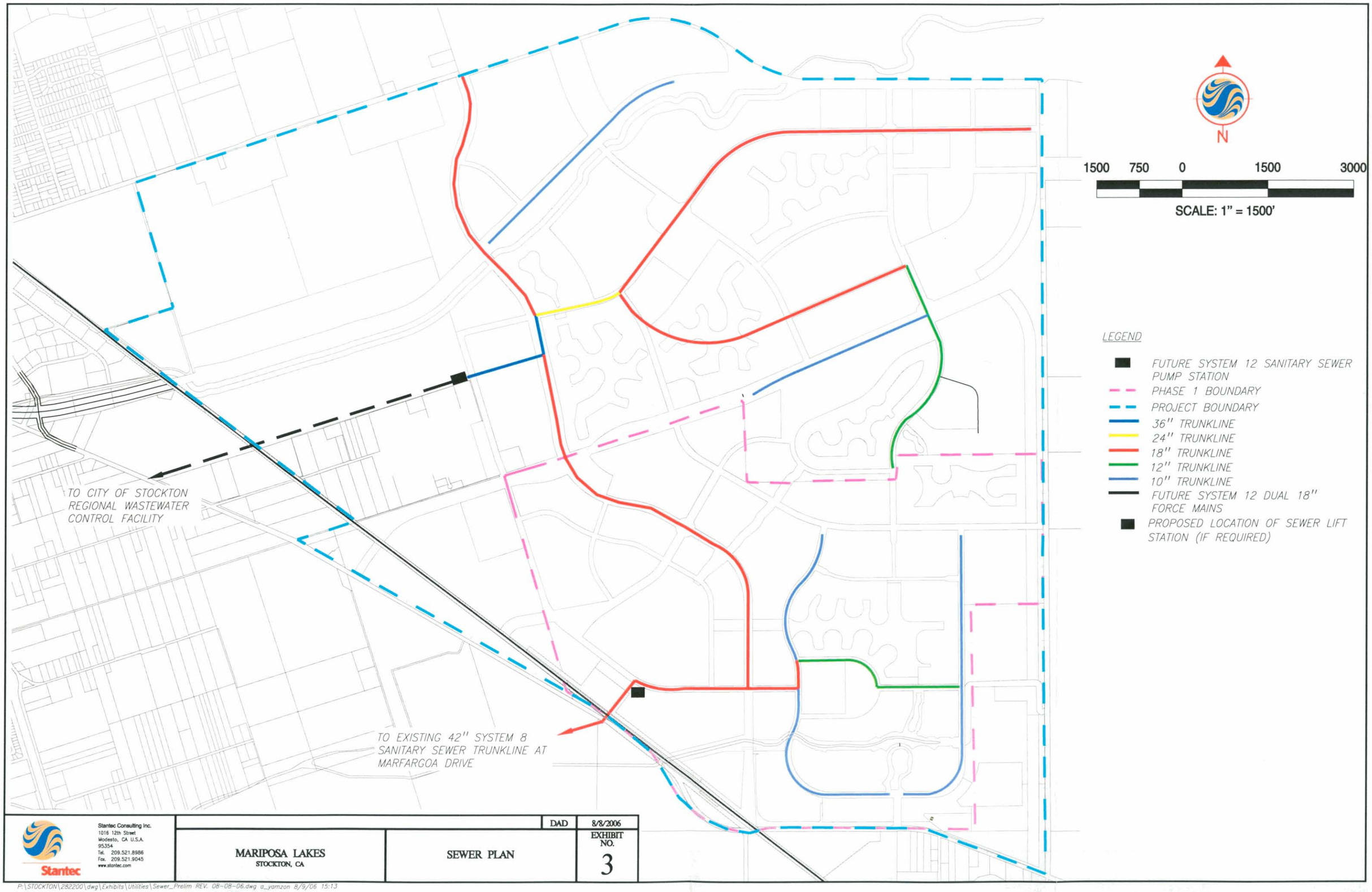
EXHIBIT 3
SEWER PLAN



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MARIPOSA LAKES STOCKTON, CA	SEWER PLAN	EXHIBIT NO. 3

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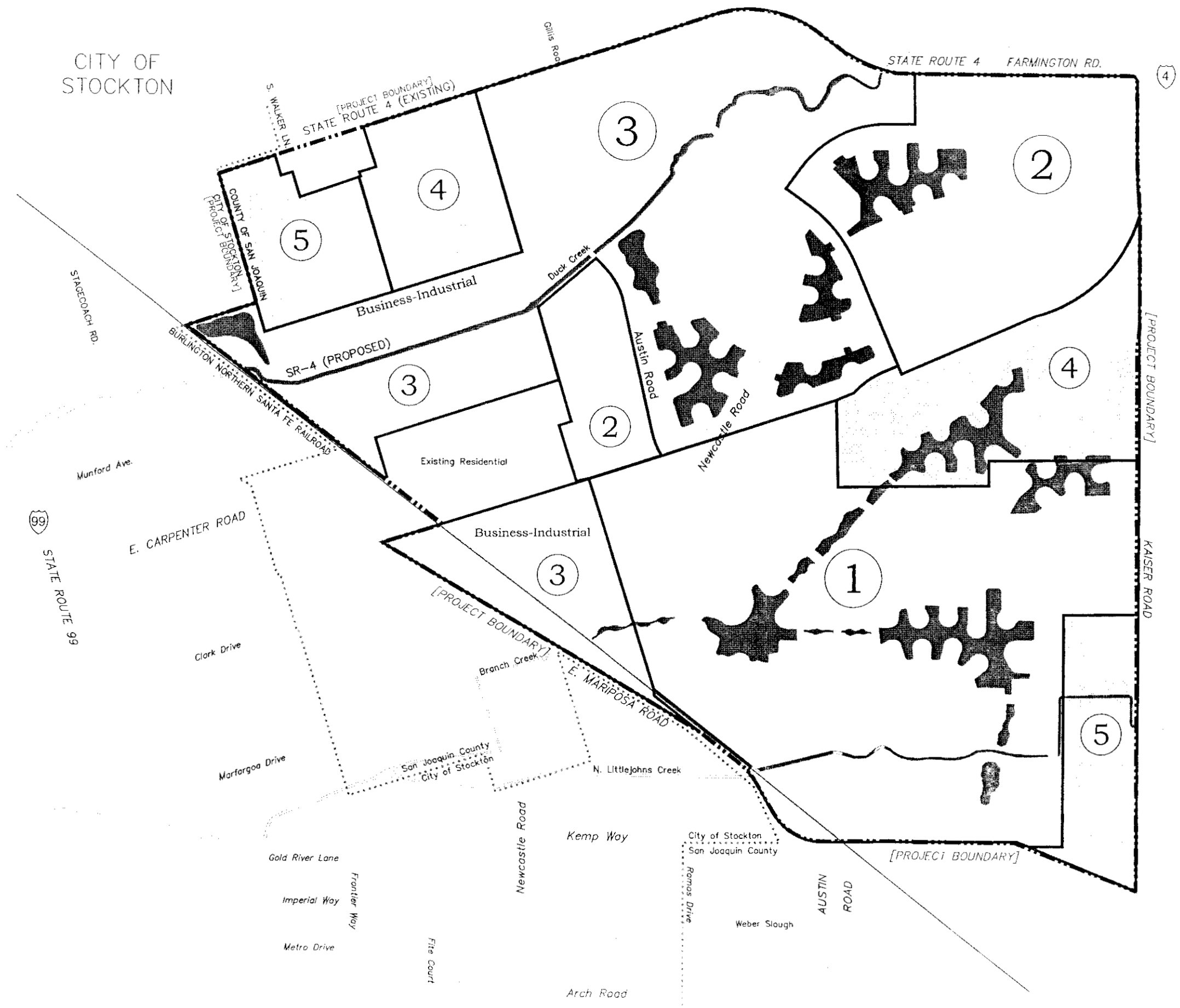
APPENDIX
MARIPOSA LAKES OVERALL PHASING PLAN

Mariposa Lakes
Stockton, California
Overall Phasing Plan

Key
Land Use
Project Boundary
Phasing Boundary



LAND PLANNER / LANDSCAPE ARCHITECT:

RANDALL PLANNING & DESIGN INC.
Landscape Architecture • Golf Course Architecture
Site and Environmental Planning

SCALE: 1" = 1800'

0 900 1800 3600 5400