

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

WELL SEARCH DISTANCE INFORMATION

<u>DATABASE</u>	<u>SEARCH DISTANCE (miles)</u>
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
1	USGS0168086	1/8 - 1/4 Mile WSW
2	USGS0168025	1/4 - 1/2 Mile NW
4	USGS0168028	1/2 - 1 Mile ENE
6	USGS0168099	1/2 - 1 Mile WNW
8	USGS0168083	1/2 - 1 Mile East

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
No PWS System Found		

Note: PWS System location is not always the same as well location.

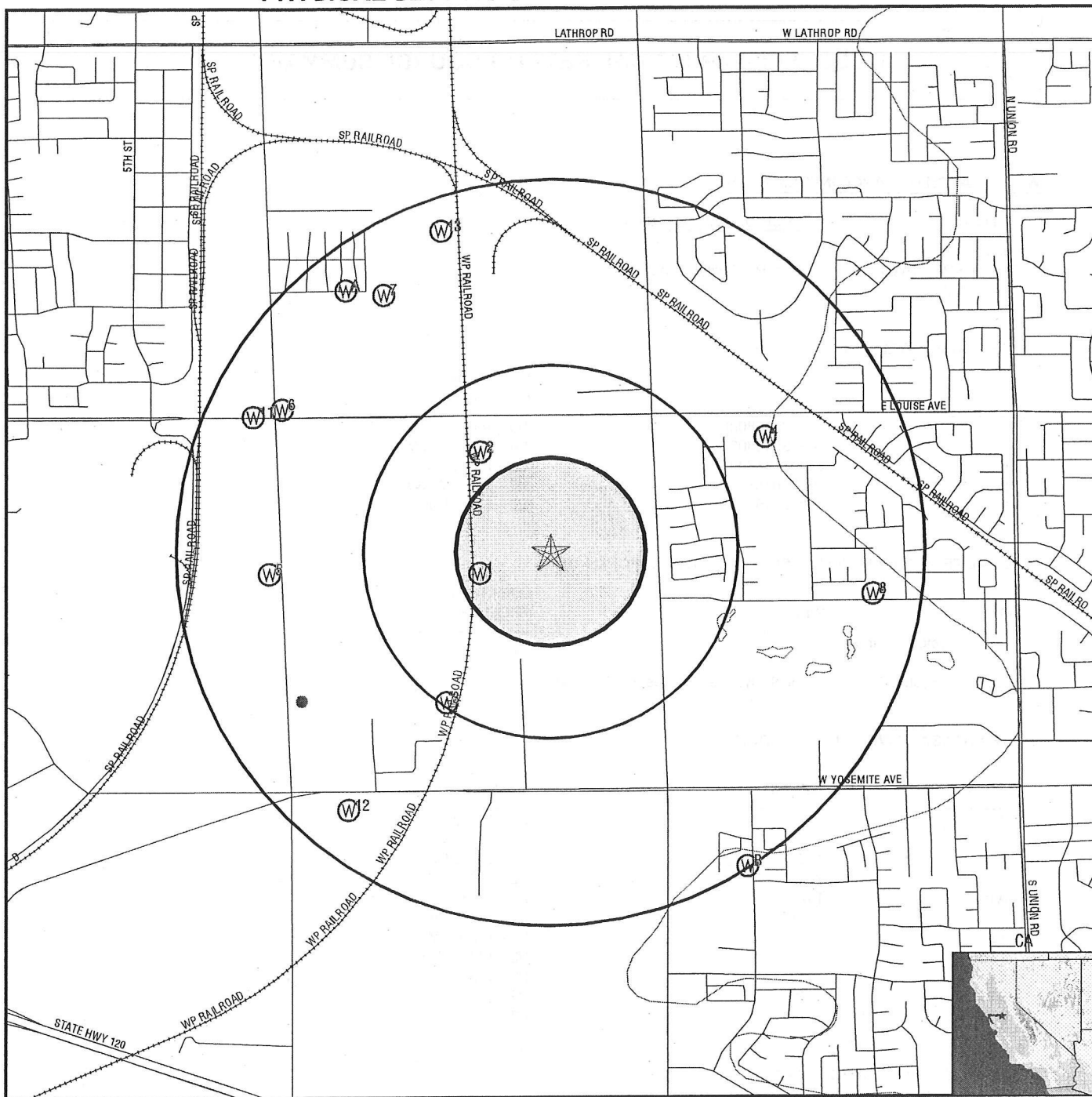
STATE DATABASE WELL INFORMATION

<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
3	19416	1/4 - 1/2 Mile SW
5	244	1/2 - 1 Mile West
7	1030	1/2 - 1 Mile NNW
A9	1031	1/2 - 1 Mile NW
A10	1028	1/2 - 1 Mile NW
11	19415	1/2 - 1 Mile WNW
12	2538	1/2 - 1 Mile SW
13	1027	1/2 - 1 Mile NNW
A14	1029	1/2 - 1 Mile NW
B15	19403	1/2 - 1 Mile SSE
B16	23161	1/2 - 1 Mile SSE

STATE OIL/GAS WELL INFORMATION

<u>DISTANCE FROM TP (Miles)</u>	<u>DISTANCE FROM TP (Miles)</u>
1/2 - 1 Mile WSW	

PHYSICAL SETTING SOURCE MAP - 01054813.1r



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location
- Closest Hydrogeological Data
- Oil, gas or related wells

TARGET PROPERTY: Villa Ticino West
 ADDRESS: Louise Avenue/Airport Way
 CITY/STATE/ZIP: Manteca CA 95337
 LAT/LONG: 37.8066 / 121.2579

CUSTOMER: Engeo
 CONTACT: Bryan C. Yates
 INQUIRY #: 01054813.1r
 DATE: September 26, 2003 7:23 pm

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database EDR ID Number

1

WSW
1/8 - 1/4 Mile
Lower

FED USGS USGS0168086

Agency:	USGS	Site ID:	374821121153701
Site Name:	001S006E36G001M		
Dec. Latitude:	37.80576		
Dec. Longitude:	-121.26133		
Coord Sys:	NAD83		
State:	CA		
County:	San Joaquin County		
Altitude:	20.00		
Hydrologic code:	18040005		
Topographic:	Valley flat		
Site Type:	Ground-water other than Spring		
Const Date:	19740726	Inven Date:	Not Reported
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	210		
Hole depth:	215	Source:	Not Reported
Project no:	Not Reported		

2

NW
1/4 - 1/2 Mile
Higher

FED USGS USGS0168025

Agency:	USGS	Site ID:	374838121153701
Site Name:	001S006E36B001M		
Dec. Latitude:	37.81048		
Dec. Longitude:	-121.26133		
Coord Sys:	NAD83		
State:	CA		
County:	San Joaquin County		
Altitude:	25.00		
Hydrologic code:	18040005		
Topographic:	Valley flat		
Site Type:	Ground-water other than Spring		
Const Date:	19740129	Inven Date:	Not Reported
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	210		
Hole depth:	210	Source:	Not Reported
Project no:	Not Reported		

3

SW
1/4 - 1/2 Mile
Lower

CA WELLS 19416

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Water System Information:

Prime Station Code:	3910015-008	User ID:	PTA
FRDS Number:	3910015008	County:	San Joaquin
District Number:	10	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	374803.0 1211543.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 09		
System Number:	3910015		
System Name:	City of Lathrop		
Organization That Operates System:	16775 S. HWOLAND RD., SUITE 1 LATHROP, CA 95330		
Pop Served:	8429	Connections:	2213
Area Served:	LATHROP		

Sample Information: * Only Findings Above Detection Level Are Listed

Sample Collected:	06/22/1994	Findings:	440.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	06/22/1994	Findings:	7.900
Chemical:	PH (LABORATORY)		
Sample Collected:	06/22/1994	Findings:	160.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO3)		
Sample Collected:	06/22/1994	Findings:	200.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06/22/1994	Findings:	160.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO3)		
Sample Collected:	06/22/1994	Findings:	46.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	06/22/1994	Findings:	11.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06/22/1994	Findings:	37.000 MG/L
Chemical:	SODIUM		
Sample Collected:	06/22/1994	Findings:	1.000
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	06/22/1994	Findings:	3.000 MG/L
Chemical:	POTASSIUM		
Sample Collected:	06/22/1994	Findings:	30.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	06/22/1994	Findings:	18.000 UG/L
Chemical:	ARSENIC		
Sample Collected:	06/22/1994	Findings:	170.000 UG/L
Chemical:	BARIUM		
Sample Collected:	06/22/1994	Findings:	.200 UG/L
Chemical:	BORON		
Sample Collected:	06/22/1994	Findings:	5.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	06/22/1994	Findings:	2.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	06/22/1994	Findings:	280.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06/22/1994	Findings:	.300
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	06/22/1994	Findings:	4.700 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/22/1994	Findings:	12.000
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)		
Sample Collected:	06/22/1994	Findings:	1100.000 UG/L
Chemical:	NITRATE + NITRITE (AS N)		
Sample Collected:	09/22/1994	Findings:	4.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	09/22/1994	Findings:	1.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	12/19/1994	Findings:	3.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	12/19/1994	Findings:	2.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	12/19/1994	Findings:	4.000 PCI/L
Chemical:	URANIUM		
Sample Collected:	12/19/1994	Findings:	2.000 PCI/L
Chemical:	URANIUM COUNTING ERROR		
Sample Collected:	03/21/1995	Findings:	3.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	03/21/1995	Findings:	2.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	03/21/1995	Findings:	8.000 PCI/L
Chemical:	URANIUM		
Sample Collected:	03/21/1995	Findings:	2.000 PCI/L
Chemical:	URANIUM COUNTING ERROR		
Sample Collected:	06/27/1995	Findings:	7.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	06/27/1995	Findings:	2.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	06/27/1995	Findings:	3.000 PCI/L
Chemical:	URANIUM		
Sample Collected:	06/27/1995	Findings:	2.000 PCI/L
Chemical:	URANIUM COUNTING ERROR		
Sample Collected:	09/12/1995	Findings:	1.000 PCI/L
Chemical:	URANIUM COUNTING ERROR		
Sample Collected:	01/23/1996	Findings:	9.400 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04/19/1996	Findings:	8.500 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	10/15/1996	Findings:	9.600 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04/21/1997	Findings:	470.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	04/21/1997	Findings:	6.200
Chemical:	PH (LABORATORY)		
Sample Collected:	04/21/1997	Findings:	180.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO3)		
Sample Collected:	04/21/1997	Findings:	220.000 MG/L
Chemical:	BICARBONATE ALKALINITY		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	04/21/1997	Findings:	31.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	04/21/1997	Findings:	300.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04/21/1997	Findings:	10.000 MG/L
Chemical:	NITRATE (AS NO3)		

4
ENE
1/2 - 1 Mile
Higher

FED USGS USGS0168028

Agency:	USGS	Site ID:	374840121144701
Site Name:	001S007E31C001M		
Dec. Latitude:	37.81104		
Dec. Longitude:	-121.24744		
Coord Sys:	NAD83		
State:	CA		
County:	San Joaquin County		
Altitude:	27.00		
Hydrologic code:	18040005		
Topographic:	Valley flat		
Site Type:	Ground-water other than Spring		
Const Date:	19510601	Inven Date:	Not Reported
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	88.0		
Hole depth:	120	Source:	Not Reported
Project no:	Not Reported		

5
West
1/2 - 1 Mile
Lower

CA WELLS 244

Water System Information:

Prime Station Code:	01N/06E-35H01 M	User ID:	39C
FRDS Number:	3901115001	County:	San Joaquin
District Number:	69	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	374821.0 1211614.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 01		
System Number:	3901115		
System Name:	JR SIMPLOT CO		
Organization That Operates System:	Not Reported		
Pop Served:	Unknown, Small System	Connections:	Unknown, Small System
Area Served:	Not Reported		

6
WNW
1/2 - 1 Mile
Higher

FED USGS USGS0168099

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Agency:	USGS	Site ID:	374844121161201
Site Name:	001S006E25N001M		
Dec. Latitude:	37.81215		
Dec. Longitude:	-121.27105		
Coord Sys:	NAD83		
State:	CA		
County:	San Joaquin County		
Altitude:	25.00		
Hydrologic code:	18040005		
Topographic:	Valley flat		
Site Type:	Ground-water other than Spring		
Const Date:	19530301	Inven Date:	Not Reported
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	50.0		
Hole depth:	60.0	Source:	Not Reported
Project no:	Not Reported		

7
NNW
1/2 - 1 Mile
Lower

CA WELLS 1030

Water System Information:

Prime Station Code:	01S/06E-25M04 M	User ID:	PTA
FRDS Number:	3910015006	County:	San Joaquin
District Number:	10	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	374900.0 1211554.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 07		
System Number:	3910015		
System Name:	City of Lathrop		
Organization That Operates System:	16775 S. HWOLAND RD., SUITE 1 LATHROP, CA 95330		
Pop Served:	8429	Connections:	2213
Area Served:	LATHROP		

Sample Information: * Only Findings Above Detection Level Are Listed

Sample Collected:	01/24/1991	Findings:	380.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	01/24/1991	Findings:	8.000
Chemical:	PH (LABORATORY)		
Sample Collected:	01/24/1991	Findings:	112.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO3)		
Sample Collected:	01/24/1991	Findings:	137.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01/24/1991	Findings:	116.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO3)		
Sample Collected:	01/24/1991	Findings:	33.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	01/24/1991	Findings:	8.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01/24/1991	Findings:	40.000 MG/L
Chemical:	SODIUM		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	01/24/1991	Findings:	3.000 MG/L
Chemical:	POTASSIUM		
Sample Collected:	01/24/1991	Findings:	38.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	01/24/1991	Findings:	30.000 UG/L
Chemical:	ARSENIC		
Sample Collected:	01/24/1991	Findings:	200.000 UG/L
Chemical:	BARIUM		
Sample Collected:	01/24/1991	Findings:	2.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	01/24/1991	Findings:	1.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	01/24/1991	Findings:	2.000 PCI/L
Chemical:	GROSS BETA COUNTING ERROR		
Sample Collected:	01/24/1991	Findings:	3.000 PCI/L
Chemical:	URANIUM		
Sample Collected:	01/24/1991	Findings:	.040 UG/L
Chemical:	FOAMING AGENTS (MBAS)		
Sample Collected:	01/24/1991	Findings:	276.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01/24/1991	Findings:	8.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	08/06/1992	Findings:	2.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	08/06/1992	Findings:	1.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	11/06/1992	Findings:	4.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	11/06/1992	Findings:	1.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	03/15/1993	Findings:	380.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	03/15/1993	Findings:	7.900
Chemical:	PH (LABORATORY)		
Sample Collected:	03/15/1993	Findings:	128.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO3)		
Sample Collected:	03/15/1993	Findings:	156.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03/15/1993	Findings:	107.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO3)		
Sample Collected:	03/15/1993	Findings:	33.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	03/15/1993	Findings:	6.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03/15/1993	Findings:	41.000 MG/L
Chemical:	SODIUM		
Sample Collected:	03/15/1993	Findings:	4.000 MG/L
Chemical:	POTASSIUM		
Sample Collected:	03/15/1993	Findings:	31.000 MG/L
Chemical:	CHLORIDE		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	03/15/1993	Findings:	33.000 UG/L
Chemical:	ARSENIC		
Sample Collected:	03/15/1993	Findings:	160.000 UG/L
Chemical:	BARIUM		
Sample Collected:	03/15/1993	Findings:	310.000 UG/L
Chemical:	ALUMINUM		
Sample Collected:	03/15/1993	Findings:	260.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03/15/1993	Findings:	9.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03/15/1993	Findings:	.300 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	01/23/1996	Findings:	510.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	01/23/1996	Findings:	7.800
Chemical:	PH (LABORATORY)		
Sample Collected:	01/23/1996	Findings:	210.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO3)		
Sample Collected:	01/23/1996	Findings:	250.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01/23/1996	Findings:	1.300 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	01/23/1996	Findings:	160.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO3)		
Sample Collected:	01/23/1996	Findings:	44.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	01/23/1996	Findings:	12.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01/23/1996	Findings:	45.000 MG/L
Chemical:	SODIUM		
Sample Collected:	01/23/1996	Findings:	2.000
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	01/23/1996	Findings:	4.000 MG/L
Chemical:	POTASSIUM		
Sample Collected:	01/23/1996	Findings:	37.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	01/23/1996	Findings:	.200 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	01/23/1996	Findings:	22.000 UG/L
Chemical:	ARSENIC		
Sample Collected:	01/23/1996	Findings:	190.000 UG/L
Chemical:	BARIUM		
Sample Collected:	01/23/1996	Findings:	.200 UG/L
Chemical:	BORON		
Sample Collected:	01/23/1996	Findings:	160.000 UG/L
Chemical:	IRON		
Sample Collected:	01/23/1996	Findings:	3.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	01/23/1996	Findings:	1.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	01/23/1996	Findings:	320.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01/23/1996	Findings:	.300
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	01/23/1996	Findings:	5.600 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01/23/1996	Findings:	5.200 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	01/23/1996	Findings:	12.200
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)		
Sample Collected:	04/19/1996	Findings:	2.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	04/19/1996	Findings:	1.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	04/19/1996	Findings:	9.600 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07/16/1996	Findings:	5.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	07/16/1996	Findings:	1.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	07/16/1996	Findings:	8.100 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	10/15/1996	Findings:	2.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		

8
East
1/2 - 1 Mile
Higher

FED USGS USGS0168083

Agency:	USGS	Site ID:	374818121142801
Site Name:	001S007E31G001M		
Dec. Latitude:	37.80493		
Dec. Longitude:	-121.24216		
Coord Sys:	NAD83		
State:	CA		
County:	San Joaquin County		
Altitude:	27.00		
Hydrologic code:	18040005		
Topographic:	Valley flat		
Site Type:	Ground-water other than Spring		
Const Date:	19720912	Inven Date:	Not Reported
Well Type:	Single well, other than collector or Ranney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	150		
Hole depth:	150		
Project no:	Not Reported	Source:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database EDR ID Number

A9
NW
1/2 - 1 Mile
Lower

CA WELLS 1031

Water System Information:

Prime Station Code:	01S/06E-26H01 M	User ID:	PTA
FRDS Number:	3910015001	County:	San Joaquin
District Number:	10	Station Type:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type:	Well/Groundwater	Well Status:	Destroyed
Source Lat/Long:	374900.0 1211600.0	Precision:	Undefined
Source Name:	WELL 01 - DESTROYED		
System Number:	3910015		
System Name:	City of Lathrop		
Organization That Operates System:	16775 S. HWOLAND RD., SUITE 1 LATHROP, CA 95330		
Pop Served:	8429	Connections:	2213
Area Served:	LATHROP		

A10
NW
1/2 - 1 Mile
Lower

CA WELLS 1028

Water System Information:

Prime Station Code:	01S/06E-25M02 M	User ID:	PTA
FRDS Number:	3910015003	County:	San Joaquin
District Number:	10	Station Type:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type:	Well/Groundwater	Well Status:	Destroyed
Source Lat/Long:	374900.0 1211600.0	Precision:	Undefined
Source Name:	WELL 04 - DESTROYED		
System Number:	3910015		
System Name:	City of Lathrop		
Organization That Operates System:	16775 S. HWOLAND RD., SUITE 1 LATHROP, CA 95330		
Pop Served:	8429	Connections:	2213
Area Served:	LATHROP		

Sample Information: * Only Findings Above Detection Level Are Listed

Sample Collected:	09/06/1985	Findings:	524.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	09/06/1985	Findings:	8.100
Chemical:	PH (LABORATORY)		
Sample Collected:	09/06/1985	Findings:	140.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO3)		
Sample Collected:	09/06/1985	Findings:	160.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO3)		
Sample Collected:	09/06/1985	Findings:	41.599 MG/L
Chemical:	CALCIUM		
Sample Collected:	09/06/1985	Findings:	13.600 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	09/06/1985	Findings:	42.799 MG/L
Chemical:	SODIUM		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	09/06/1985	Findings:	90.599 MG/L
Chemical:	CHLORIDE		
Sample Collected:	09/06/1985	Findings:	.210 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	09/06/1985	Findings:	20.000 UG/L
Chemical:	ARSENIC		
Sample Collected:	09/06/1985	Findings:	11.800 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	09/06/1985	Findings:	.110 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	11/12/1987	Findings:	8.100 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	11/12/1987	Findings:	2.200 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	03/09/1988	Findings:	1.800 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	03/09/1988	Findings:	.600 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	09/08/1988	Findings:	10.000 UNITS
Chemical:	COLOR		
Sample Collected:	09/08/1988	Findings:	554.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	09/08/1988	Findings:	7.500
Chemical:	PH (LABORATORY)		
Sample Collected:	09/08/1988	Findings:	223.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO3)		
Sample Collected:	09/08/1988	Findings:	223.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	09/08/1988	Findings:	168.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO3)		
Sample Collected:	09/08/1988	Findings:	39.800 MG/L
Chemical:	CALCIUM		
Sample Collected:	09/08/1988	Findings:	16.600 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	09/08/1988	Findings:	38.900 MG/L
Chemical:	SODIUM		
Sample Collected:	09/08/1988	Findings:	5.000 MG/L
Chemical:	POTASSIUM		
Sample Collected:	09/08/1988	Findings:	50.900 MG/L
Chemical:	CHLORIDE		
Sample Collected:	09/08/1988	Findings:	.190 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	09/08/1988	Findings:	20.900 UG/L
Chemical:	ARSENIC		
Sample Collected:	09/08/1988	Findings:	195.000 UG/L
Chemical:	BARIUM		
Sample Collected:	09/08/1988	Findings:	409.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	09/08/1988	Findings:	10.300 MG/L
Chemical:	NITRATE (AS NO3)		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	09/08/1988	Findings:	4.300 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	09/26/1988	Findings:	2.530 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	09/26/1988	Findings:	3.290 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	12/05/1988	Findings:	5.670 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	12/05/1988	Findings:	2.950 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	12/05/1988	Findings:	5.670 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	12/05/1988	Findings:	2.950 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	02/23/1989	Findings:	13.350 PCI/L
Chemical:	GROSS BETA COUNTING ERROR		

11
WNW
1/2 - 1 Mile
Higher

CA WELLS 19415

Water System Information:

Prime Station Code:	3910015-007	User ID:	PTA
FRDS Number:	3910015007	County:	San Joaquin
District Number:	10	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	374843.0 1211617.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 08		
System Number:	3910015		
System Name:	City of Lathrop		
Organization That Operates System:	16775 S. HWOLAND RD., SUITE 1 LATHROP, CA 95330		
Pop Served:	8429	Connections:	2213
Area Served:	LATHROP		

Sample Information: * Only Findings Above Detection Level Are Listed

Sample Collected:	11/06/1992	Findings:	4.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	11/06/1992	Findings:	1.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	03/15/1993	Findings:	600.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	03/15/1993	Findings:	7.800
Chemical:	PH (LABORATORY)		
Sample Collected:	03/15/1993	Findings:	217.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO3)		
Sample Collected:	03/15/1993	Findings:	265.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03/15/1993	Findings:	233.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO3)		
Sample Collected:	03/15/1993	Findings:	62.000 MG/L
Chemical:	CALCIUM		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	03/15/1993	Findings:	19.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03/15/1993	Findings:	50.000 MG/L
Chemical:	SODIUM		
Sample Collected:	03/15/1993	Findings:	5.000 MG/L
Chemical:	POTASSIUM		
Sample Collected:	03/15/1993	Findings:	28.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	03/15/1993	Findings:	19.000 UG/L
Chemical:	ARSENIC		
Sample Collected:	03/15/1993	Findings:	370.000 UG/L
Chemical:	BARIUM		
Sample Collected:	03/15/1993	Findings:	280.000 UG/L
Chemical:	ALUMINUM		
Sample Collected:	03/15/1993	Findings:	5.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	03/15/1993	Findings:	1.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	03/15/1993	Findings:	360.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03/15/1993	Findings:	.500
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	03/15/1993	Findings:	26.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03/15/1993	Findings:	.200 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	06/09/1993	Findings:	570.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	06/09/1993	Findings:	7.900
Chemical:	PH (LABORATORY)		
Sample Collected:	06/09/1993	Findings:	222.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO3)		
Sample Collected:	06/09/1993	Findings:	271.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06/09/1993	Findings:	205.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO3)		
Sample Collected:	06/09/1993	Findings:	59.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	06/09/1993	Findings:	14.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06/09/1993	Findings:	48.000 MG/L
Chemical:	SODIUM		
Sample Collected:	06/09/1993	Findings:	26.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	06/09/1993	Findings:	18.000 UG/L
Chemical:	ARSENIC		
Sample Collected:	06/09/1993	Findings:	340.000 UG/L
Chemical:	BARIUM		
Sample Collected:	06/09/1993	Findings:	150.000 UG/L
Chemical:	IRON		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	06/09/1993	Findings:	360.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06/09/1993	Findings:	.500
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	06/09/1993	Findings:	27.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/09/1993	Findings:	2.100 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	09/29/1993	Findings:	580.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	09/29/1993	Findings:	7.800
Chemical:	PH (LABORATORY)		
Sample Collected:	09/29/1993	Findings:	281.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO3)		
Sample Collected:	09/29/1993	Findings:	343.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	09/29/1993	Findings:	232.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO3)		
Sample Collected:	09/29/1993	Findings:	70.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	09/29/1993	Findings:	14.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	09/29/1993	Findings:	59.000 MG/L
Chemical:	SODIUM		
Sample Collected:	09/29/1993	Findings:	46.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	09/29/1993	Findings:	16.000 UG/L
Chemical:	ARSENIC		
Sample Collected:	09/29/1993	Findings:	360.000 UG/L
Chemical:	BARIUM		
Sample Collected:	09/29/1993	Findings:	140.000 UG/L
Chemical:	IRON		
Sample Collected:	09/29/1993	Findings:	430.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	09/29/1993	Findings:	.600
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	09/29/1993	Findings:	24.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03/16/1994	Findings:	600.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	03/16/1994	Findings:	7.700
Chemical:	PH (LABORATORY)		
Sample Collected:	03/16/1994	Findings:	230.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO3)		
Sample Collected:	03/16/1994	Findings:	280.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03/16/1994	Findings:	6300.000 UG/L
Chemical:	NITRATE NITROGEN (NO3-N)		
Sample Collected:	03/16/1994	Findings:	200.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO3)		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	03/16/1994	Findings:	59.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	03/16/1994	Findings:	13.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03/16/1994	Findings:	47.000 MG/L
Chemical:	SODIUM		
Sample Collected:	03/16/1994	Findings:	1.000
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	03/16/1994	Findings:	4.000 MG/L
Chemical:	POTASSIUM		
Sample Collected:	03/16/1994	Findings:	33.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	03/16/1994	Findings:	18.000 UG/L
Chemical:	ARSENIC		
Sample Collected:	03/16/1994	Findings:	340.000 UG/L
Chemical:	BARIUM		
Sample Collected:	03/16/1994	Findings:	.200 UG/L
Chemical:	BORON		
Sample Collected:	03/16/1994	Findings:	110.000 UG/L
Chemical:	ALUMINUM		
Sample Collected:	03/16/1994	Findings:	410.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03/16/1994	Findings:	.400
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	03/16/1994	Findings:	28.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03/16/1994	Findings:	12.000
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)		
Sample Collected:	03/16/1994	Findings:	6300.000 UG/L
Chemical:	NITRATE + NITRITE (AS N)		
Sample Collected:	12/19/1994	Findings:	9.000 PCI/L
Chemical:	URANIUM		
Sample Collected:	12/19/1994	Findings:	2.000 PCI/L
Chemical:	URANIUM COUNTING ERROR		
Sample Collected:	01/30/1996	Findings:	32.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04/19/1996	Findings:	6.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	04/19/1996	Findings:	2.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	04/19/1996	Findings:	6.000 PCI/L
Chemical:	URANIUM		
Sample Collected:	04/19/1996	Findings:	27.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04/19/1996	Findings:	1.000 PCI/L
Chemical:	URANIUM COUNTING ERROR		
Sample Collected:	07/16/1996	Findings:	9.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	07/16/1996	Findings:	2.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	07/16/1996	Findings:	7.000 PCI/L
Chemical:	URANIUM		
Sample Collected:	07/16/1996	Findings:	29.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07/16/1996	Findings:	1.000 PCI/L
Chemical:	URANIUM COUNTING ERROR		
Sample Collected:	10/15/1996	Findings:	5.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	10/15/1996	Findings:	2.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	10/15/1996	Findings:	5.000 PCI/L
Chemical:	URANIUM		
Sample Collected:	10/15/1996	Findings:	30.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	10/15/1996	Findings:	1.000 PCI/L
Chemical:	URANIUM COUNTING ERROR		
Sample Collected:	01/24/1997	Findings:	660.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	01/24/1997	Findings:	7.400
Chemical:	PH (LABORATORY)		
Sample Collected:	01/24/1997	Findings:	260.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO3)		
Sample Collected:	01/24/1997	Findings:	320.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01/24/1997	Findings:	234.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO3)		
Sample Collected:	01/24/1997	Findings:	67.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	01/24/1997	Findings:	17.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01/24/1997	Findings:	51.000 MG/L
Chemical:	SODIUM		
Sample Collected:	01/24/1997	Findings:	1.000
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	01/24/1997	Findings:	4.000 MG/L
Chemical:	POTASSIUM		
Sample Collected:	01/24/1997	Findings:	29.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	01/24/1997	Findings:	18.000 UG/L
Chemical:	ARSENIC		
Sample Collected:	01/24/1997	Findings:	440.000 UG/L
Chemical:	BARIUM		
Sample Collected:	01/24/1997	Findings:	.200 UG/L
Chemical:	BORON		
Sample Collected:	01/24/1997	Findings:	10.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	01/24/1997	Findings:	2.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	01/24/1997	Findings:	14.000 PCI/L
Chemical:	URANIUM		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	01/24/1997	Findings:	420.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01/24/1997	Findings:	.200
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	01/24/1997	Findings:	34.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01/24/1997	Findings:	12.000
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)		
Sample Collected:	01/24/1997	Findings:	2.000 PCI/L
Chemical:	URANIUM COUNTING ERROR		
Sample Collected:	01/24/1997	Findings:	7700.000 UG/L
Chemical:	NITRATE + NITRITE (AS N)		

12
SW
1/2 - 1 Mile
Lower

CA WELLS 2538

Water System Information:

Prime Station Code:	02S/06E-01D02 M	User ID:	39C
FRDS Number:	3901117001	County:	San Joaquin
District Number:	69	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	374748.0 1211600.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 01		
System Number:	3901117		
System Name:	POPLAR GROVE CABINS		
Organization That Operates System:	Not Reported		
Pop Served:	Unknown, Small System	Connections:	Unknown, Small System
Area Served:	Not Reported		

13
NNW
1/2 - 1 Mile
Lower

CA WELLS 1027

Water System Information:

Prime Station Code:	01S/06E-25C01 M	User ID:	PTA
FRDS Number:	3910015004	County:	San Joaquin
District Number:	10	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	374909.0 1211544.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 05		
System Number:	3910015		
System Name:	City of Lathrop		
Organization That Operates System:	16775 S. HWOLAND RD., SUITE 1 LATHROP, CA 95330		
Pop Served:	8429	Connections:	2213
Area Served:	LATHROP		

Sample Information: * Only Findings Above Detection Level Are Listed

Sample Collected:	09/06/1985	Findings:	336.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	09/06/1985	Findings:	8.100
Chemical:	PH (LABORATORY)		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	09/06/1985	Findings:	120.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO ₃)		
Sample Collected:	09/06/1985	Findings:	76.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO ₃)		
Sample Collected:	09/06/1985	Findings:	20.899 MG/L
Chemical:	CALCIUM		
Sample Collected:	09/06/1985	Findings:	5.800 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	09/06/1985	Findings:	33.399 MG/L
Chemical:	SODIUM		
Sample Collected:	09/06/1985	Findings:	36.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	09/06/1985	Findings:	.230 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	09/06/1985	Findings:	20.000 UG/L
Chemical:	ARSENIC		
Sample Collected:	09/06/1985	Findings:	16.500 MG/L
Chemical:	NITRATE (AS NO ₃)		
Sample Collected:	09/06/1985	Findings:	.900 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	09/03/1986	Findings:	.600 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	11/12/1987	Findings:	.800 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	03/09/1988	Findings:	.700 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	09/08/1988	Findings:	309.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	09/08/1988	Findings:	7.600
Chemical:	PH (LABORATORY)		
Sample Collected:	09/08/1988	Findings:	127.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO ₃)		
Sample Collected:	09/08/1988	Findings:	127.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	09/08/1988	Findings:	75.500 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO ₃)		
Sample Collected:	09/08/1988	Findings:	19.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	09/08/1988	Findings:	6.400 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	09/08/1988	Findings:	30.600 MG/L
Chemical:	SODIUM		
Sample Collected:	09/08/1988	Findings:	3.800 MG/L
Chemical:	POTASSIUM		
Sample Collected:	09/08/1988	Findings:	19.300 MG/L
Chemical:	CHLORIDE		
Sample Collected:	09/08/1988	Findings:	.220 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	09/08/1988	Findings:	27.700 UG/L
Chemical:	ARSENIC		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	09/08/1988	Findings:	159.000 UG/L
Chemical:	BARIUM		
Sample Collected:	09/08/1988	Findings:	247.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	09/08/1988	Findings:	15.200 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	09/08/1988	Findings:	.210 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	09/26/1988	Findings:	2.030 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	12/30/1991	Findings:	380.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	12/30/1991	Findings:	7.860
Chemical:	PH (LABORATORY)		
Sample Collected:	12/30/1991	Findings:	125.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO3)		
Sample Collected:	12/30/1991	Findings:	152.500 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	12/30/1991	Findings:	78.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO3)		
Sample Collected:	12/30/1991	Findings:	22.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	12/30/1991	Findings:	6.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	12/30/1991	Findings:	31.000 MG/L
Chemical:	SODIUM		
Sample Collected:	12/30/1991	Findings:	4.000 MG/L
Chemical:	POTASSIUM		
Sample Collected:	12/30/1991	Findings:	30.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	12/30/1991	Findings:	30.000 UG/L
Chemical:	ARSENIC		
Sample Collected:	12/30/1991	Findings:	140.000 UG/L
Chemical:	BARIUM		
Sample Collected:	12/30/1991	Findings:	.020 UG/L
Chemical:	FOAMING AGENTS (MBAS)		
Sample Collected:	12/30/1991	Findings:	207.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	12/30/1991	Findings:	9.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	12/30/1991	Findings:	.400 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	08/06/1992	Findings:	1.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	11/06/1992	Findings:	1.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	03/15/1993	Findings:	460.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	03/15/1993	Findings:	8.000
Chemical:	PH (LABORATORY)		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	03/15/1993	Findings:	148.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO ₃)		
Sample Collected:	03/15/1993	Findings:	180.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03/15/1993	Findings:	144.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO ₃)		
Sample Collected:	03/15/1993	Findings:	43.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	03/15/1993	Findings:	9.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03/15/1993	Findings:	43.000 MG/L
Chemical:	SODIUM		
Sample Collected:	03/15/1993	Findings:	4.000 MG/L
Chemical:	POTASSIUM		
Sample Collected:	03/15/1993	Findings:	42.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	03/15/1993	Findings:	28.000 UG/L
Chemical:	ARSENIC		
Sample Collected:	03/15/1993	Findings:	210.000 UG/L
Chemical:	BARIUM		
Sample Collected:	03/15/1993	Findings:	470.000 UG/L
Chemical:	ALUMINUM		
Sample Collected:	03/15/1993	Findings:	290.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03/15/1993	Findings:	.400
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	03/15/1993	Findings:	13.000 MG/L
Chemical:	NITRATE (AS NO ₃)		
Sample Collected:	03/15/1993	Findings:	.200 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	06/09/1993	Findings:	430.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	06/09/1993	Findings:	8.000
Chemical:	PH (LABORATORY)		
Sample Collected:	06/09/1993	Findings:	153.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO ₃)		
Sample Collected:	06/09/1993	Findings:	186.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06/09/1993	Findings:	139.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO ₃)		
Sample Collected:	06/09/1993	Findings:	39.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	06/09/1993	Findings:	10.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06/09/1993	Findings:	39.000 MG/L
Chemical:	SODIUM		
Sample Collected:	06/09/1993	Findings:	23.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	06/09/1993	Findings:	20.000 UG/L
Chemical:	ARSENIC		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	06/09/1993	Findings:	170.000 UG/L
Chemical:	BARIUM		
Sample Collected:	06/09/1993	Findings:	280.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06/09/1993	Findings:	.300
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	06/09/1993	Findings:	29.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/09/1993	Findings:	.200 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	01/05/1995	Findings:	450.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	01/05/1995	Findings:	7.800
Chemical:	PH (LABORATORY)		
Sample Collected:	01/05/1995	Findings:	170.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO3)		
Sample Collected:	01/05/1995	Findings:	210.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01/05/1995	Findings:	150.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO3)		
Sample Collected:	01/05/1995	Findings:	41.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	01/05/1995	Findings:	12.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01/05/1995	Findings:	38.000 MG/L
Chemical:	SODIUM		
Sample Collected:	01/05/1995	Findings:	1.300
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	01/05/1995	Findings:	4.000 MG/L
Chemical:	POTASSIUM		
Sample Collected:	01/05/1995	Findings:	23.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	01/05/1995	Findings:	.200 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	01/05/1995	Findings:	8.000 UG/L
Chemical:	ARSENIC		
Sample Collected:	01/05/1995	Findings:	210.000 UG/L
Chemical:	BARIUM		
Sample Collected:	01/05/1995	Findings:	1600.000 UG/L
Chemical:	IRON		
Sample Collected:	01/05/1995	Findings:	60.000 UG/L
Chemical:	MANGANESE		
Sample Collected:	01/05/1995	Findings:	160.000 UG/L
Chemical:	ALUMINUM		
Sample Collected:	01/05/1995	Findings:	300.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01/05/1995	Findings:	.200
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	01/05/1995	Findings:	8.000 MG/L
Chemical:	NITRATE (AS NO3)		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	01/05/1995	Findings:	12.000
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)		
Sample Collected:	01/05/1995	Findings:	1800.000 UG/L
Chemical:	NITRATE + NITRITE (AS N)		
Sample Collected:	10/25/1995	Findings:	.020 UG/L
Chemical:	DIBROMOCHLOROPROPANE (DBCP)		

A14
NW
1/2 - 1 Mile
Lower

CA WELLS 1029

Water System Information:

Prime Station Code:	01S/06E-25M03 M	User ID:	PTA
FRDS Number:	3910015005	County:	San Joaquin
District Number:	10	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	374902.0 1211602.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 06		
System Number:	3910015		
System Name:	City of Lathrop		
Organization That Operates System:	16775 S. HWOLAND RD., SUITE 1 LATHROP, CA 95330		
Pop Served:	8429	Connections:	2213
Area Served:	LATHROP		

Sample Information: * Only Findings Above Detection Level Are Listed

Sample Collected:	07/30/1987	Findings:	3.200 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	07/30/1987	Findings:	.800 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	10/29/1987	Findings:	1.500 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	10/29/1987	Findings:	.300 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	03/09/1988	Findings:	1.800 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	03/09/1988	Findings:	1.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	09/08/1988	Findings:	499.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	09/08/1988	Findings:	7.600
Chemical:	PH (LABORATORY)		
Sample Collected:	09/08/1988	Findings:	150.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO3)		
Sample Collected:	09/08/1988	Findings:	150.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	09/08/1988	Findings:	162.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO3)		
Sample Collected:	09/08/1988	Findings:	41.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	09/08/1988	Findings:	14.500 MG/L
Chemical:	MAGNESIUM		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	09/08/1988	Findings:	36.800 MG/L
Chemical:	SODIUM		
Sample Collected:	09/08/1988	Findings:	4.700 MG/L
Chemical:	POTASSIUM		
Sample Collected:	09/08/1988	Findings:	70.200 MG/L
Chemical:	CHLORIDE		
Sample Collected:	09/08/1988	Findings:	.200 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	09/08/1988	Findings:	25.700 UG/L
Chemical:	ARSENIC		
Sample Collected:	09/08/1988	Findings:	229.000 UG/L
Chemical:	BARIUM		
Sample Collected:	09/08/1988	Findings:	354.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	09/08/1988	Findings:	15.300 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	09/08/1988	Findings:	.170 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	09/26/1988	Findings:	2.020 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	01/24/1991	Findings:	700.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	01/24/1991	Findings:	7.800
Chemical:	PH (LABORATORY)		
Sample Collected:	01/24/1991	Findings:	156.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO3)		
Sample Collected:	01/24/1991	Findings:	241.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01/24/1991	Findings:	276.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO3)		
Sample Collected:	01/24/1991	Findings:	76.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	01/24/1991	Findings:	21.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01/24/1991	Findings:	44.000 MG/L
Chemical:	SODIUM		
Sample Collected:	01/24/1991	Findings:	5.000 MG/L
Chemical:	POTASSIUM		
Sample Collected:	01/24/1991	Findings:	77.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	01/24/1991	Findings:	15.000 UG/L
Chemical:	ARSENIC		
Sample Collected:	01/24/1991	Findings:	400.000 UG/L
Chemical:	BARIUM		
Sample Collected:	01/24/1991	Findings:	4.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	01/24/1991	Findings:	1.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	01/24/1991	Findings:	6.000 PCI/L
Chemical:	GROSS BETA		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	01/24/1991	Findings:	3.000 PCI/L
Chemical:	GROSS BETA COUNTING ERROR		
Sample Collected:	01/24/1991	Findings:	7.000 PCI/L
Chemical:	URANIUM		
Sample Collected:	01/24/1991	Findings:	.050 UG/L
Chemical:	FOAMING AGENTS (MBAS)		
Sample Collected:	01/24/1991	Findings:	450.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01/24/1991	Findings:	20.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	08/06/1992	Findings:	4.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	08/06/1992	Findings:	1.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	11/06/1992	Findings:	3.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	11/06/1992	Findings:	1.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	03/15/1993	Findings:	750.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	03/15/1993	Findings:	7.800
Chemical:	PH (LABORATORY)		
Sample Collected:	03/15/1993	Findings:	195.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO3)		
Sample Collected:	03/15/1993	Findings:	238.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03/15/1993	Findings:	282.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO3)		
Sample Collected:	03/15/1993	Findings:	80.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	03/15/1993	Findings:	20.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03/15/1993	Findings:	46.000 MG/L
Chemical:	SODIUM		
Sample Collected:	03/15/1993	Findings:	5.000 MG/L
Chemical:	POTASSIUM		
Sample Collected:	03/15/1993	Findings:	95.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	03/15/1993	Findings:	13.000 UG/L
Chemical:	ARSENIC		
Sample Collected:	03/15/1993	Findings:	370.000 UG/L
Chemical:	BARIUM		
Sample Collected:	03/15/1993	Findings:	300.000 UG/L
Chemical:	ALUMINUM		
Sample Collected:	03/15/1993	Findings:	470.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03/15/1993	Findings:	.500
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	03/15/1993	Findings:	26.000 MG/L
Chemical:	NITRATE (AS NO3)		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	06/09/1993	Findings:	770.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	06/09/1993	Findings:	7.800
Chemical:	PH (LABORATORY)		
Sample Collected:	06/09/1993	Findings:	195.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO ₃)		
Sample Collected:	06/09/1993	Findings:	238.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06/09/1993	Findings:	284.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO ₃)		
Sample Collected:	06/09/1993	Findings:	79.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	06/09/1993	Findings:	21.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06/09/1993	Findings:	44.000 MG/L
Chemical:	SODIUM		
Sample Collected:	06/09/1993	Findings:	104.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	06/09/1993	Findings:	17.000 UG/L
Chemical:	ARSENIC		
Sample Collected:	06/09/1993	Findings:	330.000 UG/L
Chemical:	BARIUM		
Sample Collected:	06/09/1993	Findings:	470.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06/09/1993	Findings:	.500
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	06/09/1993	Findings:	28.000 MG/L
Chemical:	NITRATE (AS NO ₃)		
Sample Collected:	01/23/1996	Findings:	3.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	01/23/1996	Findings:	1.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	01/23/1996	Findings:	22.000 MG/L
Chemical:	NITRATE (AS NO ₃)		
Sample Collected:	04/19/1996	Findings:	560.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	04/19/1996	Findings:	7.600
Chemical:	PH (LABORATORY)		
Sample Collected:	04/19/1996	Findings:	180.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO ₃)		
Sample Collected:	04/19/1996	Findings:	220.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	04/19/1996	Findings:	190.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO ₃)		
Sample Collected:	04/19/1996	Findings:	52.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	04/19/1996	Findings:	16.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04/19/1996	Findings:	41.000 MG/L
Chemical:	SODIUM		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	04/19/1996	Findings:	1.000
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	04/19/1996	Findings:	4.000 MG/L
Chemical:	POTASSIUM		
Sample Collected:	04/19/1996	Findings:	64.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	04/19/1996	Findings:	19.000 UG/L
Chemical:	ARSENIC		
Sample Collected:	04/19/1996	Findings:	260.000 UG/L
Chemical:	BARIUM		
Sample Collected:	04/19/1996	Findings:	.200 UG/L
Chemical:	BORON		
Sample Collected:	04/19/1996	Findings:	5.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	04/19/1996	Findings:	2.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	04/19/1996	Findings:	360.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04/19/1996	Findings:	.100
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	04/19/1996	Findings:	20.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04/19/1996	Findings:	12.000
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)		
Sample Collected:	07/16/1996	Findings:	4.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	07/16/1996	Findings:	2.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	07/16/1996	Findings:	24.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	10/15/1996	Findings:	2.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		

B15
SSE
1/2 - 1 Mile
Higher

CA WELLS 19403

Water System Information:

Prime Station Code: 3910005-016
 FRDS Number: 3910005016
 District Number: 10
 Water Type: Well/Groundwater
 Source Lat/Long: 374740.0 1211450.0
 Source Name: WELL 16
 System Number: 3910005
 System Name: MANTECA, CITY OF
 Organization That Operates System:
 1001 W. CENTER STREET
 MANTECA, CA 95337
 Pop Served: 44500
 Area Served: MANTECA

User ID: PTA
 County: San Joaquin
 Station Type: WELL/AMBNT/MUN/INTAKE
 Well Status: Active Raw
 Precision: 0.5 Mile (30 Seconds)

Connections: 11417

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Information: * Only Findings Above Detection Level Are Listed

Sample Collected:	07/26/1993	Findings:	1.800 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	07/26/1993	Findings:	1.500 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	10/20/1993	Findings:	1.800 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	10/20/1993	Findings:	1.500 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	01/20/1994	Findings:	1.800 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	01/20/1994	Findings:	1.500 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	04/14/1994	Findings:	1.800 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	04/14/1994	Findings:	1.500 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	04/14/1994	Findings:	25.900 UG/L
Chemical:	ARSENIC		
Sample Collected:	04/14/1994	Findings:	284.800 UG/L
Chemical:	BARIUM		
Sample Collected:	04/14/1994	Findings:	6.700 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04/14/1994	Findings:	.080 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	04/14/1994	Findings:	20.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	04/14/1994	Findings:	320.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	04/14/1994	Findings:	7.800
Chemical:	PH (LABORATORY)		
Sample Collected:	04/14/1994	Findings:	125.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO3)		
Sample Collected:	04/14/1994	Findings:	153.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	04/14/1994	Findings:	114.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO3)		
Sample Collected:	04/14/1994	Findings:	31.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	04/14/1994	Findings:	9.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04/14/1994	Findings:	26.000 MG/L
Chemical:	SODIUM		
Sample Collected:	04/14/1994	Findings:	2.800 MG/L
Chemical:	POTASSIUM		
Sample Collected:	04/14/1994	Findings:	28.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	04/14/1994	Findings:	.220 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	04/14/1994	Findings:	200.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04/14/1994	Findings:	-.050
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	04/14/1994	Findings:	6.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04/14/1994	Findings:	11.780
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)		
Sample Collected:	01/31/1996	Findings:	7.500 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07/31/1996	Findings:	7.300 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04/09/1997	Findings:	330.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	04/09/1997	Findings:	8.000
Chemical:	PH (LABORATORY)		
Sample Collected:	04/09/1997	Findings:	140.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CaCO3)		
Sample Collected:	04/09/1997	Findings:	170.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	04/09/1997	Findings:	120.000 MG/L
Chemical:	TOTAL HARDNESS (AS CaCO3)		
Sample Collected:	04/09/1997	Findings:	34.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	04/09/1997	Findings:	8.800 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04/09/1997	Findings:	29.000 MG/L
Chemical:	SODIUM		
Sample Collected:	04/09/1997	Findings:	3.000 MG/L
Chemical:	POTASSIUM		
Sample Collected:	04/09/1997	Findings:	14.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	04/09/1997	Findings:	18.000 UG/L
Chemical:	ARSENIC		
Sample Collected:	04/09/1997	Findings:	220.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04/09/1997	Findings:	.240
Chemical:	LANGELIER INDEX @ 60 C		
Sample Collected:	04/09/1997	Findings:	8.100 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04/09/1997	Findings:	.100 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	04/09/1997	Findings:	1800.000 UG/L
Chemical:	NITRATE + NITRITE (AS N)		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database EDR ID Number

B16
SSE
1/2 - 1 Mile
Higher

CA WELLS 23161

Water System Information:

Prime Station Code: J39/005-16TRT
FRDS Number: 3910005027
District Number: 10
Water Type: Well/Groundwater
Source Lat/Long: 374740.0 1211450.0
Source Name: WELL 16 - TREATED
System Number: 3910005
System Name: MANTECA, CITY OF
Organization That Operates System:

User ID: PTA
County: San Joaquin
Station Type: WELL/AMBNT/MUN
Well Status: Active Treated
Precision: 0.5 Mile (30 Seconds)

1001 W. CENTER STREET
MANTECA, CA 95337

Pop Served: 44500
Area Served: MANTECA

Connections: 11417

Sample Information: * Only Findings Above Detection Level Are Listed

Sample Collected: 10/12/1995
Chemical: NITRATE (AS NO3)

Findings: 7.300 MG/L

Sample Collected: 10/12/1995
Chemical: NITRATE + NITRITE (AS N)

Findings: 1700.000 UG/L

Sample Collected: 04/09/1996
Chemical: NITRATE (AS NO3)

Findings: 7.700 MG/L

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Direction
Distance

Database EDR ID Number

WSW
1/2 - 1 Mile

OIL_GAS CA00001906

Well Number: 1
API Number: 07720107
Latitude: 37.80090
Region: 6
Section: 36
Range: 06E
Base and Meridian: Mount Diablo
Spud Date: 12/26/1969

Status: Plugged and abandoned-dry hole
Operator: Prudential Minerals Expl. Corp.
Longitude: -121.26902
Lease: Alpine-Hardesty
Township: 01S
Map Number: 606
Total Depth: 9630.00000
Abandonment Date: 1/23/1970

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for SAN JOAQUIN County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for SAN JOAQUIN COUNTY, CA

Number of sites tested: 20

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	2.530 pCi/L	90%	10%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	2.050 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)

Source: United States Geologic Survey

EDR acquired the USGS 7.5' Digital Elevation Model in 2002. 7.5-Minute DEMs correspond to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^R Information System

Source: EDR proprietary database of groundwater flow information

EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit

Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database

Source: Department of Agriculture, Natural Resources Conservation Services

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the national Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

ADDITIONAL ENVIRONMENTAL RECORD SOURCES

FEDERAL WATER WELLS

PWS: Public Water Systems

Source: EPA/Office of Drinking Water

Telephone: 202-564-3750

Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data

Source: EPA/Office of Drinking Water

Telephone: 202-564-3750

Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)

This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STATE RECORDS

California Drinking Water Quality Database

Source: Department of Health Services

Telephone: 916-324-2319

The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

California Oil and Gas Well Locations for District 2, 3, 5 and 6

Source: Department of Conservation

Telephone: 916-323-1779

RADON

Area Radon Information

Source: USGS

Telephone: 703-356-4020

The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones

Source: EPA

Telephone: 703-356-4020

Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities

Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater

Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.



APPENDIX E

Project No.
6042.5.001.01

November 10, 2003

Ms. Laura Lukes
Pacific Municipal Consultants
140 Independence Circle, Suite C
Chico, CA 95973Subject: Villa Ticino West Development
Manteca, California**PRELIMINARY GEOTECHNICAL RECONNAISSANCE**

Dear Ms. Lukes:

ENGEO Incorporated prepared this preliminary geotechnical assessment for the proposed Villa Ticino West Development as outlined in our agreement dated May 15, 2003. The purpose of our services was to visually evaluate the geologic and geotechnical conditions at the site as they relate to the proposed development. This letter is intended for the purpose of site acquisition and preparation of an Environmental Impact Report (EIR).

The scope of this study included a review of readily available geotechnical and geological literature and maps, a review of aerial photographs, a site reconnaissance by an ENGEO representative and preparation of this letter. In addition, a Phase I environmental site assessment is being performed concurrently and will be delivered under a separate cover. No subsurface exploration, soil sampling or testing was included within the current scope of the geotechnical services.

SITE LOCATION AND DESCRIPTION

The proposed development will be located within approximately 237 acres in the City of Manteca (Figures 1 and 2). The property is bounded by Louise Avenue to the north, Airport Way to the east, a Union Pacific Railroad track line to the west and property zoned residential, commercial and light industrial to the south. The properties are identified by San Joaquin County Assessor's Parcel Numbers (APN) 198-160-06, 198-160-07, 198-160-08, 198-170-01, 198-170-07 and 198-170-08. The site currently consists of agricultural fields, livestock pastures, Rossi Hay Company truck yard and residences. An approximately 15-foot deep canal is located along the west side of the site with Union Pacific Railroad tracks further to the west. A similar sized canal extends west to east approximately three-quarters of the way across the site, in the southern one-third of the site. A shallow irrigation canal traverses along the southern parcel line of APN 198-160-06 to the area of the residence along Airport Way.

PROPOSED DEVELOPMENT

Based on review of a proposed site plan, we understand the project will include 194 acres of single family residential units, 10 acres of multiple family residential units, 12 acres for a

commercial center, 20 acres for a park and 0.78 acres for a fire station, which includes paved streets; underground utilities; sidewalks; and landscaping for entire site.

SITE CONDITIONS

We reviewed aerial photographs, historical topographic maps and published geologic maps. We visited the site on November 5, 6 and 7, 2003, to perform our site reconnaissance. The results of our document review and site reconnaissance are summarized below.

Aerial Photograph Review

We reviewed aerial photographs from 1963, 1975, 1977, 1987, 1993 and 1999. All of the photographs shows that the site is relatively flat and either fallow or being used for alfalfa, straw or grain crop with structures that correspond to those at the current locations beginning in 1963. In addition to the current structures, other structures observed at the site in the historic photographs included the following:

1. A residence at the north end of Swanson Road on the west side of the street was observed in the 1999 photograph; however, according to Mrs. Rossi, the residence recently burned down.
2. A residence and detached barn on the west side of Airport Way at the southwest corner of Crom Way was observed in the 1963 through 1987 photographs.
3. Two barns on the west side of Airport Way approximately 100 feet south of the current 709 Airport Way residence was observed in the 1963 through 1987 photographs.

Historical Topographic Map Review

We reviewed historical topographic maps of the United States Geological Survey 7.5' Lathrop Quadrangle from 1968, 1976, 1987, 1996 and 1999. The topographic maps show the site with similar conditions for the years reviewed. The site elevations ranges from 20 to 25 feet above mean sea level. Structures observed onsite in the topographic maps included ten structures to the west of Airport Way and five structures on the east and west sides of Swanson Avenue.

LOCAL GEOLOGY

The Geologic Map of California, San Jose Sheet (CDMG, 1966) shows that this site is mapped as Recent Alluvial Fan Deposits in the Great Valley. This unit consists of sediments deposited during flood stages of major streams in the areas between natural stream levees and fans. During our site reconnaissance, we observed the site was covered with sandy soil.

FAULTING

According to the Geologic Map of California (Jennings, 1994), no known faults are mapped within the property. In our review of aerial photographs, we did not observe any readily apparent geomorphic evidence of recently active faulting.

The California Geological Survey website does not list the City of Manteca and the County of San Joaquin as areas included in the Alquist Priolo earthquake hazard zones. According to parameters of the 1997 Uniform Building Code, this site is in Earthquake Zone 3. The site is situated within a seismically active region (CDMG Open-File Report 96-08). The closest known fault classified as active by the State of California Geologic Survey (CGS) is the type B Greenville fault located approximately 23 miles to the west (Blake, 1997; CDMG, 1998). Although not classified as active by the CGS the type B Great Valley - 7 fault is located approximately 14 miles to the west. The type C Foothills Fault System is considered potentially active and is approximately 32 miles to the east (Blake, 1997; CDMG, 1998; CDMG Open-File Report 96-08). The Great Valley fault has an estimated moment magnitude of 6.7.

GROUNDWATER

The California Department of Water Resources water data library was searched for state wells within the vicinity of the site. Well number 01S06E36C001M is located near the northwest corner of the site. Depth to groundwater measured from 1963 to 2003 ranged from 7.4 to 28 feet below the well site ground surface at an elevation of 23 feet (NAD 27 datum). Fluctuations in groundwater levels are expected to occur seasonally in response to changes in precipitation, irrigation, and other factors.

SITE RECONNAISSANCE

We visited the site on November 5, 6 and 7, 2003 to perform our site reconnaissance. The site topography is essentially level with several drainable fields for alfalfa, straw and grain crop production. The soil observed at the surface consisted of sandy soil.

The west side of the site is bordered by an approximately 15-foot-deep canal that flows to the north. Markers for north to south trending sanitary sewer pipeline and telephone conduit were posted on the east side of the canal. Between the canal and the railroad tracks to the west were signs posting a natural gas pipeline. Two unmarked pipes, approximately 10- and 24-inches in diameter were observed crossing the canal at the midpoint and southern portion of the site, respectively. Irrigation discharge pipes were also observed outfalling into the canal at several locations along the western property line. Three water wells were also observed along the western border of the site. The two northern wells were active and the third southernmost well had the pump removed and was capped. Each well consisted of a gated area with pipes, telephone connections and electrical panels. The northernmost well also included a generator. Each well site was serviced by an overhead electrical line that extended from the southern well site to the north at Louise Avenue.

Along the south side of Louise Avenue we observed overhead telephone lines and markers for a gas pipeline. A GTE telephone cable box was observed near the middle of the site along Louise Avenue; however, it was not clear whether the box indicated a street crossing at that location or an underground conduit located along the south side of Louise Avenue. The northern field appeared to have been recently harvested for straw and a small berm was observed along the south side of Louise Avenue.

At the northeast corner of the site (corner of Louise Avenue and Airport Way), an overhead high voltage power pole with lines and markers for a buried AT&T fiber optic cable were observed. The power and fiber optic lines were observed along the entire eastern side of the site.

The residence located at 891 North Airport Way (891) was observed during the site reconnaissance. Structures at 891 included a single-story residence, a locked garage, two small sheds, a modular office elevated on wheels for transport and a below ground pool. In the shed to the south of the garage, we observed a water well with a tank.

To the west of the 891 residence, we observed a shallow irrigation ditch that extended from the area of the residence to the northern water well along the western side of the site. The irrigation ditch was approximately located along the property line between APN's 198-160-06 and 198-160-07. Piles of stockpiled soil were observed to the south of the 891 residence.

The structure area located at 709 North Airport Way (709) consisted of four structures: An L-shaped residence, a square water tower converted to a living space, a well shed and a storage shed. To the north of the residence were approximately thirty 5-foot high piles of soil and a bobcat loader. To the south of 709, we observed an irrigation well that fed an irrigation pipeline that extended from Airport Way to just south of the second well site along the western side of the site.

Between the 891 and 709 structure areas, the ground was fallow with no vegetation. To the west of the 709 residence were fields of recently harvested straw that had been disked and to the south and southwest we observed harvested alfalfa fields.

To the southwest of the 709 structure was an approximately 10-foot-deep canal west to east approximately three-quarters of the way across the site in the southern one-third of the site. On the north side of this canal in the middle of the site; wood, concrete and metal debris was observed at the surface.

At the southwest corner of Airport Way and Crom Street, we observed some minor debris in disturbed sand where a former residence was located. The field to the southwest of this area was observed to be cultivated for alfalfa.

The structure area located at 511 Airport Way (511) consisted of a single-story office building for Rossi Hay Company, two storage barns, two tire sheds and water well shed. To the west of the office, we observed two 7,500-gallon diesel fuel tanks over gravel and soil. To the west of the tanks were two tire sheds filled with tires and tires were also observed outside of the sheds. To the north of the tire sheds, we observed a water well shed with a pump and water tank. To the north of the office at 511 was a large storage barn with a concrete floor. To the southwest of the office at 511 was a large storage barn. On the north and west sides of the barn was a concrete pad with a drain running down the middle. To the west of this barn, we observed an approximately 1,000-gallon waste oil tank placed directly on soil.

Other items noted at 511 included trucks and trailers for hauling hay, stacks of hay and alfalfa, approximately 50 tires and various equipment used at the site.

Directly to the south of the 511 site was 495 Airport Way which consisted of the Rossi residence with a detached three-car garage on the north side of the residence.

To the west of 511, we observed alfalfa fields and two residences with horse and cattle pens along Swanson Road.

Within the site on the east side of Swanson Road were two residences with livestock (horse and cattle) pens. The structure area at 326 Swanson Road consisted of a residence, detached two car garage converted to a storage area, a water well, a large barn and a storage container. The residence consisted of a single-story wood framed home. According to Mrs. Deloris Gowan, the converted garage contained a capped domestic water well that was no longer in use and that there were two septic systems for the residence.

The structure area at 350 Swanson Road was observed to have a single story wood-framed residence with attached garage, a well shed and a pool.

High voltage overhead power lines were observed along the west side of Swanson Road and to the west of Swanson Road along the southern property line. Seven transformers were observed with these power lines and only the three western most transformers were observed to have the blue PCB free labeling. A buried irrigation pipeline was observed from the end of Swanson Road to the east and west. The field on the west side of Swanson Road was observed to be cultivated for alfalfa.

CONCLUSIONS

In our opinion, the site is suitable from a geotechnical engineering viewpoint for the proposed development. For site acquisition purposes, the primary geotechnical concerns that could affect development on the site are the loose surficial soils, shallow groundwater, and seismic hazards. We summarize our conclusions regarding these issues below.

Loose Surficial Soils

We observed loose, sandy soils at the surface of the site during our site reconnaissance. Mitigation of loose surficial soils can be accomplished by proper grading techniques, compaction of the loose soils, and foundations designed to resist differential movements. A design level geotechnical exploration should characterize the loose surficial soils at this site to determine specific criteria for grading and foundation design.

Shallow Groundwater

Our review of groundwater well data in the vicinity of the site found that shallow (less than 20 feet below the existing ground surface) groundwater is known to exist at the site. The site grading and utility plans should be designed with shallow groundwater considerations. The shallow groundwater conditions should also be taken into consideration when planning for storm water detention basins. Dewatering may be required to perform excavations for utility installation at the site.

SEISMIC HAZARDS

Seismic hazards can generally be classified as primary and secondary. The primary effect is ground rupture, also called surface faulting. Common secondary seismic hazards include ground shaking, lurch cracking, soil liquefaction, lateral spreading, landslides, and tsunamis and seiches.

Since no known active faults have been identified on the subject property, the potential for the occurrence of primary seismic hazards is low.

Based on topographic data, risk from earthquake-induced lurch cracking, regional subsidence or uplift, lateral spreading and tsunamis or seiches is also considered low to negligible at the site. However, a detailed assessment should be made during a design-level geotechnical exploration.

Strong Ground Shaking

We consider ground shaking to be a seismic hazard at the site, similar to all properties in Earthquake Zone 3. The seismic effect of ground shaking, as well as other secondary seismic hazards, should be evaluated in a geotechnical exploration report. Mitigation for seismic hazards should be incorporated into the design of the project.

Potentially Liquefiable Soils

Liquefaction is a phenomenon in which saturated cohesionless soils are subject to a temporary, but essentially total, loss of shear strength because of pore pressure buildup under the reversing cyclic shear stresses associated with earthquakes. The site soils are anticipated to be silty to clean sands based on the geologic mapping and soils observed at the surface of the site during the reconnaissance. These soils may be susceptible to liquefaction; however, the risk is expected to be low because of the low potential for high seismic ground shaking at the site. The risk of liquefaction should be evaluated during a design-level geotechnical exploration to determine if the site requires special stabilization measures to reduce the risk of impact to the planned development.

CLOSURE

This letter presents geotechnical observations for site acquisition purposes for the Villa Ticino West Development. Prior to construction, we should be retained to provide a design level geotechnical exploration report.

This letter was prepared for the exclusive use of Pacific Municipal Consultants for purposes of site acquisition and preparation of an Environmental Impact Report (EIR). We strive to perform our professional services in accordance with generally accepted geotechnical engineering practices currently employed in the area. No warranty is expressed or implied.

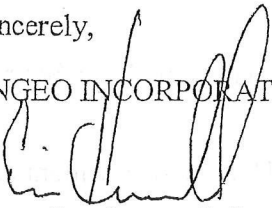
Pacific Municipal Consultants
Villa Ticino West Development
PRELIMINARY GEOTECHNICAL RECONNAISSANCE

6042.5.001.01
November 10, 2003
Page 7

If you have any questions or comments regarding this letter, please call and we will be glad to discuss them with you.

Sincerely,

ENGEO INCORPORATED


for Casey Lee Jensen, RG

Reviewed by:


Daniel S. Haynosch, GE


Duncan R. Hickmott, CEG



clj/dsh/cc:preliminary

Attachments: Selected References
Figure 1 – Vicinity Map
Figure 2 – Site Plan

SELECTED REFERENCES

- Blake, T. F.; 1997, EQFAULT, A Computer Program for Deterministic Prediction of Peak Horizontal Acceleration from Digitized California Faults.
- California Division of Mines and Geology; 1998, Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada, February, 1998.
- California Division of Mines and Geology; 1996, Probabalistic Seismic Hazard Assessment for the State of California; DMG Open-File Report 96-08, 33p.
- California Division of Mines and Geology (CDMG); 1966, Geologic Map of California, San Jose Sheet, Compilation by Thomas H. Rogers, 1966.
- Jennings, C. W.; 1994, Fault Activity Map of California and Adjacent Areas, CDMG, California Geologic Data Map Series, Map No. 6

The map displays the Stockton, California region, highlighting the proposed 'SITE' location. The site is situated near Lathrop, between the French Land and the Manteca area. Major transportation routes are shown, including Interstate 5 (I-5), Interstate 205 (I-205), and State Route 99 (SR-99). The map also identifies several islands in the San Joaquin River, including Bacon Island, Victoria Island, Lodi Island, and Manteca Island. Other labeled areas include Stockton, Lathrop, Manteca, Ripon, and Vernalis. The map is a detailed topographic representation with various landmarks and infrastructure marked.



BASE MAP SOURCE: THOMAS BROTHERS

ENGEO
INCORPORATED
EXCELLENT SERVICE SINCE 1971

SITE VICINITY MAP
VILLA TICINO WEST
MANTECA, CALIFORNIA

PROJECT NO.: 6042.5.001.01

DATE: NOVEMBER 2003

DRAWN BY: SRP	CHECKED BY: Jm
---------------	----------------

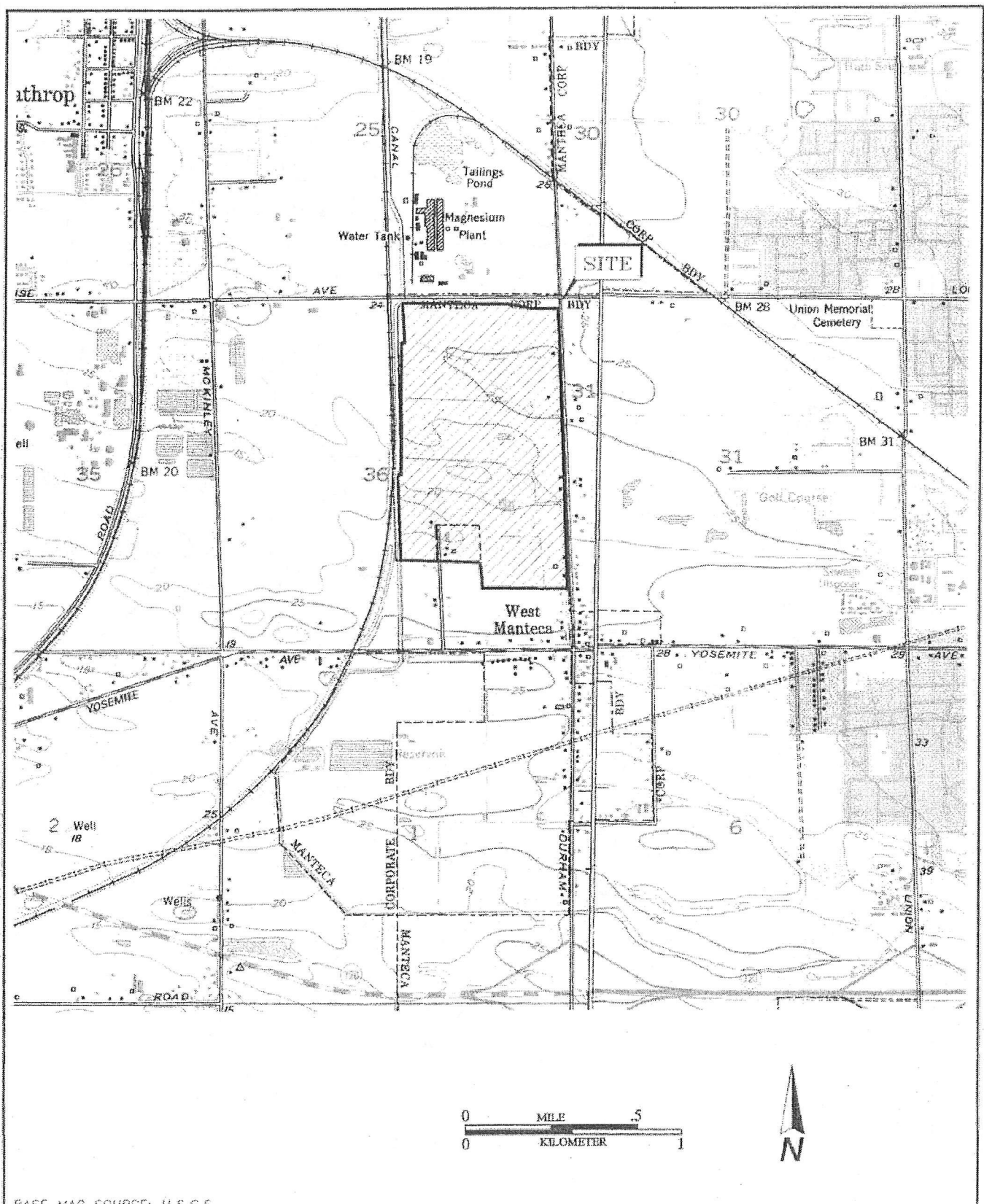
FIGURE NO.

1

ORIGINAL FIGURE PRINTED IN COLOR

1. Working Draft (2/2/77) Only for use by the FBI - 1-88-10369, 11-18-87 09:04:16 AM

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BASE MAP SOURCE: U.S.G.S.

ENGEO
INCORPORATED
EXCELLENT SERVICE SINCE 1971

SITE PLAN
VILLA TICINO WEST
MANTECA, CALIFORNIA

PROJECT NO.: 6042.5.001.01

DATE: NOVEMBER 2003

DRAWN BY: SRP

CHECKED BY: SM

FIGURE NO.

2

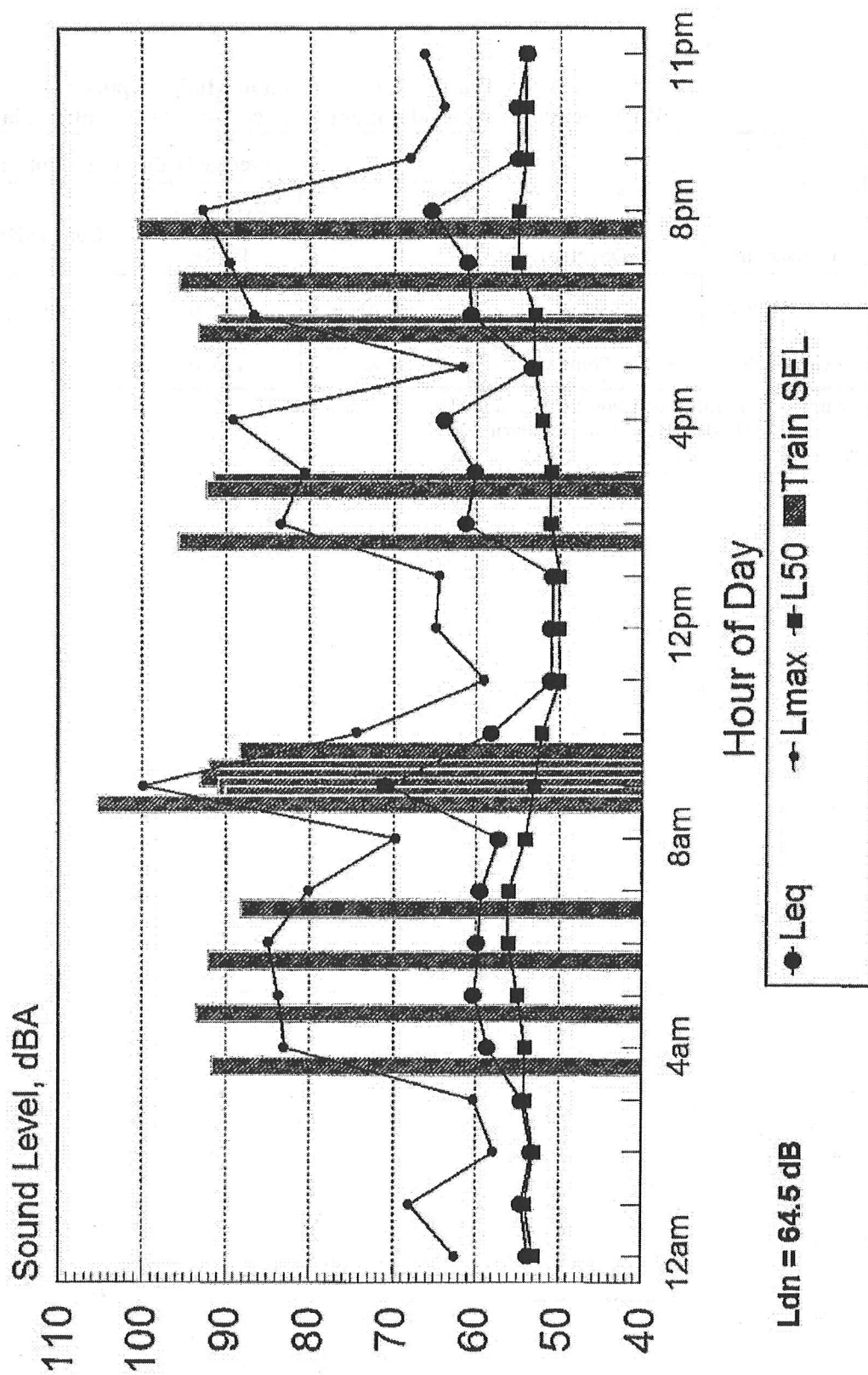
ORIGINAL FIGURE PRINTED IN COLOR

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APPENDIX F

Villa Ticino West
Measured Hourly and Railroad Operations Noise Levels
(Wednesday November 7, 2001)



**FHWA Traffic Noise Prediction Model Inputs
Villa Ticino West Development Project - Manteca, California**

Intersection	Direction	Average Daily Traffic Volume			
		Existing	Existing + Project	Cumulative	Cumulative Plus Project
Louise Ave &	West	8790	12510	14610	14610
Airport Wy	South	9290	15530	15690	15690

Source: T.Y. LIN International/CCS and Bollard & Brennan, Inc.
ADT computed as p.m. peak hour * 10.



APPENDIX G



VILLA TICINIO WEST
City of Manteca, CA
DRAFT Final Traffic Impact Analysis

prepared for

Pacific Municipal Consultants

prepared by

TY·LIN INTERNATIONAL / CCS

10365 Old Placerville Rd., Suite 200
Sacramento, CA 95827
916/366-6331

July 2004

VILLA TICINO WEST
City of Manteca, California
Draft Final Traffic Impact Study

Prepared for

Pacific Municipal Consultants

Prepared by

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10365 Old Placerville Road, Suite 200
Sacramento, CA 958274
(916) 366-6331

CCS # 03085

July 16, 2004

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APPENDICES

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- B. Intersection Operations Calculations - Existing Plus Project Condition
- C. Intersection Operations Calculations - Existing Plus Project Condition (With Mitigation)
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- E. Intersection Operations Calculations - Cumulative Condition (With Mitigation)
- F. Project Roadway Intersection Impact Analysis Calculations
- G. Signal Warrants

EXECUTIVE SUMMARY

This study has been prepared to assess the traffic impacts associated with the development of the proposed Villa Ticino West project. The Villa Ticino West project is located within the western boundary of the City of Manteca, adjacent to the City of Lathrop. The proposed project area encompasses approximately 237 acres. The general boundaries of the project area are Louise Avenue to the north, Airport Way to the east, and the Union Pacific Railroad tracks to the west. Access to the site is from Louise Avenue, Airport Road and Swanson Road. The properties to the west are zoned for heavy industrial uses, but as yet have not been developed. To the south of the project site, there is a mix of residential single storehouses and farm houses that typically rear livestock and produce hay. The project site is zoned for agriculture and is currently farmed for the production of hay. The proposed project would develop 980 residential dwelling units (760 single family and 220 multiple family) and approximately 324,000 square feet of commercial uses. The development would also include a 9-acre neighborhood park combined with a detention basin, and a fire station.

Existing traffic conditions during the AM and PM peak hours were analyzed at nine intersections in the vicinity of the project site. Five of the intersections are controlled by traffic signals and four of the intersections are controlled by stop signs. Under existing conditions, all of the intersections were found to be operating at levels of service (LOS) considered acceptable by the City of Manteca, with the exception of the Airport Way/SR-120 EB ramp intersection, which is presently operating at LOS F conditions during the PM peak hour.

The study intersections were then analyzed for the Existing Plus Project condition by adding the traffic volumes associated with the Villa Ticino West project to the Existing condition traffic volumes. The proposed project is estimated to add 22,638 daily vehicle trips to area roadways and intersections, with 1,016 trips (364 inbound and 652 outbound) in the AM peak hour and 2,116 trips (1,164 inbound and 951 outbound) in the PM peak hour. With the addition of project-related traffic to Existing conditions, all study intersections listed below would operate at LOS E or F conditions:

- Airport Way and Louise Avenue (LOS F in the PM peak hour)
- Airport Way and SR-120 WB Ramps (LOS F in the PM peak hour)
- Airport Way and SR-120 EB Ramps (LOS F in the PM peak hour)

Mitigation required for acceptable operating conditions at these intersections include implementing the recommended improvements identified in the Existing Plus Project condition, and other improvements presented in this study.

Cumulative development conditions were also analyzed. An improved roadway network, based on the City of Manteca General Plan Update assumed for Cumulative conditions included the following:

1. Airport Way - widening to six lanes between Roth Road to the north and just south of Woodward Avenue to the south.
2. Lathrop Road - widening to four lanes between the western city limit and the eastern city limit.
3. Louise Avenue - widening to four lanes between Airport Way and the eastern city limit.
4. Yosemite Avenue widening to six lanes between Airport Way and Union Road.
5. Union Road widening to four lanes between Lathrop Road to the north and just south of Woodward Avenue to the south.

Future intersection control under cumulative conditions was based on the City's Public Facilities Implementation Plan (PFIP). The PFIP identified the following intersections as signalized:

- | | |
|-------------------------------|-------------------------------|
| • Louise Avenue/Airport Way | • Airport Way/Center Street |
| • Airport Way/SR-120 WB Ramps | • Airport Way/Northgate Drive |
| • Airport Way/SR-120 EB Ramps | • Airport Way/Atherton Drive |
| • Airport Way/Daniels Drive | |

The analysis of Cumulative conditions involved the use of the City of Manteca traffic model. This model is based on the General Plan Update, which includes the Villa Ticino West project. Since the proposed project site has already been included in the City's General Plan under build out conditions, the Cumulative (no project) and Cumulative (plus project) conditions are the same. Therefore, Cumulative (no project) condition is not analyzed as part of this study.

Under Cumulative Plus Project conditions, unacceptable LOS was projected to occur at the following study intersections:

- Airport Way and Louise Avenue (LOS F in the AM and PM peak hour)
- Airport Way and SR-120 WB Ramps (LOS F in the AM and PM peak hour)
- Airport Way and SR-120 EB Ramps (LOS F in the AM and PM peak hour)

The traffic study recommends improvements at these intersections to provide for acceptable LOS.

SECTION 1

INTRODUCTION

This study has been prepared to assess the potential traffic impacts associated with the proposed Villa Ticino West development in Manteca.

ORGANIZATION OF STUDY

This section of this traffic study report, Introduction, presents a description of:

- the organization of this study,
- the proposed project as it relates to potential traffic impacts,
- the approach and methodology used to conduct this study,
- the intersections assessed in this study, and
- thresholds of significance applied in this study.

This traffic study describes existing traffic conditions in the vicinity of the project site, and evaluates the effects of the proposed project under existing plus project and cumulative plus project scenarios.

Section 2 of this traffic study report, Environmental Setting, describes existing traffic conditions in the vicinity of the project site.

Section 3 of the traffic report, Impacts – Existing Plus Project, describes traffic conditions with the proposed project added to existing traffic levels. This description of Existing Plus Project conditions is used to identify project-related traffic impacts by comparing the resulting traffic operating conditions to conditions described in Section 2 for Existing (no project) conditions.

Section 4 of this traffic study report, Cumulative Analysis, describes long-term traffic conditions assuming implementation of planned future land use development and roadway network improvements in Manteca. This section only looks at Cumulative future conditions with the project.

PROJECT DESCRIPTION

The proposed project site is located within the western boundary of the City of Manteca, adjacent to the City of Lathrop. The general boundaries of the project area are Louise Avenue to the north, Airport Way to the east, and the Union Pacific Railroad tracks to the west. Access to the site is from Louise Avenue, Airport Road and Swanson Road. The properties to the west are zoned for heavy industrial uses, but as yet have not been developed. To the south of the project site, there is a mix of residential single storehouses and farm houses that typically rear livestock and produce hay. The project site is zoned for agriculture and is currently farmed for the production of hay. **Figure 1** shows the location of the proposed project in relation to the surrounding community and roadway network. A project site plan is also provided in **Figure 2**.

Land Use and Access

The proposed project is on approximately 237 acres, and includes rezoning for the division of the 237 acres into 760 single family residential dwelling units, 220 multi-family dwelling units, approximately 324,000 square feet of commercial uses, a 9-acre neighborhood park combined with a detention basin, and a fire station.

Primary access to the project site would be provided by one intersection on Louise Avenue and two intersections on Airport Way. The project roadway intersection with Louise Avenue will eventually align with the Assieh Industrial Park Driveway to the north to form a four-leg intersection. Details of this alignment are however not available as at the time of this analysis. Swanson Road provides a fourth additional access in the southern portion of the project site. The Swanson Road access will connect to Yosemite Avenue, and also connect to the extension of Swanson Road to the south. The southern extension of Swanson Road would provide connection to the proposed Daniels Drive extension to the east. Detailed information on these planned roadway improvements are currently unavailable.

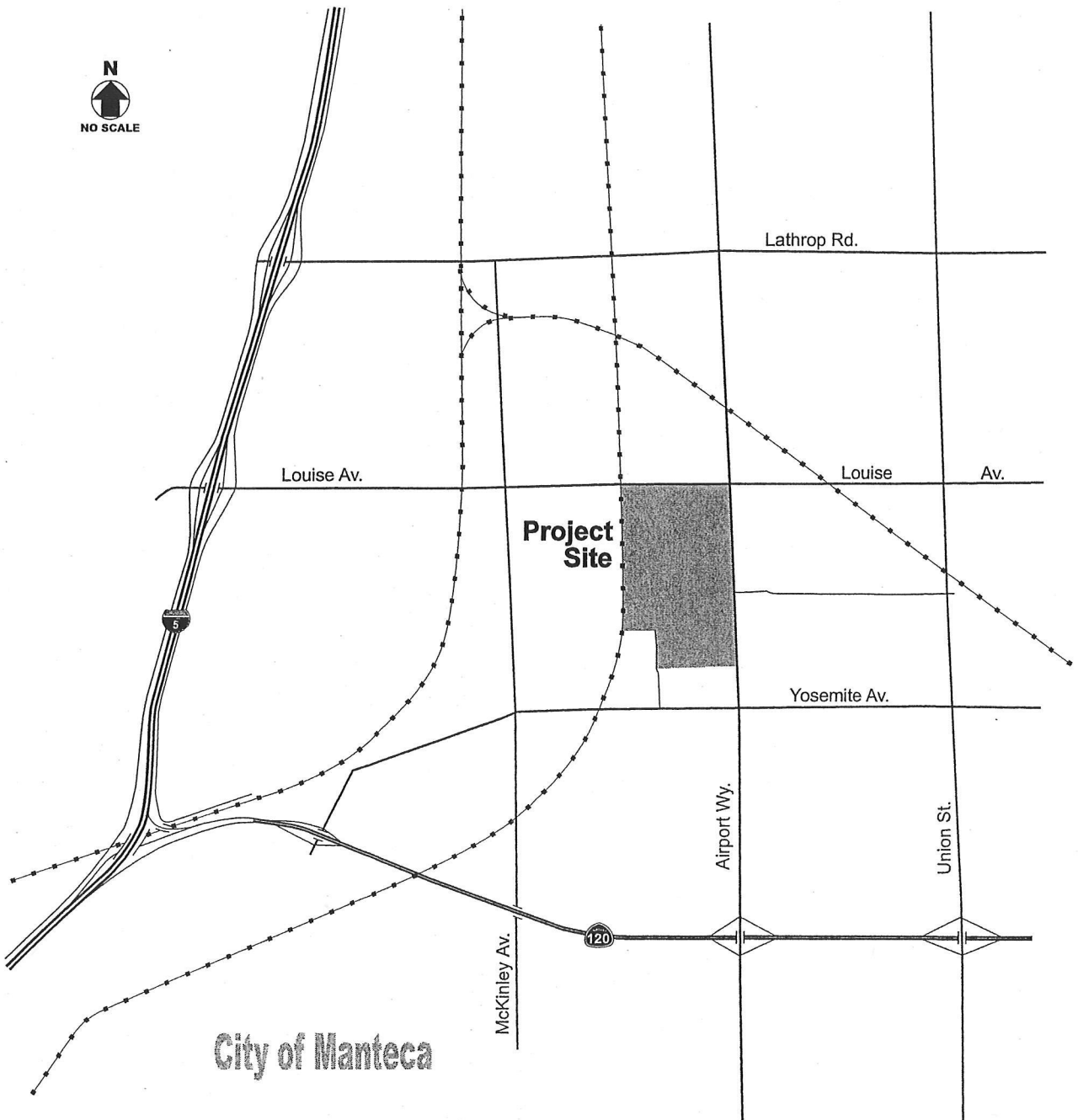
APPROACH AND METHODOLOGY

Traffic impacts are typically assessed by evaluating the effects of a proposed project on the transportation circulation system's ability to accommodate expected traffic levels. The assessment focuses on determining whether the transportation system has sufficient capacity to serve expected traffic.

In an urban or sub-urban environment, intersections, rather than mid-block segments, are the primary capacity-controlling locations. Therefore, this traffic study focuses on the operation of intersections considered most likely to be adversely affected by the proposed project.

Periods of Analysis

During a weekday, traffic flows are typically highest during morning (AM) and evening (PM) peak periods. Therefore, the potential for a project to adversely affect the operation of a transportation system is greatest during these peak periods. Implementation of the proposed project is expected to involve residential and commercial land use activity. Both land uses generate significant traffic during the morning AM and evening PM peak hours. Therefore, this study focuses on potential impacts during the AM and PM peak periods.



Villa Ticino West TIS
Manteca, CA

Study Area

Figure

1



Villa Ticino West TIS
Manteca, CA

Project Site Plan

Figure

2

Trip Generation

Trip generation estimates prepared for the proposed project are based on rates from the Institute of Transportation Engineers' (ITE) document, *Trip Generation, 6th Edition* (Institute of Transportation Engineers, 1997). The 6th Edition is the latest in the series of *Trip Generation* documents, and is the edition based on the largest and most up-to-date database. The ITE *Trip Generation* document is considered to be the industry-standard source of trip generation rates. Rates presented in the *Trip Generation* document are average rates based on trip generation survey counts conducted at similar existing facilities.

For this study, trip generation characteristics of Single Family Detached Housing (ITE Code 210), Multi-Family Housing - Apartments (ITE Code 220), and Shopping Center (ITE Code 820) were used. **Table 1** presents trip generation estimates for the proposed project. The proposed project is estimated to add a net of 22,638 daily trips to roadways in the vicinity of the project site. Of those daily trips, 1,017 trips (365 inbound and 652 outbound) would occur during the AM peak hour and 2,115 trips (1,164 inbound and 951 outbound) would occur during the PM peak hour.

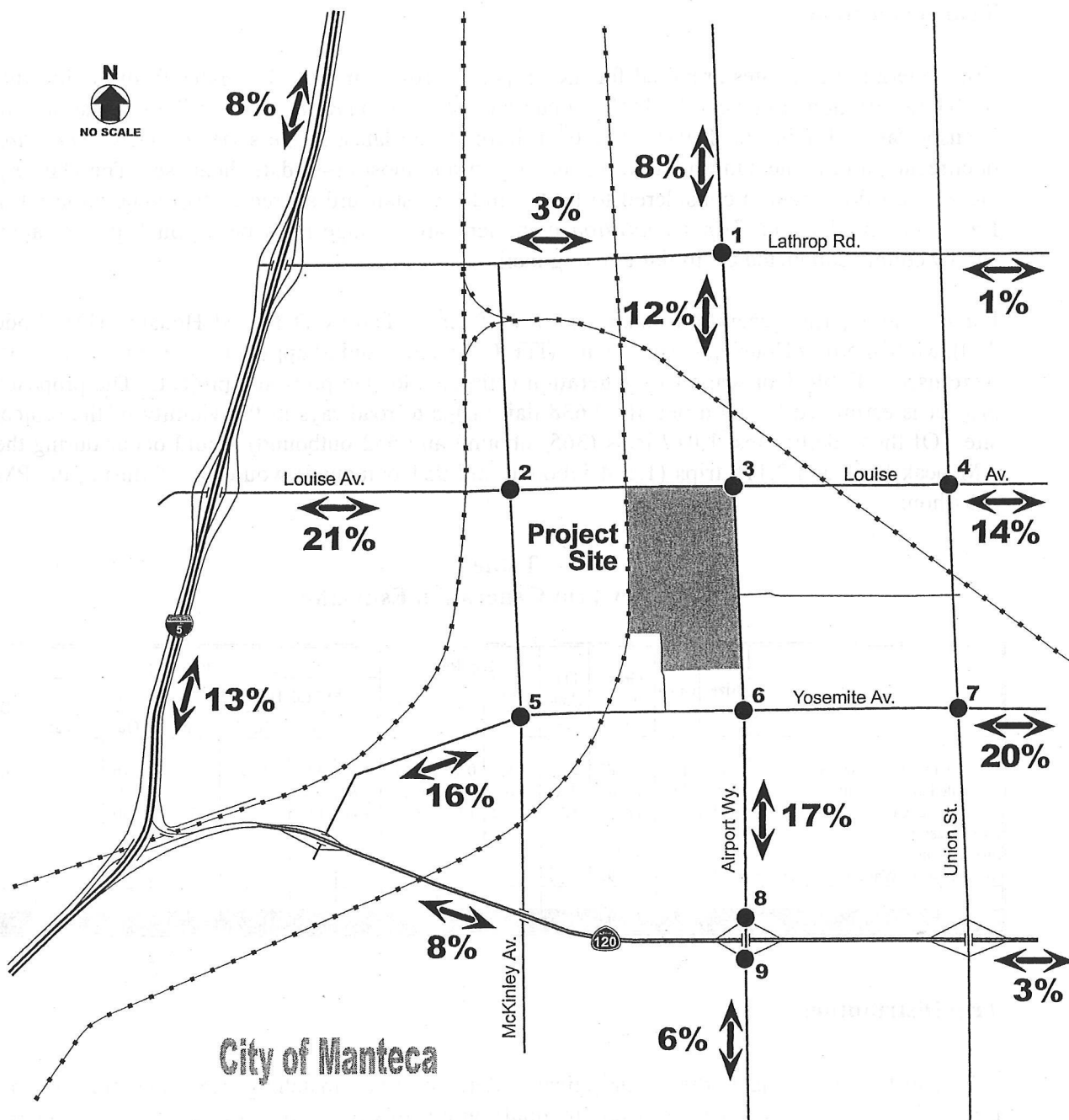
Table 1
Project Trip Generation Estimates

Land Use	Size	Units	Gross Acres	ITE Code	Trip Rates			Project Trips						
					Daily	AM	PM	AM Peak Hour			PM Peak Hour			Daily
								In	Out	Total	In	Out	Total	
Single Family Residential	760	d.u.	183.87	210	9.57	0.75	1.01	143	428	570	491	276	768	7,273
Multiple Family Residential	220	d.u.	12.40	220	6.63	0.51	0.62	18	94	112	91	45	136	1,459
Commercial Center	324	k.s.f.	18.55	820	42.92	1.03	3.74	204	130	334	582	630	1,212	13,906
Parks/Basins			14.61											
Fire Station			0.78											
Swales/Storm Water Conveyances			6.79											
Total			237.00					365	652	1,017	1,164	951	2,115	22,638

Trip Distribution

Trip distribution simulates the geographical pattern of travel, matching trips generated by one type of land use (e.g., residential or commercial) with trips generated by other types of land uses (e.g., employment, shopping, and education). The following is a description of trip distribution methods used for project condition analysis.

Project Condition. Trip distribution patterns for existing plus project and cumulative plus project condition are based on existing travel patterns in the vicinity of the project site. The trip distribution was established using a manual method to distribute the project trips to the roadway networks based on existing traffic patterns from the existing traffic counts collected. **Figure 3** shows the pattern of trip distribution to and from the proposed project site. The trip distribution indicates that seventeen percent (17%) of project traffic will use the intersection of Yosemite Avenue/Guthmiller/SR-120 Ramps, however, this intersection has not been analyzed or evaluated as part of this traffic study.



Villa Ticino West TIS Manteca, CA	Figure
Trip Distribution	3

Level of Service Concept

The operating conditions experienced by motorists are described as “levels of service” (LOS). Level of service is based on several factors, including:

- traffic volumes,
- intersection lane configurations,
- design and type of intersection control,
- speed and travel time,
- traffic interruptions,
- freedom to maneuver, and
- driving comfort and convenience.

Levels of service may be expressed qualitatively with letters “A” through “F” from best to worst, which cover the entire range of traffic operations that might occur. Levels of service A through E generally represent traffic volumes at less than roadway capacity, while LOS F represents over-capacity or forced flow conditions.

Different types of analyses are used for signalized and unsignalized intersections. The methods used to analyze both signalized and unsignalized intersections are described below.

Signalized Intersection Analysis. The LOS methodology used to analyze signalized intersections is based on the signalized intersection methodology in the 2000 Highway Capacity Manual (HCM). This methodology is described in Chapter 16 of the 2000 HCM. **Table 2** provides the delay and qualitative descriptions of intersection traffic conditions, which correspond, to the various LOS per the HCM.

Unsignalized Intersection Analysis. Unsignalized intersections (those controlled by stop signs) were analyzed using the method described in Chapter 17 of the 2000 *Highway Capacity Manual*. This method calculates an average total delay per vehicle for each controlled movement, and for the intersection as a whole. The LOS designation is based upon the calculated delay. **Table 3** presents the relationship of total delay to LOS for two-way and all-way stop-controlled intersections. Unsignalized intersection LOS described in this study is based upon average total delay per vehicle for the intersection as a whole for all-way stop intersections, and worst-case movement delay for two-way stop controlled intersections.

Table 2
Level of Service Criteria for Signalized Intersections

Level of Service	Description	Delay
A	Uncongested operations, no vehicle is required to wait more than one green cycle.	≤ 10
B	Slightly congested, but still no vehicle waits more than one green cycle.	$> 10 - 20$
C	Lightly congested with occasional backups on critical approaches. Some vehicles are delayed to a second green cycle.	$> 20 - 35$
D	Congested operations during the highest flow periods. Many vehicles wait for a second green cycle. All vehicles can pass within one or two signal cycles. Limit of acceptable operations in rural areas.	$> 35 - 55$
E	Severe congestion extending beyond one peak hour. Queues of traffic may extend to other intersections. Traffic volume is close to capacity. Limit of acceptable operations in urban areas.	$> 55 - 80$
F	Traffic volume exceeds intersection capacity. Excessive backups and long delays. Congested conditions extend beyond the peak hour. Queues of traffic may extend to other intersections.	> 80

Source: Exhibit 16-2, 2000 *Highway Capacity Manual*

Table 3
Level of Service Criteria for Unsignalized Intersections

Level Of Service	<i>Two Way Stop Controlled</i> Average Control Delay (secs/veh) ¹	<i>All Way Stop Controlled</i> Control Delay (secs/veh) ²	Description
A	0 - 10	0 - 10	Little or no delay
B	$> 10 - 15$	$> 10 - 15$	Short traffic delay
C	$> 15 - 25$	$> 15 - 25$	Average traffic delays
D	$> 25 - 35$	$> 25 - 35$	Long traffic delays
E	$> 35 - 50$	$> 35 - 50$	Very long traffic delays
F	> 50	> 50	Extreme delays potentially affecting other traffic movements in the intersection

1) Source: Exhibit 17-2, 2000 *Highway Capacity Manual*.

2) Source: Exhibit 17-22, 2000 *Highway Capacity Manual*.

Signal Warrants

Traffic signal warrants are a series of standards that provide guidelines for determining if a traffic signal is appropriate. Signal warrant analyses are typically conducted at intersections of uncontrolled major streets and stop sign-controlled minor streets. If one or more signal warrants

are met, signalization of the intersection may be appropriate. However, a signal should not be installed if none of the warrants are met, since the installation of signals would increase delays on the previously uncontrolled major street, and may increase the occurrence of particular types of accidents.

For this traffic study, available data is limited to AM and PM peak hour volumes, thus unsignalized intersections with unacceptable LOS (i.e., E or F) were evaluated using the Peak Hour Volume Warrant (Warrant No. 11) from the Caltrans Traffic Manual. The Peak Hour Volume Warrant was applied where the minor street experiences long delays in entering or crossing the major street for at least one hour of the day.

Even if the Peak Hour Volume Warrant is met, additional warrants are recommended prior to the installation of traffic signals. The additional warrants should consider peak hour volumes, volumes during the eight highest hours of the day, pedestrian traffic, and accident histories.

STUDY INTERSECTIONS

Nine study intersections were selected for analysis in this traffic study with input from City of Manteca Public Works Department staff. All of the intersections currently exist. There are three additional intersections, which would provide access to the proposed project site. These intersections have not been analyzed as part of this study.

Existing Intersections

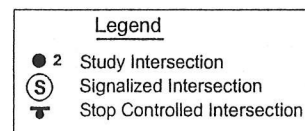
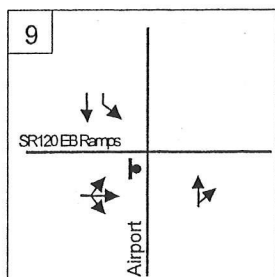
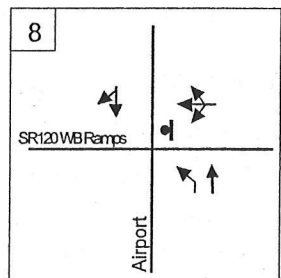
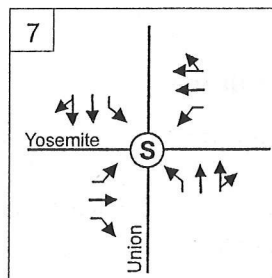
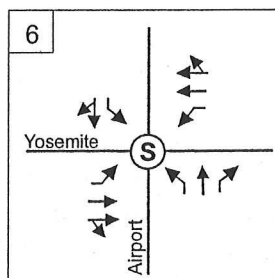
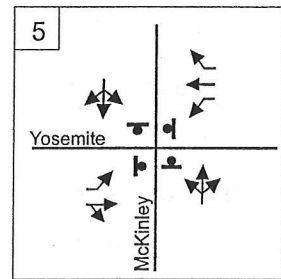
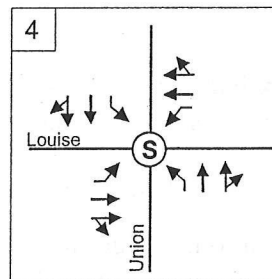
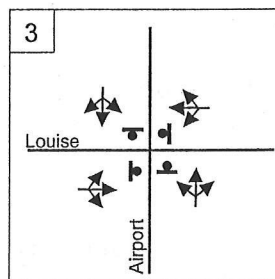
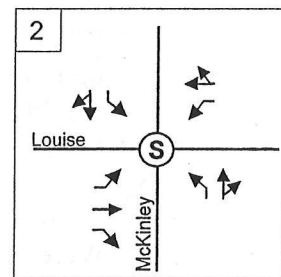
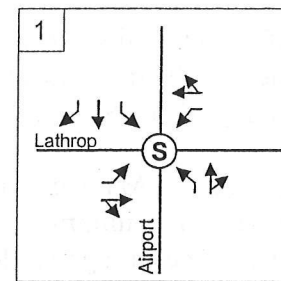
The following are the nine existing intersections. The numbers in the following list correspond to the locations of the intersections in **Figure 4**, and the intersections described in tables presented in this traffic study.

1. Airport Way/Lathrop Road
2. Airport Way/Louise Avenue
3. Louise Avenue/Union Road
4. Yosemite Avenue (Vierra Road)/McKinley Avenue
5. Airport Way/Yosemite Avenue
6. Yosemite Avenue/Union Road
7. Airport Way/State Route 120 (WB) Ramps
8. Airport Way/State Route 120 (EB) Ramps
9. Louise Avenue /McKinley Avenue

The intersections numbered 1, 3, 5, 6 and 9 above are signalized. The other four intersections are unsignalized. The lane geometrics of the nine existing intersections are also shown in **Figure 4**. The study of project access intersections is presented in Chapter 5, Project Roadway Access Impacts. The ramp intersections of Louise Avenue and Interstate 5 Northbound Ramps and Southbound Ramps have not been evaluated as part of this study. Both intersections have been studied in previous reports, and their impacts have already been addressed. Therefore, it was decided not to evaluate them. The traffic analysis is presented in a project study report (PSR) for the I-5/Louise Avenue interchange project.

Future Intersections

Based on the proposed site development plan, the project site would be accessed via three new intersections. There would be two intersections connected to the project site on Airport Way, and a third intersection would connect to Louise Avenue at the northern boundary of the project site. A fourth access point would result from the connection of the project internal road way with the existing Swanson Road intersection, located south of the project area. Detailed information on all these access points is currently unavailable.



Villa Ticino West TIS
Manteca, CA

**Existing Lane
Configurations**

Figure

4

THRESHOLDS OF SIGNIFICANCE

This section describes the thresholds of significance applied in this traffic study. The object of the thresholds is to clearly identify the significance of project-related impacts. The City of Manteca's LOS standards were used in determining project impacts.

The City of Manteca's target for transportation LOS is to provide City-wide average LOS of C or better, and a minimum of LOS D at any individual location. LOS C, LOS D and the other Level of Service ratings as defined in current traffic engineering standards. This "C" average, "D" minimum shall be accomplished by attempting to provide LOS C at all locations, but accepting LOS D under the following circumstances.

- a. Where constructing facilities with enough capacity to provide LOS C is found to be unreasonably expensive. This applies to facilities, for example, on which it would cost significantly more per dwelling unit equivalent (DUE) to provide LOS C than to provide LOS D.
- b. Where it is difficult or impossible to maintain LOS C because surrounding facilities in other jurisdictions operate at LOS D or worse.
- c. Where free-flowing roadways or interchange ramps would discourage use of alternate modes.
- d. Where maintaining LOS C will be a disincentive to use of existing alternative modes or to the implementation of new transportation modes that would reduce vehicle travel.

Thresholds of significance for auxiliary lanes are not presented in this report since the study does not specifically include the analysis of auxiliary lanes.

Thresholds for Existing Plus Project Conditions

Under Existing Plus Project condition, a significant impact is generally defined as degrading operation of an intersection from an acceptable LOS under Existing conditions to an unacceptable LOS under Existing Plus Project conditions. The intersection lane geometrics used in this comparison are those assigned for the existing conditions analysis.

Thresholds for Cumulative Conditions

Under Cumulative conditions, a significant impact is generally defined as degrading operation of an intersection from an acceptable LOS under Cumulative (no project) conditions to an unacceptable LOS under Cumulative Plus Project conditions. The intersection lane geometrics used in this comparison are generally those needed to achieve an acceptable intersection operating condition under Cumulative (no project) conditions. Since the Cumulative (no project) and Cumulative plus project conditions are the same, a significant impact under Cumulative condition would occur if the operation of a study intersection does not meet the City's minimum acceptable LOS requirements.

SECTION 2

ENVIRONMENTAL SETTING

This section of this traffic study presents a description of the traffic-related environmental setting in the vicinity of the project site. The existing conditions are described in this section of this study.

EXISTING SETTING

Existing traffic conditions in the vicinity of the project site were analyzed for this traffic study. The following is a description of existing conditions.

Existing Roads

The proposed Villa Ticino West project site is located west of Airport Way, east of the rail track and south of Louise Avenue. Louise Avenue serves as the major route for east-west movements and Airport Way serves as the major local route for north-south movements. Interstate 5 (I-5) and State Route (SR) 120 provide regional access to and from the project site via interchanges at Louise Avenue/I-5 and Airport Way/SR-120. Primary access to the project site would be provided via Louise Avenue, Airport Way and Yosemite Avenue. Important roadways in the vicinity of the Villa Ticino project site are described below and also shown on **Figure 4**.

Interstate 5 is a major regional facility to the west of the project site and provides direct connection between northern and southern California. Within the state of California, the I-5 extends from the US border with Mexico to the California border with Oregon and beyond.

State Route 120 is a major regional facility to the south of the project site and provides an east west connection between Interstate 5 and State Route 99. SR-120 continues eastwards as a rural highway at the Yosemite Avenue/SR-99 interchange.

Louise Avenue is a two-lane east-west roadway north of the project site that runs between the Cities of Manteca and Lathrop. In the vicinity of the project site, Louise Avenue intersects I-5,

Harlan Road, Howland Road, McKinley Avenue, Airport Way and Union Road. The intersections of Louise Avenue and Harlan Road, Howland Road, McKinley Avenue, and Union Road intersection are controlled by traffic signals. The intersection of Louise Avenue and Airport Way is currently stop sign controlled.

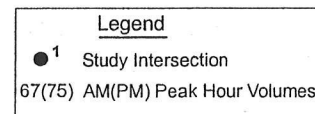
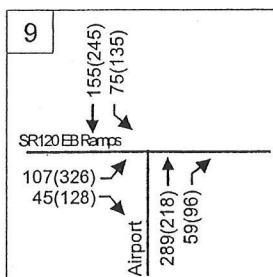
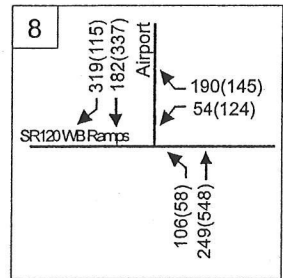
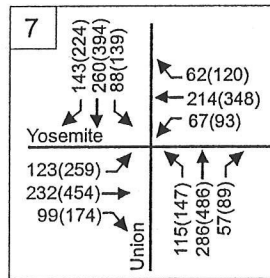
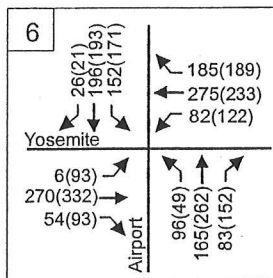
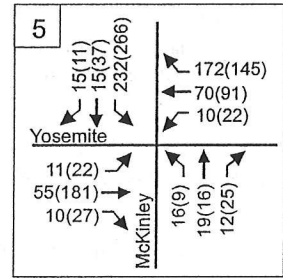
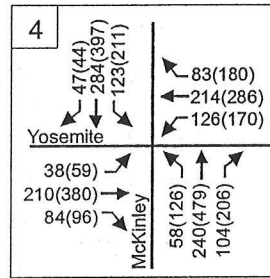
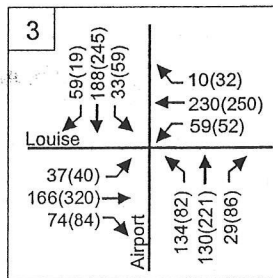
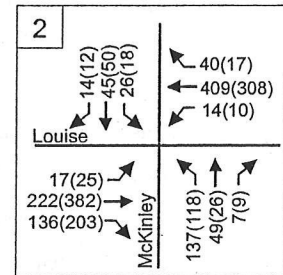
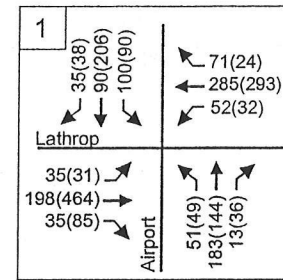
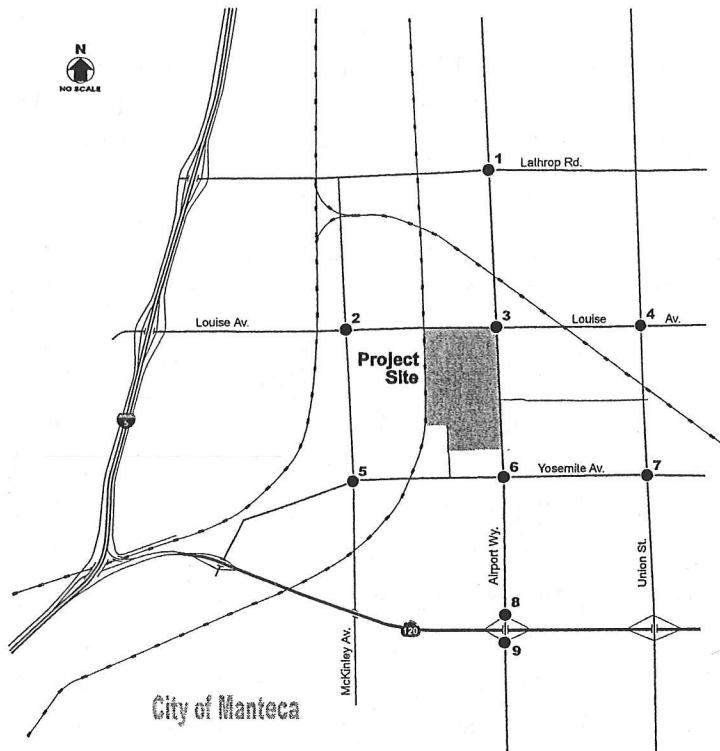
Airport Way is a two-lane north-south roadway in the City of Manteca and unincorporated part of Lathrop. Airport Way is to the east of the project site and intersects Lathrop Road, Louise Avenue, Yosemite Avenue, and SR-120 on and off ramps within the project study area. The intersections of Airport Way and Yosemite Avenue, and Airport Way and Lathrop Road are controlled by traffic signals. The intersection of Airport Way and Louise Avenue, and Airport Way and SR-120 Westbound and Eastbound Ramps are currently controlled by stop signs.

Yosemite Avenue is an east-west roadway to the south of the project site. In the project vicinity, Yosemite Avenue intersects McKinley Avenue, Airport Way and Union Road. The intersections of Yosemite Avenue and Airport Way and Yosemite Avenue and Union Road are controlled by traffic signals and the other intersections are stop sign controlled.

Lathrop Road is an east-west roadway in the City of Lathrop and City of Manteca to the north of the project site. Lathrop Road intersects Interstate 5, McKinley Avenue Airport Way, and Union Road. The intersection of Lathrop Road and Airport Way, and Lathrop Road and Union Road are signalized and the other intersections are controlled by stop signs.

Traffic Volumes

Existing AM and PM peak hour turning movement traffic volumes were collected at each of the nine existing study intersections. Intersection traffic counts were collected for this traffic study on September 25, 2003. Traffic volumes for the Louise and McKinley Avenue intersection were obtained from the ASSIEH Industrial Park Traffic Impact Study Report, dated April 9, 2002. The 2002 counts at that intersection were reviewed and found to be compatible with the recent counts taken in September 2003. Existing AM and PM peak hour turning movement traffic volumes are shown in **Figure 5**. Existing traffic count data sheets are presented in **Appendix A**.



Villa Ticino West TIS Manteca, CA	Figure
Existing Peak Hour Volumes	5

Intersection Operations

Intersection operations were evaluated for the AM and PM peak hours at the nine existing study intersections. A description of LOS at these intersections is provided in **Table 4**. Detailed intersection LOS calculations under Existing Conditions are also included in **Appendix A**.

Table 4
Existing AM and PM Peak Hour Intersection Operations

Intersection	Control	AM Peak		PM Peak	
		LOS	V/C or Delay	LOS	V/C or Delay
1. Airport Way/Lathrop Road	Signal	C	27.5	C	24.6
2. Louise Avenue /McKinley Avenue	Signal	B	17.4	B	16.5
3. Airport Way/Louise Avenue	All Way Stop	B	14.8	E	39.7
4. Louise Avenue/Union Road	Signal	C	27.1	C	30.1
5. Yosemite Avenue /McKinley Avenue	All Way Stop	A	9.4	B	11.0
6. Airport Way/Yosemite Avenue	Signal	C	28.7	C	31.6
7. Yosemite Avenue/Union Road	Signal	C	27.8	C	30.9
8. Airport Way/SR-120 WB Ramps	Two Way Stop	B	14.9	E	45.3
9. Airport Way/SR-120 EB Ramps	Two Way Stop	C	15.2	F	116.8

Notes:

Delay values are average delay per vehicle.

Worst-case movement delay reported for two way stop unsignalized intersections.

All of the existing study intersections were found to be operating acceptably at LOS C or better during the AM and PM peak hours except for the following intersections:

Airport Way/Louise Avenue (LOS E in the PM peak hour)

Airport Way/SR-120 WB Ramps (LOS E in the PM peak hour)

Airport Way/SR-120 EB Ramps (LOS F in the PM peak hour).

SECTION 3

IMPACTS – EXISTING PLUS PROJECT

This section of this traffic study describes traffic operations under Existing Plus Project conditions. Traffic under this condition is estimated by adding project-related traffic to the existing traffic volumes. Comparing Existing Plus Project conditions to the baseline Existing (no project) conditions results in an identification of project-related impacts.

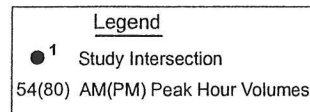
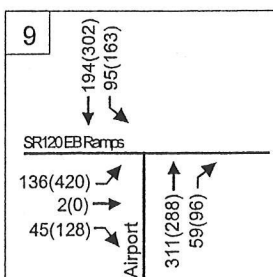
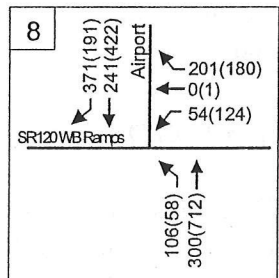
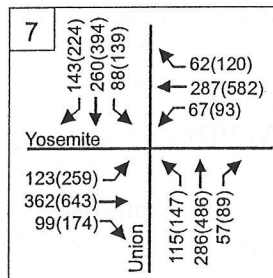
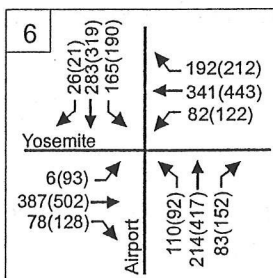
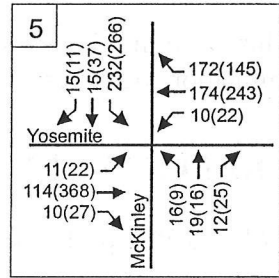
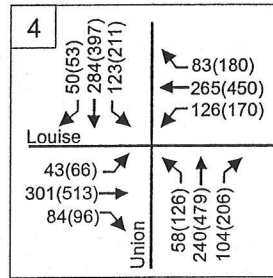
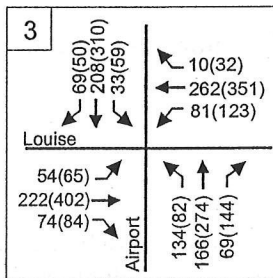
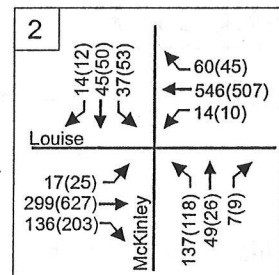
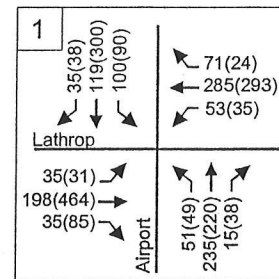
This section identifies the significance of project-related traffic impacts, and recommends mitigation measures where significant impacts are identified.

TRAFFIC VOLUMES

AM and PM peak hour traffic volumes at the study intersections under Existing Plus Project conditions are shown in **Figure 6**. Section 1 of this traffic study, Introduction, presents a description of assumptions and approaches (e.g., baseline existing conditions, project-related trip generation, and trip distribution) used to estimate traffic volumes under Existing Plus Project conditions.

PLANNED ROADWAY IMPROVEMENTS

The analysis of Existing Plus Project conditions assumed the same roadway network, study intersections, intersection geometrics, and intersection traffic controls used in the analysis of Existing conditions.



Villa Ticino West TIS
Manteca, CA

Existing + Project
Peak Hour Volumes

Figure
6

INTERSECTION OPERATIONS

Intersection operations during the AM and PM peak hours at the nine study intersections under Existing Plus Project conditions were analyzed for this traffic study. Levels of service that would occur at these intersections are presented in **Table 5**. Detailed study intersection operation calculations under Existing Plus Project conditions are presented **Appendix B**.

Table 5
Existing Plus Project
AM and PM Peak Hour Intersection Operations

Intersección	Control	Base Geometrics							
		AM Peak		PM Peak		With Improvements			
						AM Peak		PM Peak	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1. Airport Way/Lathrop Road	Signal	C	28.1	C	26.8				
2. Louise Avenue /McKinley Avenue	Signal	B	15.8	B	13.9				
3. Airport Way/Louise Avenue	All Way Stop	C	24.4	F	163.3	C	29.7	C	32.4
4. Louise Avenue/Union Road	Signal	C	27.0	C	30.7				
5. Yosemite Avenue /McKinley Avenue	All Way Stop	B	10.1	C	15.9				
6. Airport Way/Yosemite Avenue	Signal	C	28.9	C	33.4				
7. Yosemite Avenue/Union Road	Signal	C	27.5	C	32.9				
8. Airport Way/SR-120 WB Ramps	Two Way Stop	C	17.3	F	159.0	C	20.5	B	19.5
9. Airport Way/SR-120 EB Ramps	Two Way Stop	C	19.4	F	409.3	B	11.0	D	29.2

Notes:

Delay values are overall delay per vehicle for unsignalized intersections.

Under Existing Plus Project conditions, all the following study intersections would operate at unacceptable LOS E or F during the AM and PM peak hours.

- Airport Way/Louise Avenue (LOS F in the PM peak hour)
- Airport Way/SR-120 WB Ramps (LOS F in the PM peak hour)
- Airport Way/SR-120 EB Ramps (LOS F in the PM peak hour)

DEFICIENCIES AND MITIGATION MEASURES

The following is a description of the intersections that would operate at unacceptable LOS under Existing Plus Project conditions. When significant impacts are identified, mitigation measures needed to reduce the impacts to less-than-significant levels are also described. The needed mitigation measures and resulting improved LOS are also presented in **Table 6**.

The City of Manteca has adopted the 1993 Public Facilities Implementation Plan (PFIP) to finance necessary roadway improvements required to meet the objectives of the General Plan. Although the City is currently updating the 1993 PFIP, this report addresses improvement fees based on the existing PFIP report dated December 1993.

Development fees, together with other sources of financing available to the City of Manteca, are necessary to finance public improvements to implement the *General Plan*, and the Transportation Master Plan. Development fees assure an equitable distribution of costs between the existing residents and businesses in the City and new development in Manteca. The Transportation section of the 1993 PFIP Report is designed to finance required additional transportation capacity made necessary by development that would occur during the period July 1, 1993 through June 30, 2010.

The City of Manteca's development impact fees are based on five (5) Transportation Financing Zones that separate the City into areas, which differ from one another in their degree of reliance on specific major transportation facility. The Villa Ticino West project is located in Zone 5 (the northwest area). If off-site intersection and roadway segment improvements identified below are currently included in the calculations for development impact fee, the payment of the current PFIP development impact fee constitutes the developer's proportionate share of participation for the improvements. For improvements not included in the PFIP fee calculation, the owners, developers and/or successors-in-interest will be responsible for the proportionate share, based on traffic loadings, for these improvements.

The General Plan clearly states that new development will pay a fair share of the costs of street and other traffic and transportation improvements, based on traffic generation and impacts on levels of service, in conformance with the standards and policies in the Public Facilities Implementation Plan (PFIP). Development, which would necessitate roadway improvements prior to the development of lands abutting those roadways, shall be required to make any such improvements, or participate in such improvements, as a condition of approval.

Table 6
Existing Plus Project
Deficiencies and Mitigation Measures

Impact Existing Plus Project	Level of Significance	Improvement (Mitigation Measure) Existing Plus Project. <i>The owners, developers, and/or successors-in-interest of the project shall be responsible for their proportionate share of the following improvement.</i>
3: Unacceptable LOS at the Intersection of Louise Avenue/Airport Way. The addition of project-related trips to existing would result in the intersection operating at LOS F with delay of 163.3 seconds in the PM peak hour.	Significant	Install traffic signal and provide protected left-turns and through/right turn lanes at all approaches. Implementation of the identified improvement would result in this intersection operating at LOS C with a Delay of 29.7 and 32.4 seconds in the AM and PM peak hours respectively. Signal Warrant Met. Signal Warrant Sheets are provided in Appendix G .
8: Unacceptable LOS at the Intersection of Airport Way/SR-120 WB Ramps. The addition of project-related trips to existing traffic would result in LOS F for the worst-case movement with delay of 159.0 seconds in the PM peak hour.	Significant	Install traffic signal. Implementation of the identified improvement would result in this intersection operating at LOS C and B with delay of 20.5 and 19.5 seconds in the AM and PM peak hours respectively. Signal Warrant Met. Signal Warrant Sheets are provided in Appendix G .
9: Unacceptable LOS at the Intersection of Airport Way/SR-120 EB Ramps. The addition of project-related trips to existing traffic would result in LOS F for the worst-case movement with delay of 409.3 seconds in the PM peak hour.	Significant	Convert the intersection to All-Way Stop Sign control. Implementation of the identified improvement would result in this intersection operating at LOS B and D with delay of 11.0 and 29.2 seconds in the AM and PM peak hours respectively. Signal Warrant Met, however, All-Way Stop Sign Control will improve the intersection. Signal Warrant Sheets are provided in Appendix G .

Intersection operation calculations for the mitigated intersection operations under Existing Plus Project conditions are presented in **Appendix C**.

SECTION 4

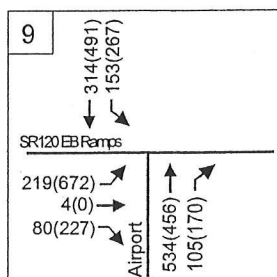
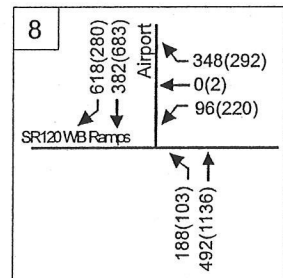
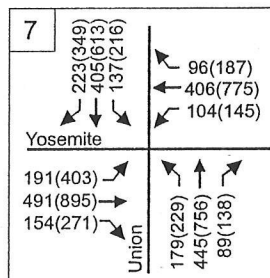
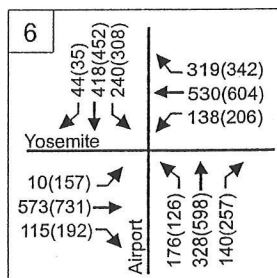
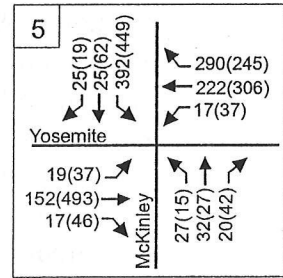
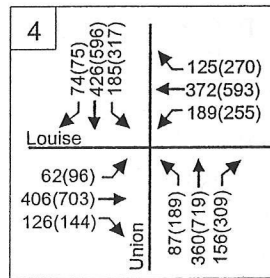
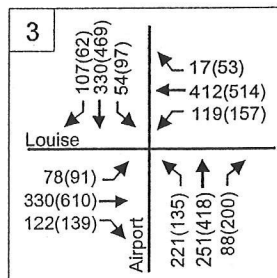
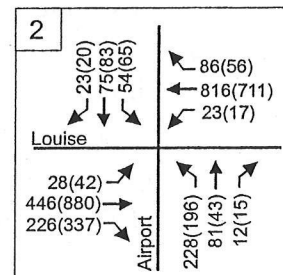
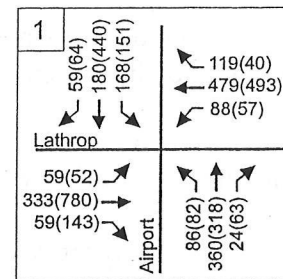
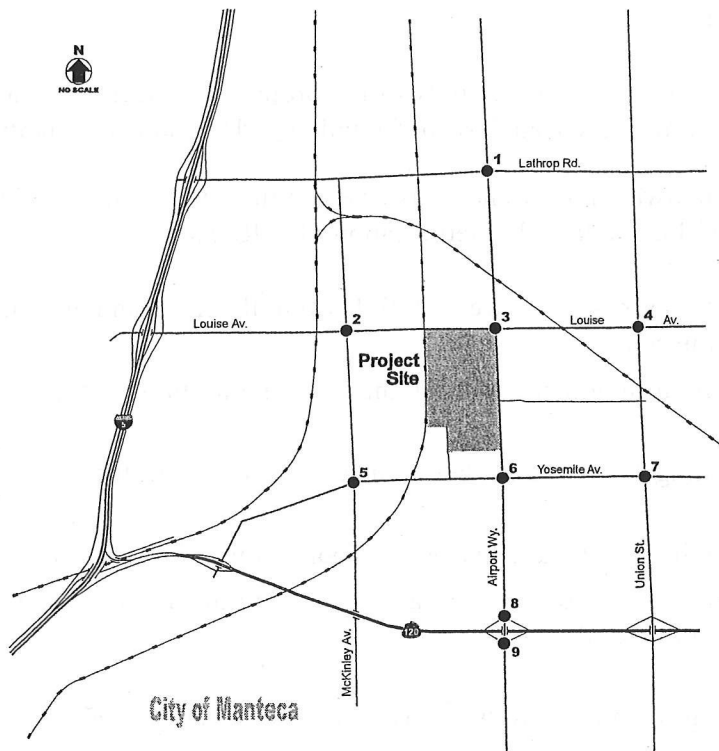
CUMULATIVE ANALYSIS

This section of the traffic study describes traffic operating conditions in the vicinity of the project associated with Cumulative development conditions. The proposed project is consistent with development assumed in the City's General Plan under build out conditions. The future year traffic volume forecasts are based on the Manteca General Plan Traffic Model, which assumes build out of General Plan land uses. Therefore, the Cumulative (no project) scenario is the same as the Cumulative Plus Project scenario, and is not analyzed separately in this study.

CUMULATIVE SETTING

Traffic Volumes

Cumulative conditions traffic volumes were developed by applying the growth contained in the City of Manteca General Plan traffic model. The growth between the 1999 base year model link volumes and the future year 2025 model link volumes were calculated, and a straight-line interpolation was applied to the existing traffic volumes based on a 22-years growth between existing (2003) and future (2025) volumes. Average growth per year was found to be approximately three percent (3%). AM and PM peak hour traffic volumes at the study intersections under the Cumulative condition are shown in **Figure 7**.



Legend

● 1 Study Intersection

87(49) AM(PM) Peak Hour Volumes

Villa Ticino West TIS Manteca, CA	Figure
Cumulative + Project Peak Hour Volumes	7

Planned Roadway Improvements

To accommodate increased traffic volumes in the vicinity of the proposed project, roadway and intersection improvements were assumed in the analysis of Cumulative development conditions.

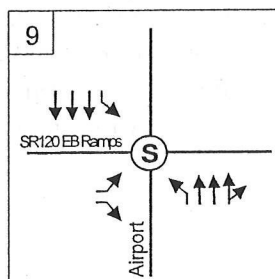
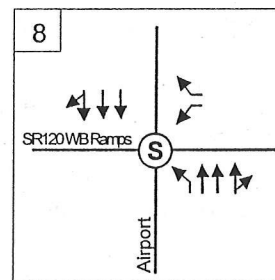
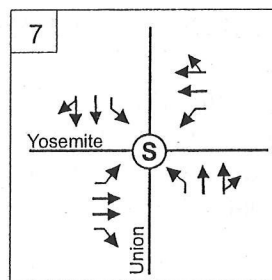
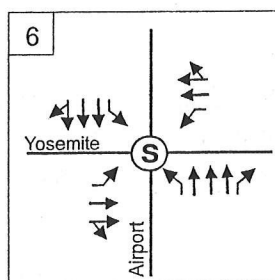
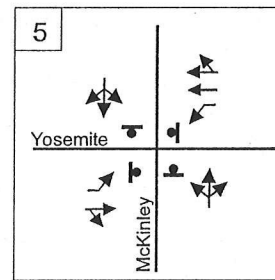
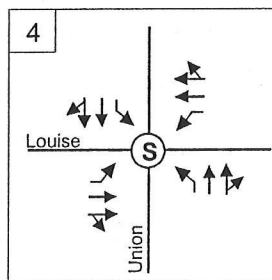
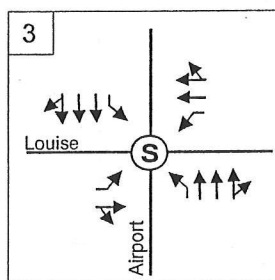
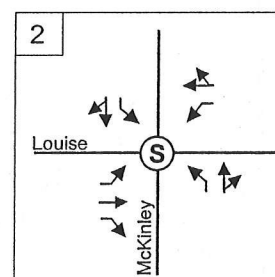
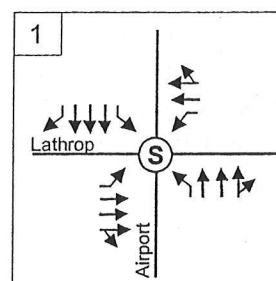
The following is a description of roadway improvements assumed in the City Manteca's General Plan traffic model as well as the Public Facilities Implementation Plan Report.

- Airport Way - widening to six lanes between Roth Road to the north and just south of Woodward Avenue to the south.
- Lathrop Road - widening to four lanes between the western city limit and the eastern city limit.
- Louise Avenue - widening to four lanes between Airport Way and the eastern city limit.
- Yosemite Avenue widening to six lanes between Airport Way and Union Road.
- Union Road widening to four lanes between Lathrop Road to the north and just south of Woodward Avenue to the south.

Based on the PFIP, the following intersections were assumed to be signalized under the Cumulative condition:

- Louise Avenue/Airport Way
- Airport Way/SR-120 WB Ramps
- Airport Way/SR-120 EB Ramps
- Airport Way/Daniels Drive
- Airport Way/Center Street
- Airport Way/Northgate Drive
- Airport Way/Atherton Dive

The intersection lane geometrics assumed in the analysis of the Cumulative condition are shown in **Figure 8**.



- Legend**
- 2 Study Intersection
 - Ⓢ Signalized Intersection
 - Ⓣ Stop Controlled Intersection

Villa Ticino West TIS
Manteca, CA

Cumulative Intersection Geometrics and Control

Figure

8

Intersection Operations

Intersection operations during the AM and PM peak hours at the nine study intersections under Cumulative conditions were analyzed for this traffic study. Levels of service that would occur at these intersections are presented in **Table 7**. Detailed study intersection operation calculations under Cumulative Plus Project conditions are presented in **Appendix D**.

Table 7
Cumulative Condition
AM and PM Peak Hour Intersection Operations

Intersección	Control	Cumulative Geometrics							
		AM Peak		PM Peak		With Improvements			
						AM Peak		PM Peak	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1. Airport Way/Lathrop Road	Signal	C	30.0	C	27.0				
2. Louise Avenue /McKinley Avenue	Signal	C	24.1	C	21.1				
3. Airport Way/Louise Avenue	Signal	C	31.9	D	35.7				
4. Louise Avenue/Union Road	Signal	C	31.8	D	52.0				
5. Yosemite Avenue /McKinley Avenue	All Way Stop	C	16.5	F	67.3	C	27.4	C	31.5
6. Airport Way/Yosemite Avenue	Signal	C	30.6	D	38.6				
7. Yosemite Avenue/Union Road	Signal	C	33.0	E	62.3	C	32.1	D	44.6
8. Airport Way/SR-120 WB Ramps	Signal	C	24.4	C	20.3				
9. Airport Way/SR-120 EB Ramps	Signal	C	22.6	C	28.3				

Notes:

Delay values are overall delay per vehicle for unsignalized intersections.

IMPACTS AND MITIGATION MEASURES

The City of Manteca has adopted the 1993 Public Facilities Implementation Plan (PFIP) to finance necessary roadway improvements required to meet the objectives of the General Plan. Although the City is currently updating the 1993 PFIP, this report addresses improvement fees based on the existing PFIP report dated December 1993.

Development fees, together with other sources of financing available to the City of Manteca, are necessary to finance public improvements to implement the *General Plan*, and the Transportation Master Plan. Development fees assure an equitable distribution of costs between the existing residents and businesses in the City and new development in Manteca. The Transportation section of the 1993 PFIP Report is designed to finance required additional transportation capacity made necessary by development that would occur during the period July 1, 1993 through June 30, 2010.

The City of Manteca's development impact fees are based on five (5) Transportation Financing Zones that separate the City into areas, which differ from one another in their degree of reliance on specific major transportation facility. The Villa Ticino West project is located in Zone 5 (the northwest area). If off-site intersection and roadway segment improvements identified below are currently included in the calculations for development impact fee, the payment of the current PFIP development impact fee constitutes the developer's proportionate share of participation for the improvements. For improvements not included in the PFIP fee calculation, the owners, developers and/or successors-in-interest will be responsible for the proportionate share, based on traffic loadings, for these improvements.

The General Plan clearly states that new development will pay a fair share of the costs of street and other traffic and transportation improvements, based on traffic generation and impacts on levels of service, in conformance with the standards and policies in the Public Facilities Implementation Plan (PFIP). Development, which would necessitate roadway improvements prior to the development of lands abutting those roadways, shall be required to make any such improvements, or participate in such improvements, as a condition of approval.

DEFICIENCIES AND MITIGATION

The following is a description of intersections that would operate at unacceptable LOS under Cumulative Plus Project conditions. Recommended improvements that would result in acceptable LOS at these intersections are also described. Level of service that would occur at these study intersections is presented in **Table 7**. Under the Cumulative condition, the Yosemite Avenue /McKinley Avenue intersection would operate at unacceptable LOS F during the PM peak hour. The Yosemite Avenue/Union Road intersection would also operate at unacceptable LOS E condition during the PM peak hour.

Recommended improvements for Cumulative conditions that would be needed to address unacceptable operating conditions are described below. Mechanisms that may be used to implement the improvements include, but are not limited to: the City's PFIP, and developer-constructed improvements required by the City. The recommended improvements and resulting improved LOS are presented in **Table 8**.

Table 8
Cumulative Plus Project Conditions
Deficiencies and Mitigation Measures

Impact Cumulative Conditions	Level of Significance	Improvement (Mitigation Measure) Cumulative Plus Project Conditions. <i>The owners, developers, and/or successors-in-interest of the project shall be responsible for their proportionate share of the following improvement.</i>
5: Unacceptable LOS at the Intersection of Yosemite Avenue/McKinley Avenue. The addition of project-related trips to existing would result in the intersection operating at LOS F in the PM peak with delay of 67.3 seconds.	Significant	Install traffic signal. Implementation of the identified improvement would result in this intersection operating at LOS C with a delay of 27.4 and 31.5 seconds in the AM and PM peak hours respectively. Signal Warrant Met. Signal Warrant Sheets are provided in Appendix G .
7: Unacceptable LOS at the Intersection of Yosemite Avenue/Union Road. The addition of project-related trips to existing would result in the intersection operating at LOS E in the PM peak with delay of 62.3 seconds.	Significant	Add 1 left-turn lane at the eastbound approach. Implementation of the identified improvement would result in this intersection operating at LOS C and D with a delay of 32.1 and 44.6 seconds in the AM and PM peak hours respectively.

Intersection operation calculations for the mitigated intersection operations under Cumulative Plus Project conditions are presented in **Appendix E**.

SECTION 5

PROJECT ROADWAY ACCESS IMPACTS

This section addresses the operating conditions of the proposed project access roadway intersections under near-term and long-term project scenarios. It also addresses queuing at the driveway intersections with particular focus on the queuing at the Louise Avenue intersection, at the eastbound approach, which could potentially impact the existing railroad tracks west of the project site. Based on the project site plan, the distance between the railroad tracks and the proposed project driveway on Louise Avenue is approximately 1200 feet.

Primary access to the project site would be provided by one intersection to the north on Louise Avenue and two intersections to the east on Airport Way, and one intersection to the south on Yosemite Avenue. The project roadway intersection with Louise Avenue will eventually align with the Assieh Industrial Park Driveway to the north to form a four-leg intersection. Details of this alignment are however not available as at the time of this analysis. Swanson Road provides a fourth access in the southern portion of the project site. The Swanson Road access will connect to Yosemite Avenue, and also connect to the extension of Swanson Road to the south to form a four-leg intersection. The southern extension of Swanson Road would provide connection to the proposed Daniels Drive extension to the east. Detailed information on these planned roadway improvements are currently unavailable.

The above project access roadway intersections were analyzed to determine level of service/operations with the project traffic. The 4 project roadway intersections are:

1. Louise Avenue/Swanson Road/Villa Ticino West Roadway/Assieh Industrial Roadway
2. Airport Way/Villa Ticino West Access/Geneva Way
3. Airport Way/Villa Ticino West/Crom Street
4. Yosemite Avenue/Swanson Road Extension

It is assumed that the secondary project roadway on Airport Way would only allow right turn in/out of the project site. This roadway will align with Geneva Way in the future. As per the PFIP, the primary project driveway on Airport Road is assumed to be a signalized intersection

which will align with Crom Street in the future. This analysis also assumes that none of the remaining project access intersections are signalized as part of the project.

At this time, there is no detailed information on access to the commercial areas shown on the project site plan. It is recommended that future traffic operations be conducted as soon as access arrangements to the commercial areas are known. Project trip distribution and assignment at project roadway intersections are presented in **Figure 9**. **Figure 10** shows the intersection lane configuration and control at each roadway access intersection.

EXISTING PLUS PROJECT CONDITION

Level of Service Analysis

Traffic operations under Existing Plus Project conditions at the driveway intersections are summarized below in **Table 9**. Detailed intersection operation calculations for project roadway intersections under Existing Plus Project Conditions are presented in **Appendix F**.

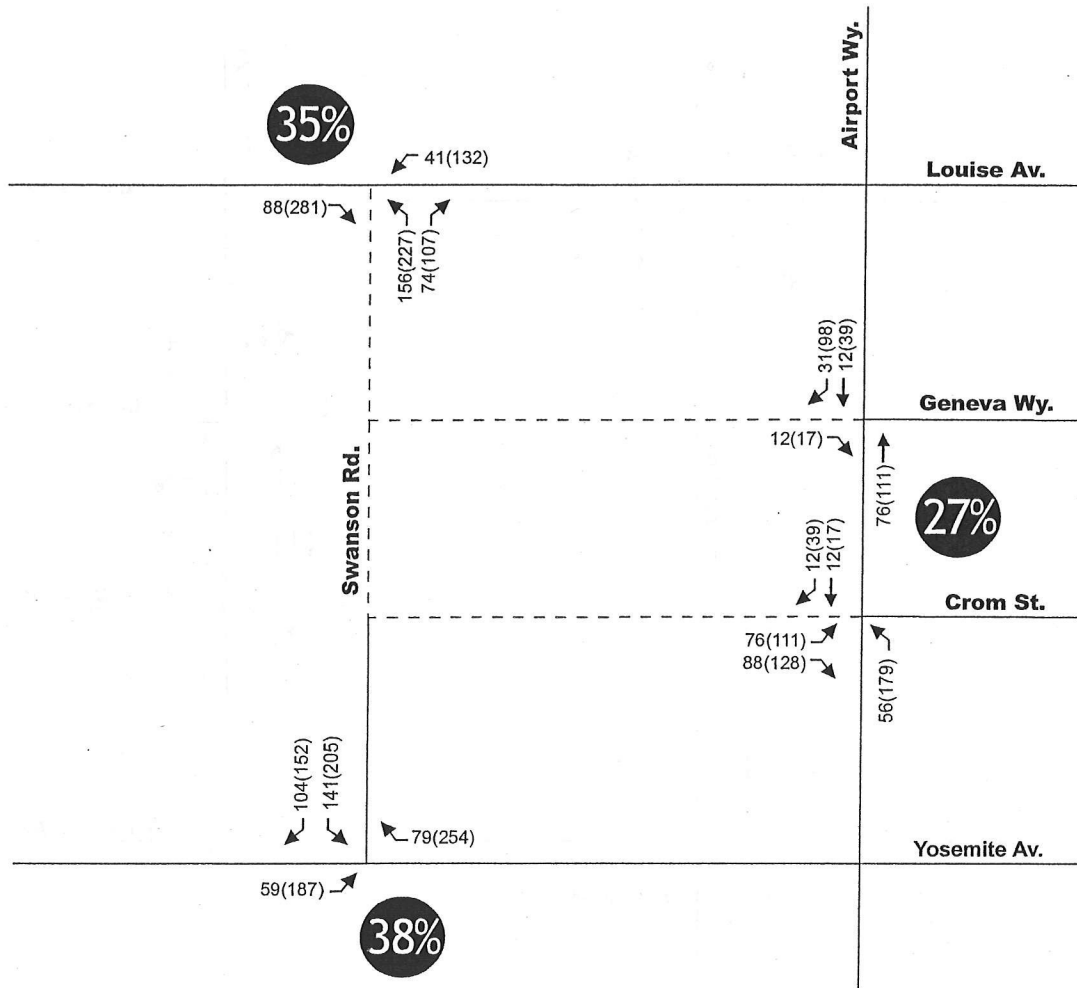
Table 9
Existing Plus Project
AM and PM Peak Hour Roadway Intersection Operations

Intersección	Control	Base Geometrics							
		AM Peak		PM Peak		With Improvements			
						AM Peak		PM Peak	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1. Louise Avenue/Swanson Road/Villa Ticino West Access/Assieh Industrial Access	Two Way Stop	C	19.4	F	>120.0	B	15.3	C	20.7
2. Airport Way/Villa Ticino West Access/Geneva Way	Two Way Stop	B	10.1	B	10.8				
3. Airport Way/Villa Ticino West/Crom Street	Signal	B	14.1	B	17.7				
4. Yosemite Avenue/Swanson Road Extension	Two Way Stop	C	16.7	F	76.7	B-	17.1-	C-	20.9-

Notes:

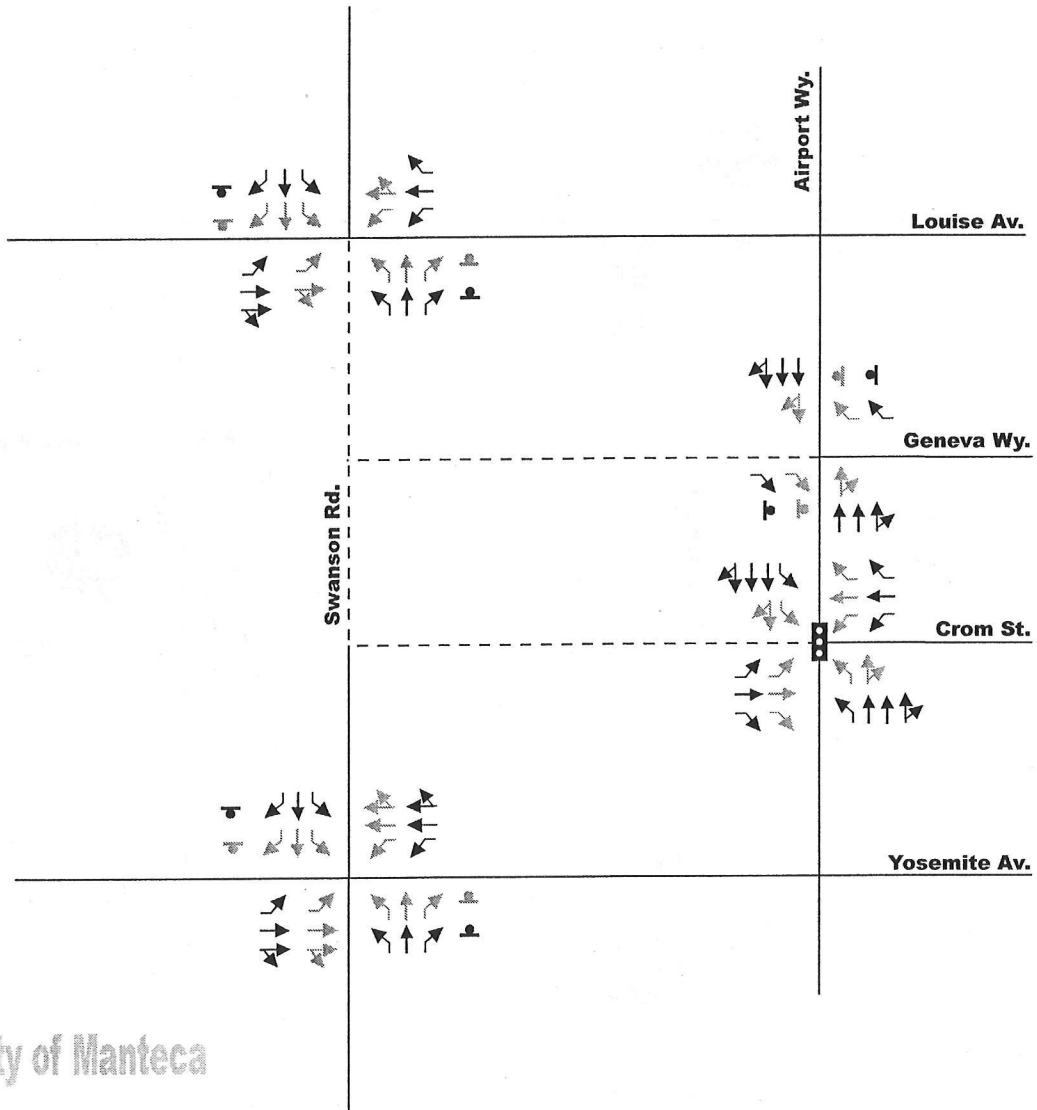
Delay values are overall delay per vehicle for unsignalized intersections. (E, N, S – East, North, South)

The results indicate that all project roadway intersections would operate at acceptable LOS C or better during the AM and PM peak hours, except for the Louise Avenue/Swanson Road/Villa Ticino West Access/Assieh Industrial Access and Yosemite Avenue/Swanson Road Extension intersections, which would both operate at LOS F conditions in the PM peak hour. Both intersections meet Caltrans traffic signal warrant 11 (Peak Hour Volume). Signal Warrant Sheets are provided in **Appendix G**. To mitigate the traffic impacts to a less-than-significant level, signalization is recommended. Implementation of traffic signals at both driveway locations would result in acceptable LOS C or better in the AM and PM peak hours. LOS at the driveway intersections with the recommended improvements is also presented in **Table 9** above. Detailed intersection operation calculations for project roadway intersections under Existing Plus Project Conditions with mitigation are presented in **Appendix F**.



City of Manteca

Villa Ticino West TIS Manteca, CA	Figure
Trip Assignment at Project Roadway Intersections	9



Legend	
	Signalized Intersection
	Stop Controlled Intersection
	Existing + Project
	Cumulative + Project

Villa Ticino West TIS Manteca, CA
Project Roadway Intersections Lane Configuration

Figure
10

Queuing Analysis

Under Existing Plus Project AM and PM peak hour conditions, there would be no off-site queuing problems based on the available queuing/storage distance between the railroad tracks and the project driveway. Although the intersection of Louise Avenue/Swanson Road/Driveway (N) would operate at unacceptable LOS F conditions during the PM peak hour, the poor LOS is due to northbound left turn out of the project site. The results also show that queuing will be minimal at the other driveway locations. A summary of the intersection queue length analysis under Existing Plus Project conditions is presented in **Table 10**. Intersection queue length analysis calculation sheets are also presented in **Appendix F**.

Table 10
Existing Plus Project
AM and PM Peak Hour Queue Lengths

Louise Avenue/Swanson Road/Villa Ticino West Access/Assieh Industrial Access	Northbound			Southbound			Eastbound			Westbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Plus Project - AM Peak	175		75				150		50	50		225
Existing Plus Project - PM Peak	250		75				250		175	175		150
Airport Way/Villa Ticino West Access/Geneva Way	Northbound			Southbound			Eastbound			Westbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Plus Project - AM Peak	-	-	-	-	-	-	-	-	-	-	-	-
Existing Plus Project - PM Peak	-	-	-	-	-	-	-	-	-	-	-	-
Airport Way/Villa Ticino West/Crom Street	Northbound			Southbound			Eastbound			Westbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Plus Project - AM Peak	75	150		175	175		75		100			
Existing Plus Project - PM Peak	200	225		275	25		125		150			
Yosemite Avenue/Swanson Road Extension	Northbound			Southbound			Eastbound			Westbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Plus Project - AM Peak				150		100	75	150		275		50
Existing Plus Project - PM Peak				225		150	200	250		275		225

Notes:

Storage lengths are in feet and are based on design queue lengths.

CUMULATIVE PLUS PROJECT CONDITION

Level of Service Analysis

Traffic operations under Cumulative Plus Project conditions at the driveway intersections are summarized below in **Table 11**. Detailed intersection operation calculations for project roadway intersections under Cumulative Plus Project conditions are presented in **Appendix F**.

Table 11
Cumulative Plus Project
AM and PM Peak Hour Roadway Intersection Operations

Intersección	Control	Base Geometrics					
		AM Peak		PM Peak		With Improvements	
						AM Peak	PM Peak
		LOS	Delay	LOS	Delay	LOS Delay	LOS Delay
1. Louise Avenue/Swanson Road/Villa Ticino West Access/Assieh Industrial Access	Two Way Stop	F	<120.0	F	<120.0	B 18.1	B 17.6
2. Airport Way/Villa Ticino West Access/Geneva Way	Two Way Stop	A	9.5	A	9.7		
3. Airport Way/Villa Ticino West/Crom Street	Signal	B	18.7	B	16.6		
4. Yosemite Avenue/Swanson Road Extension	Two Way Stop	F	<120.0	F	<120.0	B 19.6	B 18.4

Notes:

Delay values are overall delay per vehicle for unsignalized intersections. (E, N, S – East, West, South)

The Cumulative Plus Project results indicate that all project roadway intersections would operate at acceptable LOS B or better during the AM and PM peak hours, except for the Louise Avenue/Swanson Road/Villa Ticino West Roadway/Assieh Industrial Roadway and Yosemite Avenue/Swanson Road Extension intersections, which would both operate at LOS F conditions in the AM and PM peak hour.

Both roadway intersections meet Caltrans traffic signal warrant 11 (Peak Hour Volume) under Cumulative Plus Project conditions. Signal Warrant Sheets are provided in **Appendix G**. To mitigate the traffic impacts to less-than-significant level, signalization is recommended. Implementation of traffic signals at the roadway intersections would result in acceptable LOS B or better in the AM and PM peak hours. LOS at the roadway intersections based on the recommended improvements is also presented in **Table 11** above. Detailed intersection operation calculations for project roadway intersections under Cumulative Plus Project conditions with mitigation are also presented in **Appendix F**.

Queuing Analysis

Under Cumulative Plus Project AM and PM peak hour conditions, there will be no off-site queuing problems based on the available queuing/storage distance between the railroad tracks

and the project driveway. The results also show that queuing is not excessive at the other roadway intersections.

A summary of the intersection queue length analysis is presented in **Table 12**. Intersection queue length analysis calculation sheets are presented in **Appendix G**.

Table 12
Cumulative Plus Project
AM and PM Peak Hour Queue Lengths

Louise Avenue/Swanson Road/Villa Ticino West Access/Assieh Industrial Access	Northbound			Southbound			Eastbound			Westbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Cumulative Plus Project - AM Peak	225		100				325	225		150	375	
Cumulative Plus Project - PM Peak	250		125				475	200		150	275	
Airport Way/Villa Ticino West Access/Geneva Way	Northbound			Southbound			Eastbound			Westbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Cumulative Plus Project - AM Peak	-	-	-	-	-	-	-	-	-			
Cumulative Plus Project - PM Peak	-	-	-	-	-	-	-	-	-			
Airport Way/Villa Ticino West/Crom Street	Northbound			Southbound			Eastbound			Westbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Cumulative Plus Project - AM Peak	175	275		500	25		125		125			
Cumulative Plus Project - PM Peak	175	425		575	25		125		150			
Yosemite Avenue/Swanson Road Extension	Northbound			Southbound			Eastbound			Westbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Cumulative Plus Project - AM Peak				225		175	225	225		500		200
Cumulative Plus Project - PM Peak				225		175	200	375		400		200

Notes:

Storage lengths are in feet and are based on design queue lengths.

Appendix A

Traffic Counts Data Sheets
&
Intersection Operations Calculations –
Existing Setting

Traffic Count Spreadsheet

TYLin/CCS AM PEAK HOUR																						ATD AM PEAK HOUR																	
Intersection	From the South (Northbound)					From the North (Southbound)					From the West (Eastbound)					From the East (Westbound)					Peak Hour Total	Peak Hour % Difference	From the South (Northbound)				From the North (Southbound)				From the West (Eastbound)				From the East (Westbound)				Peak Hour Total
	Left Turn	Through	Right Turn	Direction Total	% Difference	Left Turn	Through	Right Turn	Direction Total	% Difference	Left Turn	Through	Right Turn	Direction Total	% Difference	Left Turn	Through	Right Turn	Direction Total	% Difference			Left Turn	Through	Right Turn	Direction Total	Left Turn	Through	Right Turn	Direction Total	Left Turn	Through	Right Turn	Direction Total	Left Turn	Through	Right Turn	Direction Total	
*Airport Way (N-S)/ Lathrop Road (E-W)	64	110	24	198	24.75%	74	68	20	162	38.89%	43	210	43	296	-9.46%	33	228	52	313	30.35%	969	18.47%	51	183	13	247	100	90	35	225	35	198	35	268	52	285	71	408	1148
Airport Way (N-S)/ SR 120 WB Ramps (E-W)	131	248	0	379	-6.33%	0	157	311	468	7.05%	0	0	0	0	#DIV/0!	60	1	171	232	5.17%	1079	1.95%	106	249	0	355	0	182	319	501	0	0	0	0	54	0	190	244	1100
Airport Way (N-S)/ SR 120 EB Ramps (E-W)	0	289	59	348	-11.78%	75	155	0	230	3.04%	107	2	45	154	-12.34%	0	0	0	0	#DIV/0!	732	-7.24%	0	250	57	307	84	153	0	237	96	2	37	135	0	0	0	0	679
Airport Way (N-S)/ Louise Avenue (E-W)	134	130	29	293	5.46%	33	188	59	280	-15.36%	37	166	74	277	-18.41%	59	230	10	299	30.77%	1149	1.22%	118	163	28	309	17	152	68	237	24	153	49	226	64	303	24	391	1163
Airport Way (N-S)/ Yosemite Avenue	90	134	63	287	19.86%	155	208	16	379	-1.32%	13	246	40	299	10.37%	73	190	122	385	40.78%	1350	17.78%	96	165	83	344	152	196	26	374	6	270	54	330	82	275	185	542	1590
**McKinley Avenue (N-S)/ Louise Avenue (E-W)	137	49	7	193	-44.56%	26	45	14	85	104.71%	17	222	136	375	21.07%	14	409	40	463	-9.07%	1116	3.58%	28	57	22	107	114	53	7	174	14	275	165	454	31	369	21	421	1156
Union Road (N-S)/ Louise Avenue (E-W)	60	279	84	423	-4.96%	134	292	56	482	-5.81%	54	166	66	286	16.08%	106	245	86	437	-3.20%	1628	-1.04%	58	240	104	402	123	284	47	454	38	210	84	332	126	214	83	423	1611
McKinley Avenue (N-S)/ Yosemite Avenue (E-W)	16	19	12	47	19.15%	232	15	15	262	3.44%	11	55	10	76	-21.05%	10	70	172	252	44.05%	637	17.74%	23	21	12	56	251	9	11	271	2	56	2	60	11	129	223	363	750
Union Road (N-S)/ Yosemite Avenue (E-W)	109	314	64	487	-5.95%	87	252	145	484	1.45%	163	229	59	451	0.67%	63	221	65	349	-1.72%	1771	-1.41%	115	286	57	458	88	260	143	491	123	232	99	454	67	214	62	343	1746
*There was road construction during the AM peak for TYLin/CCS counts **Counts not from ATD. Counts are from a Previous Study. (Assieh Industrial Park)																																							

TYLin/CCS PM PEAK HOUR																						ATD PM PEAK HOUR																	
Intersection	From the South (Northbound)					From the North (Southbound)					From the West (Eastbound)					From the East (Westbound)					Peak Hour Total	Peak Hour % Difference	From the South (Northbound)				From the North (Southbound)				From the West (Eastbound)				From the East (Westbound)				Peak Hour Total
	Left Turn	Through	Right Turn	Direction Total	% Difference	Left Turn	Through	Right Turn	Direction Total	% Difference	Left Turn	Through	Right Turn	Direction Total	% Difference	Left Turn	Through	Right Turn	Direction Total	% Difference			Left Turn	Through	Right Turn	Direction Total	Left Turn	Through	Right Turn	Direction Total	Left Turn	Through	Right Turn	Direction Total	Left Turn	Through	Right Turn	Direction Total	
Airport Way (N-S)/ Lathrop Road (E-W)	49	144	36	229	8.30%	90	206	38	334	4.79%	31	464	85	580	-14.48%	32	293	24	349	4.30%	1492	-2.28%	53	147	48	248	118	199	33	350	47	391	58	496	29	264	71	364	1458
Airport Way (N-S)/ SR 120 WB Ramps (E-W)	58	548	0	606	-14.19%	0	337	115	452	-2.65%	0	0	0	0	#DIV/0!	124	1	145	270	-28.52%	1328	-13.18%	66	454	0	520	0	310	130	440	0	0	0	0	80	0	113	193	1153
Airport Way (N-S)/ SR 120 EB Ramps (E-W)	0	218	96	314	-15.61%	135	245	0	380	-1.32%	326	0	128	454	-1.98%	0	0	0	0	#DIV/0!	1148	-5.49%	0	215	50	265	139	236	0	375	328	0	117	445	0	0	0	0	1085
Airport Way (N-S)/ Louise Avenue (E-W)	82	221	86	389	5.91%	59	245	19	323	-20.74%	40	320	84	444	-15.99%	52	250	32	334	-3.29%	1490	-8.46%	86	199	127	412	60	160	36	256	52	269	52	373	46	239	38	323	1364
Airport Way (N-S)/ Yosemite Avenue	50	273	139	462	0.22%	210	180	18	408	-5.64%	76	333	105	514	0.78%	120	216	161	497	9.46%	1881	1.54%	49	262	152	463	171	193	21	385	93	332	93	518	122	233	189	544	1910
**McKinley Avenue (N-S)/ Louise Avenue (E-W)	118	26	9	153	57.52%	18	50	12	80	-18.75%	25	382	203	610	9.51%	10	308	17	335	9.25%	1178	13.75%	157	46	38	241	11	35	19	65	29	464	175	668	28	320	18	366	1340
Union Road (N-S)/ Louise Avenue (E-W)	101	425	186	712	13.90%	168	444	53	665	-1.95%	56	368	88	512	4.49%	159	296	123	578	10.03%	2467	6.77%	126	479	206	811	211	397	44	652	59	380	96	535	170	286	180	636	2634
McKinley Avenue (N-S)/ Yosemite Avenue (E-W)	9	16	25	50	-28.00%	266	37	11	314	-0.96%	22	181	27	230	13.91%	22	91	145	258	13.95%	852	5.99%	9	15	12	36	277	24	10	311	19	231	12	262	18	99	177	294	903
Union Road (N-S)/ Yosemite Avenue (E-W)	147	486	89	722	-5.96%	139	394	224	757	-3.04%	259	454	174	887	-2.37%	93	348	120	561	-11.05%	2927	-5.09%	148	457	74	679	137	376	221	734	265	412	189	866	75	305	119	499	2778

**Counts not from ATD. Counts
are from a Previous
Study. (Assieh Industrial Park)

Villa Ticino West TIS
Existing Condition
AM Peak Hour

Villa Ticino West TIS
Existing Condition
AM Peak Hour

Scenario Report

Scenario: EXAM

Impact Analysis Report
Level Of Service

Command: EXAM
Volume: EXAM
Geometry: EXAM
Impact Fee: Default Impact Fee
Trip Generation: AM Peak
Trip Distribution: AM Peak
Paths: Default Paths
Routes: Default Routes
Configuration: Default Configuration

Intersection	Base Del/ V/ LOS Veh C	Future Del/ V/ LOS Veh C	Change in
# 1 Airport/Lathrop	C 27.5 0.423	C 28.1 0.455	+ 0.599 D/V
# 2 Louise/McKinley	B 17.4 0.412	B 15.8 0.509	-1.567 D/V
# 3 Airport/Louise	B 14.8 0.549	C 24.4 0.770	+ 0.221 V/C
# 4 Louise/Union	C 27.1 0.372	C 27.0 0.402	-0.079 D/V
# 5 Yosemite (Vierra)/McKinley	A 9.4 0.368	B 10.1 0.400	+ 0.032 V/C
# 6 Airport/Yosemite	C 28.7 0.351	C 28.9 0.458	+ 0.212 D/V
# 7 Yosemite/Union	C 27.8 0.393	C 27.5 0.472	-0.286 D/V
# 8 Airport/SR-120 WB Ramps	B 4.1 0.000	C 4.2 0.000	+ 0.000 V/C
# 9 Airport/SR-120 EB Ramps	C 4.0 0.000	C 5.2 0.000	+ 0.000 V/C

Level Of Service Computation Report

2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Airport/Lathrop

Cycle (sec): 100Critical Vol./Cap. (X): 0.423

Loss Time (sec): 12 (Y+R = 4 sec)Average Delay (sec/veh): 27.5

Optimal Cycle: 36Level Of Service: C

Approach: North BoundSouth BoundEast BoundWest Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Protected Protected Protected Protected Protected

Rights: Include Include Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Lanes: 1 0 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 0

Volume Module:

Base Vol: 51 183 13 100 90 35 35 198 35 52 285 71

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 51 183 13 100 90 35 35 198 35 52 285 71

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 51 183 13 100 90 35 35 198 35 52 285 71

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 51 183 13 100 90 35 35 198 35 52 285 71

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol.: 51 183 13 100 90 35 35 198 35 52 285 71

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 0.95 0.99 0.99 0.95 1.00 0.85 0.95 0.98 0.98 0.95 0.97 0.97

Lanes: 1.00 0.93 0.07 1.00 1.00 1.00 1.00 0.85 0.15 1.00 0.80 0.20

Final Sat.: 1805 1756 125 1805 1900 1615 1805 1579 279 1805 1475 368

Capacity Analysis Module:

Vol/Sat: 0.03 0.10 0.10 0.06 0.05 0.02 0.02 0.13 0.13 0.03 0.19 0.19

Crit Moves: ****

Green/Cycle: 0.14 0.25 0.25 0.13 0.24 0.24 0.05 0.41 0.41 0.09 0.46 0.46

Volume/Cap: 0.20 0.42 0.42 0.42 0.20 0.09 0.42 0.31 0.31 0.31 0.42 0.42

Delay/Veh: 38.4 32.3 32.3 41.2 30.8 29.9 49.9 20.2 20.2 43.3 18.6 18.6

User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

AdjDel/Veh: 38.4 32.3 32.3 41.2 30.8 29.9 49.9 20.2 20.2 43.3 18.6 18.6

DesignQueue: 2 8 1 5 4 1 2 7 1 3 9 2

Level Of Service Computation Report

2000 HCM Operations Method (Base Volume Alternative)

Intersection #2 Louise/McKinley

Cycle (sec): 90Critical Vol./Cap. (X): 0.412

Loss Time (sec): 12 (Y+R = 4 sec)Average Delay (sec/veh): 17.4

Optimal Cycle: 35Level Of Service: B

Approach: North BoundSouth BoundEast BoundWest Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Protected Protected Protected Protected Protected

Rights: Include Include Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0

Lanes: 1 0 0 1 0 1 0 0 1 0 1 0 1 0 0 1 0

Volume Module:

Base Vol: 137 49 7 26 45 14 17 222 136 14 409 40

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 137 49 7 26 45 14 17 222 136 14 409 40

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 137 49 7 26 45 14 17 222 136 14 409 40

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 137 49 7 26 45 14 17 222 136 14 409 40

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol.: 137 49 7 26 45 14 17 222 136 14 409 40

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 0.95 0.98 0.98 0.95 0.96 0.96 0.95 1.00 0.85 0.95 0.99 0.99

Lanes: 1.00 0.87 0.13 1.00 0.76 0.24 1.00 1.00 1.00 1.00 0.91 0.09

Final Sat.: 1805 1631 233 1805 1397 435 1805 1900 1615 1805 1708 167

Capacity Analysis Module:

Vol/Sat: 0.08 0.03 0.03 0.01 0.03 0.03 0.01 0.12 0.08 0.01 0.24 0.24

Crit Moves: ****

Green/Cycle: 0.18 0.18 0.18 0.09 0.08 0.08 0.02 0.57 0.57 0.04 0.58 0.58

Volume/Cap: 0.41 0.17 0.17 0.17 0.41 0.41 0.41 0.21 0.15 0.21 0.41 0.41

Delay/Veh: 33.2 31.6 31.6 38.7 41.4 41.4 49.9 9.7 9.3 43.5 10.6 10.6

User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

AdjDel/Veh: 33.2 31.6 31.6 38.7 41.4 41.4 49.9 9.7 9.3 43.5 10.6 10.6

DesignQueue: 6 2 0 1 2 1 1 5 3 1 9 1

Villa Ticino West TIS
Existing Condition
AM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #3 Airport/Louise

Cycle (sec): 100 Critical Vol./Cap. (X): 0.549
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 14.8
Optimal Cycle: 0 Level Of Service: B

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Stop Sign Stop Sign Stop Sign Stop Sign
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Lanes: 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0

Volume Module:
Base Vol: 134 130 29 33 188 59 37 166 74 59 230 10
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 134 130 29 33 188 59 37 166 74 59 230 10
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 134 130 29 33 188 59 37 166 74 59 230 10
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol.: 134 130 29 33 188 59 37 166 74 59 230 10

Saturation Flow Module:
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes: 0.46 0.44 0.10 0.12 0.67 0.21 0.13 0.60 0.27 0.20 0.77 0.03
Final Sat.: 248 240 54 64 367 115 73 328 146 107 419 18

Capacity Analysis Module:
Vol/Sat: 0.54 0.54 0.54 0.51 0.51 0.51 0.51 0.51 0.51 0.55 0.55 0.55
Crit Moves: ****
Delay/Veh: 15.2 15.2 15.2 14.4 14.4 14.4 14.2 14.2 14.2 15.4 15.4 15.4
Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 15.2 15.2 15.2 14.4 14.4 14.4 14.2 14.2 14.2 15.4 15.4 15.4
LOS by Move: C C C B B B B B C C C
ApproachDel: 15.2 14.4 14.2 14.2 14.2 14.2 14.2 14.2 14.2 15.4 15.4 15.4
Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
ApprAdjDel: 15.2 14.4 14.2 14.2 14.2 14.2 14.2 14.2 14.2 15.4 15.4 15.4
LOS by Appr: C B B B B B B B C C C

Villa Ticino West TIS
Existing Condition
AM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #4 Louise/Union

Cycle (sec): 90 Critical Vol./Cap. (X): 0.372
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 27.1
Optimal Cycle: 34 Level Of Service: C

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Protected Protected Protected Protected
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0
Lanes: 1 0 1 1 0 1 0 1 1 0 1 0 1 0 1 0

Volume Module:
Base Vol: 58 240 104 123 284 47 38 210 84 126 214 83
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 58 240 104 123 284 47 38 210 84 126 214 83
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 58 240 104 123 284 47 38 210 84 126 214 83
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol.: 58 240 104 123 284 47 38 210 84 126 214 83

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment: 0.95 0.91 0.91 0.95 0.93 0.93 0.95 0.91 0.91 0.95 0.91 0.91
Lanes: 1.00 1.40 0.60 1.00 1.72 0.28 1.00 1.43 0.57 1.00 1.44 0.56
Final Sat.: 1805 2405 1042 1805 3032 502 1805 2468 987 1805 2492 966

Capacity Analysis Module:
Vol/Sat: 0.03 0.10 0.10 0.07 0.09 0.09 0.02 0.09 0.09 0.07 0.09 0.09
Crit Moves: ****
Green/Cycle: 0.12 0.27 0.27 0.18 0.34 0.34 0.08 0.23 0.23 0.19 0.33 0.33
Volume/Cap: 0.28 0.37 0.37 0.37 0.28 0.28 0.26 0.37 0.37 0.37 0.26 0.26
Delay/Veh: 37.1 27.0 27.0 32.9 22.0 22.0 39.7 29.6 29.6 32.6 22.0 22.0
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 37.1 27.0 27.0 32.9 22.0 22.0 39.7 29.6 29.6 32.6 22.0 22.0
DesignQueue: 3 9 4 5 10 2 2 8 3 5 7 3

Villa Ticino West TIS
Existing Condition
AM Peak Hour

Level Of Service Computation Report

2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #5 Yosemite(Vierra)/McKinley

Cycle (sec): 100 Critical Vol./Cap. (X): 0.368
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 9.4
Optimal Cycle: 0 Level Of Service: A

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Stop Sign Stop Sign Stop Sign Stop Sign
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0
Lanes: 0 0 1 0 0 0 0 1 0 0 1 0 1 0 1 0 1

Volume Module:
Base Vol: 16 19 12 232 15 15 11 55 10 10 70 172
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 16 19 12 232 15 15 11 55 10 10 70 172
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 16 19 12 232 15 15 11 55 10 10 70 172
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol.: 16 19 12 232 15 15 11 55 10 10 70 172

Saturation Flow Module:
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes: 0.34 0.40 0.26 0.88 0.06 0.06 1.00 0.85 0.15 1.00 1.00 1.00
Final Sat.: 233 277 175 631 41 41 568 532 97 594 647 740

Capacity Analysis Module:
Vol/Sat: 0.07 0.07 0.07 0.37 0.37 0.37 0.02 0.10 0.10 0.02 0.11 0.23
Crit Moves: ****
Delay/Veh: 8.3 8.3 8.3 10.5 10.5 10.5 8.8 8.7 8.7 8.6 8.7 8.7
Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 8.3 8.3 8.3 10.5 10.5 10.5 8.8 8.7 8.7 8.6 8.7 8.7
LOS by Move: A A A B B B A A A A A A
ApproachDel: 8.3 8.3 8.3 10.5 10.5 10.5 8.7 8.7 8.7 8.6 8.7 8.7
Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
ApprAdjDel: 8.3 8.3 8.3 10.5 10.5 10.5 8.7 8.7 8.7 8.6 8.7 8.7
LOS by Appr: A B B A A A A A A A A A

Villa Ticino West TIS
Existing Condition
AM Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Base Volume Alternative)

Intersection #6 Airport/Yosemite

Cycle (sec): 100 Critical Vol./Cap. (X): 0.351
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 28.7
Optimal Cycle: 33 Level Of Service: C

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Stop Sign Stop Sign Stop Sign Stop Sign
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0
Lanes: 1 0 1 0 1 1 0 0 1 0 1 0 1 0 1 0 1

Volume Module:
Base Vol: 96 165 83 152 196 26 6 270 54 82 275 185
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 96 165 83 152 196 26 6 270 54 82 275 185
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 96 165 83 152 196 26 6 270 54 82 275 185
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol.: 96 165 83 152 196 26 6 270 54 82 275 185

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment: 0.95 1.00 0.85 0.95 0.98 0.98 0.95 0.93 0.93 0.95 0.89 0.89
Lanes: 1.00 1.00 1.00 1.00 0.88 0.12 1.00 1.67 0.33 1.00 1.20 0.80
Final Sat.: 1805 1900 1615 1805 1647 219 1805 2933 587 1805 2029 1365

Capacity Analysis Module:
Vol/Sat: 0.05 0.09 0.05 0.08 0.12 0.12 0.00 0.09 0.09 0.05 0.14 0.14
Crit Moves: ****
Green/Cycle: 0.15 0.25 0.25 0.24 0.34 0.34 0.01 0.26 0.26 0.13 0.38 0.38
Volume/Cap: 0.35 0.35 0.21 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35
Delay/Veh: 38.9 31.4 30.1 32.0 25.3 25.3 61.5 30.2 30.2 40.6 22.2 22.2
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 38.9 31.4 30.1 32.0 25.3 25.3 61.5 30.2 30.2 40.6 22.2 22.2
DesignQueue: 5 7 4 7 7 1 0 11 2 4 10 7
