NEWHALL RANCH™

DRAFT

ENVIRONMENTAL IMPACT REPORT APPENDIX Volume IV

Project # 94087
SCH # 95011015

NEWHALL RANCH SPECIFIC PLAN and WATER RECLAMATION PLANT

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Table N-1
NOISE LEVEL CONTOURS - Existing On-Site ADT Volumes

ROADWAY NAME	Segment	Lanes	Median Width	ADT Volume	Design Speed (mph)	Alpha Factor	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	CNEL at 75 Feet	Distance from Center of Roadway DISTANCE TO CONTOUR 75 CNEL	70 CNEL	65 CNEL	60 CNEL
SR-126													
	west of the Old Road	4	24	17,747	55	0.5	4.2%	7.4%	68.1	-	-	121	260

(1) Distance to centerline of roadway.

"-" = contour is located within the roadway lanes or within 75 feet of the roadway centerline.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Table N-2
NOISE LEVEL CONTOURS - Existing Off-Site ADT Volumes

ROADWAY NAME Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	dB(A) CNEL
McBean Parkway											
east of I-5	Cal Arts College	4	14	19,964	45	192	0.5	0	4.2%	7.4%	59.5
east of Tournament	Single Family	4	14	17,356	45	59	0.5	-6	4.2%	7.4%	61.1
	Church of Latter Day	4	14	17,356	45	114	0.5	0	4.2%	7.4%	62.4
south of Valencia	Single Family	4	14	36,308	45	61	0.5	-6	4.2%	7.4%	64.1
	Multi-Family	4	14	36,308	45	54	0.5	-7.5	4.2%	7.4%	63.5
	Hospital	4	14	36,308	45	312	0.5	0	4.2%	7.4%	58.9
north of Newhall Ranch	Single Family	4	14	21,495	40	180	0.5	0	4.2%	7.4%	58.7
SR-126											
west of The Old Road	Transient Lodging	4	24	17,747	55	100	0.5	0	4.2%	7.4%	66.0
Valencia											
east of Rockwell	Single Family	6	14	29,652	45	103	0.5	-6	4.2%	7.4%	59.6
	Multi-Family	6	14	29,652	45	88	0.5	-5	4.2%	7.4%	61.8
east of McBean	Valencia Library	6	14	33,391	45	80	0.5	0	4.2%	7.4%	68.1
Newhall Ranch Road											
east of McBean	Planned Single Family	4	14	23,357	45	50	0.5	0	4.2%	7.4%	69.8
	Planned Multi Family	4	14	23,357	45	50	0.5	0	4.2%	7.4%	69.8
Magic Mountain Parkway											
east of I-5	Planned Multi Family	4	14	22,516	45	50	0.5	0	4.2%	7.4%	69.6
Orchard Village											
south of McBean	Single Family	4	14	29,855	45	42	0.5	-8	4.2%	7.4%	64.5
	Pinecrest School	4	14	29,855	45	96	0.5	0	4.2%	7.4%	65.9
south of Wiley	Single Family	4	14	27,741	45	42	0.5	-8	4.2%	7.4%	64.2
Lyons											
east of Wiley	Single Family	6	14	26,617	45	54	0.5	-8	4.2%	7.4%	63.0
	Elementary School	6	14	26,617	45	200	0.5	0	4.2%	7.4%	60.5
east of Orchard Village	Our Lady.. Church/Schl	6	14	35,055	45	61	0.5	0	4.2%	7.4%	70.8
San Fernando/Bouquet Canyon											
south of Placerita	Mixed Residential	4	14	28,872	45	50	0.5	0	4.2%	7.4%	70.7
Rockwell Canyon											
north of McBean	Single Family	4	14	8,572	45	114	0.5	0	4.2%	7.4%	59.3
Wiley Canyon											
north of Lyons	Single Family	4	14	17,066	45	42	0.5	-8	4.2%	7.4%	62.1
	Day Care Facility	4	14	17,066	45	50	0.5	0	4.2%	7.4%	68.4
east of Tournament	Planned Single Family	4	14	10,436	45	50	0.5	0	4.2%	7.4%	66.3
	Single Family	4	14	10,436	45	42	0.5	-8	4.2%	7.4%	59.9

(1) Distance to centerline of roadway.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Table N-3
NOISE LEVEL CONTOURS - Future On-Site ADT Volumes

ROADWAY NAME / Segment	Lanes	Median Width	ADT Volume	Design Speed (mph)	Alpha Factor	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	CNEL at 75 Feet	Distance from Center of Roadway: DISTANCE TO CONTOUR 75 CNEL	70 CNEL	65 CNEL	60 CNEL
Chiquito Canyon												
north of SR-126	4	0	24,000	45	0.5	4.4%	7.8%	65.5	-	-	96	206
Commerce Center												
south of Henry Mayo	6	12	33,000	45	0.5	4.4%	7.8%	68.6	-	-	131	282
north of "A" Street	6	12	50,000	45	0.5	4.4%	7.8%	70.4	-	80	173	372
north of Magic Mountain	6	12	46,000	45	0.5	4.4%	7.8%	70.1	-	76	163	352
Potrero Canyon												
north of SR-126	2	8	8,000	35	0.5	4.4%	7.8%	58.5	-	-	-	-
south of SR-126	4	0	25,000	45	0.5	4.4%	7.8%	66.8	-	-	98	212
south of "B" Street	4	0	21,000	45	0.5	4.4%	7.8%	66.0	-	-	87	188
south of "C" Street	4	0	21,000	45	0.5	4.4%	7.8%	66.0	-	-	87	188
east of "D" Street	4	0	27,000	45	0.5	4.4%	7.8%	67.1	-	-	103	223
east of "F" Street	4	0	31,000	45	0.5	4.4%	7.8%	67.7	-	-	113	244
east of "G" Street	4	0	19,000	45	0.5	4.4%	7.8%	65.6	-	-	82	176
east of Long Canyon	4	0	35,000	45	0.5	4.4%	7.8%	68.2	-	-	123	265
SR-126												
east of Chiquito Canyon	6	12	81,000	55	0.5	4.4%	7.8%	75.0	75	162	350	754
west of Chiquito Canyon	6	12	55,000	55	0.5	4.4%	7.8%	73.4	-	126	270	583
west of Potrero Valley	6	12	45,000	55	0.5	4.4%	7.8%	72.5	-	110	237	510
Magic Mountain												
north of Potrero Valley	4	0	22,000	45	0.5	4.4%	7.8%	66.2	-	-	90	194
north of "H" Street	4	0	27,000	45	0.5	4.4%	7.8%	67.1	-	-	103	223
east of "A" Street	4	0	30,000	45	0.5	4.4%	7.8%	67.6	-	-	111	239
east of Commerce Center	6	12	53,000	45	0.5	4.4%	7.8%	70.7	-	83	179	387
Valencia												
east of Magic Mountain	4	0	29,000	45	0.5	4.4%	7.8%	67.4	-	-	108	234
Long Canyon												
south of SR-126	6	12	33,000	45	0.5	4.4%	7.8%	68.6	-	-	131	282
south of Franklin	6	12	34,000	45	0.5	4.4%	7.8%	68.8	-	-	134	288
south of "B" Street	4	0	31,000	45	0.5	4.4%	7.8%	67.7	-	-	113	244
south of "H" Street	4	0	23,000	45	0.5	4.4%	7.8%	66.4	-	-	93	200
south of "T" Street	4	0	17,000	45	0.5	4.4%	7.8%	65.1	-	-	76	164
Franklin												
east of Long Canyon	4	0	30,000	45	0.5	4.4%	7.8%	67.6	-	-	111	239
east of SR-126 Ramps	4	0	11,000	45	0.5	4.4%	7.8%	63.2	-	-	-	122
"A" Street												
west of Commerce Center	4	6	17,000	35	0.5	4.4%	7.8%	62.0	-	-	-	102
"B" Street												
east of Potrero Valley	2	8	1,000	35	0.5	4.4%	7.8%	49.5	-	-	-	-
west of Long Canyon	2	8	7,000	35	0.5	4.4%	7.8%	58.0	-	-	-	-
"C" Street												
west of Potrero Valley	2	8	5,000	35	0.5	4.4%	7.8%	56.5	-	-	-	-
"D" Street												
west of Potrero Valley	2	8	7,000	35	0.5	4.4%	7.8%	58.0	-	-	-	-
"E" Street												
west of "F" Street	2	8	12,000	35	0.5	4.4%	7.8%	60.3	-	-	-	78
"F" Street												
south of Potrero Valley	2	8	10,000	35	0.5	4.4%	7.8%	59.5	-	-	-	-
west of "G" Street	2	8	4,000	35	0.5	4.4%	7.8%	55.5	-	-	-	-
"G" Street												
south of Potrero Valley	2	8	6,000	35	0.5	4.4%	7.8%	57.3	-	-	-	-
east of "F" Street	2	8	8,000	35	0.5	4.4%	7.8%	58.5	-	-	-	-
south of Magic Mountain	2	8	10,000	35	0.5	4.4%	7.8%	59.5	-	-	-	-
"H" Street												
east of Long Canyon	2	8	8,000	35	0.5	4.4%	7.8%	58.5	-	-	-	-
west of Magic Mountain	2	8	10,000	35	0.5	4.4%	7.8%	59.5	-	-	-	-
"T" Street												
south of Long Canyon	4	0	13,000	45	0.5	4.4%	7.8%	63.9	-	-	-	137
"J" Street												
east of "G" Street	2	8	3,000	35	0.5	4.4%	7.8%	54.3	-	-	-	-
"K" Street												
north of SR-126	2	8	9,000	35	0.5	4.4%	7.8%	59.0	-	-	-	-

(1) Distance to centerline of roadway.

"-" = contour is located within the roadway lanes or within 75 feet of the roadway centerline.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Table N-4
NOISE LEVEL CONTOURS - Long Range Off-Site ADT Volumes - Master Plan of Highways

ROADWAY NAME Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	dB(A) CNEL
McBean Parkway											
east of I-5	Cal Arts College	6	14	52,531	45	192	0.5	0	4.4%	7.8%	63.8
east of Tournament	Single Family	6	14	28,550	45	59	0.5	-6	4.4%	7.8%	64.3
	Church of Latter Day	6	14	28,550	45	114	0.5	0	4.4%	7.8%	64.8
south of Valencia	Single Family	6	14	40,728	45	61	0.5	-6	4.4%	7.8%	65.5
	Multi-Family	6	14	40,728	45	54	0.5	-7.5	4.4%	7.8%	65.4
	Hospital	6	14	40,728	45	312	0.5	0	4.4%	7.8%	59.4
north of Newhall Ranch	Single Family	6	14	50,912	40	180	0.5	0	4.4%	7.8%	62.6
SR-126											
west of Commerce Center	Transient Lodging	6	24	35,149	55	100	0.5	0	4.4%	7.8%	69.3
west of Chiquito Canyon	Ventura County	4	24	36,340	55	100	0.5	0	4.4%	7.8%	69.1
Valencia											
east of Rockwell	Single Family	6	14	42,539	45	103	0.5	-6	4.4%	7.8%	61.3
	Multi-Family	6	14	42,539	45	88	0.5	-5	4.4%	7.8%	63.5
east of McBean	Valencia Library	6	14	45,555	45	80	0.5	0	4.4%	7.8%	69.5
Newhall Ranch Road											
east of McBean	Planned Single Family	8	14	112,036	45	50	0.5	0	4.4%	7.8%	86.3
Magic Mountain Prkwy											
east of I-5	Planned Multi-Family	6	14	65,108	45	50	0.5	0	4.4%	7.8%	76.0
Orchard Village											
south of McBean	Single-Family	6	14	42,031	45	42	0.5	-8	4.4%	7.8%	69.5
	Pinecrest School	6	14	42,031	45	96	0.5	0	4.4%	7.8%	67.7
south of Wiley	Single Family	6	14	26,530	45	42	0.5	-9	4.4%	7.8%	66.5
Lyons											
east of Wiley	Single-Family	6	14	38,713	45	54	0.5	-8	4.4%	7.8%	64.7
	Elementary School	6	14	38,713	45	200	0.5	0	4.4%	7.8%	62.2
east of Orchard Village	Our Lady... Church/Schl	6	14	41,823	45	61	0.5	0	4.4%	7.8%	71.6
San Fernando/Bouquet Canyon											
south of Placerita	Mixed Residential	6	14	33,310	45	50	0.5	0	4.4%	7.8%	73.0
Rockwell Canyon											
north of McBean	Single-Family	4	14	24,601	45	114	0.5	0	4.4%	7.8%	63.9
Wiley Canyon											
north of Lyons	Single-Family	6	14	34,649	45	42	0.5	-8	4.4%	7.8%	68.6
	Day Care Facility	6	14	34,649	45	50	0.5	0	4.4%	7.8%	73.2
east of Tournament	Planned Single Family	6	14	28,024	45	50	0.5	0	4.4%	7.8%	72.3
	Single Family	6	14	28,024	45	42	0.5	-8	4.4%	7.8%	67.7

(1) Distance to centerline of roadway.
"-" = contour is located within the roadway lanes or within 75 feet of the roadway centerline.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Table N-5
NOISE LEVEL CONTOURS - Long Range Off-Site ADT Volumes with Newhall Ranch - Master Plan of Highways

ROADWAY NAME Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	dB(A) CNEL
McBean Parkway											
east of I-5	Cal Arts College	6	14	53,900	45	192	0.5	0	4.4%	7.8%	63.9
east of Tournament	Single Family	6	14	28,200	45	59	0.5	-6	4.4%	7.8%	64.3
	Church of Latter Day	6	14	28,200	45	114	0.5	0	4.4%	7.8%	64.7
south of Valencia	Single Family	6	14	41,930	45	61	0.5	-6	4.4%	7.8%	65.7
	Multi-Family	6	14	41,930	45	54	0.5	-7.5	4.4%	7.8%	65.5
	Hospital	6	14	41,930	45	312	0.5	0	4.4%	7.8%	59.6
north of Newhall Ranch	Single Family	6	14	50,428	40	180	0.5	0	4.4%	7.8%	62.6
SR-126											
west of Commerce Center	Transient Lodging	6	24	84,944	55	100	0.5	0	4.4%	7.8%	73.1
west of Potrero Valley	Ventura County	4	24	44,544	55	100	0.5	0	4.4%	7.8%	70.0
Valencia											
east of Rockwell	Single Family	6	14	44,951	45	103	0.5	-6	4.4%	7.8%	61.5
	Multi-Family	6	14	44,951	45	88	0.5	-5	4.4%	7.8%	63.7
east of McBean	Valencia Library	6	14	48,159	45	80	0.5	0	4.4%	7.8%	69.8
Newhall Ranch Road											
east of McBean	Planned Single Family	8	14	116,578	45	50	0.5	0	4.4%	7.8%	86.5
Magic Mountain Parkway											
east of I-5	Planned Multi-Family	6	14	71,182	45	50	0.5	0	4.4%	7.8%	76.3
Orchard Village											
south of McBean	Single-Family	6	14	42,125	45	42	0.5	-8	4.4%	7.8%	69.5
	Pinecrest School	6	14	42,125	45	96	0.5	0	4.4%	7.8%	67.7
south of Wiley	Single Family	6	14	26,929	45	42	0.5	-9	4.4%	7.8%	66.6
Lyons											
east of Wiley	Single-Family	6	14	41,479	45	54	0.5	-8	4.4%	7.8%	65.0
	Elementary School	6	14	41,479	45	200	0.5	0	4.4%	7.8%	62.5
east of Orchard Village	Our Lady... Church/Schl	6	14	43,763	45	61	0.5	0	4.4%	7.8%	71.8
San Fernando/Bouquet Canyon											
south of Placerita	Mixed Residential	6	14	33,898	45	50	0.5	0	4.4%	7.8%	73.1
Rockwell Canyon											
north of McBean	Single-Family	4	14	27,815	45	114	0.5	0	4.4%	7.8%	64.5
Wiley Canyon											
north of Lyons	Single-Family	6	14	37,760	45	42	0.5	-8	4.4%	7.8%	69.0
	Day Care Facility	6	14	37,760	45	50	0.5	0	4.4%	7.8%	73.6
east of Tournament	Planned Single Family	6	14	30,451	45	50	0.5	0	4.4%	7.8%	72.7
	Single Family	6	14	30,451	45	42	0.5	-8	4.4%	7.8%	68.1

(1) Distance to centerline of roadway.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks -	89.10%	2.84%	8.06%

Table N-6
NOISE LEVEL CONTOURS - Long Range Off-Site ADT Volumes - Alternative Highway Plan

ROADWAY NAME Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	dB(A) CNEL
McBean Parkway											
east of I-5	Cal Arts College	6	14	51,316	45	192	0.5	0	4.4%	7.8%	63.7
east of Tournament	Single Family	6	14	30,045	45	59	0.5	-6	4.4%	7.8%	64.6
	Church of Latter Day	6	14	30,045	45	114	0.5	0	4.4%	7.8%	65.0
south of Valencia	Single Family	6	14	46,588	45	61	0.5	-6	4.4%	7.8%	66.1
	Multi-Family	6	14	46,588	45	54	0.5	-7.5	4.4%	7.8%	66.0
	Hospital	6	14	46,588	45	312	0.5	0	4.4%	7.8%	60.0
north of Newhall Ranch	Single Family	6	14	51,824	40	180	0.5	0	4.4%	7.8%	62.7
SR-126											
west of Commerce Center	Transient Lodging	6	24	35,919	55	100	0.5	0	4.4%	7.8%	69.4
west of Chiquito Canyon	Ventura County	4	24	36,349	55	100	0.5	0	4.4%	7.8%	69.1
Valencia											
east of Rockwell	Single Family	6	14	71,526	45	103	0.5	-6	4.4%	7.8%	63.5
	Multi-Family	6	14	71,526	45	88	0.5	-5	4.4%	7.8%	65.7
east of McBean	Valencia Library	6	14	59,380	45	80	0.5	0	4.4%	7.8%	70.7
Newhall Ranch Road											
east of McBean	Planned Single Family	6	14	69,016	45	50	0.5	0	4.4%	7.8%	76.2
Magic Mountain Prkwy											
east of I-5	Planned Multi Family	6	14	64,753	45	50	0.5	0	4.4%	7.8%	75.9
Orchard Village											
south of McBean	Single Family	6	14	42,773	45	42	0.5	-8	4.4%	7.8%	69.6
	Pinecrest School	6	14	42,773	45	96	0.5	0	4.4%	7.8%	67.8
south of Wiley	Single Family	6	14	28,944	45	42	0.5	-8	4.4%	7.8%	67.9
Lyons											
east of Wiley	Single Family	6	14	43,178	45	54	0.5	-8	4.4%	7.8%	65.1
	Elementary School	6	14	43,178	45	200	0.5	0	4.4%	7.8%	62.7
east of Orchard Village	Our Lady...Church/Schl	6	14	44,493	45	61	0.5	0	4.4%	7.8%	71.9
San Fernando/Bouquet Canyon											
south of Pacerita	Mixed Residential	6	14	30,612	45	50	0.5	0	4.4%	7.8%	72.7
Rockwell Canyon											
north of McBean	Single Family	4	14	24,288	45	114	0.5	0	4.4%	7.8%	63.9
Wiley Canyon											
north of Lyons.	Single Family	6	14	35,861	45	42	0.5	-8	4.4%	7.8%	68.8
	Day Care Facility	6	14	35,861	45	50	0.5	0	4.4%	7.8%	73.4
east of Tournament	Planned Single Family	6	14	28,758	45	50	0.5	0	4.4%	7.8%	72.4
	Single Family	6	14	28,758	45	42	0.5	-8	4.4%	7.8%	67.8

(1) Distance to centerline of roadway

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Table N-7
NOISE LEVEL CONTOURS - Long Range Off-Site ADT Volumes with Newhall Ranch - Alternative Highway Plan

ROADWAY NAME Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	dB(A) CNEL
McBean Parkway											
east of I-5	Cal Arts College	6	14	53,003	45	192	0.5	0	4.4%	7.8%	63.8
east of Tournament	Single Family	6	14	30,103	45	59	0.5	-6	4.4%	7.8%	64.6
	Church of Latter Day	6	14	30,103	45	114	0.5	0	4.4%	7.8%	65.0
south of Valencia	Single Family	6	14	48,254	45	61	0.5	-6	4.4%	7.8%	66.3
	Multi-Family	6	14	48,254	45	54	0.5	-7.5	4.4%	7.8%	66.1
	Hospital	6	14	48,254	45	312	0.5	0	4.4%	7.8%	60.2
north of Newhall Ranch	Single Family	6	14	51,251	40	180	0.5	0	4.4%	7.8%	62.6
SR-126											
west of Commerce Center	Transient Lodging	6	24	81,939	55	100	0.5	0	4.4%	7.8%	73.0
west of Potrero Valley	Ventura County	4	24	44,513	55	100	0.5	0	4.4%	7.8%	70.0
Valencia											
east of Rockwell	Single Family	6	14	74,510	45	103	0.5	-6	4.4%	7.8%	63.7
	Multi-Family	6	14	74,510	45	88	0.5	-5	4.4%	7.8%	65.9
east of McBean	Valencia Library	6	14	61,931	45	80	0.5	0	4.4%	7.8%	70.9
Newhall Ranch Road											
east of McBean	Planned Single Family	6	14	70,636	45	50	0.5	0	4.4%	7.8%	76.3
Magic Mountain Prkwy											
east of I-5	Planned Multi Family	6	14	72,402	45	50	0.5	0	4.4%	7.8%	76.4
Orchard Village											
south of McBean	Single Family	6	14	48,514	45	42	0.5	-8	4.4%	7.8%	70.1
	Pinecrest School	6	14	48,514	45	96	0.5	0	4.4%	7.8%	68.4
south of Wiley	Single Family	6	14	29,029	45	42	0.5	-8	4.4%	7.8%	67.9
Lyons											
east of Wiley	Single Family	6	14	45,246	45	54	0.5	-8	4.4%	7.8%	65.4
	Elementary School	6	14	45,246	45	200	0.5	0	4.4%	7.8%	62.9
east of Orchard Village	Our Lady...Church/Schl	6	14	46,613	45	61	0.5	0	4.4%	7.8%	72.1
San Fernando/Bouquet Canyon											
south of Pacerita	Mixed Residential	6	14	30,996	45	50	0.5	0	4.4%	7.8%	72.7
Rockwell Canyon											
north of McBean	Single Family	4	14	26,735	45	114	0.5	0	4.4%	7.8%	64.3
Wiley Canyon											
north of Lyons.	Single Family	6	14	39,998	45	42	0.5	-8	4.4%	7.8%	69.3
	Day Care Facility	6	14	39,998	45	50	0.5	0	4.4%	7.8%	73.8
east of Tournament	Planned Single Family	6	14	32,342	45	50	0.5	0	4.4%	7.8%	72.9
	Single Family	6	14	32,342	45	42	0.5	-8	4.4%	7.8%	68.3

(1) Distance to centerline of roadway

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Table N-8
NOISE LEVEL CONTOURS - Long Range Off-Site ADT Volumes with Cumulative Projects - Alternative Highway Plan

ROADWAY NAME Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	dB(A) CNEL
McBean Parkway											
east of I-5	Cal Arts College	6	14	54,494	45	192	0.5	0	4.4%	7.8%	64.0
east of Tournament	Single Family	6	14	32,755	45	59	0.5	-6	4.4%	7.8%	64.9
	Church of Latter Day	6	14	32,755	45	114	0.5	0	4.4%	7.8%	65.4
south of Valencia	Single Family	6	14	49,237	45	61	0.5	-6	4.4%	7.8%	66.4
	Multi-Family	6	14	49,237	45	54	0.5	-7.5	4.4%	7.8%	66.2
	Hospital	6	14	49,237	45	312	0.5	0	4.4%	7.8%	60.3
north of Newhall Ranch	Single Family	6	14	51,429	40	180	0.5	0	4.4%	7.8%	62.7
SR-126											
west of Commerce Center	Transient Lodging	6	24	90,045	55	100	0.5	0	4.4%	7.8%	73.4
west of Potrero Valley	Ventura County	4	24	44,715	55	100	0.5	0	4.4%	7.8%	70.0
Valencia											
east of Rockwell	Single Family	6	14	75,479	45	103	0.5	-6	4.4%	7.8%	63.7
	Multi-Family	6	14	75,479	45	88	0.5	-5	4.4%	7.8%	66.0
east of McBean	Valencia Library	6	14	63,777	45	80	0.5	0	4.4%	7.8%	71.0
Newhall Ranch Road											
east of McBean	Planned Single Family	6	14	74,029	45	50	0.5	0	4.4%	7.8%	76.5
Magic Mountain Prkwy											
east of I-5	Planned Multi Family	6	14	75,435	45	50	0.5	0	4.4%	7.8%	76.6
Orchard Village											
south of McBean	Single Family	6	14	50,479	45	42	0.5	-8	4.4%	7.8%	70.3
	Pinecrest School	6	14	50,479	45	96	0.5	0	4.4%	7.8%	68.5
south of Wiley	Single Family	6	14	30,111	45	42	0.5	-8	4.4%	7.8%	68.0
Lyons											
east of Wiley	Single Family	6	14	46,193	45	54	0.5	-8	4.4%	7.8%	65.4
	Elementary School	6	14	46,193	45	200	0.5	0	4.4%	7.8%	63.0
east of Orchard Village	Our Lady...Church/Schl	6	14	48,114	45	61	0.5	0	4.4%	7.8%	72.3
San Fernando/Bouquet Canyon											
south of Pacerita	Mixed Residential	6	14	31,835	45	50	0.5	0	4.4%	7.8%	72.8
Rockwell Canyon											
north of McBean	Single Family	4	14	27,689	45	114	0.5	0	4.4%	7.8%	64.4
Wiley Canyon											
north of Lyons.	Single Family	6	14	42,237	45	42	0.5	-8	4.4%	7.8%	69.5
	Day Care Facility	6	14	42,237	45	50	0.5	0	4.4%	7.8%	74.1
east of Tournament	Planned Single Family	6	14	34,258	45	50	0.5	0	4.4%	7.8%	73.2
	Single Family	6	14	34,258	45	42	0.5	-8	4.4%	7.8%	68.6

(1) Distance to centerline of roadway

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Table N-9
NOISE LEVEL CONTOURS - Long Range Off-Site ADT Volumes with Newhall Ranch Alternatives - Alternative Highway Plan

ROADWAY NAME Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	dB(A) CNEL
SR-126 - west of Commerce Center											
Alternative 2	Transient Lodging	6	24	37,840	55	100	0.5	0	4.4%	7.8%	69.6
Alternative 3	Transient Lodging	6	24	76,020	55	100	0.5	0	4.4%	7.8%	72.7
Alternative 4	Transient Lodging	6	24	70,500	55	100	0.5	0	4.4%	7.8%	72.3
Alternative 5	Transient Lodging	6	24	63,140	55	100	0.5	0	4.4%	7.8%	71.9
Alternative 6	Transient Lodging	6	24	47,960	55	100	0.5	0	4.4%	7.8%	70.7

(1) Distance to centerline of roadway

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

NOISE SURVEY RESULTS - Magic Mountain Noise Sources

Survey Site	Distance from Magic Mountain	Direction from Magic Mountain	Monitored Noise Level dB(A) Leq	Assumed Noise Level dB(A) CNEL
1	150	northwest	48.5	52.9
2	105	west	46.5	50.9
3	85	west	48.5	52.9
4	20	west	52.5	56.9
5	60	west	61.5	65.9
6	165	west	42.0	46.4
7	5	west	67.0	71.4
8	150	west	46.0	50.4
9	135	west	49.0	53.4
10	125	southwest	55.5	59.9
11	10	south	62.5	66.9
12	25	south	60.0	64.4
13	290	south	41.0	45.4

Noise Monitoring for Newhall Ranch
.June 22, 1995

Location	Reading 1	Reading 2	Reading 3	Reading 4	Reading 5	AVG ANTILOG	AVERAGE dB(A) Leq
1. Newhall Ranch Property Line and Chiquito Canyon Road							
	48.0	46.0	49.0	48.0	47.0	1.7	48.0
Notes:							
2. Residential Area in east Val Verde							
	40.0	46.5	43.0	39.5	37.0	1.6	41.0
Notes:							
3. Highway 126 and Chiquito Canyon Road (approximately 0.25 mile from Highway 126)							
	48.0	47.0	46.0	46.5	44.5	1.7	46.0
Notes:							
4. Newhall Ranch Property Line and San Martinez Grande							
	41.5	41.0	37.5	51.5	49.5	1.6	44.0
Notes:							

NOTES:

Appendix 4.10

Table AQ-1
EMISSIONS FROM HEAVY-DUTY ENGINES AND CONSTRUCTION ENERGY CONSUMPTION
(SCAQMD CEQA Air Quality Handbook Table A9-3)

Project Name: **Newhall Ranch**

% Diesel Equipment: 80.0%
% Gasoline Equipment: 20.0%
Days of Construction Activity: 7500 days (300 days per year for 25 years)

Land Use Type	Code	Square Feet	Million BTUs	Total Construction Phase Emissions in Tons				
				CO	VOC	NO_x	SO_x	PM_{10}
Estate Residential (1)	10	3,120,400	321,036.1	1,194.3	70.6	462.6	30.4	16.3
Low Density Residential	10	5,751,000	591,680.1	2,201.1	130.2	852.6	56.0	30.1
Low-Medium Residential	11	17,377,500	1,609,069.6	5,985.7	354.0	2,318.7	152.2	81.7
Medium Residential	11	11,896,500	1,101,556.4	4,097.8	242.3	1,587.3	104.2	56.0
High Density Residential	9	7,343,000	701,506.2	2,609.6	154.3	1,010.9	66.4	35.6
Business Park	5	1,513,000	364,695.0	1,356.7	80.2	525.5	34.5	18.5
Commercial	3	1,718,000	237,353.7	883.0	52.2	342.0	22.5	12.1
Office	5	2,489,000	599,951.0	2,231.8	132.0	864.5	56.8	30.5
Library	5	25,000	6,026.0	22.4	1.3	8.7	0.6	0.3
Schools	6	854,800	174,633.1	649.6	38.4	251.6	16.5	8.9
Golf Course	3	40,000	5,526.3	20.6	1.2	8.0	0.5	0.3
Utilities	17	35,000	4,989.8	18.6	1.1	7.2	0.5	0.3
TOTAL EMISSIONS				21,271.0	1,258.0	8,239.7	540.9	290.5
DAILY TOTALS (Pounds per Day)				5,672.3	335.5	2,197.2	144.2	77.5
QUARTERLY TOTALS (Tons per Quarter)				212.71	12.58	82.40	5.41	2.90

Thermal Energy Consumption per Square Foot

Land Use Type	Code		Thermal Energy Consumption in BTUs/SF		
			On-Site Activity	Material Transport	Total
Religious Buildings	1		158,760	26,430	185,190
Hospital Buildings	2		216,720	36,079	252,799
Stores and Restaurants	3		118,440	19,717	138,157
Hotels and Motels	4		154,980	25,800	180,780
Office Buildings	5		206,640	34,401	241,041
Educational Buildings	6		175,140	29,157	204,297
Dormitories	7		180,180	29,996	210,176
High-Rise Apartments	8		93,240	15,522	108,762
Garden Apartments	9		81,900	13,634	95,534
Single Family Housing	10		88,200	14,683	102,883
Two- to Four-Family Housing	11		79,380	13,215	92,595
Farm Residential Buildings	12		70,560	11,747	82,307
Farm Site Service Stations(1)	13		18,900	3,146	22,046
Other Non-Farm Buildings	14		182,700	30,415	213,115
Car Garages and Serv Stations	15		97,020	16,151	113,171
Warehouses	16		70,560	11,747	82,307
Industrial Buildings	17		122,220	20,347	142,567

Emission Factors for Each Criteria Pollutant from Energy Consumption

Emission Factors	Emission Factors in Pounds per Million BTUs				
Emission Factors	CO	VOC	NO_x	SO_x	PM_{10}
Diesel Fuel	0.735	0.23	3.38	0.225	0.12
Gasoline	34.26	1.28	0.89	0.046	0.028

(1) Includes 538 secondary units.

Table AQ-2
EVAPORATIVE EMISSIONS FROM ARCHITECTURAL COATINGS AND BUILDING MATERIAL

(SCAQMD CEQA Air Quality Handbook Table 9-13)

Project Name: **Newhall Ranch**

Days of Painting Activity: 7500 days (300 days per year for 25 years)

Land Use Type	Code	No. of Units	Square Feet/ Unit	Surface Area	Rule 1113 (lbs/gal)	VOC (lbs/1000 SF)	Emissions in Tons VOC
Estate Residential (1)	3	538	5,800.0	8,425,080.0	2.08	18.50	1,363.8
Low Density Residential	3	1917	3,000.0	15,527,700.0	2.08	18.50	2,513.5
Low-Medium Residential	3	6951	2,500.0	46,919,250.0	2.08	18.50	7,595.1
Medium Residential	3	7931	1,500.0	32,120,550.0	2.08	18.50	5,199.5
High Density Residential	3	7343	1,000.0	19,826,100.0	2.08	18.50	3,209.3
Business Park	4	1	1,513,000.0	3,026,000.0	2.08	18.50	489.8
Commercial	4	1	1,718,000.0	3,436,000.0	2.08	18.50	556.2
Office	4	1	2,489,000.0	4,978,000.0	2.08	18.50	805.8
Library	4	1	25,000.0	50,000.0	2.08	18.50	8.1
Schools	4	1	854,800.0	1,709,600.0	2.08	18.50	276.7
Golf Course	4	1	40,000.0	80,000.0	2.08	18.50	13.0
Utilities	4	1	35,000.0	70,000.0	2.08	18.50	11.3
TOTAL EMISSIONS							22,042.2
DAILY TOTALS (Pounds per Day)							5,877.9
QUARTERLY TOTALS (Tons per Quarter)							220.42

Estimating Surface Area to be Coated

Land Uses	Code	
Residential Uses		
Single Family Units	1	20,658.9 square feet of coating surface per unit.
Multi-Family Units	2	7,230.6 square feet of coating surface per unit.
Misc. Residential	3	2.7 square feet of coating surface for each sq. ft. of floor space.
Non-residential Uses	4	2.0 square feet of coating surface for each sq. ft. of floor space.

(1) Square Footage includes area for 538 Second Units.

Table AQ-3
SUMMARY OF ESTIMATED DAILY OPERATION-RELATED EMISSIONS

Project Name: Newhall Ranch - Non-Mixed Use & Non-Village Development

Land Use		Emissions in Pounds per Day				
		CO	VOC	NO_x	SO_x	PM_{10}
Single Family	Vehicular Sources	7,906.9	336.2	737.9	99.9	17,821.7
	Energy Generation and Use	85.7	14.8	407.2	22.0	7.8
	Subtotals	7,992.6	351.0	1,145.1	121.9	17,829.6
Multi-Family	Vehicular Sources	6,714.2	294.8	653.5	85.8	16,260.2
	Energy Generation and Use	81.2	11.7	404.3	27.3	9.5
	Subtotals	6,795.4	306.6	1,057.8	113.1	16,269.6
Commercial Center	Vehicular Sources	7,068.7	348.8	780.6	92.6	20,210.4
	Energy Generation and Use	47.8	3.1	276.0	26.7	8.9
	Subtotals	7,116.6	351.9	1,056.5	119.3	20,219.4
Elementary/Jr. High	Vehicular Sources	152.0	7.6	19.4	3.0	536.7
	Energy Generation and Use	2.9	0.3	16.7	1.4	0.5
	Subtotals	154.9	7.8	36.1	4.4	537.2
High School	Vehicular Sources	96.1	4.6	9.4	1.3	223.5
	Energy Generation and Use	1.3	0.1	7.5	0.6	0.2
	Subtotals	97.4	4.7	16.9	1.9	223.7
Business Park	Vehicular Sources	1,066.7	50.9	124.3	16.3	3,469.6
	Energy Generation and Use	9.3	0.9	54.1	4.4	1.5
	Subtotals	1,076.1	51.8	178.4	20.7	3,471.1
Utilities/WRP	Vehicular Sources	6.9	0.6	2.4	0.2	89.9
	Energy Generation and Use	1.3	0.1	7.3	0.8	0.3
	Subtotals	8.2	0.6	9.8	0.9	90.2
Commercial Office	Vehicular Sources	1,843.7	88.4	213.9	27.9	5,923.0
	Energy Generation and Use	15.3	1.5	88.9	7.2	2.4
	Subtotals	1,859.0	89.9	302.8	35.1	5,925.5
Golf Course	Vehicular Sources	73.2	3.5	7.8	1.1	194.4
	Energy Generation and Use	0.3	0.0	1.6	0.1	0.0
	Subtotals	73.4	3.6	9.4	1.2	194.4
Park	Vehicular Sources	25.3	1.2	2.3	0.3	51.2
	Energy Generation and Use	0.0	0.0	0.0	0.0	0.0
	Subtotals	25.3	1.2	2.3	0.3	51.2
Special Generator	Vehicular Sources	11.8	0.6	1.3	0.2	33.9
	Energy Generation and Use	0.3	0.0	1.9	0.1	0.0
	Subtotals	12.2	0.6	3.2	0.3	33.9
Library	Vehicular Sources	131.2	6.3	15.2	2.0	421.6
	Energy Generation and Use	0.2	0.0	0.9	0.1	0.0
	Subtotals	131.4	6.3	16.1	2.1	421.7
Project Totals	Vehicular Sources	25,096.8	1,143.5	2,568.0	330.4	65,236.2
	Energy Generation and Use	245.6	32.6	1,266.4	90.7	31.2
	WRP On-SIte Stationary Sources	0.9	0.1	2.7	0.0	0.9
TOTALS		25,343.3	1,176.2	3,837.0	421.1	65,268.3
SCAQMD Thresholds (lbs/day)		550.0	55.0	55.0	150.0	150.0
Project's Significance (Yes or No)		YES	YES	YES	YES	YES

Table AQ-4
EMISSIONS FROM ON-ROAD VEHICLE TRAVEL
(SCAQMD CEQA Air Quality Handbook Tables A9-5 & A9-9)

Project Name: Newhall Ranch - Non-Mixed Use & Non-Village Development

Analysis Year:	2020
Project Location:	
Orange County	
Los Angeles County	X
Riverside County	
San Bernardino Co	
EMFAC7 Model:	EMFAC7F
Analysis Temperatures:	
CO	60
VOC	85
NO_x	75
TOG to VOC Factors:	
CAT	0.8515
NCAT	0.9240
Diesel	0.9573

Ref No.	Land Use	Res/ Non-Res	Units/ 1000 SF	ADT Rates	NOV Rates	Trips per	ADT	% Pass-By	% Diverted	% Internal	External Trips	NOV	% Work Trips	% Std Cold	% Std Hot	% Truck Trips
34	Single Family	R	11025	10.40	1.52	Unit	114,704	0%	0%	0%	114,704	16,758	0.0%	100.0%	0.0%	0.4%
46	Multi-Family	R	13655	7.07	1.71	Unit	96,595	0%	0%	0%	96,595	23,350	0.0%	100.0%	0.0%	0.9%
197	Commercial Center	N	1718	69.50	34.75	1000 SF	119,399	0%	0%	0%	96,595	59,700	2.0%	80.0%	20.0%	2.1%
113	Elementary/Jr. High	N	300	13.33	6.67	Empl	4,000	0%	0%	0%	4,000	2,000	8.0%	10.0%	90.0%	0.4%
116	High School	N	100	17.00	8.50	Empl	1,700	0%	0%	0%	1,700	850	5.0%	75.0%	25.0%	0.4%
184	Business Park	N	1513	11.10	5.55	1000 SF	16,800	0%	0%	0%	16,800	8,400	40.0%	70.0%	30.0%	1.8%
32	Utilities/WRP	N	35	2.86	1.43	Empl	100	0%	0%	0%	100	50	10.0%	25.0%	75.0%	30.0%
152	Commercial Office	N	2489	11.85	5.93	1000 SF	29,500	0%	0%	0%	29,500	14,750	35.0%	70.0%	30.0%	1.8%
90	Golf Course	N	180	8.33	4.17	Acre	1,499	0%	0%	0%	1,499	750	3.0%	50.0%	50.0%	0.4%
70	Park	N	133	3.01	1.51	Acre	400	0%	0%	0%	400	200	1.0%	100.0%	0.0%	0.4%
197	Special Generator	N	1	200.00	100.00	1000 SF	200	0%	0%	0%	200	100	2.0%	80.0%	20.0%	2.1%
152	Library	N	25	84.00	42.00	1000 SF	2,100	0%	0%	0%	2,100	1,050	35.0%	70.0%	30.0%	1.8%

Trip Types	Residential			Non-Residential			
	Home to Work	Home to Shop	Home to Other	Work	Non-Work	Pass-By	Diverted
Trip Length (miles)	11.70	5.90	7.50	10.80	6.30	0.05	0.40
Percent Trip	13.3%	21.7%	65.0%				

Time of Day	A.M. Peak	Off-Peak	P.M. Peak
Traffic Speeds	21.0	33.0	10.8

Roadway Types	Paved (without cleaning)	Paved (with cleaning)	Unpaved
Project Traffic Travel		X	

Vehicle Fleetmix	% Type	Catalyst	Non-Catalyst	Diesel
Passenger Vehicles				
Automobiles	77.53%	99.99%	0.00%	0.01%
Light-Duty Trucks	21.80%	100.00%	0.00%	0.00%
Motorcycles	0.56%	-	100.00%	-
Buses	0.11%	-	-	100.00%
Trucks				
Medium-Duty Trucks	57.14%	100.00%	0.00%	-
Heavy-Duty Gas Trucks	10.71%	89.00%	11.00%	-
Heavy-Duty Diesel Trucks	32.14%	-	-	100.00%

Project Vehicular Emissions	Emissions in Pounds per Day					Vehicle
	CO	VOC	NO_x	SO_x	PM_{10}	Miles
Single Family	7,906.9	336.2	737.9	99.9	17,821.7	884,529
Multi-Family	6,714.2	294.8	653.5	85.8	16,260.2	744,886
Commercial Center	7,068.7	348.8	780.6	92.6	20,210.4	762,962
Elementary/Jr. High	152.0	7.6	19.4	3.0	536.7	26,639
High School	96.1	4.6	9.4	1.3	223.5	11,093
Business Park	1,066.7	50.9	124.3	16.3	3,469.6	136,083
Utilities/WRP	6.9	0.6	2.4	0.2	89.9	676
Commercial Office	1,843.7	88.4	213.9	27.9	5,923.0	232,310
Golf Course	73.2	3.5	7.8	1.1	194.4	9,649
Park	25.3	1.2	2.3	0.3	51.2	2,540
Special Generator	11.8	0.6	1.3	0.2	33.9	1,278
Library	131.2	6.3	15.2	2.0	421.6	16,538
TOTALS	25,096.8	1,143.5	2,568.0	330.4	65,236.2	2,829,182

Table AQ-5

EMISSIONS FROM ELECTRICITY AND NATURAL GAS CONSUMPTION

(SCAQMD CEQA Air Quality Handbook Tables A9-11 and A9-12)

Project Name: **Newhall Ranch - Non-Mixed Use & Non-Village Development**

Service Area: SCE

Land Use Type	Code	Units/ SF	kWh/Year	cf/Month	Electricity Emissions in Pounds per Day					Natural Gas Emissions in Pounds per Day				
					CO	VOC	NO_x	SO_x	PM_{10}	CO	VOC	NO_x	SO_x	PM_{10}
Single Family	1	11,025	67,043,025	73,481,625	36.7	1.8	211.2	22.0	7.3	49.0	13.0	196.0	0.0	0.5
Multi-Family	3	13,655	83,036,055	53,500,290	45.5	2.3	261.6	27.3	9.1	35.7	9.5	142.7	0.0	0.4
Commercial Center	5	1,718,000	81,261,400	4,982,200	44.5	2.2	256.0	26.7	8.9	3.3	0.9	19.9	0.0	0.0
Elementary/Jr. High	8	375,000	4,350,000	750,000	2.4	0.1	13.7	1.4	0.5	0.5	0.1	3.0	0.0	0.0
High School	7	154,128	1,818,710	446,971	1.0	0.0	5.7	0.6	0.2	0.3	0.1	1.8	0.0	0.0
Business Park	9	1,513,000	13,314,400	3,026,000	7.3	0.4	41.9	4.4	1.5	2.0	0.5	12.1	0.0	0.0
Utilities/WRP	0	1	2,325,000	313	1.3	0.1	7.3	0.8	0.3	0.0	0.0	0.0	0.0	0.0
Commercial Office	9	2,489,000	21,903,200	4,978,000	12.0	0.6	69.0	7.2	2.4	3.3	0.9	19.9	0.0	0.0
Golf Course	12	40,000	272,000	192,000	0.1	0.0	0.9	0.1	0.0	0.1	0.0	0.8	0.0	0.0
Park	11	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Special Generator	6	25,000	447,500	120,000	0.2	0.0	1.4	0.1	0.0	0.1	0.0	0.5	0.0	0.0
Library	9	25,000	220,000	50,000	0.1	0.0	0.7	0.1	0.0	0.0	0.0	0.2	0.0	0.0
TOTALS			275,991,290	141,527,399	151.2	7.6	869.6	90.7	30.2	94.4	25.0	396.8	0.0	0.9

Conversion Factors

Land Use Type	Code	Electricity Demand Conversion Factors			Natural Gas Consumption Conversion Factors	
		Electricity Unit Type	SCE	DWP		Useage Factor
Residential						
Single Family	1	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	6,665.0
Multi-Family (<5)	2	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	4,105.0
Multi-Family (5+)	3	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	3,918.0
Food Store	4	Kilowatt-hour/Square Feet/Year	51.4	55.2	Cubic Feet/Square Foot/Month	2.9
Restaurant	5	Kilowatt-hour/Square Feet/Year	47.3	47.6	Cubic Feet/Square Foot/Month	2.9
Hospitals	6	Kilowatt-hour/Square Feet/Year	17.9	25.5	Cubic Feet/Square Foot/Month	4.8
Retail	7	Kilowatt-hour/Square Feet/Year	11.8	15.3	Cubic Feet/Square Foot/Month	2.9
College/University	8	Kilowatt-hour/Square Feet/Year	11.6	11.5	Cubic Feet/Square Foot/Month	2.0
High School	9	Kilowatt-hour/Square Feet/Year	8.8	12.2	Cubic Feet/Square Foot/Month	2.0
Elementary School	10	Kilowatt-hour/Square Feet/Year	6.3	5.5	Cubic Feet/Square Foot/Month	2.0
Office	11	Kilowatt-hour/Square Feet/Year	8.8	17.1	Cubic Feet/Square Foot/Month	2.0
Hotel/Motel	12	Kilowatt-hour/Square Feet/Year	6.8	13.1	Cubic Feet/Square Foot/Month	4.8
Warehouse	13	Kilowatt-hour/Square Feet/Year	3.4	5.3	Cubic Feet/Square Foot/Month	2.0
Miscellaneous	14	Kilowatt-hour/Square Feet/Year	8.8	12.2	Cubic Feet/Customer/Month	241,611.0

Emission Factors for Each Criteria Pollutant from Consumption of Electricity and Natural Gas

Emission Factors	Electricity Emissions Factors (pounds per megawatt-hour)					Natural Gas Emission Factors (pounds per million cubic feet)				
	CO	VOC	NO_x	SO_x	PM_{10}	CO	VOC	NO_x	SO_x	PM_{10}
Residential Uses	0.20	0.01	1.15	0.12	0.04	20.0	5.3	80.0	0.0	0.2
Nonresidential Uses	0.20	0.01	1.15	0.12	0.04	20.0	5.3	120.0	0.0	0.2

Table AQ-6
EMISSIONS FROM WATER RECLAMATION PLANT STATIONARY SOURCES

Project Name: Newhall Ranch Specific Plan

Hours of Operation per Day:	24
Total Gas Production and Use per Day (cu ft/day):	56000
Percent of gas used by Boilers:	50%
Percent of gas used by Flares:	50%

BOILERS					Emissions (ppd)
CO	21.6 lb/mmcf G	*	0.028 mmcf G	=	0.6048
VOC	3.97 lb/mmcf G	*	0.028 mmcf G	=	0.11116
NOx	0.0468 lb/hr	*	24 hours	=	1.1232
SOx	0.17 lb/mmcf G	*	0.028 mmcf G	=	0.00476
PM10	15.6 lb/mmcf G	*	0.028 mmcf G	=	0.4368

FLARES					Emissions (ppd)
CO	12.1 lb/mmcf G	*	0.028 mmcf G	=	0.3388
VOC	0.71 lb/mmcf G	*	0.028 mmcf G	=	0.01988
NOx	58 lb/mmcf G	*	0.028 mmcf G	=	1.624
SOx	0.17 lb/mmcf G	*	0.028 mmcf G	=	0.00476
PM10	15.6 lb/mmcf G	*	0.028 mmcf G	=	0.4368

TOTALS	Emissions (ppd)
CO	0.9
VOC	0.1
NOx	2.7
SOx	0.0
PM10	0.9

Source of Emission Factors: Robert Ferrente, County Sanitation Districts of Los Angeles County, Whittier, California, correspondence to Impact Sciences, Inc., February 7, 1996.
mmcf G: million cubic feet of gas.

Table AQ-7
SUMMARY OF ESTIMATED DAILY OPERATION-RELATED EMISSIONS

Project Name: **Newhall Ranch - Mixed-Use & Village Concept Development**

Land Use		Emissions in Pounds per Day				
		CO	VOC	NO_x	SO_x	PM_{10}
Single Family	Vehicular Sources	5,597.4	240.9	514.0	67.2	11,989.8
	Energy Generation and Use	85.7	14.8	407.2	22.0	7.8
	Subtotals	5,683.1	255.8	921.2	89.2	11,997.7
Multi-Family	Vehicular Sources	4,752.4	211.2	454.6	57.7	10,939.3
	Energy Generation and Use	81.2	11.7	404.3	27.3	9.5
	Subtotals	4,833.5	222.9	858.9	85.0	10,948.7
Commercial Center	Vehicular Sources	5,237.5	258.4	578.6	68.7	14,995.0
	Energy Generation and Use	47.8	3.1	276.0	26.7	8.9
	Subtotals	5,285.3	261.5	854.6	95.4	15,004.0
Elementary/Jr. High	Vehicular Sources	109.2	5.5	13.9	2.1	381.5
	Energy Generation and Use	2.9	0.3	16.7	1.4	0.5
	Subtotals	112.1	5.8	30.6	3.6	382.0
High School	Vehicular Sources	70.4	3.4	6.8	0.9	162.3
	Energy Generation and Use	1.3	0.1	7.5	0.6	0.2
	Subtotals	71.7	3.5	14.4	1.5	162.5
Business Park	Vehicular Sources	692.9	34.3	77.4	9.5	2,011.5
	Energy Generation and Use	9.3	0.9	54.1	4.4	1.5
	Subtotals	702.2	35.2	131.5	13.8	2,013.0
Utilities/WRP	Vehicular Sources	4.9	0.4	1.7	0.1	63.0
	Energy Generation and Use	1.3	0.1	7.3	0.8	0.3
	Subtotals	6.2	0.5	9.0	0.9	63.3
Commercial Office	Vehicular Sources	1,217.4	60.3	136.1	16.6	3,536.5
	Energy Generation and Use	15.3	1.5	88.9	7.2	2.4
	Subtotals	1,232.7	61.7	225.0	23.8	3,538.9
Golf Course	Vehicular Sources	54.0	2.6	5.7	0.8	143.2
	Energy Generation and Use	0.3	0.0	1.6	0.1	0.0
	Subtotals	54.3	2.7	7.3	0.9	143.2
Park	Vehicular Sources	18.8	0.9	1.7	0.2	38.3
	Energy Generation and Use	0.0	0.0	0.0	0.0	0.0
	Subtotals	18.8	0.9	1.7	0.2	38.3
Special Generator	Vehicular Sources	8.8	0.4	1.0	0.1	25.1
	Energy Generation and Use	0.3	0.0	1.9	0.1	0.0
	Subtotals	9.1	0.5	2.9	0.3	25.2
Library	Vehicular Sources	86.7	4.3	9.7	1.2	251.8
	Energy Generation and Use	0.2	0.0	0.9	0.1	0.0
	Subtotals	86.8	4.3	10.6	1.3	251.8
Project Totals	Vehicular Sources	17,850.2	822.6	1,801.3	225.2	44,537.3
	Energy Generation and Use	245.6	32.6	1,266.4	90.7	31.2
	WRP On-SIte Stationary Sources	0.9	0.1	2.7	0.0	0.9
TOTALS		18,096.7	855.3	3,070.4	315.9	44,569.4
SCAQMD Thresholds (lbs/day)		550.0	55.0	55.0	150.0	150.0
Project's Significance (Yes or No)		YES	YES	YES	YES	YES

Table AQ-8

EMISSIONS FROM ON-ROAD VEHICLE TRAVEL

(SCAQMD CEQA Air Quality Handbook Tables A9-5 & A9-9)

Project Name: **Newhall Ranch - Mixed-Use & Village Concept Development**

Analysis Year:	2020
Project Location:	
Orange County	
Los Angeles County	X
Riverside County	
San Bernardino Co	
EMFAC7 Model:	EMFAC7F
Analysis Temperatures:	
CO	60
VOC	85
NO_x	75
TOG to VOC Factors:	
CAT	0.8515
NCAT	0.9240
Diesel	0.9573

Ref No.	Land Use	Res/ Non-Res	Units/ 1000 SF	ADT Rates	NOV Rates	Trips per	ADT	% Pass-By	% Diverted	% Internal	External Trips	NOV	% Work Trips	% Std Cold	% Std Hot	% Truck Trips
34	Single Family	R	11025	10.40	1.52	Unit	114,704	0%	0%	52%	84,881	12,401	0.0%	100.0%	0.0%	0.4%
46	Multi-Family	R	13655	7.07	1.71	Unit	96,595	0%	0%	52%	71,481	17,279	0.0%	100.0%	0.0%	0.9%
197	Commercial Center	N	1718	69.50	34.75	1000 SF	119,399	0%	0%	52%	71,481	44,178	2.0%	80.0%	20.0%	2.1%
113	Elementary/Jr. High	N	300	13.33	6.67	Empl	4,000	0%	0%	52%	2,960	1,480	8.0%	10.0%	90.0%	0.4%
116	High School	N	100	17.00	8.50	Empl	1,700	0%	0%	52%	1,258	629	5.0%	75.0%	25.0%	0.4%
184	Business Park	N	1513	11.10	5.55	1000 SF	16,800	0%	0%	52%	12,432	6,216	40.0%	70.0%	30.0%	1.8%
32	Utilities/WRP	N	35	2.86	1.43	Empl	100	0%	0%	52%	74	37	10.0%	25.0%	75.0%	30.0%
152	Commercial Office	N	2489	11.85	5.93	1000 SF	29,500	0%	0%	52%	21,830	10,915	35.0%	70.0%	30.0%	1.8%
90	Golf Course	N	180	8.33	4.17	Acre	1,499	0%	0%	52%	1,110	555	3.0%	50.0%	50.0%	0.4%
70	Park	N	133	3.01	1.51	Acre	400	0%	0%	52%	296	148	1.0%	100.0%	0.0%	0.4%
197	Special Generator	N	1	200.00	100.00	1000 SF	200	0%	0%	52%	148	74	2.0%	80.0%	20.0%	2.1%
152	Library	N	25	84.00	42.00	1000 SF	2,100	0%	0%	52%	1,554	777	35.0%	70.0%	30.0%	1.8%

Trip Types	Residential			Non-Residential			
	Home to Work	Home to Shop	Home to Other	Work	Non-Work	Pass-By	Diverted
Trip Length (miles)	10.21	6.52	6.52	6.25	6.41	0.05	0.40
Percent Trip	13.3%	21.7%	65.0%				

Time of Day	A.M. Peak	Off-Peak	P.M. Peak
Traffic Speeds	21.0	33.0	10.8

Roadway Types	Paved (without cleaning)	Paved (with cleaning)	Unpaved
Project Traffic Travel		X	

Vehicle Fleetmix	% Type	Catalyst	Non-Catalyst	Diesel
Passenger Vehicles				
Automobiles	77.53%	99.99%	0.00%	0.01%
Light-Duty Trucks	21.80%	100.00%	0.00%	0.00%
Motorcycles	0.56%	-	100.00%	-
Buses	0.11%	-	-	100.00%
Trucks				
Medium-Duty Trucks	57.14%	100.00%	0.00%	-
Heavy-Duty Gas Trucks	10.71%	89.00%	11.00%	-
Heavy-Duty Diesel Trucks	32.14%	-	-	100.00%

Project Vehicular Emissions	Emissions in Pounds per Day					Vehicle
	CO	VOC	NO_x	SO_x	PM_{10}	Miles
Single Family	5,597.4	240.9	514.0	67.2	11,989.8	595,081
Multi-Family	4,752.4	211.2	454.6	57.7	10,939.3	501,134
Commercial Center	5,237.5	258.4	578.6	68.7	14,995.0	566,076
Elementary/Jr. High	109.2	5.5	13.9	2.1	381.5	18,935
High School	70.4	3.4	6.8	0.9	162.3	8,054
Business Park	692.9	34.3	77.4	9.5	2,011.5	78,895
Utilities/WRP	4.9	0.4	1.7	0.1	63.0	474
Commercial Office	1,217.4	60.3	136.1	16.6	3,536.5	138,706
Golf Course	54.0	2.6	5.7	0.8	143.2	7,107
Park	18.8	0.9	1.7	0.2	38.3	1,898
Special Generator	8.8	0.4	1.0	0.1	25.1	948
Library	86.7	4.3	9.7	1.2	251.8	9,874
TOTALS	17,850.2	822.6	1,801.3	225.2	44,537.3	1,927,183

Table AQ-9

EMISSIONS FROM ELECTRICITY AND NATURAL GAS CONSUMPTION

(SCAQMD CEQA Air Quality Handbook Tables A9-11 and A9-12)

Project Name: **Newhall Ranch - Mixed-Use & Village Concept Development**

Service Area: SCE

Land Use Type	Code	Units/ SF	kWh/Year	cf/Month	Electricity Emissions in Pounds per Day					Natural Gas Emissions in Pounds per Day				
					CO	VOC	NO_x	SO_x	PM_{10}	CO	VOC	NO_x	SO_x	PM_{10}
Single Family	1	11,025	67,043,025	73,481,625	36.7	1.8	211.2	22.0	7.3	49.0	13.0	196.0	0.0	0.5
Multi-Family	3	13,655	83,036,055	53,500,290	45.5	2.3	261.6	27.3	9.1	35.7	9.5	142.7	0.0	0.4
Commercial Center	5	1,718,000	81,261,400	4,982,200	44.5	2.2	256.0	26.7	8.9	3.3	0.9	19.9	0.0	0.0
Elementary/Jr. High	8	375,000	4,350,000	750,000	2.4	0.1	13.7	1.4	0.5	0.5	0.1	3.0	0.0	0.0
High School	7	154,128	1,818,710	446,971	1.0	0.0	5.7	0.6	0.2	0.3	0.1	1.8	0.0	0.0
Business Park	9	1,513,000	13,314,400	3,026,000	7.3	0.4	41.9	4.4	1.5	2.0	0.5	12.1	0.0	0.0
Utilities/WRP	0	1	2,325,000	313	1.3	0.1	7.3	0.8	0.3	0.0	0.0	0.0	0.0	0.0
Commercial Office	9	2,489,000	21,903,200	4,978,000	12.0	0.6	69.0	7.2	2.4	3.3	0.9	19.9	0.0	0.0
Golf Course	12	40,000	272,000	192,000	0.1	0.0	0.9	0.1	0.0	0.1	0.0	0.8	0.0	0.0
Park	11	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Special Generator	6	25,000	447,500	120,000	0.2	0.0	1.4	0.1	0.0	0.1	0.0	0.5	0.0	0.0
Library	9	25,000	220,000	50,000	0.1	0.0	0.7	0.1	0.0	0.0	0.0	0.2	0.0	0.0
TOTALS			275,991,290	141,527,399	151.2	7.6	869.6	90.7	30.2	94.4	25.0	396.8	0.0	0.9

Conversion Factors

Land Use Type	Code	Elctricity Demand Conversion Factors			Natural Gas Consumption Conversion Factors	
		Electricity Unit Type	SCE	DWP		Useage Factor
Residential						
Single Family	1	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	6,665.0
Multi-Family (<5)	2	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	4,105.0
Multi-Family (5+)	3	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	3,918.0
Food Store	4	Kilowatt-hour/Square Feet/Year	51.4	55.2	Cubic Feet/Square Foot/Month	2.9
Restaurant	5	Kilowatt-hour/Square Feet/Year	47.3	47.6	Cubic Feet/Square Foot/Month	2.9
Hospitals	6	Kilowatt-hour/Square Feet/Year	17.9	25.5	Cubic Feet/Square Foot/Month	4.8
Retail	7	Kilowatt-hour/Square Feet/Year	11.8	15.3	Cubic Feet/Square Foot/Month	2.9
College/University	8	Kilowatt-hour/Square Feet/Year	11.6	11.5	Cubic Feet/Square Foot/Month	2.0
High School	9	Kilowatt-hour/Square Feet/Year	8.8	12.2	Cubic Feet/Square Foot/Month	2.0
Elementary School	10	Kilowatt-hour/Square Feet/Year	6.3	5.5	Cubic Feet/Square Foot/Month	2.0
Office	11	Kilowatt-hour/Square Feet/Year	8.8	17.1	Cubic Feet/Square Foot/Month	2.0
Hotel/Motel	12	Kilowatt-hour/Square Feet/Year	6.8	13.1	Cubic Feet/Square Foot/Month	4.8
Warehouse	13	Kilowatt-hour/Square Feet/Year	3.4	5.3	Cubic Feet/Square Foot/Month	2.0
Miscellaneous	14	Kilowatt-hour/Square Feet/Year	8.8	12.2	Cubic Feet/Customer/Month	241,611.0

Emission Factors for Each Criteria Pollutant from Consumption of Electricity and Natural Gas

Emission Factors	Electricity Emissions Factors (pounds per megawatt-hour)					Natural Gas Emission Factors (pounds per million cubic feet)				
	CO	VOC	NO_x	SO_x	PM_{10}	CO	VOC	NO_x	SO_x	PM_{10}
Residential Uses	0.20	0.01	1.15	0.12	0.04	20.0	5.3	80.0	0.0	0.2
Nonresidential Uses	0.20	0.01	1.15	0.12	0.04	20.0	5.3	120.0	0.0	0.2

Table AQ-10
ESTIMATED EMISSION REDUCTION EFFICIENCIES
(SCAQMD CEQA Air Quality Handbook Table 11-6)

Land Use		Emissions in Pounds per Day				
		CO	VOC	NOx	SOx	PM10
Residential Uses	Vehicular Sources	10,349.8	452.1	968.6	124.9	22,929.1
	Energy Generation and Use	166.9	26.5	811.5	49.3	17.3
Non Residential Uses	Vehicular Sources	7,500.4	370.5	832.7	100.3	21,608.2
	Energy Generation and Use	78.7	6.1	454.9	41.4	13.9
Total Emissions	Vehicular Sources	17,850.2	822.6	1,801.3	225.2	44,537.3
	Energy Generation and Use	245.6	32.6	1,266.4	90.7	31.2
	WRP On-Site Stationary Sources	0.9	0.1	2.7	0.0	0.9
	Total Non-Reduced Emissions	18,096.7	855.3	3,070.4	315.9	44,569.4
MEASURES, EFFICIENCIES, AND REDUCTIONS						
Residential						
Include retail services within or adjacent to residential subdivisions		1.3%	1.0%	1.3%	0.0%	1.3%
		134.5	4.5	12.6	-	298.1
Construct bus turnouts, passenger benches, and shelters		0.2%	0.2%	0.2%	0.0%	0.2%
		20.7	0.9	1.9	-	45.9
Construct pedestrian facility improvements		0.1%	0.1%	0.1%	0.0%	0.1%
		10.3	0.5	1.0	-	22.9
Construct bicycle trails		0.1%	0.1%	0.1%	0.0%	0.1%
		10.3	0.5	1.0	-	22.9
Non-Residential						
Include residential units within or adjacent to commercial/ industrial projects		4.0%	3.1%	4.0%	0.0%	4.0%
		300.0	11.5	33.3	-	864.3
Construct bus turnouts, passenger benches, and shelters		0.1%	0.1%	0.1%	0.0%	0.1%
		7.5	0.4	0.8	-	21.6
Construct pedestrian facility improvements		0.2%	0.2%	0.2%	0.0%	0.2%
		15.0	0.7	1.7	-	43.2
Construct bicycle trails		0.3%	0.2%	0.3%	0.0%	0.3%
		22.5	0.7	2.5	-	64.8
TOTAL REDUCTIONS		521.0	19.7	54.8	-	1,383.8
		2.9%	2.3%	1.8%	0.0%	3.1%
TOTAL EMISSIONS (Non-Reduced Emissions-Total Reductions)		17,575.7	835.6	3,015.6	315.9	43,185.6
AQMD Thresholds		550.0	55.0	55.0	150.0	150.0
Project Significance (Yes or No)		YES	YES	YES	YES	YES

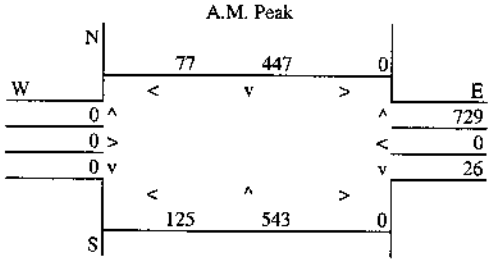
Table AQ-11
CALTRANS CALINE4 SCREENING PROCEDURE

Project Title:	Newhall Ranch
Intersection:	Chiquito Canyon/126 WB Ramps
Analysis Condition:	Long Range County Base - With Project
Nearest Air Monitoring Station measuring CO:	Santa Clarita
Background 1-hour CO Concentration (ppm):	6.9
Background 8-hour CO Concentration (ppm):	3.1
Persistence Factor:	0.6
Geographic Location:	Coastal or Coastal Valley
Analysis Year:	2012
Worst-Case Wind Speed (m/s)	0.5
Percentage of Vehicles in Cold Start Mode - A.M. Peak:	10%
Percentage of Vehicles in Cold Start Mode - P.M. Peak:	10%
SCAQMD Post-EMFAC7F1.1 Credit:	YES

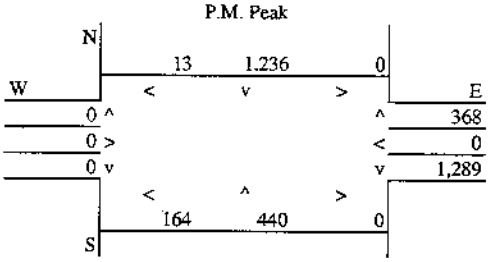
		No. of	% Red Time		Average Cruise Speed	
		Lanes	A.M.	P.M.	A.M.	P.M.
North-South Roadway:	Chiquito Canyon	4	40%	50%	35	35
East-West Roadway:	126 WB Ramps	2	60%	50%	35	35

PEAK HOUR TURNING VOLUMES

A.M. Peak



P.M. Peak



Representative Traffic Volumes (Vehicles per Hour per Lane)

N-S Road	500	N-S Road	800
E-W Road	400	E-W Road	900

ROADWAY CO CONTRIBUTIONS

Roadway	CO Concentration Contributions 15 meters	25 meters	50 meters	Traffic Volume Correction	Intersection Performance Correction	Wind Speed Correction	Cold Start & Year Correction	SCAQMD Credit	Wind Angle Correction
A.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.58	0.26	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.58	0.11	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	13.0	9.5	6.2	0.47	0.39	0.7	0.13	0.86	1.0
• Departure Volume	11.3	8.6	5.9	0.47	0.13	0.7	0.13	0.86	1.0
P.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.85	1.00	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.85	0.21	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	13.0	9.5	6.2	0.93	1.00	0.7	0.13	0.86	1.0
• Departure Volume	11.3	8.6	5.9	0.93	0.35	0.7	0.13	0.86	1.0

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
15 Meters (50 Feet) from Roadway Edge	7.5	9.9	4.9
25 Meters (82 Feet) from Roadway Edge	7.3	9.1	4.4
50 Meters (164 Feet) from Roadway Edge	7.2	8.4	4.0

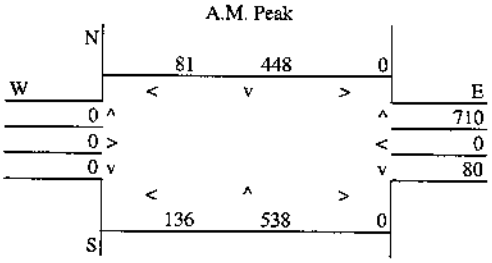
Table AQ-12
CALTRANS CALINE4 SCREENING PROCEDURE

Project Title:	Newhall Ranch
Intersection:	Chiquito Canyon/126 WB Ramps
Analysis Condition:	Long Range Alternative Plan - With Project
Nearest Air Monitoring Station measuring CO:	Santa Clarita
Background 1-hour CO Concentration (ppm):	6.9
Background 8-hour CO Concentration (ppm):	3.1
Persistence Factor:	0.6
Geographic Location:	Coastal or Coastal Valley
Analysis Year:	2012
Worst-Case Wind Speed (m/s)	0.5
Percentage of Vehicles in Cold Start Mode - A.M. Peak:	10%
Percentage of Vehicles in Cold Start Mode - P.M. Peak:	10%
SCAQMD Post-EMFAC7F1.1 Credit:	YES

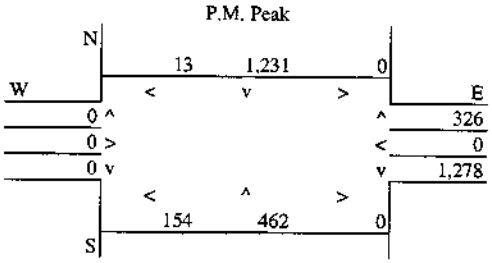
		No. of Lanes	% Red Time A.M.	% Red Time P.M.	Average Cruise Speed A.M.	Average Cruise Speed P.M.
North-South Roadway:	Chiquito Canyon	4	40%	50%	35	35
East-West Roadway:	126 WB Ramps	2	60%	50%	35	35

PEAK HOUR TURNING VOLUMES

A.M. Peak



P.M. Peak



Representative Traffic Volumes (Vehicles per Hour per Lane)

N-S Road	500	N-S Road	800
E-W Road	400	E-W Road	900

ROADWAY CO CONTRIBUTIONS

Roadway	CO Concentration Contributions 15 meters	25 meters	50 meters	Traffic Volume Correction	Intersection Performance Correction	Wind Speed Correction	Cold Start & Year Correction	SCAQMD Credit	Wind Angle Correction
A.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.58	0.26	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.58	0.11	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	13.0	9.5	6.2	0.47	0.39	0.7	0.13	0.86	1.0
• Departure Volume	11.3	8.6	5.9	0.47	0.13	0.7	0.13	0.86	1.0
P.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.85	1.00	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.85	0.21	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	13.0	9.5	6.2	0.93	1.00	0.7	0.13	0.86	1.0
• Departure Volume	11.3	8.6	5.9	0.93	0.35	0.7	0.13	0.86	1.0

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
15 Meters (50 Feet) from Roadway Edge	7.5	9.9	4.9
25 Meters (82 Feet) from Roadway Edge	7.3	9.1	4.4
50 Meters (164 Feet) from Roadway Edge	7.2	8.4	4.0

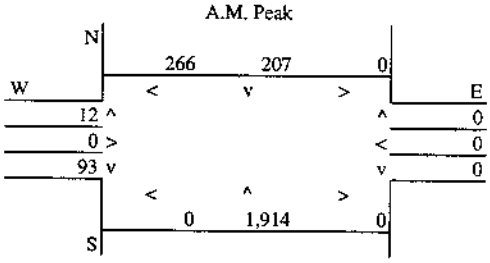
Table AQ-13
CALTRANS CALINE4 SCREENING PROCEDURE

Project Title:	Newhall Ranch
Intersection:	Chiquito Canyon/126 EB Ramps
Analysis Condition:	Long Range County Base - With Project
Nearest Air Monitoring Station measuring CO:	Santa Clarita
Background 1-hour CO Concentration (ppm):	6.9
Background 8-hour CO Concentration (ppm):	3.1
Persistence Factor:	0.6
Geographic Location:	Coastal or Coastal Valley
Analysis Year:	2012
Worst-Case Wind Speed (m/s)	0.5
Percentage of Vehicles in Cold Start Mode - A.M. Peak:	10%
Percentage of Vehicles in Cold Start Mode - P.M. Peak:	10%
SCAQMD Post-EMFAC7F1.1 Credit:	YES

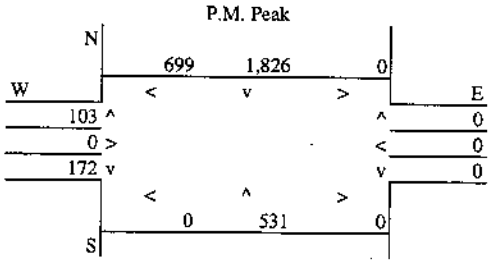
		No. of	% Red Time		Average Cruise Speed	
		Lanes	A.M.	P.M.	A.M.	P.M.
North-South Roadway:	Chiquito Canyon	4	30%	40%	35	35
East-West Roadway:	126 EB Ramps	2	80%	60%	35	35

PEAK HOUR TURNING VOLUMES

A.M. Peak



P.M. Peak



Representative Traffic Volumes (Vehicles per Hour per Lane)

N-S Road	600	N-S Road	800
E-W Road	200	E-W Road	500

ROADWAY CO CONTRIBUTIONS

Roadway	CO Concentration Contributions 15 meters	25 meters	50 meters	Traffic Volume Correction	Intersection Performance Correction	Wind Speed Correction	Cold Start & Year Correction	SCAQMD Credit	Wind Angle Correction
A.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.67	0.21	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.67	0.11	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	13.0	9.5	6.2	0.27	0.62	0.7	0.13	0.86	1.0
• Departure Volume	11.3	8.6	5.9	0.27	0.16	0.7	0.13	0.86	1.0
P.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.85	0.45	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.85	0.14	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	13.0	9.5	6.2	0.58	0.52	0.7	0.13	0.86	1.0
• Departure Volume	11.3	8.6	5.9	0.58	0.14	0.7	0.13	0.86	1.0

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
15 Meters (50 Feet) from Roadway Edge	7.5	8.1	3.8
25 Meters (82 Feet) from Roadway Edge	7.3	7.8	3.6
50 Meters (164 Feet) from Roadway Edge	7.2	7.5	3.5

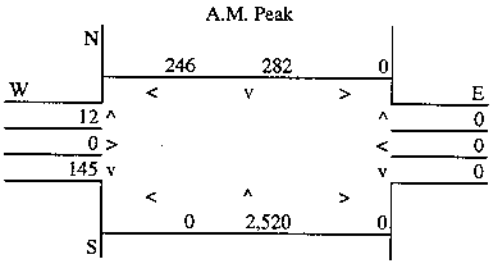
Table AQ-14
CALTRANS CALINE4 SCREENING PROCEDURE

Project Title:	Newhall Ranch
Intersection:	Chiquito Canyon/126 EB Ramps
Analysis Condition:	Long Range Alternative Plan - With Project
Nearest Air Monitoring Station measuring CO:	Santa Clarita
Background 1-hour CO Concentration (ppm):	6.9
Background 8-hour CO Concentration (ppm):	3.1
Persistence Factor:	0.6
Geographic Location:	Coastal or Coastal Valley
Analysis Year:	2012
Worst-Case Wind Speed (m/s)	0.5
Percentage of Vehicles in Cold Start Mode - A.M. Peak:	10%
Percentage of Vehicles in Cold Start Mode - P.M. Peak:	10%
SCAQMD Post-EMFAC7F1.1 Credit:	YES

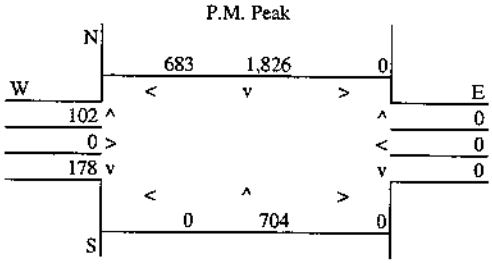
		No. of Lanes	% Red Time A.M.	% Red Time P.M.	Average Cruise Speed A.M.	Average Cruise Speed P.M.
North-South Roadway:	Chiquito Canyon	4	30%	40%	35	35
East-West Roadway:	126 EB Ramps	2	70%	60%	35	35

PEAK HOUR TURNING VOLUMES

A.M. Peak



P.M. Peak



Representative Traffic Volumes (Vehicles per Hour per Lane)

N-S Road	800	N-S Road	900
E-W Road	300	E-W Road	500

ROADWAY CO CONTRIBUTIONS

Roadway	CO Concentration Contributions 15 meters	25 meters	50 meters	Traffic Volume Correction	Intersection Performance Correction	Wind Speed Correction	Cold Start & Year Correction	SCAQMD Credit	Wind Angle Correction
A.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.85	0.29	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.85	0.12	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	13.0	9.5	6.2	0.37	1.00	0.7	0.13	0.86	1.0
• Departure Volume	11.3	8.6	5.9	0.37	1.00	0.7	0.13	0.86	1.0
P.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.93	0.62	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.93	0.16	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	13.0	9.5	6.2	0.58	0.52	0.7	0.13	0.86	1.0
• Departure Volume	11.3	8.6	5.9	0.58	0.14	0.7	0.13	0.86	1.0

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
15 Meters (50 Feet) from Roadway Edge	8.2	8.5	4.1
25 Meters (82 Feet) from Roadway Edge	7.9	8.1	3.8
50 Meters (164 Feet) from Roadway Edge	7.5	7.7	3.6

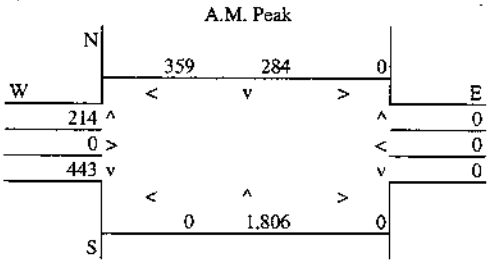
Table AQ-15
CALTRANS CALINE4 SCREENING PROCEDURE

Project Title:	Newhall Ranch
Intersection:	Franklin/126 WB Ramps
Analysis Condition:	Long Range County Base - With Project
Nearest Air Monitoring Station measuring CO:	Santa Clarita
Background 1-hour CO Concentration (ppm):	6.9
Background 8-hour CO Concentration (ppm):	3.1
Persistence Factor:	0.6
Geographic Location:	Coastal or Coastal Valley
Analysis Year:	2012
Worst-Case Wind Speed (m/s)	0.5
Percentage of Vehicles in Cold Start Mode - A.M. Peak:	10%
Percentage of Vehicles in Cold Start Mode - P.M. Peak:	10%
SCAQMD Post-EMFAC7F1.1 Credit:	YES

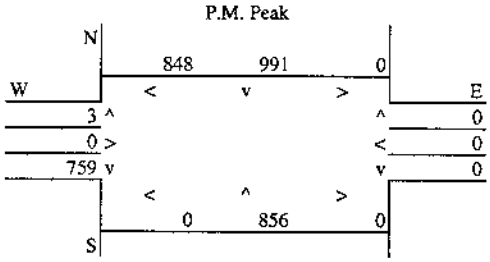
		No. of	% Red Time		Average Cruise Speed	
		Lanes	A.M.	P.M.	A.M.	P.M.
North-South Roadway:	Franklin	4	50%	60%	35	35
East-West Roadway:	126 WB Ramps	2	50%	40%	35	35

PEAK HOUR TURNING VOLUMES

A.M. Peak



P.M. Peak



Representative Traffic Volumes (Vehicles per Hour per Lane)

N-S Road	700	N-S Road	700
E-W Road	600	E-W Road	900

ROADWAY CO CONTRIBUTIONS

Roadway	CO Concentration Contributions 15 meters	25 meters	50 meters	Traffic Volume Correction	Intersection Performance Correction	Wind Speed Correction	Cold Start & Year Correction	SCAQMD Credit	Wind Angle Correction
A.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.76	0.52	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.76	0.16	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	13.0	9.5	6.2	0.67	0.39	0.7	0.13	0.86	1.0
• Departure Volume	11.3	8.6	5.9	0.67	0.13	0.7	0.13	0.86	1.0
P.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.76	1.00	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.76	0.31	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	13.0	9.5	6.2	0.93	0.62	0.7	0.13	0.86	1.0
• Departure Volume	11.3	8.6	5.9	0.93	0.16	0.7	0.13	0.86	1.0

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
15 Meters (50 Feet) from Roadway Edge	8.1	9.3	4.5
25 Meters (82 Feet) from Roadway Edge	7.8	8.7	4.2
50 Meters (164 Feet) from Roadway Edge	7.5	8.1	3.8

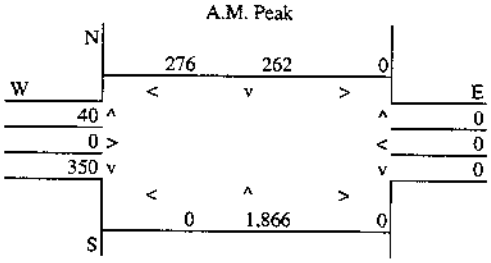
Table AQ-16
CALTRANS CALINE4 SCREENING PROCEDURE

Project Title:	Newhall Ranch
Intersection:	Franklin/126 WB Ramps
Analysis Condition:	Long Range Alternative Plan - With Project
Nearest Air Monitoring Station measuring CO:	Santa Clarita
Background 1-hour CO Concentration (ppm):	6.9
Background 8-hour CO Concentration (ppm):	3.1
Persistence Factor:	0.6
Geographic Location:	Coastal or Coastal Valley
Analysis Year:	2012
Worst-Case Wind Speed (m/s)	0.5
Percentage of Vehicles in Cold Start Mode - A.M. Peak:	10%
Percentage of Vehicles in Cold Start Mode - P.M. Peak:	10%
SCAQMD Post-EMFAC7F1.1 Credit:	YES

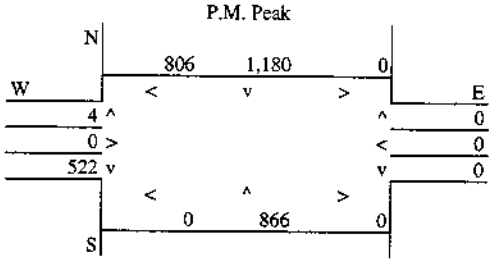
		No. of	% Red Time		Average Cruise Speed	
		Lanes	A.M.	P.M.	A.M.	P.M.
North-South Roadway:	Franklin	4	40%	50%	35	35
East-West Roadway:	126 WB Ramps	2	60%	50%	35	35

PEAK HOUR TURNING VOLUMES

A.M. Peak



P.M. Peak



Representative Traffic Volumes (Vehicles per Hour per Lane)

N-S Road	700	N-S Road	800
E-W Road	400	E-W Road	700

ROADWAY CO CONTRIBUTIONS

Roadway	CO Concentration Contributions 15 meters	25 meters	50 meters	Traffic Volume Correction	Intersection Performance Correction	Wind Speed Correction	Cold Start & Year Correction	SCAQMD Credit	Wind Angle Correction
A.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.76	0.31	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.76	0.12	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	13.0	9.5	6.2	0.47	0.39	0.7	0.13	0.86	1.0
• Departure Volume	11.3	8.6	5.9	0.47	0.13	0.7	0.13	0.86	1.0
P.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.85	1.00	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.85	0.21	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	13.0	9.5	6.2	0.76	0.52	0.7	0.13	0.86	1.0
• Departure Volume	11.3	8.6	5.9	0.76	0.16	0.7	0.13	0.86	1.0

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
15 Meters (50 Feet) from Roadway Edge	7.7	9.2	4.5
25 Meters (82 Feet) from Roadway Edge	7.5	8.6	4.1
50 Meters (164 Feet) from Roadway Edge	7.3	8.0	3.8

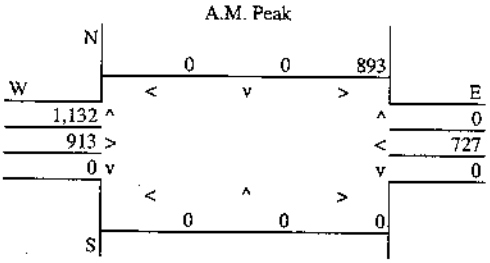
Table AQ-17
CALTRANS CALINE4 SCREENING PROCEDURE

Project Title:	Newhall Ranch
Intersection:	Franklin/126 EB Ramps
Analysis Condition:.	Long Range County Base - With Project
Nearest Air Monitoring Station measuring CO:	Santa Clarita
Background 1-hour CO Concentration (ppm):	6.9
Background 8-hour CO Concentration (ppm):	3.1
Persistence Factor:	0.6
Geographic Location:	Coastal or Coastal Valley
Analysis Year:	2012
Worst-Case Wind Speed (m/s)	0.5
Percentage of Vehicles in Cold Start Mode - A.M. Peak:	10%
Percentage of Vehicles in Cold Start Mode - P.M. Peak:	10%
SCAQMD Post-EMFAC7F1.1 Credit:	YES

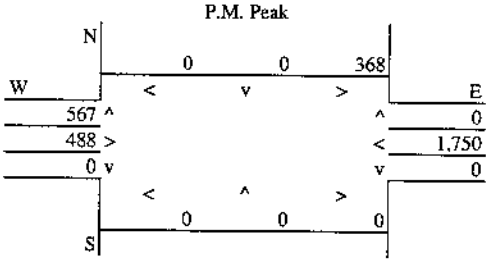
		No. of Lanes	% Red Time A.M.	% Red Time P.M.	Average Cruise Speed A.M.	Average Cruise Speed P.M.
North-South Roadway:	Franklin	4	50%	70%	35	35
East-West Roadway:	126 EB Ramps	4	50%	30%	35	35

PEAK HOUR TURNING VOLUMES

A.M. Peak



P.M. Peak



Representative Traffic Volumes (Vehicles per Hour per Lane)

N-S Road	600	N-S Road	300
E-W Road	700	E-W Road	800

ROADWAY CO CONTRIBUTIONS

Roadway	CO Concentration Contributions 15 meters	25 meters	50 meters	Traffic Volume Correction	Intersection Performance Correction	Wind Speed Correction	Cold Start & Year Correction	SCAQMD Credit	Wind Angle Correction
A.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.67	0.39	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.67	0.13	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	23.1	16.7	10.9	0.76	0.52	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.76	0.16	0.7	0.13	0.86	1.0
P.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.37	1.00	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.37	0.62	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	23.1	16.7	10.9	0.85	0.29	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.85	0.12	0.7	0.13	0.86	1.0

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
15 Meters (50 Feet) from Roadway Edge	8.4	8.5	4.0
25 Meters (82 Feet) from Roadway Edge	8.0	8.1	3.8
50 Meters (164 Feet) from Roadway Edge	7.6	7.7	3.6

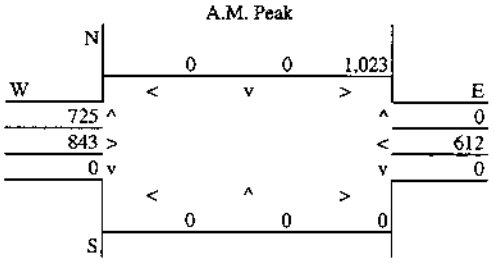
Table AQ-18
CALTRANS CALINE4 SCREENING PROCEDURE

Project Title:	Newhall Ranch
Intersection:	Franklin/126 EB Ramps
Analysis Condition:	Long Range Alternative Plan - With Project
Nearest Air Monitoring Station measuring CO:	Santa Clarita
Background 1-hour CO Concentration (ppm):	6.9
Background 8-hour CO Concentration (ppm):	3.1
Persistence Factor:	0.6
Geographic Location:	Coastal or Coastal Valley
Analysis Year:	2012
Worst-Case Wind Speed (m/s)	0.5
Percentage of Vehicles in Cold Start Mode - A.M. Peak:	10%
Percentage of Vehicles in Cold Start Mode - P.M. Peak:	10%
SCAQMD Post-EMFAC7F1.1 Credit:	YES

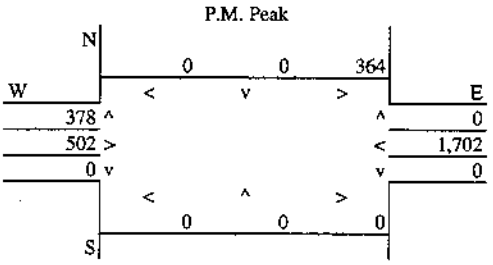
		No. of	% Red Time		Average Cruise Speed	
		Lanes	A.M.	P.M.	A.M.	P.M.
North-South Roadway:	Franklin	4	60%	80%	35	35
East-West Roadway:	126 EB Ramps	4	40%	30%	35	35

PEAK HOUR TURNING VOLUMES

A.M. Peak



P.M. Peak



Representative Traffic Volumes (Vehicles per Hour per Lane)

N-S Road	500	N-S Road	200
E-W Road	700	E-W Road	700

ROADWAY CO CONTRIBUTIONS

Roadway	CO Concentration Contributions 15 meters	25 meters	50 meters	Traffic Volume Correction	Intersection Performance Correction	Wind Speed Correction	Cold Start & Year Correction	SCAQMD Credit	Wind Angle Correction
A.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.58	0.52	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.58	0.14	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	23.1	16.7	10.9	0.76	0.31	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.76	0.12	0.7	0.13	0.86	1.0
P.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.27	0.62	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.27	0.16	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	23.1	16.7	10.9	0.76	0.24	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.76	0.11	0.7	0.13	0.86	1.0

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
15 Meters (50 Feet) from Roadway Edge	8.1	7.7	3.8
25 Meters (82 Feet) from Roadway Edge	7.8	7.5	3.6
50 Meters (164 Feet) from Roadway Edge	7.5	7.3	3.5

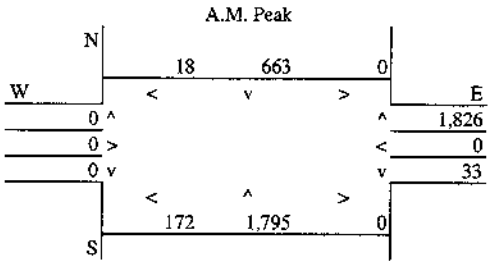
Table AQ-19
CALTRANS CALINE4 SCREENING PROCEDURE

Project Title:	Newhall Ranch
Intersection:	Commerce Ctr/126 WB Ramps
Analysis Condition:	Long Range County Base - With Project
Nearest Air Monitoring Station measuring CO:	Santa Clarita
Background 1-hour CO Concentration (ppm):	6.9
Background 8-hour CO Concentration (ppm):	3.1
Persistence Factor:	0.6
Geographic Location:	Coastal or Coastal Valley
Analysis Year:	2012
Worst-Case Wind Speed (m/s)	0.5
Percentage of Vehicles in Cold Start Mode - A.M. Peak:	10%
Percentage of Vehicles in Cold Start Mode - P.M. Peak:	10%
SCAQMD Post-EMFAC7F1.1 Credit:	YES

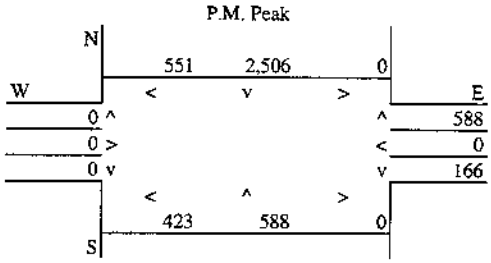
		No. of	% Red Time		Average Cruise Speed	
		Lanes	A.M.	P.M.	A.M.	P.M.
North-South Roadway:	Commerce Center	6	60%	40%	35	35
East-West Roadway:	126 WB Ramps	2	40%	60%	35	35

PEAK HOUR TURNING VOLUMES

A.M. Peak



P.M. Peak



Representative Traffic Volumes (Vehicles per Hour per Lane)

N-S Road	800	N-S Road	800
E-W Road	1,000	E-W Road	500

ROADWAY CO CONTRIBUTIONS

Roadway	CO Concentration Contributions 15 meters	25 meters	50 meters	Traffic Volume Correction	Intersection Performance Correction	Wind Speed Correction	Cold Start & Year Correction	SCAQMD Credit	Wind Angle Correction
A.M. Peak Hour									
N-S Road									
• Approach Volume	31.3	23.0	14.9	0.85	1.00	0.7	0.13	0.86	1.0
• Departure Volume	21.8	17.8	13.1	0.85	0.62	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	13.0	9.5	6.2	1	1.00	0.7	0.13	0.86	1.0
• Departure Volume	11.3	8.6	5.9	1	0.23	0.7	0.13	0.86	1.0
P.M. Peak Hour									
N-S Road									
• Approach Volume	31.3	23.0	14.9	0.85	0.45	0.7	0.13	0.86	1.0
• Departure Volume	21.8	17.8	13.1	0.85	0.14	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	13.0	9.5	6.2	0.58	0.52	0.7	0.13	0.86	1.0
• Departure Volume	11.3	8.6	5.9	0.58	0.14	0.7	0.13	0.86	1.0

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
15 Meters (50 Feet) from Roadway Edge	11.1	8.4	5.6
25 Meters (82 Feet) from Roadway Edge	10.1	8.0	5.0
50 Meters (164 Feet) from Roadway Edge	9.0	7.7	4.4

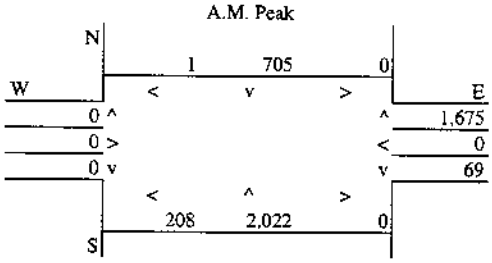
Table AQ-20
CALTRANS CALINE4 SCREENING PROCEDURE

Project Title:	Newhall Ranch
Intersection:	Commerce Ctr/126 WB Ramps
Analysis Condition:	Long Range Alternative Plan - With Project
Nearest Air Monitoring Station measuring CO:	Santa Clarita
Background 1-hour CO Concentration (ppm):	6.9
Background 8-hour CO Concentration (ppm):	3.1
Persistence Factor:	0.6
Geographic Location:	Coastal or Coastal Valley
Analysis Year:	2012
Worst-Case Wind Speed (m/s)	0.5
Percentage of Vehicles in Cold Start Mode - A.M. Peak:	10%
Percentage of Vehicles in Cold Start Mode - P.M. Peak:	10%
SCAQMD Post-EMFAC7F1.1 Credit:	YES

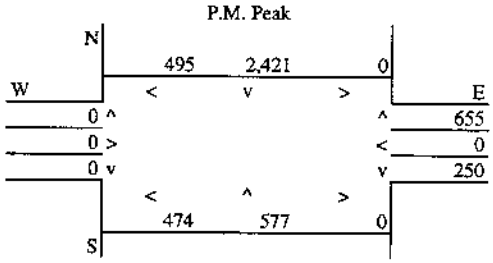
		No. of Lanes	% Red Time A.M.	% Red Time P.M.	Average Cruise Speed A.M.	Average Cruise Speed P.M.
North-South Roadway:	Commerce Center	6	50%	40%	35	35
East-West Roadway:	126 WB Ramps	2	50%	60%	35	35

PEAK HOUR TURNING VOLUMES

A.M. Peak



P.M. Peak



Representative Traffic Volumes (Vehicles per Hour per Lane)

N-S Road	800	N-S Road	700
E-W Road	900	E-W Road	500

ROADWAY CO CONTRIBUTIONS

Roadway	CO Concentration Contributions 15 meters	25 meters	50 meters	Traffic Volume Correction	Intersection Performance Correction	Wind Speed Correction	Cold Start & Year Correction	SCAQMD Credit	Wind Angle Correction
A.M. Peak Hour									
N-S Road									
• Approach Volume	31.3	23.0	14.9	0.85	1.00	0.7	0.13	0.86	1.0
• Departure Volume	21.8	17.8	13.1	0.85	0.21	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	13.0	9.5	6.2	0.93	1.00	0.7	0.13	0.86	1.0
• Departure Volume	11.3	8.6	5.9	0.93	0.35	0.7	0.13	0.86	1.0
P.M. Peak Hour									
N-S Road									
• Approach Volume	31.3	23.0	14.9	0.76	0.31	0.7	0.13	0.86	1.0
• Departure Volume	21.8	17.8	13.1	0.76	0.12	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	13.0	9.5	6.2	0.58	0.52	0.7	0.13	0.86	1.0
• Departure Volume	11.3	8.6	5.9	0.58	0.14	0.7	0.13	0.86	1.0

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
15 Meters (50 Feet) from Roadway Edge	10.5	8.0	5.3
25 Meters (82 Feet) from Roadway Edge	9.6	7.7	4.7
50 Meters (164 Feet) from Roadway Edge	8.7	7.5	4.2

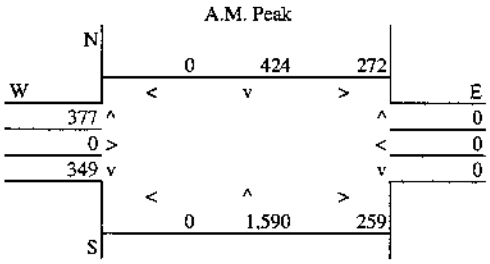
Table AQ-21
CALTRANS CALINE4 SCREENING PROCEDURE

Project Title:	Newhall Ranch
Intersection:	Commerce Ctr/126 EB Ramps
Analysis Condition:	Long Range County Base - With Project
Nearest Air Monitoring Station measuring CO:	Santa Clarita
Background 1-hour CO Concentration (ppm):	6.9
Background 8-hour CO Concentration (ppm):	3.1
Persistence Factor:	0.6
Geographic Location:	Coastal or Coastal Valley
Analysis Year:	2012
Worst-Case Wind Speed (m/s)	0.5
Percentage of Vehicles in Cold Start Mode - A.M. Peak:	10%
Percentage of Vehicles in Cold Start Mode - P.M. Peak:	10%
SCAQMD Post-EMFAC7F1.1 Credit:	YES

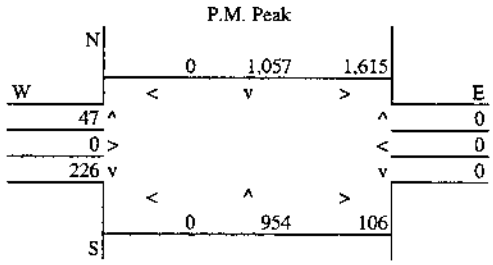
		No. of	% Red Time		Average Cruise Speed	
		Lanes	A.M.	P.M.	A.M.	P.M.
North-South Roadway:	Commerce Center	6	40%	60%	35	35
East-West Roadway:	126 EB Ramps	2	60%	40%	35	35

PEAK HOUR TURNING VOLUMES

A.M. Peak



P.M. Peak



Representative Traffic Volumes (Vehicles per Hour per Lane)

N-S Road	500	N-S Road	700
E-W Road	400	E-W Road	900

ROADWAY CO CONTRIBUTIONS

Roadway	CO Concentration Contributions 15 meters	25 meters	50 meters	Traffic Volume Correction	Intersection Performance Correction	Wind Speed Correction	Cold Start & Year Correction	SCAQMD Credit	Wind Angle Correction
A.M. Peak Hour									
N-S Road									
• Approach Volume	31.3	23.0	14.9	0.58	0.26	0.7	0.13	0.86	1.0
• Departure Volume	21.8	17.8	13.1	0.58	0.11	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	13.0	9.5	6.2	0.47	0.39	0.7	0.13	0.86	1.0
• Departure Volume	11.3	8.6	5.9	0.47	0.13	0.7	0.13	0.86	1.0
P.M. Peak Hour									
N-S Road									
• Approach Volume	31.3	23.0	14.9	0.76	1.00	0.7	0.13	0.86	1.0
• Departure Volume	21.8	17.8	13.1	0.76	0.31	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	13.0	9.5	6.2	0.93	0.62	0.7	0.13	0.86	1.0
• Departure Volume	11.3	8.6	5.9	0.93	0.16	0.7	0.13	0.86	1.0

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
15 Meters (50 Feet) from Roadway Edge	7.6	9.9	4.9
25 Meters (82 Feet) from Roadway Edge	7.4	9.1	4.4
50 Meters (164 Feet) from Roadway Edge	7.3	8.4	4.0

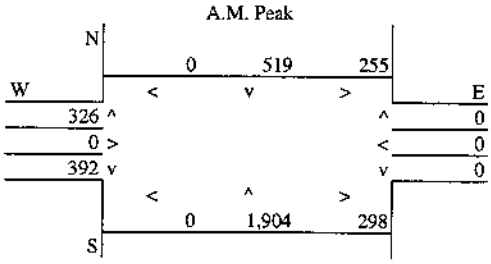
Table AQ-22
CALTRANS CALINE4 SCREENING PROCEDURE

Project Title:	Newhall Ranch
Intersection:	Commerce Ctr/126 EB Ramps
Analysis Condition:	Long Range Alternative Plan - With Project
Nearest Air Monitoring Station measuring CO:	Santa Clarita
Background 1-hour CO Concentration (ppm):	6.9
Background 8-hour CO Concentration (ppm):	3.1
Persistence Factor:	0.6
Geographic Location:	Coastal or Coastal Valley
Analysis Year:	2012
Worst-Case Wind Speed (m/s)	0.5
Percentage of Vehicles in Cold Start Mode - A.M. Peak:	10%
Percentage of Vehicles in Cold Start Mode - P.M. Peak:	10%
SCAQMD Post-EMFAC7F1.1 Credit:	YES

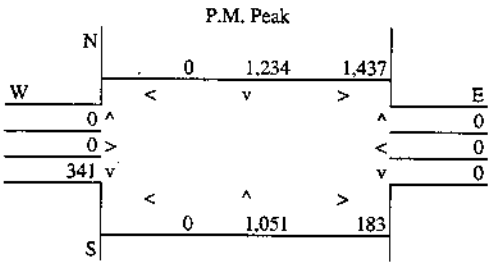
		No. of Lanes	% Red Time A.M.	% Red Time P.M.	Average Cruise Speed A.M.	Average Cruise Speed P.M.
North-South Roadway:	Commerce Center	6	40%	60%	35	35
East-West Roadway:	126 EB Ramps	2	60%	40%	35	35

PEAK HOUR TURNING VOLUMES

A.M. Peak



P.M. Peak



Representative Traffic Volumes (Vehicles per Hour per Lane)

N-S Road	600	N-S Road	700
E-W Road	400	E-W Road	900

ROADWAY CO CONTRIBUTIONS

Roadway	CO Concentration Contributions 15 meters	25 meters	50 meters	Traffic Volume Correction	Intersection Performance Correction	Wind Speed Correction	Cold Start & Year Correction	SCAQMD Credit	Wind Angle Correction
A.M. Peak Hour									
N-S Road									
• Approach Volume	31.3	23.0	14.9	0.67	0.29	0.7	0.13	0.86	1.0
• Departure Volume	21.8	17.8	13.1	0.67	0.12	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	13.0	9.5	6.2	0.47	0.39	0.7	0.13	0.86	1.0
• Departure Volume	11.3	8.6	5.9	0.47	0.13	0.7	0.13	0.86	1.0
P.M. Peak Hour									
N-S Road									
• Approach Volume	31.3	23.0	14.9	0.76	1.00	0.7	0.13	0.86	1.0
• Departure Volume	21.8	17.8	13.1	0.76	0.31	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	13.0	9.5	6.2	0.93	0.62	0.7	0.13	0.86	1.0
• Departure Volume	11.3	8.6	5.9	0.93	0.16	0.7	0.13	0.86	1.0

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
15 Meters (50 Feet) from Roadway Edge	7.8	9.9	4.9
25 Meters (82 Feet) from Roadway Edge	7.5	9.1	4.4
50 Meters (164 Feet) from Roadway Edge	7.3	8.4	4.0

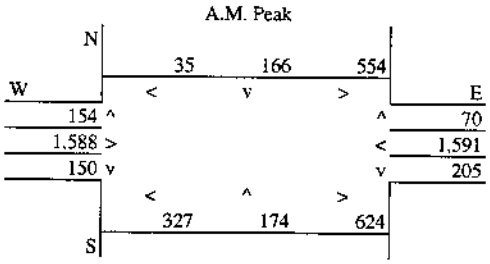
Table AQ-23
CALTRANS CALINE4 SCREENING PROCEDURE

Project Title:	Newhall Ranch
Intersection:	San Martinez/126
Analysis Condition:	Long Range County Base - With Project
Nearest Air Monitoring Station measuring CO:	Santa Clarita
Background 1-hour CO Concentration (ppm):	6.9
Background 8-hour CO Concentration (ppm):	3.1
Persistence Factor:	0.6
Geographic Location:	Coastal or Coastal Valley
Analysis Year:	2012
Worst-Case Wind Speed (m/s)	0.5
Percentage of Vehicles in Cold Start Mode - A.M. Peak:	10%
Percentage of Vehicles in Cold Start Mode - P.M. Peak:	10%
SCAQMD Post-EMFAC7F1.1 Credit:	YES

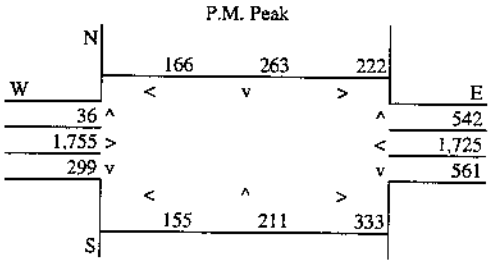
		No. of Lanes	% Red Time A.M.	% Red Time P.M.	Average Cruise Speed A.M.	Average Cruise Speed P.M.
North-South Roadway:	San Martinez	4	60%	60%	35	35
East-West Roadway:	Highway 126	6	40%	40%	40	40

PEAK HOUR TURNING VOLUMES

A.M. Peak



P.M. Peak



Representative Traffic Volumes (Vehicles per Hour per Lane)

N-S Road	500	N-S Road	500
E-W Road	800	E-W Road	900

ROADWAY CO CONTRIBUTIONS

Roadway	CO Concentration Contributions 15 meters	25 meters	50 meters	Traffic Volume Correction	Intersection Performance Correction	Wind Speed Correction	Cold Start & Year Correction	SCAQMD Credit	Wind Angle Correction
A.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.58	0.52	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.58	0.14	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	31.3	23.0	14.9	0.85	0.39	0.7	0.13	0.86	1.0
• Departure Volume	21.8	17.8	13.1	0.85	0.12	0.7	0.13	0.86	1.0
P.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.58	0.52	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.58	0.14	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	31.3	23.0	14.9	0.93	0.62	0.7	0.13	0.86	1.0
• Departure Volume	21.8	17.8	13.1	0.93	0.15	0.7	0.13	0.86	1.0

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
15 Meters (50 Feet) from Roadway Edge	8.5	9.2	4.5
25 Meters (82 Feet) from Roadway Edge	8.1	8.6	4.1
50 Meters (164 Feet) from Roadway Edge	7.7	8.0	3.8

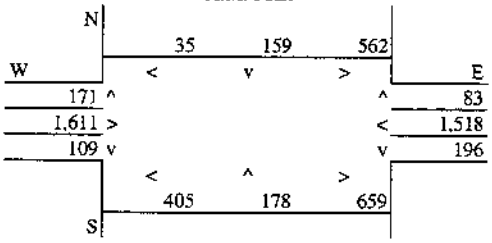
Table AQ-24
CALTRANS CALINE4 SCREENING PROCEDURE

Project Title:	Newhall Ranch
Intersection:	San Martinez/126
Analysis Condition:	Long Range Alternative Plan - With Project
Nearest Air Monitoring Station measuring CO:	Santa Clarita
Background 1-hour CO Concentration (ppm):	6.9
Background 8-hour CO Concentration (ppm):	3.1
Persistence Factor:	0.6
Geographic Location:	Coastal or Coastal Valley
Analysis Year:	2012
Worst-Case Wind Speed (m/s)	0.5
Percentage of Vehicles in Cold Start Mode - A.M. Peak:	10%
Percentage of Vehicles in Cold Start Mode - P.M. Peak:	10%
SCAQMD Post-EMFAC7F1.1 Credit:	YES

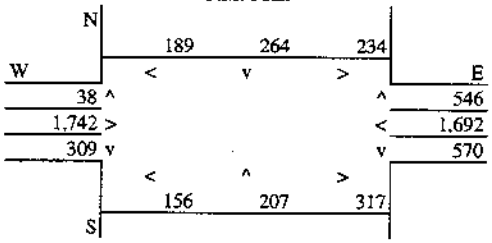
		No. of	% Red Time		Average Cruise Speed	
		Lanes	A.M.	P.M.	A.M.	P.M.
North-South Roadway:	San Martinez	4	60%	60%	35	35
East-West Roadway:	Highway 126	6	40%	40%	40	40

PEAK HOUR TURNING VOLUMES

A.M. Peak



P.M. Peak



Representative Traffic Volumes (Vehicles per Hour per Lane)

N-S Road	500	N-S Road	500
E-W Road	800	E-W Road	900

ROADWAY CO CONTRIBUTIONS

Roadway	CO Concentration Contributions 15 meters	25 meters	50 meters	Traffic Volume Correction	Intersection Performance Correction	Wind Speed Correction	Cold Start & Year Correction	SCAQMD Credit	Wind Angle Correction
A.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.58	0.52	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.58	0.14	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	31.3	23.0	14.9	0.85	0.39	0.7	0.13	0.86	1.0
• Departure Volume	21.8	17.8	13.1	0.85	0.12	0.7	0.13	0.86	1.0
P.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.58	0.52	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.58	0.14	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	31.3	23.0	14.9	0.93	0.62	0.7	0.13	0.86	1.0
• Departure Volume	21.8	17.8	13.1	0.93	0.15	0.7	0.13	0.86	1.0

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
15 Meters (50 Feet) from Roadway Edge	8.5	9.2	4.5
25 Meters (82 Feet) from Roadway Edge	8.1	8.6	4.1
50 Meters (164 Feet) from Roadway Edge	7.7	8.0	3.8

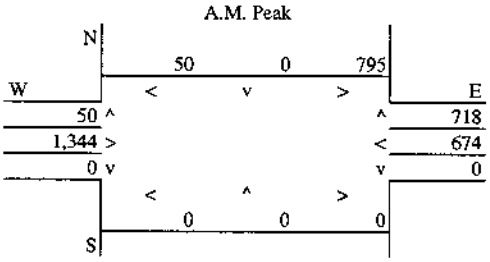
Table AQ-25
CALTRANS CALINE4 SCREENING PROCEDURE

Project Title:	Newhall Ranch
Intersection:	Long Canyon/Potrero
Analysis Condition:	Long Range - With Project
Nearest Air Monitoring Station measuring CO:	Santa Clarita
Background 1-hour CO Concentration (ppm):	6.9
Background 8-hour CO Concentration (ppm):	3.1
Persistence Factor:	0.6
Geographic Location:	Coastal or Coastal Valley
Analysis Year:	2012
Worst-Case Wind Speed (m/s)	0.5
Percentage of Vehicles in Cold Start Mode - A.M. Peak:	10%
Percentage of Vehicles in Cold Start Mode - P.M. Peak:	10%
SCAQMD Post-EMFAC7F1.1 Credit:	YES

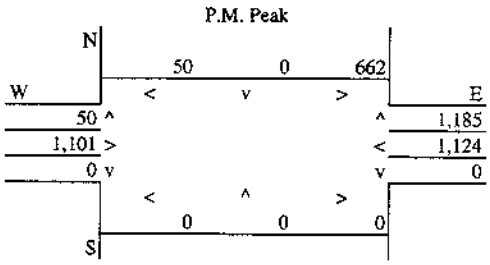
		No. of Lanes	% Red Time A.M.	% Red Time P.M.	Average Cruise Speed A.M.	Average Cruise Speed P.M.
North-South Roadway:	Long Canyon	4	50%	60%	35	35
East-West Roadway:	Potrero	6	50%	40%	35	35

PEAK HOUR TURNING VOLUMES

A.M. Peak



P.M. Peak



Representative Traffic Volumes (Vehicles per Hour per Lane)

N-S Road	500	N-S Road	500
E-W Road	600	E-W Road	700

ROADWAY CO CONTRIBUTIONS

Roadway	CO Concentration Contributions 15 meters	25 meters	50 meters	Traffic Volume Correction	Intersection Performance Correction	Wind Speed Correction	Cold Start & Year Correction	SCAQMD Credit	Wind Angle Correction
A.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.58	0.35	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.58	0.12	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	31.3	23.0	14.9	0.67	0.39	0.7	0.13	0.86	1.0
• Departure Volume	21.8	17.8	13.1	0.67	0.13	0.7	0.13	0.86	1.0
P.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.58	0.52	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.58	0.14	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	31.3	23.0	14.9	0.76	0.31	0.7	0.13	0.86	1.0
• Departure Volume	21.8	17.8	13.1	0.76	0.12	0.7	0.13	0.86	1.0

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
15 Meters (50 Feet) from Roadway Edge	8.1	8.3	3.9
25 Meters (82 Feet) from Roadway Edge	7.8	7.9	3.7
50 Meters (164 Feet) from Roadway Edge	7.5	7.6	3.5

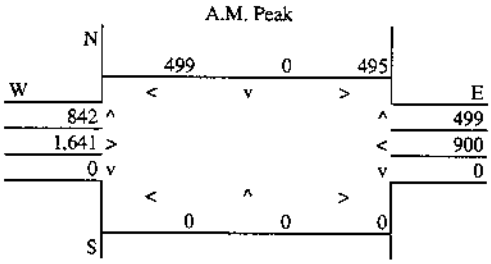
Table AQ-26
CALTRANS CALINE4 SCREENING PROCEDURE

Project Title:	Newhall Ranch
Intersection:	Magic Mountain/Potrero
Analysis Condition:	Long Range - With Project
Nearest Air Monitoring Station measuring CO:	Santa Clarita
Background 1-hour CO Concentration (ppm):	6.9
Background 8-hour CO Concentration (ppm):	3.1
Persistence Factor:	0.6
Geographic Location:	Coastal or Coastal Valley
Analysis Year:	2012
Worst-Case Wind Speed (m/s)	0.5
Percentage of Vehicles in Cold Start Mode - A.M. Peak:	10%
Percentage of Vehicles in Cold Start Mode - P.M. Peak:	10%
SCAQMD Post-EMFAC7F1.1 Credit:	YES

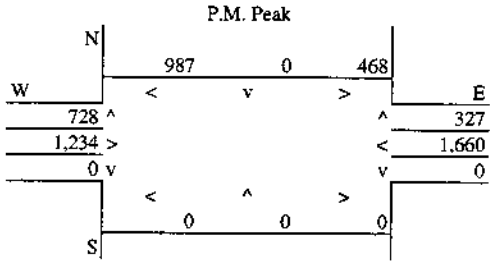
		No. of Lanes	% Red Time A.M.	% Red Time P.M.	Average Cruise Speed A.M.	Average Cruise Speed P.M.
North-South Roadway:	Magic Mountain	4	50%	50%	35	35
East-West Roadway:	Potrero	6	50%	50%	35	35

PEAK HOUR TURNING VOLUMES

A.M. Peak



P.M. Peak



Representative Traffic Volumes (Vehicles per Hour per Lane)

N-S Road	600	N-S Road	700
E-W Road	700	E-W Road	800

ROADWAY CO CONTRIBUTIONS

Roadway	CO Concentration Contributions 15 meters	25 meters	50 meters	Traffic Volume Correction	Intersection Performance Correction	Wind Speed Correction	Cold Start & Year Correction	SCAQMD Credit	Wind Angle Correction
A.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.67	0.39	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.67	0.13	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	31.3	23.0	14.9	0.76	0.52	0.7	0.13	0.86	1.0
• Departure Volume	21.8	17.8	13.1	0.76	0.16	0.7	0.13	0.86	1.0
P.M. Peak Hour									
N-S Road									
• Approach Volume	23.1	16.7	10.9	0.76	0.52	0.7	0.13	0.86	1.0
• Departure Volume	17.3	14.2	9.9	0.76	0.16	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	31.3	23.0	14.9	0.85	1.00	0.7	0.13	0.86	1.0
• Departure Volume	21.8	17.8	13.1	0.85	0.21	0.7	0.13	0.86	1.0

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
15 Meters (50 Feet) from Roadway Edge	8.7	10.2	5.1
25 Meters (82 Feet) from Roadway Edge	8.2	9.3	4.6
50 Meters (164 Feet) from Roadway Edge	7.8	8.5	4.1

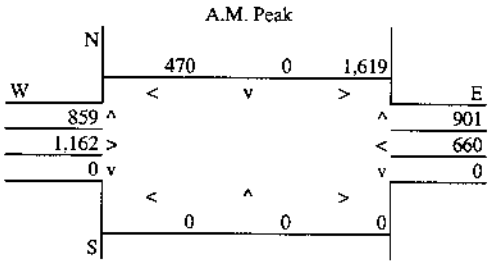
Table AQ-27
CALTRANS CALINE4 SCREENING PROCEDURE

Project Title:	Newhall Ranch
Intersection:	Commerce Center/Magic Mountain
Analysis Condition:	Long Range - With Project
Nearest Air Monitoring Station measuring CO:	Santa Clarita
Background 1-hour CO Concentration (ppm):	6.9
Background 8-hour CO Concentration (ppm):	3.1
Persistence Factor:	0.6
Geographic Location:	Coastal or Coastal Valley
Analysis Year:	2012
Worst-Case Wind Speed (m/s)	0.5
Percentage of Vehicles in Cold Start Mode - A.M. Peak:	10%
Percentage of Vehicles in Cold Start Mode - P.M. Peak:	10%
SCAQMD Post-EMFAC7F1.1 Credit:	YES

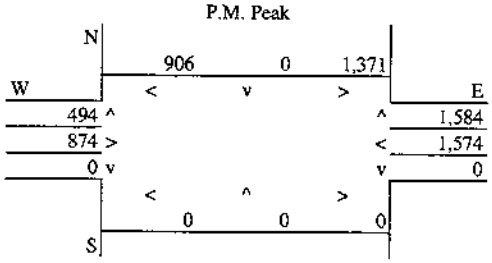
		No. of Lanes	% Red Time A.M.	% Red Time P.M.	Average Cruise Speed A.M.	Average Cruise Speed P.M.
North-South Roadway:	Commerce Center	6	50%	60%	35	35
East-West Roadway:	Magic Mountain	6	50%	40%	35	35

PEAK HOUR TURNING VOLUMES

A.M. Peak



P.M. Peak



Representative Traffic Volumes (Vehicles per Hour per Lane)

N-S Road	700	N-S Road	800
E-W Road	800	E-W Road	1,000

ROADWAY CO CONTRIBUTIONS

Roadway	CO Concentration Contributions 15 meters	25 meters	50 meters	Traffic Volume Correction	Intersection Performance Correction	Wind Speed Correction	Cold Start & Year Correction	SCAQMD Credit	Wind Angle Correction
A.M. Peak Hour									
N-S Road									
• Approach Volume	31.3	23.0	14.9	0.76	0.52	0.7	0.13	0.86	1.0
• Departure Volume	21.8	17.8	13.1	0.76	0.16	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	31.3	23.0	14.9	0.85	1.00	0.7	0.13	0.86	1.0
• Departure Volume	21.8	17.8	13.1	0.85	0.21	0.7	0.13	0.86	1.0
P.M. Peak Hour									
N-S Road									
• Approach Volume	31.3	23.0	14.9	0.85	1.00	0.7	0.13	0.86	1.0
• Departure Volume	21.8	17.8	13.1	0.85	0.62	0.7	0.13	0.86	1.0
E-W Road									
• Approach Volume	31.3	23.0	14.9	1	1.00	0.7	0.13	0.86	1.0
• Departure Volume	21.8	17.8	13.1	1	0.23	0.7	0.13	0.86	1.0

TOTAL CO CONCENTRATIONS (ppm)

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
15 Meters (50 Feet) from Roadway Edge	10.5	12.7	6.6
25 Meters (82 Feet) from Roadway Edge	9.6	11.3	5.7
50 Meters (164 Feet) from Roadway Edge	8.7	9.8	4.9

Table AQ-28
EMISSIONS FROM HEAVY-DUTY ENGINES AND CONSTRUCTION ENERGY CONSUMPTION
(SCAQMD CEQA Air Quality Handbook Table A9-3)

Project Name: Newhall Ranch - WRP

% Diesel Equipment: 80.0%
% Gasoline Equipment: 20.0%
Days of Construction Activity: 300 days

Land Use Type	Code	Square Feet	Million BTUs	Total Construction Phase Emissions in Tons				
				CO	VOC	NO_x	SO_x	PM_{10}
Water Reclamation Plant	17	35,000	4,989.8	18.6	1.1	7.2	0.5	0.3
		0	0.0	0.0	0.0	0.0	0.0	0.0
		0	0.0	0.0	0.0	0.0	0.0	0.0
		0	0.0	0.0	0.0	0.0	0.0	0.0
		0	0.0	0.0	0.0	0.0	0.0	0.0
		0	0.0	0.0	0.0	0.0	0.0	0.0
		0	0.0	0.0	0.0	0.0	0.0	0.0
		0	0.0	0.0	0.0	0.0	0.0	0.0
		0	0.0	0.0	0.0	0.0	0.0	0.0
		0	0.0	0.0	0.0	0.0	0.0	0.0
		0	0.0	0.0	0.0	0.0	0.0	0.0
		0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL EMISSIONS				18.6	1.1	7.2	0.5	0.3
DAILY TOTALS (Pounds per Day)				123.7	7.3	47.9	3.1	1.7
QUARTERLY TOTALS (Tons per Quarter)				4.64	0.27	1.80	0.12	0.06

Thermal Energy Consumption per Square Foot

Land Use Type	Code		Thermal Energy Consumption in BTUs/SF		
			On-Site Activity	Material Transport	Total
Religious Buildings	1		158,760	26,430	185,190
Hospital Buildings	2		216,720	36,079	252,799
Stores and Restaurants	3		118,440	19,717	138,157
Hotels and Motels	4		154,980	25,800	180,780
Office Buildings	5		206,640	34,401	241,041
Educational Buildings	6		175,140	29,157	204,297
Dormitories	7		180,180	29,996	210,176
High-Rise Apartments	8		93,240	15,522	108,762
Garden Apartments	9		81,900	13,634	95,534
Single Family Housing	10		88,200	14,683	102,883
Two- to Four-Family Housing	11		79,380	13,215	92,595
Farm Residential Buildings	12		70,560	11,747	82,307
Farm Site Service Stations(1)	13		18,900	3,146	22,046
Other Non-Farm Buildings	14		182,700	30,415	213,115
Car Garages and Serv Stations	15		97,020	16,151	113,171
Warehouses	16		70,560	11,747	82,307
Industrial Buildings	17		122,220	20,347	142,567

Emission Factors for Each Criteria Pollutant from Energy Consumption

Emission Factors	Emission Factors in Pounds per Million BTUs				
Emission Factors	CO	VOC	NO_x	SO_x	PM_{10}
Diesel Fuel	0.735	0.23	3.38	0.225	0.12
Gasoline	34.26	1.28	0.89	0.046	0.028

(1) Includes 538 secondary units.

Table AQ-29

SUMMARY OF ESTIMATED DAILY OPERATION-RELATED EMISSIONS

Project Name: Alternative 2 - Mixed-Use & Village Concept Development

Emissions Sources	Emissions in Pounds per Day				
	CO	VOC	NO_x	SO_x	PM_{10}
Vehicular Sources	1,496.2	65.6	140.4	18.1	3,320.1
Energy Generation and Use	16.6	2.9	79.3	4.3	1.5
TOTALS	1,512.8	68.4	219.7	22.4	3,321.6
SCAQMD Thresholds (lbs/day)	550.0	55.0	55.0	150.0	150.0
Project's Significance (Yes or No)	YES	YES	YES	NO	YES

Table AQ-30

EMISSIONS FROM ON-ROAD VEHICLE TRAVEL

(SCAQMD CEQA Air Quality Handbook Tables A9-5 & A9-9)

Project Name: **Alternative 2 - Mixed-Use & Village Concept Development**

Analysis Year:	2020
Project Location:	
Orange County	
Los Angeles County	X
Riverside County	
San Bernardino Co	
EMFAC7 Model:	EMFAC7F
Analysis Temperatures:	
CO	60
VOC	85
NO_x	75
TOG to VOC Factors:	
CAT	0.8515
NCAT	0.9240
Diesel	0.9573

Ref No.	Land Use	Res/ Non-Res	Units/ 1000 SF	ADT Rates	NOV Rates	Trips per	ADT	% Pass-By	% Diverted	% Internal	External Trips	NOV	% Work Trips	% Std Cold	% Std Hot	% Truck Trips
34	Single Family	R	2070	10.35	1.52	Unit	21,414	0%	0%	15%	19,808	2,916	0.0%	100.0%	0.0%	0.4%
197	Commercial Center	N	27.77	88.88	44.44	1000 SF	2,468	0%	0%	15%	2,283	1,142	2.0%	80.0%	20.0%	2.1%
14	General Light Industry	N	19.602	6.97	3.49	1000 SF	137	0%	0%	15%	2,283	63	50.0%	70.0%	30.0%	8.0%
70	Park	N	1527	0.52	0.26	1000 SF	799	0%	0%	15%	739	369	1.0%	100.0%	0.0%	0.4%

Trip Types	Residential			Non-Residential			
	Home to Work	Home to Shop	Home to Other	Work	Non-Work	Pass-By	Diverted
Trip Length (miles)	10.21	6.52	6.52	6.25	6.41	0.05	0.40
Percent Trip	13.3%	21.7%	65.0%				

Time of Day	A.M. Peak	Off-Peak	P.M. Peak
Traffic Speeds	21.0	33.0	10.8

Roadway Types	Paved (without cleaning)	Paved (with cleaning)	Unpaved
Project Traffic Travel		X	

Vehicle Fleetmix	% Type	Catalyst	Non-Catalyst	Diesel
Passenger Vehicles				
Automobiles	77.53%	99.99%	0.00%	0.01%
Light-Duty Trucks	21.80%	100.00%	0.00%	0.00%
Motorcycles	0.56%	-	100.00%	-
Buses	0.11%	-	-	100.00%
Trucks				
Medium-Duty Trucks	57.14%	100.00%	0.00%	-
Heavy-Duty Gas Trucks	10.71%	89.00%	11.00%	-
Heavy-Duty Diesel Trucks	32.14%	-	-	100.00%

Project Vehicular Emissions	Emissions in Pounds per Day					Vehicle
	CO	VOC	NO_x	SO_x	PM_{10}	Miles
Single Family	1,306.2	56.2	120.0	15.7	2,798.0	138,870
Commercial Center	135.3	6.7	15.0	1.8	387.5	14,628
General Light Industry	7.8	0.4	1.3	0.1	39.2	800
Park	46.8	2.2	4.2	0.5	95.4	4,734
TOTALS	1,496.2	65.6	140.4	18.1	3,320.1	159,032

Table AQ-31
EMISSIONS FROM ELECTRICITY AND NATURAL GAS CONSUMPTION
(SCAQMD CEQA Air Quality Handbook Tables A9-11 and A9-12)

Project Name: **Alternative 2 - Mixed-Use & Village Concept Development**

Service Area: SCE

Land Use Type	Code	Units/ SF	kWh/Year(1)	cf/Month(1)	Electricity Emissions in Pounds per Day					Natural Gas Emissions in Pounds per Day				
					CO	VOC	NO_x	SO_x	PM_{10}	CO	VOC	NO_x	SO_x	PM_{10}
Residential Uses	1		12,587,670	13,796,550	6.9	0.3	39.7	4.1	1.4	9.2	2.4	36.8	0.0	0.1
Non-Residential Uses	4		500,184	325,500	0.3	0.0	1.6	0.2	0.1	0.2	0.1	1.3	0.0	0.0
TOTALS			13,087,854	14,122,050	7.2	0.4	41.2	4.3	1.4	9.4	2.5	38.1	0.0	0.1

(1) Calculations are provided in Appendix 8.0 of this EIR.

Conversion Factors

Land Use Type	Code	Elctricity Demand Conversion Factors			Natural Gas Consumption Conversion Factors	
		Electricity Unit Type	SCE	DWP		Useage Factor
Residential						
Single Family	1	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	6,665.0
Multi-Family (<5)	2	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	4,105.0
Multi-Family (5+)	3	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	3,918.0
Food Store	4	Kilowatt-hour/Square Feet/Year	51.4	55.2	Cubic Feet/Square Foot/Month	2.9
Restaurant	5	Kilowatt-hour/Square Feet/Year	47.3	47.6	Cubic Feet/Square Foot/Month	2.9
Hospitals	6	Kilowatt-hour/Square Feet/Year	17.9	25.5	Cubic Feet/Square Foot/Month	4.8
Retail	7	Kilowatt-hour/Square Feet/Year	11.8	15.3	Cubic Feet/Square Foot/Month	2.9
College/University	8	Kilowatt-hour/Square Feet/Year	11.6	11.5	Cubic Feet/Square Foot/Month	2.0
High School	9	Kilowatt-hour/Square Feet/Year	8.8	12.2	Cubic Feet/Square Foot/Month	2.0
Elementary School	10	Kilowatt-hour/Square Feet/Year	6.3	5.5	Cubic Feet/Square Foot/Month	2.0
Office	11	Kilowatt-hour/Square Feet/Year	8.8	17.1	Cubic Feet/Square Foot/Month	2.0
Hotel/Motel	12	Kilowatt-hour/Square Feet/Year	6.8	13.1	Cubic Feet/Square Foot/Month	4.8
Warehouse	13	Kilowatt-hour/Square Feet/Year	3.4	5.3	Cubic Feet/Square Foot/Month	2.0
Miscellaneous	14	Kilowatt-hour/Square Feet/Year	8.8	12.2	Cubic Feet/Customer/Month	241,611.0

Emission Factors for Each Criteria Pollutant from Consumption of Electricity and Natural Gas

Emission Factors	Electricity Emissions Factors (pounds per megawatt-hour)					Natural Gas Emission Factors (pounds per million cubic feet)				
	CO	VOC	NO_x	SO_x	PM_{10}	CO	VOC	NO_x	SO_x	PM_{10}
Residential Uses	0.20	0.01	1.15	0.12	0.04	20.0	5.3	80.0	0.0	0.2
Nonresidential Uses	0.20	0.01	1.15	0.12	0.04	20.0	5.3	120.0	0.0	0.2

Table AQ-32
SUMMARY OF ESTIMATED DAILY OPERATION-RELATED EMISSIONS

Project Name: Alternative 3 - Mixed-Use & Village Concept Development

Emissions Sources	Emissions in Pounds per Day				
	CO	VOC	NO_x	SO_x	PM_{10}
Vehicular Sources	18,253.6	824.2	1,788.1	226.3	43,438.3
Energy Generation and Use	246.3	34.2	1,237.7	86.6	29.9
WRP On-Site Stationary Sources	0.9	0.1	2.7	0.0	0.9
TOTALS	18,500.8	858.5	3,028.5	312.9	43,469.1
SCAQMD Thresholds (lbs/day)	550.0	55.0	55.0	150.0	150.0
Project's Significance (Yes or No)	YES	YES	YES	YES	YES

Table AQ-33
EMISSIONS FROM ON-ROAD VEHICLE TRAVEL
(SCAQMD CEQA Air Quality Handbook Tables A9-5 & A9-9)

Project Name: **Alternative 3 - Mixed-Use & Village Concept Development**

Analysis Year:	2020
Project Location:	
Orange County	
Los Angeles County	X
Riverside County	
San Bernardino Co	
EMFAC7 Model:	EMFAC7F
Analysis Temperatures:	
CO	60
VOC	85
NO_x	75
TOG to VOC Factors:	
CAT	0.8515
NCAT	0.9240
Diesel	0.9573

Ref No.	Land Use	Res/ Non-Res	Units/ 1000 SF	ADT Rates	NOV Rates	Trips per	ADT	% Pass-By	% Diverted	% Internal	External Trips	NOV	% Work Trips	% Std Cold	% Std Hot	% Truck Trips
34	Single Family	R	16267	10.35	1.52	Unit	168,282	0%	0%	30%	143,040	21,060	0.0%	100.0%	0.0%	0.4%
46	Multi-Family	R	8413	7.21	1.71	Unit	60,666	0%	0%	30%	51,566	12,198	0.0%	100.0%	0.0%	0.9%
197	Commercial Center	N	1640	41.86	20.93	1000 SF	68,654	0%	0%	30%	51,566	29,178	2.0%	80.0%	20.0%	2.1%
32	Utilities	N	35	2.48	1.24	1000 SF	87	0%	0%	30%	74	37	10.0%	25.0%	75.0%	30.0%
152	Commercial Office	N	2785	12.08	6.04	1000 SF	33,643	0%	0%	30%	28,596	14,298	35.0%	70.0%	30.0%	1.8%
90	Golf Course	N	295	8.32	4.16	Acre	2,454	0%	0%	30%	2,085	1,043	3.0%	50.0%	50.0%	0.4%
70	Park	N	8200	0.53	0.26	Acre	4,313	0%	0%	30%	3,666	1,833	1.0%	100.0%	0.0%	0.4%

Trip Types	Residential			Non-Residential			
	Home to Work	Home to Shop	Home to Other	Work	Non-Work	Pass-By	Diverted
Trip Length (miles)	10.21	6.52	6.52	6.25	6.41	0.05	0.40
Percent Trip	13.3%	21.7%	65.0%				

Time of Day	A.M. Peak	Off-Peak	P.M. Peak
Traffic Speeds	21.0	33.0	10.8

Roadway Types	Paved (without cleaning)	Paved (with cleaning)	Unpaved
Project Traffic Travel		X	

Vehicle Fleetmix	% Type	Catalyst	Non-Catalyst	Diesel
Passenger Vehicles				
Automobiles	77.53%	99.99%	0.00%	0.01%
Light-Duty Trucks	21.80%	100.00%	0.00%	0.00%
Motorcycles	0.56%	-	100.00%	-
Buses	0.11%	-	-	100.00%
Trucks				
Medium-Duty Trucks	57.14%	100.00%	0.00%	-
Heavy-Duty Gas Trucks	10.71%	89.00%	11.00%	-
Heavy-Duty Diesel Trucks	32.14%	-	-	100.00%

Project Vehicular Emissions	Emissions in Pounds per Day					Vehicle
	CO	VOC	NO_x	SO_x	PM_{10}	Miles
Single Family	9,432.7	406.1	866.2	113.2	20,205.1	1,002,819
Multi-Family	3,428.4	152.2	327.9	41.6	7,891.6	361,519
Commercial Center	3,459.2	170.6	382.2	45.4	9,903.7	373,873
Utilities	4.9	0.4	1.7	0.1	62.7	471
Commercial Office	1,594.7	78.9	178.2	21.8	4,632.7	181,701
Golf Course	101.5	4.9	10.8	1.5	269.1	13,358
Park	232.3	10.9	21.0	2.7	473.4	23,495
TOTALS	18,253.6	824.2	1,788.1	226.3	43,438.3	1,957,236

Table AQ-34

EMISSIONS FROM ELECTRICITY AND NATURAL GAS CONSUMPTION

(SCAQMD CEQA Air Quality Handbook Tables A9-11 and A9-12)

Project Name: **Alternative 3 - Mixed-Use & Village Concept Development**

Service Area: SCE

Land Use Type	Code	Units/ SF	kWh/Year(1)	cf/Month(1)	Electricity Emissions in Pounds per Day					Natural Gas Emissions in Pounds per Day				
					CO	VOC	NO_x	SO_x	PM_{10}	CO	VOC	NO_x	SO_x	PM_{10}
Residential Uses	1		150,079,080	142,033,197	82.2	4.1	472.9	49.3	16.4	94.7	25.1	378.8	0.0	0.9
Non-Residential Uses	4		113,369,000	10,841,571	62.1	3.1	357.2	37.3	12.4	7.2	1.9	28.9	0.0	0.1
TOTALS			263,448,080	152,874,768	144.4	7.2	830.0	86.6	28.9	101.9	27.0	407.7	0.0	1.0

(1) Calculations are provided in Appendix 8.0 of this EIR.

Conversion Factors

Land Use Type	Code	Elctricity Demand Conversion Factors			Natural Gas Consumption Conversion Factors	
		Electricity Unit Type	SCE	DWP		Useage Factor
Residential						
Single Family	1	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	6,665.0
Multi-Family (<5)	2	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	4,105.0
Multi-Family (5+)	3	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	3,918.0
Food Store	4	Kilowatt-hour/Square Feet/Year	51.4	55.2	Cubic Feet/Square Foot/Month	2.9
Restaurant	5	Kilowatt-hour/Square Feet/Year	47.3	47.6	Cubic Feet/Square Foot/Month	2.9
Hospitals	6	Kilowatt-hour/Square Feet/Year	17.9	25.5	Cubic Feet/Square Foot/Month	4.8
Retail	7	Kilowatt-hour/Square Feet/Year	11.8	15.3	Cubic Feet/Square Foot/Month	2.9
College/University	8	Kilowatt-hour/Square Feet/Year	11.6	11.5	Cubic Feet/Square Foot/Month	2.0
High School	9	Kilowatt-hour/Square Feet/Year	8.8	12.2	Cubic Feet/Square Foot/Month	2.0
Elementary School	10	Kilowatt-hour/Square Feet/Year	6.3	5.5	Cubic Feet/Square Foot/Month	2.0
Office	11	Kilowatt-hour/Square Feet/Year	8.8	17.1	Cubic Feet/Square Foot/Month	2.0
Hotel/Motel	12	Kilowatt-hour/Square Feet/Year	6.8	13.1	Cubic Feet/Square Foot/Month	4.8
Warehouse	13	Kilowatt-hour/Square Feet/Year	3.4	5.3	Cubic Feet/Square Foot/Month	2.0
Miscellaneous	14	Kilowatt-hour/Square Feet/Year	8.8	12.2	Cubic Feet/Customer/Month	241,611.0

Emission Factors for Each Criteria Pollutant from Consumption of Electricity and Natural Gas

Emission Factors	Electricity Emissions Factors (pounds per megawatt-hour)					Natural Gas Emission Factors (pounds per million cubic feet)				
	CO	VOC	NO_x	SO_x	PM_{10}	CO	VOC	NO_x	SO_x	PM_{10}
Residential Uses	0.20	0.01	1.15	0.12	0.04	20.0	5.3	80.0	0.0	0.2
Nonresidential Uses	0.20	0.01	1.15	0.12	0.04	20.0	5.3	120.0	0.0	0.2

Table AQ-35

ESTIMATED EMISSION REDUCTION EFFICIENCIES FOR ALTERNATIVE 3
(SCAQMD CEQA Air Quality Handbook Table 11-6)

Land Use		Emissions in Pounds per Day				
		CO	VOC	NOx	SOx	PM10
Residential Uses	Vehicular Sources	12,861.1	558.3	1,194.1	154.8	28,096.7
	Energy Generation and Use	176.9	29.2	851.7	49.3	17.3
Non Residential Uses	Vehicular Sources	5,392.5	265.9	594.0	71.5	15,341.6
	Energy Generation and Use	69.4	5.0	386.0	37.3	12.6
Total Emissions	Vehicular Sources	18,253.6	824.2	1,788.1	226.3	43,438.3
	Energy Generation and Use	246.3	34.2	1,237.7	86.6	29.9
	WRP On-Site Stationary Sources	0.9	0.1	2.7	0.0	0.9
	Total Non-Reduced Emissions	18,500.8	858.5	3,028.5	312.9	43,469.1
MEASURES, EFFICIENCIES, AND REDUCTIONS						
Residential						
Include retail services within or adjacent to residential subdivisions		1.3%	1.0%	1.3%	0.0%	1.3%
		167.2	5.6	15.5	-	365.3
Construct bus turnouts, passenger benches, and shelters		0.2%	0.2%	0.2%	0.0%	0.2%
		25.7	1.1	2.4	-	56.2
Construct pedestrian facility improvements		0.1%	0.1%	0.1%	0.0%	0.1%
		12.9	0.6	1.2	-	28.1
Construct bicycle trails		0.1%	0.1%	0.1%	0.0%	0.1%
		12.9	0.6	1.2	-	28.1
Non-Residential						
Include residential units within or adjacent to commercial/ industrial projects		4.0%	3.1%	4.0%	0.0%	4.0%
		215.7	8.2	23.8	-	613.7
Construct bus turnouts, passenger benches, and shelters		0.1%	0.1%	0.1%	0.0%	0.1%
		5.4	0.3	0.6	-	15.3
Construct pedestrian facility improvements		0.2%	0.2%	0.2%	0.0%	0.2%
		10.8	0.5	1.2	-	30.7
Construct bicycle trails		0.3%	0.2%	0.3%	0.0%	0.3%
		16.2	0.5	1.8	-	46.0
TOTAL REDUCTIONS		466.7	17.4	47.6	-	1,183.4
		2.5%	2.0%	1.6%	0.0%	2.7%
TOTAL EMISSIONS (Non-Reduced Emissions-Total Reductions)		18,034.1	841.1	2,980.9	312.9	42,285.7
AQMD Thresholds		550.0	55.0	55.0	150.0	150.0
Project Significance (Yes or No)		YES	YES	YES	YES	YES

Table AQ-36

SUMMARY OF ESTIMATED DAILY OPERATION-RELATED EMISSIONS

Project Name: Alternative 4 - Mixed-Use & Village Concept Development

Emissions Sources	Emissions in Pounds per Day				
	CO	VOC	NO_x	SO_x	PM_{10}
Vehicular Sources	15,061.9	682.5	1,483.5	187.3	36,152.1
Energy Generation and Use	216.2	27.2	1,109.6	83.9	28.7
WRP On-Site Stationary Sources	0.9	0.1	2.7	0.0	0.9
TOTALS	15,279.0	709.8	2,595.8	271.2	36,181.8
SCAQMD Thresholds (lbs/day)	550.0	55.0	55.0	150.0	150.0
Project's Significance (Yes or No)	YES	YES	YES	YES	YES

Table AQ-37
EMISSIONS FROM ON-ROAD VEHICLE TRAVEL
(SCAQMD CEQA Air Quality Handbook Tables A9-5 & A9-9)

Project Name: **Alternative 4 - Mixed-Use & Village Concept Development**

Analysis Year:	2020
Project Location:	
Orange County	
Los Angeles County	X
Riverside County	
San Bernardino Co	
EMFAC7 Model:	EMFAC7F
Analysis Temperatures:	
CO	60
VOC	85
NO_x	75
TOG to VOC Factors:	
CAT	0.8515
NCAT	0.9240
Diesel	0.9573

Ref No.	Land Use	Res/ Non-Res	Units/ 1000 SF	ADT Rates	NOV Rates	Trips per	ADT	% Pass-By	% Diverted	% Internal	External Trips	NOV	% Work Trips	% Std Cold	% Std Hot	% Truck Trips
34	Single Family	R	13977	10.35	1.52	Unit	144,592	0%	0%	35%	119,288	17,563	0.0%	100.0%	0.0%	0.4%
46	Multi-Family	R	5773	7.21	1.71	Unit	41,629	0%	0%	35%	34,344	8,124	0.0%	100.0%	0.0%	0.9%
197	Commercial Center	N	1523.4	41.86	20.93	1000 SF	63,773	0%	0%	35%	34,344	26,306	2.0%	80.0%	20.0%	2.1%
32	Utilities	N	35	2.48	1.24	1000 SF	87	0%	0%	35%	72	36	10.0%	25.0%	75.0%	30.0%
152	Commercial Office	N	2016.6	12.08	6.04	1000 SF	24,361	0%	0%	35%	20,097	10,049	35.0%	70.0%	30.0%	1.8%
184	Business Park	N	1036	10.66	5.33	1000 SF	11,043	0%	0%	35%	9,110	4,555	40.0%	70.0%	30.0%	1.8%
70	Park	N	5858	0.52	0.26	Acre	3,064	0%	0%	35%	2,528	1,264	1.0%	100.0%	0.0%	0.4%

Trip Types	Residential			Non-Residential			
	Home to Work	Home to Shop	Home to Other	Work	Non-Work	Pass-By	Diverted
Trip Length (miles)	10.21	6.52	6.52	6.25	6.41	0.05	0.40
Percent Trip	13.3%	21.7%	65.0%				

Time of Day	A.M. Peak	Off-Peak	P.M. Peak
Traffic Speeds	21.0	33.0	10.8

Roadway Types	Paved (without cleaning)	Paved (with cleaning)	Unpaved
Project Traffic Travel		X	

Vehicle Fleetmix	% Type	Catalyst	Non-Catalyst	Diesel
Passenger Vehicles				
Automobiles	77.53%	99.99%	0.00%	0.01%
Light-Duty Trucks	21.80%	100.00%	0.00%	0.00%
Motorcycles	0.56%	-	100.00%	-
Buses	0.11%	-	-	100.00%
Trucks				
Medium-Duty Trucks	57.14%	100.00%	0.00%	-
Heavy-Duty Gas Trucks	10.71%	89.00%	11.00%	-
Heavy-Duty Diesel Trucks	32.14%	-	-	100.00%

Project Vehicular Emissions	Emissions in Pounds per Day					Vehicle
	CO	VOC	NO_x	SO_x	PM_{10}	Miles
Single Family	7,866.4	338.7	722.4	94.4	16,850.1	836,304
Multi-Family	2,283.3	101.4	218.4	27.7	5,256.0	240,778
Commercial Center	3,118.7	153.8	344.6	40.9	8,929.0	337,077
Utilities	4.7	0.4	1.7	0.1	60.9	458
Commercial Office	1,120.8	55.5	125.3	15.3	3,255.8	127,699
Business Park	507.7	25.1	56.7	6.9	1,474.0	57,814
Park	160.2	7.5	14.5	1.8	326.4	16,198
TOTALS	15,061.9	682.5	1,483.5	187.3	36,152.1	1,616,327

Table AQ-38

EMISSIONS FROM ELECTRICITY AND NATURAL GAS CONSUMPTION

(SCAQMD CEQA Air Quality Handbook Tables A9-11 and A9-12)

Project Name: **Alternative 4 - Mixed-Use & Village Concept Development**

Service Area: SCE

Land Use Type	Code	Units/ SF	kWh/Year(1)	cf/Month(1)	Electricity Emissions in Pounds per Day					Natural Gas Emissions in Pounds per Day				
					CO	VOC	NO_x	SO_x	PM_{10}	CO	VOC	NO_x	SO_x	PM_{10}
Residential Uses	1		120,099,750	99,938,144	65.8	3.3	378.4	39.5	13.2	66.6	17.7	266.5	0.0	0.7
Non-Residential Uses	4		135,197,360	14,514,635	74.1	3.7	426.0	44.4	14.8	9.7	2.6	38.7	0.0	0.1
TOTALS			255,297,110	114,452,779	139.9	7.0	804.4	83.9	28.0	76.3	20.2	305.2	0.0	0.8

(1) Calculations are provided in Appendix 8.0 of this EIR.

Conversion Factors

Land Use Type	Code	Elctricity Demand Conversion Factors			Natural Gas Consumption Conversion Factors	
		Electricity Unit Type	SCE	DWP		Useage Factor
Residential						
Single Family	1	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	6,665.0
Multi-Family (<5)	2	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	4,105.0
Multi-Family (5+)	3	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	3,918.0
Food Store	4	Kilowatt-hour/Square Feet/Year	51.4	55.2	Cubic Feet/Square Foot/Month	2.9
Restaurant	5	Kilowatt-hour/Square Feet/Year	47.3	47.6	Cubic Feet/Square Foot/Month	2.9
Hospitals	6	Kilowatt-hour/Square Feet/Year	17.9	25.5	Cubic Feet/Square Foot/Month	4.8
Retail	7	Kilowatt-hour/Square Feet/Year	11.8	15.3	Cubic Feet/Square Foot/Month	2.9
College/University	8	Kilowatt-hour/Square Feet/Year	11.6	11.5	Cubic Feet/Square Foot/Month	2.0
High School	9	Kilowatt-hour/Square Feet/Year	8.8	12.2	Cubic Feet/Square Foot/Month	2.0
Elementary School	10	Kilowatt-hour/Square Feet/Year	6.3	5.5	Cubic Feet/Square Foot/Month	2.0
Office	11	Kilowatt-hour/Square Feet/Year	8.8	17.1	Cubic Feet/Square Foot/Month	2.0
Hotel/Motel	12	Kilowatt-hour/Square Feet/Year	6.8	13.1	Cubic Feet/Square Foot/Month	4.8
Warehouse	13	Kilowatt-hour/Square Feet/Year	3.4	5.3	Cubic Feet/Square Foot/Month	2.0
Miscellaneous	14	Kilowatt-hour/Square Feet/Year	8.8	12.2	Cubic Feet/Customer/Month	241,611.0

Emission Factors for Each Criteria Pollutant from Consumption of Electricity and Natural Gas

Emission Factors	Electricity Emissions Factors (pounds per megawatt-hour)					Natural Gas Emission Factors (pounds per million cubic feet)				
	CO	VOC	NO_x	SO_x	PM_{10}	CO	VOC	NO_x	SO_x	PM_{10}
Residential Uses	0.20	0.01	1.15	0.12	0.04	20.0	5.3	80.0	0.0	0.2
Nonresidential Uses	0.20	0.01	1.15	0.12	0.04	20.0	5.3	120.0	0.0	0.2

Table AQ-39

ESTIMATED EMISSION REDUCTION EFFICIENCIES FOR ALTERNATIVE 4
(SCAQMD CEQA Air Quality Handbook Table 11-6)

Land Use		Emissions in Pounds per Day				
		CO	VOC	NOx	SOx	PM10
Residential Uses	Vehicular Sources	10,149.7	440.1	940.8	122.1	22,106.1
	Energy Generation and Use	132.4	21.0	644.9	39.5	13.9
Non Residential Uses	Vehicular Sources	4,912.2	242.4	542.7	65.2	14,046.0
	Energy Generation and Use	83.8	6.2	464.7	44.4	14.8
Total Emissions	Vehicular Sources	15,061.9	682.5	1,483.5	187.3	36,152.1
	Energy Generation and Use	216.2	27.2	1,109.6	83.9	28.7
	WRP On-Site Stationary Sources	0.9	0.1	2.7	0.0	0.9
	Total Non-Reduced Emissions	15,279.0	709.8	2,595.8	271.2	36,181.8
MEASURES, EFFICIENCIES, AND REDUCTIONS						
Residential						
Include retail services within or adjacent to residential subdivisions		1.3%	1.0%	1.3%	0.0%	1.3%
		131.9	4.4	12.2	-	287.4
Construct bus turnouts, passenger benches, and shelters		0.2%	0.2%	0.2%	0.0%	0.2%
		20.3	0.9	1.9	-	44.2
Construct pedestrian facility improvements		0.1%	0.1%	0.1%	0.0%	0.1%
		10.1	0.4	0.9	-	22.1
Construct bicycle trails		0.1%	0.1%	0.1%	0.0%	0.1%
		10.1	0.4	0.9	-	22.1
Non-Residential						
Include residential units within or adjacent to commercial/ industrial projects		4.0%	3.1%	4.0%	0.0%	4.0%
		196.5	7.5	21.7	-	561.8
Construct bus turnouts, passenger benches, and shelters		0.1%	0.1%	0.1%	0.0%	0.1%
		4.9	0.2	0.5	-	14.0
Construct pedestrian facility improvements		0.2%	0.2%	0.2%	0.0%	0.2%
		9.8	0.5	1.1	-	28.1
Construct bicycle trails		0.3%	0.2%	0.3%	0.0%	0.3%
		14.7	0.5	1.6	-	42.1
TOTAL REDUCTIONS		398.5	14.9	41.0	-	1,021.9
		2.6%	2.1%	1.6%	0.0%	2.8%
TOTAL EMISSIONS (Non-Reduced Emissions-Total Reductions)		14,880.5	694.9	2,554.8	271.2	35,159.9
AQMD Thresholds		550.0	55.0	55.0	150.0	150.0
Project Significance (Yes or No)		YES	YES	YES	YES	YES

Table AQ-40

SUMMARY OF ESTIMATED DAILY OPERATION-RELATED EMISSIONS

Project Name: Alternative 5 - Mixed-Use & Village Concept Development

Emissions Sources	Emissions in Pounds per Day				
	CO	VOC	NO_x	SO_x	PM_{10}
Vehicular Sources	11,647.9	528.8	1,149.7	145.3	28,041.1
Energy Generation and Use	183.5	23.7	936.8	69.5	23.8
WRP On-Site Stationary Sources	0.9	0.1	2.7	0.0	0.9
TOTALS	11,832.3	552.6	2,089.2	214.8	28,065.9
SCAQMD Thresholds (lbs/day)	550.0	55.0	55.0	150.0	150.0
Project's Significance (Yes or No)	YES	YES	YES	YES	YES

Table AQ-41
EMISSIONS FROM ON-ROAD VEHICLE TRAVEL
(SCAQMD CEQA Air Quality Handbook Tables A9-5 & A9-9)

Project Name: **Alternative 5 - Mixed-Use & Village Concept Development**

Analysis Year:	2020
Project Location:	
Orange County	
Los Angeles County	X
Riverside County	
San Bernardino Co	
EMFAC7 Model:	EMFAC7F
Analysis Temperatures:	
CO	60
VOC	85
NO_x	75
TOG to VOC Factors:	
CAT	0.8515
NCAT	0.9240
Diesel	0.9573

Ref No.	Land Use	Res/ Non-Res	Units/ 1000 SF	ADT Rates	NOV Rates	Trips per	ADT	% Pass-By	% Diverted	% Internal	External Trips	NOV	% Work Trips	% Std Cold	% Std Hot	% Truck Trips
34	Single Family	R	10780	10.35	1.52	Unit	111,519	0%	0%	37%	90,888	13,382	0.0%	100.0%	0.0%	0.4%
46	Multi-Family	R	4220	7.21	1.71	Unit	30,430	0%	0%	37%	24,801	5,866	0.0%	100.0%	0.0%	0.9%
197	Commercial Center	N	1042	41.86	20.93	1000 SF	43,620	0%	0%	37%	24,801	17,775	2.0%	80.0%	20.0%	2.1%
32	Utilities	N	35	2.48	1.24	1000 SF	87	0%	0%	37%	71	35	10.0%	25.0%	75.0%	30.0%
152	Commercial Office	N	1975	12.08	6.04	1000 SF	23,858	0%	0%	37%	19,444	9,722	35.0%	70.0%	30.0%	1.8%
184	Business Park	N	1095	10.66	5.33	1000 SF	11,672	0%	0%	37%	9,512	4,756	40.0%	70.0%	30.0%	1.8%
70	Park	N	6891	0.53	0.26	Acre	3,625	0%	0%	37%	2,954	1,477	1.0%	100.0%	0.0%	0.4%
90	Golf Course	N	278	8.32	4.16	Acre	2,313	0%	0%	37%	1,885	942	3.0%	50.0%	50.0%	0.4%

Trip Types	Residential			Non-Residential			
	Home to Work	Home to Shop	Home to Other	Work	Non-Work	Pass-By	Diverted
Trip Length (miles)	10.21	6.52	6.52	6.25	6.41	0.05	0.40
Percent Trip	13.3%	21.7%	65.0%				

Time of Day	A.M. Peak	Off-Peak	P.M. Peak
Traffic Speeds	21.0	33.0	10.8

Roadway Types	Paved (without cleaning)	Paved (with cleaning)	Unpaved
Project Traffic Travel		X	

Vehicle Fleetmix	% Type	Catalyst	Non-Catalyst	Diesel
Passenger Vehicles				
Automobiles	77.53%	99.99%	0.00%	0.01%
Light-Duty Trucks	21.80%	100.00%	0.00%	0.00%
Motorcycles	0.56%	-	100.00%	-
Buses	0.11%	-	-	100.00%
Trucks				
Medium-Duty Trucks	57.14%	100.00%	0.00%	-
Heavy-Duty Gas Trucks	10.71%	89.00%	11.00%	-
Heavy-Duty Diesel Trucks	32.14%	-	-	100.00%

Project Vehicular Emissions	Emissions in Pounds per Day					Vehicle
	CO	VOC	NO_x	SO_x	PM_{10}	Miles
Single Family	5,993.5	258.1	550.4	72.0	12,838.4	637,195
Multi-Family	1,648.9	73.2	157.7	20.0	3,795.5	173,873
Commercial Center	2,107.3	104.0	232.8	27.6	6,033.4	227,765
Utilities	4.7	0.4	1.6	0.1	60.1	452
Commercial Office	1,084.4	53.7	121.2	14.8	3,150.0	123,549
Business Park	530.1	26.3	59.2	7.2	1,539.1	60,365
Park	187.2	8.8	16.9	2.1	381.4	18,931
Golf Course	91.7	4.4	9.7	1.4	243.2	12,073
TOTALS	11,647.9	528.8	1,149.7	145.3	28,041.1	1,254,203

Table AQ-42

EMISSIONS FROM ELECTRICITY AND NATURAL GAS CONSUMPTION

(SCAQMD CEQA Air Quality Handbook Tables A9-11 and A9-12)

Project Name: **Alternative 5 - Mixed-Use & Village Concept Development**

Service Area: SCE

Land Use Type	Code	Units/ SF	kWh/Year(1)	cf/Month(1)	Electricity Emissions in Pounds per Day					Natural Gas Emissions in Pounds per Day				
					CO	VOC	NO_x	SO_x	PM_{10}	CO	VOC	NO_x	SO_x	PM_{10}
Residential Uses	1		91,215,000	89,171,800	50.0	2.5	287.4	30.0	10.0	59.4	15.8	237.8	0.0	0.6
Non-Residential Uses	4		120,195,667	12,331,593	65.9	3.3	378.7	39.5	13.2	8.2	2.2	32.9	0.0	0.1
TOTALS			211,410,667	101,503,393	115.8	5.8	666.1	69.5	23.2	67.7	17.9	270.7	0.0	0.7

(1) Calculations are provided in Appendix 8.0 of this EIR.

Conversion Factors

Land Use Type	Code	Electricity Demand Conversion Factors			Natural Gas Consumption Conversion Factors	
		Electricity Unit Type	SCE	DWP		Useage Factor
Residential						
Single Family	1	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	6,665.0
Multi-Family (<5)	2	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	4,105.0
Multi-Family (5+)	3	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	3,918.0
Food Store	4	Kilowatt-hour/Square Feet/Year	51.4	55.2	Cubic Feet/Square Foot/Month	2.9
Restaurant	5	Kilowatt-hour/Square Feet/Year	47.3	47.6	Cubic Feet/Square Foot/Month	2.9
Hospitals	6	Kilowatt-hour/Square Feet/Year	17.9	25.5	Cubic Feet/Square Foot/Month	4.8
Retail	7	Kilowatt-hour/Square Feet/Year	11.8	15.3	Cubic Feet/Square Foot/Month	2.9
College/University	8	Kilowatt-hour/Square Feet/Year	11.6	11.5	Cubic Feet/Square Foot/Month	2.0
High School	9	Kilowatt-hour/Square Feet/Year	8.8	12.2	Cubic Feet/Square Foot/Month	2.0
Elementary School	10	Kilowatt-hour/Square Feet/Year	6.3	5.5	Cubic Feet/Square Foot/Month	2.0
Office	11	Kilowatt-hour/Square Feet/Year	8.8	17.1	Cubic Feet/Square Foot/Month	2.0
Hotel/Motel	12	Kilowatt-hour/Square Feet/Year	6.8	13.1	Cubic Feet/Square Foot/Month	4.8
Warehouse	13	Kilowatt-hour/Square Feet/Year	3.4	5.3	Cubic Feet/Square Foot/Month	2.0
Miscellaneous	14	Kilowatt-hour/Square Feet/Year	8.8	12.2	Cubic Feet/Customer/Month	241,611.0

Emission Factors for Each Criteria Pollutant from Consumption of Electricity and Natural Gas

Emission Factors	Electricity Emissions Factors (pounds per megawatt-hour)					Natural Gas Emission Factors (pounds per million cubic feet)				
	CO	VOC	NO_x	SO_x	PM_{10}	CO	VOC	NO_x	SO_x	PM_{10}
Residential Uses	0.20	0.01	1.15	0.12	0.04	20.0	5.3	80.0	0.0	0.2
Nonresidential Uses	0.20	0.01	1.15	0.12	0.04	20.0	5.3	120.0	0.0	0.2

Table AQ-43

ESTIMATED EMISSION REDUCTION EFFICIENCIES FOR ALTERNATIVE 5
(SCAQMD CEQA Air Quality Handbook Table 11-6)

Land Use		Emissions in Pounds per Day				
		CO	VOC	NOx	SOx	PM10
Residential Uses	Vehicular Sources	7,642.4	331.3	708.1	92.0	16,633.9
	Energy Generation and Use	109.4	18.3	525.2	30.0	10.6
Non Residential Uses	Vehicular Sources	4,005.5	197.5	441.6	53.3	11,407.2
	Energy Generation and Use	74.1	5.4	411.6	39.5	13.2
Total Emissions	Vehicular Sources	11,647.9	528.8	1,149.7	145.3	28,041.1
	Energy Generation and Use	183.5	23.7	936.8	69.5	23.8
	WRP On-Site Stationary Sources	0.9	0.1	2.7	0.0	0.9
	Total Non-Reduced Emissions	11,832.3	552.6	2,089.2	214.8	28,065.9
MEASURES, EFFICIENCIES, AND REDUCTIONS						
Residential						
Include retail services within or adjacent to residential subdivisions		1.3%	1.0%	1.3%	0.0%	1.3%
		99.4	3.3	9.2	-	216.2
Construct bus turnouts, passenger benches, and shelters		0.2%	0.2%	0.2%	0.0%	0.2%
		15.3	0.7	1.4	-	33.3
Construct pedestrian facility improvements		0.1%	0.1%	0.1%	0.0%	0.1%
		7.6	0.3	0.7	-	16.6
Construct bicycle trails		0.1%	0.1%	0.1%	0.0%	0.1%
		7.6	0.3	0.7	-	16.6
Non-Residential						
Include residential units within or adjacent to commercial/ industrial projects		4.0%	3.1%	4.0%	0.0%	4.0%
		160.2	6.1	17.7	-	456.3
Construct bus turnouts, passenger benches, and shelters		0.1%	0.1%	0.1%	0.0%	0.1%
		4.0	0.2	0.4	-	11.4
Construct pedestrian facility improvements		0.2%	0.2%	0.2%	0.0%	0.2%
		8.0	0.4	0.9	-	22.8
Construct bicycle trails		0.3%	0.2%	0.3%	0.0%	0.3%
		12.0	0.4	1.3	-	34.2
TOTAL REDUCTIONS		314.2	11.7	32.4	-	807.5
		2.7%	2.1%	1.5%	0.0%	2.9%
TOTAL EMISSIONS (Non-Reduced Emissions-Total Reductions)		11,518.1	540.9	2,056.8	214.8	27,258.4
AQMD Thresholds		550.0	55.0	55.0	150.0	150.0
Project Significance (Yes or No)		YES	YES	YES	YES	YES

Table AQ-44
SUMMARY OF ESTIMATED DAILY OPERATION-RELATED EMISSIONS

Project Name: Alternative 6 - Mixed-Use & Village Concept Development

Emissions Sources	Emissions in Pounds per Day				
	CO	VOC	NO_x	SO_x	PM_{10}
Vehicular Sources	6,062.5	266.9	571.0	73.9	13,522.6
Energy Generation and Use	70.8	11.1	345.3	21.3	7.4
TOTALS	6,133.3	278.0	916.4	95.2	13,530.1
SCAQMD Thresholds (lbs/day)	550.0	55.0	55.0	150.0	150.0
Project's Significance (Yes or No)	YES	YES	YES	NO	YES

Table AQ-45

EMISSIONS FROM ON-ROAD VEHICLE TRAVEL

(SCAQMD CEQA Air Quality Handbook Tables A9-5 & A9-9)

Project Name: Alternative 6 - Mixed-Use & Village Concept Development

Analysis Year:	2020
Project Location:	
Orange County	
Los Angeles County	X
Riverside County	
San Bernardino Co	
EMFAC7 Model:	EMFAC7F
Analysis Temperatures:	
CO	60
VOC	85
NO_x	75
TOG to VOC Factors:	
CAT	0.8515
NCAT	0.9240
Diesel	0.9573

Ref No.	Land Use	Res/ Non-Res	Units/ 1000 SF	ADT Rates	NOV Rates	Trips per	ADT	% Pass-By	% Diverted	% Internal	External Trips	NOV	% Work Trips	% Std Cold	% Std Hot	% Truck Trips
34	Single Family	R	7400	10.35	1.52	Unit	76,560	0%	0%	9%	73,115	10,764	0.0%	100.0%	0.0%	0.4%
46	Multi-Family	R	600	7.21	1.71	Unit	4,327	0%	0%	9%	4,132	977	0.0%	100.0%	0.0%	0.9%
197	Commercial Center	N	135	41.86	20.93	1000 SF	5,651	0%	0%	9%	4,132	2,699	2.0%	80.0%	20.0%	2.1%
152	Commercial Office	N	465	12.08	6.04	1000 SF	5,617	0%	0%	9%	5,364	2,682	35.0%	70.0%	30.0%	1.8%
90	Golf Course	N	295	8.32	4.16	Acre	2,454	0%	0%	9%	2,343	1,172	3.0%	50.0%	50.0%	0.4%
70	Park	N	7325	0.53	0.26	Acre	3,853	0%	0%	9%	3,680	1,840	1.0%	100.0%	0.0%	0.4%

Trip Types	Residential			Non-Residential			
	Home to Work	Home to Shop	Home to Other	Work	Non-Work	Pass-By	Diverted
Trip Length (miles)	10.21	6.52	6.52	6.25	6.41	0.05	0.40
Percent Trip	13.3%	21.7%	65.0%				

Time of Day	A.M. Peak	Off-Peak	P.M. Peak
Traffic Speeds	21.0	33.0	10.8

Roadway Types	Paved (without cleaning)	Paved (with cleaning)	Unpaved
Project Traffic Travel		X	

Vehicle Fleetmix	% Type	Catalyst	Non-Catalyst	Diesel
Passenger Vehicles				
Automobiles	77.53%	99.99%	0.00%	0.01%
Light-Duty Trucks	21.80%	100.00%	0.00%	0.00%
Motorcycles	0.56%	-	100.00%	-
Buses	0.11%	-	-	100.00%
Trucks				
Medium-Duty Trucks	57.14%	100.00%	0.00%	-
Heavy-Duty Gas Trucks	10.71%	89.00%	11.00%	-
Heavy-Duty Diesel Trucks	32.14%	-	-	100.00%

Project Vehicular Emissions	Emissions in Pounds per Day					Vehicle Miles
	CO	VOC	NO_x	SO_x	PM_{10}	
Single Family	4,821.5	207.6	442.8	57.9	10,327.9	512,594
Multi-Family	274.7	12.2	26.3	3.3	632.3	28,968
Commercial Center	319.9	15.8	35.3	4.2	915.9	34,578
Commercial Office	299.1	14.8	33.4	4.1	869.0	34,083
Golf Course	114.0	5.5	12.1	1.7	302.4	15,008
Park	233.2	11.0	21.1	2.7	475.1	23,580
TOTALS	6,062.5	266.9	571.0	73.9	13,522.6	648,810

Table AQ-46

EMISSIONS FROM ELECTRICITY AND NATURAL GAS CONSUMPTION

(SCAQMD CEQA Air Quality Handbook Tables A9-11 and A9-12)

Project Name: **Alternative 6 - Mixed-Use & Village Concept Development**

Service Area: SCE

Land Use Type	Code	Units/ SF	kWh/Year(1)	cf/Month(1)	Electricity Emissions in Pounds per Day					Natural Gas Emissions in Pounds per Day				
					CO	VOC	NO_x	SO_x	PM_{10}	CO	VOC	NO_x	SO_x	PM_{10}
Residential Uses	1		48,648,000	51,671,800	26.7	1.3	153.3	16.0	5.3	34.4	9.1	137.8	0.0	0.3
Non-Residential Uses	4		16,105,500	1,323,000	8.8	0.4	50.7	5.3	1.8	0.9	0.2	3.5	0.0	0.0
TOTALS			64,753,500	52,994,800	35.5	1.8	204.0	21.3	7.1	35.3	9.4	141.3	0.0	0.4

(1) Calculations are provided in Appendix 8.0 of this EIR.

Conversion Factors

Land Use Type	Code	Elctricity Demand Conversion Factors			Natural Gas Consumption Conversion Factors	
		Electricity Unit Type	SCE	DWP		Useage Factor
Residential						
Single Family	1	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	6,665.0
Multi-Family (<5)	2	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	4,105.0
Multi-Family (5+)	3	Kilowatt-hour/Unit/Year	6,081.0	5,172.0	Cubic Feet/Unit/Month	3,918.0
Food Store	4	Kilowatt-hour/Square Feet/Year	51.4	55.2	Cubic Feet/Square Foot/Month	2.9
Restaurant	5	Kilowatt-hour/Square Feet/Year	47.3	47.6	Cubic Feet/Square Foot/Month	2.9
Hospitals	6	Kilowatt-hour/Square Feet/Year	17.9	25.5	Cubic Feet/Square Foot/Month	4.8
Retail	7	Kilowatt-hour/Square Feet/Year	11.8	15.3	Cubic Feet/Square Foot/Month	2.9
College/University	8	Kilowatt-hour/Square Feet/Year	11.6	11.5	Cubic Feet/Square Foot/Month	2.0
High School	9	Kilowatt-hour/Square Feet/Year	8.8	12.2	Cubic Feet/Square Foot/Month	2.0
Elementary School	10	Kilowatt-hour/Square Feet/Year	6.3	5.5	Cubic Feet/Square Foot/Month	2.0
Office	11	Kilowatt-hour/Square Feet/Year	8.8	17.1	Cubic Feet/Square Foot/Month	2.0
Hotel/Motel	12	Kilowatt-hour/Square Feet/Year	6.8	13.1	Cubic Feet/Square Foot/Month	4.8
Warehouse	13	Kilowatt-hour/Square Feet/Year	3.4	5.3	Cubic Feet/Square Foot/Month	2.0
Miscellaneous	14	Kilowatt-hour/Square Feet/Year	8.8	12.2	Cubic Feet/Customer/Month	241,611.0

Emission Factors for Each Criteria Pollutant from Consumption of Electricity and Natural Gas

Emission Factors	Electricity Emissions Factors (pounds per megawatt-hour)					Natural Gas Emission Factors (pounds per million cubic feet)				
	CO	VOC	NO_x	SO_x	PM_{10}	CO	VOC	NO_x	SO_x	PM_{10}
Residential Uses	0.20	0.01	1.15	0.12	0.04	20.0	5.3	80.0	0.0	0.2
Nonresidential Uses	0.20	0.01	1.15	0.12	0.04	20.0	5.3	120.0	0.0	0.2

WASTEWATER RECLAMATION
SOLID WASTE MANAGEMENT

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (310) 699-7411, FAX: (310) 695-6139

CHARLES W. CARRY
Chief Engineer and General Manager

February 7, 1996

File No: 31-380.10B

Mr. Michael Brown
Impact Sciences Inc.
267 W. Hillcrest Drive
Thousand Oaks, CA 91360

Dear Mr. Brown:

Preliminary Emissions Estimates for Proposed
Newhall Ranch Water Reclamation Plant (WRP)

Enclosed are the Valencia WRP AB2588 Air Toxics Inventory Report for reporting year 1991 and Valencia WRP criteria pollutants emission factors for combustion of sewage digester gas used for the annual emissions inventory. Since the Valencia WRP should be similar to the proposed Newhall Ranch WRP in plant configuration and the influent qualities, the enclosed information should provide an adequate estimate for the proposed plant.

You should make a note of the following items:

AB2588 Inventory Report

- The emissions are based on a flow of 7.86 million gallons per day.
- Off-gas from the primary sedimentation tanks is vented through the activated sludge aeration tanks. Therefore, there are no emissions reported from the primary sedimentation tanks.
- During the reporting year, dewatering of sludge in the filter press was improved through the addition of lime. Lime increased the pH of the sludge which transformed dissolved ammonium ions (NH_4+) into ammonia gas. Presently the plant uses a polymer which does not affect the pH. Therefore, ammonia emissions should be negligible.

Criteria Pollutants Emission Factors for Combustion of Sewage Digester Gas

- The emission factors are given as mass emissions per volume of digester gas combusted.

- SO_X emission factors are based on an average H_2S concentration of 1 ppm in digester gas. Valencia WRP uses ferrous chloride and an iron sponge system to control the H_2S concentration. The H_2S permit limit is 40 ppm. Without knowing what controls the proposed plant will use, it may be best to use 40 ppm H_2S for the basis of the SO_X emission factors.

- Any engines (e.g., cogeneration unit) used at the plant will have to comply with SCAQMD Rule 1110.2. All engine emission estimates should be based on Rule 1110.2 compliance limits.

If you have any questions, please contact me at (310) 699-7411, extension 2138.

Yours very truly,

Charles W. Carry

Robert Ferrante

Robert Ferrante
Project Engineer
Air Quality Engineering

RF:rc

Enclosures

VALENCIA WATER RECLAMATION PLANT

FORM B-1: EMISSIONS FROM BURNING OF FUELS IN BOILERS, ETC.

BOILERS

Source Test Report, Boiler Model 36-16-80-CEN, Valencia Water Reclamation Plant, Brown & Caldwell, December 15, 1993.

Fuel Flow = 32.3 scfm

NOx = 0.0468 lb/hr

$$= \frac{0.0468\ \text{lb}}{\text{hr}} \times \frac{1\ \text{hr}}{60\ \text{min}} \times \frac{\text{min}}{32.3\ \text{cf DG}} \times \frac{10^6\ \text{cf}}{\text{mmcf}} = 24.1\ \text{lb / mmcf DG}$$

ROG = 3.97 lb/mmcf DG

For CO, adjust the given natural gas emission factors based on heating value.

$$\text{Lower heating value of natural gas (NG)} = \frac{945\ \text{Btu}}{\text{cf}}$$

$$\text{Lower heating value of digester gas (DG)} = \frac{584\ \text{Btu}}{\text{cf}}$$

$$CO\ \cancel{ROG} = \frac{35\ \text{lb}}{\text{mmcf NG}} \times \frac{584\ \text{Btu}}{\text{cf DG}} \times \frac{\text{cf NG}}{945\ \text{Btu}} = 21.6\ \text{lb/mmcf DG}$$

For PM, use the emission factor from Lancaster Flares below:

PM = 15.6 lb/mmcf DG

For SOx, use the average measured H_2S concentration of 1 ppm for digester gas during the reporting period:

$$SOx = \frac{1\ \text{cf}\ H_2S}{1\ \text{mmcf DG}} \times \frac{64\ \text{lb SOx}}{\text{mole}} \times \frac{\text{mole}}{379.48\ \text{cf}} = 0.17\ \text{lb / mmcf DG}$$

FLARES

Since both plants treat primarily domestic wastewater with similar characteristics, use: Source Test Report, Lancaster Water Reclamation Plant, Brown & Caldwell, January 1994.

Fuel Flow = 47.1 cfm DG

ROG = 0.002 lb/hr

= 0.71 lb/mmcf DG

NOx = 58.0 lb/mmcf DG

CO = 12.1 lb/mmcf DG

PM = 15.6 lb/mmcf DG

For SOx, use the same from above:

= 0.17 lb/mmcf DG

Table 11-2. Mitigation for On-Road Mobile Source Emissions - Construction

Mitigation Measure	Emission Reduction Efficiency*			
	ROC	NO_x	CO	PM10
• Configure construction parking to minimize traffic interference	NQ			
• Provide temporary traffic control during all phases of construction activities to improve traffic flow (e.g., flag person)	NQ			
• Schedule construction activities that affect traffic flow to off-peak hours (e.g., between 7:00 p.m. and 6:00 a.m. and between 10:00 a.m. and 3:00 p.m.)	NQ			
• Develop a trip reduction plan to achieve a 1.5 AVR for construction employees	0.1-2.2%	0.1-2.9%	0.1-2.9%	0.1-2.9%
• Implement a shuttle service to and from retail services and food establishments during lunch hours	0.1-1.0%	0.1-1.3%	0.1-1.3%	0.1-1.3%
• Develop a construction traffic management plan that includes, but is not limited to:	NQ			
- Rerouting construction trucks off congested streets				
- Consolidating truck deliveries				
- Providing dedicated turn lanes for movement of construction trucks and equipment on- and off-site				
• Prohibit truck idling in excess of two minutes	NQ			

NQ = Not Quantified

* These efficiencies represent additive reductions from unmitigated on-road mobile source construction emissions (Table 9-3) The resulting emission reductions can be subtracted from the unmitigated totals. These data will be updated as more information becomes available. More detailed descriptions of mitigation measures are included in Appendix 11.

When efficiency is provided as a range:
if project-specific efficiency is unknown, use the lowest number given;
if project-specific efficiency is utilized, provide supporting analysis and documentation.

Table 11-3. Mitigation for Off-Road Mobile Source Emissions - Construction

Mitigation Measure	Emission Reduction Efficiency*			
	ROC	NO_X	CO	PM10
• Methanol-fueled pile drivers	54%	+29%	25%	95%
• Suspend use of all construction equipment operations during second stage smog alerts. For daily forecast, call (800) 242-4022 (L.A. and Orange counties) or (800) 367-4710 (San Bernardino and Riverside counties)	NQ			
• Prevent trucks from idling longer than two minutes	NQ			
• Use electricity from power poles rather than temporary diesel power generators	99%	97%	98%	98%
• Use electricity from power poles rather than temporary gasoline power generators	99%	96%	99%	98%
• Use of methanol or natural gas on-site mobile equipment instead of diesel	54%	+29%	25%	95%
• Use of propane- or butane-powered on-site mobile equipment instead of gasoline	53%	+53%	96%	18%

NQ = Not Quantified

* These efficiencies represent additive reductions from unmitigated on-road mobile source construction emissions (Table 9-1) The resulting emission reductions can be subtracted from the unmitigated totals. These data will be updated as more information becomes available. More detailed descriptions of mitigation measures are included in Appendix 11.

Table 11-4. Mitigation for PM10 Emissions - Construction

Mitigation Measure	Emission Reduction Efficiency*			
	ROC	NO_x	CO	PM10
GRADING				
• Apply non-toxic soil stabilizers according to manufacturers' specification to all inactive construction areas (previously graded areas inactive for ten days or more)				30-65%
• Replace ground cover in disturbed areas as quickly as possible				15-49%
• Enclose, cover, water twice daily or apply non-toxic soil binders according to manufacturers' specifications, to exposed piles (i.e., gravel, sand, dirt) with 5% or greater silt content				30-74%
• Water active sites at least twice daily				34-68%
• Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 mph				NQ
• Monitor for particulate emissions according to District-specified procedures. For information, call (714) 396-3600.				NQ
• All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard (i.e., minimum vertical distance between top of the load and the top of the trailer) in accordance with the requirements of CVC Section 23114				7-14%
PAVED ROADS				
• Sweep streets at the end of the day if visible soil material is carried onto adjacent public paved roads (recommend water sweepers with reclaimed water)				25-60%
• Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip				40-70%

NQ = Not Quantified

* These efficiencies represent additive reductions from unmitigated PM10 construction emissions (Table 9-3). The resulting emission reductions can be subtracted from the unmitigated subtotals (Unpaved Road, Paved Road, Demolition, Grading, Asbestos). These data will be updated as more information becomes available. More detailed descriptions of mitigation measures are included in Appendix 11.

** Additive reductions: Reductions in emissions obtained from one source category, then added to that from another source category.

When efficiency is provided as a range:
if project-specific efficiency is unknown, use the lowest number given;
if project-specific efficiency is utilized, provide supporting analysis and documentation.

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Table 11-4. Mitigation for PM10 Emissions - Construction (continued)

Mitigation Measure	Emission Reduction Efficiency*			
	ROC	NO_X	CO	PM10
UNPAVED ROADS				
• Apply water three times daily, or non-toxic soil stabilizers according to manufacturers' specifications, to all unpaved parking or staging areas or unpaved road surfaces				45-85%
• Traffic speeds on all unpaved roads to be reduced to 15 mph or less				40-70%
• Pave construction roads that have a traffic volume of more than 50 daily trips by construction equipment, 150 total daily trips for all vehicles				92.5%
• Pave all construction access roads at least 100 feet on to the site from the main road				92.5%
• Pave construction roads that have a daily traffic volume of less than 50 vehicular trips				92.5%

NQ = Not Quantified

* These efficiencies represent additive reductions from unmitigated PM10 construction emissions (Table 9-2). The resulting emission reductions can be subtracted from the unmitigated subtotals (Unpaved Road, Paved Road, Demolition, Grading, Asbestos). These data will be updated as more information becomes available. More detailed descriptions of mitigation measures are included in Appendix 11.

** Additive reductions: Reductions in emissions obtained from one source category, then added to that from another source category.

When efficiency is provided as a range:
if project-specific efficiency is unknown, use the lowest number given;
if project-specific efficiency is utilized, provide supporting analysis and documentation.

Table 11-6a. Mitigation for On-Road Mobile Source Emissions - Operation (Residential)

Mitigation Measure	Emission Reduction Efficiency*			
	ROC	NO_x	CO	PM10
• Include satellite telecommunications centers in residential subdivisions	0.1-0.7%	0.1-0.9%	0.1-0.9%	0.1-0.9%
• Establish a shuttle service from residential subdivisions to commercial core areas	0.1-0.2%	0.1-0.3%	0.1-0.3%	0.1-0.3%
• Construct on-site or off-site bus turnouts, passenger benches, and shelters	0.2-1.9%	0.2-2.5%	0.2-2.5%	0.2-2.5%
• Construct off-site pedestrian facility improvements, such as overpasses and wider sidewalks	0.1-0.3%	0.1-0.4%	0.1-0.4%	0.1-0.4%
• Include retail services within or adjacent to residential subdivisions	1.0-4.0%	1.3-6.0%	1.3-6.0%	1.3-6.0%
• Provide shuttles to major rail transit centers or multi-modal stations	0.1-0.3%	0.1-0.5%	0.1-0.5%	0.1-0.5%
• Contribute to regional transit systems (e.g., right-of-way, capital improvements, etc.)	NQ			
• Synchronize traffic lights on streets impacted by development	4.0-8.0%	4.0-8.0%	4.0-8.0%	4.0-8.0%
• Construct, contribute, or dedicate land for the provision of off-site bicycle trails linking the facility to designated bicycle commuting routes	0.1-0.6%	0.1-0.8%	0.1-0.8%	0.1-0.8%

NQ = Not Quantified

* These efficiencies represent additive reductions from facility operations, specifically unmitigated emissions from On-Road Mobile Sources (i.e., Work Trips, Non-Work Trips, Congestion Relief, Truck Trips, Off-Road Vehicles). These efficiencies can be subtracted from the corresponding unmitigated emissions from this category (Table 9-7). These data will be updated as more information becomes available. More detailed descriptions of mitigation measures are included in Appendix 11.

When efficiency is provided as a range:
if project-specific efficiency is unknown, use the lowest number given;
if project-specific efficiency is utilized, provide supporting analysis and documentation.

Table 11-6b. Mitigation for On-Road Mobile Source Emissions - Operation (Commerical)

Mitigation Measure	Emission Reduction Efficiency*			
	ROC	NO_x	CO	PM10
• Provide preferential parking spaces for carpools and vanpools and provide 7'2" minimum vertical clearance in parking facilities for vanpool access	0.1-1.0%	0.1-1.3%	0.1-1.3%	0.1-1.3%
• Implement on-site circulation plan in parking lots to reduce vehicle queuing	NQ			
• Improve traffic flow at drive-throughs by designing separate windows for different functions and by providing temporary parking for orders not immediately ready for pickup	NQ			
• Provide video-conference facilities	NQ			
• Set up resident worker training programs to improve job/ housing balance	NQ			
• Implement home dispatching system where employees receive routing schedule by phone instead of driving to work	Negl.	0.1%	0.1%	0.1%
• Develop a program to minimize the use of fleet vehicles during smog alerts (for businesses not subject to Regulation XV or XII)	NQ			
• Use low-emission fleet vehicles - TLEV - ULEV - LEV - ZEV	NQ			
• Reduce employee parking spaces for those businesses subject to Regulation XV	0.1-2.2%	0.1-2.9%	0.1-2.9%	0.1-2.9%

NQ = Not Quantified Negl. = Negligible (less than 0.05%)

* These efficiencies represent additive reductions from facility operations, specifically unmitigated emissions from On-Road Mobile Sources (i.e., Work Trips, Non-Work Trips, Congestion Relief, Truck Trips, Off-Road Vehicles). These efficiencies can be subtracted from the corresponding unmitigated emissions from this category (Table 9-7). These data will be updated as more information becomes available. More detailed descriptions of mitigation measures are included in Appendix 11.

When efficiency is provided as a range:
if project-specific efficiency is unknown, use the lowest number given;
if project-specific efficiency is utilized, provide supporting analysis and documentation.

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Table 11-6b. Mitigation for On-Road Mobile Source Emissions - Operation (Commerical) (continued)

Mitigation Measure	Emission Reduction Efficiency*			
	ROC	NO_x	CO	PM10
• Implement a lunch shuttle service from a worksite(s) to food establishments	0.4-1.5%	0.5-1.8%	0.5-1.8%	0.5-1.8%
• Implement compressed work-week schedules where weekly work hours are compressed into fewer than five days				
- 9/80	0.8-7.6%	1.0-10.0%	1.0-10.0%	1.0-10.0%
- 4/40	1.5-15.3%	2.0-20.0%	2.0-20.0%	2.0-20.0%
- 3/36	3.1-40.0%	4.0-40.0%	4.0-40.0%	4.0-40.0%
• Develop a trip reduction plan to achieve 1.5 AVR for businesses with less than 100 employees or multi-tenant worksites	0.1-2.2%	0.1-2.9%	0.1-2.9%	0.1-2.9%
• Utilize satellite offices rather than regular worksite to reduce VMT	0.1%	0.1-0.2%	0.1-0.2%	0.1-0.2%
• Establish a home-based telecommuting program	0.1-1.6%	0.1-2.1%	0.1-2.1%	0.1-2.1%
• Provide on-site child care and after-school facilities or contribute to off-site development within walking distance	0.1%	0.1-0.2%	0.1-0.2%	0.1-0.2%
• Require retail facilities or special event centers to offer travel incentives such as discounts on purchases for transit riders	NQ			
• Provide on-site employee services such as cafeterias, banks, etc.	0.2-3.4%	0.3-4.5%	0.3-4.5%	0.3-4.5%
• Establish a shuttle service from residential care areas to the worksite	0.1-0.3%	0.1-0.5%	0.1-0.5%	0.1-0.5%
• Construct on-site or off-site bus turnouts, passenger benches, or shelters	0.1-1.0%	0.1-1.3%	0.1-1.3%	0.1-1.3%

NQ = Not Quantified

* These efficiencies represent additive reductions from facility operations, specifically unmitigated emissions from On-Road Mobile Sources (i.e., Work Trips, Non-Work Trips, Congestion Relief, Truck Trips, Off-Road Vehicles). These efficiencies can be subtracted from the corresponding unmitigated emissions from this category (Table 9-7). These data will be updated as more information becomes available. More detailed descriptions of mitigation measures are included in Appendix 11.

When efficiency is provided as a range:
if project-specific efficiency is unknown, use the lowest number given;
if project-specific efficiency is utilized, provide supporting analysis and documentation.

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Table 11-6b. Mitigation for On-Road Mobile Source Emissions - Operation (Commerical) (continued)

Mitigation Measure	Emission Reduction Efficiency*			
	ROC	NO_x	CO	PM10
• Implement a pricing structure for single-occupancy employee parking and/or provide discounts to ridesharers	1.5-11.0%	2.0-15.5%	2.0-15.5%	2.0-15.5%
• Include residential units within a commercial project	3.1-13.7%	4.0-18.0%	4.0-18.0%	4.0-18.0%
• Utilize parking in excess of code requirements as on-site park-n-ride lots or contribute to construction of off-site lots	0.1%	0.1-0.2%	0.1-0.2%	0.1-0.2%
• Any two of the following:				
– Construct off-site bicycle facility improvements, such as bicycle trails linking the facility to designated bicycle commuting routes, or on-site improvements, such as bicycle paths	0.2-2.4%	0.3-3.2%	0.3-3.2%	0.3-3.2%
– Include bicycle parking facilities, such as bicycle lockers and racks	See Above			
– Include showers for bicycling employees' use	See Above			
• Any two of the following:				
– Construct off-site pedestrian facility improvements, such as overpasses, wider sidewalks	0.2-1.2%	0.2-1.6%	0.2-1.6%	0.2-1.6%
– Construct on-site pedestrian facility improvements, such as building access which is physically separated from street and parking lot traffic and walk paths	See Above			
– Include showers for pedestrian employees' use	See Above			
• Provide shuttles to major rail transit stations and multi-modal centers	0.1-0.3%	0.1-0.5%	0.1-0.5%	0.1-0.5%

* These efficiencies represent additive reductions from facility operations, specifically unmitigated emissions from On-Road Mobile Sources (i.e., Work Trips, Non-Work Trips, Congestion Relief, Truck Trips, Off-Road Vehicles). These efficiencies can be subtracted from the corresponding unmitigated emissions from this category (Table 9-7). These data will be updated as more information becomes available. More detailed descriptions of mitigation measures are included in Appendix 11.

When efficiency is provided as a range:
if project-specific efficiency is unknown, use the lowest number given;
if project-specific efficiency is utilized, provide supporting analysis and documentation.

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Table 11-6b. Mitigation for On-Road Mobile Source Emissions - Operation (Commerical) (continued)

Mitigation Measure	Emission Reduction Efficiency*			
	ROC	NO_x	CO	PM10
• Contribute to regional transit systems (e.g., right-of-way, capital improvements)	NQ			
• Charge visitors to park	1.5-11.0%	2.0-15.5%	2.0-15.5%	2.0-15.5%
• Synchronize traffic lights on streets impacted by development	4.0-8.0%	4.0-8.0%	4.0-8.0%	4.0-8.0%
• Reschedule truck deliveries and pickups for off-peak hours	NQ			
• Set up paid parking systems where drivers pay at walkup kiosk and exit via a stamped ticket to reduce emissions from queuing vehicles	NQ			
• Require on-site truck loading zones	NQ			
• Implement or contribute to public outreach programs	NQ			
• Require employers not subject to Regulation XV to provide commuter information areas	0.1-0.4%	0.1-0.5%	0.1-0.5%	0.1-0.5%

NQ = Not Quantified

* These efficiencies represent additive reductions from facility operations, specifically unmitigated emissions from On-Road Mobile Sources (i.e., Work Trips, Non-Work Trips, Congestion Relief, Truck Trips, Off-Road Vehicles). These efficiencies can be subtracted from the corresponding unmitigated emissions from this category (Table 9-7). These data will be updated as more information becomes available. More detailed descriptions of mitigation measures are included in Appendix 11.

When efficiency is provided as a range:
if project-specific efficiency is unknown, use the lowest number given;
if project-specific efficiency is utilized, provide supporting analysis and documentation.

Table 11-6c. Mitigation for On-Road Mobile Source Emissions - Operation (Industrial)

Mitigation Measure	Emission Reduction Efficiency*			
	ROC	NO_x	CO	PM10
• Provide preferential parking spaces for carpools and vanpools and provide 7'2" minimum vertical clearance in parking facilities for vanpool access	0.1-1.0%	0.1-0.3%	0.1-0.3%	0.1-0.3%
• Implement on-site circulation plan in parking lots to reduce vehicle queuing	NQ			
• Set up resident worker training programs to improve job/ housing balance	NQ			
• Implement home dispatching system where employees receive routing schedule by phone instead of driving to work	Negl.	0.1%	0.1%	0.1%
• Develop a program to minimize the use of fleet vehicles during smog alerts (for businesses not subject to Regulation XV or XII)	NQ			
• Use low-emission fleet vehicles - TLEV - ULEV - LEV - ZEV	NQ			
• Require employers not subject to Regulation XV to provide commuter information areas	Negl.-0.6%	Negl.-0.8%	Negl.-0.8%	Negl.-0.8%
• Reduce employee parking spaces for those businesses subject to Regulation XV	0.1-2.2%	0.1-2.9%	0.1-2.9%	0.1-2.9%

NQ = Not Quantified Negl. = Negligible (less than 0.05%)

* These efficiencies represent additive reductions from facility operations, specifically unmitigated emissions from On-Road Mobile Sources (i.e., Work Trips, Non-Work Trips, Congestion Relief, Truck Trips, Off-Road Vehicles). These efficiencies can be subtracted from the corresponding unmitigated emissions from this category (Table 9-7). These data will be updated as more information becomes available. More detailed descriptions of mitigation measures are included in Appendix 11.

When efficiency is provided as a range:
if project-specific efficiency is unknown, use the lowest number given;
if project-specific efficiency is utilized, provide supporting analysis and documentation.

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Table 11-6c. Mitigation for On-Road Mobile Source Emissions - Operation (Industrial) (continued)

Mitigation Measure	Emission Reduction Efficiency*			
	ROC	NO_x	CO	PM10
• Implement compressed work-week schedules where weekly work hours are compressed into fewer than five days				
- 9/80	0.8-7.6%	1.0-10.0%	1.0-10.0%	1.0-10.0%
- 4/40	1.5-15.3%	2.0-20.0%	2.0-20.0%	2.0-20.0%
- 3/36	3.1-40.0%	4.0-40.0%	4.0-40.0%	4.0-40.0%
• Offer first right of refusal, low-interest loans, or other incentives to employees who purchase or rent local residences	NQ			
• Develop a trip reduction plan to achieve 1.5 AVR for businesses with less than 100 employees or multi-tenant worksites	0.1-2.2%%	0.1-2.9%	0.1-2.9%	0.1-2.9%
• Provide on-site child care and after-school facilities or contribute to development within walking distance	0.1%	0.1-0.2%	0.1-0.2%	0.1-0.2%
• Provide on-site employee services such as cafeterias, banks, etc.	0.2-3.4%	0.3-4.5%	0.3-4.5%	0.3-4.5%
• Establish a shuttle service from residential core areas to the worksite	0.1-0.3%	0.1-0.5%	0.1-0.5%	0.1-0.5%
• Construct on-site or off-site bus turnouts, passenger benches, or shelters	0.1-1.0%	0.1-1.3%	0.1-1.3%	0.1-1.3%
• Implement a pricing structure for single-occupancy employee parking and/or provide discounts to ridesharers	1.5-11.0%	2.0-15.5%	2.0-15.5%	2.0-15.5%
• Utilize parking in excess of code requirements as on-site park-n-ride lots or contribute to construction of off-site lots	0.1%	0.1-0.2%	0.1-0.2%	0.1-0.2%

NQ = Not Quantified

* These efficiencies represent additive reductions from facility operations, specifically unmitigated emissions from On-Road Mobile Sources (i.e., Work Trips, Non-Work Trips, Congestion Relief, Truck Trips, Off-Road Vehicles). These efficiencies can be subtracted from the corresponding unmitigated emissions from this category (Table 9-7). These data will be updated as more information becomes available. More detailed descriptions of mitigation measures are included in Appendix 11.

When efficiency is provided as a range:
if project-specific efficiency is unknown, use the lowest number given;
if project-specific efficiency is utilized, provide supporting analysis and documentation.

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Table 11-6c. Mitigation for On-Road Mobile Source Emissions - Operation (Industrial) (continued)

Mitigation Measure	Emission Reduction Efficiency*			
	ROC	NO_X	CO	PM10
• Any two of the following:				
– Construct off-site bicycle facility improvements, such as bicycle trails linking the facility to designated bicycle commuting routes, or on-site improvements, such as bicycle paths	0.2-2.4%	0.3-3.2%	0.3-3.2%	0.3-3.2%
– Include bicycle parking facilities, such as bicycle lockers and racks	See Above			
– Include showers for bicycling employees' use	See Above			
• Any two of the following:				
– Construct off-site pedestrian facility improvements, such as overpasses, wider sidewalks	0.2-1.2%	0.2-1.6%	0.2-1.6%	0.2-1.6%
– Construct on-site pedestrian facility improvements, such as building access which is physically separated from street and parking lot traffic and walk paths	See Above			
– Include showers for pedestrian employees' use	See Above			
• Provide shuttles to major rail transit stations and multi-modal centers	0.1-0.3%	0.1-0.5%	0.1-0.5%	0.1-0.5%
• Contribute to regional transit systems (e.g., right-of-way, capital improvements)	NQ			
• Synchronize traffic lights on streets impacted by development	4.0-8.0%	4.0-8.0%	4.0-8.0%	4.0-8.0%

NQ = Not Quantified

* These efficiencies represent additive reductions from facility operations, specifically unmitigated emissions from On-Road Mobile Sources (i.e., Work Trips, Non-Work Trips, Congestion Relief, Truck Trips, Off-Road Vehicles). These efficiencies can be subtracted from the corresponding unmitigated emissions from this category (Table 9-7). These data will be updated as more information becomes available. More detailed descriptions of mitigation measures are included in Appendix 11.

When efficiency is provided as a range:
if project-specific efficiency is unknown, use the lowest number given;
if project-specific efficiency is utilized, provide supporting analysis and documentation.

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Table 11-6c. Mitigation for On-Road Mobile Source Emissions- Operation (Industrial) (continued)

Mitigation Measure*	Emission Reduction Efficiency*			
	ROG	NO_x	CO	PM10
• Reschedule truck deliveries and pickups for off-peak hours	NQ			
• Implement a lunch shuttle from a worksite(s) to food establishments	0.4-1.5%	0.5-1.8%	0.5-1.8%	0.5-1.8%
• Require on-site truck loading zones	NQ			
• Install aerodynamic add-on devices to heavy-duty trucks	NQ			
• Implement or contribute to public outreach programs	NQ			
• Reduce ship cruising speeds in the inner harbor	NQ			
• Use low-emission fuels or electrify airport ground service vehicles	NQ			
• Engine tuning for marine vessels (e.g., injection timing retard)	NQ			
• Reduce number of aircraft engines used during idling	NQ			
• Install monitoring system to control airport shuttles	NQ			
• Use centralized ground power systems for airport service vehicles	NQ			

NQ = Not Quantified

* These efficiencies represent additive reductions from facility operations, specifically unmitigated emissions from On-Road Mobile Sources (i.e., Work Trips, Non-Work Trips, Congestion Relief, Truck Trips, Off-Road Vehicles). These efficiencies can be subtracted from the corresponding unmitigated emissions from this category (Table 9-7). These data will be updated as more information becomes available. More detailed descriptions of mitigation measures are included in Appendix 11.

When efficiency is provided as a range:
if project-specific efficiency is unknown, use the lowest number given;
if project-specific efficiency is utilized, provide supporting analysis and documentation.

Table 11-7a. Mitigation for Stationary Source Emissions - Operation (Residential)

Mitigation Measure	Emission Reduction Efficiency*			
	ROC	NO_x	CO	PM10
• Use solar or low-emission water heaters	11%	9.5%	10%	4.5%
• Use central water heating systems	9%	8%	8.5%	4%
• Use built-in energy-efficient appliances	2.5%	3%	3%	6.5%
• Provide shade trees to reduce building heating/cooling needs	Negl.	Negl.	Negl.	0.5%
• Use energy-efficient and automated controls for air conditioners	–	Negl.	–	0.5%
• Use double-glass-paned windows	4.5%	4%	4.5%	2.5%
• Use energy-efficient low-sodium parking lot lights	–	–	–	0.5%
• Provide adequate ventilation systems for enclosed parking facilities	–	Negl.	Negl.	Negl.
• Use lighting controls and energy-efficient lighting	Negl.	Negl.	Negl.	0.5%
• Use fuel cells in residential subdivisions to produce heat and electricity	Negl.	1.5%	1%	7%
• Orient buildings to the north for natural cooling and include passive solar design (e.g., daylighting)	14%	13%	13.5%	10.5%
• Use light-colored roof materials to reflect heat	1.5%	1.5%	1.5%	1.5%
• Increase walls and attic insulation beyond Title 24 requirements	14%	13%	13%	7.5%

Negl. = Negligible (less than 0.05%)

* These efficiencies represent additive reductions from facility operations, specifically unmitigated emissions from Stationary Sources (i.e., Energy Use, Area Source, Stationary Source). These efficiencies can be subtracted from the corresponding unmitigated emissions from this category (Table 9-8). These data will be updated as more information becomes available.
More detailed descriptions of mitigation measures are included in Appendix 11.

Table 11-7b. Mitigation for Stationary Source Emissions - Operation (Commerical)

Mitigation Measure	Emission Reduction Efficiency*			
	ROC	NO_x	CO	PM10
• Use solar or low-emission water heaters	0.5%	0.5%	0.5%	0.5%
• Use central water heating systems	0.5%	0.5%	0.5%	0.5%
• Provide shade trees to reduce building heating/cooling needs	0.5%	0.5%	0.5%	1%
• Use energy-efficient and automated controls for air conditioners	1%	1%	1%	1.5%
• Use double-glass-paned windows	3.5%	3%	3%	2.5%
• Use energy-efficient low-sodium parking lot lights	Negl.	Negl.	Negl.	Negl.
• Provide adequate ventilation systems for enclosed parking facilities	–	–	–	0.5%
• Use lighting controls and energy-efficient lighting	3%	8.5%	7%	19.5%
• Use light-colored roof materials to reflect heat	1%	1%	1%	0.5%
• Increase walls and attic insulation beyond Title 24 requirements	10%	9%	9.5%	7%
• Orient buildings to the north for natural cooling and include passive solar design (e.g., daylighting)	11%	13.5%	12.5%	17.5%

Negl. = Negligible (less than 0.05%)

* These efficiencies represent additive reductions from facility operations, specifically unmitigated emissions from Stationary Sources (i.e., Energy Use, Area Source, Stationary Source). These efficiencies can be subtracted from the corresponding unmitigated emissions from this category (Table 9-8). These data will be updated as more information becomes available.
More detailed descriptions of mitigation measures are included in Appendix 11.

Table 11-7c. Mitigation for Stationary Source Emissions - Operation (Industrial)

Mitigation Measure	Emission Reduction Efficiency*			
	ROC	NO_X	CO	PM10
• Provide shade trees to reduce building heating/cooling needs	Negl.	Negl.	Negl.	0.5%
• Use energy-efficient and automated controls for air conditioning	Negl.	Negl.	Negl.	1%
• Use double-glass-paned windows	Negl.	0.5%	Negl.	1%
• Use energy efficient low-sodium parking lot lights	Negl.	0.5%	Negl.	1%
• Provide adequate ventilation systems for enclosed parking facilities	Negl.	Negl.	Negl.	Negl.
• Use lighting controls and energy-efficient lighting	Negl.	1%	0.5%	2.5%
• Use light-colored roof materials to reflect heat	Negl.	Negl.	Negl.	0.5%
• Orient buildings to the north for natural cooling and include passive solar design (e.g., daylighting)	2%	3%	2.5%	5.5%
• Increase walls and attic insulation beyond Title 24 requirements	Negl.	1%	0.5%	3%
• Improved storage and handling of source materials	NQ	NQ	NQ	NQ
• Materials substitution (e.g., use water-based paints, life-cycle analysis)	NQ	NQ	NQ	NQ
• Modify manufacturing processes (e.g., reduce process stages, closed-loop systems, materials recycling)	0.5%	2%	1.5%	6%
• Resource recovery systems that redirect chemicals to new production processes	3.5%	3%	3%	1.5%

NQ = Not Quantified Negl. = Negligible (less than 0.05%)

* These efficiencies represent additive reductions from facility operations, specifically unmitigated emissions from Stationary Sources (i.e., Energy Use, Area Source, Stationary Source). These efficiencies can be subtracted from the corresponding unmitigated emissions from this category (Table 9-8). These data will be updated as more information becomes available.
More detailed descriptions of mitigation measures are included in Appendix 11.

Appendix 8 DESCRIPTION OF REGIONAL CLIMATE AND ITS EFFECT ON AIR QUALITY

Section 15125 of the State CEQA Guidelines requires that "an EIR must include a description of the environment in the vicinity of the project, as it exists before commencement of the project, from both a local and regional perspective." The air quality information in the Environmental Setting section of the EIR should include a discussion of climate, the existing quality of ambient air at the proposed project site, and significant air pollutant sources, both stationary and mobile. The following information has been excerpted and paraphrased from several District publications and may be used in EIR preparation.

Climate. The distinctive climate of the SCAB is determined by its terrain and geographical location. The Basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean in the southwest quadrant with high mountains forming the remainder of the perimeter. The general region lies in the semi-permanent high pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. This usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds.

Figure A8-1 shows the terrain of the SCAB from the coast to the Basin boundary line which follows a general path approximating mountain ridges. The high desert is shown north of the SCAB and the low desert to the east.

Temperature. The annual average temperature varies little throughout the 6600-square-mile Basin, averaging 62°F. However, with a less pronounced oceanic influence, the eastern portion shows greater variability in annual minimum and maximum temperatures. The city of San Bernardino, for example, has an annual average temperature range from 37°F to 97°F, while the city of Santa Monica has an annual range between 47 to 75°F. All portions of the Basin have had recorded temperatures well above 100°F in recent years. January is usually the coldest month at all stations, and July and August are usually the hottest months.

For site-specific analysis, temperatures selected represent the lowest average temperature when assessing CO and NO_x impacts and the highest average temperature when assessing ROC.

Rainfall. Practically all of the annual rainfall in the Basin falls during the November-April period. Summer rainfall normally is restricted to widely scattered thundershowers near the coast and slightly heavier shower activity in the east and over the mountains. Annual average rainfall varies from nine inches in Riverside to fourteen inches in downtown Los Angeles, but higher amounts are measured at foothill locations. Monthly and yearly rainfall totals are extremely variable. Rainy days vary from five to ten percent of all days in the Basin, the frequency of such days being higher near the coast.

Humidity. Although the SCAB has a semi-arid climate, the air near the surface is surprisingly moist because of the presence of a shallow marine layer on most days. Except for infrequent periods when dry, continental air is brought into the Basin by off-shore winds, the ocean effect is dominant. Periods with heavy fog are frequent; and low stratus clouds, sometimes referred to as "high fog" are a characteristic climate feature. Annual average relative humidity is 70% at the coast and 57% in the eastern part of the Basin.

Wind. With very light average wind speeds, the Basin's atmosphere has a limited capability to disperse air contaminants horizontally. Downtown Los Angeles wind speed averages 5.7 miles per hour with little seasonal variation. Summer wind speeds average slightly higher than winter wind speeds. Inland areas record slightly lower wind speeds than downtown Los Angeles, while coastal wind speeds average about two miles per hour higher than downtown Los Angeles. The dominant daily wind pattern is a daytime sea breeze and a nighttime land breeze, as shown in Figure A8-1. This regime is broken only by occasional winter storms and infrequent strong northeasterly Santa Ana flows from the mountains and deserts north of the Basin.

On practically all spring and early summer days, most of the pollution produced during an individual day is moved out of the Basin through mountain passes or is lifted by the warm, vertical currents produced by the heating of mountain slopes. In those seasons, the Basin can be "flushed" of pollutants by a transport of ocean air of sixty miles or more during the afternoon. From late summer through the winter months, the flushing is less pronounced because of lighter wind speeds and the earlier appearance of off-shore (drainage) winds. With extremely stagnant wind flow, the drainage winds may

begin near the mountains by late afternoon. Pollutants remaining in the Basin are trapped and begin to accumulate during the night and the following morning. A low average morning (6:00 a.m. to noon) wind speed in pollution source areas is an important indicator of stagnation potential. In Los Angeles, the average morning wind speed is 5 mph; on about 244 days per year it is equal to, or less than 5 mph.

Cloudiness. Because of persistent low inversions and cool coastal ocean water, morning fog and low stratus clouds are common. However, 73% of possible sunshine is recorded in downtown Los Angeles, an important factor considering the necessary role of sunshine in the process of producing photochemical smog. There are 185 clear days (zero to 0.3 of the sky obscured by clouds), 106 partly cloudy days (0.4 to 0.7 cloud cover) and 74 cloudy days (0.8 to full cloud cover) each year on average. Cloudiness is slightly less in the eastern portions of the Basin and about 25% greater along the coast.

Inversions. The vertical dispersion of air pollutants in the SCAB is hampered by the presence of a persistent temperature inversion in the layers of the atmosphere near the surface of the earth. Because of expansional cooling, the temperature usually decreases with altitude. A reversal of this state of the atmosphere, wherein temperature increases with altitude, is termed an inversion, which can exist at the surface or at any height above the ground. The height of the base of the inversion at any given time is known as the "mixing height." The mixing height can change under conditions when the top of the inversion does not change. Usually, inversions are lower before sunrise than during the daylight hours. The mixing height normally increases as the day progresses, because the sun warms the ground, which in turn warms the surface air layer. As this heating continues, the temperature of the surface layer approaches the potential temperature of the base of the inversion layer. When these temperatures become equal, the inversion layer begins to erode at its lower edge. If enough warming takes place, the inversion layer becomes weaker and weaker and finally "breaks." The surface air layers can then mix upward without limit. This phenomenon is frequently observed in the middle to late afternoon on hot summer days when the smog appears to clear up suddenly. Winter inversions frequently break up by mid-morning, thereby preventing contaminant build-up. The net input of pollutants into the Basin atmosphere from mobile and stationary sources varies little by season. Pollutants enter the surface air layers and can mix with less contaminated air from anywhere below the inversion base. The contaminants in the surface layers tend to diffuse and form a relatively uniform mixture (in some cases higher concentrations exist immediately below the inversion base) all the way up to the mixing height. They cannot rise through the inversion. As a result, these air pollutants become more and more concentrated unless the inversion layer lifts, is broken, or unless surface winds are strong enough to disperse the pollutants horizontally. The combination of low wind speeds and low inversions produces the greatest concentration of pollutants. On days of no inversion or on days of winds averaging over 15 mph, there will be no important smog effects, summer or winter. In the winter, the greatest pollution problems are carbon monoxide and oxides of nitrogen because of extremely low inversions and air stagnation during the late night and morning hours and the lack of intense sunlight which is needed for the photochemical reactions.

In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and oxides of nitrogen to form more of the typical photochemical smog. Carbon monoxide is not as great a problem in summer because inversions are not as low and intense in the surface boundary layer (within one hundred feet of the ground) as in winter (though the higher summer time inversions typically are stronger and last much later in the day) and because horizontal ventilation is better in summer.

Along the southern California coast, surface air temperatures are relatively cool. The resultant shallow layer of cool air at the surface, coupled with warm, dry, subsiding air from aloft produces early morning inversions on about 87% of the days. The Basin-wide average occurrence of inversions at the ground surface is eleven days per month; the averages vary from two days in June to 22 days in December and January. Higher inversions, but less than 2500 feet above sea level, occur 22 days each month; occurring on an average of 25 days in June/July to 4 days in December and January. Restricted maximum mixing heights, 3500 feet above sea level or less, average 191 days each year.

The potential for high concentrations varies seasonally for many contaminants. During late spring, summer, and early fall, light winds, low mixing heights, and brilliant sunshine combine to produce conditions favorable for the maximum production of photochemical oxidants, mainly ozone.

During the spring and summer, when fairly deep marine layers are frequently found in the Basin, sulfate concentrations are at their peak.

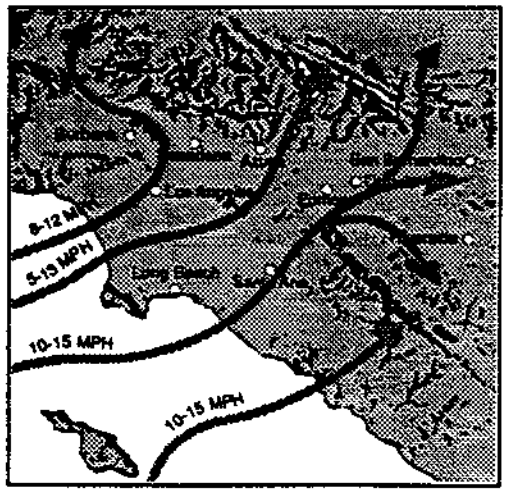
When strong inversions are formed on winter nights, and are coupled with near-calm winds, carbon monoxide (CO) from automobile exhausts becomes highly concentrated. The highest yearly CO values are generally measured during November, December, January and February.

Reference

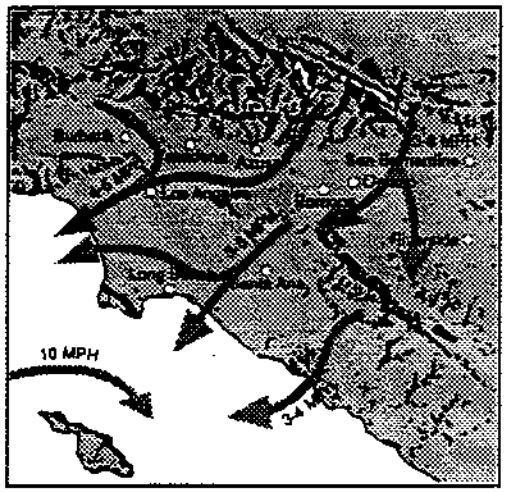
A Climatological Air Quality Profile, California South Coast Air Basin. Available from the District's Public Information Center.

(APPND_8)

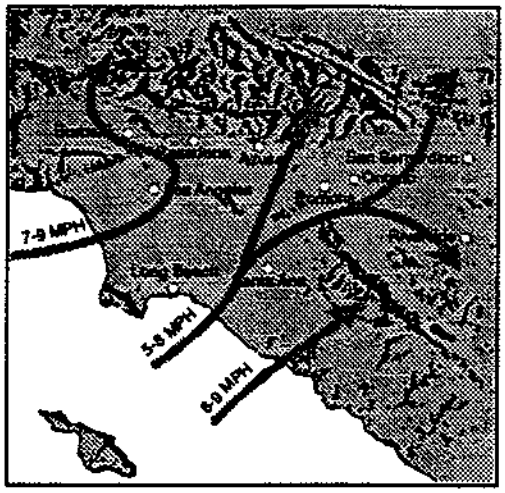
Figure A8-1. Dominant Wind Patterns in the Basin



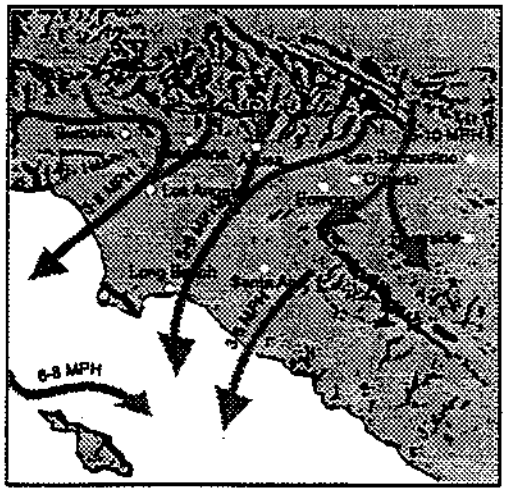
TYPICAL SUMMER DAYTIME OCEAN WINDS
(Noon to 7:00 PM)



TYPICAL SUMMER NIGHT DRAINAGE WINDS
(Midnight to 5:00 AM)



TYPICAL WINTER DAYTIME OCEAN WINDS
(Noon to 5:00 PM)



TYPICAL WINTER NIGHT DRAINAGE WINDS
(Midnight to 7:00 AM)

Water Resources and Wastewater Management for the Newhall Ranch Project

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Addendum to Water Resources and Wastewater Management for the Newhall Ranch Project

This addendum to the January 1996 report titled *Water Resources and Wastewater Management for the Newhall Ranch Project* serves to address comments by the County Sanitation Districts of Los Angeles County (CSDLAC). The primary focus of this addendum is on the different approaches applied in the report for estimating wastewater generation.

Water/Wastewater Flow Estimates

Wastewater flows were estimated in the report for two purposes: water supply planning and treatment plant sizing. From a water supply perspective, the wastewater is viewed as a resource and estimates must be consistent with the overall water budget for the Project. In the water supply analysis the wastewater is viewed in annual or monthly flow rates (i.e., acre-feet per month or year). From a wastewater perspective the daily flow rate, usually in million gallons per day (mgd) is critical to size the treatment facility and its site to meet future needs. At the current level of planning for the Project, it is expedient to be conservative is estimating flows. However, each purpose for estimating flow has different perspectives on what is considered a conservative estimate.

Water Supply/Demand Estimates

The Newhall Ranch Project (Project) is being developed with the concept of total water management. Therefore, water supply planning for the Project required development of a water budget that addressed the total water demands and the demand by type of water (i.e., potable, nonpotable). The goal of the water budget analysis was to develop a conservative estimate of water demands by type and of effluent available to be reclaimed for meeting nonpotable water demands. From a water supply perspective, a "conservative estimate" of effluent available must not overstate the available water.

The Irvine Ranch Water District (IRWD) approach employed in the report allows for disaggregation of demands and tracking of interior water use that will become wastewater. Interior water use for Residential Land Use in the IRWD approach varies from 70 to 100 gallons per capita per day (gpcpd) (See Table B-1). For Nonresidential Water Use Demands, interior water use is a function of floor space. Open Space interior water use is a function of acreage. The resulting total interior water use for the Project was estimated to be 6,547 acre-feet per year (5.85 mgd). Interior water flows to the water reclamation plant to become a nonpotable supply after treatment. Figure 4-3 *Newhall Ranch Water Balance* in the report summarized the linkage between water supply to the Project, use of the supply for various purposes, and generation of wastewater/recycled water.

Wastewater Generation Estimates

Under the IRWD approach, the interior water use is used to estimate wastewater flows for master planning purposes. The IRWD approach was used in projecting the water balance

for the Specific Plan because it disaggregates interior versus irrigation water demands for a very wide range of land uses. The IRWD demand data is based on experience of IRWD in operating domestic and reclaimed water systems since the mid-1970's. Application of the IRWD approach results in sewage flows that are lower and, therefore, more conservative in terms of projecting reclaimed water supply.

Wastewater flows for *sizing* the water reclamation plant were estimated in the report using CSDLAC criteria. The CSDLAC approach generates a higher and therefore more conservative treatment plant size estimate.

It is important to note that each wastewater agency adopts different approaches and values for estimating sewage flows. For example, recent efforts by the City of Los Angeles assumed 90 gpcpd for residential and 30 gallons per employee per day for industrial. Additionally, large industrial discharges (i.e., greater than 40,000 gallons per day) are added in separately.

CSDLAC has two approaches to estimate sewage flow. For sewer design, the generation factors are disaggregated by residential zoning categories, light and heavy industrial, general and limited commercial, hospitals, schools, universities, airports, and parks. The underlying effluent generation rate for the residential category is 85 gpcpd. Using this criteria, wastewater generation is estimated at 7.71 mgd (8,635 ac-ft per year). This value was used to set the capacity of the water reclamation plant for the project.

For water reclamation plant sizing in the Valencia and Saugus WRP area, CSDLAC has adopted a sewage generation rate of 100 gpcpd for estimating Residential/Commercial flows plus adds in a value for industrial waste flow. Using this criteria, wastewater generation is estimated at 7.52 mgd, based on residential and commercial flow of 6.9 mgd plus industrial flow (i.e., business park, treatment plant, and fire station categories) of 0.62 mgd. This translates to an average annual flow of 8,422 ac-ft per year.

The values derived using CSDLAC are appropriately conservative for sizing the water reclamation plant. From a water reclamation plant perspective, a "conservative estimate" of effluent must be conservative in the sense as to not understate the wastewater to be treated. Consequently, the conservative estimate for sizing the water reclamation plant will ensure that sufficient site room is available to build the required facility.

Impacts of Wastewater Discharge

The dichotomy of estimating wastewater flow from two perspectives (i.e., water supply planning and wastewater treatment plant capacity) created some confusion regarding the discussion of impacts in the report. In the January 1996 report, the water supply based wastewater estimate of 6,547 ac-ft per year was used to estimate potential discharge impacts. This value was used since it was consistent with the overall water budget, while the 7.71 mgd value was only used to determine the plant capacity. However, CSDLAC suggested the need to evaluate potential impacts of reclamation plant at the "design flow"

of 7.71 mgd (8,635 ac-ft per year). The following analysis addresses potential impacts of discharge at a range of flows.

As indicated in Section 2 of the report the nonpotable demands are 9,251 ac-ft per year. The annual recycled water supply is 6,547 to 8,635 ac-ft per year, which is not sufficient to meet all of the nonpotable demands. Nonpotable irrigation demands vary throughout the year. However, effluent generation is generally consistent throughout the year, as it is a function of indoor water uses. The monthly effluent flows vary in ac-ft/month because the number of days per month varies.

Figure Addendum-1 compares the typical monthly distribution of nonpotable demands (9,251 ac-ft per year) to the monthly distribution of recycled water supply (6,547 to 8,635 ac-ft per year). Figure Addendum-1 represents an average year condition for water demands, under which all recycled water can be used directly for irrigation, except in the winter months. During those months, approximately 522 to 1,372 ac-ft of the recycled water are not needed to meet nonpotable demands; this excess recycled water could be discharged to the Santa Clara River, transported to other uses outside the Project, or stored for later use.

For the purposes of preliminary planning, this report assumes that no recycled water will be stored seasonally or transported elsewhere; recycled water exceeding the Project's nonpotable demands will be discharged to the Santa Clara River as this presents a worst-case scenario from an EIR standpoint.

Impacts Assuming Annual Wastewater Flow of 8,635 ac-ft per year

Figure Addendum-2 illustrates the recycled water system operation assuming a total wastewater flow of 8,635 ac-ft per year that incorporates winter discharge to the river. Of the total nonpotable demand (9,251 ac-ft per year), 7,263 ac-ft is met with recycled water and 1,988 ac-ft per year is met with other supplies. Additionally, 1,372 ac-ft per year of excess recycled water are discharged during winter months to the Santa Clara River. The average annual discharge of 1,372 ac-ft per year during October through March will result in a discharge of 385 ac-ft per month in the highest months of December and January. This translates to a flow rate of approximately 6.3 cubic feet per second (cfs).

The long-term average annual flow at the USGS gauge located near the Los Angeles-Ventura County line is 34,852 ac-ft per year (for the 1952 to 1992 period of record). A WRP discharge of 1,372 ac-ft per year represents a 3.9 percent increase in the annual flow volume in the River at that location. Figure Addendum-3 shows the additional River flow resulting from WRP's 1,372 ac-ft discharge during October through March. During an average year, the WRP discharge in December (6.3 cfs) would increase the River flow of 56 cfs by about 11.3 percent. During a drought year (1976), a 6.3-cfs WRP discharge in December would increase the River flow of 17 cfs by about 37 percent. However, during a drought year, irrigation requirements of landscape plantings would increase, particularly during the

winter months when there is little rain. Consequently, the amount of discharge to the river would actually be significantly reduced during a drought year. Thus the average annual and peak WRP discharges of recycled water do not significantly increase the River flow, either annual or monthly.

Impacts Assuming Annual Wastewater Flow of 6,547 ac-ft per year

Figure Addendum-4 illustrates the recycled water system operation assuming a total wastewater flow of 6,547 ac-ft per year that incorporates winter discharge. Of the total nonpotable demand (9,251 ac-ft per year), 6,025 ac-ft is met with recycled water and 3,226 ac-ft per year is met with other supplies. Additionally, 522 ac-ft per year of excess recycled water are discharged during winter months to the Santa Clara River. The average annual discharge of 522 ac-ft per year during October through March will result in a discharge of 207 ac-ft per month in December and January. This translates to a flow rate of approximately 3.5 cubic feet per second (cfs).

The long-term average annual flow at the USGS gauge located near the Los Angeles-Ventura County line is 34,852 ac-ft per year (for the 1952 to 1992 period of record). A WRP discharge of 522 ac-ft per year represents a 1.5 percent increase in the annual flow volume in the River at that location. Figure Addendum-5 shows the additional River flow resulting from WRP's 522 ac-ft discharge during October through March. During an average year, the WRP discharge in December (3.5 cfs) would increase the River flow of 56 cfs by about 6 percent. During a drought year (1976), a 3.5-cfs WRP discharge in December would increase the River flow of 17 cfs by about 21 percent. However, during a drought year, irrigation requirements of landscape plantings increase, particularly during the winter months when there is little rain. Consequently, the amount of discharge to the river will be significantly reduced during a drought year. Thus the average annual and peak WRP discharges of recycled water do not significantly increase the River flow, either annual or monthly.

Impacts During Flood Events

Another potential concern about recycled water discharge to the Santa Clara River is the increase in flow during storm events. The issue is whether WRP discharges might contribute to downstream flooding. The 100-year-storm discharge at the USGS gauge location is estimated to be 60,000 cfs by the Los Angeles County and Ventura County Departments of Public Works and the U.S. Army Corps of Engineers (for the Santa Clara River Enhancement and Management Plan).

The Los Angeles Department of Public Works Flood Division also calculates a 50-year capital flood (Qcap) for facilities planning. The Qcap is based on a theoretical four-day storm event occurring right after the watershed has burned with the resulting flow

increased by a bulking factor. The bulking factor accounts for large quantities of debris such as burned tress and brush. The burning and bulking factors can yield peak flow rates that are 32 to 80 percent higher than a 50-year storm over an unburned-unbulked drainage area. The Qcap estimated by the County for the County Line is 163,000 cfs

The WRP range of discharge of 3.5 to 6.3 cfs is negligible and increases the peak flow of the 100-year storm and the Qcap by about 0.01 percent or less.

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Section 1
Introduction

This report addresses the principal water supply and wastewater treatment and recycling issues associated with the proposed Newhall Ranch Project (Project) in Los Angeles County, California, and provides technical support for the subsequent Environmental Impact Report, which is currently being prepared.

The report systematically addresses all of the key water-resource requirements for the Project, starting with the demand for water and the corresponding amount of effluent that will be generated (Section 2). Section 3 identifies the local wholesale and retail water agencies and their potential involvement in the supply of water to the Project. Alternative water supplies and their uses, along with the potential environmental impacts associated with the various proposed uses, are also discussed in Section 3. Included in this discussion are recycled water, Castaic Creek flood flows, groundwater resources, and an aquifer storage and recovery alternative for use of the Castaic Creek flows. Section 4 examines the water balance for the Project based on the water supply situation described in Section 3, and quantifies and evaluates the potential contribution of each water supply alternative. Section 5 presents the issues of wastewater management and treatment, including water quality requirements, an overview of process technologies, and the associated potential environmental impacts.

Supporting information is contained in Appendices A through G: IRWD water demand factors (A), water demand calculations (B), effluent generation calculations (C), definition of abbreviations and acronyms (D), glossary of terms (E), tables of unit conversion factors (F), and a list of cited references (G).

Section 2
Water Demands and Effluent Generation

Water demand projections serve as the basis for all water planning of a community. Accurate projections of water demands are required to provide a strong foundation for both reliable water supply planning and water system facility planning, layout, and sizing. Credible estimates must be developed that detail the type, quantity, and timing of demands.

2.1 Approach Drivers

The Newhall Ranch Company (NRC) aims to create a "zero-discharge" system for the Newhall Ranch Project (Project) that maximizes the use of recycled wastewater. The goal of a zero-discharge system is to recycle all wastewater, with no or only minor seasonal discharges to local water bodies. A total recycle system with zero-discharge is a double benefit for NRC: it will both dispose of treated wastewater and add to the local water supplies. The zero-discharge system requires development of dual water distribution systems for the Project: one system to deliver potable water and one completely separate system to deliver nonpotable recycled wastewater. To plan such distribution systems, water demands must be "disaggregated"; that is, they must differentiate between indoor (potable) demands, outdoor potable demands, and outdoor demands that can be met with nonpotable water. Also, wastewater generation for estimating the available supply of recycled water to meet nonpotable demands is defined by the indoor potable use.

Previous water demand projections in the Santa Clarita Valley by Castaic Lake Water Agency (CLWA) and Valencia Water Company (VWC) estimated the total aggregated water demands without differentiating between uses that require potable water and those that could use nonpotable water. For example, CLWA uses a factor of approximately 0.6 to 0.7 acre-feet per dwelling unit per year to estimate residential water demands in the VWC service area (Lowry, 1993). VWC estimates residential water use at 500 to 600 gallons per day per dwelling unit (GPD/unit), which translates to 0.56 to 0.67 acre-feet per dwelling unit. Although these independent estimates for water demands in the Newhall Ranch area are consistent, they do not differentiate between the type of demands for use in planning a zero-discharge system. Wastewater generation has also been estimated by the County Sanitation Districts of Los Angeles County (CSDLAC), independent of CLWA and VWC. In the previous studies by VWC, CLWA, and CSDLAC, no attempts have been made to correlate indoor potable water use with wastewater generation. Developing a water supply balance and water needs definition for the Project requires a more detailed approach than those provided by CLWA or VWC.

2.2 Newhall Ranch Approach

The Irvine Ranch Water District (IRWD) in Orange County, a long-term leader in wastewater recycling, developed a potable-vs.-nonpotable approach to estimate disaggregated water demands to project water demands. IRWD is a multiservice agency that provides potable and nonpotable water supply, wastewater collection, treatment and disposal, and wastewater recycling to a population of about 120,000 within 119 square miles. In less than 30 years, the area has developed from a primarily agricultural region to a dynamic urban center. The IRWD domestic water system is supplied through both local groundwater and purchased imported surface waters. IRWD has operated an extensive recycled water production and distribution system since the 1970s. The recycling system was originally developed to both dispose of treated wastewater and enhance water supplies. The original goal, similar to NRC's, was to create a zero-discharge system, with recycling of all the wastewater generated in the community for agricultural and landscape irrigation. (Heiertz, 1994)

Early master planning by IRWD for water (IRWD, 1983) and by CH2M HILL (1984) for recycled water and more recent master planning by IRWD (1991) have applied water demand models that are tied to land use projections. For its 1991 master plan, IRWD developed a new model that tied water demand projections to the City of Irvine's Transportation Analysis Zone (TAZ) land use database. The database is established on land use delineated in the City of Irvine General Plan and on general plans of surrounding jurisdictions. For water resource planning purposes, the 45 land use categories designated in the TAZ database have been consolidated by IRWD into 19 categories; these categories form the basis for the data management system to project water demands.

IRWD water demand projections are based on TAZ land use information and corresponding water use factors associated with each land use type. Water use factors disaggregate demands into residential, nonresidential, and irrigation water demand. Residential water demands are further subdivided into interior and local exterior. Interior water demands include drinking, bathing, laundry, sanitation, etc., and are generally considered synonymous with water that enters the wastewater collection and treatment system. Local exterior water is used for landscape irrigation near the home, washing cars, filling swimming pools, etc. Interior and local exterior water must meet potable standards. Water demands for common area greenbelt irrigation within residential neighborhoods are calculated as "irrigation" demands; these demands may be met with nonpotable water. Nonresidential potable demands are also divided into interior and exterior water demands for businesses, institutions, schools, and parks. Irrigation demands in the IRWD approach include all landscape irrigation demands that can be met with nonpotable water, such as for greenbelts, parkways, golf courses, school yards, homeowner association common areas, and parks.

IRWD derives population projections from land use factors by applying average occupancy estimates of 2.0 to 3.5 persons per dwelling unit, depending on the land use. See Appendix A for IRWD population and water use factors.

IRWD water use factors were compared to CLWA and VWC estimates to determine whether the projections of total aggregated water demands are consistent. Generally, the approaches provide similar estimates of total water demands. However, the IRWD approach provides a more refined breakdown of demands and wastewater generation to allow water balance estimates. Consequently, the IRWD approach was applied to the Project.

2.3 Land Use

The Project is anticipated to have 11,963.4 gross acres that include residential, nonresidential, and recreational areas, schools, a water treatment facility, highways, and open space. The Specific Plan indicates 24,680 dwelling units, plus 982 acres of nonresidential/mixed use, and 5,852 acres of major open area. NRC staff and the project planner, FORMA Design (FORMA) disaggregated the land use information in the Specific Plan into categories that allowed detailed water demand estimates. The disaggregated land use categories for estimates of water demands are shown in Table 2-1. Areas of significant landscaping, such as community slopes, have been removed from residential and nonresidential development and put into open space and parks to provide a better basis for estimating irrigation water demands that can be met with nonpotable water supplies. The reorganized data in Table 2-1 show 2690.1 acres in residential, 495.2 acres in nonresidential, and 8778.1 acres in open area land uses. The total acreage remains 11,963.4 for the 24,680 dwelling units.

The projected population of the Project can be estimated based on the IRWD average occupancy rates shown above and in Appendix A. Based on the IRWD rates and the number of dwelling units by type, the Project population would be about 68,960, and the weighted average occupancy rate would be about 2.8 persons per dwelling unit.

2.4 Water Demands

Annual Demands

Applying the IRWD water demand estimating approach to land use projections for the Project in Table 2-1 yields an estimated total annual demand of 19,345 acre-feet per year (ac-ft per year). Of the total demand, 10,094 ac-ft per year must be met with potable supplies and 9,251 ac-ft per year could be met from potable or nonpotable supplies. Table 2-2 summarizes water demands by type and by use: total residential demands are 11,432 ac-ft per year; total nonresidential demands are 1,265 ac-ft per year; and open space and parks demands are 6,648 ac-ft per year. Appendix B provides details of water demand calculations.

Table 2-1
Land Use Plan Statistics
Newhall Ranch Project

Land Use	Total Area (acres)	Dwelling Units		
		Detached	Attached	Total
Residential Development				
Estate	324.1	538	0	538
Low	472.1	1,917	0	1,917
Low Medium	1108.3	6,951	0	6,951
Medium	504.9	1,619	6,312	7,931
High	96.4	0	2,850	2,850
Mixed Use	184.3	0	4,493	4,493
Subtotals	**2690.1**	**11,025**	**13,655**	**24,680**
Nonresidential Development				
Mixed-Use Commercial				
Retail	78.5			
Office	78.5			
Commercial	65.5			
Business Park	137.0			
Visitor Serving	15.8			
Water Treatment Plant	14.9			
Electrical Substation (1)	2.2			
Fire Stations (2)	2.2			
Schools				
Elementary (5)	38.6			
Middle (1)	20.9			
High (1)	41.1			
Subtotal	**495.2**			
Open Space and Parks				
Recreation				
Community Parks	52.9			
Neighborhood Parks	57.7			
Lake - Water	15.0			
Lake - Park Area	9.1			
Golf Course	172.6			
Arterial Highways				
Hardscape/Road Section	255.0			
Landscape Area	76.4			
Major Open Areas				
High Country	3904.5			
River Corridor	752.3			
Community Open Area	757.9			
Community Slopes	1308.9			
Ungraded Area and Easement	1415.8			
Subtotal	**8778.1**			
Totals	**11963.4**			**24,680**

Source: Newhall Ranch Specific Plan

Table 2-2
Summary of Newhall Ranch Water Demands
Newhall Ranch Project

Land Use	Water Demand (ac-ft/yr)	
	Potable	Nonpotable
Residential Development		
Estate	530	194
Low	977	283
Low Medium	3,270	838
Medium	2,665	507
High	702	97
Mixed Use	1,184	185
Subtotals	**9,328**	**2,104**
Nonresidential Development		
Mixed-Use Commercial		
Retail	9	62
Office	139	62
Commercial	160	52
Business Park	374	82
Visitor Serving	2	57
Water Treatment Plant	13	12
Electrical Substation	0	0
Fire Stations	9	2
Schools	29	201
Subtotals	**735**	**530**
Open Space and Parks		
Recreation		
Community Parks	6	212
Neighborhood Parks	6	231
Lake - Water (c)	0	57
Lake - Park Area	0	36
Golf Course	19	932
Arterial Highways		
Landscape Area	0	306
Major Open Areas		
Community Slopes	0	4,843
Subtotals	**31**	**6,617**
Totals	**10,094**	**9,251**
Total Water Demand		**19,345**
Source: Newhall Ranch Specific Plan		

For comparison purposes, water demand developed by VWC was applied to the Project's land use categories in the Specific Plan (see calculations in Appendix D). VWC factors yield an estimated annual demand of about 17,900 ac-ft per year. The IRWD approach provided a more conservative (about 8 percent higher) estimate and allowed for a more detailed breakdown of water demand by type.

Seasonal Demands

Seasonal water demands are estimated in order to balance water supplies and demands and to identify potential impacts on the potential water retailer (VWC) and water wholesaler (CLWA).

Seasonal variation in water demands are dominated by the evapotranspiration of landscaping and the resulting irrigation demand. Figure 2-1 illustrates the monthly distribution of turfgrass evapotranspiration demand as a percentage of total annual demand in the Santa Clarita Valley. This distribution, derived from information from the University of California Cooperative Extension, is appropriate for evaluating the potable and nonpotable irrigation demands of the Project. Nonpotable system demands follow the distribution shown in Figure 2-1.

Potable system demands comprise a combination of indoor water demands that are relatively constant throughout the year and local exterior demands that vary annually, similar to those shown in Figure 2-1. Consequently, total potable demands vary monthly. However, they do not exhibit as much variation as irrigation demands due to the dampening affect of indoor use. Figure 2-2 illustrates the variation in potable and nonpotable water monthly demands. Maximum-month potable demands are 1,056 ac-ft, while maximum-month nonpotable demands are 1,305 ac-ft. Figure 2-3 illustrates the total potable and nonpotable demands by month. Total monthly demands range from a low of 1,038 ac-ft per month in January and December to a maximum of 2,362 ac-ft, projected for July.

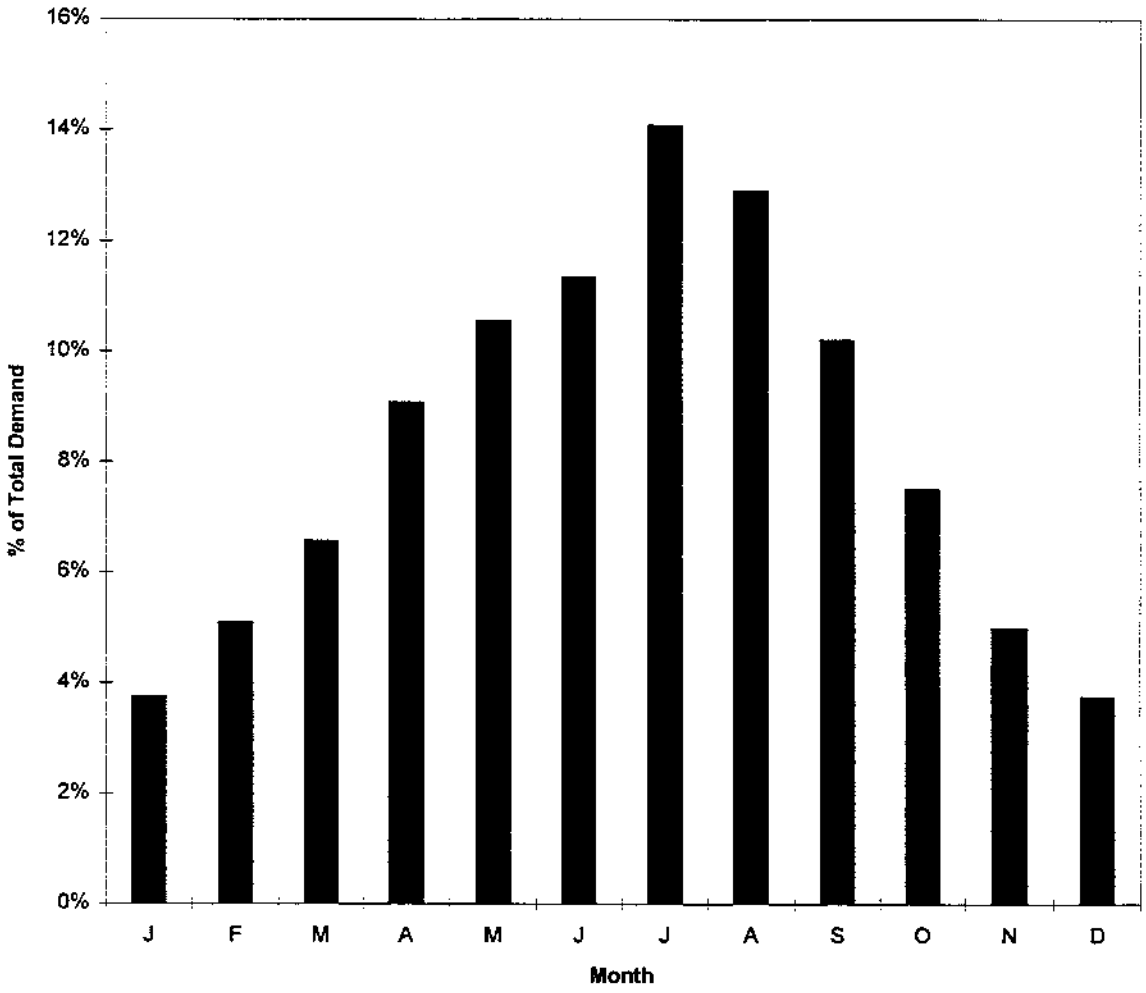
2.5 Effluent Generation

Estimates of effluent generation for water supply and water balance estimates are based on the interior potable water demands described in the previous section and detailed in Appendix B. Table 2-3 summarizes effluent generation estimates for water supply planning purposes. The estimated annual recycled water supply is 6,547 ac-ft per year. Because wastewater generation is a function of relatively constant indoor potable water use, it also has a relatively constant monthly flow. Variation in monthly flow estimates range from 502 to 556 ac-ft, depending on the number of days in the month; the average monthly flow is 546 ac-ft. Detailed calculations are provided in Appendix C.

Table 2-3
Summary of Wastewater Generated for Water Supply
Newhall Ranch Project

Land Use	Wastewater (ac-ft/yr)
Residential Development	
Estate	331
Low	601
Low Medium	2,044
Medium	1,666
High	447
Mixed Use	740
Subtotal	**5,829**
Nonresidential Development	
Mixed-Use Commercial	
Retail	9
Office	139
Commercial	160
Business Park	339
Visitor Serving	2
Water Treatment Plant	0
Electrical Substation	0
Fire Stations	9
Schools	
Elementary	11
Middle	6
High	12
Subtotal	**687**
Open Space and Parks	
Recreational Areas	31
Arterial Highways	0
Major Open Areas	0
Subtotal	**31**
Total Water Demand	**6,547**

Wastewater generation is based on IRWD water demand factors.



Source: Reference Evapotranspiration (ETo) for California Maps, Agricultural Experiment Station, University of California, Division of Agriculture and Natural Resources, Bulletin 1922.

Figure 2-1
Monthly Irrigation Water Demands
Newhall Ranch Project

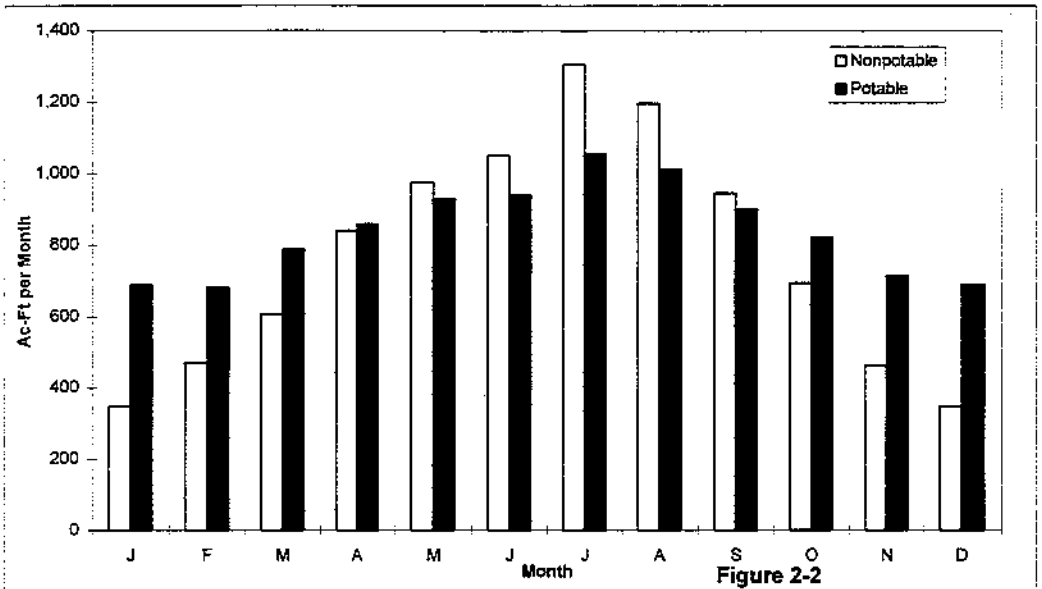


Figure 2-2
Monthly Water Demands
Newhall Ranch Project

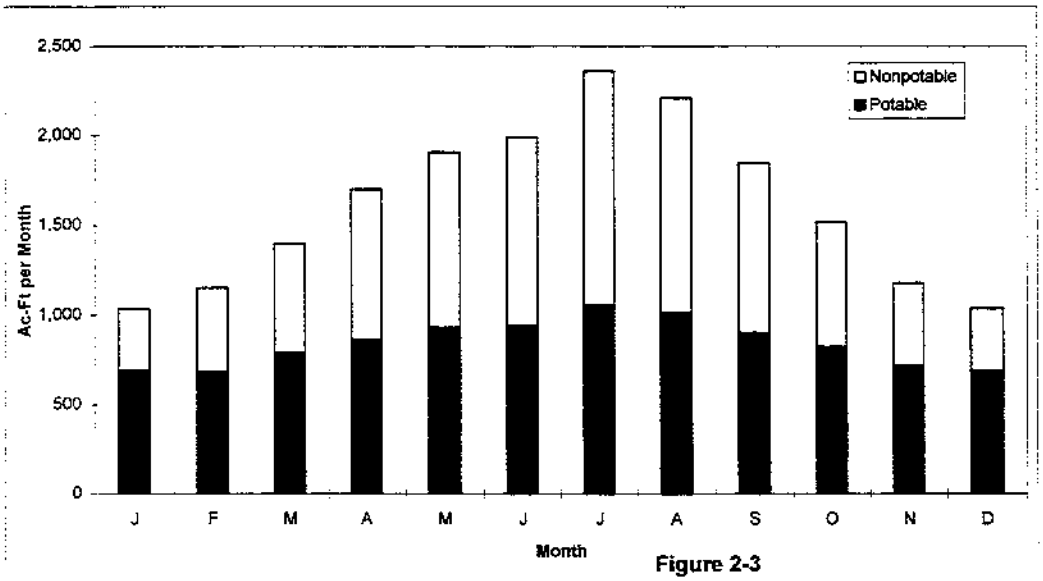


Figure 2-3
Total Monthly Water Demands
Newhall Ranch Project

Section 3
Water Supply

3.1 Introduction

This section identifies the potential water supply agency and potential water supplies to meet the Newhall Ranch Project (Project) demands quantified in Section 2. This section also discusses the potential environmental impacts associated with use of the identified water supply alternatives, which include recycled water, Castaic Creek flood flows, and use of the groundwater aquifer.

In the past, development companies addressed water supply issues for a project by simply requesting documentation from the local water purveyor that service will be provided. However, recent natural occurrences, regulatory actions, and institutional and legislative activities have prompted more specific evaluations of the ability to provide water to new development. Since 1976, California has experienced two significant droughts, which reduced both local and imported water supplies to southern California. Regulatory actions regarding water quality objectives and water rights in the California Delta have also threatened the imported water supply from the State Water Project (SWP) to wholesale and retail water purveyors in central and southern California. In light of this new emphasis on water management, the Newhall Ranch Company (NRC) initiated studies to help the local wholesale and retail water purveyors identify potential water supplies for the Project.

Water supply and distribution within the Project will likely be provided by expanding the service area of the closest retail water purveyor, Valencia Water Company (VWC). VWC obtains water from the Alluvial and Saugus Aquifers and from CLWA imported supplies.

A number of water supply options are potentially available to support VWC's service to the Project. In addition to VWC and CLWA existing supplies and supplies currently being negotiated, two other supplies are discussed in this section. First, recycled water generated by the Project will be used to meet nonpotable water demands. A second potential supply to the Project could come from a Newhall Land & Farming (NLF) agreement with the California Department of Water Resources (DWR) to provide Castaic Creek flood flows to downstream water users. This agreement, linked to the construction of Castaic Dam, ensures the continued use of Castaic Creek flows, as if the dam had not been constructed.

In the following subsections, the water purveyor and a range of available supplies is estimated and issues related to the use of each water supply option are identified.

3.2 Valencia Water Company and Castaic Lake Water Agency

Water service to the Project will require formation of a new retail water purveyor or extension of the boundaries of an existing purveyor in the Santa Clarita Valley. Valencia

Water Company (VWC) is an investor-owned, regulated utility company whose service area includes portions of the City of Santa Clarita and the community of Valencia. VWC is the most logical water retailer to serve the Project because its service area is contiguous to the project area and its infrastructure can readily be extended from VWC's distribution system backbone.

Castaic Lake Water Agency (CLWA), formed in 1962, is the Santa Clarita Valley's wholesale State Water Project (SWP) supplier. CLWA treats the SWP water at its filtration plant and distributes it to four local water purveyors: Los Angeles County Waterworks District 36, Newhall County Water District (NCWD), Santa Clarita Water Company (SCWC), and VWC. These purveyors use CLWA's imported water along with the local water resources to meet the overall water supply needs of the valley.

Existing Conditions

Valencia Water Company

VWC currently provides water to about 14,616 residential units (13,762 single family units and 854 multifamily units), 288 acres of commercial land use, and 663 acres of industrial land use. In 1993, VWC delivered 16,900 ac-ft of water. VWC's water is supplied by local groundwater and imported water, about half and half; in 1993, VWC deliveries comprised 8,462 ac-ft of CLWA-supplied imported water and 8,436 ac-ft of groundwater. Groundwater is developed from both the Alluvial and Saugus Aquifers through 19 wells located within the service area. VWC has 14 wells that extract from the Alluvial Aquifer and 4 wells that extract from the Saugus Aquifer. Over the past 10 years, about 69 percent of VWC's groundwater supplies have been drawn from the Alluvial Aquifer.

The total design capacity for all VWC wells is 21,100 gallons per minute, (gpm) and the effective operating capacity is 17,100 gpm. If operated on a continuous basis, this capacity is equivalent to an annual flow rate of about 27,600 ac-ft per year.

VWC's imported water from CLWA is provided through four turnouts with a combined capacity of 14,000 gpm, (which is equivalent to an annual delivery capacity of about 22,600 ac-ft per year). VWC's entitlement of imported water is based on a contract percentage of 35.9 percent of CLWA's imported water supply. VWC has a contract for 19,458 ac-ft per year of imported water.

The current VWC water distribution system consists of over 250 miles of pipelines (ranging from 6 to 27 inches in diameter), carrying water to 11 pressure zones.

Castaic Lake Water Agency

Currently, CLWA planning addresses the water supply needs of a population of 270,000 people by the year 2010 (Reiter-Lowry, 1993 and 1995). According to the CLWA Data Document (Reiter-Lowry, 1993 and 1995) the projected annual water demand in the

CLWA service area by the year 2010 will be 120,000 ac-ft per year. Conservation programs could reduce this demand by 10 percent; therefore, the expected demand is 108,000 ac-ft per year. Approximately 10,000 ac-ft per year of this demand are expected to be met by recycled water and additional nonpotable water.

The CLWA serves imported water to the Santa Clarita Valley from the Sacramento River Basin and the California Delta via the SWP to the upper reservoir at Castaic Lake. CLWA currently holds SWP entitlements to municipal and industrial (M&I) water supply of 41,500 ac-ft per year, and entitlements to 12,700 ac-ft per year that are transferable from the Devil's Den Water District.

Table 3-1 summarizes CLWA's projected year 2010 water supply and demand. As shown in the table, CLWA's projected supply exceeds the year 2010 projected demand by 8,700 ac-ft per year.

Table 3-1
Castaic Lake Water Agency Service Area
2010 Water Supply and Demand

Water Supply (Ac-ft per year)		Water Demand (Ac-ft per year)	
Alluvial Aquifer	32,500		
Saugus Aquifer	20,000	Demand Year 2010	120,000
Imported Water	54,200	Less Conservation	(12,000)
Subtotal	106,700		
Recycled and Nonpotable Water	10,000		
Total	116,700	Total	108,000

Source: Reiter-Lowry Consultants, Castaic Lake Water Agency, 1995.

Currently there are a number of major water resource management efforts ongoing in California that will support CLWA's efforts to supply water including the following:

- Governor Wilson's comprehensive water policy
- San Francisco Bay and Sacramento San Joaquin Delta (Bay/Delta Agreement)
- Potential Delta Fix Options
- Monterey Agreement
- Conservation (Best Management Practices)
- Plans for adding off stream facilities (Los Banos Grandes Reservoir)
- Water Transfers

Proposed Service by VWC and CLWA

Approach To Meet Additional Demands

VWC and CLWA will incorporate planning for additional water supplies for the Project into their overall planning processes for water supply and facilities. VWC periodically conducts studies to determine the impact of future developments on its water system. These studies serve to develop a plan for the orderly expansion of the water system that addresses supply, storage, and operational flows and pressures. This work is revised every 5 years (or more frequently if needed), to be updated with current trends, regulations, and issues. The goal is to make sure that VWC's system has the facilities to enable it to provide safe, adequate, and reliable service to customers under both normal and unusual conditions (i.e., a fire event during maximum-day demands).

CLWA maintains land use information on every parcel of land within its service area. Information tracked includes assessor's parcel map number, land use designation, water purveyor, water use, capital contribution of CLWA facilities dedicated to the parcel, water demand, and development status. The database is routinely updated, providing an accurate representation of existing approved, and planned developments.

From this information, water demands are projected to meet the current planning horizon for the year 2010 and a population of 270,000 people. Capital projects are then identified to accommodate the needs of existing and future water users. The CLWA Board has established the following policies with regard to capital planning:

- Capital facilities should be in place 3 to 5 years in advance of the need.

- Capital planning should be integrated with the local water purveyors' needs with regard to water storage, peaking ratios, and transmission capacities.

- Additional water demands and associated capital facilities should be paid for by the benefiting user.

- System upgrades, improvements in reliability, and costs of conformance to new regulations should be paid for by existing users.

CLWA is now in the process of revising its long-term water demands and capital program. Revising the capital program to accommodate this new planning horizon will trigger preparation of a new environmental impact report in conformance with CEQA. This work is expected to be completed in 1996.

Potential Additional Water Supplies

CLWA is currently considering several opportunities to augment its current SWP entitlement. With four other SWP contractors, CLWA is obtaining entitlement from San Luis Obispo County that would yield about 5,000 ac-ft. Santa Barbara County has also indicated willingness to sell a portion of its entitlement. In addition, the so-called Monterey Agreement between the urban and agricultural SWP contractors provides for transfer of 130,000 ac-ft of water from agriculture to urban users on a willing buyer/ willing seller basis. CLWA is carefully following these developments to evaluate the desirability of acquiring a portion of this water to meet projected future demands.

Other CLWA programs include:

- Study of the groundwater basin on the Devils Den property (which was acquired by CLWA in 1988) to determine the perennial yield of the basin and whether surplus groundwater can be exported via the California Aqueduct for delivery to CLWA's service area.

- Conservation and public education programs geared toward reducing urban and domestic water demand by 10 percent by the year 2010.

- Development of groundwater reserves, water banking (both inside and outside CLWA's boundary), and use of reclaimed water from the Saugus and Valencia Waste Water Treatment Plants.

CLWA and VWC are pursuing a wide range of options that collectively ensure the adequate supply, treatment, and delivery of water to meet the projected demands for the Project.

Financing and Extension of Facilities

As an investor-owned, regulated utility company, VWC is dependent upon two financing mechanisms for handling long-term capital additions. If the addition is primarily to serve a specific new development such as the Project, the developer is required to finance the infrastructure necessary for that development via a main extension contract. This is a standard form, preapproved contract (by the California Public Utilities Commission) that required the developer to provide the full cost of the facility to serve the development and requires the utility to repay the entire cost of said facilities to the developer over a 40-year period. Certain facilities required entirely for fire protection are not considered reimbursable under normal circumstances.

If the required facilities provide a general benefit to all the utility customers, VWC would have to finance the improvement from operational proceeds or acquire long-term financing to make the improvements.

As a wholesale water agency, CLWA is charged by law with the responsibility of providing a supplemental water supply to the water retailers within its service area. CLWA's capital program is a long-term, annually adjusted plan for financing a broad range of activities: water service policies, treatment plant expansion, supplemental water, facilities improvements, and capital program.

CLWA's capital program allocates costs based on the benefits received by property owners and others within the water service areas. CLWA may set different rates, charges, fees, and assessments in each water service area to fund the needs of the capital program. CLWA can also issue debt to finance expansion and improvements to the system and can levy taxes, but only for repayment of its SWP obligation or debt service on general obligation bonds.

The capital program is funded from the sale of water, property taxes, and connection and standby fees on property. CLWA holds an annual public hearing, presenting the various capital projects and programs necessary to supply water for the projected population. After deliberation, CLWA's Board establishes the connection fee for each water service area. These fees are charged for all new water hookups before the developer is issued a building permit. At this time, CLWA's Board, has not elected to levy any standby fees.

Annexation of Newhall Ranch Project to VWC

VWC is the most logical water retailer to provide water service to the Project. Given the long-range buildout of a project of this size and nature, annexation of the entire Project into VWC's service area will occur in stages and in accordance with PUC rules and regulations over many years as the various phases of development proceed. Each phase of development will require a conceptual water plan for review and approval by VWC. The plan must show anticipated water demand, required water storage facilities, and the booster pump stations and offsite piping that are needed for adequate water flow and pressure to

the project site. The Project Specific Plan contains a master plan for water delivery to the site and onsite. Once this plan has been reviewed and approved by VWC, an application will be filed with the Public Utilities Commission requesting annexation of the Project area into Valencia's water service area.

Commitment to Serve Newhall Ranch Project

Based on the discussion above, VWC indicates that it has, or will have in the future, sufficient water supply to meet the demands generated by the proposed project. Again, because of the long-term schedule for buildout of a project of this size, each phase of the Project will be reviewed to ensure that the necessary quantities of water for domestic and fire flow are available when needed.

Impacts of VWC/CLWA Serving the Newhall Ranch Project

As indicated above, CLWA is in the process of revising its long-term water demand projections and capital program, and will prepare a new environmental impact report in conformance with the California Environmental Quality Act based on the updated capital program.

3.3 Recycled Water

As a result of the Project, a new Newhall Ranch Water Reclamation Plant (WRP) will be constructed. A goal for the Project is to recycle the maximum amount of wastewater possible to meet nonpotable demands. As indicated in Section 2, these demands are 9,251 ac-ft per year, and the annual recycled water supply is 6,547 ac-ft per year, which is not sufficient to meet the nonpotable demands. Consequently, the nonpotable water distribution system will need to be supplemented with additional water. Additional water can be from potable supplies or from waters that do not meet drinking water standards, if available, such as potential local surface runoff or low quality groundwater.

Nonpotable irrigation demands vary throughout the year; their seasonal distribution is shown in Figure 3-1. By contrast, effluent generation is generally consistent throughout the year, as it is a function of indoor water uses. Although some older communities, such as the City of Los Angeles, may have elevated flows during rainfall events due to infiltration to the collection system and inflow into manholes, such situations are not anticipated in a well designed new system to be constructed for the Project. Consequently, the monthly flows in ac-ft/month are expected to vary only slightly, partly because the number of days per month varies.

Figure 3-2 compares the typical monthly distribution of nonpotable demands (9,251 ac-ft per year) to the monthly distribution of recycled water supply (6,547 ac-ft per year). Figure 3-2 represents an average year condition for water demands, under which all recycled water can be used directly for irrigation, except in the months of November,

December, January, and February. During those 4 months, about 522 ac-ft of the recycled water are not needed to meet nonpotable demands; this excess recycled water could be discharged to the Santa Clara River, transported to other uses outside the Project, or stored for later use.

For the purposes of preliminary planning, this report assumes that no recycled water will be stored seasonally or transported elsewhere; recycled water exceeding the Projects's nonpotable demands will be discharged as this presents a worst-case scenario from an EIR standpoint. Figure 3-3 illustrates the recycled water system operation that incorporates winter discharge. Of the total nonpotable demand (9,251 ac-ft per year), 6,025 ac-ft is met with recycled water and 3,226 ac-ft per year is met with other supplies. Additionally, 522 ac-ft per year of excess recycled water are discharged during November through February to the Santa Clara River.

Impacts of Winter Discharge

This section identifies the potential impact of recycled water discharge on the flow rates and water quality of the Santa Clara River. The Project's planned average annual discharge of 522 ac-ft per year during November through February will result in a discharge of 207 ac-ft per month in December and January. This translates to a flow rate of approximately 3.5 cubic feet per second (cfs).

Impacts of Discharge on Flow Rates

Figure 3-4 plots the average monthly flows on the Santa Clara River (for the 1972 to 1991 period of record), as well as the monthly flows for a drought year (1976) as recorded at the U.S. Geological Survey (USGS) stream flow gauge located near the Los Angeles-Ventura County line. This gauge is downstream of the proposed Newhall Ranch WRP. WRP discharges will be measured directly at the gauge, with little travel time or distance to reduce the peak.

The long-term average annual flow at the USGS gauge is 34,852 ac-ft per year (for the 1952 to 1992 period of record). A WRP discharge of 522 ac-ft per year represents a 1.5 percent increase in the annual flow volume in the River at that location. Figure 3-5 shows the additional River flow resulting from WRP's 522 ac-ft discharge during November through February. During an average year, the WRP discharge in December (3.5 cfs) would increase the River flow of 56 cfs by about 6 percent. During a drought year (1976), a 3.5-cfs WRP discharge in December would increase the River flow of 17 cfs by about 21 percent. However, during a drought year, irrigation requirements of landscape plantings increase, particularly during the winter months when there is little rain. Consequently, the amount of discharge to the river will be significantly reduced during a drought year. Thus the average annual and peak WRP discharges of recycled water do not significantly increase the River flow, either annual or monthly.

Another potential concern about recycled water discharge to the Santa Clara River is the increase in flow during storm events. The issue is whether WRP discharges might contribute to downstream flooding. The 100-year-storm discharge at the USGS gauge location is estimated to be 60,000 cfs by the Los Angeles County and Ventura County Departments of Public Works and the U.S. Army Corps of Engineers (for the Santa Clara River Enhancement and Management Plan). The WRP discharge of 3.5 cfs is negligible and increases the peak flow by less than 0.01 percent. Although no hydraulic analysis has been conducted to determine whether this minor increase in flow increases the water surface elevation, the impact is expected to be negligible as well.

Impacts of Discharge on Water Quality

Responsibility for protection of water quality in the Santa Clara River rests with the California State Water Resources Control Board (SWRCB) and the California Regional Water Quality Control Board, Los Angeles Region (RWQCBLAR). The SWRCB sets statewide water policy and develops regulations to implement the programs mandated by the state and federal water quality regulations and laws. The RWQCBLAR develops and implements Water Quality Control Plans (Basin Plans) that consider regional beneficial uses, water quality characteristics, and water quality problems. Beneficial uses specified in the Basin Plan for this reach of the Santa Clara River include: municipal and domestic supply; agricultural supply; industrial process; industrial service; groundwater recharge; freshwater replenishment; water contact recreation; noncontact water recreation; warm freshwater habitat; wildlife habitat; preservation of biological habitat; rare, threatened, or endangered species; and wetland habitat.

The Basin Plan is designed to preserve and enhance water quality and to protect the beneficial uses of the regional waters, including the Santa Clara River Basin. The Basin Plan designates beneficial uses for surface water and groundwaters, sets water quality limits that must be met or maintained to protect the beneficial uses and conform to the state's antidegradation policy, and describes implementation programs to protect all waters in the region. The Basin Plan is a resource for the RWQCBLAR and others who use water and/or discharge wastewater in the Los Angeles region.

Discharges of recycled water from the Newhall Ranch WRP to the Santa Clara River will conform to the limits specified in the Basin Plan. Discharge limits are discussed in Section 5 of this report. As defined in Section 5, Wastewater Treatment, the WRP will meet the design criteria of the County Sanitation Districts of Los Angeles County (CSDLAC) for tertiary treatment plants and (as do the CSDLAC facilities at Saugus and Valencia) will meet Basin Plan objectives and waste discharge requirements for the Santa Clara River. Newhall Ranch WRP discharges, by meeting Basin Plan requirements, will also meet state and federal requirements for the water quality of discharges to a river.

Recycled water is further subject to Water Reclamation Requirements, as specified by the applicable reclamation criteria in Title 22, California Code of Regulations, Division 4, Chapter 3. These Title 22 requirements incorporate the requirements of the California

Department of Health Services. Under Title 22 health requirements, Newhall Ranch WRP recycled water will meet criteria allowing its use for the following purposes:

- Landscape irrigation of golf courses, cemeteries, freeway landscapes, and similar areas
- Irrigation of parks, playgrounds, schoolyards, and similar areas
- Nonrestricted recreational impoundment (with no limitations on body-contact sports and activities)
- Surface and spray irrigation of food crops

Because the Newhall Ranch WRP discharges can be used for these purposes, they will also meet health requirements for these uses in the Santa Clara River if discharged directly to the river.

3.4 Castaic Creek Flood Flows

The Newhall Land and Farming Company (NLF), has agreements for use of Castaic Creek flows. Prior to construction of Castaic Dam as a part of the SWP, the California Department of Water Resources (DWR) entered into agreements with NLF and other downstream water users. The agreements provided for dam operations that would assure continuance of the reasonable and beneficial use of the Castaic Creek flow by downstream water users as would have occurred if the facilities of the SWP had not been constructed. Later agreements specified how water would be taken by the downstream water users and how the water was to be allocated.

Under the agreements, flood flows of Castaic Creek are available to downstream water users up to a cutoff date of May 1 of each year. However, available Castaic Creek flows are variable, ranging from no flow in some years to over 40,000 acre-feet (ac-ft) in wet years. Due to the high variability of the flows and the May 1 cutoff, little water has been released to the downstream water users since signing of the agreements. Modification of the existing agreement is anticipated if Castaic Creek flows are proposed for use on the Project.

This section addresses two potential alternatives for use of Castaic Creek flood flows and identifies the potential impacts of their use. These alternatives have been developed to identify how this supply could be used if needed to support VWC's service to the Project.

Existing Conditions

Agreements for Castaic Creek Flood Flows

Newhall Land and Farming Company has use of natural flows to Castaic Creek above Castaic Dam based on a number of agreements. In 1978, an agreement to conserve local flood waters originating in the watershed above Castaic Dam was entered into by DWR and the "Downstream Water Users": United Water Conservation District (UWCD), NLF, Los Angeles County, and NCWD. The goal of the agreement is to conserve waters that exceed the flow rate below which all flows are readily percolated or otherwise beneficially used. The agreement also indicates that Downstream Water Users may designate one of the Downstream Water Users to be the "Water Agency" that represents them on operational matters and acts for them in giving notices, instructions, and information, and in making water delivery requests of and payments to the State.

The agreement indicates that when the inflow to Castaic Lake exceeds 100 cubic feet per second (cfs), the total flow of Castaic Creek is retained behind the dam, if storage capacity exists, until releases are requested by Downstream Water Users.

A critical issue limiting use of these flood flows is the operational criterion that Castaic Reservoir be full for SWP purposes on or before May 1 of each year. The conservation of flood flows may not interfere with the normal operation of the reservoir, which is to store SWP flows from the California Delta. The agreement specifies that on May 1 of each year all flood water that would have historically percolated or discharged to the ocean that is in storage behind Castaic Dam becomes the property of the State of California and a part of the SWP supply.

A second agreement of 1978 was developed between the Downstream Water Users that allocated water between the signatories and assigned the "Water Agency" role defined in their earlier agreement with DWR. The parties agreed that any flood flows acquired under the DWR agreement would be allocated as follows:

- UWCD 48.000%
- NLF 44.867%
- Los Angeles County 4.471%
- NCWD 2.662%

The parties designated UWCD as the "Water Agency" representative under the agreement. Also, the agreement specified that if one of the parties elects not to take all or part of its share, other parties then have the right, on a *pro rata* basis, to acquire the right of the nonuser. Costs of the acquired water are to be borne by the party that receives the water.

Castaic Creek Flow Estimates

This section addresses the existing conditions of flood flow volumes above Castaic Dam that could be available to the Project and other Downstream Water Users. A 1988 letter report (Murray, Burns, and Kienlen, 1988) summarized operation of Castaic Reservoir subsequent to the 1978 agreement with DWR. Based on daily operation of Castaic Reservoir and Elderberry Forebay for calendar years 1979 through 1987, an average of about 13,500 ac-ft per year was estimated to be available to Downstream Water Users. Water available to the Downstream Water Users had ranged from zero (during 4 of the 9 years) to a maximum year amount of 43,600 ac-ft.

The 1988 study used only 9 years of flow records to estimate potential yields from Castaic Creek flood flows. Since the flows are highly variable, an updated estimate using a longer period of record was needed to evaluate the ability of Castaic Creek flood flows to assist VWC to meet the Project's water demands. An updated hydrologic evaluation of the Creek's flood flows was conducted for this report to confirm water availability.

Flow records for Castaic Creek are available for a relatively short period of record of 1978 through 1993. In order to extend the period of flow record, synthesized flow data were developed by correlation to an adjacent drainage basin. For the purposes of this study, Piru Creek (located just west of Castaic Creek) was chosen. Piru Creek has daily flow records since 1956 available for the stream gauge above Lake Piru.

Correlation of daily flows between Castaic Creek above Castaic Lake and Piru Creek above Lake Piru was based on records for the year 1978. Corresponding daily flow records of the two creeks were plotted and a linear regression analysis was performed to estimate the approximate runoff relationship between the two adjacent basins. Figure 3-6 illustrates the relationship of Castaic Creek and Piru Creek 1978 daily flows. The analysis indicates that a correlation exists and that daily flows at Castaic Creek are about 55 percent of those on Piru Creek. Using this relationship, 30 years of synthetic daily runoff data for the period of 1956 through 1986 were developed for the Castaic Creek drainage area based on daily flows for the same period at Piru Creek. Figure 3-7 summarizes the average daily flows above 100 cfs on Castaic Creek based on the synthetic daily hydrology for 1956 through 1986 and actual data for 1987 through 1993. The figure demonstrates that typically most of the flow occurs during the period of January through March.

An average annual volume of approximately 12,300 ac-ft is available from Castaic Creek runoff above 100 cfs based on the synthetic and actual flow records. Figure 3-8 illustrates the annual flow available to Downstream Water Users. This updated estimate compares well to the 13,500 ac-ft per year value estimated in the 1988 report previously discussed. The period of record for the 1988 study had, on the average, more flow than the average for the longer period of record used for this report.

Of the total average annual flow of 12,300 ac-ft, the quantity available to the Project, based on the agreement allocation of about 44 percent, is approximately 5,400 ac-ft/year

(see Figure 3-9). However, in the years of record, there is a notable absence of "average" years. Instead, as the figure indicates, dry periods are periodically broken by very wet years.

Existing Use of Castaic Creek Flows

No major uses of the Castaic Creek flood flows by Downstream Water Users have occurred since the 1978 agreement. In 1991 Downstream Water Users moved to request delivery of flood flows. Through an agreement, CLWA purchased 2,700 ac-ft of water from the Downstream Water Users. Flows were delivered to CLWA through the CLWA outlet from the lake. However, in most years, flows have not been delivered to Downstream Users. Castaic Creek flows not delivered to the Downstream Water Users have reverted to DWR, as specified in the agreement, and have become part of the SWP supply.

Proposed Project Use of Castaic Creek Flows

Two alternatives to use Castaic Creek flood flows for the VWC to serve the Project have been developed for this report. The first alternative would be an NRC-developed storage project with facilities to store flood flows when available prior to May 1 of each year for use after May 1. The second alternative would develop a coordinated operations/water transfer program with CLWA. NRC would provide its share of Castaic Creek flood flows that exceed Project demands during the period prior to May 1 to CLWA for use in the Santa Clarita Valley. After May 1, the Project would receive CLWA supplies in exchange for the Castaic Creek flows. Development of such projects would require agreements that define operating criteria and costs for use of CLWA facilities.

Storage Program Alternative

One potential opportunity for storage and use of Castaic Creek flood flows is a conjunctive use program in the Saugus Basin. Conjunctive use is the coordinated management of groundwater basins and surface water supplies. When these supplies are operated together in a planned and coordinated fashion, more water can be developed on a long-term basis than when they are operated independently. Many existing conjunctive use programs are primarily dependent on spreading basins for recharge of the groundwater basin. However, when land is of limited availability or there are hydrogeologic conditions unfavorable to surface spreading (e.g., confined aquifers such as the Saugus), spreading basins may not be feasible. Under these conditions, wells may be used as a method for storing and recovering water for conjunctive use projects. This approach to conjunctive use is referred to as aquifer storage and recovery (ASR).

An ASR alternative for Castaic Creek flood flows and the Saugus Aquifer would require treatment and injection of available flows via wells prior to May 1. After May 1, the flows would be recovered from the aquifer to meet Project demands. Floodwater would have to be treated prior to injection, therefore, such a program would require coordination

with CLWA for treatment and conveyance of Castaic Creek flows to the injection site. Additionally, a method to ensure that NRC recovers the injected flow would also need to be developed. Either physical or institutional methods could be used to reserve this water for use in the Project. A physical approach would be to use the Saugus Basin located west of and isolated by the Holser Fault for the ASR wells. This part of the basin is overlain almost exclusively by lands owned by NLF. Consequently, other wells are unlikely to be developed that would recover the stored flood flows.

Conceptually, under an ASR alternative, NRC's Castaic Creek flood flow allocation would be captured and temporally stored in the Castaic Lake up to the May 1 cutoff date. These flows would be diverted out of the reservoir (as available up to the May 1 cutoff) through CLWA water treatment plants, and either used directly to meet Project demands or used to recharge the Saugus Aquifer to meet future demands. Future demands could be defined as immediate demands in that upcoming summer or as demands in future years.

There are three physical constraints to an ASR program for Castaic Creek flood flows. First, CLWA must have available water treatment plant (WTP) capacity to treat the additional water in the winter for injection. Second, CLWA must have the capacity to deliver the Project winter potable demands plus additional water to the site for injection to the Saugus Aquifer. Third, injection well capacity and the ability of the aquifer to receive water must match the available WTP capacity dedicated for injection. WTP and delivery capacity are addressed in this subsection of the report; injection well and aquifer issues are addressed in a following subsection, *Groundwater Resources*.

Conceptually, CLWA should have WTP capacity available during the winter months to treat Castaic Creek flows for injection to the Saugus Aquifer. Water demands are seasonal and vary monthly, as presented in Section 2; demands are high during the summer due to landscape demands, and low during the winter when landscape demands are low. However, water treatment plants are sized to meet peak flow rates for the highest demand periods. Therefore, a WTP that can meet the peak-month water demands of July has capacity that is not used during winter months, when demands are significantly lower.

Figure 2-3 illustrated monthly variation in total water demands for the Project. For example, the average monthly demand during the January through March period is half of the monthly demand in the peak month of July. This variation pattern is expected to be similar for the entire CLWA service area. The CLWA WTPs have a combined capacity of about 55 to 60 million gallons per day (mgd). Future expansions of the facilities are identified in the CLWA Data Document (Reiter Lowry, 1993). By the year 2000, the combined WTP capacity is projected to be 110 mgd. Conversations with CLWA indicate that potentially half the current capacity of the two WTPs may be available to treat Castaic Creek flood flows during the winter months. This estimate is consistent with the demand variation pattern shown in Figure 2-3. A similar situation can be extrapolated for the future WTP capacity. As a conservative approach for this report, the Castaic Creek flood flow alternative assumes that 50 percent of the existing CLWA WTP 60-mgd capacity will be available during the winter months in the long term for use in treating flood flows. Therefore, a total capacity of 30 mgd has been used to size injection facilities.

Water delivery facilities, similar to treatment capacity, are sized to deliver peak flows to meet peak water demands. Consequently, delivery facilities are not considered to be more of a constraint than is WTP capacity, addressed above.

Typical operations of an ASR, are illustrated using data for Water Year 1979. The operations are illustrated in Figures 3-10 and 3-11. NRC's allocation of Castaic Creek inflow above 100 cfs and the resulting cumulative inflow that is stored behind Castaic Dam are shown in Figure 3-10. NRC's allocation of the total inflow is about 5,400 ac-ft. Figure 3-11 illustrates NRC's allocation of daily inflow, delivery of flow to a 30-mgd WTP operation and injection program (about 92 ac-ft per day), and the resulting daily storage. By early April, the flood flow allocation has been removed from storage by constant operation of the WTP and delivery of water to the Project for direct use or storage by injection.

The potential annual average yield of a Castaic Creek flood flow ASR program for serving the Project water demands was estimated based on the 1956 through 1993 annual hydrology combined with the physical constraint of an available WTP capacity of 30 mgd. If operated continuously for up to 3 months per year, a 30-mgd WTP could treat about 8,300 ac-ft. Yield from Castaic Creek was estimated by using the actual NRC allocation of Castaic Creek flood flows shown in Figure 3-9 for each year in the period of record. However, for years with flow to NLF greater than 8,300 ac-ft; yield was limited to the assumed annual WTP capacity of 8,300 ac-ft. Figure 3-12 demonstrates the annual yields for the period of record. The resulting average annual yield representing NLF's share of the flows would be 2,900 ac-ft per year.

Coordinated Operations and Water Transfer

Under a coordinated operations and water transfer alternative, most of NRC's 5,400-ac-ft/yr portion of Castaic Creek flood flows could be used. NLF Castaic Creek flows would be diverted, as available, through CLWA's turnout at Castaic Dam and treated at CLWA WTPs. The Project would have the first option for available water. If, after meeting the Project's immediate demands for January through April, there were excess water available, it would be used by CLWA up to the May 1 cutoff to serve other water retailers in the service area. During the period of Castaic Creek flood flow availability, CLWA would reduce its use of SWP water entitlements by an equivalent amount. After the May 1 cutoff, CLWA would provide SWP water to the Project equivalent to the amount of excess flood flow water it had provided to other retailers.

The coordinated operation and water transfer alternative expands the use of NRC Castaic Creek flood flows beyond the 2,900 ac-ft per year that is achievable under the ASR alternative by removing the 8,300 ac-ft maximum annual yield caused by constraining flow through the CLWA WTPs to 30 mgd for only 3 months. Figure 3-12 illustrates that, in 8 of the years during the 1956 through 1993 period of record, the yield was limited by the 8,300 ac-ft per year WTP capacity constraint. Under a coordinated operation and water transfer alternative, the maximum amount of NRC allocation of Castaic Creek flood flows

taken in any year would be limited by CLWA service area demands, not by the 30 mgd of available WTP capacity.

Typical operations for a coordinated operations and water transfer alternative would be for all water retailers served by CLWA to use the net available NRC allocation of Castaic Creek flows (i.e., after Project demands are met) to meet their demands and to reduce their use of imported water and local groundwater. Currently, the projected year 2010 water demands for Santa Clarita Valley are 98,000 ac-ft (after reductions for conservation and recycling) (Reiter-Lowry, 1993). Potential CLWA service area demands prior to the May 1 cutoff of Castaic Creek flows can be estimated by applying the monthly distribution of demand developed in Section 2 to a demand of 98,000 ac-ft per year. CLWA service area demands would be 18,000 ac-ft for the January through March period. If Castaic Creek flood flows were available for longer than 3 months during a wet year, then CLWA service area demand served during January through April could be up to 26,700 ac-ft.

Coordinated operations would require that up to 72 mgd of the year 2010 water demands combined CLWA WTP capacity of 110 mgd be in operation (i.e., about 66 percent of combined capacity). Operating at 72 mgd for the January through April period would increase the maximum year Castaic Creek flow use from the 8,300 ac-ft per year assumed for a conjunctive use alternative to 26,700 ac-ft per year. Under a coordinated operations and water treatment alternative, the resulting long-term average use would increase from the 2,900 ac-ft per year under the conjunctive use alternative to 5,050 ac-ft per year.

As a result of the above coordinated operations, the Project would receive SWP water from CLWA. This alternative could increase the Project's average annual supply by 2,150 ac-ft. Average annual demands for additional water at the Project are 13,308 ac-ft. In some years, the amount of water transferred to CLWA would exceed annual demands for additional water; some carryover provisions to supply Newhall Ranch in other years would be required.

Impacts of Using Castaic Creek Flood Flows

Impacts discussed in this section for use of Castaic Creek flood flow focus on the downstream water quantity and quality impacts. Potential impacts of an NRC storage alternative on the Saugus Aquifer is addressed in the next subsection, *Groundwater Resources*.

Both Los Angeles County and the State of California will require an assessment of potential environmental impacts of the use of Castaic Creek flood flows by NRC. Relevant potential impacts include:

- Reduction of flows to downstream water users
- Reduction of flows to downstream fish and wildlife resources
- Potential degradation of water quality of the Santa Clara River

Government Guidelines

Los Angeles County. It is understood that the County will be the lead agency in the review of potential environmental impacts associated with the Project. With respect to surface water resources, it is likely that the principal concern of the County Planning Department will be potential adverse impacts on the overall availability of water.

State of California. Appendix G of the California Environmental Quality Act (CEQA) guidelines lists several qualitative and generalized "significant effects," of which eight potentially pertain to the use of Castaic Creek flood flows by the Project. Specifically, the project will be considered to have a significant effect on the environment under CEQA if it:

- Interferes substantially with movement of any resident or migratory fish
- Substantially diminishes habitat for fish
- Substantially degrades water quality
- Contaminates public water supply
- Substantially degrades or depletes groundwater resources
- Interferes substantially with groundwater recharge
- Uses water in a wasteful manner
- Causes substantial flooding erosion or siltation

In addition to CEQA, the Regional Water Quality Control Board (RWQCB) requires that project impacts be assessed for water quality parameters where objectives have been defined for the Basin Plan. Newhall Ranch is located within the Upper Santa Clara River Hydrologic Area, which has specified water quality objectives for surface waters and "groundwater."

The RWQCB also has authority under a blanket water quality "nondegradation policy" that is applicable across the state. This policy is aimed at maintaining and protecting the high quality of water, unless it can be demonstrated that the change in quality will result in a overall benefit without excessively compromising existing beneficial uses. The project impacts of groundwater use must therefore consider the potential for water quality degradation in a general sense.

Impacts on Water Quantity and Quality

If needed to support VWC servicing the Project, NRC would look to use Castaic Creek flood flows. NRC would only use its allocation of Castaic Creek flood flows under the 1978 agreements to serve Project water demands. Such use of Castaic Creek flood flows would not change releases or flows to Castaic Creek and the Santa Clara River. Current agreements with DWR and other Downstream Water Users specify that any flood waters in storage after May 1 become the property of the state. Since the signing of agreements in 1978, very little water has been used by the downstream parties. Consequently, for the most part, the flows above 100 cfs have been retained by DWR to become part of the SWP

supply. Flows have not been released for downstream uses except those called for by UWCD or to reduce reservoir water elevation when it encroached on the flood pool at Castaic Dam during periods of high flow. The NRC use of flood flows will not change either of those conditions for release.

Since NRC use of Castaic Creek flood flows causes no change in downstream flows, it follows that such an alternative has no significant effects because it does not:

- Reduce flows to downstream water users
- Reduce flows to downstream fish and wildlife resources
- Affect water quality of the Santa Clara River
- Interfere substantially with movement of any resident or migratory fish
- Substantially diminish habitat for fish
- Substantially degrade water quality
- Contaminate public water supply
- Substantially degrade or deplete groundwater resources
- Interfere substantially with groundwater recharge
- Use water in a wasteful manner
- Causes substantial flooding erosion or siltation

3.5 Groundwater Resources and Aquifer Storage and Recovery Alternative

Existing Conditions

Introduction

This section summarizes the current conditions of the groundwater resources in the local vicinity of the Project and analyzes the potential impacts of utilizing an aquifer storage and recovery alternative to store Castaic Creek flood flows as described in the previous section. Water purveyors in the CLWA service area including VWC use the local groundwater basins plus imported to supply current water demands. The year 2010 projected water supply and demand conditions for the area were summarized under a previous section. The 1994 CLWA Data Document assumes use of both aquifers by the local agencies up to the projected yields. For the Project, aquifers represent a potential storage location for Castaic Creek flood flows, as described in the previous section.

The most recent and comprehensive investigations are those of the California Department of Water Resources (DWR, 1993) and Richard C. Slade (Slade, 1986; 1988; and 1994) and references contained therein. Slade was retained by the Upper Santa Clara Water Committee (Committee) to conduct a hydrogeologic assessment of alluvial sediments in the Santa Clara River Valley (1986) and by CLWA and the Committee to conduct a hydrogeologic assessment of the Saugus Formation (1988). DWR investigated water

quality and beneficial uses of groundwater in the Upper Santa Clara River Hydrologic Area (DWR, 1993).

Two principal hydrogeologic units have been identified in the Santa Clara River Valley: (1) the Alluvial Aquifer, which consists of alluvial (stream deposited) sediments associated with the Santa Clara River and its tributaries, and (2) the Saugus Formation (considered as one aquifer), which consists of a thick sequence of consolidated and folded sediments, underlying about 53 square miles of the Santa Clara River Valley. The areal extent of these hydrogeologic units and their relation to the Project area are shown in Figure 3-13. Groundwater extracted from these hydrogeologic units, principally the Alluvial Aquifer, currently represents more than half of the water supply in the Santa Clara River Valley.

The following information is summarized for each hydrogeologic unit: distribution, hydrogeologic properties, groundwater levels, groundwater quality, and groundwater use and recharge. Distribution is discussed in terms of the lateral and vertical extent of the units. Hydrogeologic properties include transmissivity and storativity. Transmissivity is a standard measure of the transmissive capability of an aquifer, and is defined as the rate at which water flows through a vertical strip (of unit width and of a length equal to the saturated thickness) of an aquifer under a hydraulic gradient of 100 percent. It is the product of the hydraulic conductivity and the saturated thickness of the aquifer. Storativity is the capacity of an aquifer to store groundwater and is defined as the volume of water released from storage per unit area per unit decline in water level.

Information on groundwater levels is provided to indicate the general pattern of groundwater movement within the hydrogeologic units and the historical fluctuations of groundwater levels. Groundwater quality is discussed to provide an indication of where potable water occurs and the potential for encountering poor-quality water. Information on groundwater uses and recharge is discussed in the context of the current estimated long-term yield of each hydrogeologic unit.

Alluvial Aquifer

The Alluvial Aquifer has been used extensively as a source of potable water supply in the Santa Clara River Valley (Figure 3-14). In 1986, for example, of a total of approximately 29,000 ac-ft of groundwater used in the local area, approximately 24,000 ac-ft came from the Alluvial Aquifer. An understanding of the current conditions in the Alluvial Aquifer is important, however, because it will serve as the basis for the evaluation of potential project-induced impacts on this resource.

The Upper Santa Clara Water Committee, consisting of Los Angeles County Waterworks District No. 36, NCWD, SCWC and VWC, retained Richard C. Slade & Associates to investigate the perennial yield and artificial recharge potential of the Alluvial Aquifer in the Santa Clara River Valley. Perennial yield refers to the total annual groundwater production that can be sustained indefinitely. The following discussion is based primarily on the results of that investigation (Slade, 1986).

Distribution. The Alluvial Aquifer consists of sediments associated with the major drainages in the Santa Clara Valley (Figures 3-13 and 3-14). The Aquifer extends from beyond the Los Angeles/Ventura County line on the west to approximately 13-1/2 miles east of Castaic Junction. Principal drainages with significant alluvium include: the Santa Clara River, South Fork Santa Clara River, Bouquet Canyon, Castaic Canyon, Mint Canyon, Hasley and San Martinez Canyon, San Francisquito Canyon, and Oak Spring Canyon. The thickness of the Aquifer is greatest along the Santa Clara River, where it is typically up to approximately 250 feet thick, and decreasing in the tributary drainages.

Hydrogeologic Properties. The alluvium consists of interfingered deposits of sand, silt, and clay, with occasional cobble and gravel zones. The coarsest materials occur in the main river valley and generally along current stream channels.

Slade (1986) does not present data on well yields, but they are anticipated to range from a few tens of gallons per minute (gpm) to several thousand gpm, based on reported values of transmissivity, which vary greatly throughout the alluvium. Typically, values are higher along the Santa Clara River because the unit is generally thicker in these areas. In the central region of the valley values are reported to range from 200,000 gallons per day per foot (gpd/ft) to 600,000 gpd/ft. Transmissivity values greater than 10,000 gpd/ft generally result in well yields that are adequate for municipal groundwater production (Driscoll, 1986).

Groundwater Levels. Groundwater levels fluctuate in the alluvium in response to water flowing into (recharge) and out from (discharge) the aquifer. Recharge to the Alluvial Aquifer occurs from precipitation, return flows from irrigation, groundwater flow into the alluvium from upgradient areas (i.e., throughflow), and seepage from streams. Discharge occurs through pumping, groundwater flow to downgradient areas, seepage to streams, and evapotranspiration.

Well hydrographs indicate that the alluvium tends to fill relatively rapidly during years with above-normal precipitation and responds equally rapidly to seasonal pumping. For example, groundwater levels in some areas of the aquifer have been observed to fluctuate as much 80 feet in a season (Slade, 1986), with 40-foot fluctuations common in some wells to the east of Castaic Junction. To illustrate this point, the hydrograph for Well V-N68 (Figure 3-15) shows the typical cyclical pattern of water level change in the Alluvial Aquifer. Although the hydrograph depicts conditions between 1942 and 1966, it is considered representative of the current water level fluctuations.

Groundwater levels in the western portions of the alluvium, near the Ventura/Los Angeles County line, do not appear to fluctuate as much as groundwater levels upgradient. This condition is likely the result of the following:

- The alluvium in this area is continuously recharged by groundwater flowing from upgradient alluvium and from discharges from the Los Angeles County Sanitation Districts' Valencia and Saugus Water Reclamation plants.

- Fewer wells are located in this area, relative to upgradient areas, because groundwater quality is generally poorer.

- The Saugus Aquifer may be discharging groundwater into the alluvium in this area.

Where alluvium overlies the Saugus Formation, a hydraulic connection between the two aquifers may be expected. Although the reaches of the Santa Clara River over which groundwater losses or gains occur vary depending on groundwater elevations, DWR (1993) identified the reach downstream of Castaic Junction as generally a gaining reach (Figure 3-16). This implies that, in general, a vertical component of hydraulic gradient resulting in an upward flow of groundwater along the river downstream of Castaic Junction. During years of below average recharge (e.g., 1993), however, water levels in the Alluvial Aquifer downstream of Castaic Junction may be below the bottom of the Santa Clara River (LACDPW, 1993). Under those conditions, the river recharges the Alluvial Aquifer.

Generally, groundwater levels in the alluvium decrease in elevation from east to west, indicating that groundwater flow is generally to the west along the Santa Clara River Valley. Groundwater flow in the tributaries is toward the Santa Clara River (i.e., to the north in southern tributaries and to the south in northern tributaries). Directions of groundwater flow differ locally, depending on the hydraulic gradients that are caused, in part, by nearby pumping wells. Slade's report contains plates showing groundwater levels during 1985 (Slade, 1986).

Groundwater Use and Storage Capacity. The principal users of groundwater from the Alluvial Aquifer include NCWD, SCWC, VWC, and NLF. Through 1985, these users had approximately 60 active wells in the Alluvial Aquifer near the Project area (Figure 3-14). Slade (1986) estimated that these users, and other miscellaneous pumpers (accounting for about 1,000 ac-ft per year), extracted an average of 31,000 ac-ft of groundwater per year between 1957 and 1985. Extractions ranged from a low of 19,000 ac-ft in 1983 to a high in 1960 of 41,000 ac-ft. Data on extractions prior to about 1980 are not very complete and are sometimes contradictory.

Between 1945 to 1985, water levels in the Alluvial Aquifer were highest in 1945 and lowest in 1965 (Slade, 1986). Consequently, these years correspond to the highest (201,000 ac-ft) and lowest (107,000 ac-ft) estimated volumes of groundwater in storage. The most recent data available to Slade were from 1985. Slade (1986) reasoned that, because groundwater levels had on average increased between 1957 and 1985, the long-term average recharge to the alluvium must be greater than the average amount of extraction that occurred over this same period, which was 31,000 ac-ft per year. Slade (1986) estimated that the perennial yield of the Alluvial Aquifer is approximately 31,600 to 32,600 ac-ft/year.

Groundwater Quality. Groundwater quality in the Project area has been characterized in hydrologic subdivisions by DWR (1993), which did not differentiate between the Alluvial

and Saugus Aquifers. Subdivisions near the Project area are referred to as Above Castaic Creek to Bouquet Canyon (Castaic-Bouquet), Castaic Creek to Blue Cut (Castaic-Blue Cut), and South Fork of Santa Clara River (Figure 3-16). Groundwater in these areas was characterized by a comprehensive review of water quality analyses collected between 1938 and 1988, and from an extensive sampling program conducted in 1989.

To provide context for evaluating the significance of the concentrations of the various water-quality parameters, numerical objectives have been set in RWQCB (1994) to protect local beneficial uses of groundwater (and surface water). These objectives have been established for selected inorganic parameters only, which are summarized in Table 3-2 according to local hydrologic subdivisions defined DWR (1993). In addition, California has adopted maximum contaminant levels (MCLs) for selected parameters in drinking water (Table 3-3).

Castaic-Bouquet and South Fork Santa Clara River Subdivisions. Spatial and temporal trends in groundwater quality are commonly assessed from general mineral content, as measured by the concentration of total dissolved solids (TDS). In 1989, TDS in the Alluvial Aquifer within the Castaic-Bouquet subdivision ranged from about 310 to 1,120 milligrams per liter (mg/L), with a median value of approximately 490 mg/L. TDS in the South Fork Santa Clara River subdivision was similar, ranging from 455 to 600 mg/L. These values reported by DWR are consistent with historical TDS concentrations in alluvial wells reported by Slade (1986) (i.e., between approximately 400 and 800 mg/L).

Table 3-2
Groundwater Quality Objectives in the Eastern Hydrologic Subarea

Parameter	Subdivision		
	Castaic-Blue Cut	Castaic Bouquet	South Fork of Santa Clara River
Boron	1.0	1.0	0.5
Chloride	150	100	100
Sulfate	350	250	200
Total dissolved solids	1,000	700	700

All values are in mg/L
Source: DWR (1993)

TDS, sulfate, chloride, nitrate, and boron data from 1940 to 1988 for the Castaic-Bouquet and South Fork Santa Clara River subdivisions, indicate that water quality has varied over time, with no significant trends being apparent (DWR, 1993). The exception appears to be a decrease in the average chloride concentration by about 10 mg/L (median of approximately 55 to 45 mg/L for the Castaic-Bouquet subdivision) between 1975 and 1989. This result is possibly caused by the occurrence of above-average rainfall between 1978 and 1983, and a general decrease in agricultural land. Specifically, this trend is present in wells NLF-S3 and V-N68 (Figure 3-17).

Table 3-3 California Drinking Water Maximum Contaminant Levels (MCLs)	
Parameter	**MCL**
Chloride	250 (S)
Fluoride	1.8* (P)
Iron	0.3 (S)
Manganese	0.05 (S)
Nitrate (NO_3)	45 (P)
Sulfate	250 (S)
Conductance	900 (S)
pH	6.5-8.5 (S)
Total Dissolved Solids	1,000 (S)
Gross Alpha	15 pCi/l (P)
Gross Beta	50 pCi/l (P)

Notes:
1. All values are in milligrams per liter (mg/L), except where otherwise indicated
2. (P) Primary drinking water standard (enforced)
3. (S) Secondary drinking water standard (voluntary)
4. * For temperature of 20°C

Castaic-Blue Cut Subdivision. TDS concentrations in the Alluvial Aquifer near the Project are highest in the Castaic-Blue Cut subdivision. In 1989, TDS ranged from about 215 to 6,980 mg/L, with a median value of about 460 mg/L (DWR, 1993). Wells sampled along the Santa Clara River near the Project area, however, had TDS values that ranged from approximately 730 to 1,200 mg/L, which are similar to the values (900 to 1,000 mg/L) reported by Slade (1986). TDS concentrations greater than 1,000 mg/L exceed the secondary drinking water standard. Secondary standards are not enforced because they do not necessarily pose a specific health risk. Poor taste or unpleasant odor, however, may result when these standards are exceeded.

Chloride and sulfate for the same alluvial wells ranged from between 46 to 160 mg/L and 255 to 411 mg/L, respectively. TDS, sulfate, chloride, nitrate and boron data for the Castaic-Blue Cut subdivision from 1940 to 1988 indicate that water quality has varied over time, with no statistically significant trends being apparent (DWR, 1993). The chloride data from wells NLF-B6 and NLF-C6 are typical of the conditions observed (Figure 3-18).

Groundwater Contamination. Nitrate concentrations in groundwater in the vicinity of the Project area are variable and exceed the MCL of 45 mg/L in some areas. Volatile organic compounds (VOCs) were detected in 6 of 22 wells in the Alluvial Aquifer sampled by the California Department of Health Services (DHS) in 1985. The data from that sampling indicate that MCLs for the VOCs were not exceeded. Although the quality of groundwater in the Alluvial Aquifer is generally good, it is vulnerable to contamination. Because the depth to groundwater in the aquifer is shallow (typically less than a few tens of feet in the Project area), and the shallow sediments are very permeable, contaminants spilled on the surface could easily migrate to the water table.

Saugus Aquifer

The Saugus Aquifer may be used as a storage medium of Castaic Creek flows for the Project. Relative to the Alluvial Aquifer, there are fewer data available to characterize the Saugus Aquifer because it has not been developed as much. CLWA and the Committee retained Richard C. Slade & Associates to conduct a hydrogeologic assessment of the Saugus Formation. The result was a compilation of data on the geology of the formation, wells, groundwater uses, groundwater levels, hydrogeologic properties and groundwater quality (Slade, 1988). Aquifer tests were also conducted by Slade on five wells to refine estimates of hydrogeologic properties. Because there were only 22 water wells in the Saugus Aquifer, much of the data in Slade (1988) came from oil and gas wells and from other geologic investigations conducted for purposes other than water supply development.

Distribution. The distribution of the surface outcrop of the Saugus Formation or aquifer is shown in Figure 3-19. The Formation consists of consolidated and folded sediments of predominantly continental origin covering about 53 square miles of the Santa Clarita Valley. In the local area, the Saugus Formation attains a maximum thickness of approximately 8,500 feet in the region (Slade, 1988). Previous geologic studies in the area, including over 200 electric logs (E-logs) of local oil wells, were used by Slade (1988) to prepare maps of the vertical distribution and thickness of the formation to estimate the water supply potential of the Saugus Formation.

The Saugus Formation is transected by two major geologic faults: the San Gabriel and Holser Faults (Figure 3-19). Both faults have a significant impact on the thickness and continuity of the Formation. In addition, both of these faults are not single traces, but zones of faults that complicate groundwater flow and the interpretation of the distribution of the Saugus Formation. Numerous other faults also occur in the area; however, they are generally believed to have less effect on the hydrogeology of the Saugus Formation. Several anticlinal and synclinal folds also transect the area, with orientations roughly subparallel to the Holser and San Gabriel Faults.

Approximately 1 mile south of Castaic Junction, oil well logs reveal the general nature of the Saugus Formation in the area. According to Slade (1994), it consists of numerous 10- to 200-foot-thick, relatively permeable, conglomerate and sandstone layers interbedded with presumably less-permeable 10- to 100-foot-thick siltstone and shale layers to a depth of about 3,900 feet below ground surface (bgs). Below this depth, the conglomerate and sandstone layers decrease in thickness to between 10 and 80 feet. Slade (1994) developed two cross-sections illustrating the vertical distribution of the Saugus Formation in the Project area (Figures 3-20 and 3-21). These cross sections also illustrate the relationship between the Saugus Formation and alluvium, as well as the underlying Pico Formation. Locally, the Pico Formation is comprised of less permeable material and is of poorer water quality, relative to the Saugus Formation. The Pico is therefore not considered to be a potential source of water, or medium for groundwater storage, with respect to the Project.

Hydrogeologic Properties. The Saugus Formation consists predominantly of continental deposits that include stream channel, floodplain, lacustrine (lake), and alluvial fan deposits. Slade (1988) used E-logs to identify the coarse-grained sediments of the Saugus Formation and mapped their combined thickness (Figure 3-22). The resulting map indicates that the coarsest, thickest section of the Saugus is located near the center of the Santa Clarita Valley, which generally coincides with the present-day Santa Clara River channel.

Slade (1988) conducted 24-hour aquifer tests on five Saugus wells using pumping rates that varied from approximately 260 to 2,560 gpm. From these tests the estimated values of aquifer transmissivity, which ranged between approximately 3,000 to 182,000 gpd/ft, and storativity, which ranged between 7.6×10^{-4} to 9.1×10^{-4} and are typical of a confined aquifer.

At least three additional wells have been drilled since Slade (1988) prepared his report. These newly installed Saugus wells are reported to produce between 2,500 and 3,500 gpm (Kennedy Jenks Chilton, 1990). One of these new wells belongs to VWC and is located at McBean Parkway and Valencia Boulevard (V-201, Figure 3-23). The other two wells belong to SCWC and are located near the intersection of San Fernando Road and Magic Mountain Parkway (SC-1 and SC-2, Figure 3-23).

Another parameter commonly used to evaluate an aquifer's ability to transmit water is the specific capacity of a well. Recent (1994) specific capacities for selected wells in the Saugus aquifer range from approximately 6 to 55 gpm/ft of drawdown. These values are consistent with the conditions inferred from other parameters (Table 3-4), which suggest that well yields and transmissivities are higher near the Santa Clara River and the center of the Santa Clarita Valley.

Slade (1994) interpreted the spatial distribution of hydrogeologic properties of the Saugus Aquifer in the vicinity of the Project and established three discrete areas (A, B, and C) each defined by a particular set of hydraulic properties (Table 3-5). In general, transmissivities and well yields are expected to decrease toward the southwest (Figure 3-23), which is toward the base of the Aquifer.

Groundwater Levels. Few wells exist on which to base estimates of hydraulic gradients and groundwater-level fluctuations in the Saugus Aquifer in the Santa Clarita Valley. Most of these wells are along the South Fork of the Santa Clara River (Figure 3-23). Slade (1988) indicates that groundwater in the Saugus Aquifer appears to flow northwest toward the Santa Clara River, based on wells located south of the San Gabriel Fault (Figures 3-23 and 3-24).

Table 3-4
Saugus Aquifer Well and Test Data

Well	Screen Interval(s) (feet bgs), Length (ft)	Pumping Rate or Yield (gpm)	Specific Capacity (gpm/ft) and Year	Transmissivity (gpd/ft)
NC-9	280-591/311	256	2 (1987)	3,000-4,100
NC-7	520-974 (m)/454	341	3 (1987)	21,000-33,000
NC-10	780-1,544/764	364	8 (1987)	35,000-62,000
V-159	662-1,900/1,238	990	6 (1994)	---
NC-11	200-1,075/875	1,465	39 (1977)	---
V-157	586-2,008/1,422	1,024	52 (1994)	89,000
V-201	1,020-1,670/650	2,217	44 (1994)	87,000-107,000
V-160	950-2,000/1,050	1,873	55 (1994)	163,000-182,000
SC-1	490-1,600 (m)/1,110	2,500-3,500	---	---
SC-2	510-1,590 (m)/1,080	2,500-3,500	---	---

Notes:
1. (m) = multiple screened intervals
2. (---) Data not available
3. Screen length is less than value shown due to blank casing sections.
4. Sources: Slade (1988 and 1994), Kennedy Jenks Chilton (1990), Valencia Water Co.

Table 3-5
Summary of Anticipated Characteristics of Saugus Aquifer

Well Site Areas*	Representative Saugus Aquifer Wells	Yield (gpm)	Specific Capacity (gpm/ft)	Transmissivity (gpd/ft)
A	V-201 V-160 V-157	1,500-2,500	30-50	60,000-90,000
B	NLF-156 V-158 (destroyed)	800-1,500	15-30	30,000-60,000
C	NC-7 NC-8	300-800	5-15	10,000-30,000

Areas defined in Slade (1994)

Historically, groundwater levels in some of Saugus wells have fluctuated approximately 60 feet in 1 year in some wells (Figure 3-24). These fluctuations are typically related largely to groundwater pumping. In general, groundwater levels appear to have increased on average between 1960 and 1986, based on the data from five wells located south of the San Gabriel Fault. Between 1987 and 1992, however, there was a decline of approximately 45 to 80 feet in the static (i.e., non-pumping) water levels in some VWC wells (Slade, 1994). These declines are most likely in response to the combined increase in pumping from several Saugus wells and the drought conditions which prevailed during that time (Figure 3-24).

The lowest water levels in VWC wells and NCWD wells NC-7, NC-11, and NC-12 were recorded in late 1991 and early 1992, which coincides with the period of greatest pumping from the Saugus Aquifer (unpublished data). During this time, static groundwater elevations were about 1,000 feet above mean sea level (amsl) for Wells V-157, V-160, and V-201, and about 1,080 feet amsl for Well V-159 (Figures 3-23 and 3-24). Water levels in Wells NC-11 and NC-12 were about 1,000 and 960 feet amsl, respectively, and the water level in Well NC-7 was about 1,035 feet amsl (Figures 3-23 and 3-24). Since then, water levels in these wells have risen about 60 to 75 feet, most likely as a result of relatively higher precipitation and a corresponding decrease in demand.

Groundwater Uses and Storage Capacity. The principal current users of groundwater from the Saugus Aquifer are NLF and the following retail water agencies: NCWD, VWC, and SCWC. Between them, there are currently 15 active wells in the Saugus Aquifer. All active wells are located south of the two major local faults (San Gabriel and Holser). Slade (1988) estimated that these users, and other miscellaneous pumpers (accounting for about 100 ac-ft per year), pumped an average of 4,660 ac-ft of groundwater per year between 1954 and 1986, or a total of 153,820 ac-ft. Extractions ranged from a high in 1972 of 8,308 ac-ft to a low in 1954 of 550 ac-ft (Slade, 1988). Approximately 38 percent of these extractions were made by NCWD. VWC and NLF combined accounted for roughly 58 percent of the total extractions and SCWC pumped the remaining 4 percent (Slade, 1988).

Data on extractions prior to 1980 are less complete and are sometimes contradictory. From 1987 to 1994, however, extractions from the Saugus Aquifer averaged approximately 9,540 ac-ft per year. In the late 1980s and early 1990s, extractions reached an all-time high for the Saugus Aquifer (Figure 3-25); almost 15,000 ac-ft in 1991. Through 1994, the total amount extracted most likely exceeded 230,000 ac-ft.

Slade (1988) estimated the amount of groundwater stored in the coarser-grained units of the Saugus Aquifer to be approximately 1.4 million ac-ft. This volume includes only water between depths of 500 and 2,500 feet bgs, and is based on specific yields of between 5 and 8 percent. Specific yield, a dimensionless parameter determined from aquifer tests, is the volume of water released from storage over a unit area resulting from a unit decline in water level. Robson (1972) estimated the total storage capacity in the Saugus Aquifer to a depth of 2,000 feet bgs to be about 6 million ac-ft. Unlike Slade, however, this estimate was not restricted to relatively permeable layers and it was based on a higher specific yield (10 percent).

The Saugus Aquifer receives recharge from precipitation and in some locations direct infiltration through overlying alluvium. Slade (1988) estimated that recharge to the Saugus Aquifer ranged from between approximately 10,800 and 13,100 ac-ft in dry years (e.g.,1965) to between approximately 19,900 and 22,200 ac-ft in wet years (e.g., 1945). Slade (1994) estimated that the total potential recharge to the Saugus Aquifer within the general area of the Project ranges between approximately 2,150 and 5,100 ac-ft per year on a long-term average basis.

Groundwater Quality. Graphs of TDS, non-pumping water levels and groundwater production have been prepared by Slade (1988) and are presented in Figure 3-24. Recent data have been added to some of these plots. Water-quality analyses relative to primary and secondary drinking water standards are available for a few Saugus wells near the Project area (Table 3-6).

Historical values of TDS range from approximately 410 to 1,440 mg/L, according to data provided by Slade (1988) and well owners for both currently active and now abandoned or destroyed wells. The maximum recommended secondary drinking water standard for TDS is 1,000 mg/L. There are insufficient data to evaluate spatial trends in TDS in the Saugus Aquifer. Recent (1991 to 1994) TDS values appear to be higher than in the past (prior to 1991) (Table 3-6 and Figure 3-24). In general, time-series hydrographs do not reveal any significant trends in TDS that might be related to water level fluctuations or groundwater extractions at individual wells (Figure 3-24). The results of chloride analyses for Wells NC-7, NC-11, and V-157 also do not reveal any significant trends over time (Figure 3-26).

VOCs were detected in 11 of 13 samples collected from Well V-157 between January 1990 and October 1993 (Slade, 1994). Specifically, trichloroethene (TCE) varied from 2.7 to 3.7 μg/l, compared to its MCL of 5 μg/l. With respect to inorganic constituents in the Saugus Aquifer, Well V-158 (which was destroyed in 1992) showed a nitrate concentration of 57 mg/L in July 1981 (the MCL is 45 mg/L). Slade (1988) attributed this value to a poor well seal and contamination from the shallow groundwater. In general, concentrations of nitrate, metals, and VOCs typically do not exceed-water quality standards where sampled in the Saugus Aquifer (Slade, 1994).

The existing land use, however, includes crude oil production, and petroleum-based products that may have locally spilled or leaked. In addition, the Castaic Junction oil field comprises a large portion of the Saugus aquifer within the Project area. Oil deposits in this field typically occur at depths greater than groundwater production zones (i.e., >2,500 feet bgs). Oil production zones in the Castaic Junction field are approximately 8,400 feet bgs on average (Slade, 1994). Although the Saugus Aquifer is not known to be

Table 3-6
Groundwater Quality of Saugus Aquifer
Newhall Ranch Project

Parameters	Symbol	Units	MCL (a)	Parameter Value by Well													
				V-201	V-160		V-159	V-157		NC-11		NC-12	NC-13		NC-7	
				10/19/94	5/25/89	10/28/94	4/21/92	5/25/89	10/14/91	5/26/89	4/28/92	4/28/92	5/26/89	4/28/92	5/26/89	4/28/92
Anions and General Water Quality																	
Bicarbonate	HCO3	mg/L	----	278	255	254	174	245	230	245	274	232	223	274	250	268
Carbonate	CO3	mg/L	----	<1.0	0.0	<1.0	1.8	0.0	0.8	0.0	0.7	0.6	0.0	0.7	0.0	1.4
Chloride	Cl	mg/L	250 (s)	24	24	20	18	26	24	36	38	34	36	50	60	69
Sulfate	SO4	mg/L	250 (s)	231	255	332	560	145	170	173	255	135	122	160	140	150
Fluoride	F	mg/L	4	0.9	0.5	0.9	0.2	0.3	0.3	0.4	0.4	0.3	0.4	0.4	0.3	0.2
Total hardness	TH	mg/L	----	340	393	459	192	292	284	352	415	240	254	373	258	230
Total dissolved solids	TDS	mg/L	1000 (s)	610	672	715	990	497	510	585	650	450	455	550	800	560
pH	pH	pH	6.5-8.5 (s)	7.5	8.0	7.5	8.2	8.1	7.7	8.1	7.6	7.6	7.7	7.6	7.4	7.9
Conductance	EC	umhos	----	1,020	900	1,070	1,440	700	785	800	980	700	700	865	800	865
Nutrients																	
Nitrate (as NO3)	NO3	mg/L	45	14.3	8	10	<1.3	9	11	31	31	11	11	35	5	4
Cations																	
Boron	B	mg/L	----	---	0.1	---	---	0.2	---	0.1	---	---	0.1	---	<0.1	---
Calcium	Ca	mg/L	----	112	110	127	57	87	80	108	115	68	76	105	76	69
Iron	Fe	mg/L	----	<0.1	<0.1	<0.1	0.24	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.35	<0.1	<0.1
Magnesium	Mg	mg/L	----	32	29	37	12	18	20	25	31	17	18	27	15	14
Manganese	Mn	mg/L	50 (s)	<0.03	<0.03	<0.03	0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.03	0.14	<0.03	<0.02
Potassium	K	mg/L	----	0.9	2.0	1.9	3.3	2.0	2.4	2.0	2.2	2.1	2.0	2.0	2.0	2.6
Sodium	Na	mg/L	----	59	57	62	255	51	57	37	50	59	51	41	83	100
Radioactivity																	
Gross alpha		pCi/L	15	3.3	---	3.4	2.4	---	1.3	---	0.2	0.3	---	0.8	---	5.2
Gross beta		pCi/L	50	3.4	---	3.5	5.6	---	1.4	---	3.7	2.3	---	3.8	---	10.0

Notes: (a) MCL value is the lower of California and Federal MCLs.
(s) = Secondary standard.
Data are from DWR, 1993; VWC and NCWD.
V-201 and V-160 radioactivity analyses on 7/26/90; V-157 on 1/23/90.

contaminated directly by the oil field, there remains the possibility that current or abandoned oil wells may have locally contributed brine or hydrocarbon contaminants inadvertently through faulty casings.

Proposed Project Uses of the Saugus Aquifer

Portions of the flood flow in Castaic Creek may be available for use by the Project (see above). One approach to managing this water for use by the Project is a conjunctive use program in which groundwater resources are augmented through enhanced localized recharge of the available Castaic Creek flows. A description of this potential source and the hydrologic analysis conducted to determine the potential amount of water available are presented above under *Castaic Creek Flood Flows*.

In general, the proposed conjunctive use program would involve directing excess flood flows through the CLWA water treatment facilities for groundwater recharge within, or adjacent to, the boundaries of the Project area. Aquifer storage and recovery (ASR) technology is proposed to manage the storage and recovery of this water. ASR involves using the same well both to inject and pump (recover) water from specific aquifer units. For this Project, the treated water from CLWA would be injected into the upper portions of the Saugus Aquifer during the winter months (i.e., typically the first 3 months of the year), when water from Castaic Creek and treatment capacity are available. The water would then be stored temporarily in the Saugus Aquifer until it is pumped as needed during the remainder of the year.

While ASR is only one available alternative for the management of available Castaic Creek flood flows; it is the only option analyzed in this report. Therefore, all references to the management of Castaic Creek flood flows in this analysis will refer to ASR. Other uses of Castaic Creek flows could include water transfers as discussed above in Section 3.4, and storage in aboveground facilities.

ASR programs have been implemented at dozens of sites across the US including at least ten sites in California. Specifically in Southern California, ASR is widely used as a groundwater management tool and agencies that have initiated related projects include the City of Camarillo, City of Pasadena, Camrosa Water District, Calleguas Municipal Water District, and the Metropolitan Water District of Southern California.

The application of ASR to manage the potential supplies from Castaic Creek is based on the current understanding of the hydrogeology of the Saugus Aquifer and the Project demand for new water. Some of the more important considerations are summarized in Table 3-7.

Table 3-7 Summary of Assumed Values of Castaic Creek Flood Flows and Project Water Demand	
Parameter	**Value**
Castaic Creek average annual runoff (> 100 cfs)	12,300 ac-ft/year
Average flow potentially available to NRC (44 percent of 12,300 ac-ft)	5,400 ac-ft/year
Available CLWA treatment capacity (daily)	30 mgd (93 ac-ft/day)
Maximum available CLWA treatment capacity (over first 3 months of the year)	8,300 ac-ft/3 months
Average available to NRC (after considering treatment capacity)	2,900 ac-ft/year
Average daily Project demand (new water)	12 mgd (36 ac-ft/day)
Peak daily Project demand (1.8 x average daily Project demand)	21 mgd (65 ac-ft/day)

System Description

The proposed conceptual design of the ASR wellfield for the Project will accommodate the maximum CLWA treatment capacity on a continuous basis for the first 3 months of the year (i.e., approximately 8,300 ac-ft). This implies that up to 30 mgd (93 ac-ft/day) will be injected through ASR wells.

On average, 2,900 ac-ft/year may be available from Castaic Creek for use by the Project. Typically, however, potentially available flows from this source have been either higher or lower than this amount. Consequently, other sources of water may be acquired for subsurface storage if the available Castaic Creek flows are less than 8,300 ac-ft/year. For the purpose of this impact analysis, it is assumed that available flood flows are 8,300 ac-ft/year.

Number of ASR Wells. A total of 19 ASR wells is proposed. Although the locations of the wells are discussed below, the total number of wells proposed is tied directly to the anticipated yield from each well, and the anticipated yield is, in turn, a function of its location. As discussed above in *Existing Conditions*, Slade (1994) identified and ranked local areas with respect to their potential well yields. The result is three areas, identified as Areas A, B and C, in which well yields are progressively less.

The key design parameter for the ASR wellfield is the anticipated injection capacity for each ASR well (i.e., the combined characteristics of the well and the aquifer that enables a particular rate of water to be injected) because the maximum rate in which treated CLWA water will be injected (30 mgd) will be greater than the anticipated peak daily demand for new water (21 mgd).

The number of ASR wells was determined based on an assumed total injection rate of 30 mgd and the hydraulic properties associated with the three most productive areas of the Saugus Aquifer, as defined by Slade (1994). Wells with potential yields consistent with each area were progressively added until the total yield was attained. The following potential injection rates were developed as a result: 3.0 mgd in Area A (four wells); 1.5 mgd in Area B (ten wells); and 0.75 mgd in Area C (4 wells). This total includes an additional ASR well that will enable the capacity of the system to be maintained should any well be temporarily removed from service.

ASR Well Locations. Twelve of the 19 ASR wells are proposed to be located generally in the northeastern portion of the Project, and the remaining seven wells are proposed to be located immediately adjacent to the Project's eastern boundary (Figure 3-27). The actual well locations will be determined after development plans have been finalized and adequate physical access to each well site has been verified. Five principal factors are considered in siting the general locations for the wells:

- Hydraulic Characteristics of the Aquifer—Emphasis was placed on areas where the Saugus Aquifer was reported to be the most transmissive to maximize the potential well yields.

- Groundwater Quality—Areas previously identified (Slade, 1988) as tending to have higher values of total dissolved solids (TDS) (i.e., >800 mg/L) were generally avoided as potential well locations.

- Potential Interference from Other Wells—A minimum distance of 1,000 feet between proposed wells was established to reduce the potential affects of overlapping pumping influence. Currently, there is only one known existing well (NLF-156) located within 1/4 mile of any of the proposed general well locations, and it is owned by NLF.

- Water Conveyance System—Locations were selected adjacent to existing or proposed roads to facilitate connection with the water distribution system for the Project, which will follow public right-of-ways.

- Sensitive or Inaccessible Areas—Steep hillsides, flood-prone areas, and known potentially environmentally sensitive areas were avoided.

ASR Well Specifications. The general specifications of the proposed ASR wells are a function of their location and are summarized accordingly in Table 3-8.

Table 3-8 General Characteristics of Proposed ASR Wells			
Parameter	**Area A[a]**	**Area B**	**Area C**
Number of wells[b]	5	10	4
Depth (ft)	1,500-2,000	1,300-1,800	1,000-1,300
Screen interval[c] (ft bgs)	700-2,000	700-1,800	500-1,300
Pumping specific capacity (gpm/ft)	30-50	15-30	5-15
Maximum potential pumping yield (gpm)	1,500-2,500	800-1,500	300-800

[a]A, B, and C designations are as defined by Slade (1994).
[b]Number of wells includes an additional well to ensure available injection capacity.
[c]Screen interval represents potential range and is not necessarily continuous; actual intervals will be dependent on final design considerations.

All new wells will be drilled and constructed according to the requirements published in the DWR Bulletin No 74-81.

The wells will be enclosed in individual pumphouses to protect the abovegrade features of the well, pump, valves and piping, and to minimize the potential noise of operation. In addition, because it is proposed that the groundwater be treated locally (at each source), chlorination equipment will be housed in these facilities to prevent public access.

Operation

The proposed ASR wellfield is designed to have an injection capacity of 30 mgd. If Castaic Creek water is available continuously over the first 3 months of a given year, then a total of approximately 8,300 ac-ft/year could be stored in the ground. During the injection phase, supplemental supplies would also be used to provide the demand for new water (i.e., 10.6 mgd [32.5 ac-ft/day] between January 1 and March 31).

Injection will be performed in 18 wells at rates that will vary by well as a function of the hydraulic properties of the aquifer. For the purpose of this discussion, the injection rates are assumed to range from 3.0 mgd to 0.75 mgd per well.

During the remaining 9 months of the year, groundwater would be extracted from up to 18 wells to meet the demand for new water (i.e., approximately 10,272 ac-ft between April 1 and December 31, on an average annual basis). This pumped water would consist of the amount that is available from estimates of the current net average annual recharge (4,500 ac-ft/year) and that portion of the water previously injected that is required to make up the difference (approximately 5,772 ac-ft). The remainder (approximately 2,528 ac-ft) would remain in storage in an average year or use as needed during dryer periods.

The pumping of 10,272 ac-ft over 9 months from all eighteen wells results in an average continuous pumping rate of approximately 570 gpm per well.

Potential Impacts Associated with Implementing ASR

The County of Los Angeles will require an assessment of potential environmental impacts of the proposed implementation of ASR for the Project. Associated relevant potential impacts include changes in:

- Groundwater levels in the Alluvial and Saugus Aquifers
- Groundwater quality in the Alluvial and Saugus Aquifers
- Groundwater recharge to the Alluvial and Saugus Aquifers
- Land surface elevation (e.g., subsidence)
- Flows in the Santa Clara River
- Water quality of the Santa Clara River

Significance Threshold Criteria

Establishing criteria for measuring the significance of potential environmental impacts is the first step in the impact-evaluation process. Accordingly, threshold criteria, which determine whether or not a project-induced impact or effect is significant, must be developed consistent with regulatory guidelines, to the extent that guidelines exist.

Regulatory Guidelines. The Los Angeles County Department of Regional Planning will be the lead agency in the review of potential environmental impacts associated with the Project. Currently, there is no specific county guidance on how to judge the significance of potential project-induced impacts associated with the use of the Saugus Aquifer for ASR. As a result, evaluation criteria will be based on:

- California Environmental Quality Act (CEQA) guidelines
- Regional Water Quality Control Board (RWQCB) water quality objectives
- California Department of Health Services (DHS) standards for drinking water
- Professional judgment
- The current level of understanding of the local groundwater conditions

Appendix G of the CEQA guidelines lists several qualitative and generalized "significant effects," of which four potentially pertain to the evaluation in this report:

- Substantial degradation or depletion of groundwater resources
- Substantial interference with groundwater recharge

- Encouragement of activities that use large amounts of water
- Wasteful use of water

Project-specific criteria must be developed, however, to define what is meant by these guidelines (e.g., what "substantial" or "interference" means). These criteria will be based on existing knowledge of local groundwater conditions and on some level of professional judgement.

RWQCB requires assessment of Project impacts on groundwater quality where basin objectives have been defined. The Project is located within the Upper Santa Clara River Hydrologic Area, which has specified water quality objectives for surface waters and groundwater. In this discussion, it is assumed that "groundwater" refers to both the Alluvial and Saugus Aquifers.

The RWQCB also has authority under a blanket water quality control policy that applies across the state. This "non-degradation policy" is aimed at maintaining and protecting high-quality water, unless it can be demonstrated that the change in quality will result in a overall benefit without excessively compromising existing beneficial uses. Therefore, Project impacts of groundwater use must consider the potential for water-quality degradation in a general sense.

DHS's Office of Drinking Water has adopted MCLs in drinking water. Because the Alluvial Aquifer and the upper portion of the Saugus Aquifer are sources of potable water, the MCLs provide an additional set of criteria on which to assess potential impacts on groundwater quality.

Impact Criteria. As discussed in the following paragraphs, the specific criteria that define a project-induced environmental impact and whether or not the impact is significant are water levels, groundwater quality, groundwater recharge, land surface elevation, and surface water flow and quality.

Water Levels. A change in water level in existing Saugus wells or overall in the Alluvial Aquifer as a result of implementing ASR in the Saugus Aquifer will be considered an impact. A significant impact will be realized upon depletion of the current available supply from either of these aquifers, with depletion being defined as a serious decline in groundwater levels, as discussed below.

In this analysis, depletion of the Saugus Aquifer is evaluated for each existing well, and is defined as a project-induced groundwater-level decline of more than 10 percent of the 1991 average annual dynamic water column in a given well. The dynamic water column is defined as the height of water in the well above the bottom of the well screen (i.e., depth of the bottom of the screened interval minus the depth to water below ground surface) under pumping conditions. To illustrate this concept, a schematic diagram of water levels in a hypothetical well is shown in Figure 3-28. The definition of depletion presented here was formulated specifically for the Project. The 10 percent criterion is considered to be

low and therefore relatively stringent, and is based on current information about the aquifer system, including current and historical use.

Impacts on the Saugus Aquifer will be considered to be beneficial if the Project stabilizes or increases water levels in existing Saugus wells, which continue to pump, for at least 1 month per year.

Depletion of the Alluvial Aquifer is defined as a continued rate of overall water-level decline that results in the Aquifer being lost as a local water supply, caused by Project use of the Saugus Aquifer. Currently, the Alluvial Aquifer is used heavily, and thus this definition of depletion must take into account potential fluctuations in groundwater levels that occur naturally, or at least under no-project conditions. The Saugus definition of depletion is impractical for the Alluvial Aquifer because the Alluvial Aquifer currently has the potential for consistent annual swings in water level which are relatively large (i.e., greater than 30 feet).

Groundwater Quality. Any project-induced change in the quality of groundwater will be considered an environmental impact. The same criterion will apply to both the Alluvial and the Saugus Aquifers. Numerical objectives have been set by the RWQCB (1994) for various water quality parameters to protect local beneficial uses of groundwater (and surface water). Exceedance of these limits as a result of the Project will be considered to be a significant impact. These limits have been established for selected inorganic parameters only, which are summarized in Table 3-9 according to hydrologic subdivisions within the Eastern Hydrologic Subarea of the Upper Santa Clara River Hydrologic Area (DWR, 1993).

Table 3-9
Surface Water Quality Objectives in the Eastern Hydrologic Subarea

Parameter	Area	
	Upstream	Downstream
Boron	1.5	1.5
Chloride	100	100
Nitrogen[a]	10	5
Sulfate	350	400
SAR[b]	5.0	10.0
TDS[c]	1,000	1,000

Notes:
All values are in mg/L, except for SAR.
[a]Nitrogen = nitrate and nitrite as nitrogen.
[b]SAR = sodium adsorption ratio $(Na/(0.5(Ca+Mg))^{1/2})$
[c]TDS = Total dissolved solids.

In the absence of specific water-quality objectives, the RWQCB will likely enforce the State's non-degradation policy. Consequently, this analysis assumes that policy is an appropriate indicator of a significant impact for those water quality parameters not included in Table 3-2 (i.e., project-induced increases in concentration above existing conditions will be considered a significant environmental impact). Current groundwater quality will therefore be the standard for impact evaluation. Typical concentrations of several water-quality parameters in the Saugus are listed in Table 3-10.

Table 3-10
Typical Saugus Aquifer Water Quality

Parameter	Concentration
Bicarbonate	246
Boron	0.1
Calcium	92
Carbonate	0.5
Chloride	35
Fluoride	0.4
Iron	0.3
Magnesium	23
Manganese	0.08
Nitrate (NO_3)	15
Potassium	2.1
Sodium	74
Sulfate	35
Conductance	894 umhos
pH	7.8 pH units
Total Dissolved Solids	619
Total Hardness	314
Gross Alpha	2.1 pCi/l
Gross Beta	4.2 pCi/l

Notes:
All values are in mg/L, except where indicated
Concentrations are averages of detected values for 1989 to 1994, (from Table 3-3).

Any improvement in the quality of groundwater (i.e., a decrease below background level in the concentration of dissolved constituents) as a result of Project activities or uses will be considered to be beneficial.

Groundwater Recharge. Any project-induced change in recharge to either the Alluvial or Saugus Aquifers will be considered to be an environmental impact. As identified in CEQA, a substantial project-induced interference with groundwater recharge will be considered a significant impact.

In this analysis, the level of accuracy associated with the values used for aquifer recharge is estimated to be not less than approximately 1,000 ac-ft/year. As a result, a decrease of 1,000 ac-ft/year was selected to be the minimum value above which a "substantial" change in the recharge to either the Saugus or the Alluvial Aquifers will be considered to occur.

This represents approximately 10 percent of the minimum annual recharge to the Saugus Aquifer (10,800 ac-ft/year) and approximately 16 percent of the minimum annual recharge to the Alluvial Aquifer (6,100 ac-ft/year) based on data reported in Slade (1986).

Land Surface Elevation. Any change in the elevation of the ground surface (subsidence or mounding) as a result of Project uses of the Saugus Aquifer will be considered a significant impact.

Surface Water. Potential Project impacts on surface water resulting from use of the Saugus Aquifer involve both changes in the flow rate and water quality of the Santa Clara River. An evaluation of the consequences of site activities and storm water drainage designs that influence the surface-water runoff characteristics from the development is not within the scope of this report. Concerning flow in the Santa Clara River, significant impacts are those that decrease flow as a result of the implementation of ASR by the Project.

Numerical objectives have been set by DWR (1993) for various water quality parameters to protect local beneficial uses of surface water. Exceedance of these limits as a result of implementing ASR will be considered a significant impact. These limits have been established for selected inorganic parameters only, which are summarized in Table 3-9.

Impacts Assessment

The potential impacts from managing Castaic Creek flood flows through ASR are evaluated in this section according to the aforementioned criteria, which define significant changes in water levels, water quality, aquifer recharge, land surface, and surface water characteristics.

Groundwater-Level Impact—Assessment Methodology for the Saugus Aquifer. Potential impacts on water levels in the Saugus Aquifer were analyzed using a mathematical representation of the Aquifer response to the injection through the proposed wells and the pumping of both existing and proposed wells.

The analysis used mathematical equations that describe the time-dependent flow of groundwater to several different wells simultaneously. The equations, developed by Theis (1935), were used in this analysis to solve for changes in water level at both existing and proposed well locations after various specified periods of injection and pumping. Inherent in the use of these equations are simplifying assumptions concerning the Aquifer. The

more important of these assumptions and their associated implications include the following:

- The physical and hydraulic properties of the Aquifer (e.g., thickness, transmissivity, and storativity) are assumed to be constant in time and space. Therefore, the change in water level at a given distance from the point of pumping will be the same in all directions (in the absence of a prevailing groundwater flow direction).

- The Aquifer is of infinite lateral extent. As a result, there is an infinite quantity of water available to a pumping well.

- The equations do not account for natural aquifer recharge. Although the resulting water-level approximations technically represent conditions of zero natural recharge, these conditions are offset by the assumption of infinite aquifer extent.

The mathematical equations used in this analysis can account for groundwater injection; however, they do not allow the injection/pumping cycle to be repeated. As a result, this analysis is only applied to assess the conditions that may occur during a typical annual injection/pumping cycle.

The analysis was applied to three scenarios involving either injection or pumping to quantify the change in water level in representative existing Saugus wells. Each scenario is based on the operational conditions assumed in *Proposed Project Uses of the Saugus Aquifer* and is identified in Table 3-11.

- Scenario I represents only the injection (storage) phase of ASR. Approximately 8,300 ac-ft per year are injected at a combined injection rate of 30 mgd continually for 90 days, the first 3 months of the year when this water is most likely to be available.

- Scenario II is a high pumping regime which follows the injection period in Scenario I. Stored water is pumped from 18 wells at the anticipated maximum daily rate for a period of 60 days. The pumping rates are a function of the potential yields at each well location (Slade, 1994; see *Existing Conditions*). This scenario represents the maximum anticipated short-term stress on the Aquifer with respect to pumping.

- Scenario III represents groundwater pumping from all 18 ASR wells to meet average demand during the 9-month period following injection (Scenario I). The pumping rates are a function of the potential yields at each well location.

Table 3-11
ASR Scenarios Analyzed

Scenario	Number of Wells	Pumping/Injection Rates (per well)	Pumping/ Injection Duration	Quantity of Groundwater Injected/ Pumped	Description
I	18	A Wells: 2,083 gpm B Wells: 1,042 gpm C Wells: 521 gpm	3 months of injection	8,300 ac-ft	Injection of Castaic Creek flood flows at 30 mgd for 90 days during January through March
II	18	All Wells: 817 gpm/well	2 months of pumping	3,900 ac-ft	Pumping equally from 18 wells continually for 2 months at 817 gpm, which combined is equivalent to peak daily demand
III	18	All Wells: 470 gpm/well	9 months of pumping	10,272 ac-ft	Pumping equally from 18 wells continually for 9 months at 470 gpm, which will meet the anticipated Project demand over that period

Notes:
A, B, and C refer to areas of the Saugus Aquifer from Slade (1994), described above in *Existing Conditions*.

The analysis was applied to each scenario using aquifer properties consistent with the existing conditions described above and the well locations in Figure 3-27. Specifically, the values of aquifer transmissivity and storativity used in the analysis were 90,000 gpd/ft and 0.001, respectively. In addition, the efficiency of the ASR wells was assumed to be 80 percent during pumping and 50 percent during injection.

Well efficiency is a means of gauging how close the water level inside a well matches the water level immediately outside the well in the aquifer. Well efficiency represents the reduction in hydraulic head that occurs as water flows across the well screen (e.g., water levels are identical for a 100 percent efficient well; a decrease in efficiency corresponds to a greater drawdown in the well relative to the aquifer). By assuming an efficiency that is less than 100 percent, the drawdown in the existing wells is increased, resulting in a more conservative estimate of potential conditions.

In addition, the baseline groundwater levels selected for the analysis were the lowest on record (1991). By selecting these levels, the resulting calculations of drawdown apply to "worst case" initial conditions, making the evaluation of significance more conservative.

The analysis focused on seven existing Saugus wells, comprising the wells closest to the proposed Project wells and wells representative of distances of up to approximately 4 miles away. In each of these existing wells, the drawdowns resulting from the two different ASR pumping scenarios (II and III) were calculated and compared with the respective 1991 pumping (dynamic) water columns to determine whether the water-level significance criteria were exceeded.

The locations for the ASR and existing Saugus wells are shown in Figure 3-29. For each existing Saugus well, the magnitude of the water-level change resulting from the pumping phase of ASR was calculated and compared with the respective 1991 dynamic water columns to determine whether the water-level significance criteria were exceeded. Assuming that the initial water levels in the existing wells for the pumping phase of ASR are the 1991 values, the calculated water-level declines are exaggerated. The initial conditions for ASR pumping should actually reflect the water-level rise caused by the preceding injection phase. The water-level decline resulting from ASR pumping should, therefore, be less than this analysis predicts.

Groundwater-Level Impacts—Assessment Results for the Saugus Aquifer. The results of the drawdown calculations in the existing wells are summarized for each ASR scenario in Tables 3-12 through 3-14.

The results of the injection scenario (Table 3-12) indicate that water levels may rise above initial pumping levels between approximately 40 and 90 feet. The storage phase of ASR is not considered to pose a significant environmental impact on the water level in the Saugus Aquifer, because injection does not result in a decrease in the dynamic water columns of existing wells. Instead, the increase in water level is considered to be a benefit.

Neither of the ASR pumping scenarios is anticipated to result in a significant impact on groundwater levels in the Saugus Aquifer because the results in all wells fall below the significance criterion of 10 percent change. The analysis of the pumping phase of ASR indicates that water-level declines could range up to approximately 55 feet, representing a maximum change in the initial dynamic water column of approximately 3 percent (Table 3-13). As an additional point of comparison, water levels in some Saugus wells have historically varied by approximately 60 feet (Figure 3-24).

Table 3-12
Results of Scenario I Injection for 3 Months at 30 mgd

Well	1991 Depth to Groundwater Under Pumping (Dynamic) Conditions (ft)	Calculated Increase in Water Level (ft)
V-160	125 (est.)	93
V-201	190 (est.)	68
V-157	168 (est.)	65
NC-11	220	48
NC-12	360	48
NC-7	310	41
NLF-159	375 (est.)	55

Notes:
Water level data are from Slade (1994) and NCWD.
(est.) = Pumping water level estimated from specific capacity, static water levels and pumping rates.

Table 3-13
Results of Scenario II Pumping for 2 Months at Maximum Daily Demand

Well	1991 Depth to Groundwater Under Pumping (Dynamic) Conditions (ft)	1991 Dynamic Water Column Height (ft)	Estimated Drawdown from ASR Pumping (ft)	Drawdown, as a Percentage of Initial Dynamic Water Column Height (%)
V-160	125 (est.)	1,866 (est.)	55	3
V-201	190 (est.)	1,480 (est.)	39	3
V-157	168 (est.)	1,840 (est.)	37	2
NC-11	220	855	26	3
NC-12	360	920	26	3
NC-7	310	664	22	3
NLF-159	375 (est.)	1,525	32	2

Notes:
Water level data are from Slade (1994) and NCWD.
(est.) = Pumping water level estimated from specific capacity, static water levels and pumping rates information.

Table 3-14 Results of Scenario III 9 Months of Pumping at Average Annual Demand				
Well	**1991 Depth to Groundwater Under Pumping (Dynamic) Conditions (ft)**	**1991 Dynamic Water Column Height (ft)**	**Estimated Drawdown from ASR Pumping (ft)**	**Drawdown, as a Percentage of Initial Dynamic Water Column Height (%)**
V-160	125 (est.)	1,866 (est.)	48	3
V-201	190 (est.)	1,480 (est.)	38	3
V-157	168 (est.)	1,840 (est.)	38	2
NC-11	220	855	30	4
NC-12	360	920	30	3
NC-7	310	664	27	4
NLF-159	375 (est.)	1,525	34	2

Notes:
Water level data from Slade (1994) and NCWD.
(est.) = Pumping water level estimated from specific capacity, static water level, and pumping rate information.

The impacts on water levels should be localized to wells in the Saugus Aquifer. Consequently, the anticipated water-level declines in the Saugus are not likely to extend to adjacent aquifers and affect downgradient (i.e., downstream) groundwater users. This conclusion is based primarily on the relative composition of the Saugus Aquifer and adjacent geologic units. The Saugus Aquifer is bounded laterally on all sides by rocks of the Pico Formation, which is characterized by finer-grained and more tightly cemented sediments. As a result, the permeability of the Pico locally is thought to be considerably less than that of the Saugus Aquifer. This conclusion is supported by information in Slade (1988), which reports that well yields in the Pico are typically between one and two orders of magnitude less than those in the Saugus Aquifer.

Groundwater-Level Impacts—Assessment Methodology for the Alluvial Aquifer. Although groundwater in the Saugus Aquifer is thought to be confined under pressure (see *Existing Conditions*), the Aquifer is hydraulically connected to some extent to the overlying Alluvial Aquifer. Understanding this interconnection is key to predicting the potential water-level changes in the Alluvial Aquifer resulting from ASR injection and pumping in the Saugus. The general lack of specific data on the potential interconnection, however, precludes a precise determination of potential effects on the Alluvial Aquifer. In the

absence of these data, the hydraulic interconnection between the two aquifers is approximated in this analysis by simplifying assumptions for the properties of both aquifers. These assumptions result in an over exaggeration of the potential water-level decline in the Alluvial Aquifer as a result of ASR pumping in the Saugus. The over exaggeration is deliberate to compensate for the lack of complete understanding of the potential flow between aquifers and therefore creates a "worst-case" water-level decline scenario.

Specifically, the methodology to assess the potential water-level changes in the Alluvial Aquifer is the same as the Saugus Aquifer water-level analyses, with one exception. The exception is the assumption that both aquifers function as one, with transmissive properties of the Saugus Aquifer (i.e., transmissivity of 90,000 gpd/ft) and storage properties of the Alluvial Aquifer (i.e., an unconfined aquifer with a specific yield of 0.1). Because the ASR wells are in the Saugus Aquifer and much of the area in the immediate vicinity of the wells is not overlain by alluvium, the transmissive properties of both aquifers are assumed in this analysis to be the same as those of the Saugus alone. The consequence of this assumption is that the resulting drawdowns will be maximized; i.e., because the transmissivity of the Saugus Aquifer is significantly lower than the alluvium, the influence of pumping is laterally inhibited, causing more water to be produced closer to the wells and resulting in higher local drawdowns.

This representation of the aquifer system enables the source of water to the ASR wells, when pumping, to come from drainage (dewatering) of the aquifer and allows water levels, equivalent to those in the Alluvial Aquifer to decline as a result of deeper pumping in the Saugus. This approach, therefore, over-estimates the water-level decline in the Alluvial Aquifer because it exaggerates the amount of water allowed to drain from the alluvium into the Saugus wells. The result is a more localized area around the pumping wells that contributes water to the wells, and maximum of drawdown in the aquifer that represents a worst-case value.

The assessment applied the equations used in the Saugus water-level assessment to approximate the magnitude and pattern of drawdown that will occur in an unconfined aquifer. Pumping Scenario II (all 18 wells pumping continuously for 2 months at peak daily demand) was selected because it resulted in the largest drawdowns. The results of the drawdown approximation were then compared to typical water-level conditions in the Alluvial Aquifer to assess the significance of the water-level decline.

Groundwater-Level Impacts—Assessment Results for the Alluvial Aquifer. Based on the pre-established criteria (see *Significance Threshold Criteria*), the potential impacts associated with the anticipated project-induced water-level declines in the Alluvial Aquifer are not considered to be significant.

Under the ASR maximum pumping scenario, essentially all of the portion of the Alluvial Aquifer that extends approximately 1.5 miles upstream and 2 miles downstream of Castaic Junction may experience drawdowns up to approximately 10 feet.

The assessment approach over-estimates the amount of water-level decline in the Alluvial Aquifer because both aquifers are represented by a single unconfined aquifer. This simplification creates a uninhibited hydraulic connection between the two Aquifers and allows water to drain directly from the alluvium into Saugus in response to pumping. In addition, the analysis does not take into account any increase in water-levels resulting from a preceding injection phase, thus adding to the overestimation. Even when considering the overestimated water levels, however, the maximum project-induced drawdowns in the Alluvial Aquifer are not considered to affect the overall water supply potential of this Aquifer because the resulting declines represent less than 10 percent of the saturated thickness and are likely to be within the range of typical water-level fluctuations in the potentially affected portion of the Aquifer.

Groundwater-Quality Impacts—Assessment Methodology for Saugus Aquifer. Potential changes in groundwater quality due to the injection phase of ASR were assessed qualitatively by comparing the quality of the CLWA water to be injected against the quality of the existing groundwater in the Saugus Aquifer (representative of depths and locations of potential potable supplies), and the standards associated with the RWQCB water-quality objectives and the California MCLs for drinking water.

Groundwater-Quality Impacts—Assessment Results for the Saugus Aquifer. The water quality in the Saugus Aquifer is not anticipated to be degraded as a result of injecting water during ASR. This conclusion is based on the data in Table 3-15, which characterizes the quality of both the injection water and current groundwater in the Saugus Aquifer. Data for Well No. 156 are included in Table 3-15 also. This well is located on the Newhall Ranch property, in the general area of the ASR well field. Groundwater quality of the Saugus aquifer in the ASR well field area appears to be somewhat higher in TDS and other constituents than the average for the Saugus aquifer. Table 3-15, also contains the RWQCB water-quality objectives and the MCLs for drinking water. The data indicate that water quality in the Saugus Aquifer is currently within the limits imposed by both sets of standards. The quality of the proposed injected water is also within these limits and is generally below the levels in the Saugus Aquifer.

The quality of CLWA water, proposed for injection, meets all drinking water MCLs and exceeds the requirements of the Basin Plan objectives, and overall it is better than the quality of groundwater in the Saugus aquifer in the area of VWC Well No. 156. The concentration of potassium (3.8 mg/l) is only slightly above the concentrations in the Saugus aquifer (average of 2.1 and 3.6 mg/l in Well No. 156). The concentration of sodium (79 mg/l) is only slightly higher than the average concentration (74 mg/l), but much less than the value in Well No. 156 (165 mg/l). Chloride concentrations are higher in CLWA water than the Saugus aquifer levels (89 mg/L vs. 35 mg/l for the average and 22.6 mg/l in Well No. 156). The higher concentrations of potassium, sodium, and chloride are not considered to be significant because they do not impact the beneficial use of the Saugus aquifer, which is predominantly drinking water. In addition, the concentrations of total hardness, nitrate, sulfate, calcium, iron, magnesium, and manganese are lower than those concentrations observed in the Saugus aquifer. Also, the operation of the ASR project is expected to minimize the migration of injected water from the ASR well field, so

Table 3-15
Water Quality of Injection Water and Saugus Aquifer

Constituent	Injection Water[1]	Saugus Aquifer[1]	Well 156	Groundwater-Quality Objective[1]	MCL
Bicarbonate	NA	246	285	--	--
Carbonate	NA	0.5	1.0	--	--
Chloride	89	35	22.6	100	250(S)
Sulfate	92	218	520	250	250(S)
Fluoride	0.22	0.4	1.2	--	1.8
Total Hardness	161	314	272	--	--
Total Dissolved Solids	360	619	1,022	700	1,000(S)
pH	7.7 pH units	7.8	7.4	--	6.5-8.5(S)
Conductance	NA	894 µmhos	NA	--	900(S)
Nitrate (NO3)	2.6	15	20.3	--	45
Boron	NA	0.1	NA	1.0	--
Calcium	32	92	89.7	--	--
Iron	<0.1	0.3	0.1	--	0.3(S)
Magnesium	18	23	58.8	--	--
Manganese	<0.015	0.08	30	--	0.05(S)
Potassium	3.8	2.1	3.6	--	--
Sodium	79	74	165	--	--
TTHMs	0.077	NA	NA	--	0.1

Table 3-15
Water Quality of Injection Water and Saugus Aquifer

Constituent	Injection Water[1]	Saugus Aquifer[1]	Well 156	Groundwater-Quality Objective[1]	MCL
Gross Alpha	0.1 pCi/l	2.1	NA	--	15
Gross Beta	4 pCi/l	4.2	4.2	--	50

Notes:
1. Values in mg/L, except where noted.
2. Concentrations represent average of recent data (1989-1994), detected values only (from Table 3-3 of *Existing Conditions*).
3. Injection water quality is average from CLWA water quality reports and Metropolitan Water District of Southern California Annual Report for Jensen Treatment plant effluent.
4. TTHM - Total trihalomethanes.
5. NA = Data are not available.
6. (--) = There is no associated numerical standard
7. MCL = California maximum contaminant level.
8. (S) = Secondary drinking water standard.
9. Groundwater quality objectives for Castaic-Bouquet area are as set by the Regional Water Quality Control Board.
10. Fluoride MCL is for temperature of 20°C.

the effects on water quality are expected to be localized to the Newhall Ranch area, where the water will be used. Injection of CLWA water is, therefore, anticipated to improve the quality of the Saugus aquifer water for its intended use, and the impact is expected to be positive.

The concentrations of trihalomethanes (THMs), however, may be of potential concern. These constituents are potential by-products of water treatment and do not occur naturally in groundwater. THMs are discussed because of the potential conflict with the non-degradation policy, even though the injected concentrations are below federal drinking water standards (currently, there are no state standards for THMs in California).

It is not anticipated, however, that THMs will pose a significant environmental impact, based on the results of ongoing studies. Several existing ASR projects have been the subject of extensive water-quality monitoring. Specifically, Calleguas Municipal Water District and the Metropolitan Water District of Southern California cooperated on an ASR demonstration project in the North Las Posas Basin near the Project. The results of monitoring several injection and recovery cycles indicate that total THMs (TTHMs) were less than 50 percent of the initial TTHM concentration in the injected water after approximately 50 percent of the injected water was recovered. This figure was reduced to 20 percent of the initial concentrations after 100 percent of the injected water had been recovered. In addition, the American Water Well Association Research Foundation is currently sponsoring research on the fate of THMs at five ASR sites in the U.S. and in the United Kingdom. To date, the data indicate that the concentrations of THMs are typically reduced by over 50 percent after approximately 10 weeks of storage. In Southern California, THMs have been observed to be significantly reduced after injection in the West Coast Basin Barrier Project, where for the past 30 years treated surface water from Metropolitan Water District has been injected into several hundred wells to form a barrier between seawater and potable water.

Groundwater-Quality Impact—Assessment Methodology for the Alluvial Aquifer. Potential water-quality impacts in the Alluvial Aquifer resulting from ASR injection were assessed qualitatively in two ways. First, the water quality of the injected water was compared with that of the Alluvial Aquifer, and then both were compared to the local water-quality objectives of the RWQCB. This comparison provides an idea of a theoretical direct mixing of the two waters, but is not very representative of actual conditions. The second method of analysis was to compare the existing water quality of the two aquifers. This approach is more representative of actual conditions, because the injected water will first mix with groundwater in the Saugus, and water that enters the Alluvial Aquifer will most likely consist of unmixed Saugus water under the pressure of injection.

For the pumping phase, the potential water-quality impacts on the Alluvial Aquifer resulting from ASR pumping are tied to the hydraulic interaction between the Alluvial and the Saugus Aquifers and local flows in the Santa Clara River and its tributaries. The potential water-quality impacts on the Alluvial Aquifer were therefore evaluated qualitatively by reviewing the anticipated water-level changes in the Alluvial Aquifer relative to the general water levels in the river, and comparing the water-quality

characteristics of the aquifer with those of the River (Table 3-16). The sampling locations for the data in Table 3-16 are shown in Figure 3-30. the assessment compared the existing water quality in the Alluvial Aquifer and the Santa Clara River in the vicinity of where the Alluvial Aquifer may be subject to water-level declines as a result of pumping.

Groundwater-Quality Impacts—Assessment Results for the Alluvial Aquifer. The groundwater quality of the Alluvial Aquifer is not anticipated to be significantly affected by the project's implementation of ASR. For the injection phase, this conclusion is based in part on the data summarized in Table 3-17. These data indicate that the injected water is generally of better quality than that of the Alluvial Aquifer, except for chloride concentrations in the Castaic-Bouquet Hydrologic Subarea. More importantly, however, the concentrations in the injected water are lower than the water-quality objectives for all constituents for which objectives have been established.

Any water that enters the Alluvial Aquifer during injection will have originated in the Saugus and therefore will have water quality characteristics similar to the Saugus. A comparison of the water quality of the two aquifers indicates that the Saugus Aquifer has generally better water quality than does the Alluvial Aquifer. In addition, because there is some degree of hydraulic interconnection between these two aquifers under natural conditions, the Alluvial Aquifer is likely recharged by the Saugus in various places at different times of the year, in the absence of ASR injection. As a result, any water that enters the Alluvial Aquifer from injection in the Saugus Aquifer is not anticipated to degrade the water quality in the Alluvial Aquifer.

From the assessment of water-level impacts in the Alluvial Aquifer (see *Groundwater-level Impacts—Assessment Results for the Alluvial Aquifer*), it is anticipated that pumping in the Saugus Aquifer may lower the water levels in the Alluvial Aquifer on the order of 10 feet (under maximum short-term pumping conditions) along a 4-mile reach of the Santa Clara River in the vicinity of the project. Along this reach, extending approximately 2 miles on either side of Castaic Junction, the river typically changes from a source of groundwater recharge (losing river) to a sink for groundwater discharge (gaining river). Historical groundwater levels in this portion of the Alluvial Aquifer most likely fluctuate causing the transition point from losing to gaining stream to move up and down the river in response to the prevailing difference between water levels in the River and in the Alluvial Aquifer.

Any groundwater-level decline resulting in the water level in the Alluvial Aquifer to fall below the water level in the River will cause the transition between a losing and gaining river to move further downstream than it would otherwise have done. Where the water levels in the Alluvium are already below River levels, additional declines will have essentially no effect.

The implication for this analysis, therefore, is that the project-induced water-level decline may result in an increase in the reach of the river that recharges the Alluvial Aquifer, causing more of the Alluvial Aquifer to be influenced by the water quality in the River. This increase to the reach where aquifer recharge occurs, however, will be limited to the area influenced by the pumping. Based on the available water-level data and the location

Table 3-16
Water Quality of Santa Clara River and Alluvial Aquifer
Newhall Ranch Project

				Parameter Value by Location				
				Santa Clara River		Alluvial Aquifer		
Parameter	Symbol	Units	MCL (a)	At I-5 9/24/90	At Castaic Cr. 9/24/90	4N/17W-13E2 8/16/89	4N/17W-14Q2 7/13/89	4N/17W-22E1 7/13/89
Bicarbonate	HCO3	mg/L	----	285	213	368	279	328
Carbonate	CO3	mg/L	----	0.0	0.0	0.0	1.0	0.0
Chloride	Cl	mg/L	250 (s)	106	138	80	46	72
Sulfate	SO4	mg/L	250 (s)	162	260	394	280	360
Fluoride	F	mg/L	4	0.4	0.5	1.0	0.7	0.8
Total hardness	TH	mg/L	----	311	407	580	435	525
Total dissolved solids	TDS	mg/L	1000 (s)	736	907	1,053	730	988
pH	pH	pH	6.5-8.5 (s)	7.7	7.3	7.7	8.5	8.4
Conductance	EC	umhos	----	1,214	1,397	1,400	1,100	1,300
Nitrate (as NO3)	NO3	mg/L	45	24	9	3	9	14
Boron	B	mg/L	----	0.7	0.7	0.6	0.4	0.5
Calcium	Ca	mg/L	----	90	108	143	101	135
Iron	Fe	mg/L	----	0.1	0.1	<0.1	<0.1	<0.1
Magnesium	Mg	mg/L	----	19	35	54	36	43
Manganese	Mn	mg/L	50 (s)	0.04	<0.03	0.05	<0.03	<0.03
Potassium	K	mg/L	----	7.0	7.0	4.0	3.0	4.0
Sodium	Na	mg/L	----	129	140	128	86	102

Notes:(a) MCL value is the lower of California and federal MCLs.
(s) = Secondary standard.
Data are from DWR, 1993.

of the potentially influenced area with respect to the entire Alluvial Aquifer system, the River may currently recharge the Aquifer within the area of potential influence during much of the year.

Table 3-17
Water Quality of Injection Water and Alluvial Aquifer

Water Source	TDS	Sulfate	Chloride	Boron
Injection Water	360	92	89	NA
Castaic-Blue Cut				
Groundwater Quality Objective	1,000	350	150	1.0
Alluvial Aquifer	460	330	103	<0.1
Castaic-Bouquet				
Groundwater Quality Objective	700	250	100	1.0
Alluvial Aquifer	600	330	45	0.1
South Fork Santa Clara River				
Groundwater Quality Objective	700	200	100	0.5
Alluvial Aquifer	620	240	40	0.1

Notes:
1. Values are in mg/L.
2. Injection water quality is the average from CLWA Water Quality Report for 1992.
3. Groundwater data represent average values from 1989 sampling event (DWR, 1993).
4. NA = not available.

Upstream of Castaic Junction, the natural flow of water under existing conditions is generally from the Santa Clara River into the Alluvial Aquifer, and the quality of the surface water is generally better than it is downstream of Castaic Junction. Pumping of the

Saugus Aquifer for the Project will therefore only enhance the current recharge process, and should not degrade the current water quality in the Alluvial Aquifer.

The water quality of the Alluvial Aquifer appears to be currently degraded as a result of recharge from the Santa Clara River in the vicinity of Castaic Junction. In this reach of the River, groundwater levels are believed to be currently below the level of the River during much of the year. As a result, because Project-induced lowering of groundwater levels will not increase the recharge from the River where this condition (i.e., recharge) is already occurring, the water quality of the Alluvial Aquifer is not anticipated to be made worse by further declines in water level, irrespective of their magnitude.

Recharge Impacts—Assessment Methodology. Potential project-induced impacts on natural groundwater recharge will not occur as a result of ASR, but may occur with a change in land use. Specifically, the Project development may inhibit recharge where the ground surface is covered by roads, buildings, paved parking areas, or other relatively impermeable features that may be constructed.

Natural recharge to the Alluvial Aquifer originates from infiltration of both direct precipitation on outcrop areas and flows in the Santa Clara River and its tributaries. The contribution from River flows is believed to be the greater of the two, because these flows are a continuous source of water to the Aquifer along reaches generally upstream of Castaic Junction and the Project area (see *Existing Conditions*). Recharge to the Saugus Aquifer occurs through the infiltration of precipitation where the formation outcrops or through the overlying alluvium. Development that results in relatively impermeable surfaces on outcrop areas or the alluvium will therefore reduce the potential for groundwater recharge.

The methodology for assessing the potential impacts on groundwater recharge focuses on the potential amount of ground surface that will be made relatively impermeable by the Project. This analysis was conducted for both aquifers independently by quantifying the proportion of the outcrop area occupied by a particular proposed land-use type and then estimating the corresponding area that would be rendered effectively impermeable to recharge. These estimates were based on general assumptions of the percentage of impacted area associated with a particular land use (Table 3-18).

The area of the Saugus overlain by the Alluvial Aquifer was not included in this analysis because the contribution to Saugus recharge from the alluvium is assumed to be constant and not affected by Project development. This assumption is based on the premises that groundwater in the alluvium largely originates from surface-water infiltration and that the percentage of alluvium potentially affected by the Project is relatively small (see below, under results).

As a result, this analysis will be a more conservative assessment of the reduction in recharge potential because it is applied only to a portion of the overall areal extent of the Aquifer. Similarly, when this analysis is applied to the Alluvial Aquifer, the results will overestimate the reduction in recharge potential because the analysis does not account for

the recharge contribution from surface water, which is considered to be the largest component of recharge to the Alluvial Aquifer.

Table 3-18
Percentage of Impermeable Surface Area by Land Use

Land Use	Impermeable Area (% of Land Area)
Estate residential	30
Residential, low-density	40
Residential, low-medium-density	50
Residential, medium-density	65
Residential, high-density	70
Multi-Use	70
Commercial	90
Business park	95
River corridor	0
Open area	2
Roads	100
Neighborhood park	5
School	60

Recharge Impacts—Assessment Results. The results of the recharge analysis are summarized below in Table 3-19 for both aquifers. The results indicate that a reduction of only 3 percent is likely to result from full Project development as currently proposed. This amount of reduction is not considered to be a significant environmental impact because it does not constitute a substantial interference with groundwater recharge, as defined above under *Significance Threshold Criteria* (i.e., overestimated reductions of 150 ac-ft/yr and 60 ac-ft/yr are less than the 1,000 ac-ft/yr criterion).

Table 3-19 Results of Aquifer Recharge Analysis		
Parameter	**Saugus**	**Alluvial**
Outcrop area (total)[a]	37,390 acres	17,370 acres
Area of Aquifer impacted by project	1,026 acres	524 acres
Percentage of Aquifer impacted	3 percent	3 percent
Annual recharge attributed to precipitation on outcrop (without Project)[b]	5,000 ac-ft/yr	2,000 ac-ft/yr
Reduction in recharge resulting from Project	150 ac-ft/yr	60 ac-ft/yr

Notes:
(a) Aquifer areas are from Slade (1988).
(b) Annual recharge attributed to precipitation assumes an average annual value of 15 inches, of which 10 percent reaches the groundwater, (i.e., 90 percent of precipitation goes to runoff and evapotranspiration).

Land-Surface Elevation Impacts. Under certain geologic conditions, groundwater withdrawals can result in subsidence of the land surface. Specifically, subsidence can occur when extensive groundwater withdrawals are made from aquifer-aquitard systems that consist of thick sequences of unconsolidated or poorly consolidated sediments containing a large percentage of highly compressible clays (Freeze and Cherry, 1979). Aquitards are geologic units (typically layers of fine-grained, low-permeability sediments) that inhibit the movement of groundwater, and act to confine groundwater in aquifers under pressure.

The Saugus Aquifer is composed of consolidated sediments. Therefore, land subsidence is not anticipated to result from pumping this aquifer. Subsidence is also not anticipated to occur as a result of conditions in the Alluvial Aquifer, primarily because the potential project-induced water-level declines are not considered to be significant. This conclusion is further supported by the following:

- Groundwater is not proposed to be pumped from the Alluvial Aquifer for use by the Project.
- The Alluvial Aquifer is not characterized by thick layers of clay that are likely to compress significantly.

- The Alluvial Aquifer is currently extensively developed, and the resulting fluctuations in groundwater levels have not resulted in known occurrences of subsidence.

Surface-Water Impacts—Assessment Methodology. Potential impacts on surface water resulting from ASR pumping in the Saugus include both changes in water levels (i.e., changes in flow) and water quality. The assessment of both of these potential impacts focused on the reach of the Santa Clara River where project pumping could affect water levels in the Alluvial Aquifer. This reach extends approximately 2 miles either side of Castaic Junction based on the analysis of potential water-level declines in the Alluvial aquifer (see *Water-level Impacts-Assessment Results for the Alluvial Aquifer*).

A project-induced reduction in river flow will occur over that portion of the affected reach where the groundwater levels are reduced below the water level in the river. Where the groundwater levels are already below the river, additional groundwater-level declines will not result in additional reductions in river flow. Therefore, to assess the potential impact on river flow, it is important to know the relative difference in water levels between the river and the Alluvial Aquifer for the entire reach of the river potentially affected (i.e., where ASR pumping could lower water levels in the Alluvial Aquifer). In addition, because the relative differences are likely to change during the course of a given year and between years, this information should be known as a function of time to assess fully the potential impact.

Groundwater-level maps from the Los Angeles County Department of Public Works and data reported in Slade (1986) enable the development of the general picture of the interaction between water levels in the river and groundwater. The data are not available in sufficient detail, however, to assess the potential impacts which may occur from project-induced groundwater-level declines of less than 10 feet. As a result, only a very generalized assessment can be made.

Water quality is directly related to flow in the Santa Clara River. Potential impacts to surface-water quality, therefore, can only be assessed in a general manner and are conditional on the actual flow conditions that prevail in the river in response to ASR pumping.

Surface-Water Impacts—Assessment Results. With respect to the injection phase of ASR, neither the flow nor the water quality in the Santa Clara River is anticipated to be affected by the implementation of ASR, because water levels in the Alluvial Aquifer are not anticipated to be significantly affected.

During the pumping phase of ASR, the results of the water-level analysis indicate that the flow, and thus the water quality, in the Santa Clara River may be affected by this phase of operation. Based on what is known of existing and potential project-induced conditions,

ASR pumping is not anticipated to have a significant impact on the flow in the Santa Clara River. This conclusion is based on the following summary of relevant factors:

- Along the 2-mile reach of the Santa Clara River, extending approximately 1 mile either side of Castaic Junction, the river typically changes from a source of groundwater recharge (losing river) to a sink for groundwater discharge (gaining river). Over this reach of transition the relative water-level position may differ at different locations at the same point in time, and will likely change seasonally and from year to year as a function of natural flows in the river and direct groundwater pumping in the Alluvial Aquifer.

- Along this reach of the river, the anticipated water level decline in the Alluvial Aquifer is up to approximately 10 feet. This decline is an over-estimated (or maximum) value that could occur in response to heavy pumping over a period of 2 months. Other factors that support the conclusion that the maximum drawdown will be less than 10 feet are presented in *Groundwater Quality Impacts-Assessment Results for the Alluvial Aquifer*.

- Water-level changes in this portion of the Alluvial Aquifer are understood to vary annually in the absence of ASR pumping.

Water-quality in the river should not be significantly impacted as a result of ASR pumping because the flow in the river is not anticipated to be significantly affected. This conclusion pertains only to a change in water-quality as a result of ASR pumping.

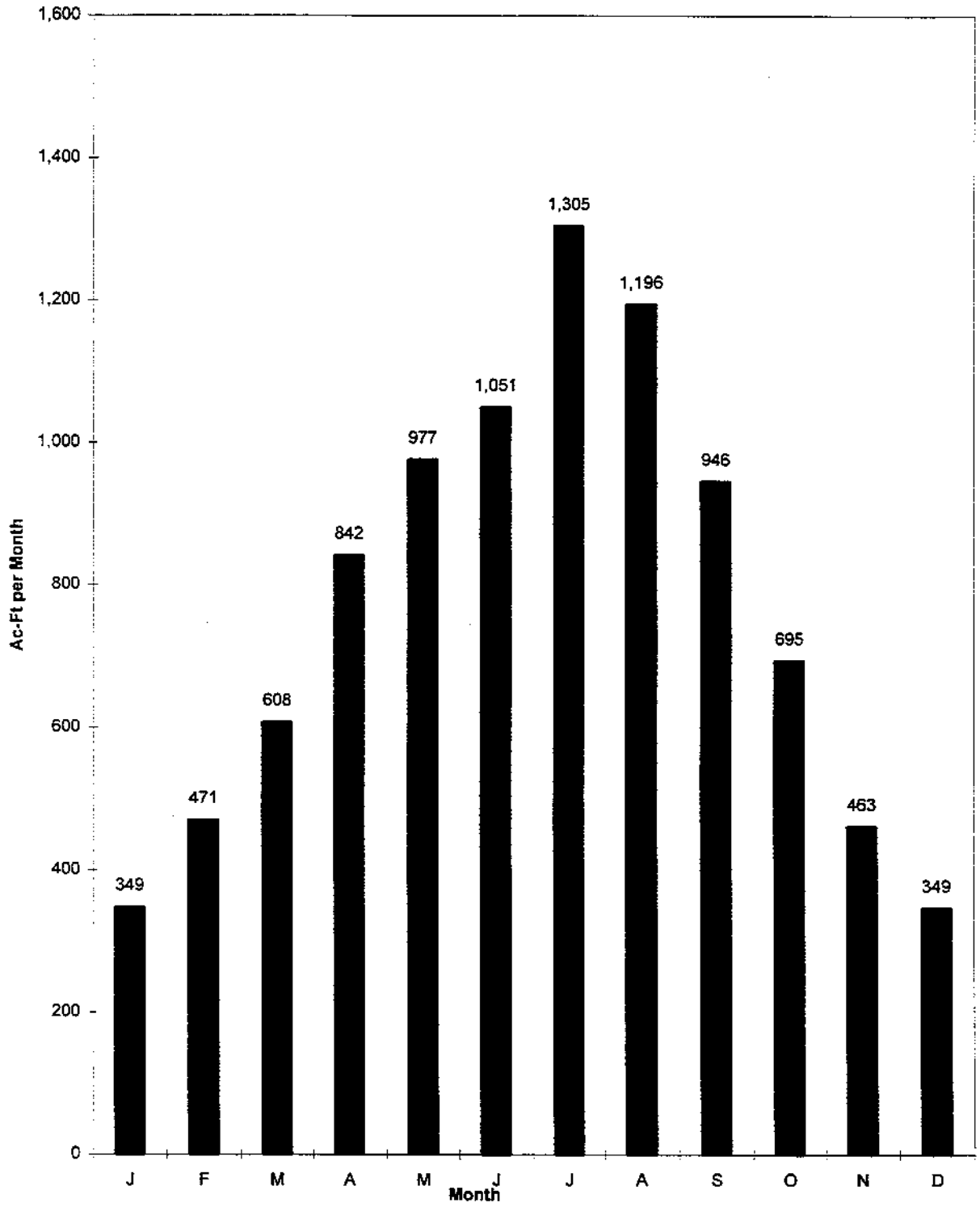


Figure 3-1
Monthly Nonpotable Water Demands
Newhall Ranch Project

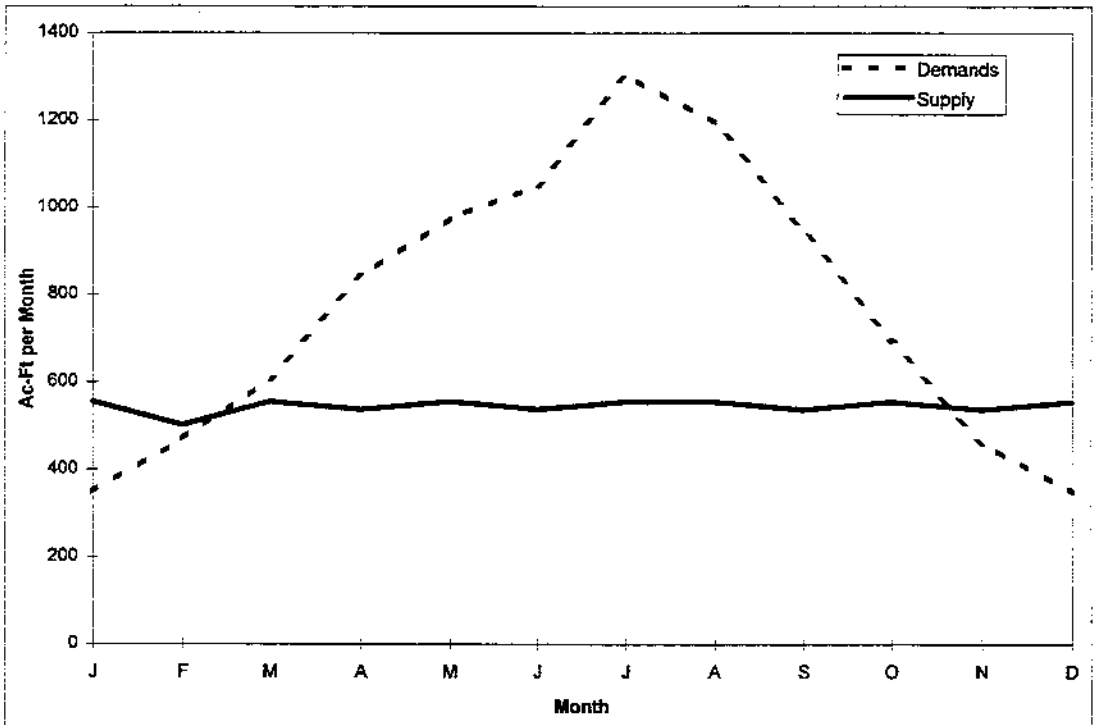
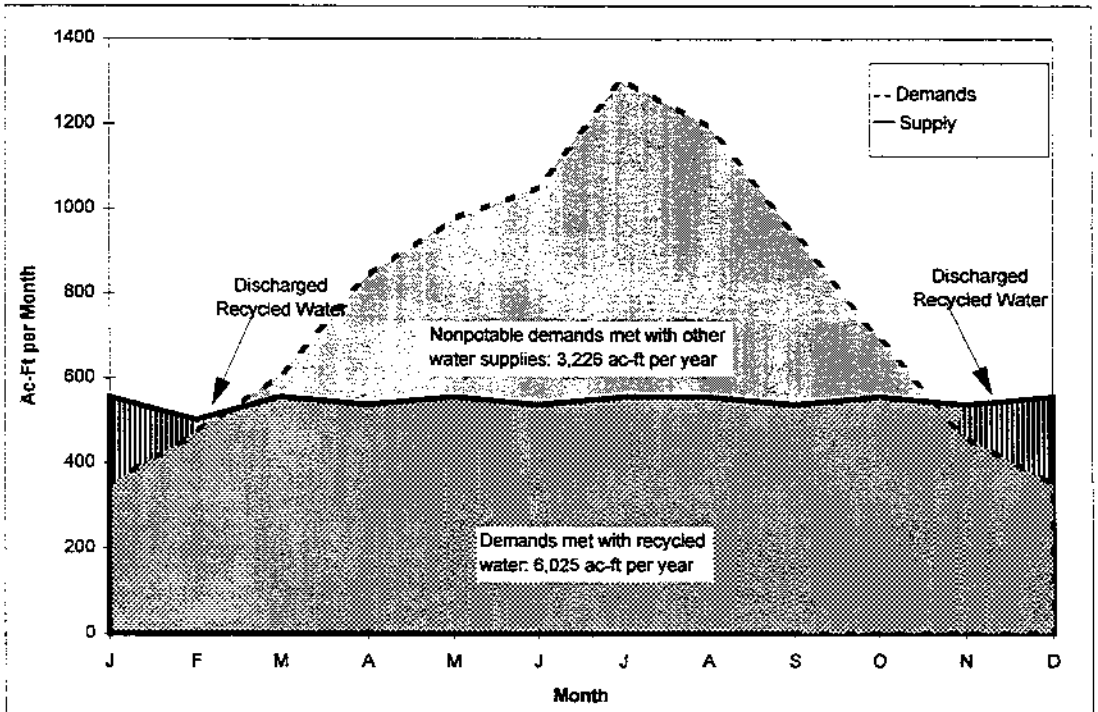
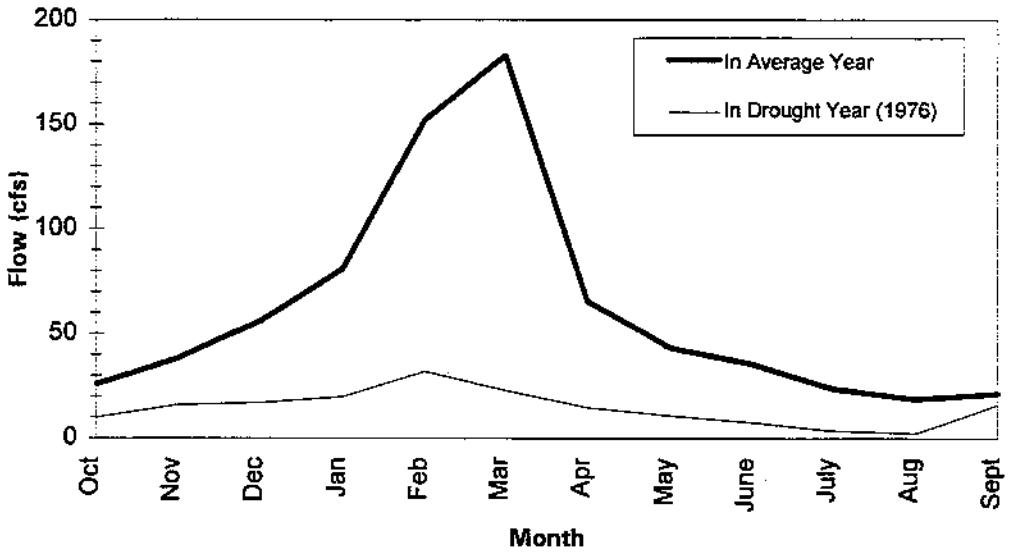


Figure 3-2
Comparison of Recycled Water



Note: Total amount of recycled water discharged to the Santa Clara River is 522 ac-ft per year.

Figure 3-3
Recycled Water System Operations
Newhall Ranch Project



Source: USGS River Gauge

Figure 3-4
Average Monthly Flows of the Santa Clara River at the Los Angeles-Ventura County Line (1972-1991) (Without Recycling Discharges)
Newhall Ranch Project

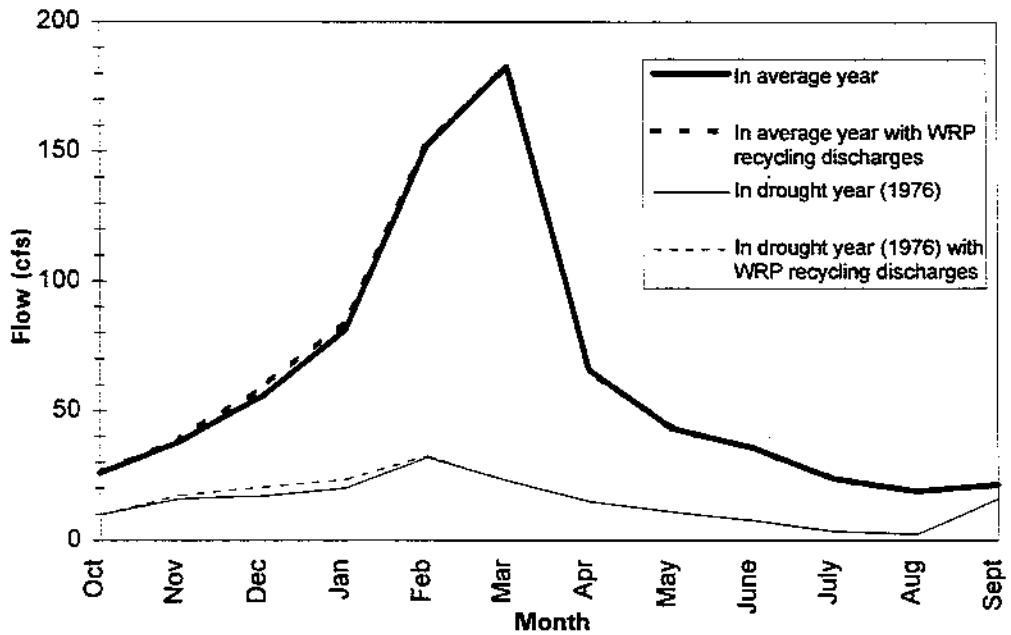


Figure 3-5
Average Monthly Flows of the Santa Clara River at the Los Angeles-Ventura County Line (1972-1991)

Source: USGS River Gauge

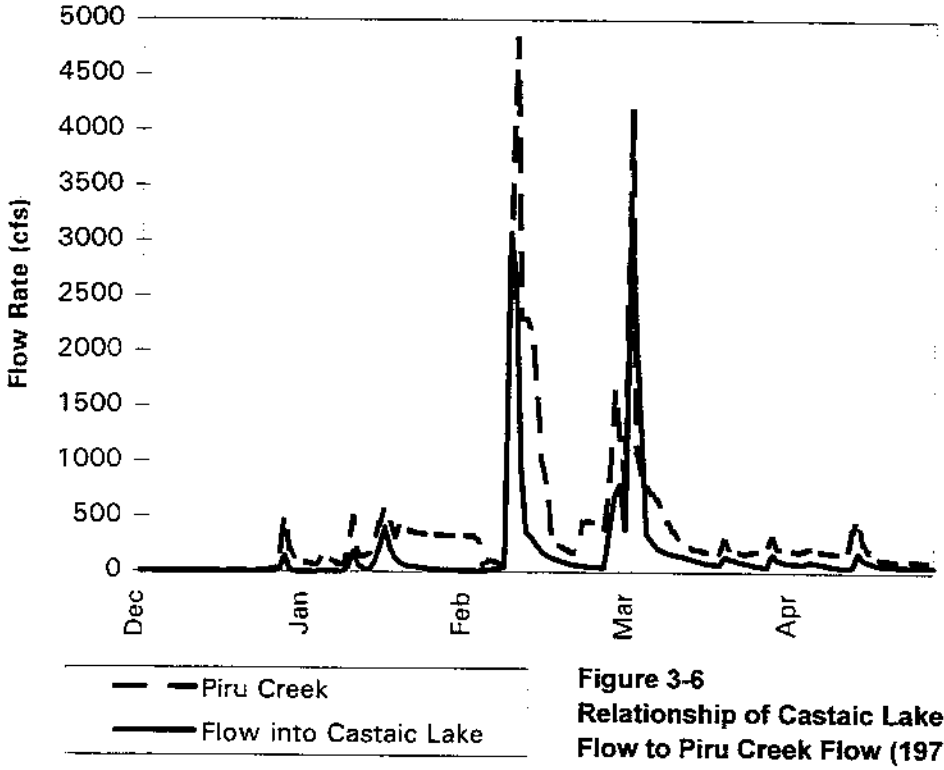


Figure 3-6
Relationship of Castaic Lake Flow to Piru Creek Flow (1978)
Newhall Ranch Project

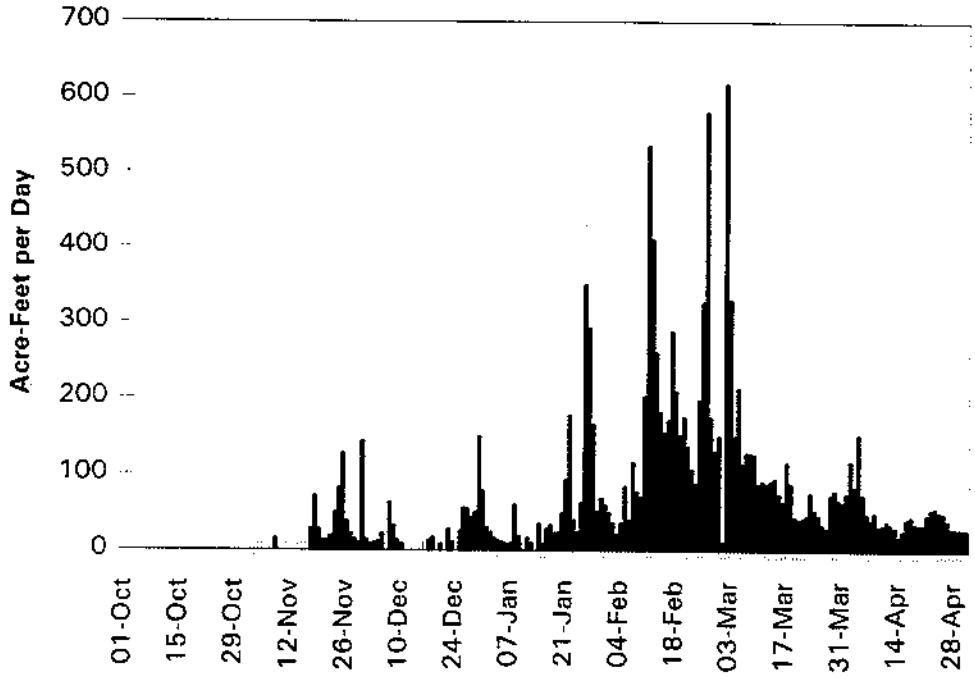


Figure 3-7
Castaic Creek Daily Flood Flow Volumes
(30-Year Average, 1956-1986, of Flows above 100 cfs)
Newhall Ranch Project

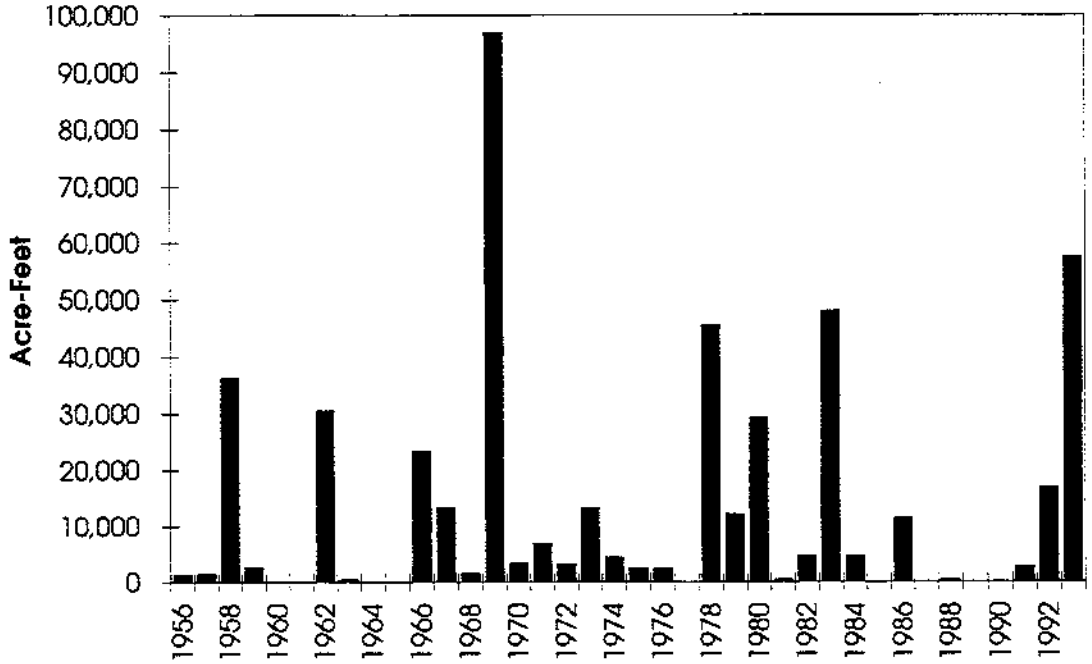
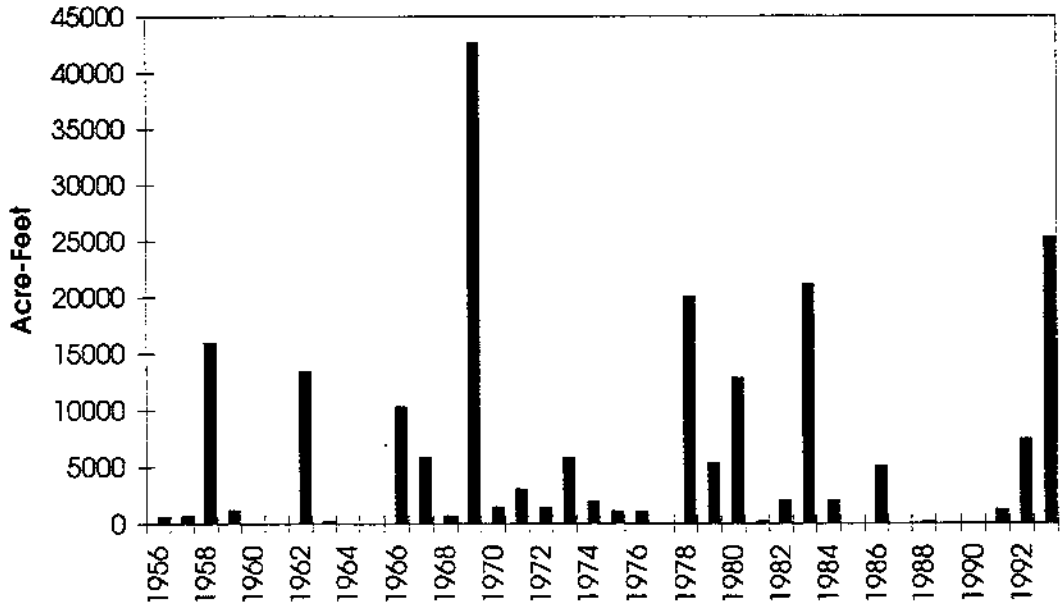
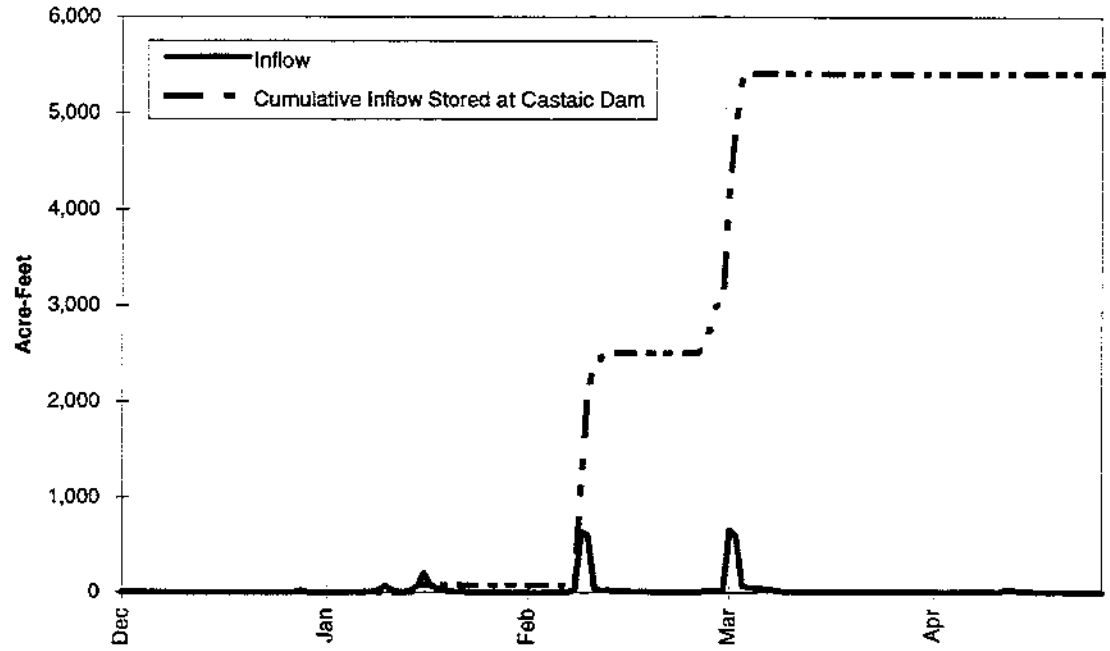


Figure 3-8
Total Castaic Creek Flood Flows
Available to Downstream Water Users
Newhall Ranch Project



Note: Average annual quantity is approximately 5,400 acre-feet per

Figure 3-9
Potential Castaic Creek Flood
Flows Available to Newhall Ranch Project
Newhall Ranch Project



Note: Total to storage in this example is 5,400 ac-ft.

Figure 3-10
Typical Year Inflow and Storage at Castaic Dam
Newhall Ranch Project

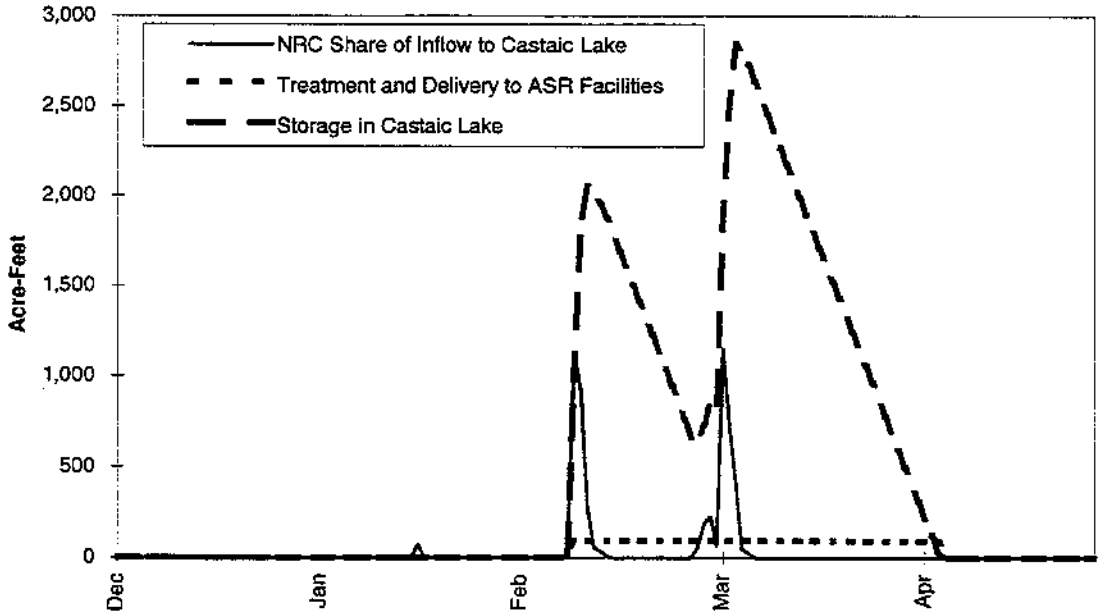
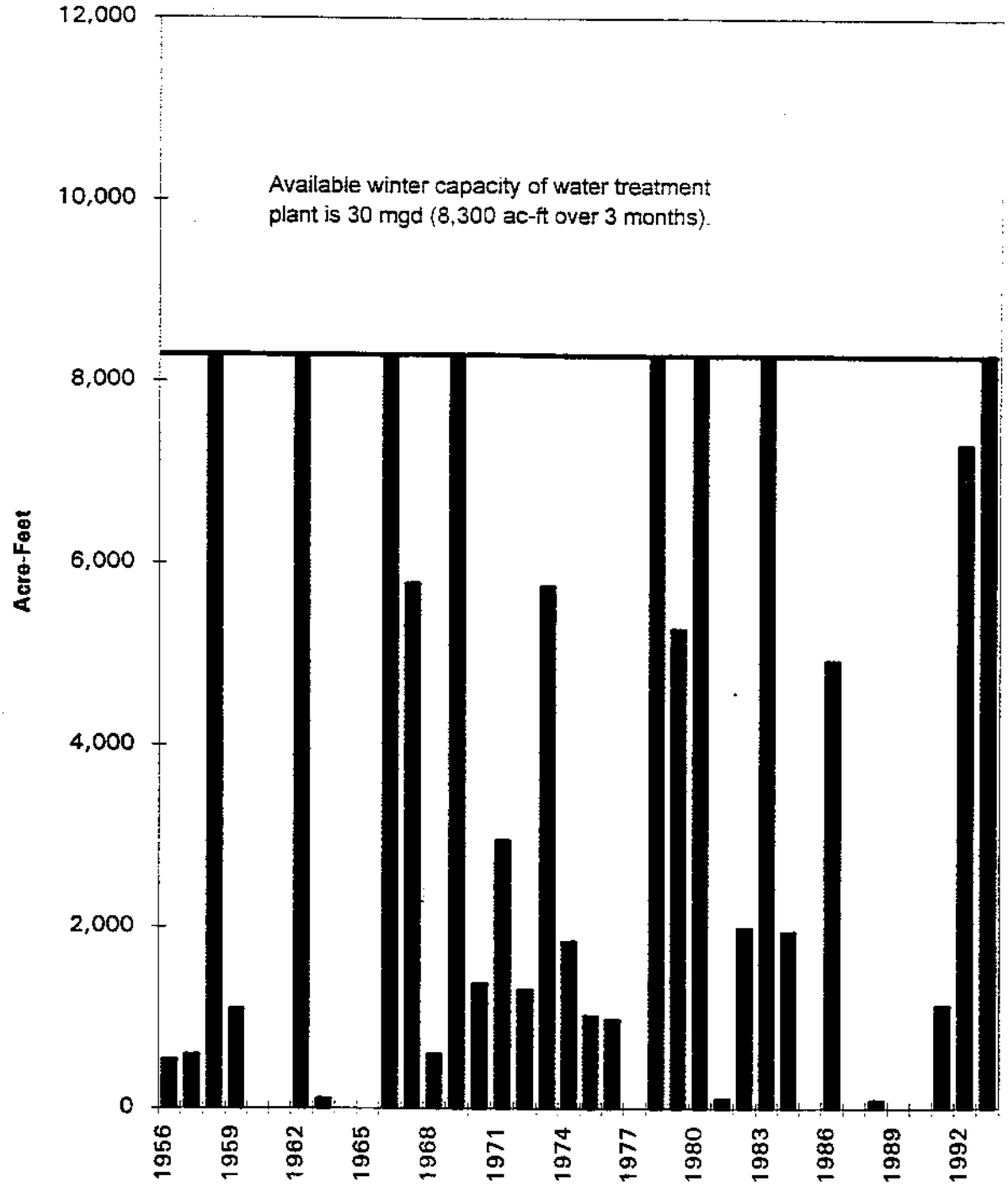
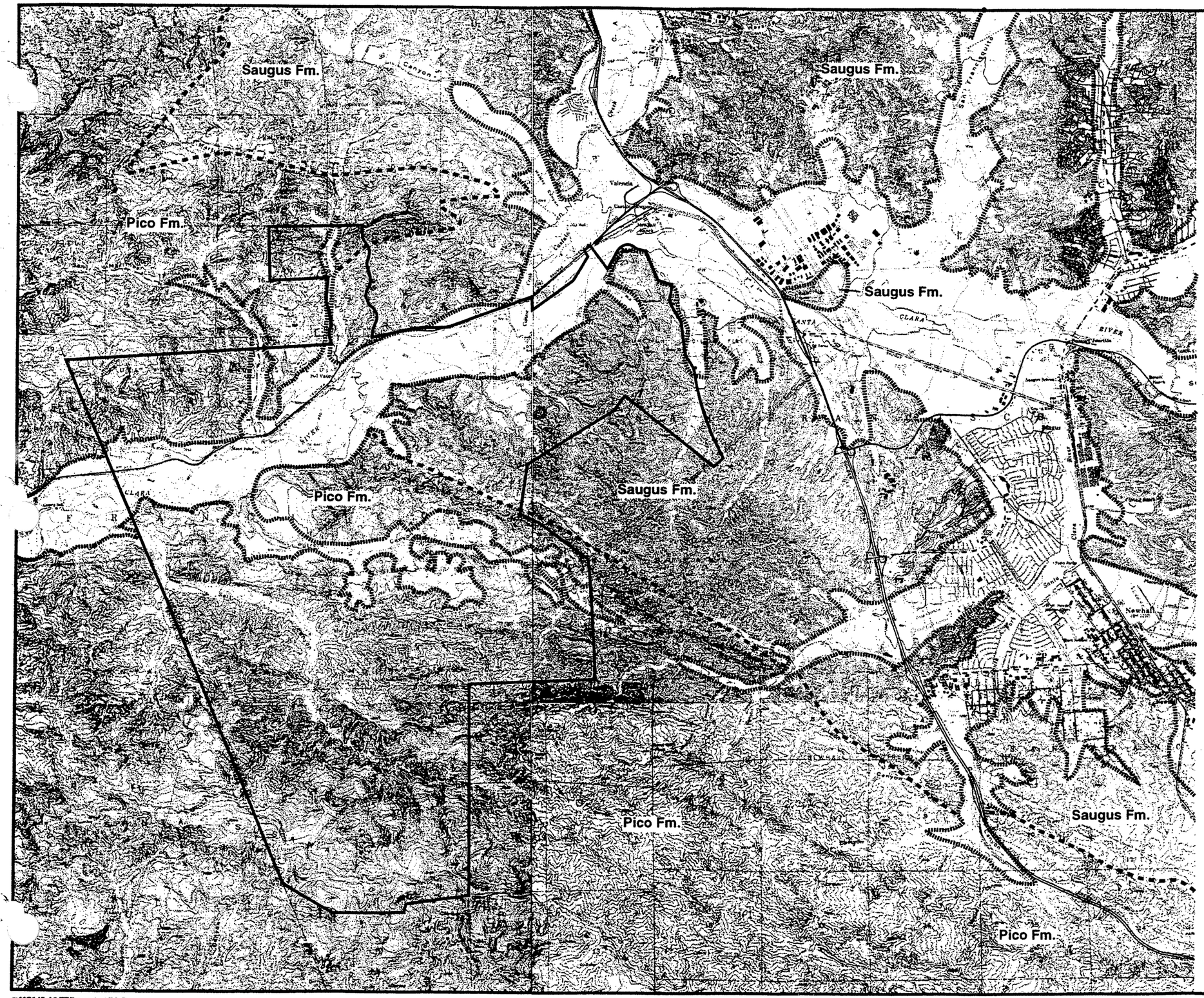


Figure 3-11
Typical Year Operation of Newhall Ranch Storage Program
Newhall Ranch Project



Note: Average annual quantity to storage during period of record is approximately 2,980 ac-ft/year.

Figure 3-12
Potential Annual Storage of Castaic Creek Flood Flows
Newhall Ranch Project



LEGEND

- Newhall Ranch Project boundary
- Boundary between Saugus Formation and Pico Formation
- Boundary between Alluvium and Saugus or Pico Formations

Source: Slade (1994)

Note: For clarity, terrace deposits overlying Saugus Formation are not shown.

N

0 4000 8000

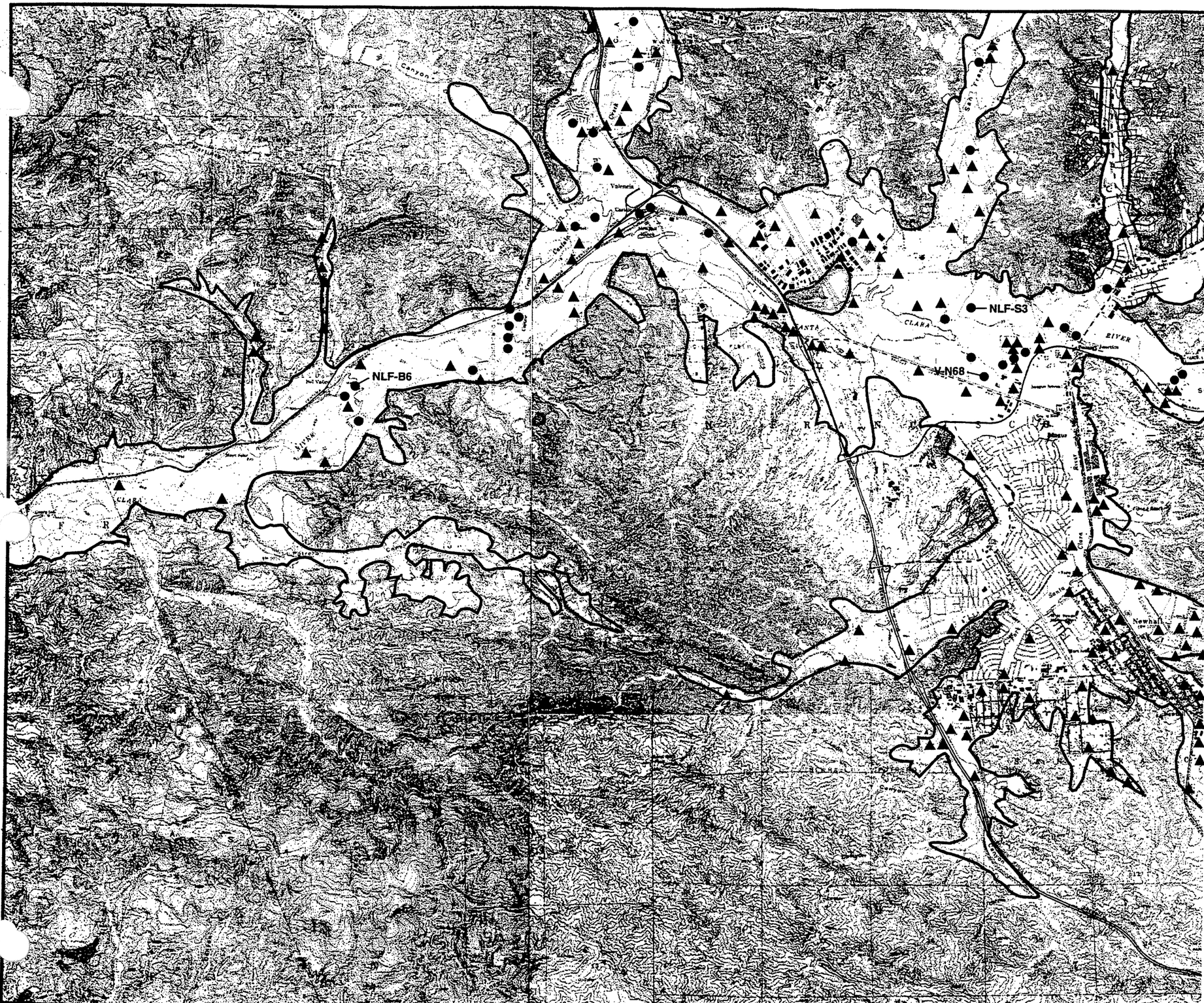
Approximate Scale in Feet

Figure 3-13
Hydrogeologic Units
Newhall Ranch Project

CH2M HILL

m110145.A6.ZZ/figure 1 1/96vjh

031990



LEGEND

- Boundary between Alluvium and Saugus or Pico Formations
- ● Approximate location of well; status in 1985 = active.
- ▲ Approximate location of well; status in 1985 = inactive or unknown.

Source: Slade (1994)

Notes on labeled wells:

1. Water level hydrograph for V-N68 is shown on Figure 3.
2. Chloride hydrographs for NLF-S3 and NLF-B6 are shown on Figure 5.

N

0 4000 8000

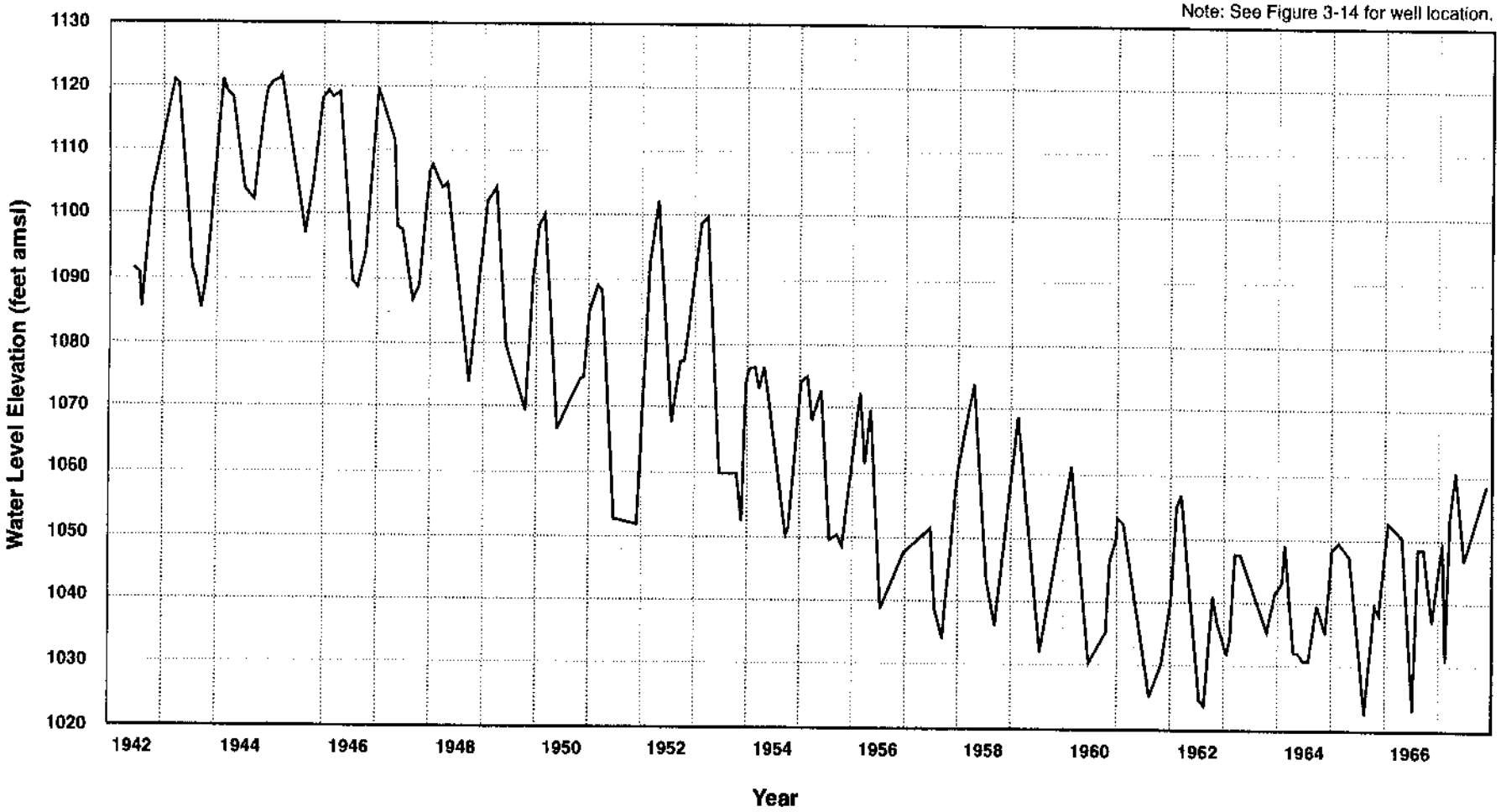
Approximate Scale in Feet

Figure 3-14
Wells in the Alluvial Aquifer
Newhall Ranch Project

CH2M HILL

m110145.A^.ZZ/aquifer 1/96vjh

031991

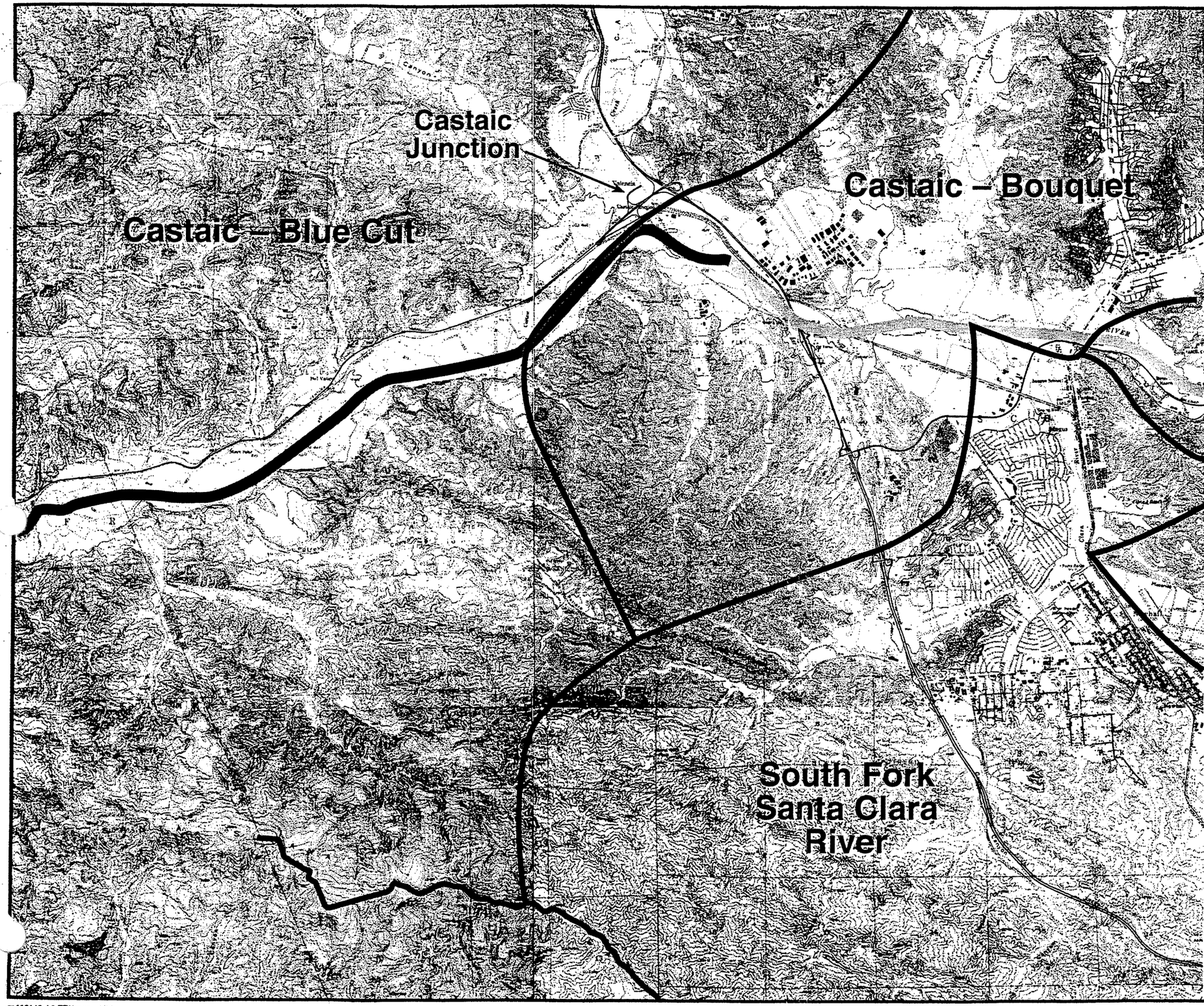


Source: Robson, 1972

Figure 3-15
Hydrograph of Well V-N68
Perforated in the Alluvial Aquifer
Newhall Ranch Project

CH2M HILL

mSCW35933.A3 hydr 1/95



LEGEND

- Santa Clara River-groundwater discharge reach (based on highest historical groundwater levels)
- Santa Clara River-groundwater recharge reach
- Approximate hydrologic subdivision boundary

Source: Interpreted from DWR (1993). Locations of groundwater recharge and discharge reaches may change slightly, depending on groundwater levels.

N

0 4000 8000

Approximate Scale in Feet

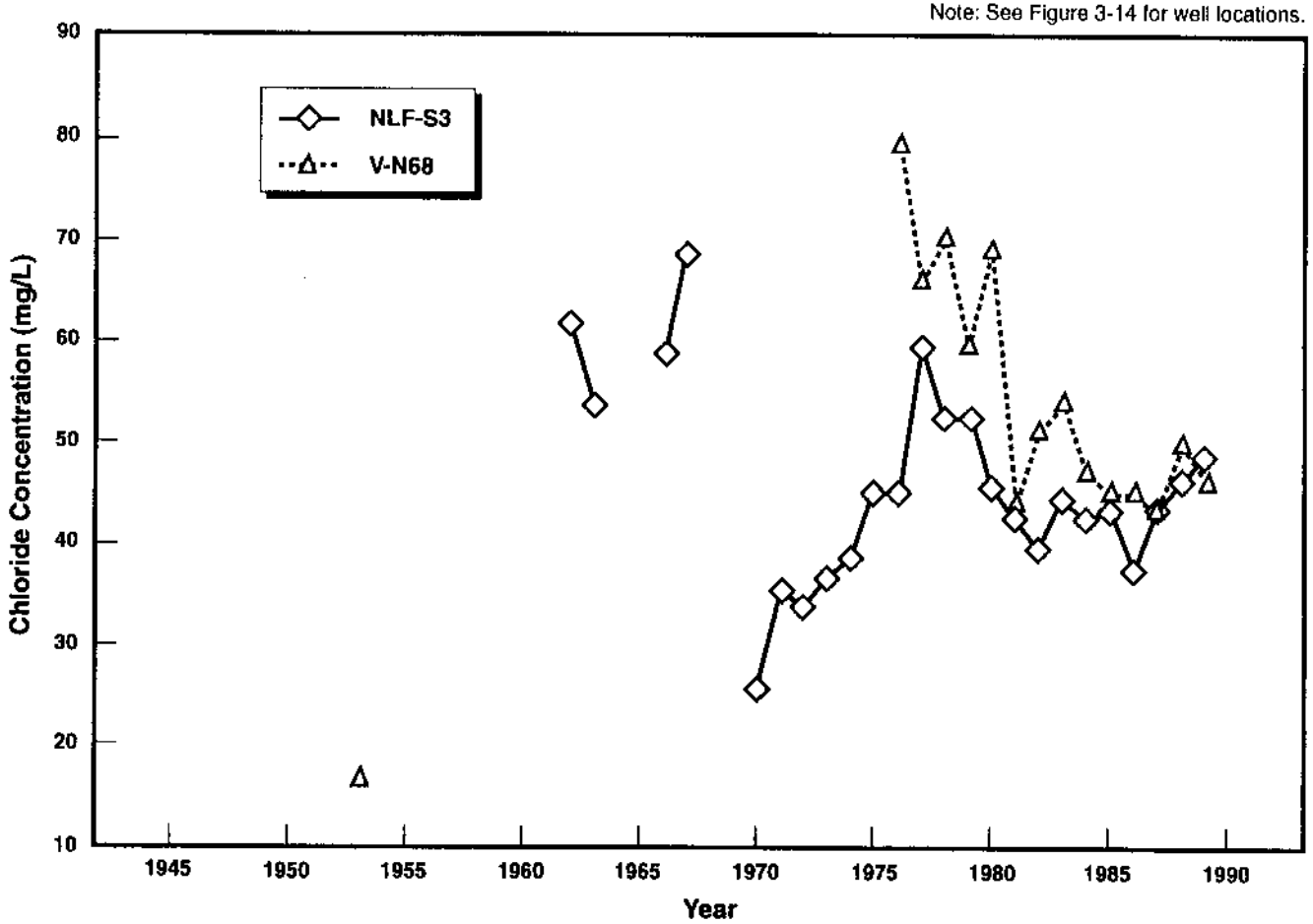
Figure 3-16
Hydrologic Subdivisions and Santa Clara River Conditions
Newhall Ranch Project

CH2M HILL

m110145.A6.ZZ/ base 1/96

031992

Note: See Figure 3-14 for well locations.



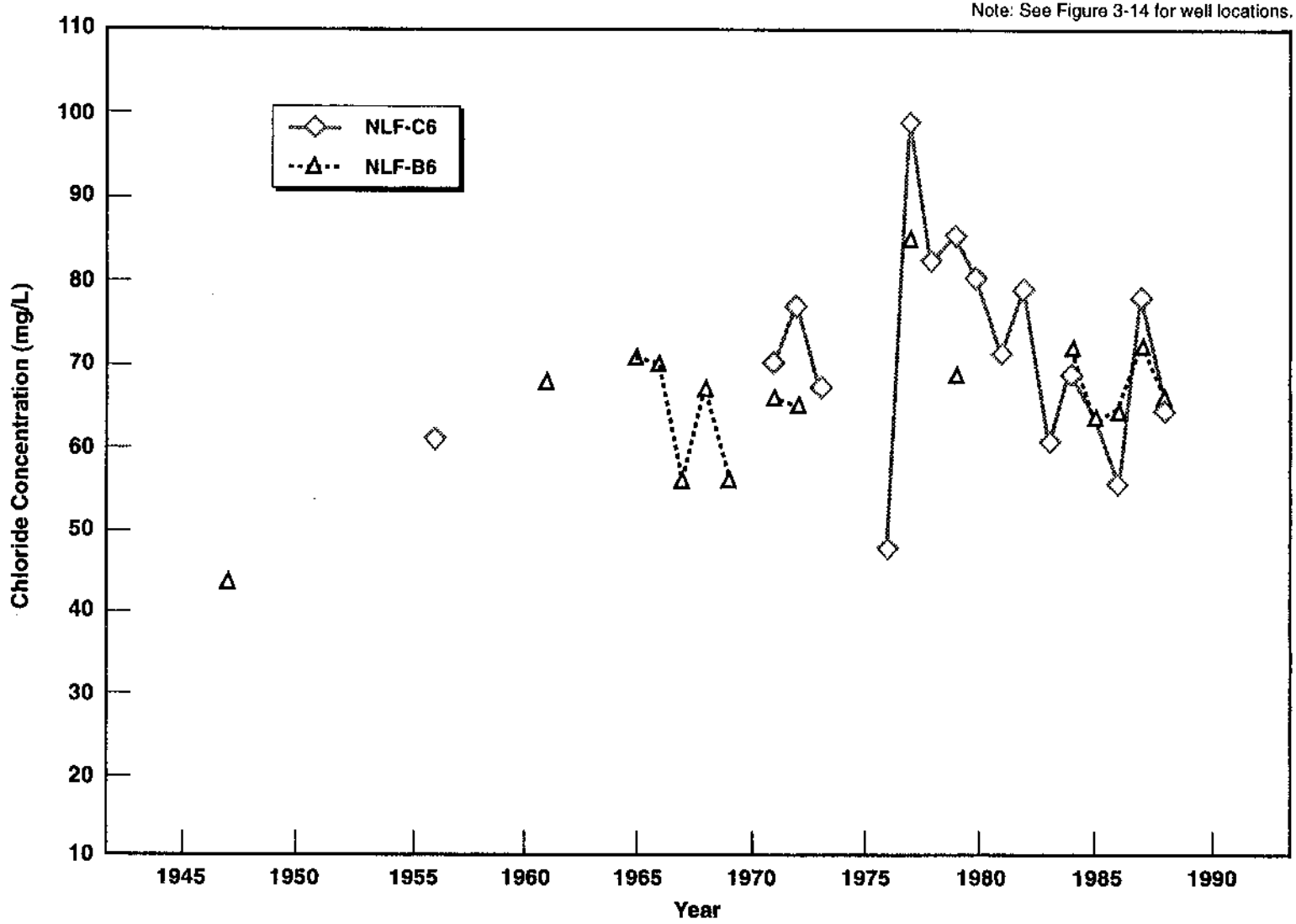
Source: DWR, 1993

Figure 3-17
Chloride Hydrograph for Selected Alluvial Wells in Castaic -Bouquet Subdivision
Newhall Ranch Project

CH2M HILL

mSCW35933.A3 castaic 1/95

Note: See Figure 3-14 for well locations.

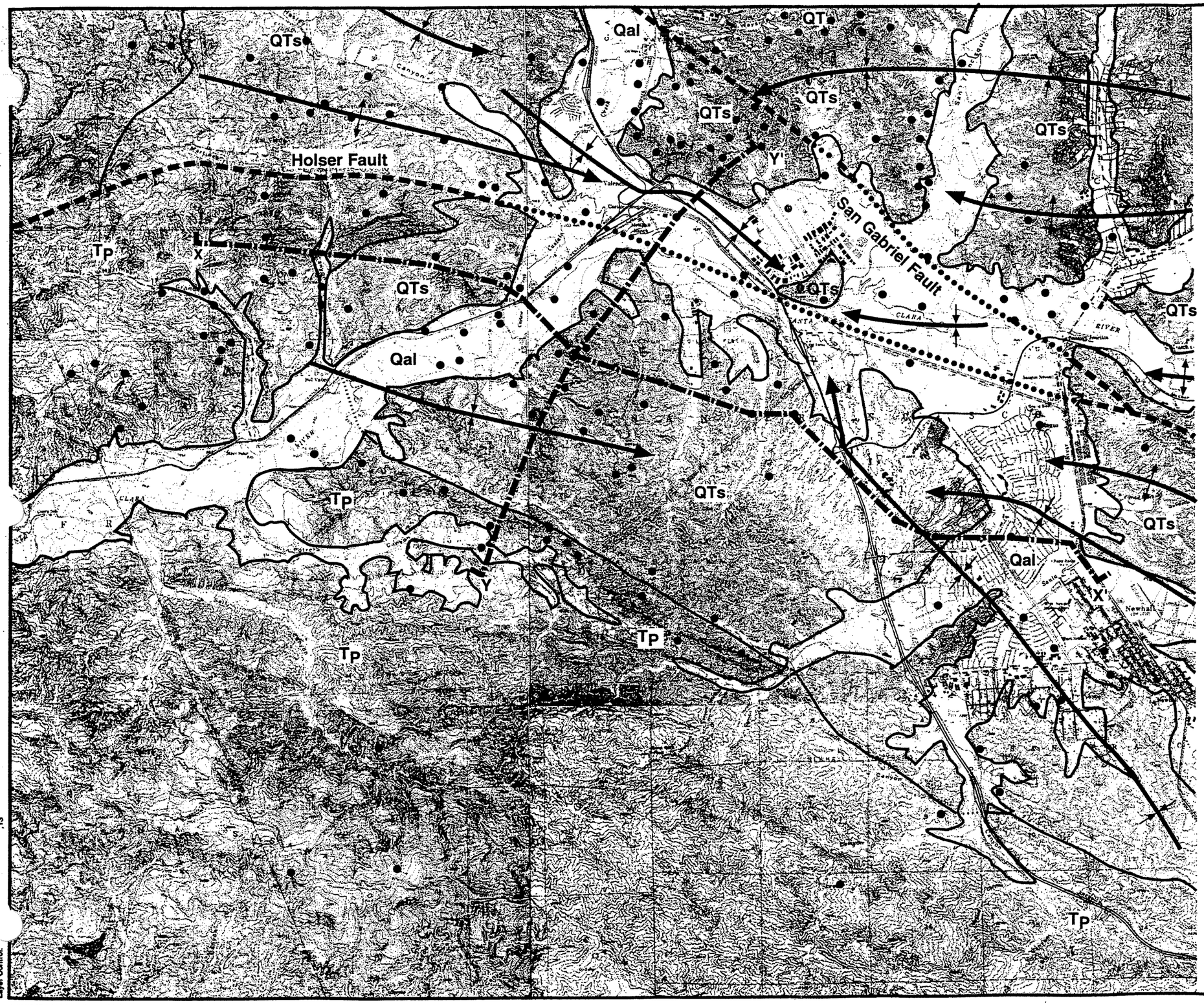


Source: DWR, 1993

Figure 3-18
Chloride Hydrograph for Selected Alluvial Wells in Castaic - Blue Cut Subdivision
Newhall Ranch Project

CH2M HILL

mSCW35933.A3 alluvium 1/95



Geologic cross section (See Figures 3-20 and 3-21)

Fault, dotted where concealed

Oil Well

Geologic contact, dotted where concealed

Sycline, showing plunge

Anticline, showing plunge

QTs = Saugus Fm. and Overlying Terrace Deposits

Qal = Alluvium

Tp = Pico Fm.

Source: Slade (1994)

N

0 4000 8000

Approximate Scale in Feet

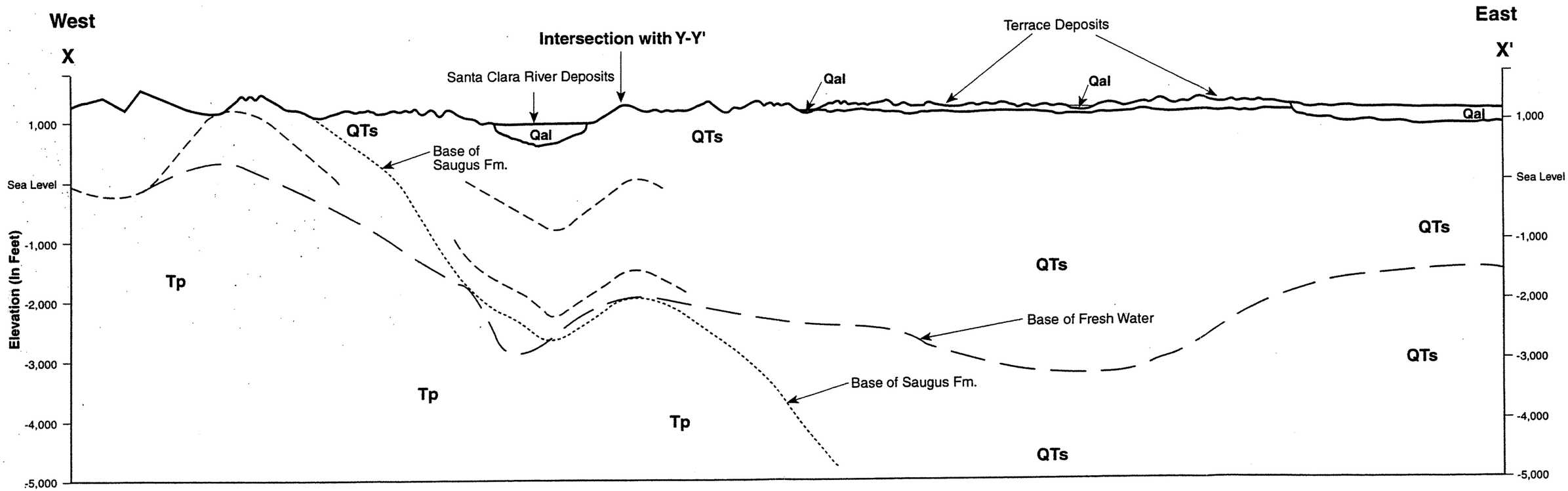
Figure 3-19
Generalized Geology of the Castaic Junction Area and of the Saugus Formation
Newhall Ranch Project

CH2M HILL

031993

Layer Control: .13

m110145 AA ZZ/aquifer 1/96vjh



0 2,000 4,000

Approximate Scale in Feet

Vertical Exaggeration = 2X

LEGEND

Qal	Alluvium
QTs	Saugus Formation and Terrace Deposits
Tp	Pico Formation
——?——	Base of Fresh Water (queried where unknown)
– – – – –	Apparent Dip of Bedding
----------	Contact Between Saugus and Pico Formations

Notes: 1) See Figure 3-19 for location of cross section.
2) Apparent dip of bedding, base of fresh water, and contact between Saugus and Pico Formations interpreted from oil well electric logs.

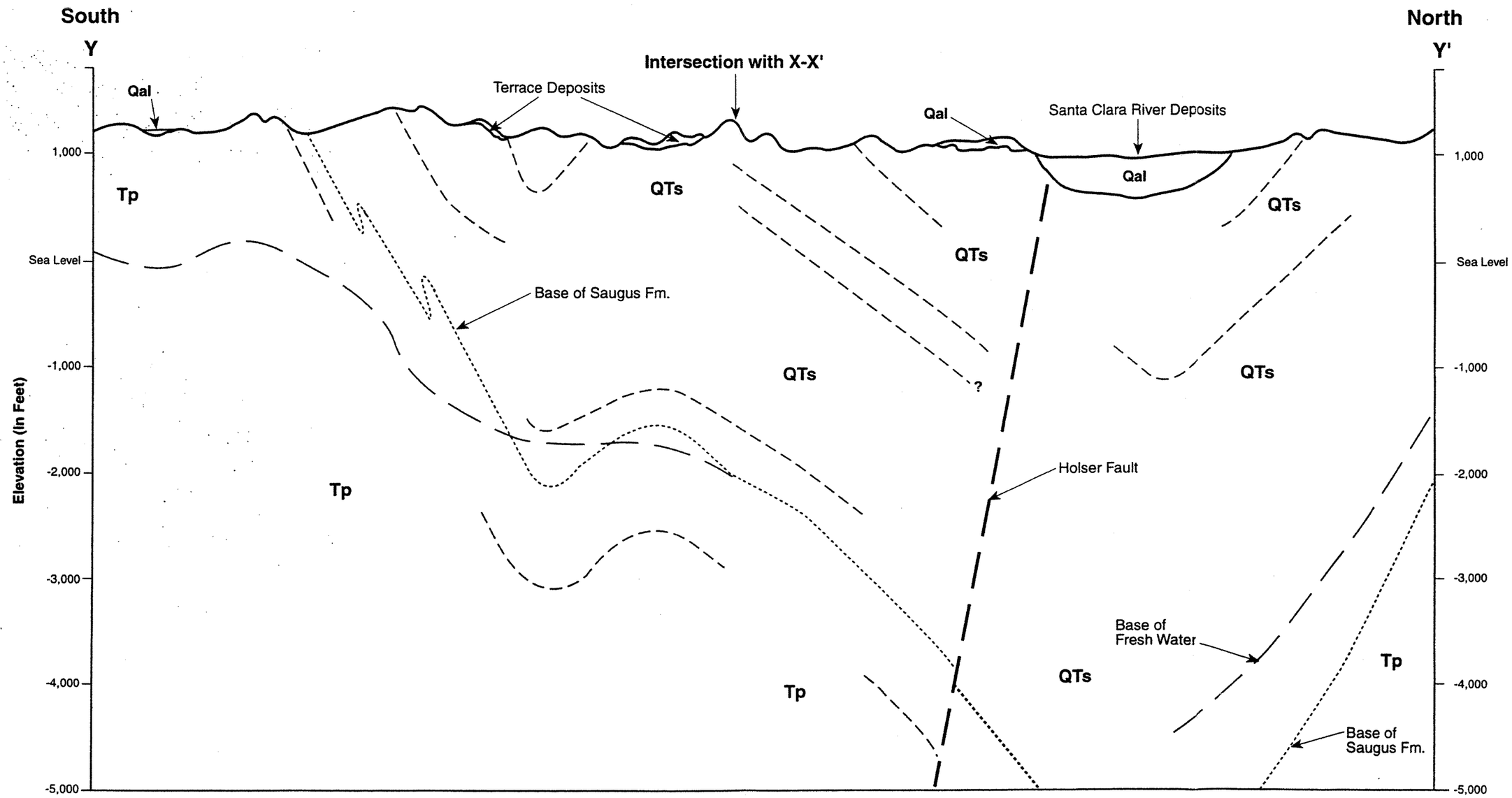
Source: Slade (1994)

Figure 3-20
Cross Section X-X'
Newhall Ranch Project

CH2M HILL

110145.A6.ZZ/X-X' 1/96

031994



LEGEND

Qal	Alluvium
QTs	Saugus Formation and Terrace Deposits
Tp	Pico Formation
——?——	Base of Fresh Water (queried where unknown)
– – – – –	Apparent Dip of Bedding
----------	Contact Between Saugus and Pico Formations

0 2,000 4,000

Approximate Scale in Feet

Vertical Exaggeration = 2X

Notes: 1) See Figure 3-19 for location of cross section.
2) Apparent dip of bedding, base of fresh water, and contact between Saugus and Pico Formations are interpreted from oil well electric logs.

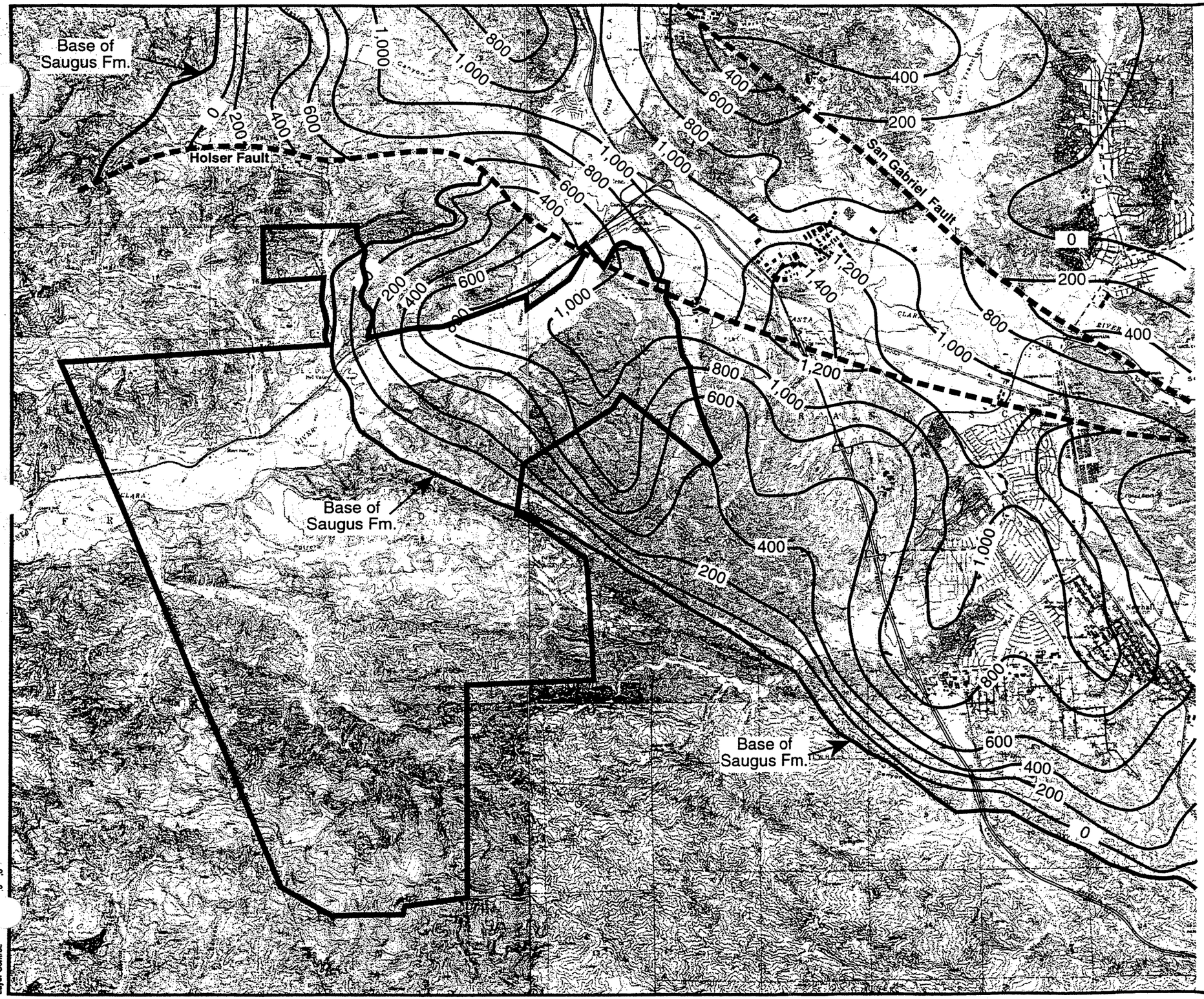
Source: Slade (1994)

Figure 3-21
Cross Section Y-Y'
Newhall Ranch Project

CH2M HILL

110145 A6 77Y-Y' 1/96

031995



Newhall Ranch Project boundary

—200— Contour of equal sand thickness, in feet

Fault

Note: Oil wells are omitted for clarity. See Slade (1988).

N

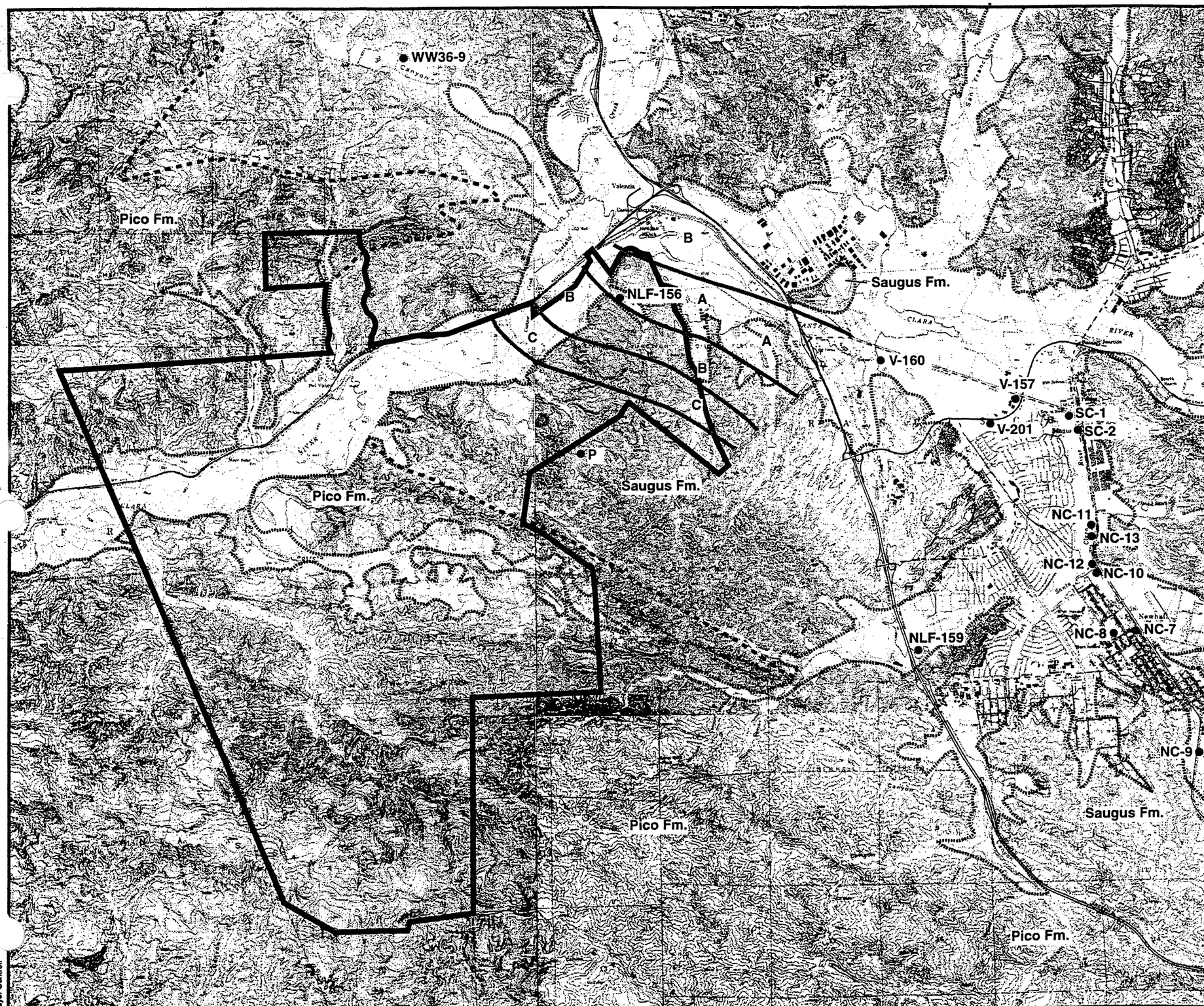
0 4000 8000

Approximate Scale in Feet

Figure 3-22
Sand Thickness of Saugus Formation
Newhall Ranch Project

CH2M HILL

031996



LEGEND

- Approximate boundary between zones with different aquifer characteristics (Slade, 1994). Refer to Table 3-2 for descriptions of A, B, and C zones.
- Boundary between Saugus Formation and Pico Formation
- Boundary between Alluvium and Saugus or Pico Formations
- Project Boundary
- ● Approximate location of Saugus Aquifer well; status in 1993 = active.

Key:

V	=	Valencia Water Co.
SC	=	Santa Clarita Water Co.
NC	=	Newhall County Water District
NLF	=	Newhall Land and Farming Co.
WW	=	Los Angeles County Waterworks District No. 36
P	=	Private

Note: These are the only wells completed entirely in the Saugus Aquifer (Slade, 1994).

N

0 4000 8000

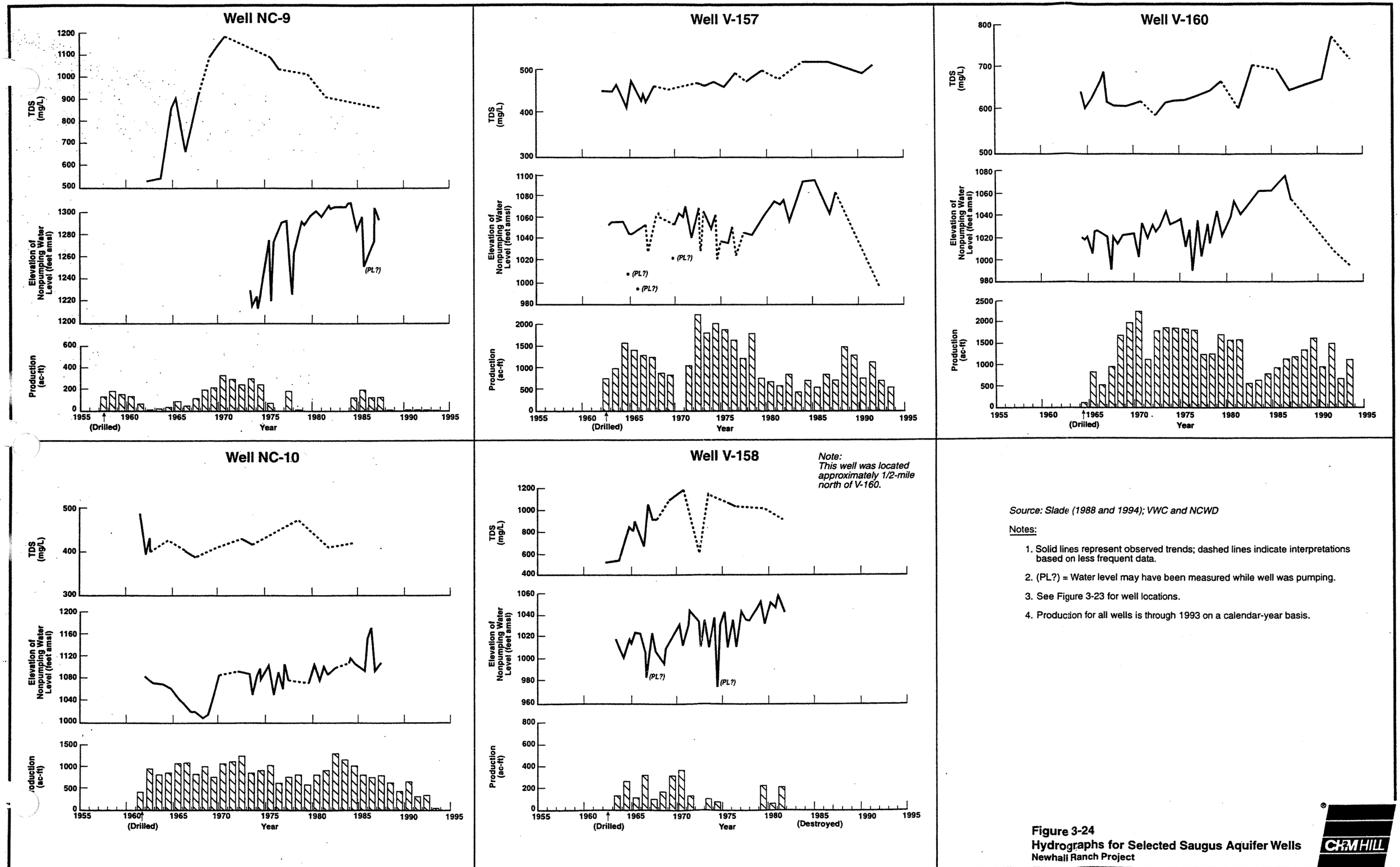
Approximate Scale in Feet

Figure 3-23
Saugus Well Locations and Aquifer Characteristics
Newhall Ranch Project

CH2M HILL

Layer Control:

031997



Source: Slade (1988 and 1994); VWC and NCWD

Notes:

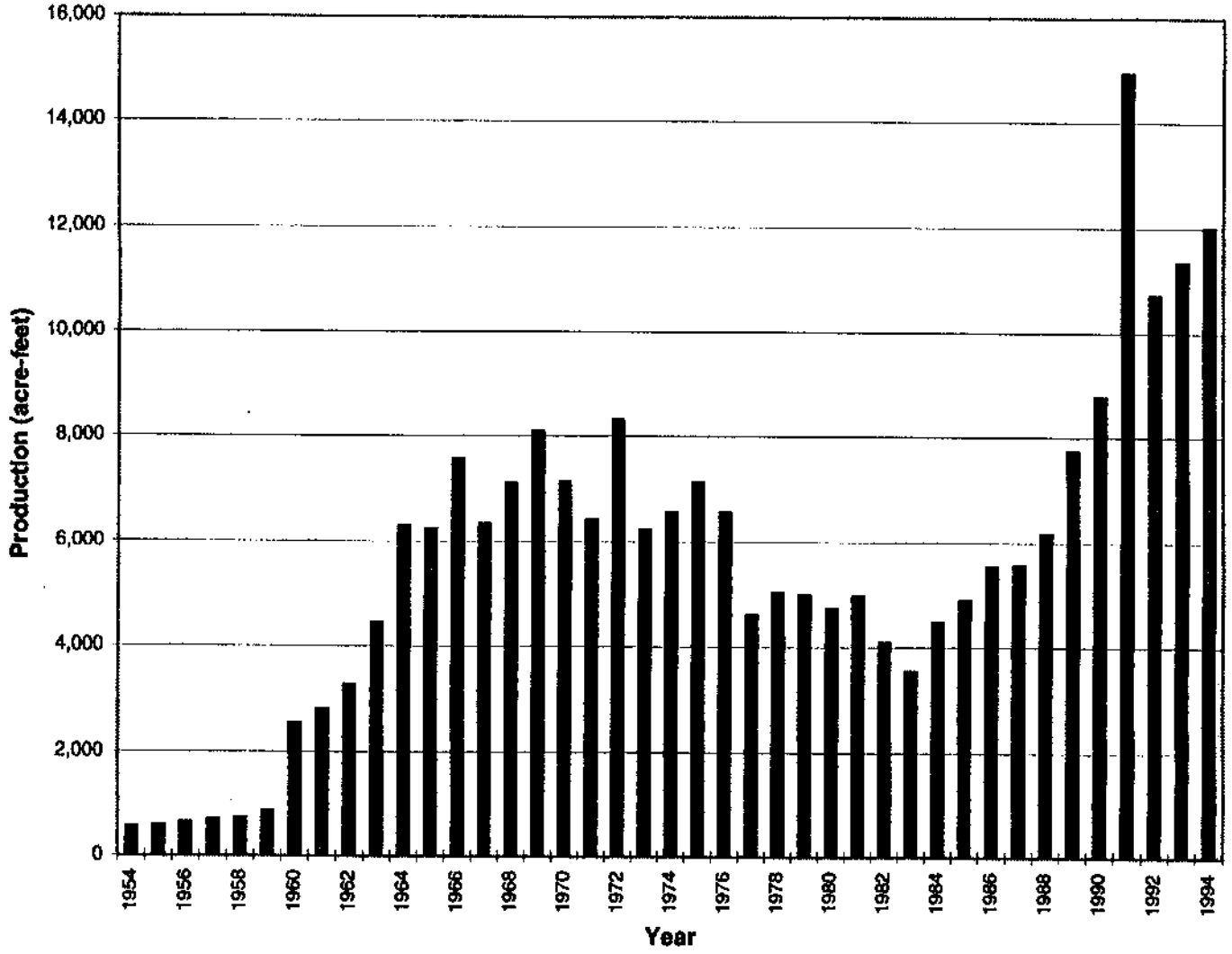
1. Solid lines represent observed trends; dashed lines indicate interpretations based on less frequent data.
2. (PL?) = Water level may have been measured while well was pumping.
3. See Figure 3-23 for well locations.
4. Production for all wells is through 1993 on a calendar-year basis.

Figure 3-24
Hydrographs for Selected Saugus Aquifer Wells
Newhall Ranch Project

CH2M HILL

110145 A6.ZZ/hydrographs 1/96

031998

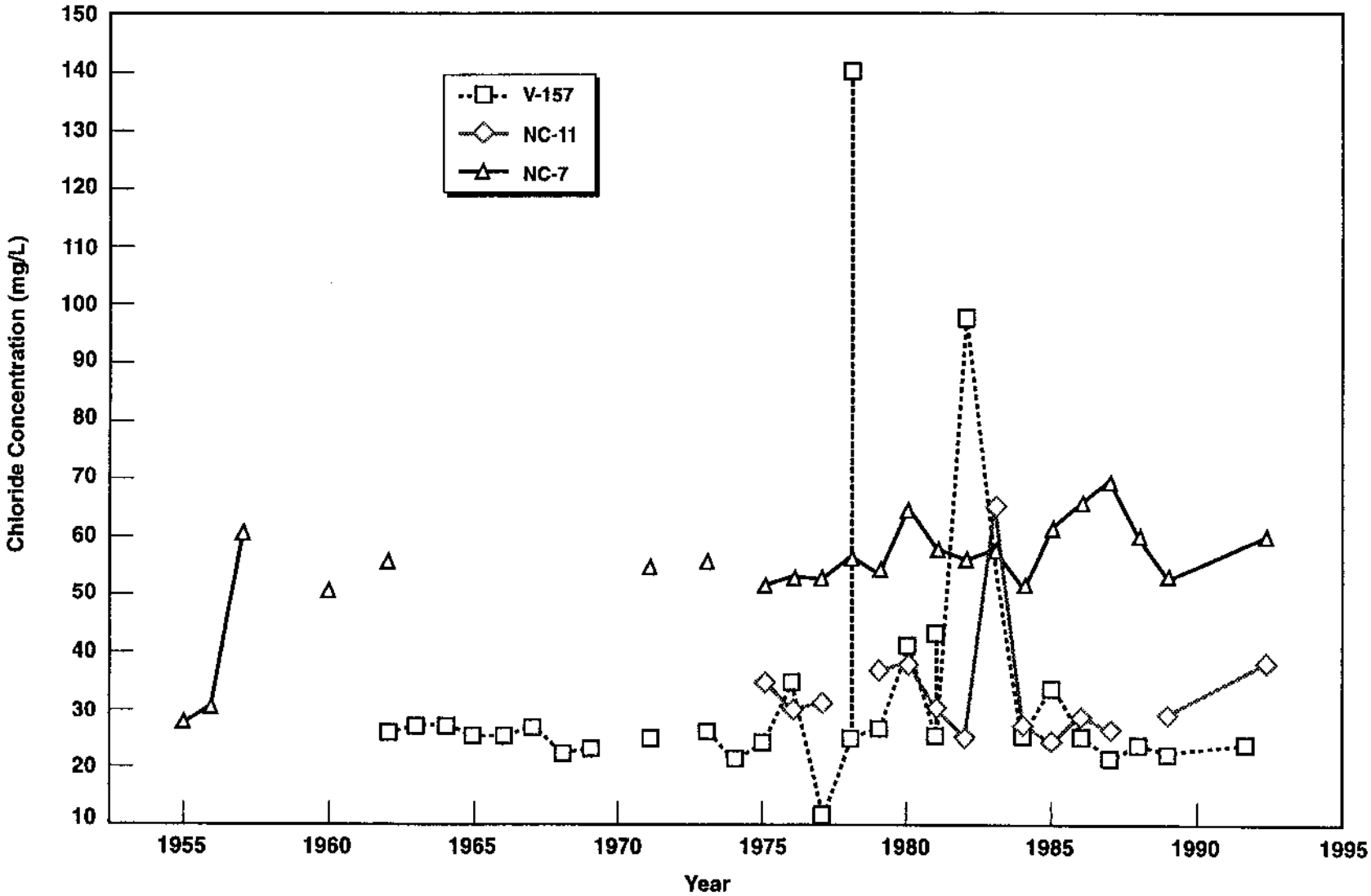


Source: Slade, 1988 and 1994; Valencia Water Co.

Figure 3-25
Groundwater Production In Saugus Aquifer
Newhall Ranch Project

CH2M HILL

mSCW35933.A3 produc 3/95



Source: DWR, 1993; VWC; and NCWD.

Figure 3-26
Chloride Hydrograph for Selected Saugus Wells in South Fork of Santa Clara River Subdivision
Newhall Ranch Project

CH2M HILL

mSCW35933.A3 saugus 1/95

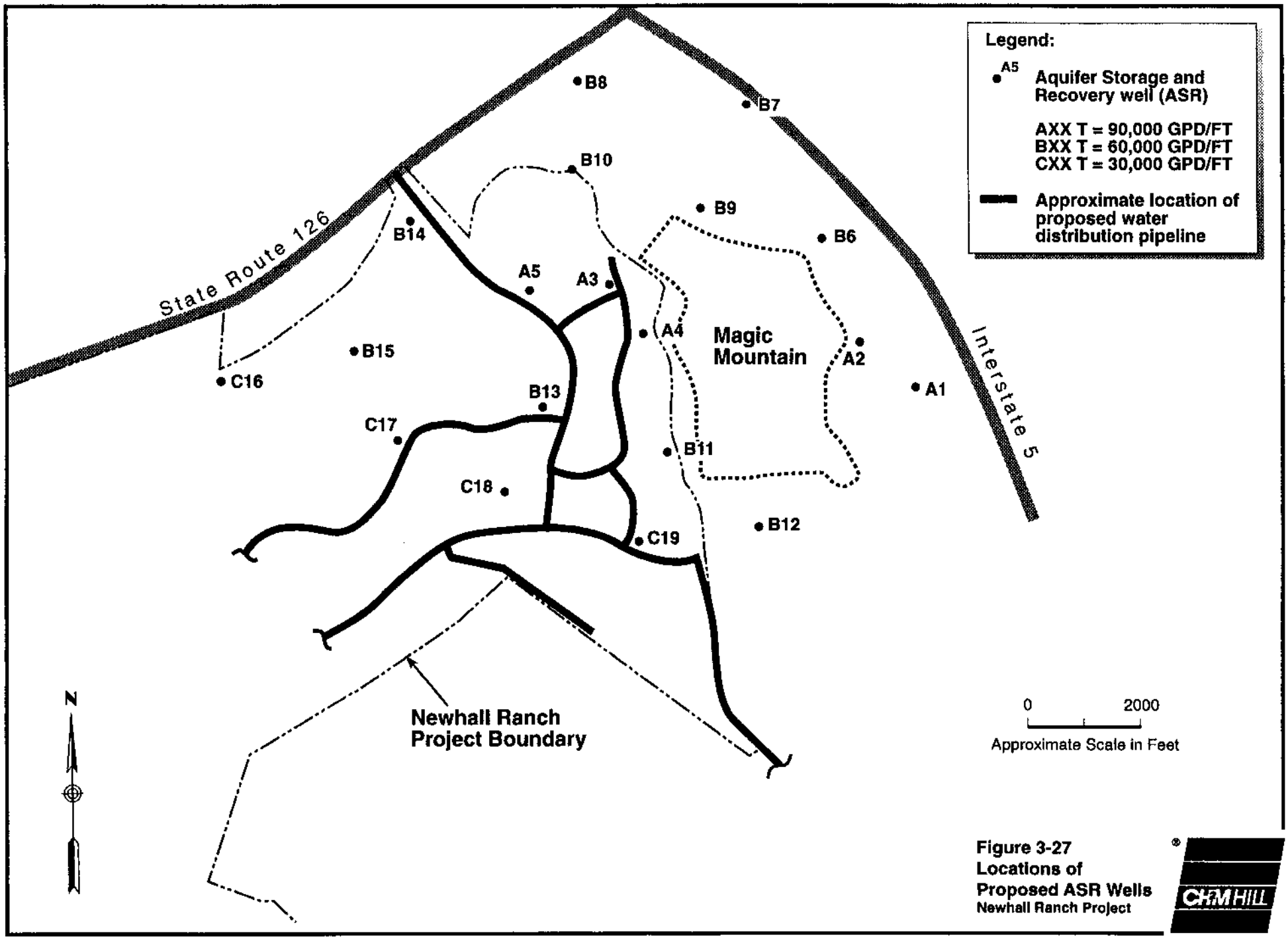


Figure 3-27
Locations of Proposed ASR Wells
Newhall Ranch Project

CH2M HILL

mSCW35933.A3 backbone 2/95

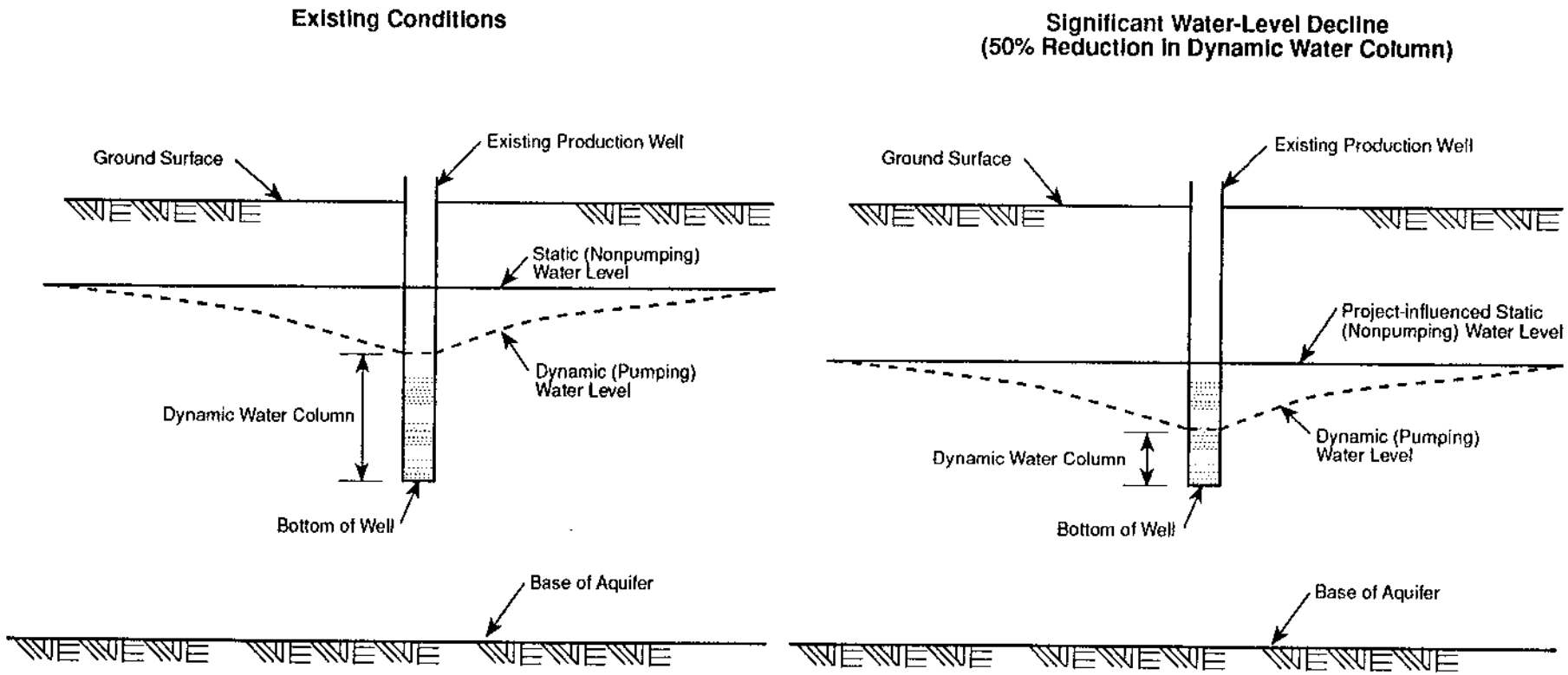
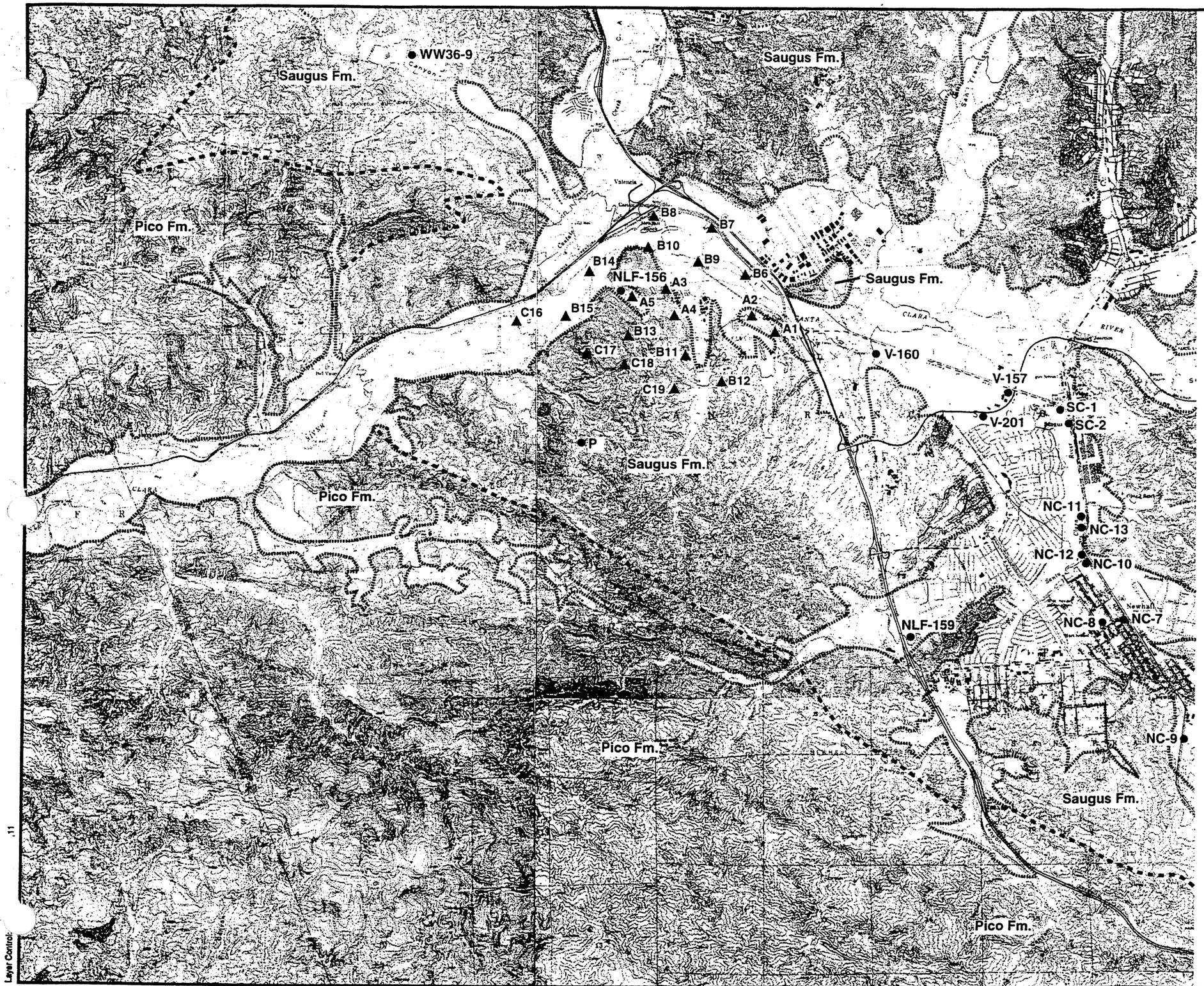


Figure 3-28
Schematic Representation of Reduction in Dynamic Water Column in Existing Well
Newhall Ranch Project

CH2M HILL

mSCW35933.A3 wells2 3/95



LEGEND

- - - Boundary between Saugus Formation and Pico Formation or Alluvium

..... Boundary between Alluvium and Saugus or Pico Formations

● Approximate location of Saugus Aquifer well; status in 1993 = active.

▲ Proposed ASR Well

Key:

V	=	Valencia Water Co.
SC	=	Santa Clarita Water Co.
NC	=	Newhall County Water District
NLF	=	Newhall Land and Farming Co.
WW	=	Los Angeles County Waterworks District No. 36
P	=	Private

Note: These are the only wells completed entirely in the Saugus Aquifer (Slade, 1994).

N

0 4000 8000

Approximate Scale in Feet

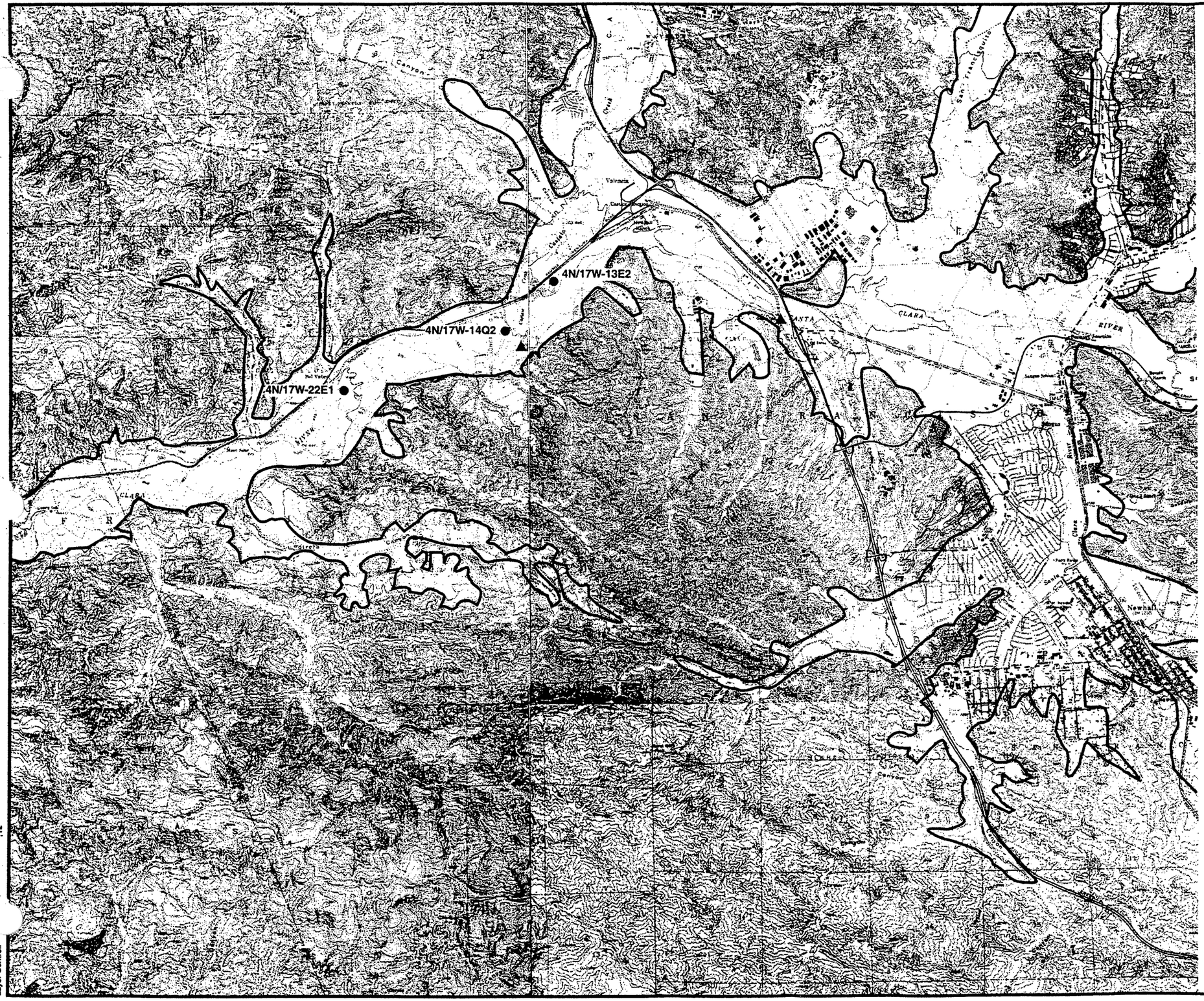
Figure 3-29
Wells in the Saugus Aquifer (Existing and Proposed)
Newhall Ranch Project

CH2M HILL

Layer Control:

m110145.A^.ZZ/aquifer 1/96vjh

031999



LEGEND

4N/17W-22E1
● Approximate location of Alluvial Aquifer groundwater sample

▲ Approximate location of Santa Clara River water sample

—— Boundary between Alluvium and Saugus or Pico Formations

Source: Slade (1994) and DWR (1993)

N

0 4000 8000
Approximate Scale in Feet

Figure 3-30
Locations of Selected Samples of Surface Water and Alluvial Aquifer Groundwater
Newhall Ranch Project

CH2M HILL

Layer Control: .12

032000

Section 4
Water Balance

This section summarizes water needs and addresses the balance of water demands and water supplies for the Newhall Ranch Project (Project). Section 2 of this report identified total water demands. Section 3 identified Valencia Water Company (VWC) as the potential water purveyor and identified potential water supplies, both potable and nonpotable, to assist VWC to meet the projected water demands. The Project is being developed with two water distribution systems: a potable water system and a nonpotable water system. These independent systems will allow water demands to be met by a combination of water supplies.

The projected Project total water demands are for the Project 19,345 ac-ft per year. After consideration of recycled water use, the net additional water need of the Project are 13,320 ac-ft per year. These additional needs are to be met by Valencia Water Company and Castaic Lake Water Agency. The water balance is summarized below.

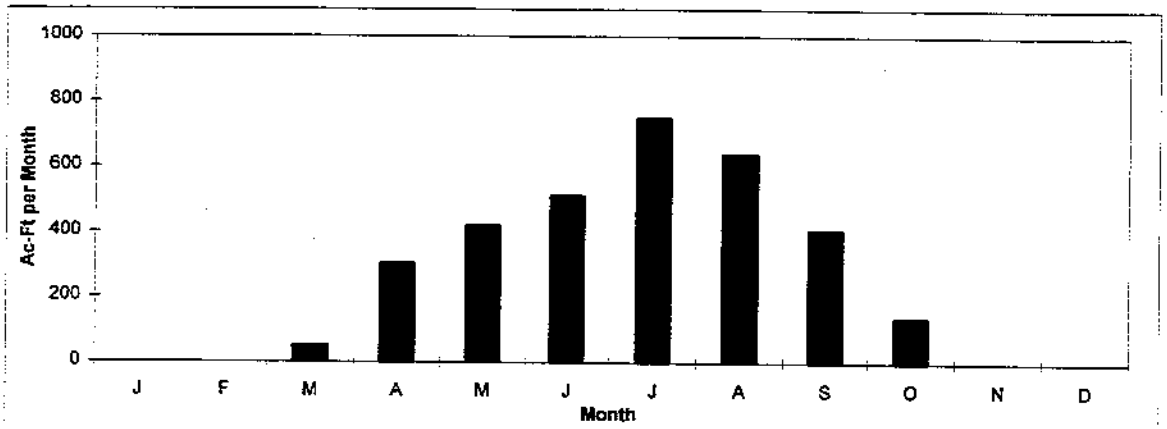
Of the total Project water demands, 9,251 ac-ft per year are nonpotable demands. The potential nonpotable supply option for the Project is recycled water; 6,025 ac-ft per year of recycled water is available after winter discharge of 522 ac-ft. All available recycled water, plus 3,226 ac-ft per year of additional water, are needed to meet demand for nonpotable water. Figure 4-1 illustrates the monthly distribution of 3,226 ac-ft per year of additional water needs of the nonpotable system. No additional water is needed during the four months that recycled supply exceeds nonpotable demands. During the peak month of July, an additional 749 ac-ft (a daily flow of about 12.2 cfs) is needed to meet nonpotable demands.

Additional water of 10,094 ac-ft per year is needed to meet potable demands. Combining potable and nonpotable water needs yields a total additional water need of 13,320 ac-ft per year. Figure 4-2 illustrates the monthly distribution of total water needs. Peak month additional water needs are 1,806 ac-ft (an average daily flow of about 29.4 cfs).

Figure 4-3 illustrates the balance between water demands by type, recycled water generation, and additional water supply needs. Of the 10,094 ac-ft per year of potable demands, 6,547 ac-ft per year are interior use that generates wastewater for recycling. Of that total, about 522 ac-ft per year are seasonally discharged when recycled water supply exceeds nonpotable demands. The remaining 6,025 ac-ft per year are then available to meet nonpotable demands.

As indicated in Figure 4-3, about 13,320 ac-ft per year of additional water supplies are needed to meet Project demands at buildout: 10,094 ac-ft per year for potable demands and 3,226 ac-ft per year for nonpotable demands. Additional water supplies to the Project are anticipated to be served by VWC.

Section 3 identified an additional water supply that could assist VWC in meeting Project water needs. Castaic Creek flood flows can provide a range of supply, depending on the selected alternative. An ASR alternative would have an average annual yield of 2,980 acre-feet per year based on hydrology for the 1956 through 1993 period of record. The yield for an individual year will vary from no flow in 9 years to 8,300 ac-ft in 8 years. A coordinated operations and water transfer alternative would have an average annual yield of 5,050 ac-ft per year. Individual year yields would vary from no flow in 9 years to 26,700 ac-ft in 3 years.



Note: Total additional water required is 3,226 ac-ft per year.

Figure 4-1
Additional Nonpotable Water Needs
Newhall Ranch Project

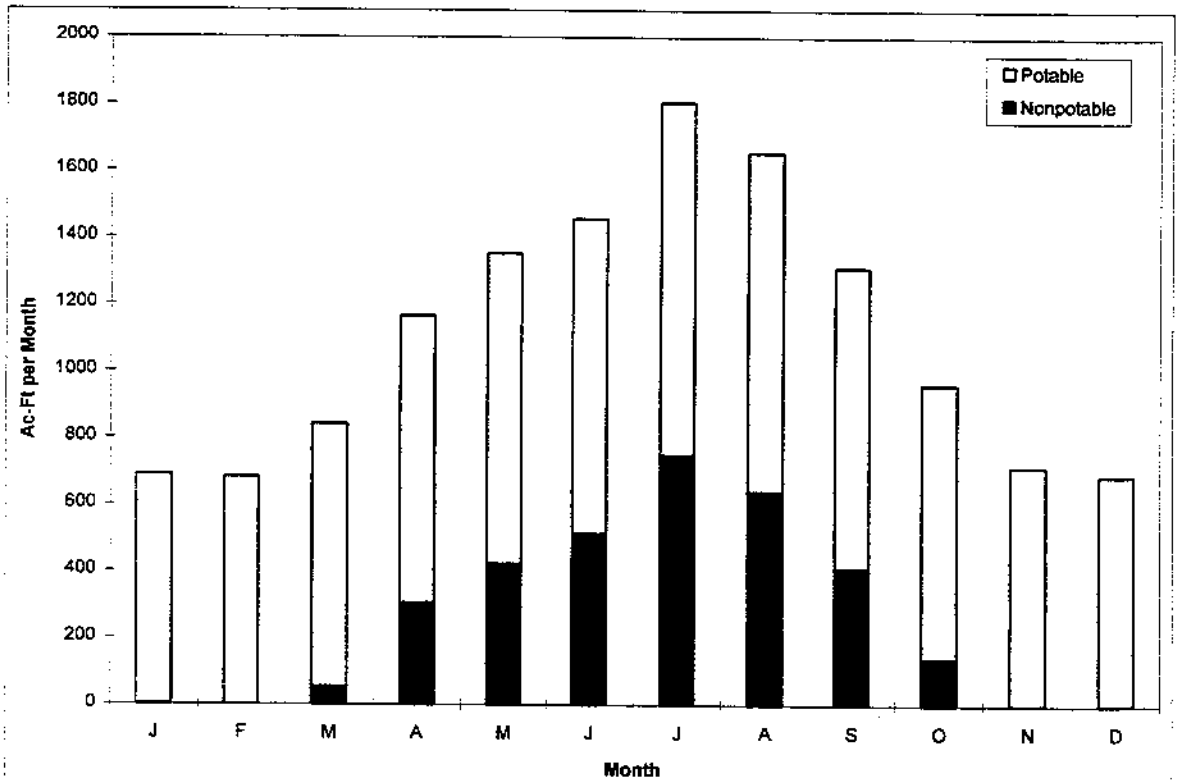
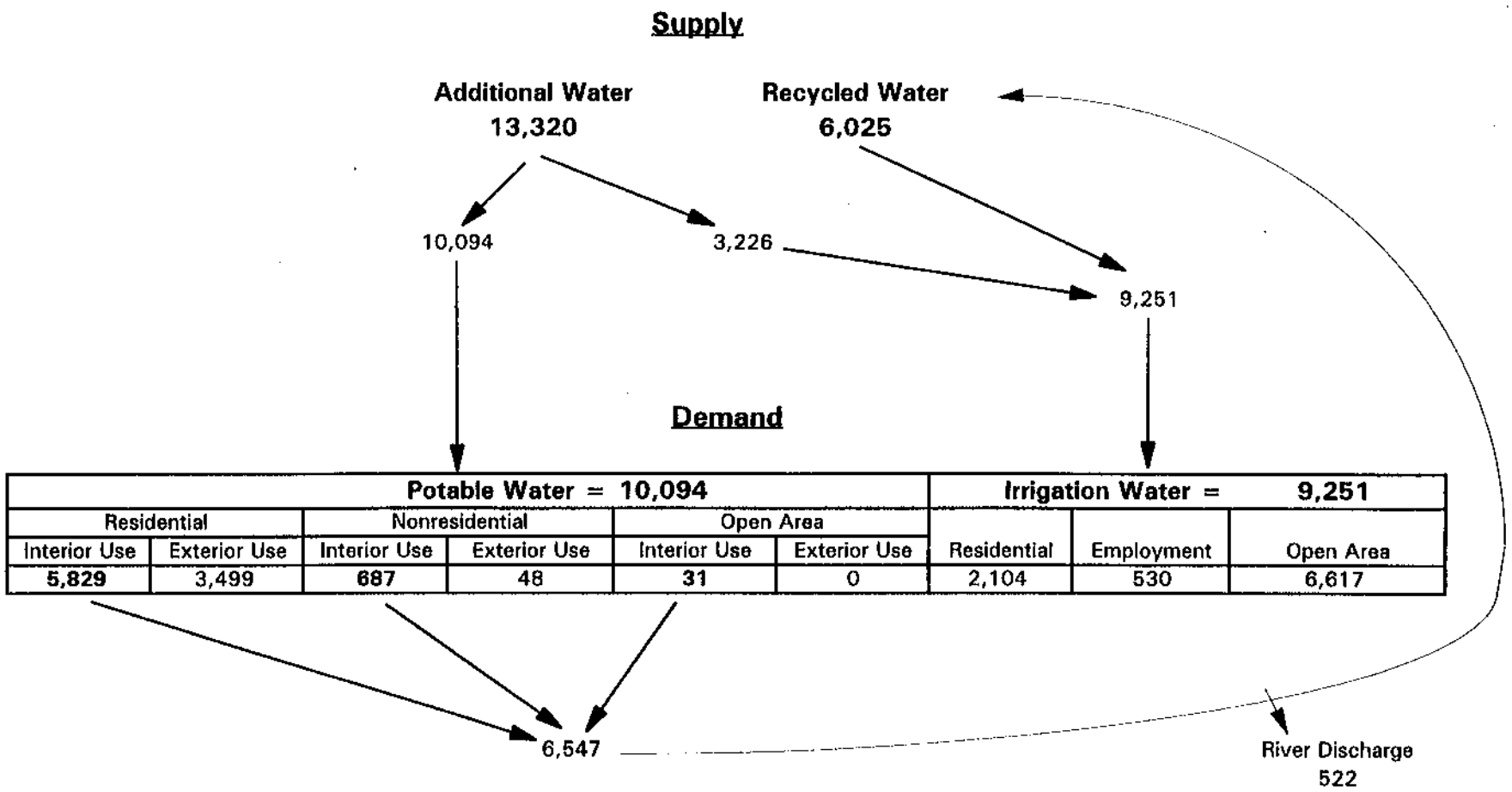


Figure 4-2
Total Additional Water Needs
Newhall Ranch Project

Figure 4-3
Newhall Ranch Water Balance

All units in acre-feet/year



Potable Water = 10,094						Irrigation Water = 9,251		
Residential		Nonresidential		Open Area				
Interior Use	Exterior Use	Interior Use	Exterior Use	Interior Use	Exterior Use	Residential	Employment	Open Area
5,829	3,499	**687**	48	**31**	0	2,104	530	6,617

Section 5
Effluent Treatment

5.1 Overview

This section discusses the preliminary design for a 7.7-mgd water reclamation plant (WRP) to be located in the Newhall Ranch Project (Project). The proposed WRP is located on the south side of SR 126, adjoining the Santa Clara River, near the Ventura County border. The facility has been sized based on estimated Project effluent generation (Table 5-1) using CSDLAC wastewater generation coefficients.

Prior to construction of the WRP, final plans will be prepared and all required permits will be obtained. The preliminary plans are appropriate given that the WRP will not be constructed for several years, during which time it is possible that design standards and requirements may change. It is also probable that the WRP will be constructed in phases. However, the increments of construction are currently unknown.

This section discusses the conceptual sizing and layout for the Newhall Ranch WRP, and includes the following:

- Title 22 Wastewater Reclamation Criteria requirements for water recycling and water quality objectives for the WRP
- Preliminary sizing for a conventional treatment plant that consists of primary, secondary, and tertiary treatment followed by disinfection
- Site layout for the treatment facilities

5.2 Water Quality Objectives

The water quality limits, as established by federal and state regulations are determined by the end use of the treated effluent. The Newhall Ranch WRP effluent is intended for reclamation and reuse by the Project; however, some discharge to the river is anticipated during winter months, when the recycled water supply exceeds demand. Title 22 of the California Administrative Code (Title 22) regulates reclaimed water, and RWQCBLAR sets the discharge limits for WRP effluent discharged to the Santa Clara river.

TABLE 5-1

Title 22 specifies California's Wastewater Reclamation Criteria (WRC) (Department of Health Services, 1978), and all recycled water in California must meet or exceed these criteria. The criteria apply to the treatment processes; treatment performance standards, such as removal efficiencies and effluent water quality; process monitoring programs, including type and frequency of monitoring; facility operation plans; and necessary reliability features.

The water quality objectives for the proposed WRP are based upon discharge limits typically set by RWQCBLAR, whose requirements are more specific than those of Title 22. To discharge to the River, a National Pollutant Discharge Elimination System (NPDES) Permit must be obtained from RWQCBLAR. The proposed WRP has been designed conceptually to meet effluent discharge standards similar to the standards specified by the RWQCBLAR for the Valencia WRP, as presented in Table 5-2. The standards for the two plants are likely to be similar, because the proposed WRP will have similar wastewater generation sources and end uses, such as the water reclamation distribution system and river discharge.

Table 5-2
Valencia WRP Discharge Limits
Newhall Ranch Project

Constituent	Units	Discharge Limit		
		30-day Average	7-day Average	Daily Maximum
Biochemical oxygen demand, (BOD), 5-day, 20°C	mg/L	20	30	45
Suspended solids	mg/L	15	40	45
Settleable solids	mg/L	0.1	---	0.3
Total dissolved solids (TDS)	mg/L	---	---	1,000
Sulfate	mg/L	---	---	400
Chloride	mg/L	---	---	100
Nitrate and nitrite (as nitrogen)	mg/L	---	---	10
Oil and grease	mg/L	10	---	15

5.3 Treatment Process

The proposed Newhall Ranch WRP will consist of primary, secondary, and tertiary treatment facilities, as well as solids handling and disinfection facilities. The conceptual

layout of the 7.7-mgd WRP has been prepared based on typical design criteria used by CSDLAC for conventional wastewater treatment plants. The average flow for the WRP is 7.7 mgd, and a peaking factor of 2.0 has been used to calculate a maximum flow of 15.4 mgd through the plant. The peaking factor is the ratio between the peak sanitary flow and the average dry weather flow. The peaking factor provides a level of conservatism so that the WRP can accommodate daily flow variations. A peaking factor of 2 was obtained from the CSDLAC. The design criteria used for developing internal dimensions for individual process units are presented in Table 5-3. Footprints for each facility may be larger than the individual units since the facility footprints account for dimensions not included in unit sizing, such as wall thickness and pipe galleries.

Primary Treatment

Influent wastewater will enter the WRP through the influent pump station and comminutors, grinders that reduce the size of solids in the plant influent. From the pump station flow enters the two grit chambers where settleable material, such as egg shells, sand, and other heavy solid material, are removed. The internal dimension of each grit chamber will be approximately 40 feet long and 10 feet wide. These facilities often generate odors, therefore the facilities can be enclosed and odor scrubbers can be installed to minimize odors released to the atmosphere.

From the grit chambers, the wastewater enters the three primary sedimentation basins, where large settleable solids are removed and sent to the solids handling facilities. The internal dimension of each basin will be approximately 20 feet wide by 200 feet long. The basins will be sub-grade structures constructed of reinforced concrete. Sedimentation basins may generate odors but are not normally covered structures.

Flow will be equalized between the primary sedimentation basins and the aeration basins using two flow equalization basins. These basins dampen the peak flows to the aeration basins, thereby reducing flow fluctuations through many of the plant processes. The flow equalization basins have been sized to hold approximately 20 percent of the average plant flow (1.5 million gallons). Each basin's internal dimensions will be approximately 260 feet by 30 feet, and the basins will be subgrade structures constructed of reinforced concrete. Equalization basins do not normally generate odors.

Secondary Treatment

Secondary treatment begins with the five aeration basins which biologically treat the incoming wastewater, removing most of the 5-day biochemical oxygen demand (BOD_5) and suspended solids. Biological treatment uses highly concentrated quantities of naturally occurring bacteria to biodegrade the organic material in the wastewater. The biodegradation efficiency of bacteria is increased by pumping air or oxygen through the mixture of primary effluent and bacteria, maintaining an aerobic condition that improves the bacteria's ability to consume organic material. The internal dimension of each aeration basin will be approximately 215 feet long by 22.5 feet wide.

Table 5-3
Summary of Design Criteria for WRP
Newhall Ranch Project

Design Element	Criterion (a)
Flow:	
Flow, Average	7.7 mgd
Flow, Maximum	15.4 mgd
Peaking Factor	2
Grit Chambers:	
Total Number of Chambers	2
Length (Internal)	40 ft
Width (Internal)	10 ft
Sidewater Depth	6.7 ft
Detention Time at Average Flow	7.7 min
Primary Sedimentation Basins:	
Total Number of Basins	3
Dimensions	
Length (Internal)	200 ft
Width (Internal)	20 ft
Depth	12 ft
Performance	
Overflow Rate @ Avg Flow	625 gpd/sq ft
Detention Time @ Avg Flow	3.4 hr
Overflow Rate @ Max Flow	1,250 gpd/sq ft
Detention Time @ Max Flow	1.7 hr
Flow Equalization Basins:	
Number of Basins	2
Dimensions	
Length (Internal)	260 ft
Width (Internal)	30 ft
Depth	13 ft
Aeration Basins:	
Total Number of Basins	5
Dimensions	
Length (Internal)	215 ft
Width (Internal)	22.5 ft
Depth	15 ft
Detention Time, Avg Flow + 33% RAS	6.5 hr

Table 5-3
Summary of Design Criteria for WRP
Newhall Ranch Project

Design Element	Criterion (a)
Final Sedimentation Basins:	
Number of Basins	6
Dimensions	
Length (Internal)	135 ft
Width (Internal)	16 ft
Depth	10 ft
Performance	
Overflow Rate @ Avg Flow	579 gpd/sq ft
Detention Time @ Avg Flow	2.3 hr
Overflow @ Max Flow	1,160 gpd/sq ft
Overflow Rate @ Max Flow (1 Unit out of Service)	1,390 gpd/sq ft
Pressure Filters:	
Number of Filters	4
Length (Internal)	32 ft
Width (Internal)	16 ft
Surface Loading Rate @ Avg Flow	2.7 gpm/sq ft
Chlorine Contact Basins:	
Number of Basins	2
Dimensions	
Length (Internal)	190 ft
Width (Internal)	20 ft
Depth	14.6 ft
Detention Time @ Avg Flow	2.7 hr
Effluent Filter Waste Backwash Equalization Tank:	
Number	1
Length (Internal)	36 ft
Width (Internal)	33 ft
Sidewater Depth	15.8 ft
Effective Volume	140,800 gal
Waste-Activated Sludge Thickeners:	
Number of Thickeners	2
Diameter	18 ft
Performance	
Solids Loading Rate @ Avg Flow	0.59 lb/hr/sq ft

Table 5-3
Summary of Design Criteria for WRP
Newhall Ranch Project

Design Element	Criterion (a)
Anaerobic Digesters:	
Total Number of Digesters	3
Dimensions	
Diameter	65 ft
Depth	26 ft
Solids Loading Rate	0.065 lbs VSS/cf-day
Solids Loading Rate (1 Digester Out of Service)	0.097 lbs VSS/cf-day
Performance	
Detention Time (All Units in Service)	32 days
Detention Time (1 Unit out of Service)	21.3 days
Storage Tanks	
Number of Tanks	1
Diameter	65 ft
Storage Time	12.6 days
Digested Sludge Plate Frame Filter Presses:	
Number	2
Digested Sludge Flow	0.060 mgd
Hydraulic Loading, 8 hrs/day, 1 unit out of service	174 gpm/filter press
Solids Loading, 8 hrs/day, 5 days/week, 1 unit out of service	58,500 lbs TS/day-filter press

(a) mgd = million gallons per day; gpd = gallons per day.

The wastewater next enters the six final sedimentation basins, which will have an internal dimension of approximately 135 feet long by 16 feet wide.

Both the aeration basins and the final sedimentation basins will be sub-grade structures constructed from reinforced concrete. These structures are not normally covered; however, to reduce potential odor emissions, these structures would be covered and odor scrubbers would be installed.

Tertiary Treatment

Tertiary treatment will consist of filtration and disinfection. Four filters have been sized for the WRP with each filter's internal dimensions approximately 32 feet long by 16 feet wide. The overall footprint for the filtration facilities will be approximately 91 feet by 35 feet, and the facilities will be contained in a belowgrade structure. Waste filter backwash water will be equalized for return to the head of the plant. The footprint for the effluent filter waste backwash equalization basin will be approximately 38 feet by 35 feet and will be located below-grade.

The filtered effluent will proceed to the two chlorine contact basins for disinfection using sodium hypochlorite. The chlorine contact basins have been sized to provide a 2.6-hour detention time at average flow. Each basin will have internal dimensions of approximately 190 feet by 20 feet and the basins will be buried. Filtration and chlorination facilities do not normally generate odors.

The disinfected water will be pumped to the reclaimed water distribution system using a pumping station with a footprint of approximately 75 feet by 75 feet.

Dechlorination capability utilizing sodium bisulfate also will be provided to meet NPDES permit limitations when discharging to the Santa Clara River.

Solids Handling Facilities

The solids handling facilities will reduce the volume of solids requiring disposal from the WRP. These facilities have been sized using the Valencia WRP's design criteria for solids loading. The waste activated sludge (WAS) from the final sedimentation basins will be thickened using two 18-foot-diameter dissolved air flotation thickeners. The thickeners concentrate the WAS prior to sending them to the digesters. This process increases the concentration of sludge that the digesters can store and digest.

The anaerobic digesters will be three 65-foot-diameter structures that will biologically degrade the primary sludge and the thickened waste activated sludge, reducing the final volume for further treatment and disposal.

The digested sludge will then be stored further in one 65-foot-diameter sludge storage tank and dewatered following storage using plate and frame filter presses. The dewatered solids will be transported offsite to a landfill that is permitted to accept such sludge.

All of the solids handling facilities will be abovegrade structures. The thickeners will be about 20 feet high. The digesters will be approximately 20 feet abovegrade, constructed of reinforced concrete. The dewatering building will be approximately a 20-foot abovegrade structure constructed using architectural design criteria from CSDLAC and consistent with architectural features of the plant. The solids handling facilities typically generate odors, so they will require odor control measures, including enclosing the structures and installing odor scrubbers to minimize odors released to the atmosphere. The thickeners are typically uncovered, while the digesters and dewatering building are typically enclosed structures.

Accessory Facilities

A variety of accessory facilities will be needed to support the plant facilities. These facilities include the following:

- Chemical handling and storage facilities
- Various pump stations
- Electrical buildings and emergency power generation
- Control building and laboratory
- Air compressors
- Maintenance building

These facilities will range in size from at grade to approximately one- to two-story structures. As shown in Figure 5-1, the plant site is laid out "campus style" which provides easy accessibility for process equipment to supporting facilities. The chemical handling facilities will contain storage and metering facilities for the coagulant, disinfectant, and various polymers to be used at the WRP. The chemical handling will provide containment areas in the event of a leak or chemical spill. These areas are typically not enclosed; however, a cover or lean-to could be provided.

5.4 Site Layout

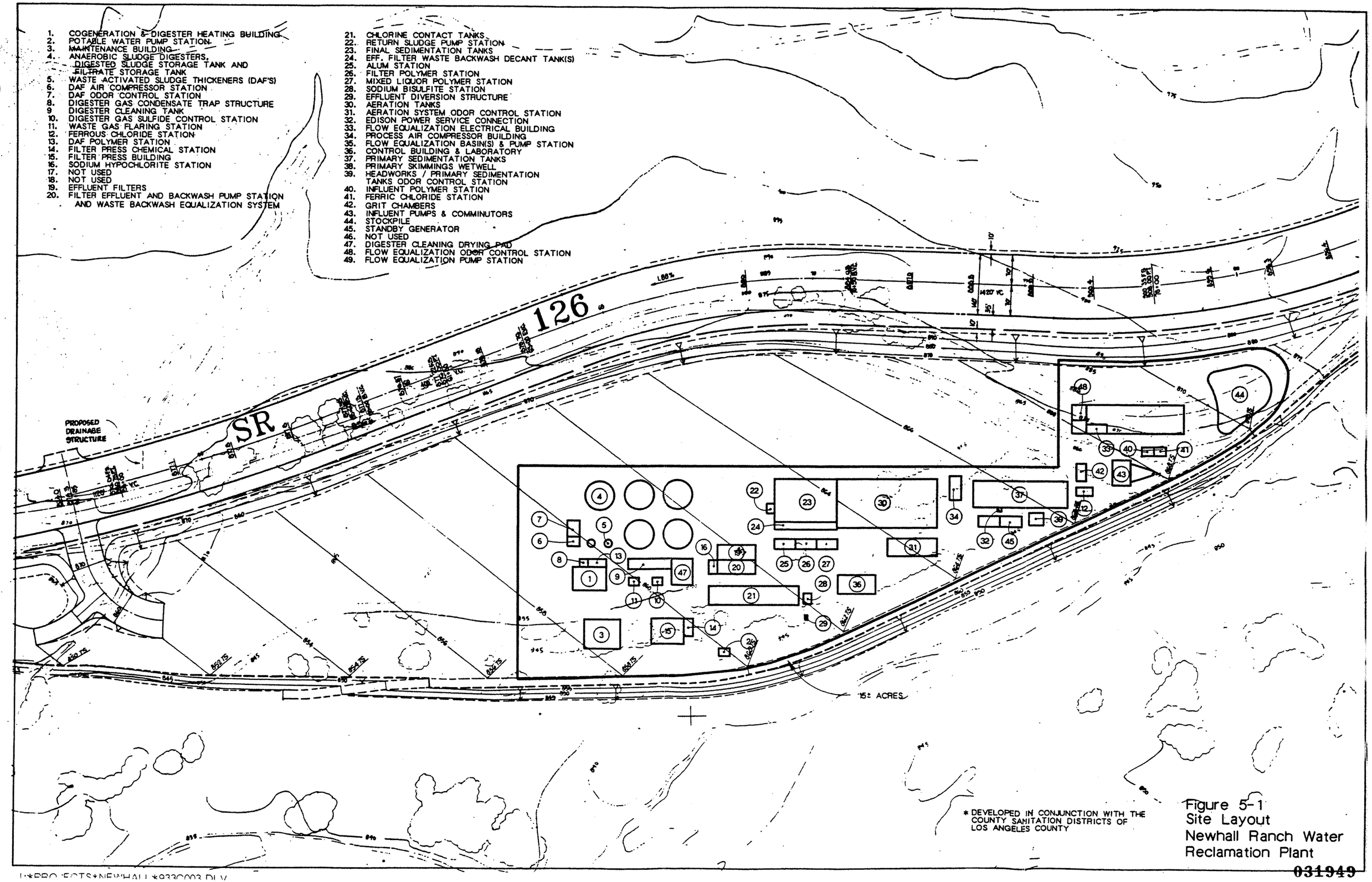
The Newhall Ranch WRP, with a capacity of 7.7 mgd, has been sized to service the needs of Newhall Ranch only. No excess capacity is provided for in the WRP construction nor is any additional capacity required to make the WRP economically feasible.

Figure 5-1 presents the site layout for the proposed WRP. The layout was designed to permit gravity flow, as well as pumping, of wastewater through the plant and to give plant workers easy access to the treatment process. The headworks, chemical stations, and the dewatering building will require routine truck access; they are located to facilitate roadside access.

The solids thickeners, anaerobic digesters, and dewatering building will be approximately 20 feet abovegrade. In addition, the support facilities will be one- to two-story structures. Because the terrain will not hide these structures, architectural and landscaping techniques (using the characteristics and theme of the surrounding community) will be needed to mitigate the visual impact. Roof styles can be designed to break up the line-of-sight within and between structures, and landscaping can also be used to enhance or to de-emphasize onsite structures.

Some facilities will generate noise from blowers and rotating machinery. Ventilation for enclosed structures and scrubbers for odor control will require blowers. Large pumps (such as those at the effluent pump station) also produce noise. In addition, some unit processes, such as the filters periodically generate noise during operation. The noise generated by these facilities can be lessened by enclosing or housing the equipment or by installing sound insulation.

1. COGENERATION & DIGESTER HEATING BUILDING
2. POTABLE WATER PUMP STATION
3. MAINTENANCE BUILDING
4. ANAEROBIC SLUDGE DIGESTERS, DIGESTED SLUDGE STORAGE TANK AND FILTRATE STORAGE TANK
5. WASTE ACTIVATED SLUDGE THICKENERS (DAF'S)
6. DAF AIR COMPRESSOR STATION
7. DAF ODOR CONTROL STATION
8. DIGESTER GAS CONDENSATE TRAP STRUCTURE
9. DIGESTER CLEANING TANK
10. DIGESTER GAS SULFIDE CONTROL STATION
11. WASTE GAS FLARING STATION
12. FERROUS CHLORIDE STATION
13. DAF POLYMER STATION
14. FILTER PRESS CHEMICAL STATION
15. FILTER PRESS BUILDING
16. SODIUM HYPOCHLORITE STATION
17. NOT USED
18. NOT USED
19. EFFLUENT FILTERS
20. FILTER EFFLUENT AND BACKWASH PUMP STATION AND WASTE BACKWASH EQUALIZATION SYSTEM
21. CHLORINE CONTACT TANKS
22. RETURN SLUDGE PUMP STATION
23. FINAL SEDIMENTATION TANKS
24. EFF. FILTER WASTE BACKWASH DECANT TANK(S)
25. ALUM STATION
26. FILTER POLYMER STATION
27. MIXED LIQUOR POLYMER STATION
28. SODIUM BISULFITE STATION
29. EFFLUENT DIVERSION STRUCTURE
30. AERATION TANKS
31. AERATION SYSTEM ODOR CONTROL STATION
32. EDISON POWER SERVICE CONNECTION
33. FLOW EQUALIZATION ELECTRICAL BUILDING
34. PROCESS AIR COMPRESSOR BUILDING
35. FLOW EQUALIZATION BASIN(S) & PUMP STATION
36. CONTROL BUILDING & LABORATORY
37. PRIMARY SEDIMENTATION TANKS
38. PRIMARY SKIMMINGS WETWELL
39. HEADWORKS / PRIMARY SEDIMENTATION TANKS ODOR CONTROL STATION
40. INFLUENT POLYMER STATION
41. FERRIC CHLORIDE STATION
42. GRIT CHAMBERS
43. INFLUENT PUMPS & COMMINUTORS
44. STOCKPILE
45. STANDBY GENERATOR
46. NOT USED
47. DIGESTER CLEANING DRYING PAD
48. FLOW EQUALIZATION ODOR CONTROL STATION
49. FLOW EQUALIZATION PUMP STATION



* DEVELOPED IN CONJUNCTION WITH THE COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

Figure 5-1
Site Layout
Newhall Ranch Water Reclamation Plant

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Appendix A
IRWD Water Demand Factors

Table A-1
Adopted Residential Water Use Factors by Density
Newhall Ranch Project

Land Use	Interior (gpcpd)	Local Exterior (gpcpd)	Persons per Dwelling Unit	Total Gallons per Dwelling Unit
Rural	100	60	3.5	560
Estate	100	60	5.5	880
Low	80	50	3.5	455
Low Medium	75	45	3.5	420
Medium	75	45	2.5	300
Medium High	70	45	2.2	253
High	70	40	2.0	220
Mixed Use	70	42	2.1	235

Notes: gpcpd = gallons per capita per day.
The persons per dwelling unit for estates land use category reflects an additional 2 persons per dwelling unit to account for second units.

Table A-2
Nonresidential Potable Water Use Factors
Newhall Ranch Project

Land Use	Unit	Interior	gpapd	Exterior	gpapd per DU
Local Commercial	gpd/sq. ft.	0.01	100	0.00	0.00
Regional Commercial	gpd/sq. ft.	0.20	2,000	0.00	0.00
Commercial Recreation	gpapd	45.00	45	235.00	235.00
Low-Rise Office	gpd/sq. ft.	0.05	763	0.00	0.00
High-Rise Office	gpd/sq. ft.	0.05	3,000	0.00	0.00
Industrial	gpd/sq. ft.	0.20	3,050	0.02	305.00
Institutional	gpd/sq. ft.	0.20	3,050	0.02	305.00
Hospital	gpd/bed	500.00	6,000	10.00	120.00
Water Treatment Plant	gpapd	200.00	200	0.00	0.00
Electrical Substation	gpapd	0.00	0	0.00	0.00
Fire Station	gpd/sq. ft.	0.20	3,050	0.02	305.00
School	gpd/student	4.00	260	0.00	0.00
Community Park	gpapd	100.00	100	0.00	0.00
Regional Park / Golf Course	gpapd	100.00	100	0.00	0.00
Undeveloped / Under Construction	gpapd	0.00	0	0.00	0.00

Notes: gpapd = Gallons per acre per day based on average square footage per acre
DU = dwelling unit

Table A-3
Irrigation Water Use Factors
Newhall Ranch Project

Land Use	Percent Irrigable Land (a)	Anuual Usage (ac-ft)	
		Per Gross Acreage (b)	Per Net Acreage
Residential			
Rural/Estate	10%	0.6	6.0
Low	10%	0.6	6.0
Low Medium	12%	0.76	6.3
Medium	15%	1.0	6.7
Medium High	15%	1.0	6.7
High	15%	1.0	6.7
Mixed Use	15%	1.0	6.7
Nonresidential			
Local Commercial	15%	0.8	5.3
Regional Commercial	15%	0.8	5.3
Commercial Recreation	67%	3.6	5.4
Low-Rise Office	15%	0.8	5.3
High-Rise Office	15%	0.8	5.3
Industrial	15%	0.8	5.3
Institutional	15%	0.9	6.0
Hospital	15%	0.9	6.0
School	50%	2.0	4.0
Community Park	100%	4.0	4.0
Open Spaces and Parks			
Regional Park	90%	3.5	3.6
Low Irrigated Agriculture	100%	2.2	2.2
High Irrigated Agriculture	100%	6.2	6.2

Notes:
(a) City of Irvine, ITAP TAZ Land Use Inventory and IRWD SAMPs.
(b) Water usage is based on the gross lot area.

Table A-4
Land Use Descriptions Used by Newhall Ranch and IRWD
Newhall Ranch Project

Newhall Ranch Company	Irvine Ranch Water District
Mixed-Use Commercial:	
Retail	Local Commercial
Office	Low-Rise Office
Commercial	Regional Commercial
Business Park	Industrial
Visitor Serving	Local Commer./Commer. Rec.

Appendix B
Water Demand Calculations

Table B-1
Residential Water Demands
Newhall Ranch Project

Land Use	Acreage	Dwelling Units		Estimated Water Demand							
				Potable Use				Irrigation Use			Total (ac-ft/yr)
		Detached	Attached	Interior Use gpcpd (a)	Exterior Use gpcpd (b)	Occupancy p/DU (c)	Subtotal (ac-ft/year)	Irrigated Area (d)	Annual Use Rate (ac-ft/ac)	Subtotal (ac-ft/yr)	
Estate	324.1	538	0	100	60	5.5	630	10%	6.0	194	724
Low	472.1	1,917	0	80	50	3.5	977	10%	6.0	283	1,260
Low Medium	1108.3	6,951	0	75	45	3.5	3,270	12%	6.3	838	4,108
Medium	504.9	1,619	6,312	75	45	2.5	2,665	15%	6.7	507	3,172
High	96.4	0	2,850	70	40	2.0	702	15%	6.7	97	799
Mixed Use	184.3	0	4,493	70	42	2.1	1,184	15%	6.7	185	1,369
Total Water Demands							9,328			2,104	11,432

Notes:
(a) gpcpd : gallons per capita per day.
Interior water uses include drinking, bathing, laundry, sanitation, etc.
(b) gpcpd : gallons per capita per day.
Exterior water uses include landscape irrigation, washing cars, filling swimming pools, etc.
(c) p/DU : persons per dwelling unit. The estates factor includes 2 persons per dwelling unit additional to account for second units.
(d) Irrigated areas include common areas, greenbelt irrigation within residential neighborhoods, etc.
Percentage is based on gross landscape area.

Source of occupancy and potable and irrigation use data: Irvine Ranch Water District 1991 Water Master Plan

Table B-2
Nonresidential Water Demands
Newhall Ranch Project

Land Use	Acreage (a)	Floor Space (sq. ft.)	Estimated Water Demand						
			Potable Use			Irrigation Use			Total (ac-ft/yr)
			Interior Use (b)	Exterior Use gpapd (c)	Subtotal (ac-ft/yr)	Irrigated Area (d)	Annual Use Rate (ac-ft/ac)	Subtotal (ac-ft/yr)	
Mixed-Use Commercial									
Retail	78.5	830,000	0.010	0	9	15%	5.3	62	71
Office	78.5	2,489,000	0.050	0	139	15%	5.3	62	201
Commercial	65.5	714,000	0.200	0	160	15%	5.3	52	212
Business Park (e)	102.8	1,513,000	0.200	305	374	15%	5.3	82	456
Visitor Serving	15.8	174,000	0.010	0	2	67%	5.4	57	59
Water Treatment Plant	14.9	35,000	0.200	305	13	15%	5.3	12	25
Electrical Substation	2.2	N/A	0	0	0	0%	0.0	0	0
Fire Stations	2.2	38,000	0.200	305	9	15%	5.3	2	11
Schools									
Elementary	38.6	N/A	260	0	11	50%	4.0	77	88
Middle	20.9	N/A	260	0	6	50%	4.0	42	48
High	41.1	N/A	260	0	12	50%	4.0	82	94
Total Water Demands					735			530	1265

Notes:
(a) The acreage used in the calculations is the actual floor area ratio acres as supplied by the Newhall Ranch Company.
(b) Interior water uses include drinking and sanitation.
Units are in gallons per day per square foot for the commercial, business park,visitor serving, water treatment plant, and fire station land uses.
Units are in gallons per acre per day for the school land use category.
(c) Exterior water is used for site-specific landscape irrigation or irrigation with potential human contact.
gpapd : gallons per acre per day.
(d) Percentage is based on gross landscape area.
Irrigated areas include common areas and greenbelt irrigation.
(e) A floor area ratio of 75% has been applied to the total area of 137 acres.

Source of potable and irrigation use data: Irvine Ranch Water District 1991 Water Master Plan

Table B-3
Open Space Water Demands
Newhall Ranch Project

Open Area	Acreage	Estimated Water Demand					
		Potable Use		Irrigation Use			Total (ac-ft/yr)
		Potable Use gpapd (a)	Subtotal (ac-ft/yr)	Irrigated Area (b)	Annual Use Rate (ac-ft/ac)	Subtotal (ac-ft/yr)	
Recreation							
Community Parks	52.9	100	6	100%	4.0	212	**218**
Neighborhood Parks	57.7	100	6	100%	4.0	231	**237**
Lake - Water (c)	15.0	0	0	100%	3.8	57	**57**
Lake - Park Area	9.1	0	0	100%	4.0	36	**36**
Golf Course	172.6	100	19	100%	5.4	932	**951**
Arterial Highways							
Hardscape/Road Section	255.0	0	0	0%	0	0	**0**
Landscape Area	76.4	0	0	100%	4.0	306	**306**
Major Open Areas							
High Country	3904.5	0	0	0%	0.0	0	**0**
River Corridor	752.3	0	0	0%	0.0	0	**0**
Community Open Area	757.9	0	0	0%	0.0	0	**0**
Community Slopes	1308.9	0	0	100%	3.7	4843	**4,843**
Ungraded Area and Easement	1415.8	0	0	0%	0.0	0	**0**
Total Water Demands			**31**			**6,617**	**6,648**

Notes:

(a) gpapd = gallons per acre per day.

(b) Area is estimated as a percentage of gross area .

(c) Data are from California Department of Water Resources, Bulletin No. 73-79. Pan coefficient of 0.7 assumed.

Source of potable and irrigation use data: Irvine Ranch Water District 1991 Water Master Plan

Appendix C
Effluent Generation Calculations

Table C-1
Residential Wastewater Generation for Water Supply (a)
Newhall Ranch Project

Land Use	Dwelling Units				Wastewater Generated	
	Total Area (acres)	Detached Units	Attached Units	Occupancy (p/DU) (c)	Ave. Rate (gpcpd) (b)	Total (ac-ft/year)
Estate	324.1	538	0	5.5	100	331
Low	472.1	1,917	0	3.5	80	601
Low Medium	1108.3	6,951	0	3.5	75	2,044
Medium	504.9	1,619	6,312	2.5	75	1,666
High	96.4	0	2,850	2.0	70	447
Mixed Use	184.3	0	4,493	2.1	70	740
Total Wastewater Generated						**5,829**

Notes:
(a) Wastewater generation is based on IRWD interior water demand factors.
(b) gpcpd : gallons per capita per day.
Interior water uses include drinking, bathing, laundry, sanitation, etc.
(c) p/DU : persons per dwelling unit.

Source of occupancy and potable use data: Irvine Ranch Water District 1991 Water Master Plan

Table C-2
Nonresidential Wastewater Generation for Water Supply (a)
Newhall Ranch Project

Land Use	Area		Wastewater Generated	
	Net Acres	Floor Space (sq. ft.)	Ave. Rate (gpd/sq. ft.) (b)	Total (ac-ft/yr)
Mixed-Use Commercial				
Retail	78.5	830,000	0.010	9
Office	78.5	2,489,000	0.050	139
Commercial - Retail	65.5	714,000	0.200	160
Business Park	102.75	1,513,000	0.200	339
Visitor Serving	15.8	174,000	0.010	2
Treatment Plant	14.9	35,000	0.200	0
Electrical Substation	2.2	N/A	0.000	0
Fire Stations	2.2	38,000	0.200	9
Schools				
Elementary	38.6	N/A	260	11
Middle	20.9	N/A	260	6
High	41.1	N/A	260	12
Total Wastewater Generated				**687**

Notes:
(a) Wastewater generation is based on IRWD interior water demand factors
(b) Interior water uses include drinking and sanitation.
Units are in gallons per day per square foot for the commercial, business park, and visitor serving land uses.
Units are in gallons per acre per day for the treatment plant and school land uses.

Source of potable use data: Irvine Ranch Water District 1991 Water Master Plan

Table C-3
Open-Space Wastewater Generation for Water Supply (a)
Newhall Ranch Project

Land Use	Area	Wastewater Generated	
	Acres	Ave. Rate (gpapd) (b)	Total (ac-ft/yr)
Recreation			
Community Parks	52.9	100	6
Neighborhood Parks	57.7	100	6
Lake - Water	15.0	0	0
- Park Area	9.1	0	0
Golf Course (c)	172.6	100	19
Arterial Highways			
Hardscape/Road Section	255.0	0	0
Landscape Area	76.4	0	0
Major Open Areas			
High Country	3,904.5	0	0
River Corridor	752.3	0	0
Community Open Area	757.9	0	0
Community Slopes (d)	1,308.9	0	0
Ungraded Area and Easement	1,415.8	0	0
Total Wastewater Generated			**31**

Notes:

(a) Wastewater generation is based on IRWD interior water demand factors.

(b) gpapd = gallons per acre per day.

(c) Sewer generation from golf course is assumed to be similar to that of parks.

(d) Slope area was provided by Ron Horn.

Source of potable use data: Irvine Ranch Water District 1991 Water Master Plan

Appendix D
Valencia Water Company Flow Factors

Table D-1
Newhall Ranch Water Demand Projection Using Valencia Water Company Flow Factors

Land Use	Unit	Flow Factor	Annual Demand
	(Dwelling Units)	(GPD/Unit)	(ac-ft/yr)
Single Family	11,025	600	7,400
Multiple Family	13,655	500	7,600
	(Acres)	(GPD/Unit)	
Commercial (1)	238	2,500	700
Industrial (2)	156	4,000	700
	(Acres)	(ac-ft/yr)	
Parks (3)	384	3	1,200
Schools	101	3	300
Total Water Demand			**17,900**

Source of flow factors: Valencia Water Company, 1994
(1) Commercial, Visitor Center
(2) WTP, Electrical Substation, Fire Station, Business Park
(3) Parks, Golf Course, Arterial Highway Landscaping

Appendix E
Abbreviations and Acronyms

Appendix E
Abbreviations and Acronyms

ac ft	acre-feet
amsl	above mean sea level
ASR	aquifer storage and recovery
bgs	below ground surface
cfs	cubic feet per second
CLWA	Castaic Lake Water Agency
CSDLAC	County Sanitation Districts of Los Angeles County
DWR	(California) Department of Water Resources
E-log	electric log
ft	feet
gpapd	gallons per acre per day
gpcpd	gallons per capita per day
gpd	gallons per day
gpm	gallons per minute
hr	hour
L	liter
MCL	maximum contaminant level
mg/L	milligrams per liter
mgd	million gallons per day
NCWD	Newhall County Water District
NLF	Newhall Land and Farming
NRC	Newhall Ranch Company
pCi	picoCuries
Project	Newhall Ranch Project
RWQCBLAR	(California) Regional Water Quality Control Board, Los Angeles Region
SAR	sodium adsorption ratio
SCWC	Santa Clarita Water Company

sq ft	square feet
SWP	State Water Project
TAZ	(Irvine) Transportation Analysis Zone
TDS	total dissolved solids
TH	total hardness
THM	trihalomethane
TTHM	total trihalomethanes
μg	microgram
μg/L	micrograms per liter
VOC	volatile organic compound
VWC	Valencia Water Company
WRP	water reclamation plant
WTP	water treatment plant
yr	year
°C	degrees Celsius
°F	degrees Fahrenheit

Appendix F
Glossary

Appendix F
Glossary

Acre-foot or acre-feet. Unit volume of water equivalent to the amount of water covering 1 acre of land to a height of 1 foot.

Alluvial. Pertaining to or composed of alluvium or unconsolidated sediments deposited by a stream or running water.

Alluvium. A general term for clay, silt, sand, gravel, or similar unconsolidated materials deposited during comparatively recent geologic time by a stream or other body of running water as a sorted or semisorted sediment in the bed of the stream or on its floodplain or delta, or as a cone or fan at the base of a mountain slope.

Aquifer. A formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield economical quantities of water to wells and springs.

Aquifer test. A test involving the withdrawal of measured quantities of water from, or the addition of water to, a well and measurement of resulting changes in hydraulic head (water level) in the aquifer, both during and after the period of withdrawal or addition.

Aquitard. A geologic formation, group of formations, or part of a formation through which virtually no water moves. (An aquitard, unlike an aquifer, does not yield economical quantities of water to wells or springs.)

ASR, Aquifer storage and recovery. The process of storing water in and recovering water from an aquifer using the same (ASR) well for injection and pumping.

Cone of depression. A depression in the groundwater table or potentiometric surface that has the shape of an inverted cone and develops around a well from which water is being withdrawn. It defines the area of influence of a well.

Confined aquifer. A formation in which the groundwater is isolated from the atmosphere at the point of discharge by impermeable geologic formations; confined groundwater is subject to pressure greater than atmospheric.

Contamination. The degradation of natural water quality as a result of man's activities. There is no implication of any specific limits, since the degree of permissible contamination depends upon the intended end use, or uses, of the water.

Discharge. Removal of water from the zone of saturation; also outflow of water from a groundwater aquifer or basin, such as by wells or uptake by plants.

Dispersion. The spreading and mixing of chemical constituents in groundwater caused by diffusion and mixing due to microscopic variations in velocities within and between pores.

Drawdown. The distance between the static water level in an aquifer (or well) and the surface of the cone of depression caused by pumping.

Dynamic water level. Depth to water or elevation of the water surface in a pumping well; same as pumping water level.

Dynamic water column. The column of water in a pumping well bounded by the bottom of the well screen and the pumping or dynamic water level in the well.

Effluent. A waste liquid discharge from a manufacturing or treatment process, in its natural state or partially or completely treated, that discharges into the environment.

Electrical conductance (EC). The ease with which a conducting current can be caused to flow through a material under the influence of an applied electric field, measured in micro mhos; it is the reciprocal of resistivity.

Equipotential line. A contour line on the water table or potentiometric surface; a line along which the hydraulic head of groundwater in an aquifer is the same. In an aquifer with uniform hydraulic conductivity everywhere, fluid flow is normal to these lines in the direction of decreasing fluid potential.

Evapotranspiration. Loss of water from a land area through transpiration of plants and evaporation from the soil.

Fault. A fracture or a zone of fractures in rock or unconsolidated sediments along which there has been displacement of the sides relative to one another, parallel to the fracture.

Groundwater table. The surface between the zone of saturation and the zone of aeration (vadose zone); the surface of an unconfined aquifer; synonymous with Water Table. The ground is unsaturated above the groundwater table.

Hardness. A property of water causing formation of an insoluble residue when the water is used with soap. It is caused primarily by calcium and magnesium ions.

Head. See hydraulic head.

Heterogeneous. Nonuniform in structure or composition throughout.

Homogeneous. Uniform in structure or composition throughout.

Hydraulic conductivity. The rate of flow of water in gallons per day (gpd) through a cross section of one square foot under a unit hydraulic gradient, at the prevailing temperature. In the International System, the units are m3/day/m2 or m/day.

Hydraulic head. A measure of the fluid potential (sum of the elevation head and pressure head) at a point in an aquifer, as indicated by a water level in a well; groundwater flows from high to low hydraulic head, or fluid potential.

Hydraulic gradient. The rate of change in total hydraulic head per unit of distance of flow in a given direction.

Hydraulic parameter. Property of an aquifer (such as transmissivity or storage coefficient) that governs groundwater flow, in particular to a well.

Hydrogeologic. Those factors that deal with subsurface waters and related geologic aspects of surface waters.

pH. A measure of the acidity or alkalinity of a solution; numerically equal to 7 for neutral solutions, increasing with increasing alkalinity, and decreasing with increasing acidity. Originally an acronym for "potential of hydrogen."

Porosity. The percentage of the bulk volume of a rock or soil that is occupied by interstices, whether isolated or connected.

Potential. A physical quantity, capable of measurement at every point in a flow system, whose properties are such that flow always occurs from regions in which the quantity has higher values to those in which it has lower values, regardless of the direction in space.

Potentiometric surface. An imaginary surface representing the total hydraulic head of groundwater in a confined or unconfined aquifer that is defined by the level to which water will rise in a well.

Pumping test. A test that is conducted to determine aquifer or well characteristics. (See Aquifer Test.)

Recharge. The addition of water to the zone of saturation, principally by rainfall; also, the amount of water added.

Runoff. That part of precipitation flowing to surface streams.

Sandstone. A sedimentary rock composed of abundant rounded or angular fragments of sand set in a fine-grained matrix (silt or clay) and more or less firmly united by a cementing material.

Sedimentary rocks. Rocks resulting from the consolidation of loose sediment that has accumulated in layers.

Shale. A fine-grained sedimentary rock, formed by the consolidation of clay, silt, or mud. It is characterized by finely laminated structure and is sufficiently indurated (hard) so that it will not fall apart on wetting.

Specific yield. The ratio (stated as a percentage) of the volume of water that a given mass of saturated rock or soil will yield by gravity to the volume of that mass; stated as a percentage.

Static water level. The level of water in a well that is not being affected by withdrawal of groundwater.

Storage. Volume of water occupying the pore space of a given volume of aquifer. This does not include water that would, upon draining of the aquifer, adhere to the aquifer matrix permanently.

Storativity. The volume of water an aquifer releases or takes into storage per unit surface area of the aquifer per unit change in hydraulic head.

Superposition. Theoretical process governing drawdown in an aquifer caused by overlapping cones of depressions from adjacent wells. The drawdown at any point in an aquifer is equal to the sum of the drawdowns at that point caused by each pumping well in that aquifer.

Theis equation. An equation that predicts drawdown in an ideal, confined aquifer at any distance from a pumping well, at any time since pumping began, for a given pumping rate, aquifer transmissivity, and storage coefficient. (C.V. Theis, 1935)

TDS, Total dissolved solids. The quantity of dissolved material in a sample of water, either the residue on evaporation, dried at 356° F (180° C), or, for many waters that contain more than about 1,000 mg/L, the sum of the concentrations of the chemical constituents.

Transmissivity. The rate at which water is transmitted through a unit width of an aquifer under a unit hydraulic gradient. Transmissivity values are given in gallons per minute (gpm) through a vertical section of an aquifer 1 foot wide and extending the full saturated height of an aquifer under a hydraulic gradient of 1 in the English Engineering System; in the International System, transmissivity is given in cubic meters per day through a vertical section of an aquifer one meter wide and extending the full saturated height of an aquifer under a hydraulic gradient of 1.

Unconfined aquifer. An aquifer in which the water table is exposed to the atmosphere through openings in the overlying materials. (See also Groundwater Table.)

Vadose zone. The zone containing water under pressure less than that of the atmosphere (i.e., under a vacuum), including soil water, intermediate vadose water, and capillary water. This zone is limited above by the land surface and below by the surface of the zone of saturation (i.e., the groundwater table).

Water table. The surface between the vadose zone and the groundwater; that surface of a body of unconfined groundwater at which the pressure is equal to that of the atmosphere. (See Groundwater Table.)

Well efficiency. The ratio of the actual pumping (dynamic), or injection, water level in a well to the water level that would be predicted by using the Theis equation to calculate drawdown (or drawup/rise for an injection well).

Well screen. A filtering device that permits water to enter, and prevents sediment from entering, a water well.

Well yield. The volume of water discharged from a well in gallons per minute (gpm) or cubic meters per day.

Appendix G
Unit Conversion Factors

Appendix G

Unit Conversion Tables

Area

Unit	Equivalent		
	Square Feet	Acres	Square Miles
Square feet	1	2.296×10^{-5}	3.587×10^{-8}
Acres	4.356×10^{-4}	1	1.563×10^{-3}
Square Miles	2.788×10^{-7}	640	1

Volume

Unit	Equivalent		
	Gallons	Cubic Feet	Acre-feet
Gallons	1	0.1337	3.068×10^{-6}
Cubic feet	7.481	1	2.296×10^{-5}
Acre-feet	3.259×10^{5}	4.356×10^{4}	1

Discharge (flow rate, volume/time)

Unit	Equivalent		
	Gallons per Minute	Acre-Feet per Year	Cubic Feet per Second
Gallons per minute	1	1.21×10^{-5}	2.228×10^{-3}
Acre-feet per year	8.26×10^{4}	1	184
Cubic feet per second	448.8	5.43×10^{-3}	1

Appendix H
References

Appendix H
References

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Valencia Water Company

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(805) 257-3566 • Fax (805) 295-8739

January 30, 1996

Ms. Rose Mamaghani
Impact Sciences, Inc.
11770 Bernardo Plaza Court
San Diego, California 92128

Dear Ms. Mamaghani,

This letter is in response to your request for information regarding the following water service issues for the proposed Newhall Ranch Project:

Conditions for Water Service

The Valencia Water Company is an investor owned public water utility regulated by the California Public Utilities Commission (PUC). We are the logical water retailer to serve the project becuase portions of the proposed project area are already within our service area boundaries. Adding the remaining portions of project to Valencia Water Company's service area will occur in stages and in accordance with PUC rules and regulations. Given the long term schedule for build out associated with this project, commitment for water service will be contingent on several factors.

Each phase of the water system must be able to provide adequate water supply and pressure to meet Los Angeles County Fire Department regulations for fire flow. These requirements in addition to peak summer flows generated by the project are used to determine the size and number of facilities such as pipelines, water tanks and pump stations. The water company is then required to file an application with the PUC confirming that the necessary quantities of water for domestic use and fire flow are available in order to expand the service area of the company.

Allocations of Imported Water

On January 10, 1996 the Castaic Lake Water Agency (CLWA) adopted a resolution changing the method of allocating imported water among the four water purveyors served by CLWA. The new approach allocates water to water service areas allowing the water to be delivered where new development occurs. The previous allocation system divided the total water supply among the four purveyors based on fixed percentages. The fixed percentage of CLWA water allocated to Valencia

NLSF A Subsidiary of THE NEWHALL LAND AND FARMING COMPANY

Water Company was 35.9% or approximately 19,500 acre-ft. CLWA is in the process of establishing reasonable rules and regulations for operating under the new system of water allocation. The Valencia Water Company believes the new system of water allocation will increase its share of water available from CLWA.

Sincerely,

Robert J. DiPrimio
Managing Director

SANTA CLARITA VALLEY
GENERAL PLAN/AREA PLAN AMENDMENTS AND ZONE CHANGES NOT ASSOCIATED WITH A LAND DIVISION
To Be Utilized in Calculating Cumulative Water Demands

In CLWA?	In VWC?	Case No.	Proj. No.	Notes	DMS Map Locat.	Residential Single Family	Multi-Family	Mobile Homes	Comm'l Acres	Comm'l Sq.Ft.	Hotel Rms	Indus'l Acres	Indus'l Sq.Ft.	Instit'l Acres	Rec'l Acres	School
No	No	86384	LP86384		R4+							-4.8	47,000			
No	No	89033	SP/PL89033	Stevenson Ranch Phase 5	F10+	1,828	1,572			323,000	350		1,600,000		242.0	3
Yes	No	89418	LP89418		P6			101								
Yes	No	90071	LP90071		K15							24.5	240,000			
Yes	No	90514	LP90514		E4				2.5	20,500						
No	No	92156	LP92156		V4				2	16,000						
No	No	93147	PL93147	Bee Canyon Mobile Home Park	T7+	2		953								
Yes	No	89098	ZC89098	A2-2 to M2 (5.0 acres)	A8							5	65,340			
Yes	No	91191	ZC91191	C2 to C3-DP (0.65 acres)	H11					0.65	5,309					
Yes	No	94011	ZC94011	M1-C-3-DP	E3											
Yes	No	94024	ZC94024	A2-1 to M1-DP	R8											
				Totals		**1,830**	**1,572**	**1,054**	**5**	**359,500**	**350**	**20**	**1,887,000**	**0**	**242**	**3**

Footnotes
(1) Square footage for ZC89098 is based on a FAR of .30
(2) Square footage for ZC91191 is based on a FAR of .1875
(3) Data will need to be obtained from LA County Regional Planning Department on ZC94011 and ZC94024

Notes:
SP: subplan amendment to the County General Plan
LP: local plan amendment to the Santa Clarita Valley Area Plan
PL: specific plan

Prepared by: Impact Sciences, Inc.
R. Mamaghani

1/21/96

Land Use	Unit	Units	Water Demand Factor (Gal/Day)			Water Demand Gallons/Day	Water Demand Acre-Feet/Year
Single Family Residential	DU	1,830	455.00			832,650.0	932.7
Multi-Family Residential	DU	1,572	220.00			345,840.0	387.4
Mobile Homes	DU	1,054	300.00			316,200.0	354.2
			Water Demand Factor (Gal/Day)				
			Interior		Exterior		
Commercial Acres	Acres	5			0.80	4.0	0.0
Commercial Square Feet	Sq.Ft.	359,500	0.01			3,595.0	4.0
Hotel Rooms	Rooms	350	500.00			175,000.0	196.0
Hotel Acres	Acres	no informat.			0.90		0.0
Industrial Acres	Acres	20			0.80	16.0	0.0
Industrial Square Feet	Sq.Ft.	1,887,000	0.20			377,400.0	422.7
Institutional Acres	Acres	0			0.90	0.0	0.0
Institutional Square Feet	Sq.Ft.	0	0.20			0.0	0.0
Recreational Acres	Acres	242			4.00	968.0	1.1
School Students	Student	3,920	4.00			15,680.0	17.6
School Acres	Acres	50			2.00	100.0	0.1
					TOTALS	**2,067,453.0**	**2,315.8**

Water Demand Factors and methodology for calculating water demand are from CH2M Hill Water Resources and Wastewater Demand for the Newhall Ranch (January 1996), Appendix A and B.

Water demand for mobile homes is based upon medium-density housing demand.

Daily water demand for hotels is 500 gallons/room, and is based on hospital demand of 500 gallons/bed (hospital demand is expected to be higher per bed than hotels, so this is a conservative estimate)

There is one elementary school, one middle school, and one high school proposed for Stevenson Ranch Phase 5. Assuming a student population of 920, 1,000, and 2,000 each, total student population would be 3920 students.

Assuming campus sizes of 10 acres for elementary schools and 20 acres each for middle and high schools, total acreage would be 50 acres.

Prepared by Impact Sciences, Inc.
R. Mamaghani
1/21/96

Land Use	Unit	Units	Water Demand Factor (Gal/Day)			Water Demand Gallons/Day	Water Demand Acre-Feet/Year
Single Family Residential	DU	1,830	455.00			832,650.0	932.7
Multi-Family Residential	DU	1,572	220.00			345,840.0	387.4
Mobile Homes	DU	1,054	300.00			316,200.0	354.2
			Water Demand Factor (Gal/Day)				
			Interior		Exterior		
Commercial Acres	Acres	5			0.80	4.0	0.0
Commercial Square Feet	Sq.Ft.	354,191	0.01			3,541.9	4.0
Hotel Rooms	Rooms	350	500.00			175,000.0	196.0
Hotel Acres	Acres	no informat.			0.90		0.0
Industrial Acres	Acres	20			0.80	16.0	0.0
Industrial Square Feet	Sq.Ft.	1,821,660	0.20			364,332.0	408.1
Institutional Acres	Acres	0			0.90	0.0	0.0
Institutional Square Feet	Sq.Ft.	0	0.20			0.0	0.0
Recreational Acres	Acres	242			4.00	968.0	1.1
School Students	Student	3,920	4.00			15,680.0	17.6
School Acres	Acres	50			2.00	100.0	0.1
					TOTALS	**2,054,331.9**	**2,301.1**

Water Demand Factors and methodology for calculating water demand are from CH2M Hill Water Resources and Wastewater Demand for the Newhall Ranch (January 1996), Appendix A and B.

Water demand for mobile homes is based upon medium-density housing demand.

Daily water demand for hotels is 500 gallons/room, and is based on hospital demand of 500 gallons/bed (hospital demand is expected to be higher per bed than hotels, so this is a conservative estimate)

There is one elementary school, one middle school, and one high school proposed for Stevenson Ranch Phase 5. Assuming a student population of 920, 1,000, and 2,000 each, total student population would be 3920 students.

Assuming campus sizes of 10 acres for elementary schools and 20 acres each for middle and high schools, total acreage would be 50 acres.

Prepared by Impact Sciences, Inc.
R. Mamaghani
1/21/96

Appendix 4.12

Newhall Ranch Specific Plan
Cumulative Impact Buildout Scenario
Wastewater Generation Impact Analysis

Land Use	Units	Units	Persons/ Unit	Population	Generation Factor (Gal/Day)	Generation (GPD)	Generation (MGD)
Residential							
Single Family	DU	100,040	3.17	317,127	80.00	25,370,144	25.370
Multi-Family	DU	52,384	2.38	124,674	70.00	8,727,174	8.727
Mobile Homes	DU	3,177	2.38	7,561	75.00	567,095	0.567
Second Units	DU	538	2.00	1,076	70.00	75,320	0.075
Non-Residential							
Commercial Retail (6)	Sq.Ft.	21,705,660	-	-	0.20	4,341,132	4.341
Hotel (1)	Sq.Ft.	456,420	-	-			
Hotel	Rooms	1,141	-	-	125.00	142,631	0.143
School	Staff	3,449	-	-			
School	Sq.Ft.	6,294,461	-	-	0.02	125,889	0.126
College (2)	Staff	1,152	-	-			
College	Sq.Ft.	490,000	-	-	0.02	9,800	0.010
Hospital	Sq.Ft.	285,470	-	-			
Hospital (3)	Bed	571	-	-	125.00	71,368	0.071
Library (4)	Sq.Ft.	251,000	-	-	0.05	12,550	0.013
Church	Sq.Ft.	399,170	-	-	0.05	19,959	0.020
Business Park	Sq.Ft.	9,286,730	-	-	0.20	1,857,346	1.857
Industrial/Manufacturing (5)	Sq.Ft.	33,480,250	-	-	0.03	837,006	0.837
Utilities	Sq.Ft.	1,456,160	-	-	0.20	291,232	0.291
Commercial/Medical Office	Sq.Ft.	11,142,790	-	-	0.05	557,140	0.557
Golf Course/Park	Acre	1,627	-	-	100.00	162,700	0.163
Visitor Serving	Sq.Ft.	174,000	-	-	0.01	1,740	0.002
Special Generator	Sq.Ft.	77,600	-	-	0.20	15,520	0.016
Special Generator	Acres	1,093	-	-			
					TOTALS	43,185,745	43.186

Wastewater generation factors for residential, commercial retail, business park, utilities, commercial office, golf course/park, visitor-serving, and special generator uses are from CH2M Hill's Water Resources and Wastewater Management for the Newhall Ranch (January 1996) Appendix C. The remaining generation factors are from CSDLAC's Loadings for Each Class of Land Use (1992-93) unless otherwise noted.

(1) Number of hotel rooms is based upon an assumed 400 gross square feet per room. Includes 120,000 square feet of Specific Plan Hotel use.

(2) Square footage for college is based on gross square footage for Mesa College, San Diego County, which is one of the largest community colleges in the State (Nadeem Shafi, personal communications, 4 January 1996). No generation factors are available for school or college staff; therefore, the same generation factor as for schools was used.

(3) Number of hospital beds is based upon an assumed 500 gross square feet per bed.

(4) Assumes same generation factor for library as used for church.

(5) Generation factor for industrial/manufacturing is based on dry manufacturing uses.

(6) Excludes 120,000 of Specific Plan Hotel use.

Prepared by Impact Sciences, Inc.
R. Mamaghani
7/7/96

Appendix 4.13

Newhall Ranch Specific Plan
Natural Gas Impact Analysis

Land Use	Quantity	Units	Consumption Rate (cu.ft./yr)	Consumption (cu.ft./month)
Residential Units:				
Single Family	8,966	Units	79,980	59,758,390
Multi-Family (</= 4)	8,234	Units	49,260	33,800,570
Multi-Family (>/= 5)	7,480	Units	47,016	29,306,640
Second Units	538	Units	47,016	2,107,884
Non-Residential				
Office (1)	2,549,000	Sq. Ft.	24	5,098,000
Retail (2)	1,598,000	Sq. Ft.	35	4,634,200
Schools (3)	965,334	Sq. Ft.	35	2,799,469
Hotel/Motel	120,000	Sq. Ft.	58	576,000
Industrial (4)	31 Customers		2,939,600	7,530,275
Total				**145,611,428**

Source of Consumption Rates: South Coast Air Quality Management District, Air Quality Handbook for Preparing EIRs, Revised 1994.

(1) Includes library, utilities, and office uses.

(2) Includes Retail, Non-retail, and Eating and Drinking.

(3) Because SCQMD does not provide consumption rates for schools, this analysis uses the same consumption rate for schools that was used for retail uses.

(4) Assumes industrial to include Business Park and Special Generator uses and an average of 50,000 square feet/customer.

Prepared by Impact Sciences, Inc.
R. Mamaghani
7/7/96

Newhall Ranch Specific Plan
Cumulative Impact Buildout Scenario
Natural Gas Impact Analysis

	Quantity	Units	Useage Rate (cu.ft./year)	Total (cu.ft./year)	Total (cu.ft./month)
Residential Units:					
Single Family	100,040	Units	79,980.0	8,001,199,200	666,766,600
Multi Family (1)					
Multi Family (</= 4)	27,781	Units	49,260.0	1,368,467,430	114,038,953
Multi Family (>/= 5)	27,781	Units	47,016.0	1,306,127,988	108,843,999
Second Units	538	Units	47,016.0	25,294,608	2,107,884
Non-Residential:					
Office	11,142,790	Sq. Ft.	24.0	267,426,960	22,285,580
Commercial (2)				0	0
Restaurant	3,255,849	Sq. Ft.	34.8	113,303,545	9,441,962
Retail	11,938,113	Sq. Ft.	34.8	415,446,332	34,620,528
Food Store	5,426,415	Sq. Ft.	34.8	188,839,242	15,736,604
Warehouse (3)(6)	16,740,125	Sq. Ft.	24.0	401,763,000	33,480,250
School (4)(7)	6,294,461	Sq. Ft.	34.8	219,047,243	18,253,937
College/Univ. (5)(7)	490,000	Sq. Ft.	34.8	17,052,000	1,421,000
Hospital (8)	285,470	Sq. Ft.	57.6	16,443,072	1,370,256
Hotel/Motel	456,420	Sq. Ft.	57.6	26,289,792	2,190,816
Library (6)	251,000	Sq. Ft.	24.0	6,024,000	502,000
Church (6)	399,170	Sq. Ft.	24.0	9,580,080	798,340
Business Park (6)	9,286,730	Sq. Ft.	24.0	222,881,520	18,573,460
Utilities (6)	1,456,160	Sq. Ft.	24.0	34,947,840	2,912,320
Special Generator (7)	77,600	Sq. Ft.	34.8	2,700,480	225,040
Misc. (3)(9)	335	Customers	2,939,600.0	984,185,429	82,015,452
Totals				**13,627,019,761**	**1,135,584,980**

Consumption Factors are from: South Coast Air Quality Management District, Air Quality Handbook for Preparing EIR's, Revised 1994.

(1) Includes multi-family and mobile home units, and splits them 50/50 between the two categories.

(2) Assumes 55-15-25% split of 21,705,660 square feet among retail, restaurants, and food stores, respectively

(3) Assumes 50% split of 33,480,250 square feet of industrial uses between warehouse and misc. uses.

(4) Assumes 55 square feet per student (see Santa Clarita Valley Buildout School Impact Analysis).

(5) Based on gross square footage for Mesa College, San Diego County, which is one of the five largest community colleges in the State (Nadeem Shafi, personal communications, 4 January 1996).

(6) Assumes same consumption rate as office.

(7) Assumes same consumption rate as commercial retail.

(8) Assumes same consumption rate as hotel/motel.

(9) Assumes an average industrial customer would be 50,000 square feet.

Prepared by Impact Sciences, Inc.
R. Mamaghani
7/7/96

Appendix 4.14

Newhall Ranch Specific Plan
Electricity Impact Analysis

Land Use	Quantity	Units	Consumption Rate (kWh/yr)	Consumption (kWh/yr)
Residential Units:	24,680	Units	6,081.00	150,079,080
Second Units	538	Units	6,081.00	3,271,578
Non-Residential				
Office (1)	2,549,000	Sq. Ft.	8.80	22,431,200
Restaurant	120,000	Sq. Ft.	47.30	5,676,000
Retail (2)	580,000	Sq. Ft.	11.80	6,844,000
Food Store (2)	580,000	Sq. Ft.	51.40	29,812,000
Warehouse (3)	1,513,000	Sq. Ft.	3.40	5,144,200
Schools	965,334	Sq. Ft.	6.30	6,081,604
College/University		Sq. Ft.	11.60	0
Hospital		Sq. Ft.	17.90	0
Hotel/Motel	120,000	Sq. Ft.	6.80	816,000
Misc. (4)	342,000	Sq. Ft.	8.80	3,009,600
Total				**233,165,262**

Source of Consumption Rates: South Coast Air Quality Management District, Air Quality Handbook for Preparing EIRs, Revised 1994.

(1) Also includes library and utilities uses.

(2) Splits retail uses 50/50 between retail and foodstore categories.

(3) Business park isplaced in warehouse category.

(4) Includes Non-Retail and Special Generator uses.

Prepared by Impact Sciences, Inc.
R. Mamaghani
7/7/96

Newhall Ranch Specific Plan
Cumulative Impact Buildout Scenario
Electricity Impact Analysis

	Quantity	Units	Useage Rate (kWh/year)	Total kWh/year	Total therms/year
Residential Units: (1)	155,601	Units	6,081	946,209,681	32,360,371
Second Units	538	Units	6,081	3,271,578	111,888
Non-Residential:					
Office	11,142,790	Sq. Ft.	8.8	98,056,552	3,353,534
Commercial (2)					
Restaurant	3,255,849	Sq. Ft.	47.3	154,001,658	5,266,857
Retail	11,938,113	Sq. Ft.	11.8	140,869,733	4,817,745
Food Store	5,426,415	Sq. Ft.	51.4	278,917,731	9,538,986
Warehouse (3)	16,740,125	Sq. Ft.	3.4	56,916,425	1,946,542
School	6,294,461	Sq. Ft.	6.3	39,655,104	1,356,205
College/Univ. (4)	490,000	Sq. Ft.	11.6	5,684,000	194,393
Hospital	285,470	Sq. Ft.	17.9	5,109,913	174,759
Hotel/Motel (7)	456,420	Sq. Ft.	6.8	3,103,656	106,145
Library (5)	251,000	Sq. Ft.	8.8	2,208,800	75,541
Church (5)	399,170	Sq. Ft.	8.8	3,512,696	120,134
Business Park (5)	9,286,730	Sq. Ft.	8.8	81,723,224	2,794,934
Utilities (5)	1,456,160	Sq. Ft.	8.8	12,814,208	438,246
Special Generator (6)	77,600	Sq. Ft.	11.8	915,680	31,316
Misc. (3)	16,740,125	Sq. Ft.	8.8	147,313,100	5,038,108
Totals				**1,980,283,739**	**67,725,704**

Consumption factors are from: South Coast Air Quality Management District, Air Quality Handbook for Preparing EIR's, Revised 1994.

(1) Includes single family, multi-family, and mobile home units.

(2) Assumes 55-15-25% split of 21,825,660 sq. feet among retail, restaurants and food stores, respectively.

(3) Assumes 50% split of 33,480,250 square feet of industrial uses between warehouse and misc. uses.

(4) Based on gross square footage for Mesa College, San Diego County, which is one of the five largest community colleges in the State (Nadeem Shafi, personal communications, 4 January 1996).

(5) Assumes same consumption rate as office.

(6) Assumes same consumption rate as commercial retail.

(7) Includes 120,000 Specific Plan square feet for Hotel use.

Prepared by Impact Sciences, Inc.
R. Mamaghani
7/7/96

Appendix 4.15

CALIFORNIA INTEGRATED WASTE MANAGEMENT BOARD

MODEL ORDINANCE

RELATING TO AREAS FOR COLLECTING AND LOADING RECYCLABLE MATERIALS IN DEVELOPMENT PROJECTS

MARCH 31, 1993

SECTION I

PURPOSE

Cities and counties must divert 50 percent of all solid waste by January 1, 2000, through source reduction, recycling, and composting activities.

Diverting 50 percent of all solid waste requires the participation of the residential, commercial, industrial, and public sectors.

The lack of adequate areas for collecting and loading recyclable materials that are compatible with surrounding land uses is a significant impediment to diverting solid waste and constitutes an urgent need for state and local agencies to address access to solid waste for source reduction, recycling, and composting activities. This ordinance has been developed to meet that need.

SECTION II

DEFINITIONS

The following definitions shall apply to the language contained in this ordinance:

A. **DEVELOPMENT PROJECT** - Means any of the following:

1) A project for which a building permit is required for a commercial, industrial, or institutional building, marina, or residential building having five or more living units, where solid waste is collected and loaded and any residential project where solid waste is collected and loaded in a location serving five or more living units.

2) Any new public facility where solid waste is collected and loaded and any improvements for areas of a public facility used for collecting and loading solid waste.

3) The definition of development project only includes subdivisions or tracts of single-family detached homes if, within such subdivisions or tracts there is an area where solid waste is collected and loaded in a location which serves five or more living units. In such instances, recycling areas as specified in this ordinance are only required to serve the needs of the living units which utilize the solid waste collection and loading area.

B. **IMPROVEMENT** - An improvement adds to the value of a facility, prolongs its useful life, or adapts it to new uses. Improvements should be distinguished from repairs. Repairs keep facilities in good operating condition, do not materially add to the value of the facility, and do not substantially extend the life of the facility.

C. **FLOOR AREA OF A MARINA** - The floor area of a marina shall be defined as the space dedicated to the docking or mooring of marine vessels.

D. **PUBLIC FACILITY** - The definition of public facility includes, but is not limited to buildings, structures, marinas, and outdoor recreation areas owned by a local agency.

E. **RECYCLING AREA (AREAS FOR RECYCLING)** - Space allocated for collecting and loading of recyclable materials. Such areas shall have the ability to accommodate receptacles for recyclable materials. Recycling areas shall be accessible and convenient for those who deposit as well as those who collect and load any recyclable materials placed therein.

SECTION III

GENERAL REQUIREMENTS

A. Any new development project for which an application for a building permit is submitted on or after September 1, 1994, shall include adequate, accessible, and convenient areas for collecting and loading recyclable materials.

B. Any improvements for areas of a public facility used for collecting and loading solid waste shall include adequate, accessible, and convenient areas for collecting and loading recyclable materials.

C. Any existing development project for which an application for a building permit is submitted on or after September 1, 1994 for a single alteration which is subsequently performed that adds 30 percent or more to the existing floor area of the development project shall provide adequate, accessible, and convenient areas for collecting and loading recyclable materials.

D. Any existing development project for which an application for a building permit is submitted on or after September 1, 1994 for multiple alterations which are conducted within a twelve month period which collectively add 30 percent or more to the existing floor area of the development project shall provide adequate, accessible, and convenient areas for collecting and loading recyclable materials.

E. Any existing development project for which multiple applications for building permits are submitted within a twelve month period beginning on or after September 1, 1994 for multiple alterations which are subsequently performed that collectively add 30 percent or more to the existing floor area of the development project shall provide adequate, accessible, and convenient areas for collecting and loading recyclable materials.

F. Any existing development project occupied by multiple tenants, one of which submits on or after September 1, 1994, an application for a building permit for a single alteration which is subsequently performed that adds 30 percent or more to the existing floor area of that portion of the development project which said tenant leases shall provide adequate, accessible, and convenient areas for collecting and loading recyclable materials. Such recycling areas shall, at a minimum be sufficient in capacity, number, and distribution to serve that portion of the development project which said tenant leases.

G. Any existing development project occupied by multiple tenants, one of which submits on or after September 1, 1994 an application for a building permit for multiple alterations which are conducted within a twelve month period which collectively add 30 percent or more to the existing floor area of that portion of the development project which said tenant leases shall provide adequate, accessible, and convenient areas for collecting and loading recyclable materials. Such recycling areas shall, at a minimum be sufficient in capacity, number, and distribution to serve that portion of the development project which said tenant leases.

H. Any existing development project occupied by multiple tenants, one of which submits within a twelve month period beginning on or after September 1, 1994 multiple applications for building permits for multiple alterations which are subsequently performed that collectively add 30 percent or more to the existing floor area of that portion of the development project which said tenant leases shall provide adequate, accessible, and convenient areas for collecting and loading recyclable materials. Such recycling areas shall, at a minimum be sufficient in capacity, number, and distribution to serve that portion of the development project which said tenant leases.

I. Any costs associated with adding recycling space to existing development projects shall be the responsibility of the party or parties who are responsible for financing the alterations.

SECTION IV

GUIDELINES FOR ALL DEVELOPMENT PROJECTS

A. Where local standards exist, recycling areas should be designed to be architecturally compatible with nearby structures and with the existing topography and vegetation, in accordance with such standards.

B. The design and construction of recycling areas shall not prevent security of any recyclable materials placed therein.

C. The design, construction, and location of recycling areas shall not be in conflict with any applicable federal, state, or local laws relating to fire, building, access, transportation, circulation, or safety.

D. Recycling areas or the bins or containers placed therein must provide protection against adverse environmental conditions, such as rain, which might render the collected materials unmarketable.

E. Driveways and/or travel aisles shall, at a minimum, conform to local building-code requirements for garbage collection access and clearance. In the absence of such building-code requirements, driveways and/or travel aisles should provide unobstructed access for collection vehicles and personnel.

F. A sign clearly identifying all recycling and solid waste collection and loading areas and the materials accepted therein shall be posted adjacent to all points of direct access to the recycling areas.

G. Developments and transportation corridors adjacent to recycling areas shall be adequately protected for any adverse impacts such as noise, odor, vectors, or glare through measures including, but not limited to maintaining adequate separation, fencing, and landscaping.

SECTION V

ADDITIONAL GUIDELINES FOR SINGLE TENANT DEVELOPMENT PROJECTS

A. Areas for recycling shall be adequate in capacity, number, and distribution to serve the development project.

B. Dimensions of the recycling area shall accommodate receptacles sufficient to meet the recycling needs of the development project.

C. An adequate number of bins or containers to allow for the collection and loading of recyclable materials generated by the development project should be located within the recycling area.

SECTION VI

ADDITIONAL GUIDELINES FOR MULTIPLE TENANT DEVELOPMENT PROJECTS

A. Recycling areas shall, at a minimum be sufficient in capacity, number, and distribution to serve that portion of the development project leased by the tenant(s) who submitted an application or applications resulting in the need to provide recycling area(s) pursuant to Section III of this ordinance.

B. Dimensions of recycling areas shall accommodate receptacles sufficient to meet the recycling needs of that portion of the development project leased by the tenant who submitted an application or applications resulting in the need to provide recycling area(s) pursuant to Section III of this ordinance.

C. An adequate number of bins or containers to allow for the collection and loading of recyclable materials generated by that portion of the development project leased by the tenant(s) who submitted an application or applications resulting in the need to provide recycling area pursuant to Section III of this ordinance should be located within the recycling area.

SECTION VII

LOCATION

A. Recycling areas shall not be located in any area required to be constructed or maintained as unencumbered, according to any applicable federal, state, or local laws relating to fire, access, building, transportation, circulation, or safety.

B. Any and all recycling area(s) shall be located so they are at least as convenient for those persons who deposit, collect, and load the recyclable materials placed therein as the location(s) where solid waste is collected and loaded. Whenever feasible, areas for collecting and loading recyclable materials shall be adjacent to the solid waste collection areas.

SECTION VIII

DECLARATION OF SEVERABILITY

All provisions of this Ordinance are severable and, if for any reason any sentence, paragraph, or section of this Ordinance shall be held invalid, such decision shall not affect the validity of the remaining parts of the Ordinance.

Newhall Ranch Solid Waste Generation

Land Use	Quantity	Units	Generation Rate (tpy)	Generation Rate (lbs./day)	Total Waste Generated (tpy)	Total Waste Generated (lbs./day)
Residential Units:						
Single Family Detached	11,025	Units	2.0400	11.18	22,491	123,238
Multi-Family or Attached	14,193	Units	1.1700	6.41	16,606	90,991
Commercial/Industrial						
General Retail	1,160,000	Sq. Ft.	0.0024	0.01	2,784	15,255
Eating & Drinking Establ.	120,000	Sq. Ft.	0.0108	0.06	1,296	7,101
Non-Retail	318,000	Sq. Ft.	0.0072	0.04	2,290	12,546
Auto Dealer & Service Sta.	0	Sq. Ft.	0.0051	0.03	0	0
Hotel & Motel	120,000	Sq. Ft.	0.0053	0.03	636	3,485
Warehouse	0	Sq. Ft.	0.0011	0.01	0	0
Medical Offices	0	Sq. Ft.	0.0027	0.01	0	0
Hospitals	0	Sq. Ft.	0.0055	0.03	0	0
Business Park	1,513,000	Sq. Ft.	0.0014	0.01	2,118	11,607
Office	2,489,000	Sq. Ft.	0.0014	0.01	3,485	19,094
Library	25,000	Sq. Ft.	0.0014	0.01	35	192
Education & Schools	965,334	Sq. Ft.	0.0013	0.01	1,255	6,876
Trans., Comm., Utilities	35,000	Sq. Ft.	0.0079	0.04	277	1,515
Special Generator	24,000	Sq. Ft.	0.0079	0.04	190	1,039
Golf Course	180	Acres	0.2000	1.10	36	197
Developed Park	133	Acres	0.2000	1.10	27	146
Manufacturing	0	Sq. Ft.	0.0050	0.03	0	0
					53,524	**293,281**

Source: Impact Sciences, Inc., January 1996.

The solid waste generation rates are derived from the Ventura County Solid Waste Management Department's Guidelines for Preparation of Environmental Assessments for Solid Waste Impacts.

Visitor Serving Use falls under the General Retail category.

Newhall Ranch Specific Plan
Cumulative Impact Buildout
Solid Waste Generation
(No Recycling) Impact Analysis

Land Use	Quantity	Units	Generation Rate (tpy) (1)	Generation Rate (lbs./day)	Total Waste Generated (tpy)	Total Waste Generated (lbs./day)
Residential Units:						
Single Family Detached	100,040	Units	2.0400	11.18	204,082	1,118,255
Multi-Family or Attached	52,384	Units	1.1700	6.41	61,289	335,832
Mobile Home	3,117	Units	1.1700	6.41	3,647	19,983
Second Unit	538	Units	1.1700	6.41	629	3,449
Commercial/Industrial						
General Retail (2)(5)	5,426,415	Sq. Ft.	0.0024	0.01	13,023	71,361
Eating/Drnkng Establ.(2)	3,255,849	Sq. Ft.	0.0108	0.06	35,163	192,675
Food & Drug Stores(2)	8,682,264	Sq. Ft.	0.0072	0.04	62,512	342,533
Auto Dlr/Service Sta.(2)	4,341,132	Sq. Ft.	0.0051	0.03	22,140	121,314
Hotel & Motel (8)	456,420	Sq. Ft.	0.0053	0.03	2,419	13,255
Warehouse		Sq. Ft.	0.0011	0.01	0	0
Medical Offices(3)	5,571,395	Sq. Ft.	0.0027	0.01	15,043	82,426
Hospitals	285,470	Sq. Ft.	0.0055	0.03	1,570	8,603
Business Park (3)	9,286,730	Sq. Ft.	0.0014	0.01	13,001	71,241
Office(3)	5,571,395	Sq. Ft.	0.0014	0.01	7,800	42,739
Library (4)	251,000	Sq. Ft.	0.0014	0.01	351	1,925
Education & Schools	6,294,461	Sq. Ft.	0.0013	0.01	8,183	44,837
College (5)	490,000	Sq. Ft.	0.0013	0.01	637	3,490
Trans., Comm., Utilities	1,456,160	Sq. Ft.	0.0079	0.04	11,504	63,034
Special Generator (5)	77,600	Sq. Ft.	0.0079	0.04	613	3,359
Golf Course/Park	1,627	Acres	0.2000	1.10	325	1,783
Manufacturing	33,480,250	Sq. Ft.	0.0050	0.03	167,401	917,267
Church (4)	399,170	Sq. Ft.	0.0014	0.01	559	3,062
					631,334	**3,459,363**

(1) The solid waste daily generation rates in tons per year are derived from the Ventura County Solid Waste Management Department's Guidelines for Preparation of Environmental Assessments for Solid Waste Impacts. These figures do not reflect any recycling activities on the part of the generator.

(2) Retail uses are assumed to be 25% general retail, 20% auto dealer and service stations, 15% eating and drinking establishments, and 40% food and drug stores. Excludes 120,000 Specific Plan square feet for Hotel uses.

(3) Conservatively splits office uses 50/50 with medical offices.

(4) Assumes same generation rate as for office.

(5) Based on gross square footage for Mesa College, San Diego County, which is one of the five largest community colleges in the State (Nadeem Shafi, personal communications, 4 January 1996).

(6) Conservatively assumes same generation rate as utilities.

(7) Includes 120,000 square feet of Specific Plan Hotel uses.

Prepared by Impact Sciences, Inc.
R. Mamaghani
7/7/96

A JOINT RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SANTA CLARITA, THE BOARD OF SUPERVISORS OF THE COUNTY OF LOS ANGELES AND THE BOARD FOR THE WILLIAM S. HART UNION HIGH SCHOOL DISTRICT, SULPHUR SPRINGS UNION SCHOOL DISTRICT, CASTAIC DISTRICT AND SAUGUS UNION SCHOOL DISTRICT

THE CITY COUNCIL OF THE CITY OF SANTA CLARITA, THE BOARD OF SUPERVISORS OF THE COUNTY OF LOS ANGELES, THE BOARD OF TRUSTEES AND GOVERNING BOARDS FOR THE WILLIAM S. HART UNION HIGH SCHOOL DISTRICT, SULPHUR SPRINGS UNION SCHOOL DISTRICT, CASTAIC UNION SCHOOL DISTRICT, NEWHALL SCHOOL DISTRICT AND SAUGUS UNION SCHOOL DISTRICT DO HEREBY RESOLVE AS FOLLOWS:

SECTION 1. The City of Santa Clarita ("City"), the County of Los Angeles ("County"), William S. Hart Union High School District, Sulphur Springs Union School District, Castaic Union School District, Newhall School District and Saugus Union School District ("School Districts") do hereby find, determine and declare:

A. The Government Code for the State of California, at section 65996, provides the exclusive methods of mitigating environmental effects relating to the adequacy of school facilities when considering the approval or establishment of conditions for the approval of development projects.

B. Government Code section 65996 applies to the City, County and School Districts.

C. Government Code section 65995 provides that no public agency shall deny the approval of a project on the basis of the adequacy of school facilities.

D. Mira Development Corporation v. City of San Diego (1988) 205 Cal.App.3d 1201 and recent cases following it have found that the statutory definition of "development project" applies to adjudicative or administrative actions of the City and the County, and not to legislative actions, such as zone changes or general plan amendments.

E. Mira and the recent cases following it have found that Government Code section 65996 deals only with the approval of adjudicative or administrative activity and that it makes no reference to legislative decisions. They further found that cities and counties are not constrained by Government Code section 65996 when making legislative decisions, and that, when making such legislative decisions, cities and counties may consider the adequacy of school facilities.

F. For the purposes of this Resolution, the City, County, and School Districts desire to establish a uniform treatment for the consideration of the adequacy of school facilities in connection with legislative approvals throughout the Santa Clarity Valley.

G. For the purposes of this Resolution, the "Santa Clarity Valley" shall be coterminous with the boundaries of the William S.Hart Union High School District.

H. Much of the undeveloped, unincorporated land in the Santa Clarity Valley is currently zoned for agricultural uses. As such, prior to residential development, the applicant shall apply

for a zone change or general plan amendment, or both. These acts by the County are legislative acts.

I. Some of the undeveloped property within the Santa Clarita Valley is properly zoned for residential development and therefore does not require any legislative act to permit residential development to go forward nor is it subject to any pre-existing condition requiring the mitigation of school impacts. Other undeveloped property is subject to pre-existing mitigation agreements with one or more of the School Districts which shall remain in full force and effect. In both cases, it is the intent of the City, County and School Districts that the School Mitigation Payment defined in Paragraph 2.C of this Resolution shall not be required in order to develop the above-referenced property for residential purposes.

SECTION 2. The City, County and School Districts do hereby resolve as follows:

A. That City and County shall consider the adequacy of school facilities prior to granting any legislative act which would permit the construction of new residential development in the Santa Clarita Valley.

B. Those development applications which have received prior legislative approvals and which contain a pre-existing condition for development which requires the mitigation of school impacts shall be required to pay the School Mitigation Payment defined in Paragraph 2.C of this Resolution for any building permits sought after the adoption of this Resolution. No

additional payment of any sort shall be required as to any building permit for which the certification required by Government Code §53080(b) has been provided by any of the School Districts prior to the adoption of this Resolution.

C. Prior to any legislative act to permit residential development in the Santa Clarity Valley being approved, City or County shall require the particular developer to provide to the City or County and affected School Districts an executed agreement to provide payment for educational facilities, in the form set forth in Exhibit A to the Resolution, providing for the payment of an amount to mitigate the impacts related to the adequacy of school facilities (the "School Mitigation Payment").

D. Payment of the School Mitigation Payment represents only a portion of the costs for providing school facilities as a result of approval of new development in Santa Clarita Valley. The remaining portion of the cost shall be paid through participation in the State building program and other local or district-wide efforts. Except as may separately be agreed to between School Districts and a developer, the School Mitigation Payment shall be the exclusive method of mitigating the impacts related to the adequacy of school facilities resulting from the legislative acts permitting the construction of new residential development.

E. The School Districts shall not oppose applications for development projects, which do not require any legislative act to permit residential development to go forward and which are not otherwise subject to any conditions requiring the mitigation of

school impacts, on the basis of inadequate school facilities. The School Districts shall not oppose the legislative acts or the agreements to provide for financing educational facilities as set forth in this Resolution unless the Boards of Trustees or the Governing Boards of the School Districts adopt Resolutions determining that they can no longer adequately provide school facilities for new development with the School Mitigation Payment. No such Resolution shall be adopted until after written notice has been given to the City and County.

F. The School Mitigation Payment for the fiscal year 1991-1992 is $2.50 per square foot of accessible area (as that term is defined in Government section 65995(b)(1) of new residential development. The amount shall be adjusted annually beginning June 1, 1992, shall be uniform throughout the Santa Clarita Valley for the City and the County, and such adjustments shall be based upon increases set forth in the Consumer Price Index published by the United States Department of Labor, Bureau of Labor Statistics Index for all Urban Consumers in the Los Angeles-Anaheim-Riverside Metropolitan area between January 1, 1991, and January 1, 1992 and every year thereafter.

G. The School Districts shall issue appropriate certifications to developers upon payment of the School Mitigation Payment for those developers who are required to pay it pursuant to this Resolution; upon payment of the amounts called for in any mitigation agreement between a developer and the School Districts; and upon payment of the school fees authorized by Government Code

§ 53080 and limited by Government Code § 65995 for all other developers.

SECTION 3. The City Clerk, the Secretary for the Board of Supervisors, and the Secretaries of the Board of Trustee and the Governing Boards of the School Districts shall certify to the adoption of this Resolution.

AGREEMENT TO PROVIDE FINANCING

FOR EDUCATIONAL FACILITIES

1. _____("Developer") is the owner of real property located in the County of Los Angeles, State of California, described in Exhibit A attached hereto and incorporated herein by this reference (Real Property').

2. The Real Property is within the boundaries of the _____ School District(s).

3. The rights and obligations contained herein shall run with the land and shall be binding on Developer, its successors and assigns, and all subsequent owners of all or any part of the Real Property; provided, however, that following the conveyance of all or any portion of the Real Property, the transferor shall not be liable for obligations that accrue with respect to the transferred portion following such conveyance; and provided further, however, that the transferor shall not be relieved from liability for obligations that accrue with respect to the transferred portion prior to such conveyance.

4. The Real Property is going to be used as, or for the construction of, a residential project ("Project") pursuant to Zone Case Number _____.

5. There is an unacceptable level of educational facilities operated by the School Districts in the Santa Clarita Valley. The Project cannot currently be provided with an acceptable level of educational facilities.

6. The Project, both individually and cumulatively with other residential developments, will have a significant impact on the educational facilities of the School Districts.

7. Developer agrees to help pay for the necessary expansion of the School Districts' educational facilities resulting from the development of the Project.

8. The School Districts have calculated their financial needs for the expansion of the school facilities due to new residential development and have determined that it will require $2.50 per square foot of assessable space, as that term is defined in Government Code § 65995(b)(1) ("School Mitigation Payment"), to cover a portion of the costs of providing school facilities for new development.

9. Developer will not seek the issuance of building permits for the Project, absent certification by the School Districts of Developer's payment of the School Mitigation Payment.

10. The amount of the School Mitigation Payment shall be adjusted on June 1, 1992, and every year thereafter, based upon increases set forth in the Consumer Price Index published by the United States Department of Labor, Bureau of Labor Statistics Index for all Urban Consumers in the Los Angeles-Anaheim-Riverside Metropolitan area. The adjustment shall reflect the changes in the Index between January 1, 1991, and January 1, 1992, and every year thereafter.

11. The provisions imposed by this Agreement are in consideration of the adoption of a zoning ordinance or other

legislative approval by the Board of Supervisors of the County of Los Angeles permitting residential development on the Real Property and in the forbearance of the School Districts from attacking the validity of the ordinance.

12. The provisions imposed by this Agreement shall be effective only during such time that the zone classification or other legislative approval of the Real Property permits the residential development described in paragraph 4 above, and related accessory uses, unless otherwise released by authority of the Board of Supervisors of the County of Los Angeles. Developer shall provide the School Districts with written notice of any request for such a release at the time any such release is requested.

13. The County of Los Angeles shall have the right to enforce by proceedings at law or in equity all of the provisions imposed by this Agreement, including without limitation, the right to prosecute a proceeding at law or in equity against the person or persons who have violated or are attempting to violate any of its provisions, to enjoin or prevent them from doing so, and to cause any such violation to be remedied.

14. If Developer defaults in the performance or observation of any provision of this Agreement, Developer agrees to pay the County of Los Angeles all costs and fees incurred, including reasonable attorneys' fees, regardless of whether legal proceedings are instituted. In case a suit is instituted, Developer shall also pay the costs of suit, in addition to the aforesaid costs and fees.

15. The failure of the County of Los Angeles to enforce any of the provisions imposed by this Agreement shall not constitute a waiver of the right to enforce the same thereafter.

16. Subject to the provisions of Section 3 above, the provisions of this Agreement shall inure to the benefit of, and be binding upon all of Developer's assigns, transferees, heirs and successors-in-interest.

DEVELOPER

By:_____

Its:_____

b.agree1

SCHOOL FACILITIES FUNDING AGREEMENT

BETWEEN THE NEWHALL SCHOOL DISTRICT AND

THE NEWHALL LAND AND FARMING COMPANY

This School Facilities Funding Agreement ("Agreement") is made at Valencia, California, as of October 17, 1995, between the NEWHALL SCHOOL DISTRICT ("District"), a school district organized and existing under the laws of the State of California, on the one hand, and THE NEWHALL LAND AND FARMING COMPANY ("NLF"), a California limited partnership, on the other hand, with respect to the following facts:

A. NLF is the owner, and is presently developing, two new communities, Westridge ("Westridge") and the Newhall Ranch ("Newhall Ranch"), both of which are located in part within the District's boundaries and which are described in Exhibits A and B, respectively, which are hereby incorporated.

B. Westridge is a mixed use development which will include approximately 2,000 dwelling units in addition to commercial facilities; Newhall Ranch is a proposed new town which will include approximately 25,000 dwelling units in addition to commercial and industrial facilities. Total buildout of Westridge and Newhall Ranch will take 30 years or longer and the details of both, including the location and extent of land uses and the number of dwelling units, are expected to change over time to meet the needs of the market. Corresponding changes in governmental approvals are also expected.

C. Historically, the State of California has provided a substantial portion of the money necessary to build new school facilities ("State Funding"). However, over the last several years funds have not been available from the State for this purpose and the District does not believe that funds will be available from the State for this purpose in the near future.

D. The District has determined the amount of money which would be necessary on a per unit basis to completely mitigate the impacts of Westridge and Newhall Ranch on the District's educational facilities in the absence of State Funding ("Mitigation Payments").

E. Both the District and NLF desire to provide a financing schedule ("Financing Schedule") and a financing plan ("Financing Plan"), as set out in this Agreement, in lieu of Mitigation Payments, which will provide permanent facilities, including land, buildings, furnishings and equipment, ("School Facilities") to house the K-6 students who will be generated by Westridge and Newhall Ranch ("NLF students") and which will completely mitigate the direct and cumulative impacts on the District's educational facilities. Temporary facilities to house NLF students while new School Facilities are being constructed will be provided, and paid for, by the District. School Facilities will be constructed in accordance with the requirements and specifications contained in the Education Code and the Applicant Handbook for State School Building Lease-Purchase Program put out by the Office of Public School Construction as those requirements and specifications

exist at any given time ("State Requirements and Specifications"). A copy of the State Requirements and Specifications as they currently exist is attached as Exhibit C which is hereby incorporated.

F. The construction of School Facilities will be accomplished through the use of funds advanced by NLF in response to requests from the District ("Construction Draws"). The Financing Schedule will ensure that the District will always have sufficient capacity to house every NLF Student; the Financing Plan will minimize the financial impacts on NLF while at the same time maximizing the opportunity to obtain funds from the State for funding School Facilities or the repayment, without interest, of the funds advanced by NLF for the cost of School Facilities necessary to house NLF Students.

G. The Financing Schedule and the Financing Plan will ensure that the development of Westridge and Newhall Ranch, either individually or cumulatively with other projects within the District's boundaries, will have no adverse impacts on the District's ability to provide adequate educational opportunities to every student in the District. In particular, the Financing Schedule and the Financing Plan guarantees to the District that there will be adequate School Facilities available to house every NLF Student.

H. The District has determined that the development of Westridge, as a planned community, and Newhall Ranch, as a new town, presents a unique opportunity for the District to provide

for complete mitigation of the impacts that their development is likely to have on the District's educational facilities, that the Financing Schedule and the Financing Plan will provide all of the land and money necessary to provide all needed School Facilities without the need to collect any fees which might otherwise be available to the District in connection with the construction of commercial or industrial buildings within Westridge and Newhall Ranch, and that the number of additional students who might be entitled to attend the District's schools because of their parents' or guardians' employment in those buildings is less than, or equal to, the number of NLF Students who will not attend the District's schools because they will be attending schools in other districts or private schools. The District's determination is limited to Westridge and Newhall Ranch and does not represent a precedent applicable to any other property within the District.

I. Each future permanent elementary school to house NLF Students will be built to the State Requirements and Specifications and will contain at least 30% relocatable classrooms, which, together with permanent School Facilities, will house 837 students on a traditional, single track, nine month school schedule and that each represents the appropriate size elementary school to house NLF Students ("New Elementary School"). The District will operate each New Elementary School to house 1004 NLF Students by housing the additional 167 NLF Students at any New Elementary School or at any other District school by either, in its sole discretion, adding relocatable

classrooms or, without adding relocatable classrooms, by operating any New Elementary School on a multi-track, year-round schedule.

J. Each New Elementary School will be built on a ten acre school site or, in NLF's sole discretion, on a seven acre school site for joint use with an adjoining local public park containing at least five acres ("New Elementary School Site"). Any adjoining local park will be improved and available for use by the District at the time the adjoining New Elementary School is open for operation and for as long afterwards as the New Elementary School remains in operation.

IN LIGHT OF THE FOREGOING FACTS, IT IS MUTUALLY AGREED THAT:

1. The District shall use its best efforts to annex those portions of Westridge which are presently within the boundaries of the Saugus Union School District and those portions of Newhall Ranch which are currently within the boundaries of the Castaic Union School District. The terms of this Agreement shall apply to those portions of Westridge and Newhall Ranch which are within the District's boundaries regardless of the outcome of any annexation attempts.

2. The District shall build the New Elementary Schools necessary to house all NLF Students pursuant to the terms of this Agreement and NLF will advance all of the funds needed by the District to build the New Elementary Schools pursuant to the terms of this Agreement.

3. The District shall provide NLF with written notice ("District Notice") for the first New Elementary School when the District reasonably determines that at least 300 NLF Students are estimated to exist for the next succeeding school year and that a New Elementary School is reasonably required to house NLF Students. Thereafter the District shall provide NLF with a District Notice whenever it reasonably determines that all existing New Elementary Schools will house at least 1004 NLF Students in the next succeeding school year and that at least 300 additional NLF Students are reasonably estimated by the District to exist for the next succeeding school year. The District Notice shall contain a description of the New Elementary School and a schematic footprint showing the location of all proposed buildings, parking lots, and other improved areas ("Project Layout") and shall state the District's estimated cost to construct the New Elementary School and the amount needed for the first Construction Draw.

4. The District shall use its best efforts to provide each New Elementary School, open for operation, at the time when 450 additional NLF Students are available to be housed in the New Elementary School. NLF shall advance to the District the funds required to construct each New Elementary School to a maximum of $6,760,962 adjusted beginning in 1996 to account for inflation based on the statewide cost index for Class D construction as determined by the State Allocation Board at its quarterly meetings, which adjustment shall be effective as of the date of

each meeting ("Maximum Construction Cost"). If the State Allocation Board stops determining the adjustments, the adjustments shall be made using the Lee Saylor Class D Construction Cost Index for the Western United States, or another mutually agreed upon index, as of January 1 of each calendar year. NLF shall, in its sole discretion, post an improvement bond, in a form, and by a surety, reasonably acceptable to the District, or a letter of credit in favor of the District in the lesser of the amount of the cost of construction set forth in the District Notice and the Maximum Construction Cost and shall advance the funds required for the first Construction Draw to the District within 60 calendar days of receipt of the District Notice. Thereafter, the District shall submit subsequent written Construction Draw requests to NLF and NLF shall advance the funds required by each subsequent Construction Draw request to the District within 30 calendar days of receipt of the Construction Draw request up to the lesser of the amount of the cost of construction set forth in the District Notice, plus any change orders or actual reasonable extra costs, and the Maximum Construction Cost. The District shall confer with NLF as to any change orders involving extra costs in excess of 5% of the Maximum Construction Cost.

5. The District shall be responsible for obtaining, paying for, and installing any permanent or temporary relocatable classrooms which are to be used to house NLF Students while a New Elementary School is being built.

6. The District and NLF shall consult with each other on the planning, design, layout, and grading of each New Elementary School and each New Elementary School Site to maximize architectural compatibility with surrounding development and to minimize construction and maintenance costs to the District to the greatest extent possible while still conforming to the State Requirements and Specifications. All decisions regarding the planning, design, layout, and grading of New Elementary Schools and New Elementary School Sites shall be in the District's sole discretion and it is not intended that the District be required to do anything that will increase its current or future costs of operation or maintenance.

7. NLF shall provide each New Elementary School Site to the District in a construction ready condition within 180 calendar days of receipt of the District Notice. It is the intent of the District and NLF that plans, drawings, and construction documents will have been prepared and approved by the Office of the State Architect and the State Allocation Board and that a construction contract will have been awarded, or will be concurrently awarded, so that construction of each New Elementary School can begin at the time each New Elementary School Site is provided to the District.

8. Each New Elementary School Site shall be provided to the District in a construction ready condition with all-weather access to public roads and utilities, which shall consist of one potable water line, one fire water line, one electrical line, one

natural gas line, one telephone line, and up to two sewer lines, stubbed to the hook-up location indicated for each utility on pages 3-B-40-41 of Exhibit C and shown on the Project Layout, sufficient to service a New Elementary School, in place. Each New Elementary School Site shall have no more than two pads with no more than a 2% grade as to each pad. The District and NLF anticipate that one of the New Elementary School Sites may have a difference in pad elevation in excess of four feet. The Maximum Construction Cost shall be increased by any additional costs of service-site development over that which would otherwise be incurred if the difference in elevation of two pads on a New Elementary School Site exceeds four feet. Every pad shall be compacted to the degree required by a geotechnical engineer to support the uses shown on the Project Layout without additional cost to the District.

9. NLF shall provide New Elementary School Sites to allow the construction of New Elementary Schools (currently estimated to be one in Westridge and five in Newhall Ranch, provided that those portions of Westridge which are currently in the Saugus Union School District and those portions of Newhall Ranch which are currently in the Castaic Union School District are annexed to the District). The location of each New Elementary School Site is to be reasonably determined by NLF subject to the consent of the District, which consent shall not be unreasonably withheld, the concurrence of the State Department of Education and, if required, the County of Los Angeles. The number and locations of

New Elementary Schools and New Elementary School Sites shall be adjusted to account for changes in the number of NLF Students caused by changes in student generation factors, the number of dwelling units approved for Westridge and Newhall Ranch, or for any portions of either which are not annexed to the District.

10. NLF shall lease New Elementary School Sites to the District as needed by the District on the terms and conditions of this Agreement. Each lease shall commence 60 calendar days after receipt of the District Notice. Each local public park adjacent to a seven acre New Elementary School Site shall be improved and available for joint use in connection with the operation of the New Elementary School at the time that it opens for operation and shall remain available for as long afterwards as it remains in operation. Each lease for a New Elementary School Site shall be for a period of 30 years ("Lease Term") at a rental of $1 per year. Each lease shall terminate if the New Elementary School is not open for operation within five years of the commencement of the lease, provided that NLF has advanced all required funds for the New Elementary School to the District, or if, after the New Elementary School has opened for operation, it fails to operate as an elementary school for five years in any seven year period. The District, upon termination of any lease, shall, at the District's sole expense, demolish all improvements constructed by it on the New Elementary School Site and return it to the condition it was in at the commencement of the lease and shall refund to NLF any funds advanced to the District, together with

interest actually earned by the District, for the construction of the New Elementary School which have not been paid, irrevocably committed, or required to terminate any applicable contract.

11. Each lease shall contain an option which allows the District to purchase the New Elementary School Site and which the District shall exercise immediately if the District is able to obtain money for construction or land acquisition from any State or federal agency. The purchase price shall be the appraised value at the time of the exercise of the option or at such other time as required by applicable State or federal law. If the money received from any State or federal agency is less than the purchase price, then the District shall pay NLF the amount received and any additional amounts received for the New Elementary School Site from any State or federal agency thereafter. If the District is unable to exercise its purchase option during Lease Term, the District shall purchase the new elementary school site for $1 at the end of the Lease Term. Any purchase of a New Elementary School Site which does not include the payment of the full amount of the appraised value shall be subject to a power of termination, as that term is defined in Civil Code § 885.010, in favor of NLF which will require the District to deed the New Elementary School Site back to NLF, to demolish all improvements constructed by it on the New Elementary School Site, and to return it to the condition it was in at the commencement of the lease if the New Elementary School fails to operate as an elementary school for five years in any seven year

period. Upon exercise of the power of termination, NLF shall pay the District the amount of the purchase price, without interest, paid to NLF. The power of termination shall become ineffective at such time as NLF receives the full amount of the appraised value.

12. The District shall state in the District Notice for the last school needed to house NLF Students ("Last School") the number of NLF Students that will be housed in the Last School.

A. If the District determines that the Last School will house less than 1004 NLF Students but more than 500 NLF Students, then the District shall build the Last School on a New Elementary School Site to be provided by NLF. The Last School shall be built to the State Requirements and Specifications and shall be large enough to house the number of NLF Students if the school were operated on a multi-track, year round schedule. NLF shall only be required to advance funds to the District equal to the construction cost of the Last School up to the Maximum Construction Cost. Alternatively, the District, in its sole discretion, may build a New Elementary School in which case NLF shall be required to advance funds to the District equal to the lesser of the construction cost

of the New Elementary School multiplied by the ratio of the number of NLF Students to be housed to 1004 or the Maximum Construction Cost multiplied by the ratio of the number of NLF Students to be housed to 1004.

B. If the District determines that the Last School will house 500 NLF Students or less, then the District shall not be required to build the Last School and NLF shall only be required to advance funds to the District equal to the construction cost of a school large enough to house the number of NLF Students which shall be equal to the construction cost of a New Elementary School, up to the Maximum Construction Cost, multiplied by the ratio of the number of NLF Students to be housed to 1004. Alternatively, the District, in its sole discretion, may build the Last School in which case it shall be large enough to house a minimum of 500 students if operated on a traditional, single track, nine month school schedule and shall be built to the State Requirements and Specifications. If the District constructs the Last School and if it becomes obligated to purchase land for the

Last School within five years of the time that NLF advances the funds called for under this subparagraph, then NLF shall advance additional funds to the District equal to the construction cost of the Last School plus the District's actual out-of-pocket purchase price of the land, both times the ratio of the number of NLF Students to be housed to the number of students that the Last School will be able to house if the Last School were operated on a multi-track, year round schedule, up to the Maximum Construction Cost, less the amount of the funds previously advanced for the Last School. The District shall reimburse NLF for the funds advanced for the purchase of the land for the Last School if the District later receives funds for the purchase of the land from any State or federal agency. NLF shall have no obligation to advance additional funds for the construction cost or the purchase of the land for the Last School if the District does not become obligated to purchase the land within five years of the time that NLF advances the funds called for under this subparagraph.

13. The District shall use its best efforts to maximize its eligibility to obtain funding for each New Elementary School and each New Elementary School Site from any State or federal agency and shall take all reasonable efforts to obtain such funding. Toward this end, the District and NLF will, upon NLF's request, revise this Agreement to provide a different procedure, including Design/Build and Public/Private Partnership concepts, which will increase the opportunity to obtain funding from any State or federal agency as long as there is no increased cost to either the District or NLF. The District shall, in any event, use its best efforts to ensure that NLF receives any funds received from any State or federal agency in connection with the acquisition of a New Elementary School Site or the construction of a New Elementary School. The District shall be entitled to retain funds received from any State or federal agency up to the cost of six permanent relocatable classrooms for each New Elementary School. However, if the law is changed to allow local bond issues to be approved by a majority of the voters, the District shall use its best efforts to put a local bond issue on the ballot and have it approved. If such a local bond issue passes, then NLF shall be reimbursed for the appraised value of the New Elementary School Sites before the District retains funds received from the State or any federal agency for permanent relocatable classrooms.

14. Current student generation factors have been determined by the District to be .348 students for a single family dwelling

unit, .078 students for a multiple family dwelling unit, and .253 students for an apartment unit. The District shall determine student generation factors for each type of dwelling unit every five years based on the then-existing dwelling units in Westridge and Newhall Ranch for the purpose of estimating the number of NLF Students to be generated in succeeding school years and of the number of New Elementary Schools needed to house NLF Students. The result of each determination shall be used until a new determination is made. Dwelling units subject to age restrictions which require that all permanent residents be over 15 years of age are deemed to generate no students.

15. The District shall provide the County of Los Angeles with information for the County's Development Monitoring System based on a capacity of 1004 students for each New Elementary School.

16. The District may, with NLF's consent, which consent may be given or withheld in NLF's sole discretion, designate capacity in any New Elementary School to be used to permanently house non-NLF Students in which case it shall pay NLF $12,230 per student, adjusted as set forth in paragraph 3, for the capacity designated. The amount to be paid to NLF to designate capacity at any New Elementary School shall be reduced to account for any money received by NLF as a result of funds given to the District for land acquisition costs by any State or federal agency for that school.

17. The District shall not, under any circumstances:

A. Exercise any power or authority under current or future law to levy or impose an exaction of land, goods, money, or services, whether denominated a fee, charge, dedication, or tax, against any development of either Westridge or Newhall Ranch except as to any District-wide general tax, special tax, or assessment for School Facilities;

B. Require, request, or cooperate with the County of Los Angeles, the City of Santa Clarita, or any other governmental entity to exercise its power or authority to levy or impose an exaction of land, goods, money, or services, whether denominated a fee, charge, dedication, or tax, for the benefit of the District;

C. Oppose the development of either Westridge or Newhall Ranch, any governmental approval, whether legislative or administrative, of either, or any change in any governmental approval of either on any basis whatsoever; or

D. Sponsor, or require the formation of, a Communities Facilities District, except on a District-wide basis, for either

Westridge or Newhall Ranch without the express, written consent of NLF which consent may be given or withheld in NLF's sole discretion. The District shall not unreasonably refuse to act as sponsor for a Community Facilities District if requested to do so by NLF.

18. The funds and land to be provided to the District by NLF pursuant to the terms of this Agreement constitute the entire extent of NLF's obligation to provide School Facilities for Westridge and Newhall. The District shall not require or accept any fees in connection with the development of either Westridge or Newhall Ranch which might otherwise be available to it under current or future State law, the Valley-Wide Joint School Fee Resolution (which the District is no longer a party to), or by any other means. The District shall inform the William S. Hart Union High School District that the amount of any such fees that would be otherwise available to the District shall not be collected.

19. The District shall provide written certification upon written request from NLF that adequate School Facilities for the District's K-6 needs either exist, or that the Financing Schedule and the Financing Plan provided by this Agreement guarantee their availability as needed, to house NLF Students. This written certification shall be given to the County of Los Angeles, the City of Santa Clarita, or any other governmental entity which may

have development approval authority over either Westridge or Newhall Ranch as requested by NLF.

20. No development, change of development, governmental approval, nor change in any governmental approval of either Westridge or Newhall Ranch shall constitute the basis for any change or termination of this Agreement because this Agreement provides for the complete mitigation of all impacts, direct and cumulative, of Westridge and Newhall Ranch on the District's ability to provide adequate educational opportunities to every student in the District.

21. The District, immediately upon request by NLF, shall provide any written certification required to obtain building permits or other development approvals for Westridge and Newhall Ranch. The written certifications shall be provided for whatever number of residential dwelling units or commercial or industrial buildings are requested by NLF at any time.

22. NLF shall have the right, in its sole discretion, to sell or encumber Westridge or Newhall Ranch, improved or unimproved and in whole or in part, by any deed, mortgage, deed of trust, or other security device. No sale, transfer, or encumbrance of either Westridge or Newhall Ranch shall affect NLF's obligations under this Agreement. Neither this Agreement nor any breach of this Agreement shall defeat, invalidate, diminish, or impair the lien or priority of any deed, mortgage, deed of trust, or other security device.

23. The District and NLF, within 30 calendar days of the

written request, shall perform any acts and prepare, sign, deliver, file, and record any documents reasonably required to obtain the goals, and to satisfy the conditions, contained in this Agreement. This includes, but is not limited to, providing the requesting party with a written statement certifying that:

A. This Agreement is unmodified and in full force and effect or, if there have been modifications, that this Agreement, as modified, is in full force and effect, stating the date and nature of any modifications; and

B. There are no current uncured defaults under this Agreement or, if there are any, the dates and natures of the defaults.

24. Any District Notice, request for a Construction Draw, information as to the District's determination of student generation factors, or other document which would impose a duty on NLF or change the extent of NLF's obligations under this Agreement shall be accompanied by reasonable supporting documentation at the time that it is provided to NLF by the District.

25. This Agreement is entered into solely for the benefit of the District and NLF and their successors, transferrees, and assigns. Other than the District and NLF and their successors, transferrees and assigns, no third person shall be entitled,

directly or indirectly, to base any claim or to have any right arising from, or related to, this Agreement.

26. This Agreement contains the entire agreement and understanding concerning the funding of educational facilities to house NLF Students and supersedes and replaces all prior negotiations and reposed agreements, written or oral. The District and NLF acknowledge that neither the other party nor its agents or attorneys has made any promise, representation, or warranty whatsoever, express or implied, not contained herein to induce the execution of this Agreement and acknowledges that this Agreement has not been executed in reliance upon any promise, representation, or warranty not contained herein.

27. This Agreement may not be amended except in writing and signed by the District and NLF.

28. The District and NLF acknowledge that each has conducted an independent investigation of the facts concerning the development of Westridge and Newhall Ranch, the impact that NLF Students will have on the District's educational facilities, and the costs of housing NLF Students.

29. The District and NLF desire to resolve any disputes as to the meaning of any portion of this Agreement or the rights or obligations of the District or NLF under it as quickly as possible. Therefore any such disputes shall be resolved by binding arbitration conducted by a mutually agreed upon retired judge of the Los Angeles Superior Court. If the District and NLF are unable to agree on the arbitrator within 30 calendar days of

the receipt of a request for arbitration, they shall request that the presiding judge of the Los Angeles Superior Court designate one. The District and NLF shall each pay half of the cost of the arbitration and each shall be responsible for its own costs as to any such arbitration.

30. Except as provided in paragraph 29, if it becomes necessary to enforce any of the terms of this Agreement, the prevailing party shall be entitled to reasonable attorneys' fees and other costs of litigation in addition to any other relief to which it may be entitled.

31. In interpreting this Agreement, it shall be deemed that it was prepared by the parties jointly and no ambiguity shall be resolved against either party on the premise that it or its attorneys was responsible for drafting this Agreement or any provision hereof.

32. Each individual signing this Agreement warrants and represents that he or she has been authorized by appropriate action of the party which he or she represents to enter into this Agreement on behalf of the party.

33. All notices, demands, and communications between the District and NLF shall be given by personal delivery, registered or certified mail, postage prepaid, return receipt requested, Federal Express or other reliable private express delivery, or by facsimile transmission. Such notices, demands, or communications shall be deemed received upon delivery if personally served or sent by facsimile or after three business days if given by other

approved means as specified above. Notices, demands, and communications shall be sent:

To the District:	Newhall School District 25375 Orchard Village Road, Suite 200 Valencia, CA 91355 Fax No: (805) 286-2290
With a copy to:	Alexander Bowie, Esq. Bowie, Arneson, Kadi, Wiles & Giannone 4920 Campus Drive, Suite A Newport Beach, CA 92660 Fax No: (714) 851-2014
To NLF:	The Newhall Land and Farming Company Attn: President 23823 Valencia Blvd. Valencia, CA 91355 Fax No: (805) 255-3960
With a copy to:	Kenneth B. Bley, Esq. Cox, Castle & Nicholson 2049 Century Park East, 28th Floor Los Angeles, CA 90067 Fax No: (310) 277-7889

The foregoing names, addresses, and fax numbers may be changed at any time by a written notice given as provided above.

34. This Agreement and all rights and obligations arising out of it shall be construed in accordance with the laws of the State of California.

35. Any litigation arising out of this Agreement shall be conducted only in Los Angeles County, California.

36. This Agreement may be signed in one or more counterparts at which, taken together, shall constitute one original document.

37. Recitals A through I are true and correct and are hereby incorporated.

38. The terms and conditions of this Agreement shall be incorporated in every environmental impact report, environmental monitoring program, general plan amendment, specific plan, and tentative subdivision map approval given by Los Angeles County for Westridge or Newhall Ranch.

DATED: October __, 1995

BOARD OF TRUSTEES OF THE NEWHALL SCHOOL DISTRICT

By: _____
PRESIDENT OF THE BOARD OF TRUSTEES OF THE NEWHALL DISTRICT

ATTEST:

_____
CLERK OF THE BOARD OF TRUSTEES OF THE NEWHALL SCHOOL DISTRICT

DATED: October __, 1995

THE NEWHALL LAND AND FARMING COMPANY
(A California Limited Partnership)

By: NEWHALL MANAGEMENT LIMITED PARTNERSHIP
Managing General Partner

By: NEWHALL MANAGEMENT CORPORATION
Managing General Partner

By: _____
Its: President

By: _____
Its: Senior V.P.

(Signatures continued on the next page.)

APPROVED AS TO FORM:

BOWIE, ARNESON, KADI, WILES & GIANNONE

By: _____
ALEXANDER BOWIE
Attorneys for THE NEWHALL SCHOOL DISTRICT

COX, CASTLE & NICHOLSON

By: _____
KENNETH B. BLEY
Attorneys for ~~THE NEWHALL LAND AND~~ FARMING COMPANY

SPECIFIC PLAN STUDENT/CLASSROOM/SCHOOL GENERATION - ACTUAL STUDENT GENERATION RATES

District	Units With Reorganization			Units w/o Reorganization			Rate			Class Size	School Size	Students	Students	Class Size	Class Size	Schools	Schools
	SF	MF	Apartment	SF	MF	Apartment	SF	MF	Apartment			With Reorg	W/O Reorg	With Reorg	W/O Reorg	With Reorg	W/O Reorg
Newhall El	11025	9790	4403	8367	8913	3420	0.348	0.078	0.253	30	1004	5714	4472	190.5	149.1	5.7	4.5
Castaic El	0	0	0	2658	877	983	0.3021	0.1079	0.0998	30	756	0	996	0.0	33.2	0.0	1.3
Hart JH	11025	9790	4403	8367	8913	3420	0.098	0.037	0.038	32	1000	1610	1280	50.3	40.0	1.6	1.3
Castaic JH	0	0	0	2658	877	983	0.1578	0.0618	0.0585	30	960	0	531	0.0	17.7	0.0	0.6
Hart SH	11025	9790	4403	11025	9790	4403	0.171	0.064	0.054	32	2000	2750	2750	85.9	85.9	1.4	1.4
									Total			10074	10028	327	326		

SPECIFIC PLAN SCHOOL COST VS. REVENUE - STATE COST METHOD

	Without Reorganization					With Reorganization		
	Castaic El	Castaic JH	Hart JH	Hart SH	Total	Hart JH	Hart SH	Total
Costs/Student	$ 11,558	$ 16,133	$ 21,307	$ 18,250		$ 21,307	$ 18,250	
Students	996	531	1280	2750		1610	2750	
Total Cost	$ 11,511,768	$ 8,566,623	$ 27,272,960	$ 50,187,500	$ 97,538,851	$ 34,304,270	$ 50,187,500	$ 84,491,770.00
Resolution Fee	$ 2.72	$ 2.72	$ 2.72	$ 2.72		$ 2.72	$ 2.72	
% of Fee	43%	22%	20%	35%		20%	35%	
Share of Fee	$ 1.17	$ 0.60	$ 0.54	$ 0.95		$ 0.54	$ 0.95	
Statutory Fee	$ 0.30	$ 0.30	$ 0.30	$ 0.30		$ 0.30	$ 0.30	
% of Fee	43%	22%	20%	35%		20%	35%	
Share of Fee	$ 0.13	$ 0.07	$ 0.06	$ 0.11		$ 0.06	$ 0.11	
Residential SF	8421200	8421200	32232650	40653850		40653850	40653850	
Commercial SF	3005000	3005000	2715000	5720000		5720000	5720000	
Resolution Revenue	$ 9,849,435.52	$ 5,039,246.08	$ 17,534,561.60	$ 38,702,465.20	$ 71,125,708	$ 22,115,694.40	$ 38,702,465.20	$ 60,818,159.60
Statutory Revenue	$ 387,645.00	$ 198,330.00	$ 162,900.00	$ 600,600.00	$ 1,349,475	$ 343,200.00	$ 600,600.00	$ 943,800.00
Total	$ 10,237,080.52	$ 5,237,576.08	$ 17,697,461.60	$ 39,303,065.20	$ 72,475,183	$ 22,458,894.40	$ 39,303,065.20	$ 61,761,959.60
% Costs Covered By SP	88.9%	61.1%	64.9%	78.3%	74.3%	65.5%	78.3%	73.1%

SPECIFIC PLAN STUDENT/CLASSROOM/SCHOOL GENERATION - THEORETICAL STUDENT GENERATION RATES

District	Units With Reorganization			Units w/o Reorganization			Rate			Class Size	School Size	Students	Students	Class Size	Class Size	Schools	Schools
	SF	MF	Apartment	SF	MF	Apartment	SF	MF	Apartment			With Reorg	W/O Reorg	With Reorg	W/O Reorg	With Reorg	W/O Reorg
Newhall El	11025	9790	4403	8367	8913	3420	0.348	0.078	0.253	30	1004	5714	4472	190.5	149.1	5.7	4.5
Castaic El	0	0	0	2658	877	983	0.3021	0.1079	0.0998	30	756	0	996	0.0	33.2	0.0	1.3
Hart JH	11025	9790	4403	8367	8913	3420	0.1066	0.044	0.0416	32	1000	1789	1426	55.9	44.6	1.8	1.4
Castaic JH	0	0	0	2658	877	983	0.1578	0.0618	0.0585	30	960	0	531	0.0	17.7	0.0	0.6
Hart SH	11025	9790	4403	11025	9790	4403	0.2007	0.087	0.0776	32	2000	3406	3406	106.4	106.4	1.7	1.7
									Total			10910	10832	353	351		

SPECIFIC PLAN SCHOOL COST VS. REVENUE - DISTRICT COST METHOD

	Without Reorganization					With Reorganization		
	Castaic El	Castaic JH	Hart JH	Hart SH	Total	Hart JH	Hart SH	Total
Costs/Student	$ 16,720	$ 22,210	$ 28,439	$ 24,770		$ 28,439	$ 24,770	
Students	996	531	1426	3406		1789	3406	
Total Cost	$ 16,653,120	$ 11,793,510	$ 40,554,014	$ 84,366,620	$ 153,367,264	$ 50,877,371	$ 84,366,620	$ 135,243,991.00
Resolution Fee	$ 2.72	$ 2.72	$ 2.72	$ 2.72		$ 2.72	$ 2.72	
% of Fee	43%	22%	20%	35%		20%	35%	
Share of Fee	$ 1.17	$ 0.60	$ 0.54	$ 0.95		$ 0.54	$ 0.95	
Statutory Fee	$ 0.30	$ 0.30	$ 0.30	$ 0.30		$ 0.30	$ 0.30	
% of Fee	43%	22%	20%	35%		20%	35%	
Share of Fee	$ 0.13	$ 0.07	$ 0.06	$ 0.11		$ 0.06	$ 0.11	
Residential SF	8421200	8421200	32232650	40653850		40653850	40653850	
Commercial SF	3005000	3005000	2715000	5720000		5720000	5720000	
Resolution Revenue	$ 9,849,435.52	$ 5,039,246.08	$ 17,534,561.60	$ 38,702,465.20	$ 71,125,708	$ 22,115,694.40	$ 38,702,465.20	$ 60,818,159.60
Statutory Revenue	$ 387,645.00	$ 198,330.00	$ 162,900.00	$ 600,600.00	$ 1,349,475	$ 343,200.00	$ 600,600.00	$ 943,800.00
Total	$ 10,237,080.52	$ 5,237,576.08	$ 17,697,461.60	$ 39,303,065.20	$ 72,475,183	$ 22,458,894.40	$ 39,303,065.20	$ 61,761,959.60
% Costs Covered By SP	61.5%	44.4%	43.6%	46.6%	47.3%	44.1%	46.6%	45.7%

DMS BUILDOUT STUDENT/CLASSROOM/SCHOOL GENERATION - ACTUAL STUDENT GENERATION RATES

District	Units With Reorganization			Units w/o Reorganization			Rate			Class Size	School Size	Students	Students	Class Size	Class Size	Schools	Schools
	SF	MF	Apartment	SF	MF	Apartment	SF	MF	Apartment			With Reorg	W/O Reorg	With Reorg	W/O Reorg	With Reorg	W/O Reorg
Newhall El	4162	2702	0	4162	2702	0	0.348	0.166	0.07	30	1004	1897	1897	63.2	63.2	1.9	1.9
Castaic El	0	0	0	4191	1059	0	0.3021	0.104	0.104	30	756	0	1376	0.0	45.9	0.0	1.8
Hart JH	16711	15488	0	16711	15488	0	0.098	0.0375	0.375	32	1000	2218	2218	69.3	69.3	2.2	2.2
Castaic JH	0	0	0	4191	1059	0	0.1578	0.06	0.06	30	960	0	725	0.0	24.2	0.0	0.8
Hart SH	20900	16466	0	20900	16466	0	0.171	0.059	0.059	32	2000	4545	4545	142.0	142.0	2.3	2.3
									Total			8661	10762	275	345		

DMS BUILDOUT STUDENT/CLASSROOM/SCHOOL GENERATION - THEORETICAL STUDENT GENERATION RATES

District	Units With Reorganization			Units w/o Reorganization			Rate			Class Size	School Size	Students	Students	Class Size	Class Size	Schools	Schools
	SF	MF	Apartment	SF	MF	Apartment	SF	MF	Apartment			With Reorg	W/O Reorg	With Reorg	W/O Reorg	With Reorg	W/O Reorg
Newhall El	4162	2702	0	4162	2702	0	0.348	0.166	0.07	30	1004	1897	1897	63.2	63.2	1.9	1.9
Castaic El	0	0	0	4191	1059	0	0.3021	0.104	0.104	30	756	0	1376	0.0	45.9	0.0	1.8
Hart JH	16711	15488	0	16711	15488	0	0.1066	0.0428	0.0428	32	1000	2444	2444	76.4	76.4	2.4	2.4
Castaic JH	0	0	0	4191	1059	0	0.1578	0.06	0.06	30	960	0	725	0.0	24.2	0.0	0.8
Hart SH	20900	16466	0	20900	16466	0	0.2007	0.0823	0.0823	32	2000	5550	5550	173.4	173.4	2.8	2.8
									Total			9891	11992	313	383		

SCV CUMULATIVE BUILDOUT STUDENT/CLASSROOM/SCHOOL GENERATION - ACTUAL STUDENT GENERATION RATES

District	Units With Reorganization			Units w/o Reorganization			Rate			Class Size	School Size	Students	Students	Class Size	Class Size	Schools	Schools
	SF	MF	Apartment	SF	MF	Apartment	SF	MF	Apartment			With Reorg	W/O Reorg	With Reorg	W/O Reorg	With Reorg	W/O Reorg
Newhall El	0	0	0	12451	4410	0	0.348	0.166	0.07	30	1004	0	5065	0.0	168.8	0.0	5.0
Castaic El	0	0	0	11137	3073	0	0.3021	0.104	0.104	30	756	0	3684	0.0	122.8	0.0	4.9
Hart JH	0	0	0	49173	19727	578	0.098	0.0375	0.0375	32	1000	0	5580	0.0	174.4	0.0	5.6
Castaic JH	0	0	0	11137	3073	0	0.1578	0.06	0.06	30	960	0	1942	0.0	64.7	0.0	2.0
Hart SH	0	0	0	58673	22800	578	0.171	0.059	0.059	32	2000	0	11412	0.0	356.6	0.0	5.7
									Total			0	27684	0	887		

SCV CUMULATIVE BUILDOUT STUDENT/CLASSROOM/SCHOOL GENERATION - THEORETICAL STUDENT GENERATION RATES

District	Units With Reorganization			Units w/o Reorganization			Rate			Class Size	School Size	Students	Students	Class Size	Class Size	Schools	Schools
	SF	MF	Apartment	SF	MF	Apartment	SF	MF	Apartment			With Reorg	W/O Reorg	With Reorg	W/O Reorg	With Reorg	W/O Reorg
Newhall El	0	0	0	12451	4410	0	0.348	0.166	0.07	30	1004	0	5065	0.0	168.8	0.0	5.0
Castaic El	0	0	0	11137	3073	0	0.3021	0.104	0.104	30	756	0	3684	0.0	122.8	0.0	4.9
Hart JH	0	0	0	49173	19727	578	0.1066	0.0428	0.0428	32	1000	0	6111	0.0	191.0	0.0	6.1
Castaic JH	0	0	0	11137	3073	0	0.1578	0.06	0.06	30	960	0	1942	0.0	64.7	0.0	2.0
Hart SH	0	0	0	58673	22800	578	0.2007	0.0823	0.0823	32	2000	0	13700	0.0	428.1	0.0	6.8
									Total			0	30501	0	975		

Appendix 4.17

DEPARTMENT OF CALIFORNIA HIGHWAY PATROL
28648 The Old Road
Valencia, CA. 91355
(805) 257-6030
(818) 367-6177
FAX (818) 367-6178

December 15, 1994

File No.: 540.10190

Mr. Thomas P. Worthington
Impact Sciences Inc.
267 W. Hillcrest Drive
Thousand Oaks, CA. 91360

Dear Mr. Worthington:

In response to your recent request for information regarding the Newhall Ranch project and its impact on current Newhall CHP operations, I have included the following:

1. The Newhall Area will provide for the management and regulation of traffic to achieve safe, lawful and efficient use of the highway transportation system in the new area. The objectives of the CHP will include accident prevention, emergency incident management, general law enforcement, service, and assistance.

2. Current staffing in the Newhall Area includes forty-eight road patrol officers, and five special duty officers, deployed in (three) eight hour shifts over a twenty-four hour period.

3. Our service area includes SR 14 and I-5 through the Santa Clarita Valley and includes all unincorporated areas and roadways.

4. The Newhall Area estimates a thirty percent increase in manpower requirements, or approximately sixteen officer positions, in the next ten years based on population and traffic projections.

5. Approximately five percent of the Newhall Area's accident investigations occur along SR 126 between the Ventura County line and I-5. This equates to approximately 50 collision investigations per year. Approximately two percent of the Area's calls for service in 1994, (ex: disabled/abandoned vehicles, emergency services and non-collision criminal investigations), occur in the vicinity of SR 126/I-5. This equates to approximately six hundred contacts this year. These levels are expected to increase dramatically upon completion of the Newhall Ranch project.

6. The Newhall Area has Mutual Aid agreements with all emergency response agencies in the Santa Clarita Valley. Mutual Aid is implemented when specified criteria is met.

I hope the above information adequately addresses your concerns. Please feel free to contact me if you have any further questions.

Sincerely,

R. J. DEL MESE, Sergeant
Acting Newhall Area Commander

County of Los Angeles
Sheriff's Department Headquarters
4700 Ramona Boulevard
Monterey Park, California 91754-2169
(805) 255-1121

SHERMAN BLOCK, SHERIFF

November 18, 1994

Mr. Paul Calderwood
Impact Sciences Incorporated
267 West Hillcrest Drive
Thousand Oaks, California 91360

Dear Mr. Calderwood:

ENVIRONMENTAL IMPACT REPORT
PROPOSED NEWHALL RANCH PROJECT

The proposed Newhall Ranch Project consisting of 22,330 housing units within a 19 square mile area is located in the unincorporated area of Los Angeles County. The area is serviced by the Los Angeles County Sheriff's Department, Santa Clarita Valley Station, 23740 Magic Mountain Parkway, Valencia 91355.

The proposed project site is bounded by State Route 126 on the north, the Santa Susana Mountain ridgeline on the south, the Los Angeles / Ventura County line on the west, and approximately Magic Mountain theme park on the east.

The project is approximately 5-15 miles from the Santa Clarita Valley Station depending on the location within the project. It is anticipated that the average non-emergent response times to a request for service would be approximately 15-40 minutes. The response time under emergent circumstances would be approximately 5-15 minutes. All response times are only approximations and would be dependent on both the deployment of area radio cars and traffic conditions.

At present, all law enforcement services with the exception of traffic services (traffic enforcement and traffic accident investigation will be handled by the California Highway Patrol) are handled by the Los Angeles County Sheriff's Department.

Adding this project and other projects in progress, either proposed, approved or committed would significantly impact law enforcement services. This station serves an area of 656 square miles and a population of approximately 170,000 with a staff of 151 sworn officers. A desired officer-to-population ratio is one officer per 1,000 population. This station is currently operating at a less than desirable level.

In answering your questions, the Los Angeles County Sheriff's Department does not have a reciprocal service agreement with Ventura County. The department will require that an additional Sheriff facility be built in the project area, in order to police the area. We are unable to determine at this time whether the facility will be a sub-station or a full service facility. As the project is further defined we will revisit this issue and determine what additional needs will be required by the department.

Santa Clarita Valley Sheriff's Station has available a helicopter, a K-9 unit, and a full Search and Rescue Team on a 24 hour basis.

For crime prevention purposes and for the security and safety of the future residents, the following measures should be implemented during site and building layout design:

- Proper lighting in open areas and parking lots;
- Visibility of doors and windows from the street and between buildings;
- Adequate parking spaces in the parking lots to accommodate shoppers and employees;
- The required building address numbers be lighted and readily apparent from the street for emergency response agencies.

Should you have further questions or need for consultation please contact my Community Relations Office, Deputy Patrick Rissler, at (805) 255-1121 ext. 358.

Sincerely,

SHERMAN BLOCK, SHERIFF

Michael I. Quinn

Michael I. Quinn, Captain
Santa Clarita Valley Station

Appendix 4.18

COUNTY OF LOS ANGELES

FIRE DEPARTMENT

1320 NORTH EASTERN AVENUE
LOS ANGELES, CALIFORNIA 90063-3294

(213) 881-2481

P. MICHAEL FREEMAN
FIRE CHIEF
FORESTER & FIRE WARDEN

December 16, 1994

Mr. Paul Calderwood
267 West Hillcrest Drive
Thousand Oaks, CA 91360

Dear Mr. Calderwood:

SUBJECT: ENVIRONMENTAL IMPACT REPORT – NEWHALL RANCH SANTA CLARITA VALLEY (EIR #206, 1994)

SERVICE RESPONSIBILITY

Due to the fact that only limited information is available on this project at the present time, we are not able to respond completely as to how this project will affect our Department. We would like to reserve the right to respond further at a future date when more specific information is available. Specifically, we would need a detailed map of the proposed development to calculate response distance/times for existing stations.

Enclosed is a listing of fire station locations in the Santa Clarita Valley area. The following table lists equipment and staffing.

Station	Equipment	Personnel
73	2 Engines, 1 Truck, 1 Water Tender	12
76	1 Engine, 1 Haz. Materials Task Force	9
81	1 Engine, 1 Patrol	3
107	2 Engines, 1 PM Squad, 1 Patrol	9
111	1 Engine, 1 PM Squad, 1 Patrol	5
123	1 Engine, 1 Patrol	3
124	1 Engine, 1 PM Squad	5
149	1 Engine, 1 Patrol, 1 Water Tender	3

DESIGN AND CONSTRUCTION

The development of this project must comply with all applicable code and ordinance requirements for construction, access, water mains, fire flows, and fire hydrants.

Fire flows of up to 1,250 gallons per minute at 20 pounds per square inch residual pressure for a two-hour duration will be required for the single-family residences in this project, and fire flows of up to 5,000 gallons per minute at 20 pounds per square inch residual pressure for a five-hour duration will be required for the commercial and industrial developments within this project.

Final fire flow will be based on the size of the building, its relationship to other structures and property lines, and the type of construction used.

Fire Department requirements for access, fire flow and hydrants are addressed at the Los Angeles County Subdivision Committee meeting when approval for tentative subdivision maps are considered.

Very truly yours,

Michael A. Ullberson for

PAUL H. RIPPENS, CHIEF, FORESTRY DIVISION
PREVENTION BUREAU

PHR:jmb

Enclosure

DIVISION III

ASSISTANT FIRE CHIEF GARY NELSON

Headquarters: Fire Station 73
Telephone: (805) 254-9665
FAX: (805) 254-6181

BATTALION 6

BATTALION CHIEFS:

(A) SANDEMAN **(B) SCHWAB** **(C) ROHRER** (805) 254-9664
FAX (805) 254-6181

FS 73 (Div & Bn Hq)	24875 N. San Fernando Rd., Newhall 91321-1520	(805) 254-9661
FS 75	23310 Lake Manor Dr., Chatsworth 91311-6418	(818) 883-1414
FS 76	27223 Henry Mayo Dr., Valencia 91355-1009	(805) 257-4144
FS 77	46855 N. Peace Valley Rd., Gorman 93243	(805) 248-5284
FS 81	8710 W. Sierra Hwy., Agua Dulce 91350-2814	(805) 268-0638
FS 107	18239 W. Soledad Canyon Road, Canyon Country 91351	(805) 252-2414
FS 111	26829 Seco Canyon Rd., Valencia 91350-2217	(805) 296-5758
FS 123	26321 N. Sand Canyon Rd., Canyon Country 91351	(805) 252-1235
FS 124	25111 Pico Canyon Rd. Stevenson Ranch 91381	(805) 254-4404
FS 149	31770 Ridge Route, Castaic 91384-3300	(805) 257-3020

COUNTY OF LOS ANGELES

FIRE DEPARTMENT

1320 NORTH EASTERN AVENUE
LOS ANGELES, CALIFORNIA 90063-3294

(805) 254-9665

P. MICHAEL FREEMAN
FIRE CHIEF
FORESTER & FIRE WARDEN

March 31, 1995

Mr. Paul Calderwood
267 West Hillcrest Drive
Thousand Oaks, CA 91360

Dear Mr. Calderwood:

SUBJECT: 1994 STATISTICS FOR NEWHALL RANCH PROJECT

Following please find the response activity statistics that you requested:

	FIRE STATION 76	FIRE STATION 111
RESPONSES	1,602	4,527
FIRES	178	457
EMS	602	2,604
OTHER	822	1,466

Fire Station 76, 27223 Henry Mayo Drive, is the closest fire station to the Newhall Ranch project.

Fire Station 111, 26829 Seco Canyon Road, is more typical of response activity in a built out area in the Santa Clarita Valley.

If I can be of any further assistance to you, please do not hesitate to contact me.

Sincerely yours,

Gary K Nelson

GARY K. NELSON, ASSISTANT FIRE CHIEF
DIVISION III, OPERATIONS BUREAU II

GKN:ds

COUNTY OF LOS ANGELES

FIRE DEPARTMENT

1320 NORTH EASTERN AVENUE
LOS ANGELES, CALIFORNIA 90063-3294

(213) 881-2404

P. MICHAEL FREEMAN
FIRE CHIEF
FORESTER & FIRE WARDEN

April 14, 1995

Paul Calderwood, Project Manager
Impact Sciences, Inc.
267 W. Hillcrest Drive
Thousand Oaks, CA 91360

Dear Mr. Calderwood:

SUBJECT: **REQUEST FOR INFORMATION**
NEWHALL RANCH DEVELOPMENT

Enclosed is the Consolidated Fire Protection District's response to your letter requesting information regarding resources and service levels within the area surrounding the proposed Newhall Ranch development.

We hope this information will assist you in the development of the environmental impact report for the proposed project. If you have any additional questions, please contact me at the above telephone number.

Very truly yours,

JOHN Y. GEE, CHIEF
PLANNING DIVISION

JYG:dkj

Enclosure

INFORMATION/DATA REQUEST
IMPACT SCIENCES, INC.

April 14, 1995

1. Service area map indicating primary and secondary response

   The Consolidated Fire Protection District's (District) response assignments are 50 resources deep by station. Maps may need to be developed for this request which may result in a cost to you. We will need to know specifically what this information is needed for, as we may be able to provide information already available which would eliminate any cost.

   Three to four stations will be required to adequately protect the Newhall Ranch Development. Primary responses will be from the stations to be built within the development area. Secondary responses will be from the closest fire stations within the Santa Clarita Valley area and beyond, if necessary. As presented, the development is a major development isolated from appropriate fire protection.

2. Identify fire stations serving Santa Clarita Valley (Castaic, Valencia, Newhall, Santa Clarita)

   Fire Station 73
   24875 N. San Fernando Road
   Newhall, CA 91321

   Fire Station 76
   27223 Henry Mayo Dr.
   Valencia, CA 91355

   Fire Station 111
   26829 Seco Cyn Rd.
   Saugus, CA 91350

   Fire Station 124
   25111 Pico Canyon Rd.
   Stevenson Ranch, CA 91381

   Fire Station 149
   31770 Ridge Route
   Castaic, CA 91384

3. Identify fire stations in areas adjacent to the Santa Clarita Valley

   Fire Station 107
   18239 W. Soledad Cyn.
   Canyon Country, CA 91351

   Fire Station 123
   26321 N. Sand Canyon Rd.
   Canyon Country, CA 91351

4. Service Zones

The District operates a regional system in its provision of fire protection, emergency medical services, and hazardous materials services to District cities and unincorporated areas of the County. Under this regional system, one prevailing level of service is provided throughout the District, thereby allowing the District to provide optimum response regardless of jurisdictional boundaries.

5. Equipment types and staffing at each station

Station No.	Equipment	Staffing
73	Engine 73	3 Person
	Engine 273	4 Person
	Truck 73	4 Person
76	Engine 76	4 Person
	Haz Mat Squad 76	5 Person
107	Engine 107	3 Person
	Engine 307	4 Person
	Paramedic Squad 107	2 Person
111	Engine 111	3 Person
	Paramedic Squad 111	2 Person
123	Engine 123	3 Person
124	Engine 124	3 Person
	Paramedic Squad 124	2 Person
149	Engine 149	3 Person

6. Reciprocal service agreement with the County of Ventura, location and manpower of station(s) in both counties providing this service

A copy of the Memorandum of Understanding between the District and the County of Ventura is attached.

7. Plans for increase in staffing, opening new station, additional equipment

   Attached is the District's developer fee capital improvement plan dated March 1995 which identifies additional fire stations required to protect growth areas in the next five years. Nine additional stations are identified for the Santa Clarita Valley area. The impact of the Newhall Ranch Development is only partially addressed in the five-year plan.

8. Potential staff reductions, station closures

   Staff reductions and/or station closures are contingent upon any adverse ruling by the State of California which would divert any portion of the property tax funding of the District to fund other State obligations.

9. Breakdown of types of fire service calls and spatial distribution in Santa Clarita Valley

   The information requested is being studied by our Information Management Division. This information may take some time to develop and may result in a net cost to you.

10. List of special equipment stationed in the service area

    See response to Question 5 above.

11. Search and Rescue service for the Santa Clarita Valley

    Wilderness search and rescue is provided by the Sheriff's Department. Urban search and rescue is provided by the District. The primary response is Truck 73 and the closest available engine and squad. Additional resources will be responded depending on the nature of the rescue.

12. Wildland Fire Hazard areas/designation, special fire hazard areas/demands

    The area encompassing the Newhall Ranch Development is Fire Zone 4, which is defined as a very high fire hazard severity zone. This designation is based on the severity of fire hazard that is expected to prevail in those areas including fuel loading, slope, fire weather, and other relevant factors.

13. Level of service ratio for Santa Clarita Valley

    Not applicable due to regional concept. See response to Question No. 4 above.

14. Level of service ratio for the overall service area of the Fire Department

    Not applicable due to regional concept. See response to Question No. 4 above.

15. Desired level of service ratio

    Not applicable due to regional concept. See response to Question No. 4 above.

16. Development impact fee program

    The developer fee program funds the acquisition, construction, improvement, and equipping of fire station facilities in the high growth urban expansion areas of the District. The prevailing fee amount, which shall be adjusted on August 1, 1995, is $.1868 per square foot of new development. The fee is imposed on new development at the time of building permit application.

17. Paramedic Service to Santa Clarita Valley

    See answer to Question No. 5 above.

18. Service Zones

    See Question No. 4 above.

19. Fuel Modification Standards

    The District has drafted proposed fuel modification plan guidelines which have not yet been formally adopted by the department but it is our long range intention to place a requirement on all new development to have a fuel modification plan modeled after these guidelines, which are attached for your information.

LB:NEWHEIR

April 18, 1995

TO: FILE

FROM: JOHN GEE, CHIEF
PLANNING DIVISION

SUBJECT: NEWHALL RANCH DEVELOPMENT

On March 31, 1995, a meeting was held with the Newhall Land and Farming Company regarding the proposed Newhall Ranch Development. In attendance were the following:

ATTENDEES:

GLORIA GLENN	NEWHALL LAND AND FARMING CO.
DAVID CROWDER	NEWHALL LAND AND FARMING CO.
STEVE SHERRILL	FIRE DEPARTMENT
GARY NELSON	FIRE DEPARTMENT
JAMES RYLAND	FIRE DEPARTMENT
JOHN GEE	FIRE DEPARTMENT
LORRAINE BUCK	FIRE DEPARTMENT

The following issues were discussed:

1. The first phase of development will be located along the Santa Clara River.
2. The first development phase should be approved at the end of 1996, with grading to begin in 1998. Homes anticipated approximately 1999-2000.
3. Newhall Land and Farming Co. is amenable to building any required fire stations to offset its development fee obligation.
4. Station 76 is approximately 2.5 miles from the first phase of development.
5. The development project is located in an area designated as Fire Zone 4.

In order to satisfy public safety requirements and concerns as well as address Newhall Land's development prospective plans, it is probably best to take the following approach:

1. At the meeting it was discussed that two to three stations may be required. Upon further consideration by the department, three to four stations may be required to adequately protect the planned development. The proportionate cost for Newhall Land may equal less than four stations.
2. The provision of the above required stations with appropriate apparatus would mitigate development impact.
3. Newhall Land to be included in all future annual developer fee capital improvement plan update reviews for adjustment in station planning based on development timelines.

LB:NEWHALL2

April 28, 1995 **REVISED**

TO: FILE

FROM: JOHN GEE, CHIEF
PLANNING DIVISION

SUBJECT: NEWHALL RANCH DEVELOPMENT

On March 31, 1995, a meeting was held with the Newhall Land and Farming Company regarding the proposed Newhall Ranch Development. In attendance were the following:

ATTENDEES:

GLORIA GLENN	NEWHALL LAND AND FARMING CO.
DAVID CROWDER	NEWHALL LAND AND FARMING CO.
STEVE SHERRILL	FIRE DEPARTMENT
GARY NELSON	FIRE DEPARTMENT
JAMES RYLAND	FIRE DEPARTMENT
JOHN GEE	FIRE DEPARTMENT
LORRAINE BUCK	FIRE DEPARTMENT

The following issues were discussed:

1. The first phase of development will be located along the Santa Clara River.
2. The specific plan should be approved at the end of 1996, with grading to begin in 1998. Homes anticipated approximately 1999-2000.
3. Newhall Land and Farming Co. is amenable to building any required fire stations to offset its development fee obligation.
4. Station 76 is within approximately 2.5 miles from the first phase of development.
5. The development project is located in an area designated as Fire Zone 4.

In order to satisfy public safety requirements and concerns as well as address Newhall Land's development prospective plans, it is probably best to take the following approach:

1. At the meeting it was discussed that two to three stations may be required. Upon further consideration by the department, three to four stations may be required to adequately protect the planned development. The proportionate cost for Newhall Land may equal less than four stations.
2. The provision of the above required stations with appropriate apparatus would mitigate development impact.
3. Newhall Land to be included in all future annual developer fee capital improvement plan update reviews for adjustment in station planning based on development timelines.
4. Tentative general locations for stations are: 1) the vicinity of Chiquito Canyon Rd. and SR-126; 2) Potrero Canyon; and 3) fire property on the extension of Valencia Blvd.

COUNTY OF LOS ANGELES

FIRE DEPARTMENT

1320 NORTH EASTERN AVENUE
LOS ANGELES, CALIFORNIA 90063-3294
(213) 881-2404

P. MICHAEL FREEMAN
FIRE CHIEF
FORESTER & FIRE WARDEN

July 19, 1995

Rosemarie B. Mamaghani, AICP
Senior Project Manager
Impact Sciences, Inc.
267 W. Hillcrest Drive
Thousand Oaks, Ca 91360

Dear Ms. Mamaghani:

SUBJECT: **FIRE DEPT. RESPONSE TIMES TO NEWHALL RANCH**

The following is the information you requested:

	(a)		(b)	
STATION	DIST.	TIME	DIST.	TIME
76	0.1	0.2	5.7	9.8
149	4.2	7.2	9.8	16.8
73	5.5	9.5	11.1	19.0
111	5.5	9.5	11.1	19.0
124	6.0	10.3	11.5	19.8

(a) to Route 126 and the Old Road (b) to Route 126 and Ventura County Line

If you have any further questions, please call me at the number listed above.

Very truly yours,

JOHN Y. GEE, CHIEF
PLANNING DIVISION

JYG:es

COUNTY OF LOS ANGELES

FIRE DEPARTMENT

1320 NORTH EASTERN AVENUE
LOS ANGELES, CALIFORNIA 90063-3294

(213) 881-2481

P. MICHAEL FREEMAN
FIRE CHIEF
FORESTER & FIRE WARDEN

September 22, 1995

Mr. Lee Stark
Department of Regional Planning
320 West Temple Street
Los Angeles, CA 90012

Dear Mr. Stark:

SUBJECT: NEWHALL RANCH - SCREENCHECK EIR - PRELIMINARY REVIEW (EIR #284, 1995)

PLANNING DIVISION

We would like to correct some factually incorrect statements in Section 3.18, "Fire Services and Hazards."Fire Services and Hazards."

Page 3.18-5, second paragraph, second sentence, should read:

> The station maintains two fire engines supported by six fire fighters, a four-man truck, a water tender, and a patrol vehicle:

Page 3.18-6, fourth paragraph, first 3 sentences should read:

> The County of Los Angeles Fire Department field operations are divided into 8 field divisions. Each field division comprises 2 to 3 battalions. The Santa Clarita Valley area is within Battalion 6. This Battalion includes the project site and other unincorporated lands, as well as the City of Santa Clarita.

Also, the term "Fire Department's Facilities Fee program", appearing on pp. 3.81-1, 3.18-5, and 3.18-6, should be changed to "Fire Department's Developer Fee Program," and the amount, quoted on p. 3.18-6, should be $0.1868 per square foot. It should also be noted that effective August 1, 1995 through July 31, 1996, the developer fee amount is $.1820 per square foot.

In addition, the document states (p. 3.18-1) that two sites will be reserved for future fire stations. In the March 31, 1995 meeting between representatives of Newhall Land and the Fire Department, it was discussed that two to three stations may be required. (Please see the attached notes on the meeting.) Upon further consideration by the Department of the project's extent and density, it is now considered that three to four stations may be required to adequately protect the planned development. The developer's responsibility for one of the stations may be a proportionate share only. Provision of apparatus for the required stations would fully mitigate the project's impact.

FORESTRY DIVISION

We have reviewed the Newhall Ranch Specific Plan Screencheck for the Newhall Ranch Development located in the unincorporated portion of the Santa Clarita Valley in northwestern Los Angeles County.

In response to your request for advance input on the DEIR we have areas of concern that the Forestry Division of the Los Angeles County Fire Department would like to have addressed in the Environmental document.

The statutory responsibilities of the Forestry Division of the Los Angeles County Fire Department include erosion control, watershed management, rare and endangered species, vegetation, archeological and cultural resources and the County Oak Tree Ordinance. Potential impacts in these areas should be addressed in the Draft Environmental Impact Report.

We have not received an Oak Tree Permit application or report for review. An Oak Tree Permit is required for this project. **We would like to review the Oak Tree Report and any proposed impacts to this resource. This material should be incorporated in the Draft EIR.**

An archaeological and historical records check and field survey should be conducted to determine potential impacts to these resources and to verify your statements in the Draft Environmental Impact Report.

The flora and fauna analysis should address any rare, endangered and/or sensitive species that exist on the project site. The preservation, relocation and/or construction impacting any of these species should be fully explained in the EIR.

A fuel management/modification and fire hazard reduction plan is now required due to recent Fire Code changes. This plan is to be developed and implemented prior to any construction. The plan must be reviewed and approved by the Brush Unit of the Los Angeles County Fire Department before implementation. Actions taken to meet the Fuel Modification Zone guidelines should be included in the EIR.

This project will require an EIR fee deposit of $1,000 payable to the Los Angeles County Fire Department at the time the DEIR is submitted for review (see enclosed).

If you have any additional questions, please contact this office at (213) 881-2481.

Very truly yours,

Paul H. Rippens

PAUL H. RIPPENS, CHIEF, FORESTRY DIVISION
PREVENTION BUREAU

PHR:jmb

Enclosures

Appendix 4.19

LIBRARY APPENDIX

Santa Clarita Valley Cumulative Buildout Scenario

Methodology for Library Space and Items

	Population at Buildout	Sq. Ft. Per Captia Factor[1]	Total Sq. Ft. Per Captia	Books Per Capita Factor[1]	Total Books Per Capita
Santa Clarita Valley Cum. Buildout	450,438	0.35	157,653	2.0	900,876

Source: Compiled by Impact Sciences, January 1996.

1 Library space and items generation factors used by the County of Los Angeles Public Library system.

Newhall Ranch Specific Plan
Cumulative Impact Buildout Scenario
Library Impact Analysis

Land Use	Number of Units	Persons/ Household	Library (Sq. Feet)	Library Books
Single Family Res'l	100,040	3.17	110,994	634,254
Multi-Family Res'l	52,384	2.38	43,636	249,348
Mobile Homes	3,117	2.38	2,596	14,837
Second Units	538	2.00	377	2,152
Totals			**157,603**	**900,590**

L.A. County Public Library Standard: 0.35 s.f./capita
L.A. County Public Library Standard: 2.0 books/capita

Prepared by Impact Sciences, Inc.
R.Mamaghani
7/7/96

Appendix 4.20

Newhall Ranch Specific Plan
Cumulative Impact Buildout Scenario
Parks and Recreation Impact Analysis

Land Use	Number of Units	Persons/ Household	Population	Parkland Req'mt (acres)
Single Family Res'l	100,040	3.17	317,127	951.38
Multi-Family Res'l	52,384	2.38	124,674	374.02
Mobile Homes	3,117	2.38	7,418	22.26
Second Units	538	2.00	1,076	3.23
Totals			**450,295**	**1,325.40**

Based on Quimby requirement of 3.0 acres/1000 persons

Prepared by Impact Sciences, Inc.
R. Mamaghani
7/7/96

Newhall Ranch Specific Plan
Cumulative Impact Buildout Scenario
Population and Employment Impact Analysis

Land Use	Unit Type	Units	Persons/ Household	Population	Employees/ Unit	Employees
Single Family Res'l	DU	100,040	3.17	317,127	-	-
Multi-Family Res'l	DU	52,384	2.38	124,674	-	-
Mobile Homes	DU	3,117	2.38	7,418	-	-
Second Units	DU	538	2.00	1,076	-	-
Comm'l Retail (4)	TSF	21,706	-	-	2.50	54,264
Hotel/Motel (1)	ROOMS	1,141	-	-	0.90	1,027
School/College (2)	-	-	-	-	-	4,601
Hospital	TSF	285.47	-	-	3.00	856
Library	TSF	251	-	-	1.00	251
Church	TSF	399	-	-	0.50	200
Business Park	TSF	9,287	-	-	3.00	27,860
Industrial/Mfg.	TSF	33,480	-	-	2.00	66,961
Utilities	TSF	1,456	-	-	0.70	1,019
Office	TSF	11,143	-	-	4.00	44,571
Golf Course/Park	AC	1,627	-	-	0.40	651
Special Generator (3)	TSF	77.60	-	-	0.70	54
Totals				**450,295**		**202,315**

TSF = thousand square feet
Build out analysis and school employment is derived from the Traffic Model.
(1) Based on 400 gross square feet per room and 0.9 employees per room (SCAG, 1990). Includes 120,000 square feet of Specific Plan Hotel use.
(2) Reflects employment for elementary, middle, and high schools (3,449 staff), as well as for college (1,152 staff)
(3) Assumes same rate as utilities.
(4) Excludes 120,000 square feet of Specific Plan Hotel use.

Prepared by Impact Sciences, Inc.
R. Mamaghani
7/7/96

Appendix 5.0

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (310) 699-7411, FAX: (310) 695-6139

CHARLES W. CARRY
Chief Engineer and General Manager

COPY

February 7, 1995
File No: 32-04.01-00

Ms. Lauren Fondahl
U.S. EPA - Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Dear Ms. Fondahl:

Valencia Water Reclamation Plant
NPDES Permit No. CA0054216
Interim Sewage Sludge Permit Application Form

Section 405(f) of the Clean Water Act requires that NPDES permits issued to publicly owned treatment works contain the standards for the use and disposal of biosolids as established by 40 CFR Part 503. Per 40 CFR 122.21, facilities with a current NPDES permit are required to submit biosolids application information at the time of their next NPDES permit renewal application.

In compliance with these requirements, the Districts is submitting the enclosed Interim Sewage Sludge Permit Application Form for removal of biosolids from the Valencia WRP. The referenced Valencia WRP NPDES Permit No. CA0054216, WQCB Order No. 89-129 expired on August 10, 1994. The Districts submitted an NPDES permit renewal application in February 1994; it is presently being reviewed by the Regional Water Quality Control Board and a new permit is expected to be issued in the next 3-4 months.

If you have any questions or require additional information, please contact Michelle Weber at (310)699-7411, extension 2826.

Very truly yours,

Charles W. Carry

David W. Snyder
Supervising Engineer,
Monitoring Section

DWS:MW:ea
Enclosures

FACILITY NAME:	PERMIT NUMBER:	EPA ID NUMBER: (for official use only)
Valencia WRP	CA0054216	

Form Approved
OMB Number 2040 0086
Approval Expires 8/31/95

INTERIM SEWAGE SLUDGE PERMIT APPLICATION FORM

Paperwork Reduction Act Notice
Public reporting burden for this application is estimated to average 8.4 hours per application, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate, any other aspect of this collection of information, or suggestions for improving this form, including suggestions which may increase or reduce this burden, to: Chief, Information Policy Branch, PM-223Y, U.S. Environmental Protection Agency, 401 M Street, SW, Washington, DC, 20460, or Director, Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC, 20503.

PRELIMINARY INFORMATION

This page is designed to indicate whether the applicant is to complete Part 1 or Part 2. Answer each question. Then complete Part 1 or Part 2, as indicated.
For purposes of this form, the term "you" refers to the applicant. "This facility" and "your facility" refer to the facility for which application information is submitted.

1. Is this facility required to have, or is it requesting, site-specific pollutant limits?

   ____ Yes X No

2. Does this facility have a currently effective NPDES permit?

   X Yes ____ No

3. Is this facility required by the permitting authority to submit a full permit application at this time?

   X Yes ____ No

If the answers to the above questions are <u>all</u> no, complete Part 1 only (see instructions). If the answer to <u>any</u> of the above questions is yes, complete Part 2 rather than Part 1.

Send the completed application form to:

FACILITY NAME:	PERMIT NUMBER:	EPA ID NUMBER: (for official use only)	Form Approved OMB Number 2040-0086 Approval Expires 8/31/95
Valencia WRP	CA0054216		N/A

PART 1: LIMITED BACKGROUND INFORMATION

This part should be completed only by "sludge-only" facilities—that is, facilities that do not currently have, and are not now applying for, an NPDES permit for a direct discharge to a surface body of water. This part also does not pertain to facilities that are requesting, or that are required to have, site-specific pollutant limits in their permits.

For purposes of this form, the term "you" refers to the applicant. "This facility" and "your facility" refer to the facility for which application information is submitted.

1. **Facility Identification.**

   a. Name of facility: _____

   b. Facility contact. Name: _____
   Title: _____
   Phone: ( ) _____

   c. Facility mailing address.
   Street or P.O. Box: _____
   City or Town: _____ State: _____ Zip: _____

   d. Facility location.
   Street or Route #: _____
   County: _____
   City or Town: _____ State: _____ Zip: _____

2. **Owner/Operator Information.**

   a. Are you the owner of this facility? ____ Yes ____ No

   If no, provide the owner's:
   Name: _____
   Phone: ( ) _____
   Street or P.O. Box: _____
   City or Town: _____ State: _____ Zip: _____

   b. Are you the operator of this facility? ____ Yes ____ No

   If no, provide the operator's:
   Name: _____
   Phone: ( ) _____
   Street or P.O. Box: _____
   City or Town: _____ State: _____ Zip: _____

   c. Indicate the type of facility:
   ____ Publicly owned treatment works (POTW)
   ____ Privately owned treatment works
   ____ Federally owned treatment works
   ____ Blending or treatment operation
   ____ Surface disposal site
   ____ Sewage sludge incinerator
   ____ Other. If other, explain: _____

3. **Sewage Sludge Amount.** Provide the total dry metric tons per 365-day period of sewage sludge handled under the following practices:

   a. Amount generated at the facility: _____
   b. Amount received from off site: _____
   c. Amount treated on site (including blending): _____
   d. Amount sold or given away in a bag or other container for application to the land:
   e. Amount of bulk sewage sludge shipped off site for treatment or for sale/give-away in a bag or other container for application to the land: _____
   f. Amount applied to the land in bulk form: _____
   g. Amount placed on a surface disposal site: _____
   h. Amount fired in a sewage sludge incinerator: _____
   i. Amount sent to a municipal solid waste landfill: _____
   j. Amount used or disposed by another practice: _____
   Describe: _____

FACILITY NAME:	PERMIT NUMBER:	EPA ID NUMBER: (for official use only)
Valencia WRP	CA0054216	N/A

4. **Pollutant Concentrations.** Using the table below or a separate attachment, provide existing data on the pollutant concentrations in sewage sludge from this facility. Provide all data for the last two years. If data from the last two years are unavailable, provide the most recent data.

POLLUTANT	CONCENTRATION (mg/kg dry weight)	SAMPLE TYPE	SAMPLE DATE	DETECTION LEVEL FOR ANALYSIS
Arsenic				
Cadmium				
Chromium				
Copper				
Lead				
Mercury				
Molybdenum				
Nickel				
Selenium				
Zinc				

5. **Treatment Provided at Your Facility.**

a. Which class of pathogen reduction does the sewage sludge meet at your facility?

_____ Class A _____ Class B _____ Neither or unknown

b. Describe, on this form or another sheet of paper, any treatment processes used at your facility to reduce pathogens in sewage sludge:

_____

_____

_____

_____

c. Which vector attraction reduction option is met for the sewage sludge at your facility?

_____ Option 1 (Minimum 38 percent reduction in volatile solids)
_____ Option 2 (Anaerobic process, with bench-scale demonstration)
_____ Option 3 (Aerobic process, with bench-scale demonstration)
_____ Option 4 (Specific oxygen uptake rate for aerobically digested sludge)
_____ Option 5 (Aerobic processes plus raised temperature)
_____ Option 6 (Raise pH to 12 and retain at 11.5)
_____ Option 7 (75 percent solids with no unstabilized solids)
_____ Option 8 (90 percent solids with unstabilized solids)
_____ Option 9 (Injection below land surface)
_____ Option 10 (Incorporation into soil within 6 hours)
_____ Option 11 (Covering active sewage sludge unit daily)
_____ None or unknown

d. Describe, on this form or another sheet of paper, any treatment processes used at your facility to reduce vector attraction properties of sewage sludge:

_____

_____

_____

_____

FACILITY NAME:	PERMIT NUMBER:	EPA ID NUMBER: (for official use only)
Valencia WRP	CA0054216	N/A

6. **Treatment Provided at Other Facilities.** Is sewage sludge from your facility provided to another facility for treatment, distribution, use, or disposal?

_____ Yes _____ No

If yes, provide the following information for the facility receiving the sewage sludge:

a. Name of facility: _____

b. Facility contact. Name: _____
Title: _____
Phone: ( ) _____

c. Facility mailing address.
Street or P.O. Box: _____
City or Town: _____ State: _____ Zip: _____

d. Facility location.
Street or Route #: _____
County: _____
City or Town: _____ State: _____ Zip: _____

e. Which activities does the receiving facility provide? (Check all that apply):
_____ Treatment (e.g., blending, dewatering, composting, heat drying)
_____ Sale or give-away in bag or other container
_____ Land application _____ Surface disposal
_____ Other (describe): _____ Incineration

7. **Use and Disposal Sites.** Provide the following information for each site on which sewage sludge from this facility is used or disposed:

a. Site name or number: _____

b. Site contact. Name: _____
Title: _____
Phone: ( ) _____

c. Site location.
Street or Route #: _____
County: _____
City or Town: _____ State: _____ Zip: _____

d. Site type:
_____ Agricultural _____ Lawn or home garden
_____ Forest _____ Surface disposal
_____ Public contact _____ Incineration
_____ Reclamation _____ Other (describe):

8. **Certification.** Sign the certification statement below. (Refer to instructions to determine who is an officer for purposes of this certification.)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with the system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Officer: _____
Name of Officer: _____
(typed or printed)
Official Title of Officer: _____
Telephone Number: _____
Date Signed: _____

FACILITY NAME: Valencia WRP	PERMIT NUMBER: CA0054216	EPA ID NUMBER: (for official use only)	Form Approved OMB Number 2040-0086 Approval Expires 8/31/95

PART 2: PERMIT APPLICATION INFORMATION

Complete this part if you answered "yes" to any of the questions in the PRELIMINARY INFORMATION section (page 1). In other words, complete this part if your facility has, or is applying for, an NPDES permit or if your facility (including a "sludge-only" facility) is requesting, or is required to have, site-specific pollutant limits in its permit.

For purposes of this form, the term "you" refers to the applicant. "This facility" and "your facility" refer to the facility for which application information is submitted.

SCREENING INFORMATION — SEWAGE SLUDGE USE OR DISPOSAL INFORMATION

Part 2 is divided into six sections (A-F). Sections A and F pertain to all applicants. The applicability of Sections B, C, D, and E depends on your facility's sewage sludge use or disposal practices. The information provided on this page will indicate which sections of Part 2 to fill out.

1. All applicants must complete **Section A (General Information).**

2. Does this facility generate sewage sludge?

   X Yes ____ No

   Does this facility derive a material from sewage sludge?

   ____ Yes X No

   If you answered **Yes** to either, complete **Section B (Generation of a Sewage Sludge or Preparation of a Sewage Sludge or Preparation of a Sewage Sludge Product).**

3. Does this facility apply sewage sludge to the land?
   ____ Yes X No See Attached Discussion, Page 1

   Is sewage sludge from this facility applied to the land?
   ____ Yes X No

   If you answered **Yes** to either, answer the following three questions:

   a. Does sewage sludge from this facility meet the pollutant concentrations, Class A pathogen reduction requirements, and one of vector attraction reduction options 1-8, as identified in the instructions? ____ Yes ____ No

   b. Is sewage sludge from this facility placed in a bag or other container for sale or give-away? ____ Yes ____ No

   c. Is sewage sludge from this facility sent to another facility for treatment (including blending) or placement in a bag or other container for sale or give-away?
   ____ Yes ____ No

   If you answered **No** to all three, complete **Section C (Land Application of Bulk Sewage Sludge).**

   If you answered **Yes** to a., b., or c., **skip Section C.**

4. Do you own or operate a surface disposal site?

   ____ Yes X No

   If **Yes**, complete **Section D (Surface Disposal).**

5. Do you own or operate a sewage sludge incinerator?

   ____ Yes X No

   If **Yes**, complete **Section E (Incineration).**

6. All applicants must complete **Section F (Other Information).**

FACILITY NAME:	PERMIT NUMBER:	EPA ID NUMBER: (for official use only)
Valencia WRP	CA0054216	

A. GENERAL INFORMATION

All applicants must complete this section.

A.1. Facility Identification.

a. Name of facility: Valencia Water Reclamation Plant (WRP)

b. Facility contact. Name: Michelle Weber
Title: Project Engineer
Phone: (310) 699-7411 x2826

c. Facility mailing address.
Street or P.O. Box: P.O. Box 4998
City or Town: Whittier State: CA Zip: 90607

d. Facility location.
Street or Route #: 28185 The Old Road
County: Los Angeles
City or Town: Valencia State: CA Zip: 91335

e. Facility latitude: 118° 36' Facility longitude: 34° 26'

Method of latitude/longitude determination:
X USGS map ____ Other (describe:)
____ Field survey

If map used, provide datum and scale: North American Datum 1983. See attached map for scale.

f. Is this facility a Class I sludge management facility?

X Yes ____ No

g. Indicate whether this facility is currently: X Active ____ Inactive
Date on which facility became active/inactive: 9-15-65

h. SIC Codes (4-digit, in descending order of priority):
Code: 4952 Specify: Sewerage Systems
Code: ____ Specify: ____
Code: ____ Specify: ____
Code: ____ Specify: ____

A.2. Permit Information.

a. Facility's NPDES permit number (if applicable): CA0054216

b. List, on this form or an attachment, all other Federal, State, and local permits or construction approvals received or applied for that regulate this facility's sewage sludge management practices:

Permit Number:	Type of Permit:
N/A	

A.3. Owner/Operator Information.

a. Are you the owner of this facility? X Yes ____ No
If no, provide the owner's:
Name: N/A
Phone: ( ) ____
Street or P.O. Box: ____
City or Town: ____ State: ____ Zip: ____

b. Are you the operator of this facility? X Yes ____ No
If no, provide the operator's:
Name: N/A
Phone: ( ) ____
Street or P.O. Box: ____
City or Town: ____ State: ____ Zip: ____

c. Indicate the type of facility:
X Publicly owned treatment works (POTW)
____ Privately owned treatment works
____ Federally owned treatment works
____ Blending or treatment operation
____ Surface disposal site
____ Sewage sludge incinerator
____ Other. If other, explain: ____

FACILITY NAME:	PERMIT NUMBER:	EPA ID NUMBER: (for official use only)
Valencia WRP	CA0054216	

A.4. Indian Lands. Does any generation, treatment, storage, application to land, or disposal of sewage sludge from this facility occur on Indian lands?

____ Yes X No

If yes, describe: N/A

A.5. Topographic Map. Provide a topographic map or maps (or other appropriate map(s) if a topographic map is unavailable) that shows the following items of information. Map(s) should include the area one mile beyond all property boundaries of the facility:

a. Location of all sewage sludge management facilities, including locations where sewage sludge is generated, treated, or disposed.

b. Location of all water bodies within one mile beyond the facility's property boundaries.

c. Location of all wells used for drinking water listed in public records or otherwise known to the applicant within 1/4 mile of the property boundaries.

See Attached Discussion, Page 1 & Exhibit I

A.6. Hazardous Waste Characteristics. Attach the results of any testing that has been conducted in the last five years to determine whether the sewage sludge is a hazardous waste.

See Attached Discussion, Page 1 & Exhibits II-VI

A.7. Pollutant Concentrations. Using the table below or a separate attachment, provide existing data on the pollutant concentrations in sewage sludge from this facility. Provide all data for the last two years. If data from the last two years are unavailable, provide the most recent data.

See Attached Discussion, Page 2

POLLUTANT	CONCENTRATION (mg/kg dry weight)	SAMPLE TYPE	SAMPLE DATE	DETECTION LEVEL FOR ANALYSIS
Arsenic				
Cadmium				
Chromium				
Copper				
Lead				
Mercury				
Molybdenum				
Nickel				
Selenium				
Zinc				

FACILITY NAME:	PERMIT NUMBER:	EPA ID NUMBER: (for official use only)
Valencia WRP	CA0054216	

B. GENERATION OF SEWAGE SLUDGE OR PREPARATION OF A MATERIAL DERIVED FROM SEWAGE SLUDGE

Complete this section if your facility generates sewage sludge or derives a material from sewage sludge.

B.1. Amount Generated On Site.

Total dry metric tons per 365-day period generated at your facility: See Attached Discussion, Page 3

B.2. Amount Received from Off Site. If your facility receives sewage sludge from another facility for treatment, use, or disposal, provide the following information for each facility from which sludge is received. If you receive sewage sludge from more than one facility, attach additional pages as necessary.

a. Name of facility: Saugus Water Reclamation Plant (WRP)

b. Facility contact. Name: Michelle Weber
Title: Project Engineer
Phone: (310) 699-7411 x2826

c. Facility mailing address.
Street or P.O. Box: P.O. Box 4998
City or Town: Whittier State: CA Zip: 90607

d. Facility location.
Street or Route #: 26200 Springbrook Avenue
County: Los Angeles
City or Town: Saugus State: CA Zip: 91350

e. Total dry metric tons per 365-day period received from this facility: See Attached Discussion, Page 4.

f. Describe, on this form or on another sheet of paper, any treatment processes known to occur at the off-site facility, including blending activities and treatment to reduce pathogens or vector attraction characteristics:
None

B.3. Treatment Provided at Your Facility.

a. Which class of pathogen reduction is achieved for the sewage sludge at your facility?

___ Class A X Class B ___ Neither or unknown

b. Describe, on this form or another sheet of paper, any treatment processes used at your facility to reduce pathogens in sewage sludge:
Anaerobic Digestion .

c. Which vector attraction reduction option is met for the sewage sludge at your facility?

X Option 1 (Minimum 38 percent reduction in volatile solids)
___ Option 2 (Anaerobic process, with bench-scale demonstration)
___ Option 3 (Aerobic process, with bench-scale demonstration)
___ Option 4 (Specific oxygen uptake rate for aerobically digested sludge)
___ Option 5 (Aerobic processes plus raised temperature)
___ Option 6 (Raise pH to 12 and retain at 11.5)
___ Option 7 (75 percent solids with no unstabilized solids)
___ Option 8 (90 percent solids with unstabilized solids)
___ None or unknown

d. Describe, on this form or another sheet of paper, any treatment processes used at your facility to reduce vector attraction properties of sewage sludge:
Anaerobic Digestion

FACILITY NAME:	PERMIT NUMBER:	EPA ID NUMBER: (for official use only)
Valencia WRP	CA0054216	

e. Describe, on this form or another sheet of paper, any other sewage sludge treatment (including blending) activities not identified in (a) - (d) above:
Primary & Waste Activated Solids are combined and thickened by Air Flotation then Anaerobically Digested and Dewatered using Plate & Frame Presses

Complete Section B.4 if sewage sludge from your facility meets the pollutant concentrations in Table 3 of 40 CFR 503.13, the Class A pathogen reduction requirements in §503.32(a), and one of the vector attraction reduction requirements in §503.33(b)(1)-(8). Skip this section if sewage sludge from your facility does not meet all of these criteria. N/A

B.4. Preparation of Sewage Sludge Meeting Pollutant Concentrations, Class A Pathogen Requirements, and One of Vector Attraction Reduction Options 1-8.

a. Total dry metric tons per 365-day period of sewage sludge subject to this section that is applied to the land: _____

b. Is sewage sludge subject to this section placed in bags or other containers for sale or give-away?
_____ Yes _____ No

c. Is sewage sludge subject to this section provided to another facility for distribution (including placement in a bag or other container for sale or give-away)?
_____ Yes _____ No

If yes, provide the following information if available for each facility distributing this sewage sludge:

Name of facility: _____
Facility contact. Name: _____
Title: _____
Phone: ( ) _____
Street or P.O. Box: _____
City or Town: _____ State: _____ Zip: _____

List, on this form or an attachment, the receiving facility's NPDES permit number, as well as the numbers of all other Federal, State, and local permits that regulate the receiving facility's sewage sludge management practices:

Permit Number:	Type of Permit:

Complete Section B.5 if you place sewage sludge in a bag or other container for sale or give-away prior to land application. Skip this section if the sewage sludge is covered in Section B.4. N/A

B.5. Sale or Give-Away in a Bag or Other Container.

a. Total dry metric tons per 365-day period of sewage sludge placed in a bag or other container at your facility for sale or give-away: _____

b. Attach, with this application, a copy of all labels or notices that accompany the sewage sludge being sold or given away in a bag or other container.

FACILITY NAME: Valencia WRP	PERMIT NUMBER: CA0054216	EPA ID NUMBER: (for official use only) N/A

Complete Section B.6 if sewage sludge from your facility is provided to another facility that provides treatment or that places the sewage sludge in a bag or other container for sale or give-away. This section does not apply to sewage sludge sent directly to a land application or surface disposal site. Skip this section if the sewage sludge is covered in Sections B.4 or B.5. If you provide sewage sludge to more than one facility, attach additional pages as necessary.

B.6. Shipment Off Site for Treatment or for Sale or Give-Away.

a. Name of receiving facility: _____

b. Facility contact. Name: _____
Title: _____
Phone: ( ) _____

c. Facility mailing address.
Street or P.O. Box: _____
City or Town: _____ State: _____ Zip: _____

d. Total dry metric tons per 365-day period of sewage sludge provided to receiving facility: _____

e. List, on this form or an attachment, the receiving facility's NPDES permit number, as well as the numbers of all other Federal, State, and local permits that regulate the receiving facility's sewage sludge management practices:

Permit Number:	Type of Permit:

f. Does the receiving facility provide additional treatment to reduce pathogens in sewage sludge from your facility? _____ Yes _____ No

Which class of pathogen reduction is achieved for the sewage sludge at the receiving facility?

_____ Class A _____ Class B _____ Neither or unknown

Describe, on this form or another sheet of paper, any treatment processes used at the receiving facility to reduce pathogens in sewage sludge:

_____
_____
_____
_____

g. Does the receiving facility provide additional treatment to reduce vector attraction characteristics of the sewage sludge? _____ Yes _____ No

Which vector attraction reduction option is met for the sewage sludge at the receiving facility?

_____ Option 1 (Minimum 38 percent reduction in volatile solids)
_____ Option 2 (Anaerobic process, with bench-scale demonstration)
_____ Option 3 (Aerobic process, with bench-scale demonstration)
_____ Option 4 (Specific oxygen uptake ratefor aerobically digested sludge)
_____ Option 5 (Aerobic processes plus raised temperature)
_____ Option 6 (Raise pH to 12 and retain at 11.5)
_____ Option 7 (75 percent solids with no unstabilized solids)
_____ Option 8 (90 percent solids with unstabilized solids)
_____ None

Describe, on this form or another sheet of paper, any treatment processes used at the receiving facility to reduce vector attraction properties of sewage sludge:

_____
_____
_____
_____

h. Does the receiving facility provide any additional treatment (including blending) activities) not identified in (f) or (g) above? _____ Yes _____ No

If yes, describe—on this form or another sheet of paper—the treatment (including blending) activities not identified in (f) or (g) above:

_____
_____
_____
_____

i. If you answered yes to (f), (g), or (h), attach a copy of any information you provide the receiving facility to comply with the "notice and necessary information" requirement of 40 CFR 503.12(g).

j. Does the receiving facility place sewage sludge from your facility in a bag or other container for sale or give-away? ____ Yes ____ No

If yes, provide a copy of all labels or notices that accompany the product being sold or given away.

FACILITY NAME:	PERMIT NUMBER:	EPA ID NUMBER: (for official use only)
Valencia WRP	CA0054216	N/A

Complete Section B.7 if sewage sludge from your facility is applied to the land, unless the sewage sludge is covered in:

- **Section B.4 (it meets Table 3 pollutant concentrations, Class A pathogen requirements, and one of vector attraction reduction options 1-8); or**
- **Section B.5 (you place it in a bag or other container for sale or give-away); or**
- **Section B.6 (you send it to another facility for treatment or for sale or give-away).**

B.7. Land Application of Bulk Sewage Sludge.

a. Total dry metric tons per 365-day period of sewage sludge applied to all land application sites: _____

b. Nitrogen content in the sewage sludge that is applied to the land in bulk form, expressed as percent dry weight or mg/kg dry weight:

	Content	Units
Ammonium nitrogen:		
Nitrate nitrogen:		
Total Kjeldahl nitrogen (TKN):		

c. Do you identify all land application sites in Section C of this application?

_____ Yes _____ No

If no, submit a copy of the land application plan with this application (see instructions).

d. Are any land application sites located in States other than the State where you generate sewage sludge or derive a material from sewage sludge?

_____ Yes _____ No

If yes, describe—on this form or another sheet of paper—how you notify the permitting authority for the States where the land application sites are located. Provide a copy of the notification.

_____

_____

_____

_____

Complete Section B.8 if sewage sludge from your facility is placed on a surface disposal site.

B.8. Surface Disposal.

a. Total dry metric tons of sewage sludge from your facility placed on all surface disposal sites per 365-day period: _____

b. Do you own or operate all surface disposal sites to which you send sewage sludge for disposal?

_____ Yes _____ No

If no, answer B.8.c - B.8.h for each surface disposal site that you do not own or operate. If you send sewage sludge to more than one such surface disposal site, attach additional pages as necessary.

c. Site name or number: _____

d. Site contact. Name: _____
Title: _____
Phone: ( ) _____
Contact is: _____ Site owner _____ Site operator

e. Site mailing address.
Street or P.O. Box: _____
City or Town: _____ State: _____ Zip: _____

f. Site location.
Street or Route #: _____
County: _____
City or Town: _____ State: _____ Zip: _____

g. Total dry metric tons of sewage sludge from your facility placed on this surface disposal site per 365-day period: _____

h. List, on this form or an attachment, the site's NPDES permit number, as well as the numbers of all other Federal, State, and local permits that regulate sewage sludge disposal at the site:

Permit Number:	Type of Permit:

FACILITY NAME:	PERMIT NUMBER:	EPA ID NUMBER:
Valencia WRP	CA0054216	(for official use only)

Complete Section B.9 if sewage sludge from your facility is fired in a sewage sludge incinerator.

B.9. Incineration. N/A

a. Total dry metric tons of sewage sludge from your facility fired in all sewage sludge incinerators per 365-day period: _____

b. Do you own or operate all sewage sludge incinerators in which sewage sludge from your facility is fired?

_____ Yes _____ No

If no, complete B.9.c - B.9.h for each sewage sludge incinerator that you do not own or operate. If you send sewage sludge to more than one such sewage sludge incinerator, attach additional pages as necessary.

c. Incinerator name or number: _____

d. Incinerator contact. Name: _____
Title: _____
Phone: ( ) _____
Contact is: Incinerator: _____ Owner _____ Operator

e. Incinerator mailing address.
Street or P.O. Box: _____
City or Town: _____ State: _____ Zip: _____

f. Incinerator location.
Street or Route #: _____
County: _____
City or Town: _____ State: _____ Zip: _____

g. Total dry metric tons of sewage sludge from your facility fired in this sewage sludge incinerator per 365-day period: _____

h. List, on this form or an attachment, the numbers of all other Federal, State, and local permits that regulate the firing of sewage sludge in this incinerator:

Permit Number:	Type of Permit:

Complete Section B.10 if sewage sludge from this facility is placed on a municipal solid waste landfill.

B.10. Disposal in a Municipal Solid Waste Landfill. Provide the following information for each municipal solid waste landfill on which sewage sludge from your facility is placed. If sewage sludge is placed on more than one municipal solid waste landfill, attach additional pages as necessary.

a. Name of landfill: Chiquita Canyon Landfill

b. Landfill contact. Name: Rod Walters
Title: Division Manager
Phone: (805) 257-3655
Contact is: _____ Landfill owner X Landfill operator

c. Mailing address for municipal solid waste landfill.
Street or P.O. Box: 29201 Henry Mayo Drive
City or Town: Valencia State: CA Zip: 91355

d. Location of municipal solid waste landfill.
Street or Route #: Same
County: Los Angeles
City or Town: _____ State: _____ Zip: _____

e. Total dry metric tons of sewage sludge from your facility placed in this municipal solid waste landfill per 365-day period: See Attached Discussion, Page 4

f. List, on this form or an attachment, the numbers of all other Federal, State, and local permits that regulate the operation of this municipal solid waste landfill:

Permit Number:	Type of Permit:
89-52	Waste Discharge Requirements *
19-AA-0052	Solid Waste Facility Permit
169112	Gas Flare Permit to Construct
1809-5	Conditional Use Permit

g. Submit, with this application, information to determine whether the sewage sludge meets applicable requirements for disposal of sewage sludge in a municipal solid waste landfill (e.g., results of paint filter liquids test and TCLP test).
See Attached Discussion

h. Does the municipal solid waste landfill comply with applicable criteria set forth in 40 CFR Part 258?

X Yes _____ No

* 6231 Monitoring & Reporting Program

FACILITY NAME:	PERMIT NUMBER:	EPA ID NUMBER: (for official use only)
Valencia WRP	CA0054216	N/A

C. LAND APPLICATION OF BULK SEWAGE SLUDGE

Complete Section C for sewage sludge that is applied to the land, unless any of the following conditions apply:

- **The sewage sludge meets the Table 3 pollutant concentrations, Class A pathogen requirements, and one of vector attraction reduction options 1-8 *(fill out B.4 instead)*; or**
- **The sewage sludge is sold or given away in a bag or other container *(fill out B.5 instead)*; or**
- **You provide the sewage sludge to another facility for treatment or placement in a bag or other container *(fill out B.6 instead)*.**

In other words, complete Section C only for the sewage sludge that you reported in Section B.7.

C.1. Identification of Land Application Site.

a. Site name or number: _____

b. Site location.

Street or Route #: _____

County: _____

City or Town: _____ State: _____ Zip: _____

Latitude: _____ Longitude: _____

C.2. Owner Information.

a. Are you the owner of this land application site? _____ Yes _____ No

b. If no, provide the following information for the owner:

Name: _____

Phone: ( ) _____

Street or P.O. Box: _____

City or Town: _____ State: _____ Zip: _____

C.3. Applier Information.

a. Are you the person who applies, or who is responsible for application of, sewage sludge to this land application site? _____ Yes _____ No

b. If no, provide the following information for the person who applies:

Name: _____

Phone: ( ) _____

Street or P.O. Box: _____

City or Town: _____ State: _____ Zip: _____

C.4. Site Type. Identify the type of land application site from among the following:

_____ Agricultural land
_____ Forest
_____ Public contact site
_____ Reclamation site
_____ Lawn or home garden
_____ Other. If other, specify: _____

C.5. Crop or Other Vegetation.

a. What type of crop or other vegetation is grown on this site?

_____

b. What is the nitrogen requirement for this crop or vegetation?

_____

C.6. Vector Attraction Reduction.

Are any vector attraction reduction requirements met when sewage sludge is applied to the land application site?

_____ Yes _____ No

If yes, answer C.6.a and C.6.b:

a. Indicate which vector attraction reduction option is met:

_____ Option 9 (injection below land surface)
_____ Option 10 (incorporation into soil within 6 hours)

b. Describe, on this form or another sheet of paper, any treatment processes used at the land application site to reduce vector attraction properties of sewage sludge:

_____
_____
_____
_____

C.7. Ground-Water Monitoring.

Are any ground-water monitoring data available for this land application site?

_____ Yes _____ No

If yes, submit the ground-water monitoring data with this permit application. Also submit a written description of the well locations, approximate depth to ground water, and the ground-water monitoring procedures used to obtain these data.

FACILITY NAME:	PERMIT NUMBER:	EPA ID NUMBER: (for official use only)
Valencia WRP	CA0054216	N/A

Complete Question C.8 only if the sewage sludge applied to this site since July 20, 1993, is subject to the cumulative pollutant loading rates (CPLRs) in 40 CFR 503.13(b)(2) (see instructions).

C.8. Cumulative Loadings and Remaining Allotments.

a. Have you contacted the permitting authority in the State where the bulk sewage sludge subject to CPLRs will be applied, to ascertain whether bulk sewage sludge subject to CPLRs has been applied to this site on or since July 20, 1993?

_____ Yes _____ No

If no, sewage sludge subject to CPLRs may not be applied to this site.
If yes, continue on to the next question.

b. Based upon this inquiry, has bulk sewage sludge subject to CPLRs been applied to this site since July 20, 1993?

_____ Yes _____ No

If no, skip the rest of this section.
If yes, answer questions C.8.c - C.8.g.

c. Site size, in hectares: _____

d. Dry metric tons of sewage sludge per hectare from your facility applied to this site, per 365-day period: _____

e. Total dry metric tons of sewage sludge per hectare from your facility applied to this site, over the life of the site: _____

f. Provide the following information for every facility other than yours that is sending, or has sent, bulk sewage sludge subject to CPLRs to this site since July 20, 1993. If more than one such facility sends sewage sludge to this site, attach additional pages as necessary.

Name of facility: _____
Facility contact. Name: _____
Title: _____
Phone: ( ) _____
Facility mailing address.
Street or P.O. Box: _____
City or Town: _____ State: _____ Zip: _____

g. Provide the total loading and allotment remaining, in kg/hectare, for each of the following pollutants:

	Cumulative loading	Allotment remaining
Arsenic		
Cadmium		
Chromium		
Copper		
Lead		
Mercury		
Molybdenum		
Nickel		
Selenium		
Zinc		

FACILITY NAME: Valencia WRP	PERMIT NUMBER: CA0054216	EPA ID NUMBER: *(for official use only)*	N/A

D. SURFACE DISPOSAL

Complete this section if you own or operate a surface disposal site.

Complete Section D.1 once for each surface disposal site that you own or operate.

D.1. Site Information. Provide the following information for the surface disposal site:

a. Site name or number: _____

b. Are you the owner of this surface disposal site? ____ Yes ____ No

If no, provide the following information:
Name of owner: _____
Facility contact. Name: _____
Title: _____
Phone: ( ) _____

Owner mailing address.
Street or P.O. Box: _____
City or Town: _____ State: ____ Zip: _____

c. Are you the operator of this surface disposal site? ____ Yes ____ No

If no, provide the following information:
Name of operator: _____
Facility contact. Name: _____
Title: _____
Phone: ( ) _____

Operator mailing address.
Street or P.O. Box: _____
City or Town: _____ State: ____ Zip: _____

Facility location.
Street or Route #: _____
County: _____
City or Town: _____ State: ____ Zip: _____

FACILITY NAME:	PERMIT NUMBER:	EPA ID NUMBER: (for official use only)
Valencia WRP	CA0054216	N/A

Complete Sections D.2 - D.6 for each active sewage sludge unit.

D.2. Information on Active Sewage Sludge Units.

a. Unit name or number: _____

b. Total dry metric tons of sewage sludge placed on the active sewage sludge unit per 365-day period: _____

c. Does the active sewage sludge unit have a liner with a minimum hydraulic conductivity of 1 x 10^{-7} cm/sec? _____ Yes _____ No

If yes, describe the liner (or attach a description):

_____

d. Does the active sewage sludge unit have a leachate collection system? _____ Yes _____ No

If yes, describe the leachate collection system (or attach a description). Also describe the method used for leachate disposal and provide the numbers of any Federal, State, or local permit(s) for leachate disposal:

_____

e. If you answered no to either D.2.c or D.2.d, answer the following question:

Is the boundary of the active sewage sludge unit less than 150 meters from the property line of the surface disposal site? _____ Yes _____ No

If yes, provide the actual distance in meters: _____

D.3. Sewage Sludge from Other Facilities. Is sewage sludge sent to this active sewage sludge unit from any facilities other than your facility? _____ Yes _____ No

If yes, provide the following information for each such facility. If sewage sludge is sent to this active sewage sludge unit from more than one such facility, attach additional pages as necessary.

a. Name of facility: _____

b. Facility contact. Name: _____
Title: _____
Phone: ( ) _____

c. Facility mailing address.
Street or P.O. Box: _____
City or Town: _____ State: _____ Zip: _____

d. List, on this form or an attachment, the facility's NPDES permit number, as well as the numbers of all other Federal, State, and local permits that regulate the facility's sewage sludge management practices:

Permit Number:	Type of Permit:

e. Which class of pathogen reduction is achieved before sewage sludge leaves the other facility?

_____ Class A _____ Class B _____ None or unknown

f. Describe, on this form or another sheet of paper, any treatment processes used at the other facility to reduce pathogens in sewage sludge:

_____

g. Which vector attraction reduction option is achieved before sewage sludge leaves the other facility?

_____ Option 1 (Minimum 38 percent reduction in volatile solids)
_____ Option 2 (Anaerobic process, with bench-scale demonstration)
_____ Option 3 (Aerobic process, with bench-scale demonstration)
_____ Option 4 (Specific oxygen uptake rate for aerobically digested sludge)
_____ Option 5 (Aerobic processes plus raised temperature)
_____ Option 6 (Raise pH to 12 and retain at 11.5)
_____ Option 7 (75 percent solids with no unstabilized solids)
_____ Option 8 (90 percent solids with unstabilized solids)
_____ None or unknown

h. Describe, on this form or another sheet of paper, any treatment processes used at the other facility to reduce vector attraction properties of sewage sludge:

_____
_____
_____

i. Describe, on this form or another sheet of paper, any other sewage sludge treatment activities performed by the other facility that are not identified in (e) - (h) above:

_____
_____
_____

D.4. Vector Attraction Reduction.

a. Which vector attraction reduction option, if any, is met when sewage sludge is placed on this active sewage sludge unit?

_____ Option 9 (Injection below land surface)
_____ Option 10 (Incorporation into soil within 6 hours)
_____ Option 11 (Covering active sewage sludge unit daily)

b. Describe, on this form or another sheet of paper, any treatment processes used at the active sewage sludge unit to reduce vector attraction properties of sewage sludge:

_____
_____
_____

D.5. Ground-Water Monitoring.

a. Is ground-water monitoring currently conducted at this active sewage sludge unit, or are ground-water monitoring data otherwise available for this active sewage sludge unit ?

_____ Yes _____ No

If yes, provide a copy of available ground-water monitoring data. Also provide a written description of the well locations, the approximate depth to ground water, and the ground-water monitoring procedures used to obtain these data.

_____
_____
_____

b. Has a ground-water monitoring program been prepared for this active sewage sludge unit?

_____ Yes _____ No

If yes, submit a copy of the ground-water monitoring program with this permit application.

c. Have you obtained a certification from a qualified ground-water scientist that the aquifer below the active sewage sludge unit has not been contaminated?

_____ Yes _____ No

If yes, submit a copy of the certification with this permit application.

D.6. Site-Specific Limits. Are you seeking site-specific permit limits for the sewage sludge placed on the active sewage sludge unit?

_____ Yes _____ No

If yes, submit information to support the request for site-specific pollutant limits with this application.

FACILITY NAME:	PERMIT NUMBER:	EPA ID NUMBER: (for official use only)
Valencia WRP	CA0054216	N/A

E. INCINERATION

Complete this section if you fire sewage sludge in a sewage sludge incinerator.

Complete this section once for each incinerator in which you fire sewage sludge. If you fire sewage sludge in more than one sewage sludge incinerator, attach additional copies of this section as necessary.

E.1. Incinerator Identification. Provide the following information for the sewage sludge incinerator:

a. Incinerator name or number: _____

b. Are you the owner of this sewage sludge incinerator? ____ Yes ____ No

If no, provide the following information:
Name of owner: _____
Facility contact. Name: _____
Title: _____
Phone: ( ) _____

Owner mailing address.
Street or P.O. Box: _____
City or Town: _____ State: ____ Zip: _____

c. Are you the operator of this sewage sludge incinerator? ____ Yes ____ No

If no, provide the following information:
Name of operator: _____
Facility contact. Name: _____
Title: _____
Phone: ( ) _____

Operator mailing address.
Street or P.O. Box: _____
City or Town: _____ State: ____ Zip: _____

Facility location.
Street or Route #: _____
County: _____
City or Town: _____ State: ____ Zip: _____

E.2. Amount Fired. Dry metric tons per 365-day period of sewage sludge fired in the sewage sludge incinerator:

_____

E.3. Beryllium NESHAP.

a. Is the sewage sludge fired in this incinerator "beryllium-containing waste," as defined in the instructions?

____ Yes ____ No

Submit, with this application, information, test data, and description of measures taken that demonstrate whether the sewage sludge incinerated is beryllium-containing waste, and will continue to remain as such.

b. If the answer to (a) is yes, submit—with this application—a complete report of the latest beryllium emission rate testing and documentation of ongoing incinerator operating parameters indicating that the NESHAP emission rate limit for beryllium has been and will continue to be met.

E.4. Mercury NESHAP.

a. How is compliance with the mercury NESHAP being demonstrated?

____ Stack testing (if checked, complete E.4.b)
____ Sewage sludge sampling (if checked, complete E.4.c)

b. If stack testing is conducted, submit the following information with this application:

- A complete report of stack testing and documentation of ongoing incinerator operating parameters indicating that the incinerator has met, and will continue to meet, the mercury NESHAP emission rate limit.
- Copies of mercury emission rate tests for the two most recent years in which testing was conducted.

c. If sewage sludge sampling is used to demonstrate compliance, submit a complete report of sewage sludge sampling and documentation of ongoing incinerator operating parameters indicating that the incinerator has met, and will continue to meet, the mercury NESHAP emission rate limit.

E.5. Dispersion Factor.

a. Dispersion factor, in micrograms/cubic meter per gram/second: _____

b. Name and type of dispersion model: _____

c. Submit a copy of the modeling results and supporting documentation with this application.

E.6. Control Efficiency.

a. Control efficiency, in hundredths, for the following pollutants:

Arsenic: _____ Lead: _____
Cadmium: _____ Nickel: _____
Chromium: _____

b. Submit a copy of the results of performance testing and supporting documentation (including testing dates) with this application.

E.7. Risk Specific Concentration for Chromium.

a. Risk specific concentration (RSC) used for chromium, in micrograms per cubic meter: _____

b. Which basis was used to determine the RSC?
_____ Table 2 in 40 CFR 503.43
_____ Equation 6 in 40 CFR 503.43 (site-specific determination)

c. If Table 2 was used, identify the type of incinerator used as the basis:
_____ Fluidized bed with wet scrubber
_____ Fluidized bed with wet scrubber and wet electrostatic precipitator
_____ Other types with wet scrubber
_____ Other types with wet scrubber and wet electrostatic precipitator

d. If Equation 6 was used, provide the following:

Decimal fraction of hexavalent chromium concentration to total chromium concentration in stack exit gas: _____

Submit results of incinerator stack tests for hexavalent and total chromium concentrations, including date(s) of test, with this application.

E.8. Operational Standard for Total Hydrocarbons (THC).

a. Raw value for THC concentration in stack emissions, in ppm: _____
b. Moisture content in stack gas, in percent: _____
c. Oxygen concentration in stack gas, in percent: _____
d. Corrected value for THC concentration in stack emissions, in ppm: _____

e. Submit, with this application, documentation used to derive raw THC concentration, moisture content, oxygen concentration, and corrected THC concentration.

E.9. Operating Parameters.

a. Incinerator type: _____

b. Combustion temperature: _____

Submit, with this application, supporting documentation such as testing date(s), a description of temperature measurement and data recording and handling systems, and a description of how such combustion temperature data have been averaged.

c. Sewage sludge feed rate, in dry metric tons/day: _____

Indicate whether value submitted is:
_____ Average use _____ Maximum design

Submit, with this application, supporting documentation describing how the feed rate was calculated.

d. Incinerator stack height, in meters: _____

Indicate whether value submitted is:
_____ Actual stack height _____ Creditable stack height

e. Submit, with this application, information documenting the operating parameters for the air pollution control device(s) used for this sewage sludge incinerator.

E.10. Monitoring Equipment. List the equipment in place to monitor the following parameters:

a. Total hydrocarbons: _____
b. Percent oxygen: _____
c. Moisture content: _____
d. Combustion temperature: _____
e. Other: _____

E.11. Air Pollution Control Equipment. Submit, with this application, a list of all air pollution control equipment used with this sewage sludge incinerator.

FACILITY NAME:	PERMIT NUMBER:	EPA ID NUMBER:
Valencia WRP	CA0054216	*(for official use only)*

F. CERTIFICATION

All applicants must sign the certification in this section.

Read and submit the following certification statement with this application.

Refer to the instructions to determine who is an officer for purposes of this certification.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with the system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Officer: David W. Snyder

Name of Officer: (typed or printed) David W. Snyder

Official Title of Officer: Supervising Engineer, Monitoring & Wastewater Research Section

Telephone Number: (310) 699-7411 Ext. 2803

Date Signed:

SCREENING INFORMATION, page 5 of 23

3. Biosolids from this facility are not land applied at this time, however, it is a reuse option for the future that is being investigated.

A. GENERAL INFORMATION

A.5. Topographic Map, page 7 of 23

a. The following items are highlighted on the attached map:
   (1) Valencia WRP. Waste activated sludge and primary solids from the Valencia and Saugus WRP service areas are processed at this site.
   (2) Saugus WRP. Waste activated sludge and primary solids that are generated at this site are transported via pipeline to Valencia WRP for processing.
   (3) Chiquita Canyon Landfill. All biosolids produced at Valencia WRP are disposed of at this location.

b. The locations of all water bodies within one mile beyond the facilities' property boundaries are shown on the attached map.

c. There are no drinking water wells within 1/4 mile of Saugus WRP, Valencia WRP or Chiquita Canyon Landfill.

A.6. Hazardous Waste Characteristics, page 7 of 23

California Title 22, Division 4.5, Chapter 11, Article 3 contains Toxicity Characteristic Leaching Procedure (TCLP) and Soluble Threshold Limit Concentration (STLC) limits which must be met in order for a material being tested to be considered non-hazardous. The Valencia WRP biosolids were tested per TCLP criteria September, 1990, prior to discharge at the Chiquita Canyon Landfill (Exhibit II). The biosolids were tested per STLC criteria, October, 1992 (Exhibit III). The results demonstrate that the material is non-hazardous. Additionally, the results of testing conducted on the Valencia WRP biosolids from 1992 to 1994 are enclosed (Valencia WRP Biosolids Analyses - Exhibit IV). The results shown in Exhibit IV are for total concentrations of the constituent measured, on a wet weight basis. It is assumed that when the total concentration of a constituent is below the Title 22 STLC limits, then the soluble concentration must be below the STLC limit as well, since the soluble concentration is a portion of the total concentration. All constituents measured for total concentration were found at levels below both TCLP and STLC limits, except for certain cases in which the detection level of the equipment or test used was above the soluble pollutant limit. The Chiquita Canyon Landfill, where all Valencia WRP biosolids are disposed, performs bimonthly and semi-annual testing as shown on the enclosed form (Exhibit V). These analyses are conducted on a composite sample of all biosolids deposited at the landfill. This data is available upon request, although not directly representative of the material that leaves Valencia WRP. The Sanitation Districts intend to repeat the TCLP and STLC testing in the near future. The recent results of a paint filter test performed on a composite biosolids sample are included at the end of this report (Exhibit VI).

DISCUSSION - PAGE 2
FACILITY NAME: VALENCIA WRP
PERMIT NUMBER: CA0054216

A. GENERAL INFORMATION

A.7. Pollutant Concentrations in Biosolids, page 7 of 23

24-Hour Composite Samples
January 1992 - December, 1994
Mg/Kg Dry Weight

Date / Sample No.	3/24/92 SJ34515	9/16/92 SJ44001	3/8/93 SJ53606	9/13/93 SJ62862	3/14/94 SJ73465	9/19/94 SJ81834	Analysis Detection Level*
POLLUTANT							
ARSENIC	4.4	3.4	4.1	6.9	0.66**	4.47	0.25
CADMIUM	2	2	1	4.5	2	3	0.6
CHROMIUM	23	23	31	28	38	26	10
COPPER	474	308	326	533	523	687	2
LEAD	26	9.7**	21	27	28	21	2
MERCURY	2.83	1.9	<1.3	2	<2	2.2	0.03
MOLYBDENUM	-	-	-	-	-	-	-
NICKEL	33	16	26	27	27	23	6
SELENIUM	7.4	4.2	4.3	9.0	5.2	5.2	0.25
ZINC	880	548	617	909	753	993	11

* Detection Level for wet weight analyses.
** Low values are suspect.
\- Constituent not analyzed.

B. GENERATION OF BIOSOLIDS OR PREPARATION OF A MATERIAL DERIVED FROM BIOSOLIDS

B.1 Amount Generated On Site, page 8 of 23

The Sanitation Districts operate two Water Reclamation Plants (WRP) in the Santa Clarita Valley: the Saugus WRP and the Valencia WRP. A 1980 Facilities' Plan recognized that the Saugus WRP was reaching maximum capacity due to space limitations and recommended combining the two Santa Clarita Valley facilities into a regional system. This was achieved in 1984 through a Joint Powers Agreement. Regionalization was accomplished with 1) an interceptor sewer through which excess flows and primary solids from the Saugus WRP are directed to the Valencia WRP for treatment and 2) a sludge force main which carries waste activated sludge (WAS) from the Saugus WRP to the Valencia WRP for processing. These modifications allow all solids processing to be conducted at the Valencia site.

Flows from the Saugus WRP interceptor sewer enter the Valencia facility as part of the influent flow; therefore, primary sludge at Valencia WRP contains primary solids from both facilities. The WAS from Saugus is combined with the WAS from Valencia and thickened by dissolved air flotation. Primary sludge and thickened WAS are blended and anaerobically digested, thickened and dewatered using plate and frame presses and then co-disposed with municipal solid waste at Chiquita Canyon Landfill.

Prior to dewatering, the solids are mixed with ferric chloride and lime slurry. The resulting cake is approximately 30% total solids. Roughly 45% of the final cake is lime solids. Research is currently being conducted on substituting polymer as a conditioner. This substitution will result in a less alkaline material and should make reuse practices, such as land application, more attractive as a management option. Additionally, this modification will decrease the total quantity of material produced. Investigation and implementation of available reuse options is expected to commence in 1995.

Total dry metric tons per 365-day period generated at your facility:

Valencia Service Area	1,600 dry metric tons wastewater solids
Saugus Service Area	1,100 dry metric tons wastewater solids
Total	2,700 dry metric tons wastewater solids

Valencia Service Area	2,900 dry metric tons wastewater solids plus lime solids
Saugus Service Area	2,000 dry metric tons wastewater solids plus lime solids
Total	4,900 dry metric tons wastewater solids plus lime solids, all of which is placed in Chiquita Canyon Landfill

B.2. Amount Received From Off Site, page 8 of 23

e. Total dry metric tons per 365-day period received from this facility: See B.1.

B.10. Disposal in a Municipal Solid Waste Landfill, page 13 of 23

e. Total dry metric tons of biosolids from your facility placed in this municipal solid waste landfill per 365-day period: See B.1.

g. Submit, with this application, information to determine whether the biosolids meet applicable requirements for disposal of biosolids in a municipal solid waste landfill: See A.6.

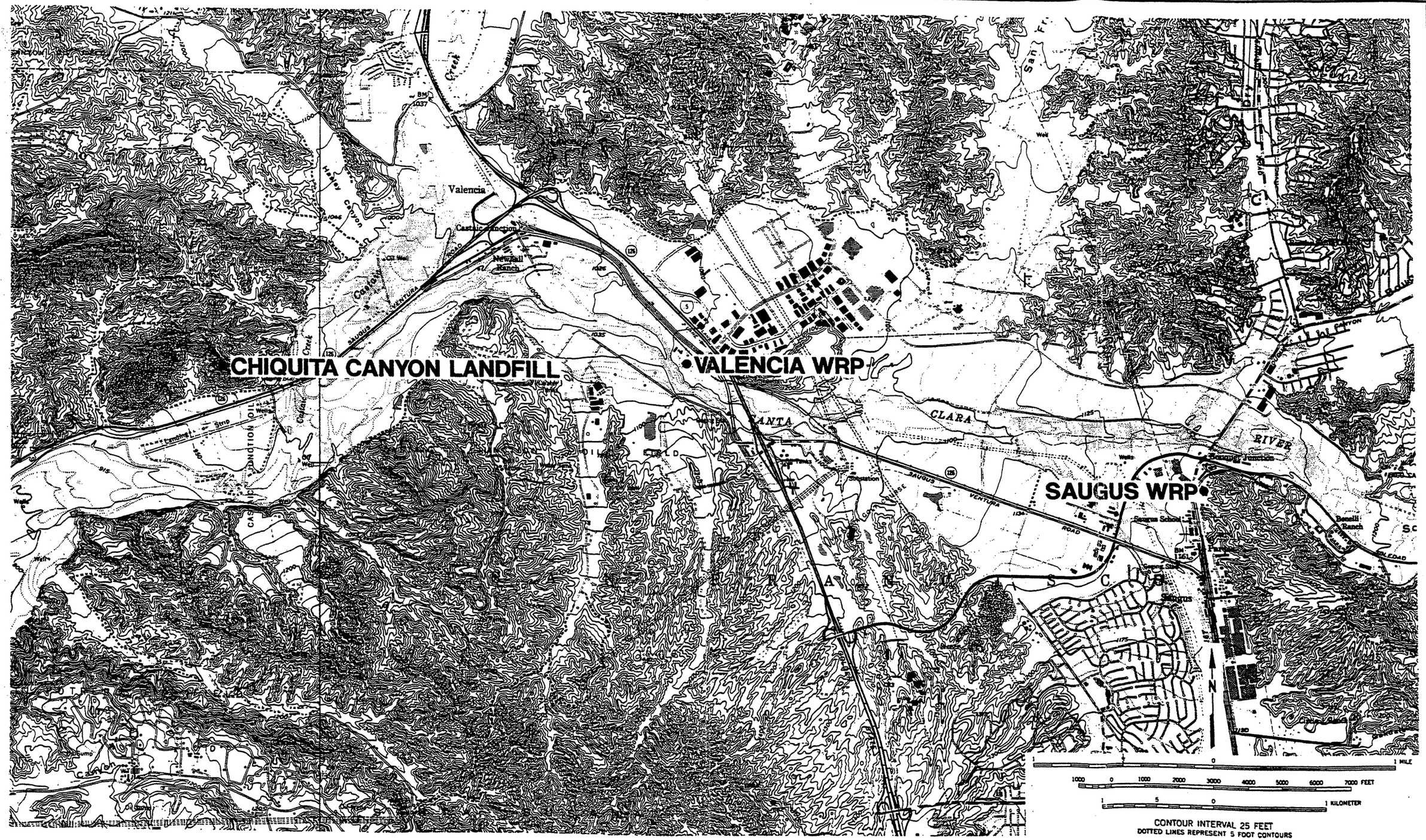
CHIQUITA CANYON LANDFILL
VALENCIA WRP
SAUGUS WRP
Valencia
Castaic Junction
Newhall Ranch
SANTA CLARA RIVER
Bouquet Junction
Saugus School
Benelli Ranch
Saugus
N
1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETER
CONTOUR INTERVAL 25 FEET
DOTTED LINES REPRESENT 5 FOOT CONTOURS

EXHIBIT I

Valencia WRP – TCLP Analysis

Analytical Report

EXHIBIT II

LOG NO: G90-09-152

Received: 10 SEP 90
Reported: 20 SEP 90

Los Angeles County Sanitation Districts
Valencia Water Reclamation Plant
Mr. Jim Lehner
San Jose Creek Water Qual. Lab
1965 S. Workman Mill Road
Whittier, CA 90601

Purchase Order: 25285

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, TCLP EXTRACT SAMPLES	DATE SAMPLED
09-152-1	1965	9/10/90

	PARAMETER	09-152-1
X	Mercury, mg/L	<0.02
X	Arsenic, mg/L	<0.02
	Selenium, mg/L	<0.02
	TCLP Extract	
	Nitric Acid Digestion, Date	NA
	Nitric Acid Digestion with HCl, Date	09/13/90
	TCLP Extract, Date	09/11/90
	TCLP by Emission Spectroscopy	
X	Silver, mg/L	0.014
X	Barium, mg/L	<0.001
X	Cadmium, mg/L	<0.003
X	Chromium, mg/L	<0.02
	Nickel, mg/L	0.03
X	Lead, mg/L	<0.04
	Thallium, mg/L	0.05

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B C Analytical

Analytical Report

LOG NO: G90-09-152

Received: 10 SEP 90
Reported: 20 SEP 90

Los Angeles County Sanitation Districts
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Purchase Order: 25285

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, TCLP EXTRACT SAMPLES	DATE SAMPLED
09-152-1	1965	

	PARAMETER	09-152-1
	B/N,A Ext.Pri.Poll. (EPA-8270)	
	Date Analyzed	09/20/90
	Date Extracted	09/19/90
	Dilution Factor, Times 1	1
	1,2,4-Trichlorobenzene, ug/L	<10
	1,2-Dichlorobenzene, ug/L	<10
	1,2-Diphenylhydrazine, ug/L	<10
	1,3-Dichlorobenzene, ug/L	<10
X	1,4-Dichlorobenzene, ug/L	<10
X	2,4,5-Trichlorophenol, ug/L	<10
X	2,4,6-Trichlorophenol, ug/L	<10
	2,4-Dichlorophenol, ug/L	<10
	2,4-Dimethylphenol, ug/L	<10
	2,4-Dinitrophenol, ug/L	<25
X	2,4-Dinitrotoluene, ug/L	<10
	2,6-Dinitrotoluene, ug/L	<10
	2-Chloronaphthalene, ug/L	<10
	2-Chlorophenol, ug/L	<10
	2-Methyl-4,6-dinitrophenol, ug/L	<50
	2-Methylnaphthalene, ug/L	<10
	2-Methylphenol, ug/L	<10
	2-Nitroaniline, ug/L	<50
	2-Nitrophenol, ug/L	<10
	3,3'-Dichlorobenzidine, ug/L	<10
	3-Nitroaniline, ug/L	<50
	4-Bromophenylphenylether, ug/L	<10
	4-Chloro-3-methylphenol, ug/L	<10
	4-Chloroaniline, ug/L	<20

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BCA B C Analytical

Analytical Report

LOG NO: G90-09-152

Received 10 SEP 90
Reported 20 SEP 90

Los Angeles County Sanitation Districts
Valencia Water Reclamation Plant
Mr. Jim Lehner
San Jose Creek Water Qual. Lab
1965 S. Workman Mill Road
Whittier, CA 90601

Purchase Order: 25285

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, TCLP EXTRACT SAMPLES	DATE SAMPLED
09-152-1	1965	

	PARAMETER	09-152-1
	4-Chlorophenylphenylether, ug/L	<10
	4-Methylphenol, ug/L	<10
	4-Nitroaniline, ug/L	<50
	4-Nitrophenol, ug/L	<25
	Acenaphthene, ug/L	<10
	Acenaphthylene, ug/L	<10
	Aniline, ug/L	<20
	Anthracene, ug/L	<10
	Benzidine, ug/L	<40
	Benzo(a)anthracene, ug/L	<10
	Benzo(a)pyrene, ug/L	<10
	Benzo(b)fluoranthene, ug/L	<10
	Benzo(g,h,i)perylene, ug/L	<10
	Benzo(k)fluoranthene, ug/L	<10
	Benzyl Alcohol, ug/L	<20
	Benzoic acid, ug/L	<50
	Butylbenzylphthalate, ug/L	<10
	Chrysene, ug/L	<10
	Di-n-octylphthalate, ug/L	<10
	Dibenzo(a,h)anthracene, ug/L	<10
	Dibenzofuran, ug/L	<10
	Dibutylphthalate, ug/L	<30
	Diethylphthalate, ug/L	<10
	Dimethylphthalate, ug/L	<25
	Fluoranthene, ug/L	<10
	Fluorene, ug/L	<10
X	Hexachlorobenzene, ug/L	<10
X	Hexachlorobutadiene, ug/L	<10

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BCA B C Analytical

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Los Angeles County Sanitation Districts
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REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, TCLP EXTRACT SAMPLES	DATE SAMPLED
09-152-1	1965	

	PARAMETER	09-152-1
	Hexachlorocyclopentadiene, ug/L	<10
X	Hexachloroethane, ug/L	<10
	Indeno(1,2,3-c,d)pyrene, ug/L	<10
	Isophorone, ug/L	<10
	N-Nitrosodimethylamine, ug/L	<80
	N-Nitrosodiphenylamine, ug/L	<10
	N-Nitrosodi-n-propylamine, ug/L	<40
X	Nitrobenzene, ug/L	<10
	Naphthalene, ug/L	<10
	Phenanthrene, ug/L	<10
	Phenol, ug/L	<10
X	Pentachlorophenol, ug/L	<10
	Pyrene, ug/L	<10
	Bis(2-chloroethoxy)methane, ug/L	<10
	Bis(2-chloroethyl)ether, ug/L	<10
	Bis(2-chloroisopropyl)ether, ug/L	<10
	Bis(2-ethylhexyl)phthalate, ug/L	12
	Semi-Quantified Results **	
	A 2nd Unidentified Compound, ug/L	300
	An Unidentified Compound, ug/L	400
X	Pyridine, ug/L	<50
X	Total Cresol, ug/L	<100

** Quantification based upon comparison of total ion count of the compound with that of the nearest internal standard.

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Purchase Order: 25285

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, TCLP EXTRACT SAMPLES	DATE SAMPLED
09-152-1	1965	

	PARAMETER	09-152-1
	Pesticides/PCBs (EPA 8080)	
	Date Analyzed	09/20/90
	Date Extracted	09/19/90
	Dilution Factor, Times 1	1
	Aldrin, ug/L	<0.04
X	Chlordane, ug/L	<0.3
	p,p'-DDD, ug/L	<0.04
	p,p'-DDE, ug/L	<0.04
	p,p'-DDT, ug/L	<0.04
	Dieldrin, ug/L	<0.04
	Endosulfan I, ug/L	<0.04
	Endosulfan II, ug/L	<0.05
	Endosulfan sulfate, ug/L	<0.05
X	Endrin, ug/L	<0.07
	Endrin aldehyde, ug/L	<0.04
X	Heptachlor epoxide, ug/L	<0.04
X	Heptachlor, ug/L	<0.04
X	Methoxychlor, ug/L	<0.2
	Aroclor 1016, ug/L	<0.6
	Aroclor 1221, ug/L	<0.6
	Aroclor 1232, ug/L	<0.6
	Aroclor 1242, ug/L	<0.6
	Aroclor 1248, ug/L	<0.6
	Aroclor 1254, ug/L	<0.6
	Aroclor 1260, ug/L	<0.6
	Aroclor 1262, ug/L	<0.6
X	Toxaphene, ug/L	<0.5
	BHC, alpha isomer, ug/L	<0.04

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Los Angeles County Sanitation Districts
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Mr. Jim Lehner
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Whittier, CA 90601

Purchase Order: 25285

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, TCLP EXTRACT SAMPLES	DATE SAMPLED
09-152-1	1965	

	PARAMETER	09-152-1
	BHC, beta isomer, ug/L	<0.04
	BHC, delta isomer, ug/L	<0.04
x	BHC, gamma isomer (Lindane), ug/L	<0.04
	Chlorinated Acid Herbicides (EPA-8150)	
	Date Analyzed	09/20/90
	Date Extracted	09/18/90
	Dilution Factor, Times 1	20
x	2,4,5-TP (Silvex), ug/L	<1
x	2,4-D, ug/L	<6
	2,4,5-T, ug/L	<1
	2,4-DB, ug/L	<1
	Dicamba, ug/L	<1
	2,4-DP, ug/L	<6
	Dinoseb, ug/L	<1
	Other Chlorinated Acid Herbicides (EPA-8150)	---

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D C Analytical

09/21/1990 07:24 BCAL GLENDALE LAB 818 247 9797 P.07

Analytical Report

LOG NO: G90-09-152

Received: 10 SEP 90
Reported: 20 SEP 90

Mr. Jim Lehner
San Jose Creek Water Qual. Lab
1965 S. Workman Mill Road
Whittier, CA 90601

Purchase Order: 25285

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, TCLP EXTRACT SAMPLES	DATE SAMPLED
09-152-2	1965	

PARAMETER	09-152-2
Zero Headspace Extraction	09/11/90

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B C Analytical

Analytical Report

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Los Angeles County Sanitation Districts
Valencia Water Reclamation Plant
Mr. Jim Lehner
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1965 S. Workman Mill Road
Whittier, CA 90601

Purchase Order: 25285

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, TCLP EXTRACT SAMPLES	DATE SAMPLED
09-152-2	1965	

	PARAMETER	09-152-2
	Vol.Pri.Poll. (EPA-8240)	
	Date Analyzed	09/13/90
	Date Extracted	09/11/90
	Dilution Factor, Times 1	1
	1,1,1-Trichloroethane, ug/L	<1
	1,1,2,2-Tetrachloroethane, ug/L	<1
	1,1,2-Trichloroethane, ug/L	<1
	1,1-Dichloroethane, ug/L	<1
X	1,1-Dichloroethene, ug/L	<1
X	1,2-Dichloroethane, ug/L	<1
	1,2-Dichlorobenzene, ug/L	<1
	1,2-Dichloropropane, ug/L	<1
	1,3-Dichlorobenzene, ug/L	<1
X	1,4-Dichlorobenzene, ug/L	1
	2-Chloroethylvinylether, ug/L	<1
	2-Hexanone, ug/L	<10
	Acetone, ug/L	70
	Acrolein, ug/L	<50
	Acrylonitrile, ug/L	<20
	Bromodichloromethane, ug/L	<1
	Bromomethane, ug/L	<1
X	Benzene, ug/L	<1
	Bromoform, ug/L	<1
X	Chlorobenzene, ug/L	<1
X	Carbon Tetrachloride, ug/L	<1
	Chloroethane, ug/L	<1
X	Chloroform, ug/L	<1
	Chloromethane, ug/L	<2

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BCA B C Analytical

Analytical Report

LOG NO: G90-09-152

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Reported: 20 SEP 90

Los Angeles County Sanitation Districts
Valencia Water Reclamation Plant
Mr. Jim Lehner
San Jose Creek Water Qual. Lab
1965 S. Workman Mill Road
Whittier, CA 90601

Purchase Order: 25285

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, TCLP EXTRACT SAMPLES	DATE SAMPLED
09-152-2	1965	

	PARAMETER	09-152-2
	Carbon Disulfide, ug/L	<2
	Dibromochloromethane, ug/L	<1
	Ethylbenzene, ug/L	<1
	Freon 113, ug/L	<1
x	Methyl ethyl ketone, ug/L	10
	Methyl isobutyl ketone, ug/L	20
	Methylene chloride, ug/L	<2
	Styrene, ug/L	<1
	Trichloroethene, ug/L	<1
x	Trichlorofluoromethane, ug/L	<1
	Toluene, ug/L	2
x	Tetrachloroethene, ug/L	<1
	Vinyl acetate, ug/L	<5
x	Vinyl chloride, ug/L	<1
	Total Xylene Isomers, ug/L	<5
	cis-1,2-Dichloroethene, ug/L	<1
	cis-1,3-Dichloropropene, ug/L	<1
	trans-1,2-Dichloroethene, ug/L	<1
	trans-1,3-Dichloropropene, ug/L	<1

Based on historical data, the level of bis(2-ethylhexyl)phthalate found in sample -1 may have been introduced in the laboratory as a random contaminant. G. Havalias 09/20/90

Jeffrey A. Erion, Laboratory Manager

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B C Analytical

Valencia WRP – STLC . ysis, page 1 of 2

TECHNICAL DATA SYSTEM -- Water Reclamation Plant Data : VAL 11/11/92 Page 1

* S A M P L E D A T A *

NO.	LOCATION	TYPE	DATE	LOG NO.	DESCRIPTION	STATUS
1.	VAL MISC	DWAS	10/21/92	SJ45876	BI-MONTHLY VALENCIA SLUDGE CAKE FOR CHIQUITA LANDFILL	COMPLETE, APPROVED
2.	VAL MISC	CIT	10/21/92	SJ45877	STLC EXTRACT OF VALENCIA SLUDGE CAKE FOR CHIQUITA LANDFILL	COMPLETE, APPROVED
3.	VAL MISC	DWAS	10/21/92	SJ45878	VALENCIA SLUDGE CAKE TTLC ORGANICS FOR CHIQUITA	COMPLETE, APPROVED

TECHNICAL DATA SYSTEM -- Water Reclamation Plant Data : VAL 11/11/92 Page 1

* S A M P L E T E S T R E S U L T S * * * * * * * * * * * * * * * * *

DATE	LOG NO.	(101) PH PH	(153) TOTAL SOLIDS %	(171) WASTE EXTRACTION TES NO DATA CITR	(405) TOTAL ORGANIC CARBON MG/KG C	(410) TOTAL ORGANIC HALOGE UG/L	(501) OP'-DDE UG/KG	(502) PP'-DDE UG/KG	(503) OP'-DDD UG/KG
10/21/92	SJ45876 R-GR	11.9	28.4	0 A					
10/21/92	SJ45877 R-GR					680			
10/21/92	SJ45878 R-GR		28.4		62700	190	< 5.0	< 5.0	< 5.0

* S A M P L E T E S T R E S U L T S * * * * * * * * * * * * * * * * *

DATE	LOG NO.	(504) PP'-DDD UG/KG	(505) OP'-DDT UG/KG	(506) PP'-DDT UG/KG	(509) LINDANE (GAMMA-BHC) UG/KG	(514) ENDRIN UG/KG	(515) TOXAPHENE UG/KG	(516) METHOXYCLOR UG/KG	(517) 2,4-D(ACID) MG/KG
10/21/92	SJ45876 R-GR								
10/21/92	SJ45877 R-GR								
10/21/92	SJ45878 R-GR	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 500	< 100	< 0.2

* S A M P L E T E S T R E S U L T S * * * * * * * * * * * * * * * * *

DATE	LOG NO.	(518) 2,4,5-TP(SIL VEX) MG/KG	(519) AROCLOR 1242 UG/KG	(520) AROCLOR 1254 UG/KG	(535) AROCLOR 1016 UG/KG	(536) AROCLOR 1221 UG/KG	(537) AROCLOR 1232 UG/KG	(538) AROCLOR 1248 UG/KG	(539) AROCLOR 1260 UG/KG
10/21/92	SJ45876 R-GR								
10/21/92	SJ45877 R-GR								
10/21/92	SJ45878 R-GR	< 0.02	< 50	< 50	< 50	< 250	< 250	< 50	< 50

EXHIBIT III

Footnote(s): A-TEST NOT REQUIRED

Valencia WRP -- STLC Analysis, page 2 of 2

* SAMPLE TEST RESULTS *

DATE	LOG NO.	(604) CARBON TETRACHLORIDE MG/KG	(606) TRICHLOROETHYLENE MG/KG	(607) TETRACHLOROETHYLENE MG/KG	(705) ARSENIC MG/L AS	(706) BARIUM MG/L BA	(707) ALUMINUM MG/L AL	(708) CADMIUM MG/L CD	(709) TOTAL CHROMIUM MG/L CR
10/21/92	SJ45876 R-GR								
10/21/92	SJ45877 R-GR				< 0.030	1.93	114	< 0.1	< 1
10/21/92	SJ45878 R-GR	< 0.2	< 0.2	< 0.2					

* SAMPLE TEST RESULTS *

DATE	LOG NO.	(711) COBALT MG/L CO	(712) COPPER MG/L CU	(714) LEAD MG/L PB	(717) MERCURY MG/L HG	(718) NICKEL MG/L NI	(720) SELENIUM MG/L SE	(722) SILVER MG/L AG	(724) ZINC MG/L ZN
10/21/92	SJ45876 R-GR								
10/21/92	SJ45877 R-GR	< 0.4	< 0.5	< 0.04	0.0012	< 1	< 0.030	0.04	6.15
10/21/92	SJ45878 R-GR								

* SAMPLE TEST RESULTS *

DATE	LOG NO.	(725) ANTIMONY MG/L SB	(726) BERYLLIUM MG/L BE	(732) MOLYBDENUM MG/L MO	(734) THALLIUM MG/L TL	(735) TIN MG/L SN	(737) VANADIUM MG/L V
10/21/92	SJ45876 R-GR						
10/21/92	SJ45877 R-GR	< 0.060	< 0.1	< 0.2	< 0.025	< 0.6	< 0.2
10/21/92	SJ45878 R-GR						

Footnote(s): A-TEST NOT REQUIRED

Footnote(s): A-TEST NOT REQUIRED

VALENCIA WRP BIO. .IDS ANALYSES
Total Wet Weight Concentrations (mg/L)

	DATE SAMPLE NO.	3/24/92 SJ34515	9/16/92 SJ44001	3/8/93 SJ53606	9/13/93 SJ62862	3/14/94 SJ73455	9/19/94 SJ81834	TCLP** Limit mg/L	STLC*** Limit mg/L
TEST	CONSTITUENTS								
313	FLUORIDE SALTS	---	---	---	---	---	---		180
501	DDE	0.0006 *	0.0013	ND	< 0.005	< 0.0025	< 0.02		0.1
503	DDD	ND	< 0.001	0.0004	< 0.005	< 0.0025	< 0.02		0.1
505	DDT	ND	< 0.001	0.0093	< 0.005	< 0.0025	< 0.02		0.1
509	LINDANE (GAMMA-BHC)	ND	< 0.001	ND	< 0.005	< 0.0025	< 0.02	0.4	0.4
510	HEPTACHLOR	ND	< 0.001	ND	< 0.005	< 0.0025	< 0.02	0.008	0.47
511	HEPTACHLOR EPOXIDE	ND	< 0.001	ND	< 0.005	< 0.0025	< 0.02	0.008	
512	ALDRIN	ND	< 0.001	ND	< 0.005	< 0.0025	< 0.02		0.14
513	DIELDRIN	0.0005 *	< 0.001	0.0002	< 0.005	< 0.0025	< 0.02		0.8
514	ENDRIN	ND	< 0.001	ND	< 0.005	< 0.0025	< 0.02	0.02	0.02
515	TOXAPHENE	ND	< 0.1	ND	< 0.5	< 0.25	< 0.05		0.5
516	METHOXYCLOR	---	---	ND	< 0.1	< 0.05	< 0.075	10.0	10
517	2,4-D(ACID)	---	---	< 0.02 *	< 0.02 *	< 0.02 *	< 0.02 *	10.0	10
518	2,4,5-TP(SILVEX)	---	---	< 0.002 *	< 0.002 *	< 0.002 *	< 0.002 *	1.0	1.0
535	PCBS	ND	ND	ND	ND	ND	ND		5.0
540	CHLORDANE	0.0078 *	< 0.02	0.003	< 0.05	< 0.025	< 0.05	0.03	0.25
602	CHLOROFORM	< 0.0025	< 0.005	< 0.0025	< 0.0025	< 0.0025	< 0.1	6.0	
604	CARBON TETRACHLORIDE	< 0.0015	< 0.0025	< 0.0015	< 0.0015	< 0.0015	< 0.05	0.5	
605	1,1-DICHLOROETHENE	< 0.0015	< 0.0025	< 0.0015	< 0.0015	< 0.0015	< 0.05	0.7	
606	TRICHLOROETHYLENE	< 0.0015	< 0.0025	< 0.0015	< 0.0015	< 0.0015	< 0.05	0.5	204
607	TETRACHLOROETHYLENE	< 0.0015	< 0.0025	< 0.0015	< 0.0015	< 0.0015	< 0.05	0.7	
611	CHLOROBENZENE	< 0.0025	< 0.005	< 0.0025	< 0.0025	< 0.0025	< 0.1	100.0	
612	VINYL CHLORIDE	< 0.0025	< 0.005	< 0.0025	< 0.0025	< 0.0025	< 0.1	0.2	
619	1,2-DICHLOROETHANE	< 0.0015	< 0.0025	< 0.0015	< 0.0015	< 0.0015	< 0.05	0.5	
620	BENZENE	< 0.0015	< 0.0025	< 0.0015	< 0.0015	< 0.0015	< 0.05	0.5	
627	O-CRESOL	---	---	---	---	---	---	200.0	
628	M-CRESOL	---	---	---	---	---	---	200.0	
630	P-CRESOL	---	---	---	---	---	---	200.0	
631	CRESOL	---	---	---	---	---	---	200.0	
680	METHYL ETHYL KETONE	---	---	---	---	---	---	200.0	
691	2,4,5-TRICHLOROPHENOL	---	---	---	---	---	---	400.0	
705	ARSENIC	0.118	0.16	0.164	0.227 *	0.016 *	0.134 *	5.0	5.0
706	BARIUM	9.48	8.27	11.3	11.6	9.03	10.3	100.0	100
708	CADMIUM	0.06	0.08	0.06	0.15	0.04	0.09	1.0	1.0

EXHIBIT IV

VALENCIA WRP BIOSOLIDS ANALYSES
Total Wet Weight Concentrations (mg/L)

TEST	DATE / SAMPLE NO.	3/24/92 SJ34515	9/16/92 SJ44001	3/8/93 SJ53606	9/13/93 SJ62862	3/14/94 SJ73465	9/19/94 SJ81834	TCLP** Limit mg/L	STLC*** Limit mg/L
	CONSTITUENTS								
709	TOTAL CHROMIUM	0.62	1.06	1.23	0.92	0.93	0.77	5.0	5
711	COBALT	---	---	---	---	---	---		80
712	COPPER	12.8	14.3	13.1	17.6	12.7	20.6		25
714	LEAD	0.7	0.45	0.85	0.89	0.68	0.62	5.0	5.0
717	MERCURY	0.0764	0.09 *	< 0.05 *	0.06	< 0.05 *	0.066 *	0.2	0.2
718	NICKEL	0.88	0.73	1.06	0.88	0.66	0.68		20
720	SELENIUM	0.20	0.196	0.172	0.298 *	0.127 *	0.155 *	1.0	1.0
722	SILVER	1.38	1.08	1.23	0.032	0.98	0.42	5.0	5
724	ZINC	23.7	25.5	24.8	30.0	18.3	29.8		250
725	ANTIMONY	0.096	0.082	0.107	0.223	0.116 *	0.096 *		15
726	BERYLLIUM	0.02	< 0.02	0.01	< 0.01	0.01	< 0.05		0.75
732	MOLYBDENUM	---	---	---	---	---	---		350
734	THALLIUM	< 0.05	< 0.05	< 0.05	< 0.002	< 0.002	< 0.005		7.0
737	VANADIUM	---	---	---	---	---	---		24
821	1,4-DICHLOROBENZENE	< 2 *	< 0.020	0.06	0.085	< 0.2	< 0.2	7.5	
826	2,4-DINITROTOLUENE	< 3 *	< 0.030	< 0.3	< 0.3	< 0.3	< 0.3	0.13	
832	HEXACHLOROBENZENE	< 1 *	< 0.01	< 0.1	< 0.1	< 0.1	< 0.1	0.13	
833	HEXACHLOROBUTADIENE	< 10 *	< 0.10	< 1	< 1	< 1	< 1	0.5	
835	HEXACHLOROETHANE	< 12 *	< 0.120	< 1.2	< 1.2	< 1.2	< 12	3.0	
839	NITROBENZENE	< 2 *	< 0.02	< 0.2	< 0.2	< 0.2	< 0.2	2.0	
844	DIOXIN(2,3,7,8-TCDD)	< 3 *	< 0.03	< 0.3	< 0.3	< 0.3	< 0.3		0.001
854	PENTACHLOROPHENOL	< 16 *	< 0.16	< 1.6	< 1.6	< 1.6	< 1.6	100.0	1.7
856	2,4,6-TRICHLOROPHENOL	< 2 *	< 0.02	< 0.2	< 0.2	< 0.2	< 0.2	2.0	
	PYRIDINE	---	---	---	---	---	---	5.0	
	KEPONE	---	---	---	---	---	---		2.1
	MIREX	---	---	---	---	---	---		2.1

* - In mg/kg wet weight basis. The units mg/kg and mg/L are approximately the same.

** - EPA Toxicity Characteristic Leaching Procedure.

*** - California Title 22 Soluble Threshold Limit Concentration.

ND - Not Detected.

--- Constituent not analyzed.

EXHIBIT V

CHIQUITA CANYON LANDFILL
DEWATERED SEWAGE SLUDGE
SWAA REVIEW PROGRAM

DATE: June 30, 1994

GENERATOR: Chiquita Canyon Landfill Bi-Monthly Biosolid

TYPE OF ANALYSIS: Bi–Monthly X Semi–Annual ____

	YES	NO
1. SAMPLING PROTOCOL:		
* All loads sampled for a 24–hour period with samples being weight–proportion composited and mixed	X	
* Total percent solids determined Average results of samples: 34 percent	X	
2. EXTRACTION PROCEDURES:		
* Waste Extraction Test (WET) modified as follows: a. Citrate buffer pH is 4.5 b. Testing done on 48–hour extract only	X	
3. BI–MONTHLY EXTRACT ANALYSES (LEA AND RWQCB REQ'T)		
* Extracts analyzed for (STLC–mg/l):	X	
a. Aluminum b. Antimony c. Arsenic d. Barium e. Beryllium f. Cadmium g. Chromium h. Cobalt i. Copper j. Lead k. Mercury l. Molybdenum m. Nickel n. Selenium o. Silver p. Thallium q. Tin r. Vanadium s. Zinc t. Total org hal		
4. BIMONTHLY VOLATILE (EPA Method 8260) AND SEMI–VOLATILE ORGANICS (EPA Method 8270) ANALYSES ON EXTRACT (RWQCB REQ'T)	X	
5. SEMI–ANNUAL SLUDGE ANALYSES (LEA REQ'T)		
* Digested sludge analyzed for (TTLC or STLC): a. Total organic carbon b. Total organic halogens c. Polychlorinated biphenyls (PCBs) d. Trichlorethylene (TCE) e. Perchlorethylene (PCE) f. Carbon tetrachloride g. DDT (and its metabolites) h. Endrin i. Lindane j. Methoxychlor k. Toxaphene l. 2,4–D m. 2,4,5–TP (Silvex)		

ENVIRONMENTAL

ANALYTICAL CHEMISTS

EXHIBIT VI

January 6, 1995

LAB No: SP 500074-1

Waste Markets
PO Box 3871
Ventura , CA 93006-3871

RE: Organic Analysis
Matrix: Sludge

Sampling Site: Chiquita Canyon Landfill Biosolid Sampling
Sample Description: ID #352034 LA County Valencias, Saugus

Sampled by : Pete Munoz
Container : Glass Jar
Preservatives:

Sampled : December 7, 1994
Received : December 7, 1994
Extracted : N/A
Analyzed : December 19, 1994
QA/QC ID# : SP 94121900A

EPA 9095 ORGANIC ANALYSIS

Paint Filter Liquids	No free liquids

DLR = Detection Limit for Reporting Purposes. MCL = Maximum Contaminant Level (--- indicates none determined.)
UG/L = Micrograms Per Liter (ppb) ND = Not Detected at or above the DLR.
* = DLR adjusted because of dilutions, concentrations, or limited sample.

If you have any questions, please call.

FGL ENVIRONMENTAL

Kelly A. Dunnahoo, B.S.
Organic Laboratory Manager

Darrell H. Nelson, B.S.
Laboratory Director

KAD/DHN:cl

Corporate Offices & Laboratory
PO Box 272 / 853 Corporation Street
Santa Paula, CA 93061-0272
TEL: 805/659-0910
FAX: 805/525-4172

Office & Laboratory
2500 Stagecoach Road
Stockton, CA 95215
TEL: 209/942-0181
FAX: 209/942-0423

Field Office
Visalia, CA
TEL: 209/734-9473
FAX: 209/734-8435
Mobile: 209/737-2399

WASTEWATER RECLAMATION
SOLID WASTE MANAGEMENT

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (310) 699-7411, FAX: (310) 695-6139

CHARLES W. CARRY
Chief Engineer and General Manager

February 7, 1996

File No: 31-380.10B

Mr. Michael Brown
Impact Sciences Inc.
267 W. Hillcrest Drive
Thousand Oaks, CA 91360

Dear Mr. Brown:

Preliminary Emissions Estimates for Proposed
Newhall Ranch Water Reclamation Plant (WRP)

Enclosed are the Valencia WRP AB2588 Air Toxics Inventory Report for reporting year 1991 and Valencia WRP criteria pollutants emission factors for combustion of sewage digester gas used for the annual emissions inventory. Since the Valencia WRP should be similar to the proposed Newhall Ranch WRP in plant configuration and the influent qualities, the enclosed information should provide an adequate estimate for the proposed plant.

You should make a note of the following items:

AB2588 Inventory Report

- The emissions are based on a flow of 7.86 million gallons per day.
- Off-gas from the primary sedimentation tanks is vented through the activated sludge aeration tanks. Therefore, there are no emissions reported from the primary sedimentation tanks.
- During the reporting year, dewatering of sludge in the filter press was improved through the addition of lime. Lime increased the pH of the sludge which transformed dissolved ammonium ions (NH_4+) into ammonia gas. Presently the plant uses a polymer which does not affect the pH. Therefore, ammonia emissions should be negligible.

Recycled Paper

Criteria Pollutants Emission Factors for Combustion of Sewage Digester Gas

- The emission factors are given as mass emissions per volume of digester gas combusted.

- SO_X emission factors are based on an average H_2S concentration of 1 ppm in digester gas. Valencia WRP uses ferrous chloride and an iron sponge system to control the H_2S concentration. The H_2S permit limit is 40 ppm. Without knowing what controls the proposed plant will use, it may be best to use 40 ppm H_2S for the basis of the SO_X emission factors.

- Any engines (e.g., cogeneration unit) used at the plant will have to comply with SCAQMD Rule 1110.2. All engine emission estimates should be based on Rule 1110.2 compliance limits.

If you have any questions, please contact me at (310) 699-7411, extension 2138.

Yours very truly,

Charles W. Carry

Robert Ferrante

Robert Ferrante
Project Engineer
Air Quality Engineering

RF:rc

Enclosures

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

AB 2588 SECTION
P.O. BOX 4949
Diamond Bar, CA 91765-0949

7.86 MGD

AB 2588 AIR TOXICS DOCUMENT CERTIFICATION & APPLICATION FORM

1. Please check the appropriate boxes in this section:

- [ ] AIR TOXICS INVENTORY PLAN — For Reporting YEAR 19 [91]
- [X] AIR TOXICS INVENTORY REPORT — [X] First years report
- [ ] HEALTH RISK ASSESSMENT — [ ] INITIAL [ ] REVISED — [ ] Biennial Report

Sanitation Districts of Los Angeles County
Valencia Water Reclamation Plant
P.O. Box 4998
Whittier, CA 90607-4998

AQMD ID# 22674

2. If the company name and/or ID # has changed, please print or type the company name and/or ID# below:

Company:

New AQMD ID #:

If your mailing address has changed, please print or type the new mailing address below:

3. Please print or type the following information:

Facility Address: 28185 The Old Road
Valencia, CA 91355

Contact Person (company official):	Name: Ching-lin Chen	Title: Head, Wastewater Research
		Tel. No.: (310) 699-7411 X2816
Preparer (if different from above):	Name: Philip Johnson	Title: Project Engineer
	Company: LACSD	Tel No.: (310) 699-7411 X2822

I SWEAR UNDER PENALTY OF PERJURY THAT THE DATA SUBMITTED WITH THIS DOCUMENT IS A TRUE STATEMENT OF THE INFORMATION REQUESTED BY THE DISTRICT. PURSUANT TO HEALTH AND SAFETY CODE SECTION 44381: ANY PERSON WHO KNOWINGLY SUBMITS ANY FALSE INFORMATION IN THIS DOCUMENT IS SUBJECT TO CIVIL PENALTIES OF UP TO $25,000.00 BUT NOT LESS THAN $1,000.00 FOR EACH DAY THAT THE INFORMATION REMAINS UNCORRECTED; AND ANY PERSON WHO FAILS TO SUBMIT THE REQUESTED INFORMATION BY THE DUE DATE IS SUBJECT TO CIVIL PENALTIES OF UP TO $10,000.00 BUT NOT LESS THAN $500.00 FOR EACH DAY THAT THE INFORMATION IS NOT SUBMITTED.

	February 11, 1994
Signature of Responsible Company Official	Date of Submittal
Gregory M. Adams	Assistant Departmental Engineer
Name of Responsible Company Official	Title of Responsible Company Official

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

FACILITY EMISSION SUMMARY FORM

COMPANY: LA County Sanitation Districts

AQMD FACILITY ID#: 22674

APPENDIX A-1 SUBSTANCES		FACILITYWIDE EMISSIONS	
AIR TOXIC NAME	CAS NO.	MAX LBS/HR	AVG LBS/YR
acetaldehyde	75070	0.000056	0.07
ammonia	7664417	4.458	5216
benzene	71432	0.000103	0.42
chlorine	7782505	0.00364	0.05
chloroform	67663	0.04096	42.28
p-dichlorobenzene	106467	0.01127	40.82
formaldehyde	50000	0.01594	58.27
hydrogen sulfide	7783064	0.00119	10.42
methylene chloride	75092	0.00444	13.02
styrene	100425	0.00003	0.25
tetrachloroethylene	127184	0.01631	59.05
toluene	108883	0.00421	11.68
1,1,1-trichloroethane	71556	0.02740	99.59
trichloroethylene	79016	0.00057	2.05
vinyl chloride	75014	0.00033	1.08
xylenes	1210	0.00276	7.57

336.2

Facility Operating Schedule:	HOURS / DAY	DAYS / YEAR
	24	365

EMISSION YEAR			
1	9	9	1

Valencia = 7.96 mgd

Solids 5.12 (1.52%
Comb. 16.92 (5.03%
Water 314.16 (93.44

Facility Location Address 28185 The Old Road, Valencia CA 91355

Receptor Proximity Form for AB-2588 Air Toxics "Hot Spots" Prioritization

Please provide answers to the following questions in terms of meters. 100 meters is equal to about 108 yards or 325 feet. If your measurements are originally in feet or yards, please convert them to meters. (Meters = Feet X 0.3048)

1. What is the closest distance between any source of air toxic emissions at your facility and the property boundary of any one of these receptors – other business, work-site, school, day-care center, shopping center, park, or hospital?

___ Less than 50 meters (160 feet)
___ Less than 100 meters
___ Less than 250 meters
x Less than 500 meters
___ Less than 1,000 meters (1,080 yards)
___ Less than 1,500 meters
___ Less than 2,000 meters
___ Greater than 2,000 meters
RECEPTOR TYPE Business

Place check mark in front of appropriate distance category and indicate type of receptor. Please note that vacant commercial/industrial lots will also be considered work places.

Important! If distance is less than 250 meters (270 yards or 810 feet) and more than 50 meters (54 yards or 160 feet), provide actual distance in meters.

_____ meters.

2. What is the closest distance between any source of air toxic emissions at your facility and the property boundary of any one of these receptors – house, apartment, convalescent home, trailer park, or other residence?

___ Less than 50 meters (160 feet)
___ Less than 100 meters
___ Less than 250 meters
___ Less than 500 meters
x Less than 1,000 meters (1,080 yards)
___ Less than 1,500 meters
___ Less than 2,000 meters
___ Greater than 2,000 meters
RECEPTOR TYPE House

Place check mark in front of appropriate distance category and indicate type of receptor. Please note that vacant lots zoned as residential will also be considered residences.

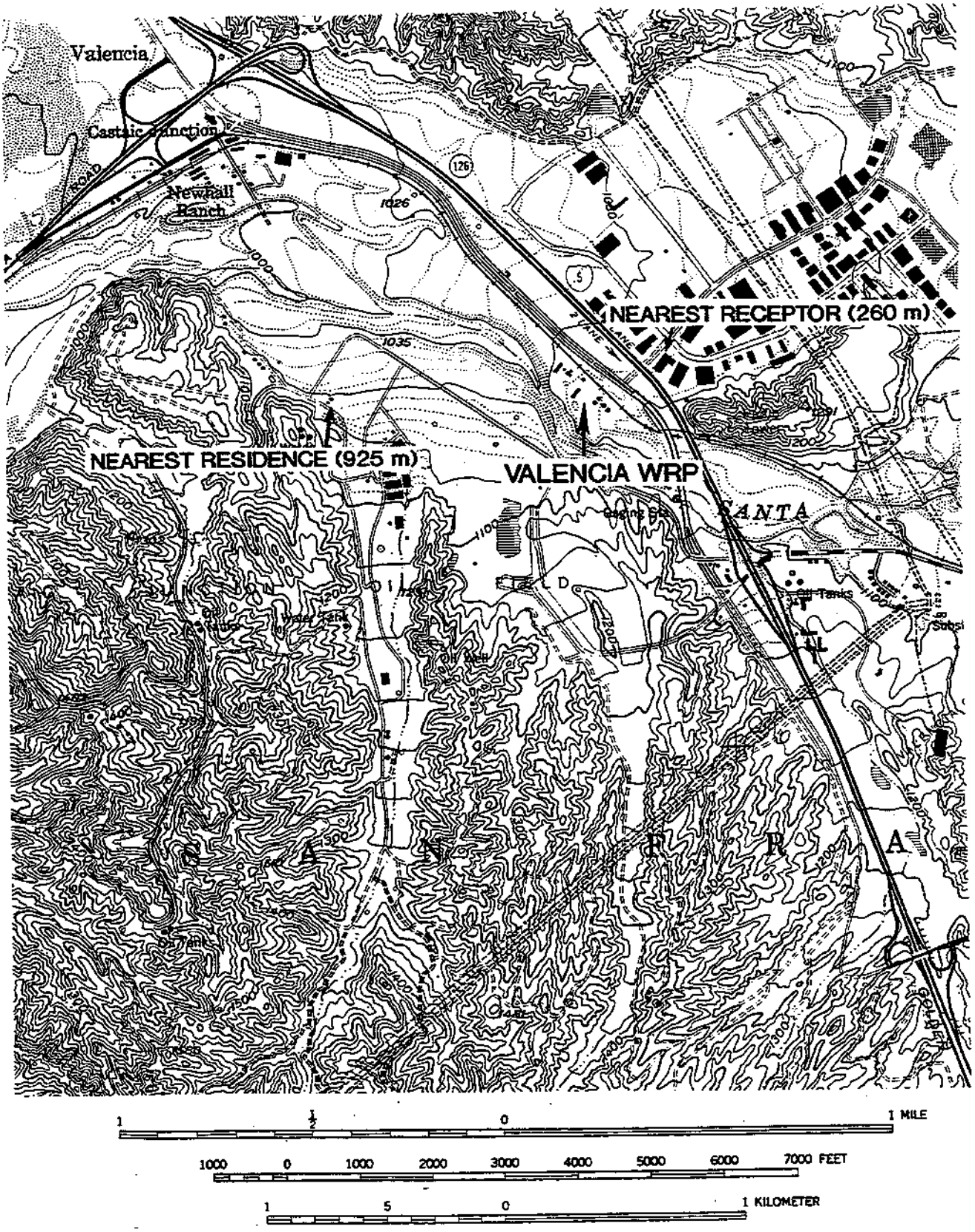
Important! If distance is less than 250 meters (270 yards or 810 feet) and more than 50 meters (54 yards or 160 feet), provide actual distance in meters.

_____ meters.

Documentation must be provided to support the distance information provided. Include copies of appropriate maps with map scale (in feet, meters, etc.). U.S. Geological Survey (7 1/2 minute), "Thomas Brothers Guide", "Auto Club" or other similar maps are acceptable if the map provides sufficient detail.

Operating Hours/Day 24

Inventory Plan Year 91



USGS Topographic Map of Valencia WRP

NEWHALL QUADRANGLE

EMISSION YEAR 1991	AIR TOXICS EMISSION DATA SYSTEM REVIEW & UPDATE REPORT FACILITY DESCRIPTION	FORM FAC

FACILITY DATA

COMPANY NAME: LA COUNTY SANITATION DISTRICTS

ADDRESS: 28185 THE OLD ROAD

CITY: VALENCIA CA

ZIP CODE: 91355-

CONTACT PERSON: CHING-LIN CHEN

TELEPHONE: 310-699-7411

FACILITY SIC: 4952

NUMBER OF EMPLOYEES: 10

MAILING ADDRESS DATA

COMPANY NAME: LA COUNTY SANITATION DISTRICTS

ADDRESS: PO BOX 4998

CITY: WHITTIER

STATE: CA

ZIP CODE: 90607-4998

ATTENTION: CHING-LIN CHEN

FOR OFFICE USE ONLY

COUNTY ID:

FACILITY ID:

ACTION CODE:

DISTRICT:

AIR BASIN CODE:

CITY CODE (OPTIONAL):

AQCR (OPTIONAL):

SUBCOUNTY ID:

FACD1 (OPTIONAL):

FACD2 (OPTIONAL):

UTM ZONE:

UTM EAST:

UTM NORTH:

ARB/FAC/080289

NAME: _____ DATE: _____

EMISSION YEAR 1991	AIR TOXICS EMISSION DATA SYSTEM REVIEW & UPDATE REPORT STACK DATA	FORM STK

FOR OFFICE USE ONLY COUNTY ID: FACILITY ID:

DO NOT DELETE STACK IF IT SERVES OTHER DEVICES. SEE INSTRUCTIONS

DESC CODE	STACK/VENT CATEGORY	REQUIRED INFORMATION
	AMBIENT TEMP & LOW-VELOCITY EXHAUST (T W/IN 25 F OF AMBIENT & V LT 750 FPM)	
1	RELEASE POINT(RP) AT GROUND-LEVEL	STACK ID & CODE ONLY
2	RELEASE FROM BLDG HVAC ONLY	STACK ID, CODE, & STACK HEIGHT
3	RP W/IN (2.5 X HB) ABOVE GROUND AND W/IN (5 X HB) SIDEWAYS TO NEAREST BLDG	STACK ID, CODE & STACK HEIGHT
4	OTHER STACK/VENT (LOW T,V)	STACK ID, CODE & STACK HEIGHT
	OTHER TEMP & FLOW CONDITIONS	
5	RP W/IN (2.5 X HB) ABOVE GROUND AND W/IN (5 X HB) SIDEWAYS TO NEAREST BLDG	ALL STACK INFORMATION
6	OTHER STACK/VENT (OTHER T,V)	ALL STACK INFORMATION

WHERE HB = HEIGHT OF NEAREST BUILDING AND HVAC = HEATING, VENTILATING AND AIR CONDITIONING

OFC USE

********** EXHAUST **********

ACTION CODE	STACK ID	DESC CODE	HEIGHT ABOVE GROUND (FEET)	DIAMETER (FEET)	GAS TEMP (F)	GAS FLOW RATE (CFM)	GAS VELOCITY (FPM)	*OFC USE ONLY* UTM EAST (KILOMETER)	UTM NORTH (KILOMETER)
	90001	3	12						
	90002	3	18						
	90003	5	17	0.833	350	651	1192		
	90004	5	20	0.433	325	2220	3765		

ARB/STK/890323

NAME _____ DATE _____

EMISSION YEAR 19 91	AIR TOXICS EMISSION DATA SYSTEM REVIEW & UPDATE REPORT STACK DATA	FORM STK

FOR OFFICE USE ONLY COUNTY ID: FACILITY ID:

DO NOT DELETE STACK IF IT SERVES OTHER DEVICES. SEE INSTRUCTIONS

DESC CODE	STACK/VENT CATEGORY	REQUIRED INFORMATION
	AMBIENT TEMP & LOW-VELOCITY EXHAUST (T W/IN 25 F OF AMBIENT & V LT 750 FPM)	
1	RELEASE POINT(RP) AT GROUND-LEVEL	STACK ID & CODE ONLY
2	RELEASE FROM BLDG HVAC ONLY	STACK ID, CODE, & STACK HEIGHT
3	RP W/IN (2.5 X HB) ABOVE GROUND AND W/IN (5 X HB) SIDEWAYS TO NEAREST BLDG	STACK ID, CODE & STACK HEIGHT
4	OTHER STACK/VENT (LOW T,V)	STACK ID, CODE & STACK HEIGHT
	OTHER TEMP & FLOW CONDITIONS	
5	RP W/IN (2.5 X HB) ABOVE GROUND AND W/IN (5 X HB) SIDEWAYS TO NEAREST BLDG	ALL STACK INFORMATION
6	OTHER STACK/VENT (OTHER T,V)	ALL STACK INFORMATION

WHERE HB = HEIGHT OF NEAREST BUILDING AND HVAC = HEATING, VENTILATING AND AIR CONDITIONING

OFC USE

********* EXHAUST *********

ACTION CODE	STACK ID	DESC CODE	HEIGHT ABOVE GROUND (FEET)	DIAMETER (FEET)	GAS TEMP (F)	GAS FLOW RATE (CFM)	GAS VELOCITY (FPM)	*OFC USE ONLY* UTM EAST (KILOMETER)	UTM NORTH (KILOMETER)
	90005	5	27	2.75	1675	5300	840		
	90006	5	27	2.75	1675	5300	840		
	90007	5	15	1	63	764	978		
	90008	3	25						

NAME_____ DATE_____

ARB/STK/890323

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW & UPDATE REPORT
DEVICE DESCRIPTION AND DEVICE-STACK RELATIONS

FORM **DEV**

FOR OFFICE USE ONLY

COUNTY ID: 1

FACILITY ID:

OFC USE

***** OFFICE USE ONLY *****
*** EACH ITEM IS OPTIONAL ***

ACTION CODE	DEVICE ID	DEVICE NAME	NBR OF DEV.	DEVD1	DEVICE GROUP	DEVD2
	70001	Aerated Grit Channels	2			

STACK ID	PERMIT ID (IF AVAILABLE)
90001	P68029

ACTION CODE	DEVICE ID	DEVICE NAME	NBR OF DEV.	DEVD1	DEVICE GROUP	DEVD2
	70002	Aeration Tanks	6			

	STACK ID	PERMIT ID (IF AVAILABLE)
Fugitive Emissions	50001	P68101

ACTION CODE	DEVICE ID	DEVICE NAME	NBR OF DEV.	DEVD1	DEVICE GROUP	DEVD2
	70003	Secondary Clarifiers	6			

	STACK ID	PERMIT ID (IF AVAILABLE)
Fugitive Emissions	50002	P68101

ACTION CODE	DEVICE ID	DEVICE NAME	NBR OF DEV	DEVD1	DEVICE GROUP	DEVD2
	70004	Weirs	6			

	STACK ID	PERMIT ID (IF AVAILABLE)
Fugitive Emissions	50003	P68101

ACTION CODE	DEVICE ID	DEVICE NAME	NBR OF DEV.	DEVD1	DEVICE GROUP	DEVD2
	70005	Chlorine Dosing Station	1			

	STACK ID	PERMIT ID (IF AVAILABLE)
Fugitive Emissions	50004	P68101

ACTION CODE	DEVICE ID	DEVICE NAME	NBR OF DEV.	DEVD1	DEVICE GROUP	DEVD2
	70006	Chlorine Contact Tanks	2			

	STACK ID	PERMIT ID (IF AVAILABLE)
Fugitive Emissions	50005	P68101

ARB/DEV/240:39

NAME _____ DATE _____

EMISSION YEAR 1991

AIR TOXICS EMISSION DATA SYSTEM REVIEW & UPDATE REPORT
DEVICE DESCRIPTION AND DEVICE-STACK RELATIONS

FORM **DEV**

FOR OFFICE USE ONLY

COUNTY ID

FACILITY ID

OFC USE

***** OFFICE USE ONLY *****
*** EACH ITEM IS OPTIONAL ***

ACTION CODE	DEVICE ID	DEVICE NAME	NBR OF DEV.	DEVD1	DEVICE GROUP	DEVD2
	70007	Dechlorination	1			

STACK ID	PERMIT ID (IF AVAILABLE)
50006	P68101

Fugitive Emissions

ACTION CODE	DEVICE ID	DEVICE NAME	NBR OF DEV.	DEVD1	DEVICE GROUP	DEVD2
	70008	Dissolved Air Flotation	3			

STACK ID	PERMIT ID (IF AVAILABLE)
90002	126624

ACTION CODE	DEVICE ID	DEVICE NAME	NBR OF DEV.	DEVD1	DEVICE GROUP	DEVD2
	70009	Anaerobic Digesters	4			

STACK ID	PERMIT ID (IF AVAILABLE)
50007	P68101

Fugitive Emissions

ACTION CODE	DEVICE ID	DEVICE NAME	NBR OF DEV	DEVD1	DEVICE GROUP	DEVD2
	70010	Boiler	1			

STACK ID	PERMIT ID (IF AVAILABLE)
90003	126587

ACTION CODE	DEVICE ID	DEVICE NAME	NBR OF DEV.	DEVD1	DEVICE GROUP	DEVD2
	70011	Co-generation Unit	1			

STACK ID	PERMIT ID (IF AVAILABLE)
90004	125244

ACTION CODE	DEVICE ID	DEVICE NAME	NBR OF DEV.	DEVD1	DEVICE GROUP	DEVD2
	70012	Flares	2			

STACK ID	PERMIT ID (IF AVAILABLE)
90005-6	P68245

ARB/DEV/240389

NAME _____ DATE _____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW & UPDATE REPORT
DEVICE DESCRIPTION AND DEVICE-STACK RELATIONS

FORM **DEV**

FOR OFFICE USE ONLY

COUNTY ID

FACILITY ID

OFC USE

ACTION CODE	DEVICE ID	DEVICE NAME	NBR OF DEV.	STACK ID	PERMIT ID (IF AVAILABLE)	DEVD1	DEVICE GROUP	DEVD2
	70013	Filter Presses	2	50008 (Fugitive Emissions)	125243			
	70014	Digester Cleaning Station	1	90007	125247			
	70015	Lab Fume Hood	1	90008				

***** OFFICE USE ONLY *****
*** EACH ITEM IS OPTIONAL ***

ARB/DEV/240389

NAME _____ DATE _____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA

FORM **PRO** SIDE A

FOR OFFICE USE ONLY

PROCESS DESCRIPTION: | C | SCC NO: | COUNTY ID: | AIR BASIN:

ACTION CODE | PROD1 (OPTIONAL) | PROD2 (OPTIONAL) | FACILITY ID:

STOP FILL OUT ANY SUPPLEMENTAL PROCESS FORM(S) FOR THIS PROCESS FIRST. THEN FILL OUT THIS PAGE, SUBMITTING ONE FOR EACH EMITTING PROCESS IN YOUR FACILITY.

SECTION 1
PROCESS DATA

DEVICE I.D.: 70001

SIC: 4952

CONFIDENTIAL (Y/N) IF Y CHECK SMALL BOXES AS APPROPRIATE: N

PROCESS EQUIPMENT DESCRIPTION: Aerated Grit Chamber | C

FUEL TYPE /OTHER PROCESS INFO: | C

NOTE USE 1 SPACE FOR EACH DECIMAL POINT

TOTAL YEARLY PROCESS RATE (UNITS/YR)	MAXIMUM HOURLY PROCESS RATE (UNITS/HR)	PROCESS UNITS	HRS/ DAY	DAYS/ WEEK	WKS/ YEAR
2871.91 C	0.792 C	P T 077 C	24 C	7 C	52 C

RELATIVE MONTHLY ACTIVITY (%) C

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33

OFFICE USE ONLY

SECTION 2

EMITTENT DATA					EMISSIONS
EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	*CONTROL EQPT CODES* PRIMARY / SECONDARY	OVERALL CONTROL EFF(%) / FULL/ PART	ANNUAL AVERAGE EMISSIONS (LBS/YR) / HOURLY MAX EMISSIONS (LBS/HOUR)
67663	06 C	0.000048 C	001 C / 000 C	70.0 C / F C	0.14 / 0.000038
75092	06 C	0.0000091 C	001 C / 000 C	70.0 C / F C	0.03 / 0.000007

ACTION CODE | ALLOWABLE EMIS LBS/YR(OPTIONAL)

ARB/PRO/890327

NAME _____ DATE _____

EMISSION YEAR 1991

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA
(ADDITIONAL EMITTENTS)

FORM PRO SIDE B

OFFICE USE ONLY
CO. _____
FACID _____

DEVICE ID: 70001

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ACTION CODE	ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
127184	06	0.00014	0.40			001	000	70.0	F	0.00011
108883	06	0.0000056	0.02			001	000	70.0	F	0.000004
71556	06	0.00025	0.71			001	000	70.0	F	0.00020
79016	06	0.0000063	0.02			001	000	70.0	F	0.000005
1210	06	0.0000007	0.002			001	000	70.0	F	0.000001

ARB/PROB/8903176

NAME _____ DATE _____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA

FORM **PRO** SIDE A

FOR OFFICE USE ONLY

PROCESS DESCRIPTION: | C

SCC NO:

COUNTY ID:

AIR BASIN:

ACTION CODE:

PROD1 (OPTIONAL):

PROD2 (OPTIONAL):

FACILITY ID:

STOP FILL OUT ANY SUPPLEMENTAL PROCESS FORM(S) FOR THIS PROCESS FIRST. THEN FILL OUT THIS PAGE, SUBMITTING ONE FOR EACH EMITTING PROCESS IN YOUR FACILITY.

SECTION 1
PROCESS DATA

DEVICE I.D.: 70002

SIC: 4952

CONFIDENTIAL (Y/N) IF Y CHECK SMALL BOXES AS APPROPRIATE: N

PROCESS EQUIPMENT DESCRIPTION: Aeration Tanks | C

FUEL TYPE /OTHER PROCESS INFO: | C

NOTE USE 1 SPACE FOR EACH DECIMAL POINT

TOTAL YEARLY PROCESS RATE (UNITS/YR)	MAXIMUM HOURLY PROCESS RATE (UNITS/HR)	PROCESS UNITS	HRS/ DAY	DAYS/ WEEK	WKS/ YEAR
2871.91 C	0.792 C	077 C P T	24 C	7 C	52 C

RELATIVE MONTHLY ACTIVITY (%) C

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33

OFFICE USE ONLY

SECTION 2

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR(OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	67663	06 C	0.01115 C	32.03		000 C	000 C	0000 C	F C	0.00883
	106467	06 C	0.00248 C	7.13		000 C	000 C	0000 C	F C	0.00197

ARB/PRO/890327

NAME _____ DATE _____

EMISSION YEAR 19 91	AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT PROCESS AND EMITTENTS DATA (ADDITIONAL EMITTENTS)	FORM PRO SIDE B

OFFICE USE ONLY
CO: _____
FACID _____

DEVICE ID: 70002

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	75092	06	0.00185	5.30

ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	000	000	0000	F	0.00146

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	127184	06	0.02026	58.19

ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	000	000	0000	F	0.01605

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	108883	06	0.00227	6.53

ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	000	000	0000	F	0.00180

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	71556	06	0.03427	98.42

ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	000	000	0000	F	0.02714

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	79016	06	0.00069	1.98

ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	000	000	0000	F	0.00055

ARB/PROB/8903176

NAME _____ DATE _____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA
(ADDITIONAL EMITTENTS)

FORM **PRO** SIDE B

OFFICE USE ONLY
CO. _____
FACID _____

DEVICE ID: 70002

EMITTENT DATA / EMISSIONS

ACTION CODE:
ALLOWABLE EMIS LBS/YR (OPTIONAL):

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
1210	06 C	0.00105 C	3.01

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
000 C	000 C	0000 C	F C	0.00083

ACTION CODE:
ALLOWABLE EMIS LBS/YR (OPTIONAL):

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	C	C	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
C	C	C	C	

ACTION CODE:
ALLOWABLE EMIS LBS/YR (OPTIONAL):

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	C	C	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
C	C	C	C	

ACTION CODE:
ALLOWABLE EMIS LBS/YR (OPTIONAL):

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	C	C	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
C	C	C	C	

ACTION CODE:
ALLOWABLE EMIS LBS/YR (OPTIONAL):

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	C	C	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
C	C	C	C	

ARB/PROB/8903176

NAME _____ DATE _____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA

FORM **PRO** SIDE A

FOR OFFICE USE ONLY

PROCESS DESCRIPTION: | C | SCC NO: | COUNTY ID: | AIR BASIN:

ACTION CODE | PROD1 (OPTIONAL) | PROD2 (OPTIONAL) | FACILITY ID:

STOP FILL OUT ANY SUPPLEMENTAL PROCESS FORM(S) FOR THIS PROCESS FIRST. THEN FILL OUT THIS PAGE, SUBMITTING ONE FOR EACH EMITTING PROCESS IN YOUR FACILITY.

SECTION 1
PROCESS DATA

DEVICE I.D.: 70003

SIC: 4952

CONFIDENTIAL (Y/N) IF Y CHECK SMALL BOXES AS APPROPRIATE: N

PROCESS EQUIPMENT DESCRIPTION: Secondary Clarifiers C

FUEL TYPE /OTHER PROCESS INFO: C

NOTE USE 1 SPACE FOR EACH DECIMAL POINT

TOTAL YEARLY PROCESS RATE (UNITS/YR)	MAXIMUM HOURLY PROCESS RATE (UNITS/HR)	PROCESS UNITS	HRS/ DAY	DAYS/ WEEK	WKS/ YEAR
2871.91 C	0.792 C	P T 077 C	24 C	7 C	52 C

RELATIVE MONTHLY ACTIVITY (%) C

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33

OFFICE USE ONLY

SECTION 2

EMITTENT DATA					EMISSIONS
ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)		ANNUAL AVERAGE EMISSIONS (LBS/YR)
	67663	06 C	0.000040 C		0.11
ALLOWABLE EMIS LBS/YR(OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	000 C	000 C	0000 C	F C	0.00003
ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)		ANNUAL AVERAGE EMISSIONS (LBS/YR)
	75092	06 C	0.0000077 C		0.02
ALLOWABLE EMIS LBS/YR(OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	000 C	000 C	0000 C	F C	0.00001

ARB/PRO/890327

NAME _____ *DATE* _____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA

FORM **PRO** SIDE A

FOR OFFICE USE ONLY

PROCESS DESCRIPTION: | C | SCC NO: | COUNTY ID: | AIR BASIN:

ACTION CODE: | PROD1 (OPTIONAL): | PROD2 (OPTIONAL): | FACILITY ID:

STOP FILL OUT ANY SUPPLEMENTAL PROCESS FORM(S) FOR THIS PROCESS FIRST. THEN FILL OUT THIS PAGE, SUBMITTING ONE FOR EACH EMITTING PROCESS IN YOUR FACILITY.

SECTION 1
PROCESS DATA

DEVICE I.D.: 70004

SIC: 4952

CONFIDENTIAL (Y/N) IF Y CHECK SMALL BOXES AS APPROPRIATE: N

PROCESS EQUIPMENT DESCRIPTION: Weirs C

FUEL TYPE /OTHER PROCESS INFO: C

NOTE USE 1 SPACE FOR EACH DECIMAL POINT

TOTAL YEARLY PROCESS RATE (UNITS/YR)	MAXIMUM HOURLY PROCESS RATE (UNITS/HR)	PROCESS UNITS	HRS/ DAY	DAYS/ WEEK	WKS/ YEAR
2871.91 C	0.792 C	P T 077 C	24 C	7 C	52 C

RELATIVE MONTHLY ACTIVITY (%) C

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33

OFFICE USE ONLY

SECTION 2

EMITTENT DATA						EMISSIONS
ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	67663	06 C	0.000038 C	000 C	000 C	0.11
ALLOWABLE EMIS LBS/YR(OPTIONAL)	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)			
	0000 C	F C	0.00003			

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	ANNUAL AVERAGE EMISSIONS (LBS/YR)
		C	C	C	C	
ALLOWABLE EMIS LBS/YR(OPTIONAL)	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)			
	C	C				

ARB/PRO/890327

NAME _____ *DATE* _____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA

FORM **PRO** SIDE A

FOR OFFICE USE ONLY

PROCESS DESCRIPTION: | C | SCC NO: | COUNTY ID: | AIR BASIN:

ACTION CODE | PROD1 (OPTIONAL) | PROD2 (OPTIONAL) | FACILITY ID:

STOP FILL OUT ANY SUPPLEMENTAL PROCESS FORM(S) FOR THIS PROCESS FIRST. THEN FILL OUT THIS PAGE, SUBMITTING ONE FOR EACH EMITTING PROCESS IN YOUR FACILITY.

SECTION 1
PROCESS DATA

DEVICE I.D.: 70005

SIC: 4952

CONFIDENTIAL (Y/N) IF Y CHECK SMALL BOXES AS APPROPRIATE: N

PROCESS EQUIPMENT DESCRIPTION: Chlorine Dosing Station | C

FUEL TYPE /OTHER PROCESS INFO: | C

NOTE USE 1 SPACE FOR EACH DECIMAL POINT

TOTAL YEARLY PROCESS RATE (UNITS/YR)	MAXIMUM HOURLY PROCESS RATE (UNITS/HR)	PROCESS UNITS	HRS/ DAY	DAYS/ WEEK	WKS/ YEAR
13 C	1 C	P T 011 C	01 C	1 C	13 C

RELATIVE MONTHLY ACTIVITY (%) C

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33

OFFICE USE ONLY

ACTION CODE

ALLOWABLE EMIS LBS/YR(OPTIONAL)

SECTION 2

EMITTENT DATA					EMISSIONS
EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	*CONTROL EQPT CODES* PRIMARY / SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	ANNUAL AVERAGE EMISSIONS (LBS/YR)	HOURLY MAX EMISSIONS (LBS/HOUR)
7782505	07 C	0.00362 C	050 C / 046 C	100 C	F C	0.05	0.00364

ACTION CODE

ALLOWABLE EMIS LBS/YR(OPTIONAL)

ARB/PRO/890327

NAME _____ DATE _____

EMISSION YEAR 1991

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA

FORM PRO SIDE A

FOR OFFICE USE ONLY

PROCESS DESCRIPTION: C

SCC NO:

COUNTY ID:

AIR BASIN:

ACTION CODE:

PROD1 (OPTIONAL):

PROD2 (OPTIONAL):

FACILITY ID:

STOP FILL OUT ANY SUPPLEMENTAL PROCESS FORM(S) FOR THIS PROCESS FIRST. THEN FILL OUT THIS PAGE, SUBMITTING ONE FOR EACH EMITTING PROCESS IN YOUR FACILITY.

SECTION 1
PROCESS DATA

DEVICE I.D.: 70006

SIC: 4952

CONFIDENTIAL (Y/N) IF Y CHECK SMALL BOXES AS APPROPRIATE: N

PROCESS EQUIPMENT DESCRIPTION: Chlorine Contact Tanks C

FUEL TYPE /OTHER PROCESS INFO: C

NOTE USE 1 SPACE FOR EACH DECIMAL POINT

TOTAL YEARLY PROCESS RATE (UNITS/YR)	MAXIMUM HOURLY PROCESS RATE (UNITS/HR)	PROCESS UNITS	HRS/ DAY	DAYS/ WEEK	WKS/ YEAR
2871.91 C	0.792 C	P T 077 C	24 C	7 C	52 C

RELATIVE MONTHLY ACTIVITY (%) C

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33

OFFICE USE ONLY

SECTION 2

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ACTION CODE	ALLOWABLE EMIS LBS/YR(OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
67663	06 C	0.000054 C	0.15			000 C	000 C	0000 C	F C	0.00004
106467	06 C	0.00016 C	0.45			000 C	000 C	0000 C	F C	0.00012

ARB/PRO/890327

NAME _____ DATE _____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA
(ADDITIONAL EMITTENTS)

FORM **PRO** SIDE B

OFFICE USE ONLY
CO: _____
FACID: _____

DEVICE ID: 70006 1

EMITTENT DATA / EMISSIONS

ACTION CODE: [ ]
ALLOWABLE EMIS LBS/YR (OPTIONAL): [ ]

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
50000	06 C	0.0000003 C	0.001

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
000 C	000 C	0000 C	F C	0.0000002

ACTION CODE: [ ]
ALLOWABLE EMIS LBS/YR (OPTIONAL): [ ]

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	C	C	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
C	C	C	C	

ACTION CODE: [ ]
ALLOWABLE EMIS LBS/YR (OPTIONAL): [ ]

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	C	C	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
C	C	C	C	

ACTION CODE: [ ]
ALLOWABLE EMIS LBS/YR (OPTIONAL): [ ]

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	C	C	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
C	C	C	C	

ACTION CODE: [ ]
ALLOWABLE EMIS LBS/YR (OPTIONAL): [ ]

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	C	C	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
C	C	C	C	

ARB/PROB/8903176

NAME _____ DATE _____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA

FORM **PRO** SIDE A

FOR OFFICE USE ONLY

PROCESS DESCRIPTION: | C | SCC NO: | COUNTY ID: | AIR BASIN:

ACTION CODE | PROD1 (OPTIONAL) | PROD2 (OPTIONAL) | FACILITY ID:

STOP FILL OUT ANY SUPPLEMENTAL PROCESS FORM(S) FOR THIS PROCESS FIRST. THEN FILL OUT THIS PAGE, SUBMITTING ONE FOR EACH EMITTING PROCESS IN YOUR FACILITY.

SECTION 1
PROCESS DATA

DEVICE I.D.: 70007

SIC: 4952

CONFIDENTIAL (Y/N) IF Y CHECK SMALL BOXES AS APPROPRIATE: N

PROCESS EQUIPMENT DESCRIPTION: Dechlorination Tank C

FUEL TYPE /OTHER PROCESS INFO: C

NOTE USE 1 SPACE FOR EACH DECIMAL POINT

TOTAL YEARLY PROCESS RATE (UNITS/YR)	MAXIMUM HOURLY PROCESS RATE (UNITS/HR)	PROCESS UNITS	HRS/ DAY	DAYS/ WEEK	WKS/ YEAR
2871.91 C	0.792 C	077 C (P T)	24 C	7 C	52 C

RELATIVE MONTHLY ACTIVITY (%) C

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33

OFFICE USE ONLY

SECTION 2

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR(OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	67663	06 C	0.00326 C	9.35		000 C	000 C	0000 C	F C	0.00258
	106467	06 C	0.01150 C	33.03		000 C	000 C	0000 C	F C	0.00911

ARB/PRO/890327

NAME_____ DATE_____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA
(ADDITIONAL EMITTENTS)

FORM **PRO** SIDE B

OFFICE USE ONLY
CO. _____
FACID _____

DEVICE ID 70007

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	50000	06 C	0.01935 C	55.57

ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	000 C	000 C	0000 C	F C	0.01533

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
		C	C	

ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	C	C	C	C	

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
		C	C	

ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	C	C	C	C	

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
		C	C	

ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	C	C	C	C	

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
		C	C	

ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	C	C	C	C	

ARB/PROB/8903176

NAME _____ *DATE* _____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA

FORM **PRO** SIDE A

FOR OFFICE USE ONLY

PROCESS DESCRIPTION: | C | SCC NO: | COUNTY ID: | AIR BASIN:

ACTION CODE | PROD1 (OPTIONAL) | PROD2 (OPTIONAL) | FACILITY ID:

STOP FILL OUT ANY SUPPLEMENTAL PROCESS FORM(S) FOR THIS PROCESS FIRST. THEN FILL OUT THIS PAGE, SUBMITTING ONE FOR EACH EMITTING PROCESS IN YOUR FACILITY.

SECTION 1
PROCESS DATA

DEVICE I.D.: 70008

SIC: 4952

CONFIDENTIAL (Y/N) IF Y CHECK SMALL BOXES AS APPROPRIATE: N

PROCESS EQUIPMENT DESCRIPTION: Dissolved Air Flotation C

FUEL TYPE /OTHER PROCESS INFO: C

NOTE USE 1 SPACE FOR EACH DECIMAL POINT

TOTAL YEARLY PROCESS RATE (UNITS/YR)	MAXIMUM HOURLY PROCESS RATE (UNITS/HR)	PROCESS UNITS	HRS/ DAY	DAYS/ WEEK	WKS/ YEAR
80.94 C	0.0145 C	P T 077 C	24 C	7 C	52 C

RELATIVE MONTHLY ACTIVITY (%) C

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33

OFFICE USE ONLY

SECTION 2

EMITTENT DATA				EMISSIONS
EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)		ANNUAL AVERAGE EMISSIONS (LBS/YR)
67663	06 C	0.00039 C		0.03
CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
001 C	028 C	95.5 C	F C	0.0000056

ACTION CODE | ALLOWABLE EMIS LBS/YR(OPTIONAL)

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)		ANNUAL AVERAGE EMISSIONS (LBS/YR)
106467	06 C	0.00022 C		0.02
CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
001 C	028 C	95.5 C	F C	0.0000032

ACTION CODE | ALLOWABLE EMIS LBS/YR(OPTIONAL)

ARB/PRO/890327

NAME _____ *DATE* _____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA
(ADDITIONAL EMITTENTS)

FORM **PRO** SIDE B

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CO. _____
FACID _____

DEVICE ID: 70008

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR (OPTIONAL)
	75092	06 C	0.00013 C	0.01	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
001 C	028 C	95.5 C	F C	0.0000019

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR (OPTIONAL)
	127184	06 C	0.00089 C	0.07	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
001 C	028 C	95.5 C	F C	0.000013

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR (OPTIONAL)
	71556	06 C	0.00228 C	0.18	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
001 C	028 C	95.5 C	F C	0.000033

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR (OPTIONAL)
	79016	06 C	0.000022 C	0.002	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
001 C	028 C	95.5 C	F C	0.0000003

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR (OPTIONAL)
	50000	06 C	0.0000005 C	0.00004	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
001 C	028 C	95.5 C	F C	0.00000001

ARB/PROB/8903176

NAME _____ DATE _____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA

FORM **PRO** SIDE A

FOR OFFICE USE ONLY

PROCESS DESCRIPTION: | C | SCC NO: | COUNTY ID: | AIR BASIN:

ACTION CODE: | PROD1 (OPTIONAL): | PROD2 (OPTIONAL): | FACILITY ID:

STOP FILL OUT ANY SUPPLEMENTAL PROCESS FORM(S) FOR THIS PROCESS FIRST. THEN FILL OUT THIS PAGE, SUBMITTING ONE FOR EACH EMITTING PROCESS IN YOUR FACILITY.

SECTION 1
PROCESS DATA

DEVICE I.D.: 70009

SIC: 4952

CONFIDENTIAL (Y/N) IF Y CHECK SMALL BOXES AS APPROPRIATE: N

PROCESS EQUIPMENT DESCRIPTION: Anaerobic Digesters | C

FUEL TYPE /OTHER PROCESS INFO: | C

NOTE USE 1 SPACE FOR EACH DECIMAL POINT

TOTAL YEARLY PROCESS RATE (UNITS/YR)	MAXIMUM HOURLY PROCESS RATE (UNITS/HR)	PROCESS UNITS	HRS/ DAY	DAYS/ WEEK	WKS/ YEAR
29015	3.312	P T 009	24	7	52

RELATIVE MONTHLY ACTIVITY (%) C

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33

OFFICE USE ONLY

SECTION 2

EMITTENT DATA					EMISSIONS
EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	*CONTROL EQPT CODES* PRIMARY / SECONDARY	OVERALL CONTROL EFF(%) / FULL/ PART	ANNUAL AVERAGE EMISSIONS (LBS/YR) / HOURLY MAX EMISSIONS (LBS/HOUR)
71432	10	0.00000007	017 / 050	100 / F	0.002 / 0.0000002
106467	10	0.0000006	017 / 050	100 / F	0.02 / 0.0000019

ACTION CODE: | ALLOWABLE EMIS LBS/YR(OPTIONAL):

ACTION CODE: | ALLOWABLE EMIS LBS/YR(OPTIONAL):

ARB/PRO/890327

NAME _____ DATE _____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA
(ADDITIONAL EMITTENTS)

FORM **PRO** SIDE B

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FACID _____

DEVICE ID: 70009

ACTION CODE	ALLOWABLE EMIS LBS/YR (OPTIONAL)	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
		50000	10	0.000000005	0.0002	017	050	100	F	0.00000002
		7783064	10	0.00036	10.42	017	050	100	F	0.00119
		75092	10	0.00000015	0.004	017	050	100	F	0.0000005
		127184	10	0.00000061	0.02	017	050	100	F	0.000002
		108883	10	0.0000029	0.08	017	050	100	F	0.0000096

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NAME _____ DATE _____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA
(ADDITIONAL EMITTENTS)

FORM **PRO** SIDE B

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CO: _____
FACID _____

DEVICE ID: 70009

EMITTENT DATA / EMISSIONS

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR (OPTIONAL)
	79016	10 C	0.00000027 C	0.008	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
017 C	050 C	100 C	F C	0.0000009

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR (OPTIONAL)
	75014	10 C	0.0000065 C	0.19	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
017 C	050 C	100 C	F C	0.000021

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR (OPTIONAL)
	1210	10 C	0.0000032 C	0.09	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
017 C	050 C	100 C	F C	0.0000105

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR (OPTIONAL)
		C	C		

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
C	C	C	C	

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR (OPTIONAL)
		C	C		

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
C	C	C	C	

ARB/PROB/8903176

NAME _____ DATE _____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA

FORM PRO SIDE A

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PROCESS DESCRIPTION: | C | SCC NO: | COUNTY ID: | AIR BASIN:

ACTION CODE | PROD1 (OPTIONAL) | PROD2 (OPTIONAL) | FACILITY ID:

STOP FILL OUT ANY SUPPLEMENTAL PROCESS FORM(S) FOR THIS PROCESS FIRST. THEN FILL OUT THIS PAGE, SUBMITTING ONE FOR EACH EMITTING PROCESS IN YOUR FACILITY.

SECTION 1
PROCESS DATA

DEVICE I.D.: 70010

SIC: 4952

CONFIDENTIAL (Y/N) IF Y CHECK SMALL BOXES AS APPROPRIATE: N

PROCESS EQUIPMENT DESCRIPTION: Boiler C

FUEL TYPE /OTHER PROCESS INFO: Digester Gas C

NOTE USE 1 SPACE FOR EACH DECIMAL POINT

TOTAL YEARLY PROCESS RATE (UNITS/YR)	MAXIMUM HOURLY PROCESS RATE (UNITS/HR)	PROCESS UNITS	HRS/ DAY	DAYS/ WEEK	WKS/ YEAR
5.738 C	0.0075 C	P T 074 C	24 C	7 C	52 C

RELATIVE MONTHLY ACTIVITY (%) C

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33

OFFICE USE ONLY

SECTION 2

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
75070	06 C	0.004705 C	0.03

ACTION CODE | ALLOWABLE EMIS (LBS/YR)(OPTIONAL)

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
017 C	050 C	100 C	F C	0.000036

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
50000	06 C	0.0115 C	0.07

ACTION CODE | ALLOWABLE EMIS (LBS/YR)(OPTIONAL)

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
017 C	050 C	100 C	F C	0.000086

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NAME _____ DATE _____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA
(ADDITIONAL EMITTENTS)

FORM **PRO** SIDE B

OFFICE USE ONLY
CO: _____
FACID: _____

DEVICE ID: 70010

EMITTENT DATA					EMISSIONS
ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)		ANNUAL AVERAGE EMISSIONS (LBS/YR)
	108883	06 C	0.0293 C		0.17
ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	017 C	050 C	100 C	F C	0.00022
ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)		ANNUAL AVERAGE EMISSIONS (LBS/YR)
		C	C		
ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	C	C	C	C	
ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)		ANNUAL AVERAGE EMISSIONS (LBS/YR)
		C	C		
ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	C	C	C	C	
ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)		ANNUAL AVERAGE EMISSIONS (LBS/YR)
		C	C		
ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	C	C	C	C	
ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)		ANNUAL AVERAGE EMISSIONS (LBS/YR)
		C	C		
ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	C	C	C	C	

ARB/PROB/8903176

NAME _____ DATE _____

EMISSION YEAR 1991	AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT PROCESS AND EMITTENTS DATA	FORM PRO SIDE A

FOR OFFICE USE ONLY

PROCESS DESCRIPTION C | SCC NO | COUNTY ID: | AIR BASIN

ACTION CODE | PROD1 (OPTIONAL) | PROD2 (OPTIONAL) | FACILITY ID:

STOP FILL OUT ANY SUPPLEMENTAL PROCESS FORM(S) FOR THIS PROCESS FIRST. THEN FILL OUT THIS PAGE, SUBMITTING ONE FOR EACH EMITTING PROCESS IN YOUR FACILITY.

SECTION 1 PROCESS DATA

DEVICE I.D.: 70011

SIC: 4952

CONFIDENTIAL (Y/N) IF Y CHECK SMALL BOXES AS APPROPRIATE: N

PROCESS EQUIPMENT DESCRIPTION: Co-generation Unit C

FUEL TYPE /OTHER PROCESS INFO: Digester Gas C

NOTE USE 1 SPACE FOR EACH DECIMAL POINT

TOTAL YEARLY PROCESS RATE (UNITS/YR)	MAXIMUM HOURLY PROCESS RATE (UNITS/HR)	PROCESS UNITS	HRS/DAY	DAYS/WEEK	WKS/YEAR
27.431 C	0.0142 C	PT 074 C	24 C	7 C	52 C

RELATIVE MONTHLY ACTIVITY (%) C

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33

OFFICE USE ONLY

SECTION 2

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	75070	06 C	0.00139 C	0.04

ALLOWABLE EMIS LBS/YR(OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	017 C	050 C	100 C	F C	0.00002

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	71432	06 C	0.00160 C	0.04

ALLOWABLE EMIS LBS/YR(OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	017 C	050 C	100 C	F C	0.000023

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NAME_____ DATE_____

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AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA
(ADDITIONAL EMITTENTS)

FORM **PRO** SIDE B

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CO: _____
FACID _____

DEVICE ID: 70011

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR (OPTIONAL)
	50000	06	0.01972	0.54	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
017	050	100	F	0.00028

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR (OPTIONAL)
	75092	06	0.05508	1.51	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
017	050	100	F	0.00078

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR (OPTIONAL)
	108883	06	0.11327	3.11	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
017	050	100	F	0.00161

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR (OPTIONAL)
	1210	06	0.08534	2.34	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
017	050	100	F	0.00121

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR (OPTIONAL)

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)

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AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA

FORM **PRO** SIDE A

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PROCESS DESCRIPTION: C

SCC NO:

COUNTY ID:

AIR BASIN:

ACTION CODE:

PROD1 (OPTIONAL):

PROD2 (OPTIONAL):

FACILITY ID:

STOP FILL OUT ANY SUPPLEMENTAL PROCESS FORM(S) FOR THIS PROCESS FIRST. THEN FILL OUT THIS PAGE, SUBMITTING ONE FOR EACH EMITTING PROCESS IN YOUR FACILITY.

SECTION 1
PROCESS DATA

DEVICE I.D.: 70012

SIC: 4952

CONFIDENTIAL (Y/N) IF Y CHECK SMALL BOXES AS APPROPRIATE: N

PROCESS EQUIPMENT DESCRIPTION: Flares C

FUEL TYPE /OTHER PROCESS INFO: Digester Gas C

NOTE USE 1 SPACE FOR EACH DECIMAL POINT

TOTAL YEARLY PROCESS RATE (UNITS/YR)	MAXIMUM HOURLY PROCESS RATE (UNITS/HR)	PROCESS UNITS	HRS/ DAY	DAYS/ WEEK	WKS/ YEAR
32.466 C	0.0118 C	074 C P T	24 C	7 C	52 C

RELATIVE MONTHLY ACTIVITY (%) C

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33

OFFICE USE ONLY

SECTION 2

EMITTENT DATA					EMISSIONS
EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	*CONTROL EQPT CODES* PRIMARY / SECONDARY	OVERALL CONTROL EFF(%) / FULL/ PART	ANNUAL AVERAGE EMISSIONS (LBS/YR) / HOURLY MAX EMISSIONS (LBS/HOUR)
71432	01 C	0.00468 C	017 C / 050 C	100 C / F C	0.15 / 0.000055
106467	01 C	0.00514 C	017 C / 050 C	100 C / F C	0.17 / 0.000061

ACTION CODE:

ALLOWABLE EMIS LBS/YR(OPTIONAL):

ARB/PRO/890327

NAME _____ DATE _____

EMISSION YEAR 1991

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA
(ADDITIONAL EMITTENTS)

FORM PRO SIDE B

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FACID _____

DEVICE ID: 70012

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR (OPTIONAL)
	75092	01 C	0.18278 C	5.93	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
017 C	050 C	100 C	F C	0.00216

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR (OPTIONAL)
	127184	01 C	0.01127 C	0.37	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
017 C	050 C	100 C	F C	0.00013

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR (OPTIONAL)
	108883	01 C	0.03144 C	1.02	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
017 C	050 C	100 C	F C	0.000371

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR (OPTIONAL)
	79016	01 C	0.00139 C	0.05	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
017 C	050 C	100 C	F C	0.000017

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR (OPTIONAL)
	75014	01 C	0.02606 C	0.85	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
017 C	050 C	100 C	F C	0.000307

ARB/PROB/8903176

NAME _____ DATE _____

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AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA
(ADDITIONAL EMITTENTS)

FORM **PRO** SIDE B

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CO: _____
FACID: _____

DEVICE ID: 70012

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	1210	01 C	0.04824 C	1.57

ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	017 C	050 C	100 C	F C	0.000569

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
		C	C	

ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	C	C	C	C	

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
		C	C	

ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	C	C	C	C	

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
		C	C	

ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	C	C	C	C	

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
		C	C	

ALLOWABLE EMIS LBS/YR (OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	C	C	C	C	

NAME _____ DATE _____

ARB.PROE.8903176

EMISSION YEAR 1991

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA

FORM PRO SIDE A

FOR OFFICE USE ONLY

PROCESS DESCRIPTION: | C | SCC NO: | COUNTY ID: | AIR BASIN:

ACTION CODE: | PROD1 (OPTIONAL): | PROD2 (OPTIONAL): | FACILITY ID:

STOP FILL OUT ANY SUPPLEMENTAL PROCESS FORM(S) FOR THIS PROCESS FIRST. THEN FILL OUT THIS PAGE, SUBMITTING ONE FOR EACH EMITTING PROCESS IN YOUR FACILITY.

SECTION 1
PROCESS DATA

DEVICE I.D.: 70013

SIC: 4952

CONFIDENTIAL (Y/N) IF Y CHECK SMALL BOXES AS APPROPRIATE: N

PROCESS EQUIPMENT DESCRIPTION: Filter Presses C

FUEL TYPE /OTHER PROCESS INFO: C

NOTE USE 1 SPACE FOR EACH DECIMAL POINT

TOTAL YEARLY PROCESS RATE (UNITS/YR)	MAXIMUM HOURLY PROCESS RATE (UNITS/HR)	PROCESS UNITS	HRS/ DAY	DAYS/ WEEK	WKS/ YEAR
18.342 C	0.0161 C	077 C PT	08 C	5 C	52 C

RELATIVE MONTHLY ACTIVITY (%) C

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33

OFFICE USE ONLY

SECTION 2

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR(OPTIONAL)
	108883	06 C	0.00823 C	0.15	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
000 C	000 C	0000 C	F C	0.00013

ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ALLOWABLE EMIS LBS/YR(OPTIONAL)
	1210	06 C	0.004907 C	0.09	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
000 C	000 C	0000 C	F C	0.00008

ARB/PRO/890327

NAME _____ DATE _____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA
(ADDITIONAL EMITTENTS)

FORM **PRO** SIDE B

OFFICE USE ONLY
CO: _____
FACID: _____

DEVICE ID: 70013

EMITTENT DATA / EMISSIONS

ACTION CODE:
ALLOWABLE EMIS LBS/YR (OPTIONAL):

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
7664417	07 C	284.37 C	5216

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
000 C	000 C	0000 C	F C	4.458

ACTION CODE:
ALLOWABLE EMIS LBS/YR (OPTIONAL):

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	C	C	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
C	C	C	C	

ACTION CODE:
ALLOWABLE EMIS LBS/YR (OPTIONAL):

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	C	C	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
C	C	C	C	

ACTION CODE:
ALLOWABLE EMIS LBS/YR (OPTIONAL):

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	C	C	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
C	C	C	C	

ACTION CODE:
ALLOWABLE EMIS LBS/YR (OPTIONAL):

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)
	C	C	

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
C	C	C	C	

ARB/PROB/8903176

NAME _____ DATE _____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA

FORM PRO SIDE A

FOR OFFICE USE ONLY

PROCESS DESCRIPTION: C

SCC NO:

COUNTY ID:

AIR BASIN:

ACTION CODE:

PROD1 (OPTIONAL):

PROD2 (OPTIONAL):

FACILITY ID:

STOP FILL OUT ANY SUPPLEMENTAL PROCESS FORM(S) FOR THIS PROCESS FIRST. THEN FILL OUT THIS PAGE, SUBMITTING ONE FOR EACH EMITTING PROCESS IN YOUR FACILITY.

SECTION 1
PROCESS DATA

DEVICE I.D.: 70014

SIC: 4952

CONFIDENTIAL (Y/N) IF Y CHECK SMALL BOXES AS APPROPRIATE: N

PROCESS EQUIPMENT DESCRIPTION: Digester Cleaning Station C

FUEL TYPE /OTHER PROCESS INFO: C

NOTE USE 1 SPACE FOR EACH DECIMAL POINT

TOTAL YEARLY PROCESS RATE (UNITS/YR)	MAXIMUM HOURLY PROCESS RATE (UNITS/HR)	PROCESS UNITS	HRS/ DAY	DAYS/ WEEK	WKS/ YEAR
401.56 C	0.04584 C	073 C P T	24 C	7 C	52 C

RELATIVE MONTHLY ACTIVITY (%) C

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33

OFFICE USE ONLY

SECTION 2

EMITTENT DATA					EMISSIONS
ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)		ANNUAL AVERAGE EMISSIONS (LBS/YR)
	71432	01 C	0.00054 C		0.22
ALLOWABLE EMIS (LBS/YR)(OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	001 C	000 C	70.0 C	F C	0.00002
ACTION CODE	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)		ANNUAL AVERAGE EMISSIONS (LBS/YR)
	50000	01 C	0.00521 C		2.09
ALLOWABLE EMIS (LBS/YR)(OPTIONAL)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
	001 C	000 C	70.0 C	F C	0.00024

ARB/PRO/890327

NAME _____ *DATE* _____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA
(ADDITIONAL EMITTENTS)

FORM **PRO** SIDE B

OFFICE USE ONLY
CO: _____
FACID: _____

DEVICE ID: 70014

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ACTION CODE	ALLOWABLE EMIS LBS/YR (OPTIONAL)
75092	01	0.00051	0.21		

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
001	000	70.0	F	0.00002

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ACTION CODE	ALLOWABLE EMIS LBS/YR (OPTIONAL)
100425	01	0.00063	0.25		

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
001	000	70.0	F	0.00003

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ACTION CODE	ALLOWABLE EMIS LBS/YR (OPTIONAL)
108883	01	0.00152	0.61		

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
001	000	70.0	F	0.00007

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ACTION CODE	ALLOWABLE EMIS LBS/YR (OPTIONAL)
71556	01	0.00069	0.28		

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
001	000	70.0	F	0.00003

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	ACTION CODE	ALLOWABLE EMIS LBS/YR (OPTIONAL)
75014	01	0.00012	0.05		

CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/PART	HOURLY MAX EMISSIONS (LBS/HOUR)
001	000	70.0	F	0.00001

ARB/PROB/8903176

NAME _____ DATE _____

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA
(ADDITIONAL EMITTENTS)

FORM **PRO** SIDE B

OFFICE USE ONLY
CO: _____
FACID _____

DEVICE ID: 70014

ACTION CODE	ALLOWABLE EMIS LBS/YR (OPTIONAL)	EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR (LBS/UNIT)	ANNUAL AVERAGE EMISSIONS (LBS/YR)	*CONTROL EQPT CODES* PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART	HOURLY MAX EMISSIONS (LBS/HOUR)
		1210	01	0.00116	0.47	001	000	70.0	F	0.00005

EMITTENT DATA | EMISSIONS

NAME _____ DATE _____

ARB/PROB/8903176

EMISSION YEAR 19 91

AIR TOXICS EMISSION DATA SYSTEM REVIEW AND UPDATE REPORT
PROCESS AND EMITTENTS DATA

FORM PRO SIDE A

FOR OFFICE USE ONLY

PROCESS DESCRIPTION | C | SCC NO | COUNTY ID | AIR BASIN

ACTION CODE | PROD1 (OPTIONAL) | PROD2 (OPTIONAL) | FACILITY ID

STOP FILL OUT ANY SUPPLEMENTAL PROCESS FORM(S) FOR THIS PROCESS FIRST. THEN FILL OUT THIS PAGE, SUBMITTING ONE FOR EACH EMITTING PROCESS IN YOUR FACILITY.

SECTION 1
PROCESS DATA

DEVICE I.D.: 70015

SIC: 4952

CONFIDENTIAL (Y/N) IF Y CHECK SMALL BOXES AS APPROPRIATE: N

PROCESS EQUIPMENT DESCRIPTION: Lab Fume Hood C

FUEL TYPE /OTHER PROCESS INFO: C

NOTE USE 1 SPACE FOR EACH DECIMAL POINT

TOTAL YEARLY PROCESS RATE (UNITS/YR)	MAXIMUM HOURLY PROCESS RATE (UNITS/HR)	PROCESS UNITS	HRS/ DAY	DAYS/ WEEK	WKS/ YEAR
12 C	1 C	011 C P T	01 C	1 C	12 C

RELATIVE MONTHLY ACTIVITY (%) C

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33

OFFICE USE ONLY

SECTION 2

EMITTENT DATA					EMISSIONS
EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)			ANNUAL AVERAGE EMISSIONS (LBS/YR)
67663	07 C	0.0294 C			0.35
CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART		HOURLY MAX EMISSIONS (LBS/HOUR)
027 C	000 C	95.0 C	F C		0.0294

ACTION CODE | ALLOWABLE EMIS. LBS/YR(OPTIONAL)

EMITTENT ID	EST METH	ACTUAL EMISSIONS FACTOR(LBS/UNIT)			ANNUAL AVERAGE EMISSIONS (LBS/YR)
	C	C			
CONTROL EQPT CODES PRIMARY	SECONDARY	OVERALL CONTROL EFF(%)	FULL/ PART		HOURLY MAX EMISSIONS (LBS/HOUR)
C	C	C	C		

ACTION CODE | ALLOWABLE EMIS. LBS/YR(OPTIONAL)

ARB/PRO/890327

NAME _____ DATE _____

EMISSION YEAR 19 91	AIR TOXICS EMISSION DATA SYSTEM REVIEW & UPDATE REPORT SUPPLEMENTAL PROCESS PARAMETER FORM SUBSTANCES USED, PRODUCED, OR OTHERWISE PRESENT	FORM **S-UP**

FOR OFFICE USE ONLY
CO: AB:
FACID:

FACILITY NAME Valencia Water Reclamation Plant

PLEASE COPY THIS FORM AS MANY TIMES AS NECESSARY FOR YOUR FACILITY.
PLEASE READ THE INSTRUCTIONS BEFORE COMPLETING THIS FORM.

ALL AFFECTED FACILITIES: USE THIS FORM TO REPORT SUBSTANCES LISTED IN APPENDIX A-II WHICH ARE USED, PRODUCED OR OTHERWISE PRESENT.

FACILITIES SUBJECT TO SECTION 93303: ALSO USE THIS FORM TO REPORT SUBSTANCES IN APPENDIX A-I WHICH ARE BELOW THE APPLICABLE DEGREE OF ACCURACY.

FACILITIES SUBJECT TO SECTION 93308(C): ALSO USE THIS FORM TO REPORT SUBSTANCES IN APPENDIX A-I WHICH ARE USED, PRODUCED OR OTHERWISE PRESENT.

FOR EACH LISTED SUBSTANCE REPORTED WITH THIS FORM, PLEASE INDICATE (Y/N) WHETHER IT IS USED, PRODUCED OR OTHERWISE PRESENT WITHIN YOUR FACILITY.

"USED" REFERS TO SUBSTANCES WHICH ARE INGREDIENTS IN ANY ACTIVITY OR PROCESS AT YOUR FACILITY.
"PRODUCED" REFERS TO SUBSTANCES WHICH ARE THE RESULT OF ANY ACTIVITY OR PROCESS TAKING PLACE IN YOUR FACILITY.
"OTHERWISE PRESENT" REFERS TO SUBSTANCES PRESENT IN ANY OTHER WAY IN AN ACTIVITY OR PROCESS, SUCH AS BY-PRODUCTS OR REACTION INTERMEDIATES WHICH APPEAR TEMPORARILY DURING PROCESSING. PLEASE SPECIFY THE NATURE OF THE PRESENCE OF THE SUBSTANCE.

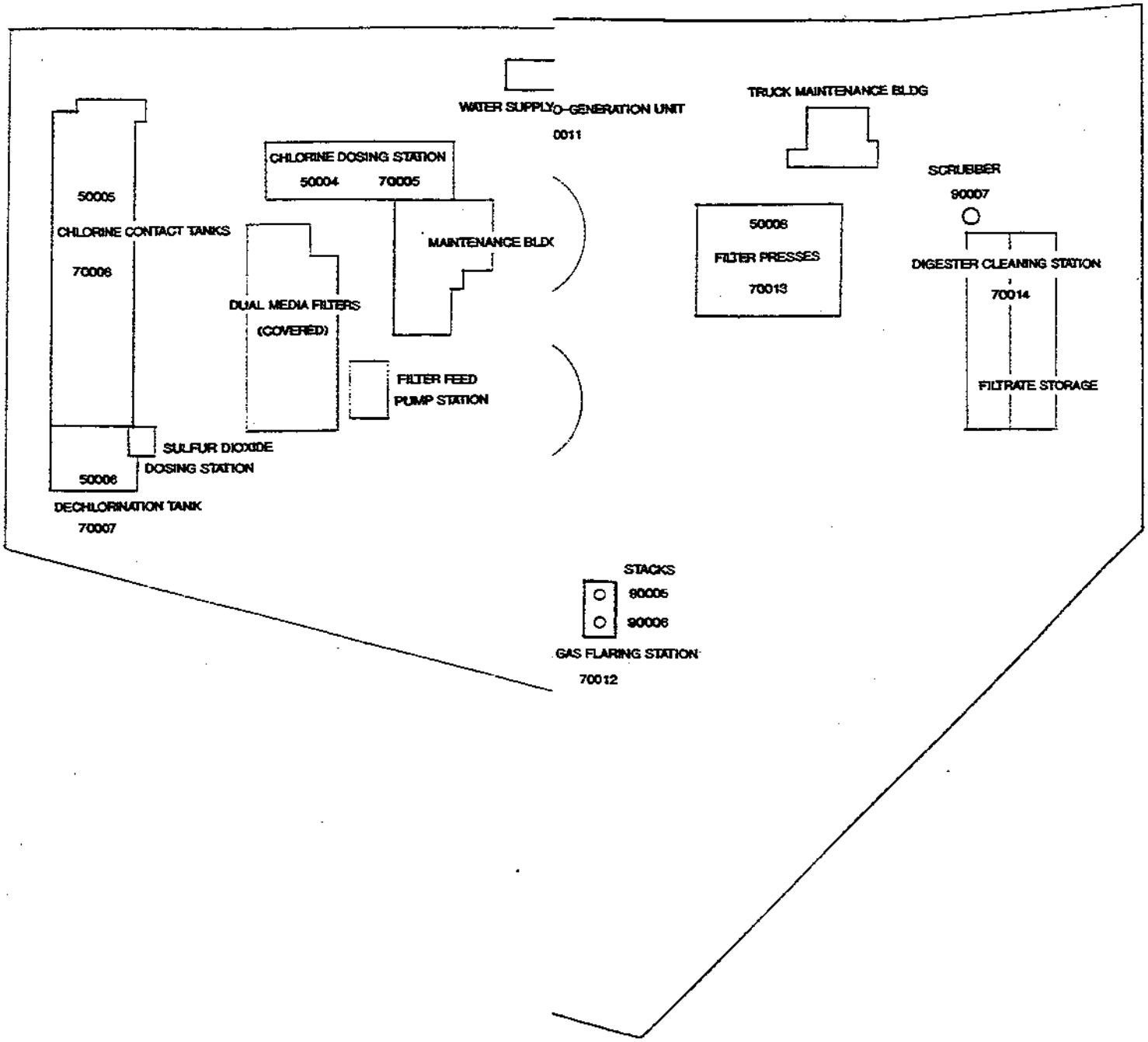
LISTED SUBSTANCE EMITTENT ID	*USED*	*PRODUCED*	*OTHERWISE PRESENT*	*(SPECIFY)*
cadmium 7440439	(X)	( )	( )	used in laboratory analysis
cupric sulfate 7440508	(X)	( )	( )	used in laboratory analysis
dichlorodifluoromethane 75718	(X)	( )	( )	used in laboratory analysis
hydrochloric acid 7647010	(X)	( )	( )	used in laboratory analysis
mercuric sulfate 7439976	(X)	( )	( )	used in laboratory analysis
methanol 67561	(X)	( )	( )	used in laboratory analysis
phosphoric acid 7664382	(X)	( )	( )	used in laboratory analysis
potassium dichromate 18540299	(X)	( )	( )	used in laboratory analysis
	( )	( )	( )	
	( )	( )	( )	
	( )	( )	( )	
	( )	( )	( )	
	( )	( )	( )	
	( )	( )	( )	
	( )	( )	( )	
	( )	( )	( )	

NAME: _____ *DATE:* _____

ARB/S-UP/90086

TABLE 1
Reassignment of ID Numbers
Valencia WRP

Old ID No. (from ATIP)	New ID No.
70001-70002	70001
70003-70008	70002
70009-70014	70003
70015-70020	70004
70021	70005
70022-70023	70006
70024	70007
70025-70027	70008
70028-70031	70009
70032	70010
70033	70011
70034-70035	70012
70036-70037	70013
70038	70014
70039	70015
F1	50001
F2	50002
F3	50003
F4	50004
F5	50005
F6	50006
F6	50007
F8	50008
90001	90001
90002	90002
90003	90003
90004	90004
90005	90005
90006	90006
90007	90007
90008	90008


WATER SUPPLY
O-GENERATION UNIT
0011
TRUCK MAINTENANCE BLDG
CHLORINE DOSING STATION
50004 70005
50005
CHLORINE CONTACT TANKS
70006
MAINTENANCE BLDG
DUAL MEDIA FILTERS
(COVERED)
FILTER FEED
PUMP STATION
50006
FILTER PRESSES
70013
SCRUBBER
90007
DIGESTER CLEANING STATION
70014
FILTRATE STORAGE
SULFUR DIOXIDE
DOSING STATION
50006
DECHLORINATION TANK
70007
STACKS
90005
90006
GAS FLARING STATION
70012

NTY

Laboratory Analysis of Compounds in Raw Influent

TECHNICAL DATA SYSTEM -- Water Reclamation Plant Data : VAL 01/11/94 Page 1

* SAMPLE TEST RESULTS * * * * * * * * * * * * * * * * * * *

DATE	LOG NO.	(601) METHYLENE CHLORIDE UG/L	(602) CHLOROFORM UG/L	(603) 1,1,1-TRICHLOROETHANE UG/L	(604) CARBON TETRACHLORIDE UG/L	(605) 1,1-DICHLOROETHENE UG/L	(606) TRICHLOROETHYLENE UG/L	(607) TETRACHLOROETHYLENE UG/L	(612) VINYL CHLORIDE UG/L
03/26/91	SJ13789 B-CO	< 2.0	5.6	58	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0
09/09/91	SJ22220 B-CO	1.5	5.6	24	< 0.3	< 0.3	< 0.3	5.0	< 0.5
12/23/91	SJ28522 B-CO	< 10	10	2.1	< 0.3	< 0.3	3.8	45	< 0.5
02/25/92	SJ32824 B-CO	3.5	7.3	5.4	< 0.3	< 0.3	0.6	40	< 0.5
03/24/92	SJ34513 B-CO	< 5.0 A	5.0	11	< 0.3	< 0.3	< 0.3	17	< 0.5
05/21/92	SJ37751 B-CO	< 5.0	7.4	16	< 0.3	< 0.3	< 0.3	11	< 0.5
06/25/92	SJ39563 B-CO								
09/16/92	SJ43999 B-CO	1.3	2.6	6.3	< 0.3	< 0.3	< 0.3	7.4	< 0.5
12/22/92	SJ49201 B-CO								
03/08/93	SJ53604 B-CO	1.3	4.3	3.2	< 0.3	< 0.3	< 0.3	10	< 0.5
06/21/93	SJ58982 B-CO	< 1.5	5.4	9.3	< 0.3	< 0.3	< 0.3	4.4	< 0.5
09/13/93	SJ62860 B-CO	1.1 B	2.5	6.2	< 0.3	< 0.3	< 0.3	9.7	< 0.5

Footnote(s): A-INTERFERENCE, B-CHECK NOTES TO USER, C-AVERAGE OF DUPS

* SAMPLE TEST RESULTS * * * * * * * * * * * * * * * * * * *

DATE	LOG NO.	(615) P-DICHLOROBENZENE UG/L	(619) 1,2-DICHLOROETHANE UG/L	(620) BENZENE UG/L	(621) TOLUENE UG/L	(629) O-XYLENE UG/L	(669) FREON 11 (UG/L	(673) 1,2-DIBROMOETHANE UG/L	(682) STYRENE UG/L
03/26/91	SJ13789 B-CO	2.2	< 0.5	< 0.5	2.4				
09/09/91	SJ22220 B-CO	1.8	< 0.3	< 0.3	0.6				
12/23/91	SJ28522 B-CO	1.6	< 0.3	< 0.3	1.6	< 0.5	< 2.5	< 0.5	< 0.5
02/25/92	SJ32824 B-CO	2.3	< 0.3	< 0.3	1.8	< 2.0 A	< 1.0	< 0.5	< 1.0
03/24/92	SJ34513 B-CO	2.1	< 0.3	< 0.3	2.0	< 0.5	< 1.0	< 0.5	< 0.5
05/21/92	SJ37751 B-CO	3.5	< 0.3	< 0.3	2.0	< 2.0	< 1.0	< 0.5	< 1.0
06/25/92	SJ39563 B-CO					< 2.5 A	< 1.0	< 0.5	< 1.0
09/16/92	SJ43999 B-CO	4.2	< 0.3	< 0.3	4.1	< 0.5	< 0.5	< 0.5	< 0.5
12/22/92	SJ49201 B-CO					< 0.5	< 0.5	< 1.0	< 0.5
03/08/93	SJ53604 B-CO	2.9	< 0.3	< 0.3	1.3	0.6	< 1.0	< 0.5	< 0.5
06/21/93	SJ58982 B-CO	2.7	< 0.3	< 0.3	2.3	0.9	< 1.0	< 0.5	< 0.5
09/13/93	SJ62860 B-CO	2.5	< 0.3	< 0.3	1.0	< 0.5	< 1.0	< 0.5	< 0.5

Footnote(s): A-INTERFERENCE, B-CHECK NOTES TO USER, C-AVERAGE OF DUPS

* S A M P L E T E S T R E S U L T S * * * * * * * * * * * * * * * * * *

DATE	LOG NO.	(695) M+P-XYLENE UG/L	(696) 1,4-DIOXANE UG/L	(697) FORMALDEHYDE UG/L
03/26/91	SJ13789 B-CO			
09/09/91	SJ22220 B-CO			
12/23/91	SJ28522 B-CO	< 0.5	< 250	64
02/25/92	SJ32824 B-CO	1.0	< 300	< 5.0
03/24/92	SJ34513 B-CO	< 0.5	< 50	< 5.0
05/21/92	SJ37751 B-CO	0.7	< 250	22 B
06/25/92	SJ39563 B-CO	1.6	< 100	< 5 B
09/16/92	SJ43999 B-CO	0.5	< 50	62
12/22/92	SJ49201 B-CO	0.5	< 50	42
03/08/93	SJ53604 B-CO	1.3	< 250	< 5
06/21/93	SJ58982 B-CO	1.4	< 150	9
09/13/93	SJ62860 B-CO	< 0.5	< 150	10.1 C

Footnote(s): A-INTERFERENCE, B-CHECK NOTES TO USER, C-AVERAGE OF DUPS

TABLE 2
Concentration of AB-2588 Compounds in Raw Influent Water
Valencia WRP

Compound	CAS #	No. of Analyses	Conc.* (ug/L)	Conc. (lb/gal)
benzene	71432	10	ND	ND
carbon tetrachloride	56235	10	ND	ND
chloroform	67663	10	5.14	4.29E-08
p-dichlorobenzene	106467	10	2.48	2.07E-08
1,4-dioxane	123911	10	ND	ND
ethylene dibromide	106934	10	ND	ND
ethylene dichloride	107062	10	ND	ND
formaldehyde	50000	10	10.27	8.57E-08
methylene chloride	75092	10	1.72	1.44E-08
styrene	100425	10	ND	ND
tetrachloroethylene	127184	10	8.17	6.82E-08
toluene	108883	10	1.70	1.42E-08
1,1,1-trichloroethane	71556	10	8.93	7.45E-08
trichloroethylene	79016	10	0.25	2.09E-09
trichlorofluoromethane	75694	10	ND	ND
vinyl chloride	75014	10	ND	ND
vinylidene chloride	75354	10	ND	ND
xylenes	1210	10	1.12	9.30E-09

*Concentration determined as geometric mean of all values acquired since 1991, which may be found on pages 43-44.

Compounds with one or more non-detect values were averaged as follows:

Case 1: If all analyses for a compound were below the detection limit, its concentration was assumed to be 0, and was listed as "ND".

Case 2: If a compound had analyses both above and below the detection limit, the geometric mean was determined by assigning values of 1/2 of the detection limit to the non-detect values.

TABLE 3
Air Emissions from Aerated Grit Chamber (with Caustic Scrubber)
(Device ID # 70001; Stack # 90001)
Valencia WRP

Quantification method: emission factors from PEEP Final Report, Table 5-1 and scrubber efficiency factors from the Technical Guidance Document to the Criteria and Guidelines Regulation for AB- 2588, Calif. Air Resources Board

Emissions calculation: EMS = (Q x Cin x EF)(1 - CEcaustic)

EMS = average yearly emissions or maximum hourly emissions, (lb/yr) or (lb/hr)

Q = influent flowrate = 2871.91 MGY, yearly total flow or 0.792 MGH maximum hourly flow

Cin = influent concentration (lb/gal) obtained from TABLE 2 for each listed compound

EF = emission factor (lb/lb), obtained from PEEP Final Report, Table 5-1

CEcaustic = caustic scrubber control efficiency = 0.70 as obtained from the Technical Guidance Document to the Criteria and Guidelines Regulation for AB-2588, California Air Resources Board, August 1989, p. 32

Process effluent concentration: Cout = Cin x (1 - TLF)

TLF = total loss factor (lb/lb), obtained from PEEP Final Report, Table 5-2

Compound	Cin (lb/gal)	EF (lb/lb)	Total Air Emiss. (lb/yr)	Max. Hourly Emiss. (lb/hr)	TLF (lb/lb)	Cout (lb/gal)
benzene	0.00E+00	3.2 E-2	0.000	0.000000	3.0 E-2	0.00E+00
carbon tetrachloride	0.00E+00	3.7 E-3	0.000	0.000000	0.0 E+0	0.00E+00
chloroform	4.29E-08	3.7 E-3	0.137	0.000038	0.0 E+0	4.29E-08
p-dichlorobenzene	2.07E-08	0.0 E+0	0.000	0.000000	0.0 E+0	2.07E-08
1,4-dioxane	0.00E+00	1.3 E-3	0.000	0.000000	-2.8 E-2	0.00E+00
ethylene dibromide	0.00E+00	3.7 E-3	0.000	0.000000	0.0 E+0	0.00E+00
ethylene dichloride	0.00E+00	3.7 E-3	0.000	0.000000	1.0 E+0	0.00E+00
formaldehyde	8.57E-08	-6.4 E-6	0.000	0.000000	2.4 E-2	8.36E-08
methylene chloride	1.44E-08	2.1 E-3	0.026	0.000007	1.3 E-2	1.42E-08
styrene	0.00E+00	1.3 E-3	0.000	0.000000	1.1 E-1	0.00E+00
tetrachloroethylene	6.82E-08	6.8 E-3	0.400	0.000110	1.0 E-1	6.14E-08
toluene	1.42E-08	1.3 E-3	0.016	0.000004	0.0 E+0	1.42E-08
1,1,1-trichloroethane	7.45E-08	1.1 E-2	0.706	0.000195	0.0 E+0	7.45E-08
trichloroethylene	2.09E-09	1.0 E-2	0.018	0.000005	0.0 E+0	2.09E-09
trichlorofluoromethane	0.00E+00	0.0 E+0	0.000	0.000000	0.0 E+0	0.00E+00
vinyl chloride	0.00E+00	3.7 E-3	0.000	0.000000	0.0 E+0	0.00E+00
vinylidene chloride	0.00E+00	3.7 E-3	0.000	0.000000	0.0 E+0	0.00E+00
xylenes	9.30E-09	2.5 E-4	0.002	0.000001	-2.6 E-2	9.54E-09

CALCULATION 1
Sodium Hydroxide Emissions from Headworks Caustic Scrubber
(Device ID # 70001; Stack ID # 90001)
Valencia WRP

Quantification method: emissions based on material balance using engineering expertise and knowledge of process.

Sodium hydroxide is used in the headworks scrubber to remove objectionable compounds such as VOC's and hydrogen sulfide from air which is drawn off of the headworks processes. In addition to removing the majority of VOC's and hydrogen sulfide which is present, sodium hydroxide also reacts with carbon dioxide present in the air being scrubbed. The carbon dioxide dissolves in the scrubber solution to form carbonic acid, H_2CO_3, which then reacts with NaOH to form sodium carbonate, Na_2CO_3. We will assume that the major reaction controlling the consumption of NaOH is the reaction with H_2CO_3.

Air emissions of NaOH from the caustic scrubber are expected to be very low since NaOH has almost no vapor pressure and therefore, will not evaporate into the atmosphere. The caustic scrubber is also equipped with a mist remover so that NaOH solution droplets are not likely to exit the scrubber.

Total NaOH air emissions may be determined using a mass balance on the air scrubbing process:

Emissions calculation: EMS (lb/yr) = $Q_{in} \cdot C_{in} - Q_{out} \cdot C_{out} - M_{reacted}$

where Q_{in} is the flowrate of NaOH solution into scrubber, gal/yr
C_{in} is the influent concentration of NaOH solution, lb/gal
Q_{out} is the flowrate of NaOH solution out of scrubber, gal/yr
C_{out} is the effluent concentration of NaOH solution, lb/gal
$M_{reacted}$ is the mass of NaOH reacted with H_2CO_3, lb/yr

During 1991, 1145 gallons of NaOH were used in the headworks caustic scrubber (i.e. Q_{in} = 1145 gal/yr).
C_{in} = 0.14 moles NaOH/L x 40 g NaOH/mole x 3.785 L/gal x 1 lb/453.6 g = 4.67 x 10^{-2} lb NaOH/gal
Q_{out}= 805 gal/yr
C_{out} = 0.1 moles NaOH/L x 40 g NaOH/mole x 3.785 L/gal x 1 lb/453.6 g = 3.33 x 10^{-2} lb NaOH/gal

$M_{reacted}$ This value may be determined from the following reactions:

$$CO_2 + H_2O = H_2CO_3$$
$$2\ NaOH + H_2CO_3 = Na_2CO_3 + H_2O$$

which generates the stoichiometric relationship: 2 x moles CO_2 consumed = moles NaOH reacted
in 1991, 154 moles of CO_2 were consumed, based on measurements of CO_2 at scrubber inlet and outlet.

Therefore, $M_{reacted}$ = 154 moles CO_2 x 2 moles NaOH/(mole CO_2) x 40 g NaOH/mole x 1 lb/453.6 g
= 27.1 lb NaOH reacted

Therefore, EMS (lb/yr) = (1145 gal/yr x 4.67 x 10^{-2} lb NaOH/gal) - (805 gal/yr x 3.33 x 10^{-2} lb NaOH/gal) - 27.1 lb NaOH
= **-0.44 lb, or no NaOH emissions.**

TABLE 4
Air Emissions from Activated Sludge Aeration Tanks
(Device ID # 70002; Fugitive ID # 50001)
Valencia WRP

Quantification method: emission factors from PEEP Final Report, Table 5-1

Emissions calculation: EMS = Q x Cin x EF
EMS = average yearly emissions or maximum hourly emissions, (lb/yr) or (lb/hr)
Q = influent flowrate = 2871.91 MGY, yearly total flow or 0.792 MGH, maximum hourly flow
Cin = influent concentration (lb/gal) obtained from TABLE 3 (Cout from TABLE 3)
EF = emission factor (lb/lb), obtained from PEEP Final Report, Table 5-1

Process effluent concentration: Cout = Cin x (1 - TLF)
TLF = total loss factor (lb/lb), obtained from PEEP Final Report, Table 5-2

Compound	Cin (lb/gal)	EF (lb/lb)	Total Air Emiss. (lb/yr)	Max. Hourly Emiss. (lb/hr)	TLF (lb/lb)	Cout (lb/gal)
benzene	0.00E+00	1.1 E-1	0.000	0.00000	1.0 E+0	0.00E+00
carbon tetrachloride	0.00E+00	2.6 E-1	0.000	0.00000	1.0 E+0	0.00E+00
chloroform	4.29E-08	2.6 E-1	32.033	0.00883	5.6 E-1	1.89E-08
p-dichlorobenzene	2.07E-08	1.2 E-1	7.134	0.00197	7.5 E-1	5.18E-09
1,4-dioxane	0.00E+00	4.8 E-5	0.000	0.00000	5.7 E-2	0.00E+00
ethylene dibromide	0.00E+00	2.6 E-1	0.000	0.00000	1.0 E+0	0.00E+00
ethylene dichloride	0.00E+00	0.0 E+0	0.000	0.00000	1.0 E+0	0.00E+00
formaldehyde	8.36E-08	-2.1 E-4	0.000	0.00000	2.3 E-1	6.44E-08
methylene chloride	1.42E-08	1.3 E-1	5.302	0.00146	3.4 E-1	9.37E-09
styrene	0.00E+00	1.1 E-1	0.000	0.00000	1.0 E+0	0.00E+00
tetrachloroethylene	6.14E-08	3.3 E-1	58.191	0.01605	1.0 E+0	0.00E+00
toluene	1.42E-08	1.6 E-1	6.525	0.00180	1.0 E+0	0.00E+00
1,1,1-trichloroethane	7.45E-08	4.6 E-1	98.420	0.02714	1.0 E+0	0.00E+00
trichloroethylene	2.09E-09	3.3 E-1	1.981	0.00055	1.0 E+0	0.00E+00
trichlorofluoromethane	0.00E+00	2.6 E-1	0.000	0.00000	1.0 E+0	0.00E+00
vinyl chloride	0.00E+00	2.6 E-1	0.000	0.00000	1.0 E+0	0.00E+00
vinylidene chloride	0.00E+00	2.6 E-1	0.000	0.00000	1.0 E+0	0.00E+00
xylenes	9.54E-09	1.1 E-1	3.014	0.00083	1.0 E+0	0.00E+00

TABLE 5
Air Emissions from Secondary Clarifiers
(Device ID # 70003; Fugitive ID # 50002)
Valencia WRP

Quantification method: emission factors from PEEP Final Report, Table 5-1

Emissions calculation: EMS = Q x Cin x EF
EMS = average yearly emissions or maximum hourly emissions, (lb/yr) or (lb/hr)
Q = influent flowrate = 2871.91 MGY, yearly total flow or 0.792 MGH, maximum hourly flow
Cin = influent concentration (lb/gal) obtained from TABLE 4 (Cout from TABLE 4)
EF = emission factor (lb/lb) obtained from PEEP Final Report, Table 5-1

Process effluent concentration: Cout = Cin x (1 - TLF)
TLF = total loss factor (lb/lb) obtained from PEEP Final Report, Table 5-2

Compound	Cin (lb/gal)	EF (lb/lb)	Total Air Emiss. (lb/yr)	Max. Hourly Emiss. (lb/hr)	TLF (lb/lb)	Cout (lb/gal)
benzene	0.00E+00	0.0 E+0	0.000	0.00000	1.0 E+0	0.00E+00
carbon tetrachloride	0.00E+00	8.3 E-4	0.000	0.00000	3.0 E-1	0.00E+00
chloroform	1.89E-08	2.1 E-3	0.114	0.00003	0.0 E+0	1.89E-08
p-dichlorobenzene	5.18E-09	0.0 E+0	0.000	0.00000	3.3 E-1	3.47E-09
1,4-dioxane	0.00E+00	0.0 E+0	0.000	0.00000	1.0 E+0	0.00E+00
ethylene dibromide	0.00E+00	8.3 E-4	0.000	0.00000	3.0 E-1	0.00E+00
ethylene dichloride	0.00E+00	8.3 E-4	0.000	0.00000	3.0 E-1	0.00E+00
formaldehyde	6.44E-08	0.0 E+0	0.000	0.00000	-3.0 E-2	6.63E-08
methylene chloride	9.37E-09	8.3 E-4	0.022	0.00001	1.0 E+0	0.00E+00
styrene	0.00E+00	0.0 E+0	0.000	0.00000	1.0 E+0	0.00E+00
tetrachloroethylene	0.00E+00	8.0 E-4	0.000	0.00000	2.7 E-1	0.00E+00
toluene	0.00E+00	0.0 E+0	0.000	0.00000	1.0 E+0	0.00E+00
1,1,1-trichloroethane	0.00E+00	8.5 E-4	0.000	0.00000	1.7 E-1	0.00E+00
trichloroethylene	0.00E+00	8.3 E-4	0.000	0.00000	3.0 E-1	0.00E+00
trichlorofluoromethane	0.00E+00	8.3 E-4	0.000	0.00000	3.0 E-1	0.00E+00
vinyl chloride	0.00E+00	8.3 E-4	0.000	0.00000	3.0 E-1	0.00E+00
vinylidene chloride	0.00E+00	8.3 E-4	0.000	0.00000	3.0 E-1	0.00E+00
xylenes	0.00E+00	0.0 E+0	0.000	0.00000	1.0 E+0	0.00E+00

TABLE 6
Air Emissions from Secondary Clarifier Weirs
(Device ID # 70004; Fugitive ID # 50003)
Valencia WRP

Quantification method: emission factors from PEEP Final Report, Appendix vol. II, p. 7AW-1

Emissions calculation: EMS = Q x Cin x EF
EMS = average yearly emissions or maximum hourly emissions, (lb/yr) or (lb/hr)
Q = influent flowrate = 2871.91 MGY, yearly total flow or 0.792 MGH, maximum hourly flow
Cin = influent concentration (lb/gal) obtained from TABLE 5 (Cout from TABLE 5)
EF = emission factor (lb/lb) obtained from PEEP Final Report, Appendix Vol. II, p. 7AW-1

Process effluent concentration: Cout = Cin x (1 - TLF)
TLF = total loss factor (lb/lb) which is assumed identical to EF for weir process

Compound	Cin (lb/gal)	EF (lb/lb)	Total Air Emiss. (lb/yr)	Max. Hourly Emiss. (lb/hr)	TLF (lb/lb)	Cout (lb/gal)
benzene	0.00E+00	0.0 E+0	0.000	0.00000	0.0 E+0	0.00E+00
carbon tetrachloride	0.00E+00	0.0 E+0	0.000	0.00000	0.0 E+0	0.00E+00
chloroform	1.89E-08	2.0 E-3	0.109	0.00003	2.0 E-3	1.89E-08
p-dichlorobenzene	3.47E-09	0.0 E+0	0.000	0.00000	0.0 E+0	3.47E-09
1,4-dioxane	0.00E+00	0.0 E+0	0.000	0.00000	0.0 E+0	0.00E+00
ethylene dibromide	0.00E+00	0.0 E+0	0.000	0.00000	0.0 E+0	0.00E+00
ethylene dichloride	0.00E+00	0.0 E+0	0.000	0.00000	0.0 E+0	0.00E+00
formaldehyde	6.63E-08	0.0 E+0	0.000	0.00000	0.0 E+0	6.63E-08
methylene chloride	0.00E+00	1.2 E-3	0.000	0.00000	1.2 E-3	0.00E+00
styrene	0.00E+00	0.0 E+0	0.000	0.00000	0.0 E+0	0.00E+00
tetrachloroethylene	0.00E+00	1.2 E-3	0.000	0.00000	1.2 E-3	0.00E+00
toluene	0.00E+00	0.0 E+0	0.000	0.00000	0.0 E+0	0.00E+00
1,1,1-trichloroethane	0.00E+00	0.0 E+0	0.000	0.00000	0.0 E+0	0.00E+00
trichloroethylene	0.00E+00	0.0 E+0	0.000	0.00000	0.0 E+0	0.00E+00
trichlorofluoromethane	0.00E+00	0.0 E+0	0.000	0.00000	0.0 E+0	0.00E+00
vinyl chloride	0.00E+00	0.0 E+0	0.000	0.00000	0.0 E+0	0.00E+00
vinylidene chloride	0.00E+00	0.0 E+0	0.000	0.00000	0.0 E+0	0.00E+00
xylenes	0.00E+00	0.0 E+0	0.000	0.00000	0.0 E+0	0.00E+00

CALCULATION 2
Chlorine Air Emissions from Chlorine Dosing Station
(Device ID # 70005; Fugitive ID # 50004)
Valencia WRP

Quantification method: emissions based on material balance using engineering expertise and knowledge of process.

Chlorine emissions are likely to occur from the chlorine dosing station (ID # 70005) only during transfer of liquid chlorine from delivery trucks to on-site storage tanks. The amount of chlorine which may be emitted during one delivery is limited to the amount of chlorine gas remaining in the hose used to transfer chlorine from the delivery truck to the storage tank. In order to minimize chlorine emissions, a procedure is used to purge the hose of residual chlorine prior to disconnecting the hose from the storage tank inlet port. This procedure involves evacuation of chlorine vapors from the line using nitrogen gas. It is estimated that this procedure is at least 95% effective at purging the transfer hose of residual chlorine vapors; *i.e.* no more than 5% of the hose volume contains chlorine vapors.

The following calculation may be used to calculate annual chlorine emissions:

Emissions calculation: EMS (lb/yr) = V x D x N x (1-E)

where V is hose volume, gal
D is chlorine gas density, lb/gal
N is number of chlorine deliveries during 1991, #/yr
E is efficiency of chlorine purging process

During 1991, there were 13 chlorine deliveries.
Hose dimensions: 11/16 in. ID x 20 ft. length. Hose volume = 0.386 gal.
Chlorine density = 0.0226 g/cc at 20°C (ref: Lange's Handbook of Chemistry, 10th Ed, p. 1454).
= 0.1887 lb/gal
Removal efficiency = 95% (0.95)

Therefore, EMS (lb/yr) = 0.386 gal x 0.1887 lb/gal x 13 #/yr x (1 - 0.95) = **0.047 lb/yr, the yearly total emission rate**

Each chlorine delivery lasts about 1 hour. Therefore, maximum hourly emissions of chlorine are equivalent to the amount emitted during one delivery, *i.e*:

Emissions calculation: EMS (lb/hr) = V x D x (1-E)

= 0.386 gal x 0.1887 lb/gal x (1 - 0.95) = **0.00364 lb/hr, the maximum hourly emission rate**

TABLE 7
Air Emissions from Chlorine Contact Tanks
(Device ID # 70006; Fugitive ID # 50005)
Valencia WRP

Quantification method: emission factors from PEEP Final Report, Table 5-1

Emissions calculation: EMS = Q x Cin x EF

EMS = average yearly emissions or maximum hourly emissions, (lb/yr) or (lb/hr)

Q = influent flowrate = 2871.91 MGY, yearly total flow or 0.792 MGH, maximum hourly flow

Cin = influent concentration (lb/gal) obtained by applying tertiary filter TLFs to Cout values from TABLE 6

EF = emission factor (lb/lb) obtained from PEEP Final Report, Table 5-1

Process effluent concentration: Cout = Cin x (1 - TLF)

TLF = total loss factor (lb/lb) obtained from PEEP Final Report, Table 5-2

Compound	Cin (lb/gal)	EF (lb/lb)	Total Air Emiss. (lb/yr)	Max. Hourly Emiss. (lb/hr)	TLF (lb/lb)	Cout (lb/gal)
benzene	0.00E+00	0.0 E+0	0.000	0.0000000	0.0 E+0	0.00E+00
carbon tetrachloride	0.00E+00	4.1 E-3	0.000	0.0000000	6.5 E-2	0.00E+00
chloroform	1.92E-08	2.8 E-3	0.154	0.0000426	-5.4 E-1	2.96E-08
p-dichlorobenzene	3.82E-08	4.1 E-3	0.450	0.0001240	2.9 E-2	3.71E-08
1,4-dioxane	0.00E+00	0.0 E+0	0.000	0.0000000	0.0 E+0	0.00E+00
ethylene dibromide	0.00E+00	4.1 E-3	0.000	0.0000000	6.5 E-2	0.00E+00
ethylene dichloride	0.00E+00	4.1 E-3	0.000	0.0000000	6.5 E-2	0.00E+00
formaldehyde	5.77E-08	5.1 E-6	0.001	0.0000002	2.2 E-1	4.50E-08
methylene chloride	0.00E+00	4.1 E-3	0.000	0.0000000	6.5 E-2	0.00E+00
styrene	0.00E+00	0.0 E+0	0.000	0.0000000	0.0 E+0	0.00E+00
tetrachloroethylene	0.00E+00	4.1 E-3	0.000	0.0000000	1.0 E+0	0.00E+00
toluene	0.00E+00	0.0 E+0	0.000	0.0000000	0.0 E+0	0.00E+00
1,1,1-trichloroethane	0.00E+00	5.3 E-3	0.000	0.0000000	1.0 E-1	0.00E+00
trichloroethylene	0.00E+00	4.1 E-3	0.000	0.0000000	6.5 E-2	0.00E+00
trichlorofluoromethane	0.00E+00	4.1 E-3	0.000	0.0000000	6.5 E-2	0.00E+00
vinyl chloride	0.00E+00	4.1 E-3	0.000	0.0000000	6.5 E-2	0.00E+00
vinylidene chloride	0.00E+00	4.1 E-3	0.000	0.0000000	6.5 E-2	0.00E+00
xylenes	0.00E+00	0.0 E+0	0.000	0.0000000	0.0 E+0	0.00E+00

TABLE 8
Air Emissions from Dechlorination Tank
(Device ID # 70007; Fugitive ID # 50006)
Valencia WRP

Quantification method: emission factors from PEEP Final Report, Table 5-1

Emissions calculation: EMS = Q x Cin x EF
EMS = average yearly emissions or maximum hourly emissions, (lb/yr) or (lb/hr)
Q = influent flowrate = 2871.91 MGY, yearly total flow or 0.792 MGH; maximum hourly flow
Cin = influent concentration (lb/gal) obtained from TABLE 7 (Cout from TABLE 7)
EF = emission factor (lb/lb) obtained from PEEP Final Report, Table 5-1

Process effluent concentration: Cout = Cin x (1 - TLF)
TLF = total loss factor (lb/lb) obtained from PEEP Final Report, Table 5-2

Compound	Cin (lb/gal)	EF (lb/lb)	Total Air Emiss. (lb/yr)	Max. Hourly Emiss. (lb/hr)	TLF (lb/lb)	Cout (lb/gal)
benzene	0.00E+00	7.5 E-1	0.000	0.00000	7.5 E-1	0.00E+00
carbon tetrachloride	0.00E+00	1.0 E+0	0.000	0.00000	1.0 E+0	0.00E+00
chloroform	2.96E-08	1.1 E-1	9.351	0.00258	1.1 E-1	2.63E-08
p-dichlorobenzene	3.71E-08	3.1 E-1	33.030	0.00911	1.7 E-1	3.08E-08
1,4-dioxane	0.00E+00	7.1 E-1	0.000	0.00000	6.9 E-1	0.00E+00
ethylene dibromide	0.00E+00	3.5 E-1	0.000	0.00000	3.7 E-1	0.00E+00
ethylene dichloride	0.00E+00	3.5 E-1	0.000	0.00000	3.5 E-1	0.00E+00
formaldehyde	4.50E-08	4.3 E-1	55.571	0.01533	2.9 E-1	3.20E-08
methylene chloride	0.00E+00	3.5 E-1	0.000	0.00000	0.0 E+0	0.00E+00
styrene	0.00E+00	6.4 E-1	0.000	0.00000	6.4 E-1	0.00E+00
tetrachloroethylene	0.00E+00	1.7 E-1	0.000	0.00000	9.1 E-2	0.00E+00
toluene	0.00E+00	6.9 E-1	0.000	0.00000	4.0 E-1	0.00E+00
1,1,1-trichloroethane	0.00E+00	4.9 E-1	0.000	0.00000	8.1 E-1	0.00E+00
trichloroethylene	0.00E+00	7.6 E-1	0.000	0.00000	3.8 E-1	0.00E+00
trichlorofluoromethane	0.00E+00	3.5 E-1	0.000	0.00000	1.0 E+0	0.00E+00
vinyl chloride	0.00E+00	3.5 E-1	0.000	0.00000	3.7 E-1	0.00E+00
vinylidene chloride	0.00E+00	3.5 E-1	0.000	0.00000	1.0 E+0	0.00E+00
xylenes	0.00E+00	7.3 E-1	0.000	0.00000	7.3 E-1	0.00E+00

TABLE 9
Air Emissions from Dissolved Air Flotation Thickeners (with Scrubbers)
(Device ID # 70008; Stack ID # 90002)
Valencia WRP

Quantification method: emission factors from PEEP Final Report, Table 5-1 and scrubber efficiency factors from the Technical Guidance Document to the Criteria and Guidelines Regulations for AB-2588, California Air Resources Board

Emissions calculation: EMS = (Q x Cin x EF)(1 - CEcaustic)(1 - CEcarbon)

EMS = average yearly emissions or maximum hourly emissions, (lb/yr) or (lb/hr)

Q = influent flowrate = 80.94 MGY, yearly total flow or 0.0145 MGH, maximum hourly flow

Cin = influent concentration (lb/gal) obtained from TABLE 2 for each listed compound (sludge assumed to have same composition as raw influent)

EF = emission factor (lb/lb) obtained from PEEP Final Report, Table 5-1

CEcaustic = caustic scrubber control efficiency = 0.70*

CEcarbon = carbon scrubber control efficiency = 0.85*

*Source: Technical Guidance Document to the Criteria and Guidelines Regulations for AB-2588, California Air Resources Board, August 1989, pp. 32-33

Process effluent concentration: Cout = Cin x (1 - TLF)

TLF = total loss factor (lb/lb) obtained from PEEP Final Report, Table 5-2

Compound	Cin (lb/gal)	EF (lb/lb)	Total Air Emiss. (lb/yr)	Max. Hourly Emiss. (lb/hr)	TLF (lb/lb)	Cout (lb/gal)
benzene	0.00E+00	0.0 E+0	0.00000	0.00000000	-1.8 E+0	0.00E+00
carbon tetrachloride	0.00E+00	2.4 E-1	0.00000	0.00000000	2.6 E-1	0.00E+00
chloroform	4.29E-08	2.0 E-1	0.03125	0.00000560	1.4 E-1	3.69E-08
p-dichlorobenzene	2.07E-08	2.4 E-1	0.01809	0.00000324	1.0 E+0	0.00E+00
1,4-dioxane	0.00E+00	0.0 E+0	0.00000	0.00000000	-1.8 E+0	0.00E+00
ethylene dibromide	0.00E+00	2.4 E-1	0.00000	0.00000000	2.6 E-1	0.00E+00
ethylene dichloride	0.00E+00	2.4 E-1	0.00000	0.00000000	2.6 E-1	0.00E+00
formaldehyde	8.57E-08	1.3 E-4	0.00004	0.00000001	3.1 E-1	5.91E-08
methylene chloride	1.44E-08	2.0 E-1	0.01049	0.00000188	1.2 E-1	1.27E-08
styrene	0.00E+00	0.0 E+0	0.00000	0.00000000	-1.8 E+0	0.00E+00
tetrachloroethylene	6.82E-08	2.9 E-1	0.07204	0.00001291	4.0 E-1	4.09E-08
toluene	1.42E-08	0.0 E+0	0.00000	0.00000000	-1.8 E+0	3.98E-08
1,1,1-trichloroethane	7.45E-08	6.8 E-1	0.18452	0.00003306	3.8 E-1	4.62E-08
trichloroethylene	2.09E-09	2.4 E-1	0.00183	0.00000033	2.6 E-1	1.55E-09
trichlorofluoromethane	0.00E+00	2.4 E-1	0.00000	0.00000000	1.0 E-1	0.00E+00
vinyl chloride	0.00E+00	2.4 E-1	0.00000	0.00000000	2.6 E-1	0.00E+00
vinylidene chloride	0.00E+00	2.4 E-1	0.00000	0.00000000	2.6 E-1	0.00E+00
xylenes	9.30E-09	0.0 E+0	0.00000	0.00000000	-1.8 E+0	2.60E-08

0.30917

CALCULATION 3
Sodium Hydroxide Emissions from DAF Caustic Scrubber
(Device ID # 70008; Stack ID # 90002)
Valencia WRP

Quantification method: emissions based on material balance using engineering expertise and knowledge of process.

Sodium hydroxide is used in the DAF caustic scrubber to remove objectionable compounds such as VOC's and hydrogen sulfide from air which is drawn off of the dissolved air flotation process. In addition to removing the majority of VOC's and hydrogen sulfide which is present, sodium hydroxide also reacts with carbon dioxide present in the air being scrubbed. The carbon dioxide dissolves in the scrubber solution to form carbonic acid, H_2CO_3, which then reacts with NaOH to form sodium carbonate, Na_2CO_3. We will assume that the major reaction controlling the consumption of NaOH is the reaction with H_2CO_3.

Air emissions of NaOH from the caustic scrubber are expected to be very low since NaOH has almost no vapor pressure and therefore, will not evaporate into the atmosphere. The caustic scrubber is also equipped with a mist eliminator so that NaOH solution droplets are not likely to exit the scrubber.

Total NaOH air emissions may be determined using a mass balance on the air scrubbing process:

Emissions calculation: EMS (lb/yr) = $Q_{in} \cdot C_{in} - Q_{out} \cdot C_{out} - M_{reacted}$

where Q_{in} is the flowrate of NaOH solution into scrubber, gal/yr
C_{in} is the influent concentration of NaOH solution, lb/gal
Q_{out} is the flowrate of NaOH solution out of scrubber, gal/yr
C_{out} is the effluent concentration of NaOH solution, lb/gal
$M_{reacted}$ is the mass of NaOH reacted with H_2CO_3, lb/yr

During 1991, 1065 gallons of NaOH were used in the headworks caustic scrubber (i.e. Q_{in} = 1065 gal/yr).
C_{in} = 0.14 moles NaOH/L x 40 g NaOH/mole x 3.785 L/gal x 1 lb/453.6 g = 4.67 x 10^{-2} lb NaOH/gal
Q_{out} = 384 gal/yr
C_{out} = 0.11 moles NaOH/L x 40 g NaOH/mole x 3.785 L/gal x 1 lb/453.6 g = 3.67 x 10^{-2} lb NaOH/gal

$M_{reacted}$ This value may be determined from the following reactions:

$$CO_2 + H_2O = H_2CO_3$$
$$2\ NaOH + H_2CO_3 = Na_2CO_3 + H_2O$$

which generates the stoichiometric relationship: 2 x moles CO_2 consumed = moles NaOH reacted
in 1991, 210 moles of were consumed, based on CO_2 measurements of at scrubber inlet and outlet.

Therefore, $M_{reacted}$ = 210 moles CO_2 x 2 moles NaOH/(mole CO_2) x 40 g NaOH/mole x 1 lb/453.6 g
= 37.0 lb NaOH reacted

Therefore, EMS (lb/yr) = (1065 gal/yr x 4.67 x 10^{-2} lb NaOH/gal) - (384 gal/yr x 3.67 x 10^{-2} lb NaOH/gal) - 37.0 lb NaOH
= **-1.4 lb, or no NaOH emissions.**

TABLE 10
Concentration of AB-2588 Compounds in Digester Effluent
Valencia WRP

Cout = Cin x (1 - TLF)

Cout = digester liquid effluent concentration (lb/gal)

Cin = influent concentration (lb/gal), obtained from TABLE 9 (Cout from TABLE 9)

TLF = total loss factor (lb/lb), obtained from PEEP Final Report, Table 5-2

Compound	Cin (lb/gal)	TLF (lb/lb)	Cout (lb/gal)
benzene	0.00E+00	8.9 E-1	0.00E+00
carbon tetrachloride	0.00E+00	1.0 E+0	0.00E+00
chloroform	3.69E-08	1.0 E+0	0.00E+00
p-dichlorobenzene	0.00E+00	-1.0 E+0	0.00E+00
1,4-dioxane	0.00E+00	7.2 E-1	0.00E+00
ethylene dibromide	0.00E+00	1.0 E+0	0.00E+00
ethylene dichloride	0.00E+00	1.0 E+0	0.00E+00
formaldehyde	5.91E-08	-6.0 E-1	9.46E-08
methylene chloride	1.27E-08	1.0 E+0	0.00E+00
styrene	0.00E+00	1.0 E+0	0.00E+00
tetrachloroethylene	4.09E-08	1.0 E+0	0.00E+00
toluene	3.98E-08	5.4 E-1	1.83E-08
1,1,1-trichloroethane	4.62E-08	1.0 E+0	0.00E+00
trichloroethylene	1.55E-09	1.0 E+0	0.00E+00
trichlorofluoromethane	0.00E+00	1.0 E+0	0.00E+00
vinyl chloride	0.00E+00	1.0 E+0	0.00E+00
vinylidene chloride	0.00E+00	1.0 E+0	0.00E+00
xylenes	2.60E-08	-9.2 E-1	4.99E-08

TABLE 11
Air Emissions from Filter Presses
(Device ID # 70013; Fugitive ID # 50008)
Valencia WRP

Quantification method: emission factors from PEEP Final Report, Table 5-1

Emissions calculation: EMS = Q x Cin x EF

EMS = average yearly emissions or maximum hourly emissions, (lb/yr) or (lb/hr)

Q = influent flowrate = 18.342 MGY, yearly total flow or 0.0161 MGH, maximum hourly flow

Cin = influent concentration (lb/gal) obtained from TABLE 10 (Cout from TABLE 10)

EF = emission factor (lb/lb) obtained from PEEP Final Report, Table 5-1

Process effluent concentration: Cout = Cin x (1 - TLF)

TLF = total loss factor (lb/lb) obtained from PEEP Final Report, Table 5-2

Compound	Cin (lb/gal)	EF (lb/lb)	Total Air Emiss. (lb/yr)	Max. Hourly Emiss. (lb/hr)	TLF (lb/lb)	Cout (lb/gal)
benzene	0.00E+00	2.7 E-1	0.000	0.00000	9.0 E-1	0.00E+00
carbon tetrachloride	0.00E+00	0.0 E+0	0.000	0.00000	1.0 E+0	0.00E+00
chloroform	0.00E+00	0.0 E+0	0.000	0.00000	1.0 E+0	0.00E+00
p-dichlorobenzene	0.00E+00	0.0 E+0	0.000	0.00000	5.9 E-1	0.00E+00
1,4-dioxane	0.00E+00	2.7 E-1	0.000	0.00000	7.3 E-1	0.00E+00
ethylene dibromide	0.00E+00	0.0 E+0	0.000	0.00000	1.0 E+0	0.00E+00
ethylene dichloride	0.00E+00	0.0 E+0	0.000	0.00000	1.0 E+0	0.00E+00
formaldehyde	9.46E-08	0.0 E+0	0.000	0.00000	-5.6 E+0	6.24E-07
methylene chloride	0.00E+00	0.0 E+0	0.000	0.00000	1.0 E+0	0.00E+00
styrene	0.00E+00	2.7 E-1	0.000	0.00000	7.3 E-1	0.00E+00
tetrachloroethylene	0.00E+00	0.0 E+0	0.000	0.00000	1.0 E+0	0.00E+00
toluene	1.83E-08	4.5 E-1	0.151	0.00013	7.3 E-1	4.94E-09
1,1,1-trichloroethane	0.00E+00	0.0 E+0	0.000	0.00000	1.0 E+0	0.00E+00
trichloroethylene	0.00E+00	0.0 E+0	0.000	0.00000	1.0 E+0	0.00E+00
trichlorofluoromethane	0.00E+00	0.0 E+0	0.000	0.00000	1.0 E+0	0.00E+00
vinyl chloride	0.00E+00	0.0 E+0	0.000	0.00000	1.0 E+0	0.00E+00
vinylidene chloride	0.00E+00	0.0 E+0	0.000	0.00000	1.0 E+0	0.00E+00
xylenes	4.99E-08	9.8 E-2	0.090	0.00008	7.0 E-1	1.50E-08

0.241

CALCULATION 4
Ammonia Emissions from Filter Presses
(Device ID # 70013, Fugitive ID # 50008)
Valencia WRP

Quantification method: emissions based on material balance using engineering expertise and knowedge of process.

Ammonia (NH_3) emissions occur during the sludge dewatering process at the filter presses (ID # 70013) due to an increase in the pH of the sludge. The sludge pH rises above 10 due to the addition of lime, which is introduced as an aid in the dewatering process. As solution pH rises, dissolved ammonium ions (NH_4^+) are transformed into ammonia gas, which is released into the atmosphere. The total amount of ammonia air emissions may be calculated by performing a mass balance on the filter presses.

mass NH_3 in = mass NH_3 out

mass NH_3 in = $Q_{in} \times C_{in}$
where Q_{in} = sludge influent flowrate = 18.342×10^6 gal/yr, yearly average flowrate or 16125 gal/hr, max. hourly flowrate
C_{in} = ammonia concentration in influent sludge = 5.41×10^{-3} lb/gal

mass NH_3 in = 18.342×10^6 gal/yr x 5.41×10^{-3} lb/gal = 99230 lb/yr, yearly average ammonia flux through filter presses
mass NH_3 in = 16125 gal/hr x 5.41×10^{-3} lb/gal = 87.236 lb/hr, maximum hourly ammonia flux through filter presses

mass NH_3 out = $Q_{sc} \times C_{sc} + Q_f \times C_f$ + EMS
where Q_{sc} = sludge cake flowrate = 9.313×10^6 lb/yr, yearly average flowrate or 7992.5 lb/hr, max. hourly flowrate
C_{sc} = ammonia concentration in sludge cake = 2.62×10^{-3} lb/lb
Q_f = filtrate flowrate = 14.78×10^6 gal/yr, yearly average flowrate or 13129 gal/hr, max. hourly flowrate
C_f = ammonia concentration in filtrate = 4.71×10^{-3} lb/gal
EMS = mass of ammonia emitted to air, lb/yr or lb/hr

Emissions calculation: EMS (lb/yr) = mass NH_3 in - ($Q_{sc} \times C_{sc} + Q_f \times C_f$)

= 99230 lb/yr - (9.313×10^6 lb/yr x 2.62×10^{-3} lb/lb + 14.78×10^6 gal/yr x 4.71×10^{-3} lb/gal)
= **5216 lb/yr, the yearly total emission rate for ammonia**

Emissions calculation: EMS (lb/hr) = mass NH_3 in - ($Q_{sc} \times C_{sc} + Q_f \times C_f$)

= 87.236 lb/hr - (7992.5 lb/hr x 2.62×10^{-3} lb/lb + 13129 gal/hr x 4.71×10^{-3} lb/gal)
= **4.458 lb/hr, the maximum hourly emission rate for ammonia**

Analysis of Group I Compounds in Digester Gas

TECHNICAL DATA SYSTEM -- Water Reclamation Plant Data : VAL 01/26/94 Page 1

* SAMPLE TEST RESULTS * * * * * * * * * * * * * * * * * *

DATE	LOG NO.	(330) PERMANENT GASES, TOTAL % V/V	(332) OXYGEN (O2) % V/V	(333) ARGON (AR) % V/V	(334) NITROGEN (N2) % V/V	(335) METHANE (CH4) % V/V	(336) CARBON DIOXIDE (CO2) % V/V	(601) METHYLENE CHLORIDE PPB V/V	(602) CHLOROFORM PPB V/V
01/27/92	JW90381 O-GR	98.3	0.26	0.03	2.2	58.8	37.0	37	< 20
01/27/92	JW90382 O-GR	98.5	0.75	0.04	3.1	58.1	36.5	< 100	< 100
02/03/92	JW90477 O-GR	98.6	0.31	0.02	1.5	59.4	37.3	< 100	< 100
02/03/92	JW90478 O-GR	94.7	0.17	0.01	0.7	58.0	35.9	< 100	< 100
02/11/92	JW90611 O-GR	96.3	0.06	0.01	0.5	59.4	36.3	< 100	< 100
02/11/92	JW90612 O-GR	96.3	0.34	0.02	1.5	58.8	35.6	< 100	< 100

* SAMPLE TEST RESULTS * * * * * * * * * * * * * * * * * *

DATE	LOG NO.	(603) 1,1,1-TRICHLOROETHANE PPB V/V	(604) CARBON TETRACHLORIDE PPB V/V	(605) 1,1-DICHLOROETHENE PPB V/V	(606) TRICHLOROETHYLENE PPB V/V	(607) TETRACHLOROETHYLENE PPB V/V	(611) CHLOROBENZENE PPB V/V	(612) VINYL CHLORIDE PPB V/V	(614) M-DICHLOROBENZENE PPB V/V
01/27/92	JW90381 O-GR	< 20	< 8.0	< 20	76	110	250	4400	< 20
01/27/92	JW90382 O-GR	< 100	< 40	< 100	< 100	93	190	4000	< 100
02/03/92	JW90477 O-GR	< 100	< 40	< 100	< 100	60	170	3100	< 100
02/03/92	JW90478 O-GR	< 100	< 40	< 100	< 100	60	170	3200	< 100
02/11/92	JW90611 O-GR	< 100	< 40	< 100	< 100	150	110	1600	< 100
02/11/92	JW90612 O-GR	< 100	< 40	< 100	< 100	160	130	1500	< 100

* S A M P L E T E S T R E S U L T S * * * * * * * * * * * * * * * * *

DATE	LOG NO.	(616) 1,1-DICHLORO ETHANE PPB V/V	(619) 1,2-DICHLORO ETHANE PPB V/V	(620) BENZENE PPB V/V	(621) TOLUENE PPB V/V	(666) M-XYLENE PPB V/V	(667) O+P-XYLENE PPB V/V	(669) FREON 11 PPB V/V	(673) 1,2-DIBROMOE (THANE PPB V/V
01/27/92	JW90381 O-GR	< 20	< 20	39	1400	600	250	< 4.0	< 40
01/27/92	JW90382 O-GR	< 100	< 100	< 40	1100	720	490	< 20	< 200
02/03/92	JW90477 O-GR	< 100	< 100	< 40	840	500	220	< 20	< 200
02/03/92	JW90478 O-GR	< 100	< 100	< 40	650	470	200	< 20	< 200
02/11/92	JW90611 O-GR	< 100	< 100	40	690	570	270	< 20	< 200
02/11/92	JW90612 O-GR	< 100	< 100	< 40	590	510	190	< 20	< 200

* S A M P L E T E S T R E S U L T S * * * * * * * * * * * * * * * * *

DATE	LOG NO.	(674) O+P DICHLOROBENZ ENE PPB V/V	(675) 1,3-BUTADIEN E PPB V/V	(677) CIS-1,2-DICH LOROETHYLENE PPB V/V
01/27/92	JW90381 O-GR	130	< 4.0	700
01/27/92	JW90382 O-GR	110	< 20	560
02/03/92	JW90477 O-GR	70	< 20	510
02/03/92	JW90478 O-GR	80	< 20	480
02/11/92	JW90611 O-GR	120	< 20	330
02/11/92	JW90612 O-GR	120	< 20	330

Analysis of Group II Compounds in Digester Gas

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21354 Nordhoff St., Suite 113, Chatsworth, CA 91311 (818) 718-6070 • FAX (818) 718-9779
environmental consultants
laboratory services

LABORATORY ANALYSIS REPORT

DNPH cartridges were analyzed for formaldehyde (HCHO), acetaldehyde (CH3CHO), and acrolein by high performance liquid chromatography.

Report Date : February 11, 1992
Date Received : February 7, 1992
Date Analyzed : February 7, 1992
P.O. No. : 45324

Each cartridge based on 50 liters of Digester Gas.

	AtmAA Lab. No.	Sample ID	ug/cartridge HCHO	CH3CHO	ACROLEIN*
Palmdale WRP	90382-16	227	0.26	0.24	<0.07
	90382-17	197	0.23	0.16	<0.07
	90382-18	170	0.22	0.12	<0.07
Trip Blanks	90382-19	114	0.20	0.13	<0.07
	90382-20	121	0.21	0.05	<0.07
	90382-21	203	0.21	0.06	<0.07
Lancaster WRP	90382-22	222	0.19	0.22	<0.07
	90382-23	202	0.20	0.15	<0.07
	90382-24	156	0.21	0.16	<0.07
Valencia WRP	90382-25	128	0.34	0.77	<0.07
	90382-26	163	0.23	0.64	<0.07
	90382-27	188	0.29	0.26	<0.07
	90382-21 repeat	203	0.21	0.06	<0.07

* No acrolein was detected in the sample.

Dr. Kochy Fung
Air Programs Director

CALCULATION 5
Determination of Digester Gas Parameters
Valencia WRP

In order to calculate air emissions of compounds associated with digester gas, the molecular weight and density of the digester gas must first be determined. The average molecular weight of digester gas is required for converting chemical concentrations from a volume per volume basis (v/v) to a weight per weight basis (w/w). The density of the digester gas must be determined for field conditions in order to convert concentrations from a weight per volume basis (w/v) to a weight per weight basis (w/w).

The **molecular weight** and **digester gas density** are determined from the bulk composition of the digester gas, as follows:

bulk composition (mol/mol gas) *:

CH_4 = 58.75%
CO_2 = 36.43%
H_2O = 3.26%
N_2 = 1.32%
O_2 = 0.24%
Total: 100.00%

convert to (g/mol): for 1 mole of digester gas,

0.5875 mol CH_4 x 16 g/mol = 9.400 g CH_4
0.3643 mol CO_2 x 44 g/mol = 16.029 g CO_2
0.0326 mol H_2O x 18 g/mol = 0.587 g H_2O
0.0132 mol N_2 x 28 g/mol = 0.370 g N_2
0.0024 mol O_2 x 32 g/mol = 0.077 g O_2
Total: **26.463 g/mol, molecular weight of digester gas**

convert to (g/L):

26.463 g/mol x (1mol/22.4 L) = 1.181 g/L at STP

convert from STP to field conditions:

gas pressure = 10 in. H_2O = 15.06 psi
gas temperature = 34.5° C = 307.5 K

1.181 g/L x (15.06 psi/14.7 psi) x (273 K/307.5 K) = **1.074 g/L, gas density at field conditions**

*Source: Digester gas analysis, p. 59.

TABLE 12
Concentration of AB-2588 Compounds in Digester Gas
Valencia WRP

Group I Compounds	CAS #	No. of Analyses	Conc. (vol/vol)	Formula Wt.	Conc.* (lb/lb)
benzene	71432	6	2.51 E-8	78.11	7.41 E-8
1,3-butadiene	106990	6	ND	54.09	ND
carbon tetrachloride	56235	6	ND	153.82	ND
chloroform	67663	6	ND	119.38	ND
p-dichlorobenzene	106467	6	1.02 E-7	147.00	5.67 E-7
1,4-dioxane	123911	6	ND	88.11	ND
ethylene dibromide	106934	6	ND	187.87	ND
ethylene dichloride	107062	6	ND	98.96	ND
hydrogen sulfide	7783064	12	2.79 E-4	34.08	3.59 E-4
methylene chloride	75092	6	4.75 E-8	84.93	1.52 E-7
styrene	100425	6	ND	104.15	ND
tetrachloroethylene	127184	6	9.80 E-8	165.83	6.14 E-7
toluene	108883	6	8.36 E-7	92.14	2.91 E-6
1,1,1-trichloroethane	71556	6	ND	133.41	ND
trichloroethylene	79016	6	5.36 E-8	131.39	2.66 E-7
trichlorofluoromethane	75694	6	ND	137.37	ND
vinyl chloride	75014	6	2.74 E-6	62.50	6.47 E-6
vinylidene chloride	75354	6	ND	96.94	ND
xylenes	1210	6	7.93 E-7	106.17	3.18 E-6

Group II Compounds	CAS #	No. of Analyses	Conc. (g/L)	Conc.** (lb/lb)
acetaldehyde	75070	3	1.11 E-8	1.03 E-8
acrolein	107028	3	ND	ND
formaldehyde	50000	3	5.74 E-9	5.34 E-9

Average concentration determined using geometric mean of analyses, pp. 59-61.

* Concentration (lb/lb) for Group I compounds is calculated as follows:
(compound conc., v/v) x (1/digester gas molecular wt.) x (compound molecular wt.)
example: p-dichlorobenzene
1.02 E-7 mol benzene/(mol gas) x (1 mol gas/ 26.46 lb) x 147.00 lb p-dichlorobenzene/mol
= 5.67 E-7 lb/lb

** Concentration (lb/lb) for Group II compounds calculated as follows:
(compound conc., g/L) x (1/digester gas density)
example: acetaldehyde
1.11 E-8 g acetaldehyde/(L digester gas) x (1/1.074 g digester gas/L)
= 1.03 E-8 g/g or 1.03 E-8 lb/lb

TABLE 13
Air Emissions from Anaerobic Digesters
(Device ID # 70009; Fugitive ID # 50007)
Valencia WRP

Quantification method: emission factors from EPA Document:
EPA-450/3-86-002; Emission Factors for Equipment Leaks of VOC and HAP, p. 3-23

Emissions calculation: EMS = C x EFfug
EMS = average yearly emissions or maximum hourly emissions, (lb/yr) or (lb/hr)
C = concentration (lb/lb) obtained from TABLE 12
EFfug = sum total of all fugitive emission factors, (lb/yr) or (lb/hr)
EFfug (kg/hr) = 0.0056 x (# of valves) + 0.228 x (# of comp. seals) + 0.00083 x (# of flanges)
= 0.0056 x 66 + 0.228 x 4 + 0.00083 x 266
= 1.5024 kg/hr or 3.3122 lb/hr

Compound	C (lb/lb)	EFfug (lb/hr)	EFfug (lb/yr)	Total Air Emiss. (lb/yr)	Max. Hourly Emiss. (lb/hr)
benzene	7.41E-08	3.3122	29015	0.00215	0.00000025
carbon tetrachloride	0.00E+00	3.3122	29015	0.00000	0.00000000
chloroform	0.00E+00	3.3122	29015	0.00000	0.00000000
p-dichlorobenzene	5.67E-07	3.3122	29015	0.01645	0.00000188
1,4-dioxane	0.00E+00	3.3122	29015	0.00000	0.00000000
ethylene dibromide	0.00E+00	3.3122	29015	0.00000	0.00000000
ethylene dichloride	0.00E+00	3.3122	29015	0.00000	0.00000000
formaldehyde	5.34E-09	3.3122	29015	0.00015	0.00000002
hydrogen sulfide	3.59E-04	3.3122	29015	10.41639	0.00118908
methylene chloride	1.52E-07	3.3122	29015	0.00441	0.00000050
styrene	0.00E+00	3.3122	29015	0.00000	0.00000000
tetrachloroethylene	6.14E-07	3.3122	29015	0.01782	0.00000203
toluene	2.91E-06	3.3122	29015	0.08443	0.00000964
1,1,1-trichloroethane	0.00E+00	3.3122	29015	0.00000	0.00000000
trichloroethylene	2.66E-07	3.3122	29015	0.00772	0.00000088
trichlorofluoromethane	0.00E+00	3.3122	29015	0.00000	0.00000000
vinyl chloride	6.47E-06	3.3122	29015	0.18773	0.00002143
vinylidene chloride	0.00E+00	3.3122	29015	0.00000	0.00000000
xylenes	3.18E-06	3.3122	29015	0.09227	0.00001053

10.8 295 L
(10.8 [illegible])

TABLE 14
Air Emissions from Digester Gas Fired Boiler
(Device ID # 70010; Stack ID # 90003)
Valencia WRP

Quantification method: emission factors from PEEP Final Report, Table 4-15B, p. 4-35

Emissions calculation: EMS = Q x Cin x Dgas x EF

EMS = average yearly emissions or maximum hourly emissions, (lb/yr) or (lb/hr)

Q = digester gas flowrate = 5.738 MCFY, yearly total flow or 0.0075 MCFH, maximum hourly flow

Cin = compound concentration (lb/lb) obtained from TABLE 12

Dgas = digester gas density = 0.0671 lb/cu. ft.

EF = emission factor (lb/lb), obtained from PEEP Final Report, Table 4-15B

Compound	Cin (lb/lb)	EF (lb/lb)	Total Air Emiss. (lb/yr)	Max. Hourly Emiss. (lb/hr)
acetaldehyde	1.03 E-8	6.9 E+0	0.027	0.000036
acrolein	0.00 E+0	8.2 E+0	0.000	0.000000
benzene	7.41 E-8	0.0 E+0	0.000	0.000000
1,3-butadiene	0.00 E+0	0.0 E+0	0.000	0.000000
carbon tetrachloride	0.00 E+0	0.0 E+0	0.000	0.000000
chloroform	0.00 E+0	0.0 E+0	0.000	0.000000
p-dichlorobenzene	5.67 E-7	0.0 E+0	0.000	0.000000
1,4-dioxane	0.00 E+0	0.0 E+0	0.000	0.000000
ethylene dibromide	0.00 E+0	0.0 E+0	0.000	0.000000
ethylene dichloride	0.00 E+0	0.0 E+0	0.000	0.000000
formaldehyde	5.34 E-9	3.2 E+1	0.066	0.000086
methylene chloride	1.52 E-7	0.0 E+0	0.000	0.000000
styrene	0.00 E+0	6.2 E-1	0.000	0.000000
tetrachloroethylene	6.14 E-7	0.0 E+0	0.000	0.000000
toluene	2.91 E-6	1.5 E-1	0.168	0.000220
1,1,1-trichloroethane	0.00 E+0	0.0 E+0	0.000	0.000000
trichloroethylene	2.66 E-7	0.0 E+0	0.000	0.000000
trichlorofluoromethane	0.00 E+0	0.0 E+0	0.000	0.000000
vinyl chloride	6.47 E-6	0.0 E+0	0.000	0.000000
vinylidene chloride	0.00 E+0	0.0 E+0	0.000	0.000000
xylenes	3.18 E-6	0.0 E+0	0.000	0.000000

0.251

TABLE 15
Air Emissions from Co-generation Unit
(Device ID # 70011; Stack ID # 90004)
Valencia WRP

Quantification method: emission factors from PEEP Final Report, Table 4-14A3, p. 4-30

Emissions calculation: EMS = Q x Cin x Dgas x EF

EMS = average yearly emissions or maximum hourly emissions, (lb/yr) or (lb/hr)

Q = digester gas flowrate = 27.431 MCFY, yearly total flow or 0.0142 MCFH, maximum hourly flow

Cin = compound concentration (lb/lb) obtained from TABLE 12

Dgas = digester gas density = 0.0671 lb/cu. ft.

EF = emission factor (lb/lb), obtained from PEEP Final Report, Table 4-15A

Compound	Cin (lb/lb)	EF (lb/lb)	Total Air Emiss. (lb/yr)	Max. Hourly Emiss. (lb/hr)
acetaldehyde	1.03 E-8	2.0 E+0	0.038	0.000020
acrolein	0.00 E+0	0.0 E+0	0.000	0.000000
benzene	7.41 E-8	3.2 E-1	0.044	0.000023
1,3-butadiene	0.00 E+0	0.0 E+0	0.000	0.000000
carbon tetrachloride	0.00 E+0	0.0 E+0	0.000	0.000000
chloroform	0.00 E+0	0.0 E+0	0.000	0.000000
p-dichlorobenzene	5.67 E-7	0.0 E+0	0.000	0.000000
1,4-dioxane	0.00 E+0	0.0 E+0	0.000	0.000000
ethylene dibromide	0.00 E+0	0.0 E+0	0.000	0.000000
ethylene dichloride	0.00 E+0	0.0 E+0	0.000	0.000000
formaldehyde	5.34 E-9	5.5 E+1	0.541	0.000280
methylene chloride	1.52 E-7	5.4 E+0	1.511	0.000782
styrene	0.00 E+0	0.0 E+0	0.000	0.000000
tetrachloroethylene	6.14 E-7	0.0 E+0	0.000	0.000000
toluene	2.91 E-6	5.8 E-1	3.107	0.001608
1,1,1-trichloroethane	0.00 E+0	0.0 E+0	0.000	0.000000
trichloroethylene	2.66 E-7	0.0 E+0	0.000	0.000000
trichlorofluoromethane	0.00 E+0	0.0 E+0	0.000	0.000000
vinyl chloride	6.47 E-6	0.0 E+0	0.000	0.000000
vinylidene chloride	0.00 E+0	0.0 E+0	0.000	0.000000
xylenes	3.18 E-6	4.0 E-1	2.341	0.001212

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Pooled Source Test Results for Flare Emissions

Results Summary

Client:		CSDLAC	
Unit:		Lancaster Flare	
Site:		Outlet	
Parameter			
Date	12/17/93	12/17/93	
Time	1150-1321	1357-1522	
	R1	R2	Average
Average Duct Conditions:			
Temperature, °F	1658	1693	1675
Abs. Pressure, in. Hg	28.26	28.26	28.26
Velocity, ft/sec	13.7	14.3	14.0
Volume Flow Rate:			
ACFM	5186	5424	5305
SDCFM	1091	1116	1103
% Moisture	9.2	9.8	9.5
Particulate Results, mg collected:			
Filterable	0.6	0.6	0.6
Condensable	3.8	5.0	4.4
Total	4.4	5.6	5.0
Particulate Results, gr/SDCF:			
Filterable	5.24E-04	5.54E-04	5.48E-04
Condensable	3.43E-03	4.66E-03	4.05E-03
Total	3.97E-03	5.21E-03	4.59E-03
Particulate Results, lb/hr:			
Filterable	0.005	0.005	0.005
Condensable	0.032	0.045	0.038
Total	0.037	0.050	0.044

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Results Summary

Client:	CSDLAC
Unit:	Lancaster Flare
Site:	Outlet

Parameter	
Date	12/16/93
Time	1109-1209
Continuous Emissions Monitoring Results:	
CO, ppmvd:	8.3
SO2, ppmvd	2.0
NOx, ppmvd	24.2
O2, %vd	10.8
CO2, %vd	8.6
Concentrations corrected to 3% O2:	
CO, ppmvd @ 3% O2	14.7
NOx, ppmvd @ 3% O2	42.9
SO2, ppmvd@ 3% O2	3.5
Concentrations corrected to 15% O2:	
CO, ppmvd @ 15% O2	4.8
NOx, ppmvd @ 15% O2	14.2
SO2, ppmvd @ 15% O2	1.2
Emission Rates:	
CO, lb/hr	0.0342
NOx, lb/hr	0.164
SO2, lb/hr	0.019

Results Summary

Client:	CSDLAC			
Unit:	Lancaster Flare			
Parameter				
Site	Inlet	Inlet	Inlet	
Date	12/16/93	12/16/93	12/16/93	
Time	1050-1120	1232-1302	1348-1418	
	R1	R2	R3	Average
Aldehyde Results:				
Acetaldehyde, ppb	< 111	< 191	< 148	74.9
Acetaldehyde, lb/hr	< 3.73E-05	< 6.41E-05	< 4.95E-05	2.52E-05
Acrolein, ppb	< 16.0	< 27.4	< 21.2	10.8
Acrolein, lb/hr	< 6.82E-06	< 1.17E-05	< 9.05E-06	4.60E-06
Formaldehyde, ppb	< 117	< 201	< 156	79.0
Formaldehyde, lb/hr	< 2.68E-05	< 4.61E-05	< 3.56E-05	1.81E-05

Site	Outlet	Outlet	Outlet	
Date	12/16/93	12/16/93	12/16/93	
Time	1648-1718	1739-1809	1820-1850	
	R1	R2	R3	Average
Aldehyde Results:				
Acetaldehyde, ppb	< 214	< 103	< 117	72.2
Acetaldehyde, lb/hr	< 1.39E-03	< 6.66E-04	< 7.62E-04	4.70E-04
Acrolein, ppb	< 28.6	< 13.7	< 15.7	9.7
Acrolein, lb/hr	< 2.37E-04	< 1.16E-04	< 1.30E-04	8.00E-05
Formaldehyde, ppb	< 223	< 107	< 122	75.2
Formaldehyde, lb/hr	< 9.86E-04	< 4.73E-04	< 5.41E-04	3.33E-04

Results Summary

Client:		CSDLAC		
Unit:		Lancaster Flare		
Parameter				
Site	Inlet	Inlet	Inlet	
Date	12/17/93	12/17/93	12/17/93	
Time	1153-1213	1214-1244	1410-1440	
	R1	R2	R3	Average
Trace Organic Gases, lb/hr:				
Vinyl Chloride	1.95E-04	1.75E-04	1.41E-04	1.70E-04
Trichlorofluoromethane	< 4.19E-06	< 4.19E-06	< 4.19E-06	2.10E-06
Vinylidene Chloride	7.10E-06	7.10E-06	5.44E-06	6.55E-06
Methylene Chloride	< 2.59E-06	3.32E-06	< 2.59E-06	1.97E-06
1,1-Dichloroethane	< 3.02E-06	< 3.02E-06	< 3.02E-06	1.51E-06
Trichloromethane	< 3.64E-06	< 3.64E-06	< 3.64E-06	1.82E-06
1,1,1-Trichloroethane	< 4.07E-06	< 4.07E-06	< 4.07E-06	2.04E-06
Tetrachloromethane	< 4.69E-06	< 4.69E-06	< 4.69E-06	2.35E-06
Benzene	1.53E-05	1.38E-05	1.14E-05	1.35E-05
1,2-Dichloroethane	< 3.02E-06	< 3.02E-06	< 3.02E-06	1.51E-06
Trichloroethylene	3.29E-04	2.73E-04	2.16E-04	2.73E-04
Toluene	1.41E-04	1.35E-04	1.07E-04	1.27E-04
Tetrachloroethylene	1.21E-04	9.82E-05	7.59E-05	9.85E-05
Ethylene Dibromide	< 5.67E-06	< 5.67E-06	< 5.67E-06	2.84E-06
Chlorobenzene	2.68E-05	2.61E-05	1.99E-05	2.43E-05
m, p-Xylene	1.17E-04	1.10E-04	8.42E-05	1.04E-04
o-Xylene	5.51E-05	5.25E-05	3.82E-05	4.86E-05
Styrene	< 3.18E-06	< 3.18E-06	< 3.18E-06	1.59E-06
m-Dichlorobenzene	< 4.49E-06	< 4.49E-06	< 4.49E-06	2.24E-06
p-Dichlorobenzene	4.13E-04	3.68E-04	2.69E-04	3.50E-04
o-Dichlorobenzene	< 4.49E-06	< 4.49E-06	< 4.49E-06	2.24E-06
1,3-Butadiene	< 1.65E-06	< 1.65E-06	< 1.65E-06	8.25E-07
1,4-Dioxane	< 2.69E-05	< 2.69E-05	< 2.69E-05	1.34E-05

Results Summary

Client:		CSDLAC		
Unit:		Lancaster Flare		
Parameter				
Site	Outlet	Outlet	Outlet	
Date	12/17/93	12/17/93	12/17/93	
Time	1153-1213	1214-1244	1410-1440	
	R1	R2	R3	Average
Trace Organic Gases, lb/hr:				
Vinyl Chloride	< 1.85E-05	< 2.18E-05	< 2.07E-05	1.02E-05
Trichlorofluoromethane	< 4.07E-05	< 4.79E-05	< 4.55E-05	2.24E-05
Vinylidene Chloride	< 2.87E-05	< 3.38E-05	< 3.21E-05	1.58E-05
Methylene Chloride	3.85E-05	5.33E-05	< 2.81E-05	3.53E-05
1,1-Dichloroethane	< 2.93E-05	< 3.45E-05	< 3.28E-05	1.61E-05
Trichloromethane	< 3.54E-05	< 4.16E-05	< 3.96E-05	1.94E-05
1,1,1-Trichloroethane	< 3.95E-05	< 4.65E-05	< 4.42E-05	2.17E-05
Tetrachloromethane	< 4.56E-05	< 5.36E-05	< 5.10E-05	2.50E-05
Benzene	< 2.32E-05	< 2.72E-05	< 2.59E-05	1.27E-05
1,2-Dichloroethane	< 2.93E-05	< 3.45E-05	< 3.28E-05	1.61E-05
Trichloroethylene	< 3.90E-05	< 4.58E-05	< 4.35E-05	2.14E-05
Toluene	< 2.73E-05	3.21E-05	< 3.05E-05	2.04E-05
Tetrachloroethylene	< 4.92E-05	< 5.78E-05	< 5.49E-05	2.70E-05
Ethylene Dibromide	< 5.51E-05	< 6.48E-05	< 6.16E-05	3.03E-05
Chlorobenzene	< 3.34E-05	< 3.93E-05	< 3.73E-05	1.83E-05
m, p-Xylene	< 3.15E-05	< 3.70E-05	< 3.52E-05	1.73E-05
o-Xylene	< 3.15E-05	< 3.70E-05	< 3.52E-05	1.73E-05
Styrene	< 3.09E-05	< 3.63E-05	< 3.45E-05	1.70E-05
m-Dichlorobenzene	< 4.36E-05	< 5.13E-05	< 4.87E-05	2.39E-05
p-Dichlorobenzene	6.15E-05	5.64E-05	< 4.87E-05	4.74E-05
o-Dichlorobenzene	< 4.36E-05	< 5.13E-05	< 4.87E-05	2.39E-05
1,3-Butadiene	< 1.60E-05	< 1.89E-05	< 1.79E-05	8.80E-06
1,4-Dioxane	< 2.61E-04	< 3.07E-04	< 2.92E-04	1.43E-04

TABLE 16
Calculation of Emission Factors
Waste Gas Flare Pooled Source Test
Valencia WRP

A pooled source test was performed on the Lancaster flare on 12/17/93.
Source test results are contained on pp. 67-71.
The following calculation was used to derive emission factors for flares:

EF = (Mass flux out)/ (Mass flux in)
EF = emission factor, lb/lb
Mass flux in (lb/hr) obtained from p. 69 (aldehydes) and p. 70 (trace organics).
Mass flux out (lb/hr) obtained from p. 69 (aldehydes) and p. 71 (trace organics).

Compound	Mass flux in (lb/hr)	Mass flux out (lb/hr)	EF (lb/lb)
acetaldehyde	ND	ND	0.00 E+00
acrolein	ND	ND	0.00 E+00
benzene	1.35 E-05	1.27 E-05	9.41 E-01
1,3-butadiene	ND	ND	0.00 E+00
carbon tetrachloride	ND	ND	0.00 E+00
chloroform	ND	ND	0.00 E+00
p-dichlorobenzene	3.50 E-04	4.74 E-05	1.35 E-01
1,4-dioxane	ND	ND	0.00 E+00
ethylene dibromide	ND	ND	0.00 E+00
ethylene dichloride	ND	ND	0.00 E+00
formaldehyde	ND	ND	0.00 E+00
methylene chloride	1.97 E-06	3.53 E-05	1.79 E+01
styrene	ND	ND	0.00 E+00
tetrachloroethylene	9.85 E-05	2.70 E-05	2.74 E-01
toluene	1.27 E-04	2.04 E-05	1.61 E-01
1,1,1-trichloroethane	ND	ND	0.00 E+00
trichloroethylene	2.73 E-04	2.14 E-05	7.84 E-02
trichlorofluoromethane	ND	ND	0.00 E+00
vinyl chloride	1.70 E-04	1.02 E-05	6.00 E-02
vinylidene chloride	6.55 E-06	1.58 E-05	2.41 E+00
xylenes	1.53 E-04	3.46 E-05	2.26 E-01

ND is a non-detect value

TABLE 17
Air Emissions from Waste Gas Flares
(Device ID # 70012; Stack ID # 90005 and 90006)
Valencia WRP

Quantification method: emission factors from pooled source test on Lancaster flare, 12/17/93.

Emissions calculation: EMS = Q x Cin x Dgas x EF

EMS = average yearly emissions or maximum hourly emissions, (lb/yr) or (lb/hr)

Q = digester gas flowrate = 32.466 MCFY, yearly flow or 0.0118 MCFH, max. hr. flow

Cin = compound concentration (lb/lb) obtained from TABLE 12

Dgas = digester gas density = 0.0671 lb/cu. ft.

EF = emission factor (lb/lb), obtained from pooled source test, TABLE 16

Compound	Cin (lb/lb)	EF (lb/lb)	Total Air Emiss. (lb/yr)	Max. Hourly Emiss. (lb/hr)
acetaldehyde	1.03 E-8	0.00 E+0	0.000	0.000000
acrolein	0.00 E+0	0.00 E+0	0.000	0.000000
benzene	7.41 E-8	9.41 E-1	0.152	0.000055
1,3-butadiene	0.00 E+0	0.00 E+0	0.000	0.000000
carbon tetrachloride	0.00 E+0	0.00 E+0	0.000	0.000000
chloroform	0.00 E+0	0.00 E+0	0.000	0.000000
p-dichlorobenzene	5.67 E-7	1.35 E-1	0.167	0.000061
1,4-dioxane	0.00 E+0	0.00 E+0	0.000	0.000000
ethylene dibromide	0.00 E+0	0.00 E+0	0.000	0.000000
ethylene dichloride	0.00 E+0	0.00 E+0	0.000	0.000000
formaldehyde	5.34 E-9	0.00 E+0	0.000	0.000000
methylene chloride	1.52 E-7	1.79 E+1	5.934	0.002157
styrene	0.00 E+0	0.00 E+0	0.000	0.000000
tetrachloroethylene	6.14 E-7	2.74 E-1	0.366	0.000133
toluene	2.91 E-6	1.61 E-1	1.021	0.000371
1,1,1-trichloroethane	0.00 E+0	0.00 E+0	0.000	0.000000
trichloroethylene	2.66 E-7	7.84 E-2	0.045	0.000017
trichlorofluoromethane	0.00 E+0	0.00 E+0	0.000	0.000000
vinyl chloride	6.47 E-6	6.00 E-2	0.846	0.000307
vinylidene chloride	0.00 E+0	2.41 E+0	0.000	0.000000
xylenes	3.18 E-6	2.26 E-1	1.566	0.000569

9.076

Source Test Results for Digester Cleaning Station

Results Summary

Client:	CSDLAC
Unit:	Valencia Digester Cleaning System
Site:	Outlet

Parameter				
Date	12/14/93	12/14/93		
	Run 1	Run 2	Run 3	Average
Average Duct Conditions:				
Temperature, °F	63.1	63.0	-	63.1
Abs. Pressure, in. Hg	29.3	29.22	-	29.26
Velocity, ft/sec	16.2	16.3	-	16.3
Volume Flow Rate:				
ACFM	762	766	-	764
SDCFM	731	731	-	731
% Moisture	1.4	1.7	-	1.6
Continuous Emissions Monitoring Results:				
O2, %vd	20.6	20.5	-	20.6
CO2, %vd	0.0	0.1	-	0.1
Formaldehyde Results:				
ppb	<63.4	<70.5	<72.6	< 68.8
lb/hr	<2.20E-04	<2.45E-04	<2.52E-04	< 2.39E-04
Sulfur Compounds Results:				
Hydrogen Sulfide, ppb	< 500	< 500	-	< 500
Hydrogen Sulfide, lb/hr	< 1.97E-03	< 1.97E-03	-	< 1.97E-03

Results Summary, cont.

Client:		CSDLAC	
Unit:		Valencia Digester Cleaning System	
Site:		Outlet	
Parameter			
Date	12/14/93	12/14/93	
	Run 1	Run 2	Average
Trace Organic Gases Results, ppb:			
Vinyl Chloride	< 1.0	1.0	0.8
Trichlorofluoromethane	< 1.0	< 1.0	< 1.0
Vinylidene Chloride	< 1.0	< 1.0	< 1.0
Methylene Chloride	2.4	2.4	2.4
1,1-Dichloroethane	< 1.0	< 1.0	< 1.0
Trichloromethane	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	2.4	1.7	2.1
Tetrachloromethane	< 1.0	< 1.0	< 1.0
Benzene	2.7	2.8	2.8
1,2-Dichloroethane	< 1.0	< 1.0	< 1.0
Trichloroethylene	< 1.0	< 1.0	< 1.0
Toluene	6.5	6.6	6.6
Tetrachloroethylene	< 1.0	< 1.0	< 1.0
Ethylene Dibromide	< 1.0	< 1.0	< 1.0
Chlorobenzene	< 1.0	< 1.0	< 1.0
m, p-Xylene	3.2	2.7	3.0
o-Xylene	1.5	1.3	1.4
Styrene	2.2	2.6	2.4
m-Dichlorobenzene	< 1.0	< 1.0	< 1.0
p-Dichlorobenzene	< 1.0	< 1.0	< 1.0
o-Dichlorobenzene	< 1.0	< 1.0	< 1.0
1,3-Butadiene	< 1.0	< 1.0	< 1.0
1,4-Dioxane	< 1.0	< 1.0	< 1.0

Results Summary, cont.

Client:	CSDLAC		
Unit:	Valencia Digester Cleaning System		
Site:	Outlet		
Parameter			
Date	12/14/93	12/14/93	
	Run 1	Run 2	Average
Trace Organic Gases Results, lb/hr:			
Vinyl Chloride	< 7.22E-06	7.22E-06	5.42E-06
Trichlorofluoromethane	< 1.59E-05	< 1.59E-05	< 1.59E-05
Vinylidene Chloride	< 1.12E-05	< 1.12E-05	< 1.12E-05
Methylene Chloride	2.36E-05	2.36E-05	2.36E-05
1,1-Dichloroethane	< 1.14E-05	< 1.14E-05	< 1.14E-05
Trichloromethane	< 1.38E-05	< 1.38E-05	< 1.38E-05
1,1,1-Trichloroethane	3.70E-05	2.62E-05	3.16E-05
Tetrachloromethane	< 1.78E-05	< 1.78E-05	< 1.78E-05
Benzene	2.44E-05	2.53E-05	2.48E-05
1,2-Dichloroethane	< 1.14E-05	< 1.14E-05	< 1.14E-05
Trichloroethylene	< 1.52E-05	< 1.52E-05	< 1.52E-05
Toluene	6.92E-05	7.03E-05	6.98E-05
Tetrachloroethylene	< 1.92E-05	< 1.92E-05	< 1.92E-05
Ethylene Dibromide	< 2.15E-05	< 2.15E-05	< 2.15E-05
Chlorobenzene	< 1.30E-05	< 1.30E-05	< 1.30E-05
m, p-Xylene	3.93E-05	3.31E-05	3.62E-05
o-Xylene	1.84E-05	1.60E-05	1.72E-05
Styrene	2.65E-05	3.13E-05	2.89E-05
m-Dichlorobenzene	< 1.70E-05	< 1.70E-05	< 1.70E-05
p-Dichlorobenzene	< 1.70E-05	< 1.70E-05	< 1.70E-05
o-Dichlorobenzene	< 1.70E-05	< 1.70E-05	< 1.70E-05
1,3-Butadiene	< 6.25E-06	< 6.25E-06	< 6.25E-06
1,4-Dioxane	< 1.02E-05	< 1.02E-05	< 1.02E-05

TABLE 18
Air Emissions from Digester Cleaning Station
(Device ID # 70014; Stack ID # 90007)
Valencia WRP

Quantification method: source test

Emissions calculation: EMS = Q x C

EMS = average yearly emissions or maximum hourly emissions, (lb/yr) or (lb/hr)

Q = volumetric flowrate = 764 CFM or 45840 CFH or 401.56 MCFY

C = compound concentration (PCF) obtained from source test results, p. 74-76.

Compound	C (lb/cu ft)	Total Air Emiss. (lb/yr)	Max. Hourly Emiss. (lb/hr)
benzene	5.41 E-10	0.21724	0.000025
carbon tetrachloride	0.00 E+00	0.00000	0.000000
chloroform	0.00 E+00	0.00000	0.000000
p-dichlorobenzene	0.00 E+00	0.00000	0.000000
1,4-dioxane	0.00 E+00	0.00000	0.000000
ethylene dibromide	0.00 E+00	0.00000	0.000000
ethylene dichloride	0.00 E+00	0.00000	0.000000
formaldehyde	5.21 E-09	2.09213	0.000239
hydrogen sulfide	0.00 E+00	0.00000	0.000000
methylene chloride	5.15 E-10	0.20680	0.000024
styrene	6.30 E-10	0.25298	0.000029
tetrachloroethylene	0.00 E+00	0.00000	0.000000
toluene	1.52 E-09	0.61037	0.000070
1,1,1-trichloroethane	6.89 E-10	0.27667	0.000032
trichloroethylene	0.00 E+00	0.00000	0.000000
trichlorofluoromethane	0.00 E+00	0.00000	0.000000
vinyl chloride	1.18 E-10	0.04738	0.000005
vinylidene chloride	0.00 E+00	0.00000	0.000000
xylenes	1.16 E-09	0.46581	0.000053

41692

CALCULATION 6
Sodium Hydroxide Emissions from Digester Cleaning Station Caustic Scrubber
(Device ID # 70014; Stack ID # 90007)
Valencia WRP

Quantification method: emissions based on material balance using engineering expertise and knowledge of process.

Sodium hydroxide is used in the digester cleaning station caustic scrubber to remove objectionable compounds such as VOC's and hydrogen sulfide from air which is drawn off of the digetser cleaning station headspace. In addition to removing the majority of VOC's and hydrogen sulfide which is present, sodium hydroxide also reacts with carbon dioxide present in the air being scrubbed. The carbon dioxide dissolves in the scrubber solution to form carbonic acid, H_2CO_3, which then reacts with NaOH to form sodium carbonate, Na_2CO_3. We will assume that the major reaction controlling the consumption of NaOH is the reaction with H_2CO_3.

Air emissions of NaOH from the caustic scrubber are expected to be very low since NaOH has almost no vapor pressure and therefore, will not evaporate into the atmosphere. The caustic scrubber is also equipped with a mist eliminator so that NaOH solution droplets are not likely to exit the scrubber.

Total NaOH air emissions may be determined using a mass balance on the air scrubbing process:

Emissions calculation: EMS (lb/yr) = $Q_{in} \cdot C_{in} - Q_{out} \cdot C_{out} - M_{reacted}$

where Q_{in} is the flowrate of NaOH solution into scrubber, gal/yr
C_{in} is the influent concentration of NaOH solution, lb/gal
Q_{out} is the flowrate of NaOH solution out of scrubber, gal/yr
C_{out} is the effluent concentration of NaOH solution, lb/gal
$M_{reacted}$ is the mass of NaOH reacted with H_2CO_3, lb/yr

During 1991, 540 gallons of NaOH were used in the headworks caustic scrubber (i.e. Q_{in} = 540 gal/yr).
C_{in} = 0.14 moles NaOH/L x 40 g NaOH/mole x 3.785 L/gal x 1 lb/453.6 g = 4.67×10^{-2} lb NaOH/gal
Q_{out}= 159 gal/yr
C_{out} = 0.1 moles NaOH/L x 40 g NaOH/mole x 3.785 L/gal x 1 lb/453.6 g = 3.33×10^{-2} lb NaOH/gal

$M_{reacted}$ This value may be determined from the following reactions:

$$CO_2 + H_2O = H_2CO_3$$
$$2\ NaOH + H_2CO_3 = Na_2CO_3 + H_2O$$

which generates the stoichiometric relationship: 2 x moles CO_2 consumed = moles NaOH reacted
in 1991, 130 moles of CO_2 were consumed, based on measurements of CO_2 at scrubber inlet and outlet.

Therefore, $M_{reacted}$ = 130 moles CO_2 x 2 moles NaOH/(mole CO_2) x 40 g NaOH/mole x 1 lb/453.6 g
= 22.9 lb NaOH reacted

Therefore, EMS (lb/yr) = (540 gal/yr x 4.67×10^{-2} lb NaOH/gal) - (159 gal/yr x 3.33×10^{-2} lb NaOH/gal) - 22.9 lb NaOH
= **-3.0 lb, or no NaOH emissions.**

CALCULATION 7
Chloroform Air Emissions from Laboratory Fume Hood
(Device ID # 70015; Stack ID # 90008)
Valencia WRP

Quantification method: emissions based on material balance using engineering expertise and knowledge of process.

The laboratory fume hood (ID # 70015) is a possible air emitter of chloroform, due to its use in the analysis of MBAS. MBAS tests are run once a month for approximately one hour. Chloroform is used as an extractant in the analysis. There are six sets of extractions run during each test, and the test is repeated three times for a total of 18 extractions per month. Ten ml of chloroform is used in each extraction which amounts to 180 ml of chloroform per month. It is estimated that no more than 5% of the chloroform is allowed to evaporate during the test. Therefore, the total amount of chloroform emitted to the air from the laboratory fume hood each month is 0.05 x 180 ml/month = 9 ml/month.

Annual chloroform emissions from the laboratory fume hood are calculated as follows:

Emissions calculation: EMS (lb/yr) = X x D

where X is total gallons of chloroform evaporated per year, gal/yr
D is chloroform density, lb/gal

X = 9 ml/mo x 12 mo/yr x 1 L/(1000 ml) x 0.264 gal/L = 0.0285 gal/yr
D = 1.4832 g chloroform/ml x 1 lb/(453.6 g) x 3785 ml/gal = 12.376 lb/gal

EMS (lb/yr) = 0.0285 gal/yr x 12.376 lb/gal = **0.353 lb/yr, annual chloroform air emissions from laboratory fume hood.**

Maximum hourly emissions of chloroform from laboratory fume hood may be calculated as follows:

Emissions calculation: EMS (lb/hr) = X x D

where X is total gallons of chloroform evaporated per hour, gal/hr
D is chloroform density, lb/gal

X = 9 ml/hr x 0.264 gal/(1000 ml) = 0.002376 gal/hr
D = 12.376 lb/gal (obtained from material safety data sheet)

EMS (lb/hr) = 0.002376 gal/hr x 12.376 lb/gal = **0.0294 lb/hr, maximum hourly emissions of chloroform from lab fume hood.**

CC071 -01 -- CADMIUM, 1,000 UG/ML OR 10,000 UG/ML-- PAGE: 1
EFFECTIVE: 03/09/92 ISSUED: 03/28/92

J.T.BAKER INC., 1037 LOWER BROWNSVILLE RD., JACKSON, TN 38301

SECTION I - PRODUCT IDENTIFICATION

PRODUCT NAME: CADMIUM, 1,000 UG/ML OR 10,000 UG/ML
COMMON SYNONYMS: N/A
CHEMICAL FAMILY: PLASMA STANDARDS
FORMULA: CD
FORMULA WT.: 112.41
CAS NO.: N/A
NIOSH/RTECS NO.: QU5775000
PRODUCT USE: LABORATORY REAGENT
PRODUCT CODES: 5709,5723

PRECAUTIONARY LABELING

BAKER SAF-T-DATA* SYSTEM

HEALTH	-	3	SEVERE (CANCER CAUSING)
FLAMMABILITY	-	0	NONE
REACTIVITY	-	2	MODERATE
CONTACT	-	2	MODERATE

LABORATORY PROTECTIVE EQUIPMENT

GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

U.S. PRECAUTIONARY LABELING

WARNING

CAUSES SEVERE IRRITATION. HARMFUL IF SWALLOWED OR INHALED. CAUTION: CONTAINS CADMIUM, CANCER HAZARD.
DO NOT GET IN EYES, ON SKIN, ON CLOTHING. DO NOT BREATHE VAPOR. KEEP IN TIGHTLY CLOSED CONTAINER. USE WITH ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING. IN CASE OF SPILL, NEUTRALIZE WITH SODA ASH OR LIME AND PLACE IN DRY CONTAINER.

INTERNATIONAL LABELING

AVOID CONTACT WITH EYES. AFTER CONTACT WITH SKIN, WASH IMMEDIATELY WITH PLENTY OF WATER. KEEP CONTAINER TIGHTLY CLOSED.

SAF-T-DATA* STORAGE COLOR CODE: ORANGE (GENERAL STORAGE)

CONTINUED ON PAGE: 2

SECTION II - COMPONENTS

COMPONENT	CAS NO.	WEIGHT %	OSHA/PEL	ACGIH/TLV
CADMIUM	7440-43-9	0.1-1	N/E	N/E
NITRIC ACID	7697-37-2	<4	2 PPM	2 PPM
WATER	7732-18-5	>95	N/E	N/E

SECTION III - PHYSICAL DATA

BOILING POINT: N/A

VAPOR PRESSURE (MMHG): N/A

MELTING POINT: N/A

VAPOR DENSITY (AIR=1): N/A

SPECIFIC GRAVITY: N/A
(H2O=1)

EVAPORATION RATE: N/A

SOLUBILITY(H2O): COMPLETE (100%)

% VOLATILES BY VOLUME: 99
(21 C)

: N/A

ODOR THRESHOLD (P.P.M.): N/A

PHYSICAL STATE: LIQUID

COEFFICIENT WATER/OIL DISTRIBUTION: N/A

APPEARANCE & ODOR: COLORLESS LIQUID. ODORLESS.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (CLOSED CUP): N/A

AUTOIGNITION TEMPERATURE: N/A

FLAMMABLE LIMITS: UPPER - N/A LOWER - N/A

FIRE EXTINGUISHING MEDIA
USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.

DATE: 06/03/92 ACCT: 479843-03
INDEX: 28921550327 CAT NO: C493500 PO NBR: 156645

CUPRIC SULFATE, PENTAHYDRATE
CUPRIC SULFATE, PENTAHYDRATE
CUPRIC SULFATE, PENTAHYDRATE

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTREC ASSISTANCE: (800) 424-9300

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SUBSTANCE IDENTIFICATION

SUBSTANCE: **CUPRIC SULFATE, PENTAHYDRATE** CAS-NUMBER 7758-99-8

TRADE NAMES/SYNONYMS:
COPPER(II) SULFATE, PENTAHYDRATE; TRIANGLE; BLUESTONE;
COPPER(II) SULFATE, PENTAHYDRATE (1:1:16); BLUE COPPER AS; COPPER SULPHATE;
COPPER(2+) SULFATE, PENTAHYDRATE; COPPERFINE-ZINC; BLUE VITRIOL;
ROMAN VITRIOL; STCC 4961316; NA 9109; C493; C489; C490; BP348; CUH10099;
ACC05690

CHEMICAL FAMILY:
INORGANIC SALT

MOLECULAR FORMULA: CU-04-S.5H20

MOLECULAR WEIGHT: 249.68

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=0 REACTIVITY=0 PERSISTENCE=3
NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=0 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: CUPRIC SULFATE, PENTAHYDRATE PERCENT: 100
CAS# 7758-99-8

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
COPPER DUST AND MIST (AS CU):
1 MG/M3 OSHA TWA
1 MG/M3 ACGIH TWA
1 MG/M3 NIOSH RECOMMENDED TWA
1 MG/M3 DFG MAK TWA (TOTAL DUST);
2 MG/M3 DFG MAK 30 MINUTE PEAK, AVERAGE VALUE, 4 TIMES/SHIFT

MEASUREMENT METHOD: PARTICULATE FILTER; ACID; ATOMIC ABSORPTION SPECTROMETRY; (NIOSH VOL. III # 7029).

SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING

PHYSICAL DATA

DESCRIPTION: BLUE CRYSTALS, GRANULES, OR POWDER

BOILING POINT: 302 F (150 C) -H20 MELTING POINT: 230 F (110 C) -H20

SPECIFIC GRAVITY: 2.3 SOLUBILITY IN WATER: 32%

SOLVENT SOLUBILITY: METHANOL; SLIGHTLY SOLUBLE IN ETHANOL, GLYCEROL

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
NEGLIGIBLE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FIREFIGHTING:

DATE: 06/03/92 ACCT: 479843-03
INDEX: 28921550327 CAT NO: C493500 PO NBR: 156645

MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. DO NOT SCATTER SPILLED MATERIAL WITH HIGH-PRESSURE WATER STREAMS. DIKE FIRE-CONTROL WATER FOR LATER DISPOSAL (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE 31).

EXTINGUISH USING AGENTS SUITABLE FOR TYPE OF FIRE. AVOID BREATHING VAPORS OR DUSTS.

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49 CFR 172.101:
ORM-E

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49 CFR 172.101 AND SUBPART E:
NONE

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49 CFR 173.510
EXCEPTIONS: NONE

TOXICITY

CUPRIC SULFATE (COPPER SULFATE):
TOXICITY DATA:
ANHYDROUS: 150 MG/KG ORAL-CHILD TDLO; 11 MG/KG ORAL-HUMAN TDLO; 857 MG/KG ORAL-MAN LDLO; 50 MG/KG ORAL-HUMAN LDLO; 300 MG/KG ORAL-RAT LD50; 43 MG/KG SUBCUTANEOUS-RAT LD50; 520 MG/KG UNREPORTED ROUTE-RAT LD50; 18 MG/KG INTRAPERITONEAL-MOUSE LD50; 500 UG/KG SUBCUTANEOUS-MOUSE LDLO; 50 MG/KG INTRAVENOUS-MOUSE LDLO; 10 MG/KG INTRAVENOUS-RABBIT LD50; 2 MG/KG INTRAVENOUS-GUINEA PIG LDLO; 10 MG/KG PARENTERAL-CHICKEN LDLO; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS); TUMORIGENIC DATA (RTECS).
MONOHYDRATE: NO DATA AVAILABLE.
PENTAHYDRATE: 272 MG/KG ORAL-HUMAN TDLO; 1088 MG/KG ORAL-HUMAN LDLO; 300 MG/KG ORAL-RAT LD50; 80 MG/KG ORAL-DOG LDLO; 5 MG/KG ORAL-DOMESTIC ANIMAL LDLO; 62 MG/KG SUBCUTANEOUS-GUINEA PIG LDLO; 18,700 UG/KG INTRAPERITONEAL-RAT LD50; 33 MG/KG INTRAPERITONEAL-MOUSE LD50; 7500 UG/KG INTRAPERITONEAL-MAMMAL LD50; 221 MG/KG UNREPORTED ROUTE-MAN LDLO; MUTGENIC DATA (RTECS).
CARCINOGEN STATUS: NONE.
LOCAL EFFECTS: CORROSIVE- EYES AND INGESTION; IRRITANT- INHALATION AND SKIN.
ACUTE TOXICITY LEVEL: TOXIC BY INGESTION (ANHYDROUS AND PENTAHYDRATE.)
TARGET EFFECTS: POISONING MAY AFFECT THE LIVER, KIDNEYS, AND BLOOD.*
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH PRE-EXISTING RESPIRATORY, LIVER, KIDNEY, SKIN, OR WILSON'S DISEASE, OR HEMATOPOIETIC DISORDERS.*
ADDITIONAL DATA: MAY BE EXCRETED IN BREAST MILK.*

* MAY BE BASED ON GENERAL INFORMATION ON COPPER SALTS.

HEALTH EFFECTS AND FIRST AID

INHALATION:
CUPRIC SULFATE (COPPER SULFATE):
IRRITANT.
SEE INFORMATION ON COPPER SALTS. IN ADDITION TO THE EFFECTS DESCRIBED IN COPPER SALTS, COPPER SULFATE MAY CAUSE SORE THROAT, COUGHING, SHORTNESS OF BREATH, AND CAN BE CORROSIVE TO MUCOUS MEMBRANES. CHRONIC EXPOSURE CAN ALSO CAUSE SLOUGHING OF NASAL MUCOSA. WORKERS EXPOSED OVER THE YEARS TO BORDEAUX MIXTURE, CONTAINING COPPER SULFATE AS THE PRINCIPLE TOXIC AGENT, HAVE DEVELOPED COPPER CONTAINING NODULES AND GREENISH TUMORS IN THE LIVER AND LUNGS.

COPPER SALTS:
ACUTE EXPOSURE- MISTS OF COPPER SALTS MAY CAUSE IRRITATION OF THE UPPER RESPIRATORY TRACT OR AN ILLNESS SIMILAR TO THE COMMON COLD WITH CHILLS AND STUFFINESS OF THE HEAD. CHEST PAIN, DYSPNEA, A METALLIC TASTE AND GASTROINTESTINAL DISTURBANCES MAY OCCUR.
CHRONIC EXPOSURE- REPEATED OR PROLONGED EXPOSURE TO DUSTS OR MISTS OF COPPER SALTS MAY CAUSE IRRITATION OF THE UPPER RESPIRATORY TRACT, RHINITIS, SNEEZING, COUGHING, FEVER, METALLIC TASTE AND DIGESTIVE DISORDERS. ULCERATION AND PERFORATION OF THE NASAL SEPTUM HAS BEEN REPORTED ON OCCASION. CONGESTION AND ATROPHIC CHANGES IN NASAL MUCOSA HAVE BEEN REPORTED FROM LONGTERM EXPOSURE. MILD ANEMIA, POSSIBLY HEMOLYTIC, HAS BEEN OBSERVED IN WORKERS EXPOSED TO COPPER IN THE AIR. GREENISH DISCOLORATION OF THE SKIN, HAIR AND TEETH HAS OCCURRED. IN ANIMALS INHALATION OF COPPER SALTS HAS CAUSED INJURY TO THE LUNGS AND LIVER WITH HEMOCHROMATOSIS.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
CUPRIC SULFATE (COPPER SULFATE):
IRRITANT.
SEE INFORMATION ON COPPER SALTS. IN ADDITION TO THE EFFECTS DESCRIBED IN COPPER SALTS, COPPER SULFATE MAY CAUSE REDNESS, PAIN, AND ITCHING PAPULOVESICULAR AND ECZEMATOID LESIONS. STRONG SOLUTIONS OF COPPER SULFATE

DUPONT

MORBARK INDUSTRIES, INC.

WINN, MICHIGAN 48896 • 517-866-2381 • TELEX 386 488 (MORBARK WINN)

MATERIAL SAFETY DATA SHEET

IDENTIFICATION

Name:
Freon® 12 (Used in airconditioners sold with Morbark equipment)

Chemical Family:
Halogenated Hydrocarbon

Synonyms:
R-12, Refrigerant 12, Dichlorodifluoromethane

Formula:
CCl_2F_2

CAS Name:
Methane, Dichlorodifluoro

CAS Registry No.:
75-71-8

Manufacturer/Distributor:
E. I. du Pont de Nemours & Co. (Inc.)

Medical Emergency Phone:
(800) 441-3637

Address:
Freon® Products Division
Wilmington, DE 19898

Transportation Emergency Phone:
CHEMTREC (800) 424-9300

PHYSICAL DATA

Boiling Point (°F): -21.6

Density: 1.311 g/cc @ 77°F

Vapor Density (Air = 1): 4.2

Form: Liquefied Gas

Color: Colorless

Percent Volatile by Volume: 100

Vapor Pressure: 80 psig @ 77°F

Solubility in H_2O: 0.028% by wt @ 77°F

Appearance: Clear

Odor: Slight ethereal odor

HAZARDOUS COMPONENTS

Material:
Dichlorodifluoromethane

Approximate %:
100

HAZARDOUS REACTIVITY

Stability:
Material is stable. However, avoid open flames and high temperatures.

Incompatibility:
Alkali or alkaline earth metals - powdered Al, Zn, Be, etc.

I-CHEM RESEARCH

Chemists In The Container Business™

I-CHEM RESEARCH
29787 - F Eichler Street
Hayward, CA 94545

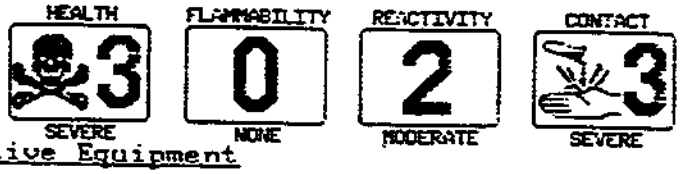
MATERIAL SAFETY DATA SHEET

SECTION I - PRODUCT IDENTIFICATION

Product Name: Hydrochloric Acid
Formula: HCl
Formula Wt: 36.46
CAS No.: 7647-01-0
NIOSH/RTECS No.: MW4025000
Common Synonyms: Muriatic Acid; Chlorohydric Acid; Hydrochloride
Product Codes: 9543,9539,9535,5367,9534,9544,9529,9542,4800,9549,9530,9548 9540,9547,9546,9537

PRECAUTIONARY LABELLING

BAKER SAF-T-DATA™ System



Laboratory Protective Equipment

Precautionary Label Statements

POISON! DANGER!
CAUSES SEVERE BURNS
MAY BE FATAL IF SWALLOWED OR INHALED

Do not get in eyes, on skin, on clothing.
Do not breathe vapor. Keep in tightly closed container. Loosen closure cautiously. Use with adequate ventilation. Wash thoroughly after handling. In case of spill neutralize with soda ash or lime and place in dry container.

SECTION II - HAZARDOUS COMPONENTS

Component	%	CAS No.
Hydrochloric Acid (23° Baume)	35-40	7647-01-0

SECTION III - PHYSICAL DATA

Boiling Point: 110°C (230°F) Vapor Pressure(mmHg): N/A

SPECTRUM CHEMICAL MFG. CORP.
14422 S. SAN PEDRO STREET
GARDENA, CALIFORNIA 90248-9985
PHONE : (213) 516-8000

EMERGENCY CONTACT:
CHEMTREC (800) 424-9300
SPECTRUM TECHNICAL SERVICE (213) 516-8000

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SUBSTANCE IDENTIFICATION

SUBSTANCE: MERCURIC SULFATE CAS-NUMBER 7783-35-9

TRADE NAMES/SYNONYMS:
MERCURY(II) SULFATE; MERCURIC SULPHATE; MERCURY BISUL-FATE;
MERCURY PERSULFATE; MERCURIC SULFATE, SOLID;
SULFURIC ACID, MERCURY(2+) SALT (1:1); UN 1645;

CHEMICAL FAMILY:
INORGANIC SALT

MOLECULAR FORMULA: HG-S-O4 MOL WT: 296.65

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=0 REACTIVITY=0 PERSISTENCE=3
NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: MERCURIC SULFATE PERCENT: 100

OTHER CONTAMINANTS: NONE.

EXPOSURE LIMITS:
MERCURY AND INORGANIC COMPOUNDS:
0.1 MG(HG)/M3 OSHA CEILING
0.1 MG(HG)/M3 ACGIH TWA
0.05 MG(HG)/M3 NIOSH RECOMMENDED 10 HOUR TWA

PHYSICAL DATA

DESCRIPTION: ODORLESS, WHITE GRANULES OR CRYSTALLINE POWDER.

MELTING POINT: DECOMPOSES SPECIFIC GRAVITY: 6.5

SOLUBILITY IN WATER: DECOMPOSES

SOLVENT SOLUBILITY: ACIDS, NACL, HCL. INSOL IN AL, ACETETONE, & NH3.

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
NEGLIGIBLE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

FLASH POINT: NON-FLAMMABLE

Baxter Healthcare Corporation
Burdick & Jackson Division
1953 South Harvey Street
Muskegon, MI 49442 USA

information/emergency telephone no. 616.726.3171
chemtrec telephone no. 800.424.9300
canadian emergency telephone no. 613.996.6666

MATERIAL SAFETY DATA SHEET

METHANOL

I. Identification

chemical name Methanol
molecular weight 32.04
chemical family Alcohol
formula CH_4O
synonyms Carbinol, Methyl Alcohol, Wood Alcohol
DOT proper shipping name Methyl Alcohol or Methanol
DOT hazard class Flammable Liquid
DOT identification no. UN1230
CAS no. 67-56-1

II. Physical and Chemical Data

boiling point, 760mm Hg. 64.7°C
freezing point -97.7°C
evaporation rate (BuAc=1) ca 5
vapor pressure at 20°C 97 mm Hg
vapor density (air=1) 1.11
solubility in water @ 20°C complete
% volatiles by volume ca 100
specific gravity (H_2O=1) @ 20°C 0.792
stability Stable
hazardous polymerization Not expected to occur.
appearance and odor A clear, colorless liquid with a slight alcoholic odor.
conditions to avoid Heat, sparks, open flame, open containers, and poor ventilation.

materials to avoid Strong oxidizing agents and reactive metals which will displace hydrogen.

hazardous decomposition products Incomplete combustion can generate carbon monoxide and other toxic vapors such as formaldehyde.

III. Fire and Explosion Hazard Data

flash point, (test method) 12°C (Tag closed cup)
auto ignition temperature 385°C
flammable limits in air % by volume: lower limit 6.7
upper limit 36.5
unusual fire and explosion hazards May burn with an invisible flame. Mixtures with water as low as 21% by volume are still flammable (flash point below 37.8°C). Under some circumstances can corrode certain metals, including aluminum and zinc, and generate hydrogen gas.
extinguishing media Carbon dioxide, dry chemical, alcohol foam, water mist or fog.

special fire fighting procedures Wear full protective clothing and self-contained breathing apparatus. Heat will build pressure and may rupture closed storage containers. Keep fire-exposed containers cool with water spray.

IV. Hazardous Components

	%	TLV	CAS no.
Methanol	ca 100	200 ppm (skin)	67-56-1

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J.T.BAKER INC., 222 RED SCHOOL LANE, PHILLIPSBURG, NJ 08865

SECTION I - PRODUCT IDENTIFICATION

PRODUCT NAME: PHOSPHORIC ACID
COMMON SYNONYMS: ORTHO-PHOSPHORIC ACID
CHEMICAL FAMILY: INORGANIC ACIDS
FORMULA: H3PO4
FORMULA WT.: 98.00
CAS NO.: 7664-38-2
NIOSH/RTECS NO.: TB6300000
PRODUCT USE: LABORATORY REAGENT
PRODUCT CODES: 5372,0261,0267,0264,0266,0262,0274,0260,0265,0259

PRECAUTIONARY LABELING

BAKER SAF-T-DATA® SYSTEM

HEALTH	-	2	MODERATE
FLAMMABILITY	-	0	NONE
REACTIVITY	-	2	MODERATE
CONTACT	-	3	SEVERE (CORROSIVE)

LABORATORY PROTECTIVE EQUIPMENT

GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

U.S. PRECAUTIONARY LABELING

DANGER

CAUSES BURNS. HARMFUL IF SWALLOWED.
DO NOT GET IN EYES, ON SKIN, ON CLOTHING. AVOID BREATHING VAPOR. KEEP IN TIGHTLY CLOSED CONTAINER. USE WITH ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING.

INTERNATIONAL LABELING

CAUSES BURNS.
IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE.

SAF-T-DATA® STORAGE COLOR CODE: WHITE (CORROSIVE)

CONTINUED ON PAGE: 2

SECTION II - COMPONENTS

OMPONENT	CAS NO.	WEIGHT %	OSHA/PEL	ACGIH/TLV
HOSPHORIC ACID	7664-38-2	85-100	1 MG/M3	1 MG/M3

SECTION III - PHYSICAL DATA

OILING POINT: 158 C (316 F)
(AT 760 MM HG)

VAPOR PRESSURE (MMHG): 2.2
(20 C)

ELTING POINT: 21 C (69 F)
(AT 760 MM HG)

VAPOR DENSITY (AIR=1): 3.4

PECIFIC GRAVITY: 1.71
(H2O=1)

EVAPORATION RATE: N/A

OLUBILITY(H2O): COMPLETE (100%)

% VOLATILES BY VOLUME: 100
(21 C)

H: 1.5 (0.1M SOLUTION)

OOR THRESHOLD (P.P.M.): N/A

PHYSICAL STATE: LIQUID

OEFFICIENT WATER/OIL DISTRIBUTION: N/A

PPEARANCE & ODOR: COLORLESS VISCOUS LIQUID. ODORLESS.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

LASH POINT (CLOSED CUP): N/A

NFPA 704M RATING: 2-0-0

UTOIGNITION TEMPERATURE: N/A

LAMMABLE LIMITS: UPPER - N/A LOWER - N/A

IRE EXTINQUISHING MEDIA
USE WATER SPRAY, CARBON DIOXIDE, DRY CHEMICAL OR ORDINARY FOAM.

PECIAL FIRE-FIGHTING PROCEDURES
FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN POSITIVE PRESSURE MODE.

Mallinckrodt
Material Safety Data

Emergency Phone Number: 314-982-5000

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Mallinckrodt, Inc., Science Products Division, P.O. Box M, Paris, KY 43061.

POTASSIUM DICHROMATE

PRODUCT IDENTIFICATION:

Synonyms: Dichromic Acid, Dipotassium Salt; Potassium Bichromate; Dipotassium Dichromate

Formula CAS No.: 7778-50-9

Molecular Weight: 294.18

Chemical Formula: $K_2Cr_2O_7$

Hazardous Ingredients: Not Applicable

PRECAUTIONARY MEASURES

DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. MAY BE FATAL IF SWALLOWED. CAUSES BURNS. CONTAINS HEXAVALENT CHROMIUM. EXPOSURE MAY CREATE A CANCER RISK. HARMFUL IF INHALED.

Keep from contact with clothing and other combustible materials.
Store in a tightly closed container.
Remove and wash contaminated clothing promptly.
Do not breathe dust.
Use only with adequate ventilation.
Avoid contact with eyes, skin and clothing.
Wash thoroughly after handling.

EMERGENCY/FIRST AID

If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. In all cases call a physician.
SEE SECTION 5.

DOT Hazard Class: ORM-A

SECTION 1 Physical Data

Appearance: Orange-red crystals or powder

Odor: Odorless.

Solubility: 6.5% @ 10°C (50°F) in water.

Boiling Point: Decomposes @ 500°C (932°F)

Melting Point: 398°C (784°F)

Specific Gravity: 2.69

Vapor Density (Air=1): No info. found.

Vapor Pressure (mm Hg): No info. found.

Evaporation Rate: No info. found.

SECTION 2 Fire and Explosion Information

Fire:
Not combustible, but substance is a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. Releases oxygen upon decomposition which enhances combustion.

Explosion:
Contact with oxidizable substances may cause extremely violent combustion.

Fire Extinguishing Media:
Flood with large amounts of water. Water spray may be used to keep fire exposed containers cool. Do not allow water run off to enter sewer.

Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

SECTION 3 Reactivity Data

Stability:
Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:
Emits oxygen and toxic fumes of chromium trioxide when heated decomposition.

Hazardous Polymerization:
This substance does not polymerize.

Incompatibilities:
Reducing agents, acetone plus sulfuric acid, hydrazine, and hydroxylamine.

SECTION 4 Leak/Spill Disposal Information

Ventilate area of leak or spill. Clean-up personnel require protective clothing and respiratory protection from dust. Spills: Pick up and place in a suitable container for reclamation or disposal in a method that does not generate dust. Disposal: Whatever cannot be saved for reclamation may be disposed in a RCRA approved hazardous waste facility. Do not flush to the sewer.

Reportable Quantity (RQ)(CWA/CERCLA) : 1000 lbs.

Ensure compliance with local, state and federal regulations.

NFPA Ratings: Health: 1 Flammability: 0 Reactivity: 1 Other: Oxidizer

RISK MANAGEMENT AND PREVENTION PROGRAM

FOR

CHLORINE AND SULFUR DIOXIDE

HANDLING

AT THE

VALENCIA
WATER RECLAMATION PLANT

VALENCIA, CALIFORNIA

Due to the Sanitation Districts' Decision to Discontinue Use Of Chlorine and Sulfur Dioxide, Only the HAZOP and Seismic Studies Have Been Completed

SEPTEMBER 1992

PREPARED FOR THE

LOS ANGELES COUNTY SANITATION DISTRICTS

BY:

ENGINEERING-SCIENCE, INC

DESIGN ■ RESEARCH ■ PLANNING

199 SOUTH LOS ROBLES AVENUE P.O. BOX 7056 PASADENA, CALIFORNIA 91109

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NOTE

After completion of the Hazard and Operability (HAZOP) Study and consideration of the risks involved with continuing the use of chlorine as disinfecting medium and sulfur dioxide as dechlorinating agent, the Los Angeles County Sanitation Districts reached the decision to discontinue use of chlorine and sulfur dioxide, and replace them with sodium hypochlorite and sodium bisulfite respectively.

These sodium compounds are used as aqueous solutions, and have therefore a much lower hazard potential. Any spills which may occur would not generate a toxic gas cloud, and safety provisions such as emergency shutoff valves, gas detectors, and gas scrubbers are not required. The worst type of accident which could foreseeably occur, a catastrophic rupture of an on-site storage tank of sodium hypochlorite or sodium bisulfite, would result in the spill of the entire contents. Because of the low vapor pressure of these solutions, and the fact that secondary containment is provided, no off-site consequences are expected from the spill. The spilled materials can be diluted with water prior to discharge. Sodium hypochlorite may be inactivated with reducing agents, such as sodium bisulfite.

Both sodium hypochlorite and sodium bisulfite are corrosive, and contact should be avoided. Sodium hypochlorite is a strong oxidizer; it is incompatible with a commonly used water treatment agent, ferric chloride, with which it reacts exothermically producing ferric hydroxide and liberating chlorine.

Due to the Sanitation Districts' decision to discontinue use of chlorine and sulfur dioxide, the Los Angeles County Fire Department directed the Sanitation Districts to complete a partial Risk Management and Prevention Program (RMPP) including only the HAZOP and Seismic Sections.

SECTION 3

HAZARD AND OPERABILITY STUDY

This section discusses the conduct and results of the Hazard and Operability (HAZOP) Study performed for the (1) equipment and (2) normal operating, startup, shutdown, and emergency procedures for the Los Angeles County Sanitation Districts' Vallencia Water Reclamation Plant (WRP).

3.1 PERFORMANCE OF HAZOP STUDY

The HAZOP team performing the study consisted of qualified personnel experienced in the conduct of HAZOP studies, chemical process and operations, process instrumentation, and safety procedures, as detailed on Table 3-1, to ensure that a thorough analysis was performed. HAZOP team members received two hours of training prior to start. The following items were discussed: overview of predictive hazard analysis; background and concept of HAZOP; overview of the project; preparation for the study; team assignments and duties; and record-keeping.

The following operating and management personnel from the Valencia WRP and a Fire Department representative attended and participated in HAZOP meetings:

Steven Easley, Sueprvising Project Engineer, Sanitation District
Wesley Hoffmaster, Design Engineer
Ronald Kettle, Superintendent of Operations
Bob Shimokochi, Operations Supervisor
Barbara Yu, Hazardous Materials Specialist, Fire Department

The first HAZOP meeting, held on December 17, 1991, consisted of an orientation session, where the participants were informed of the materials and processes involved, State of California requirements, HAZOP goals, and HAZOP techniques to be followed. A detailed inspection of the chlorine and sulfur dioxide handling equipment and related facilities was also made.

HAZOP study activities were performed for approximately four hours per day, one day per week, over a 6-week period. In addition to the orientation session, an additional meeting was held on January 9, 1992. The breaks provided allowed for re-assessment of data and appraisal of new information received. Sessions were tape-recorded by the HAZOP secretary; technical discussions were transcribed.

3.2 HAZOP METHODOLOGY

The HAZOP study was based on the "HAZOP Technique". This technique was developed by AIChE to identify hazards and operability problems which may

Table 3-1 - HAZOP Study Team, Chlorine System

NAME	ASSIGNMENT	HAZOP EXPERIENCE	FIELD OF EXPERTISE	EDUCATION	PROCESS EXPERIENCE	REASON WHY CHOSEN	TIME COMMITMENT
Bern Folkman	Leader	Directed HAZOP studies concerning chlorine and sulfur dioxide at wastewater treatment plants. Designed grass roots crude processing and hydrotreating plants, ammonia recovery plants, and ammonia supply system for NO_X control plan heaters and boilers.	Process design and process management for the petroleum refining and chemical industries. Commercial pilot plant operations; operator training.	M.S., Chemical Engineering, 1956. B.S., Chemical Engineering, 1955, California Institute of Technology.	Twenty-nine years of process-related experience in the chemical industry including safety analysis.	Thoroughly familiar with all aspects of hazardous chemical handling, storage, and utilization.	Full time during study performance
Dr. Bruno Loran	Member	Directed HAZOP studies for RMPP projects involving liquid chlorine, ammonia, sulfuric acid, and sodium hydroxide transfer, storage, and delivery.	Handling of liquefied compressed gases, physiological exposure effects, emergency response procedures.	M.S., Environmental Engineering, 1973, University of Southern California. Ph.D., Chemistry, 1966, University of Florida. Pharm.D., Pharmacy 1956, University of Pavia, Italy.	Sixteen years of environmental engineering work related to chemical industry and refinery processes.	Understands both the mechanical and the exposure aspects of hazardous materials handling	Full time during study performance
Dr. Krishna Nand	Member	Three years experience in performance of risk assessments for release of acutely hazardous materials, including ammonia, chlorine, and sulfuric acid. Definition of industrial hygiene and safety procedures.	Atmospheric dispersion of hazardous materials and risk analysis.	B.S., Physics, Chemistry and mathematics, 1961; M.S., Physics, 1963, University of Lucknow, India. Ph.D., Physics, 1977, University of Pune, India.	Fourteen years of professional experience in air quality dispersion modeling, including release of dense gases, risk assessment, and impact analysis.	Knowledgeable in modeling of atmospheric releases of ammonia and chlorine, including vaporization rates, definition of vulnerability zone, and offsite consequence analysis	Full time during study performance
Dr. Byung Rhee	Member	Directed HAZOP studies concerning chlorine, sulfur dioxide and ammonia at wastewater treatment and refrigeration plants. Deigned grass roots crude processing and hydrotreating plants, and ammonia recovery plants.	Process design and project management for the petroleum refining and chemical industries. Commercial pilot plant operations; operator training.	Ph.D., Chemical Engineering, 1972, Univ. of Michigan. M.S., Engineering, 1967, Univ. of California, L.A. B.S., Chemical Engineering, 1962, Seoul National University, Korea	Twenty-seven years of process-related experience in the chemical industry including safety analysis.	Thoroughly familiar with all aspects of hazardous chemical handling, storage, and utilization.	Full time during study performance
Liza Marfori	Secretary	Provided technical support and coordination in RMPP projects concerning liquid chlorine and sulfur dioxide.	Chemical engineering, instrumentation and controls, environmental assessment.	B.S., Chemical Engineering, 1982, University of Southern California	Nine years of industrial and environmental experience, most of it in the area of hazardous materials management.	Familiar with municipal wastewater treatment processes and hazardous materials handling.	Full time during study performance

undermine the ability to maintain safe conditions at all times (AIChE, 1985). The technique involves the forming of a multidisciplinary team that works together (brainstorms) in a series of meetings, to search for deviations from design intents. The team leader systematically guides the team through the plant design using a fixed set of words, called "guide words". These guide words are applied at specific points or sections of a piping and instrumentation diagram called "study nodes" to identify potential deviations of the plant process parameters which may occur at those nodes. The guide words are used to ensure that the design is explored in every conceivable way (AIChE, 1985). Sample guide words for the equipment HAZOP were: excess, high, low, no, reverse. Sample parameters were: flow, pressure, and temperature; these parameters apply to the acutely hazardous materials (chlorine and sulfur dioxide) considered. Sample guide words/parameters for the procedure HAZOP were: procedure performed incorrectly, procedure steps omitted, procedure steps performed out of order, incorrect or incomplete procedures.

When the causes and consequences of a deviation were assessed to be realistic and significant, they were recorded for follow-up action. The results of this analysis were qualitative and included: identification of hazards and operating problems; recommended changes in design, procedures, etc. to improve safety; and recommendations for follow-up studies where no conclusions were possible due to lack of information.

The HAZOP analysis included the following steps: (1) defining the purpose, objectives, and scope of the study; (2) preparing for the study; (3) carrying out the team review; and (4) recording the results. All information received from the Sanitation District personnel regarding plant process, safety precautions, safety equipment, and health protection procedures was studied. Piping and instrumentation diagrams, layouts, and vendor manuals were consulted. Chlorine and sulfur dioxide handling systems were then reviewed in detail, and the effectiveness of the detection, monitoring, and control systems included in the design was assessed. By applying the guide words and parameters, deviations with their causes and consequences, and related recommendations were then tabulated using an AIChE format modified by Engineering-Science, based on prior experience in performance of RMPP studies. The following headings were used:

Node - Point or section of process and instrumentation diagram under consideration.

Causes - Causes which would result in the deviation addressed. A cause is usually an event which can occur (e.g., earthquake, fire), a way an operator can act, or the way equipment can act or fail.

Consequences - Potential event which can occur to detrimentally impact human life, equipment, or the environment.

Suggested Action - Recommendations by the HAZOP team to prevent or mitigate the consequences listed.

Existing Safety Features - Existing automatic controls, detection and monitoring systems, operating procedures, or mitigating circumstances which may prevent, decrease, or counteract the effects of a consequence.

3.3 Results of HAZOP Analysis of Equipment and Procedures

The results of the HAZOP analysis of the equipment and procedures related to chlorine and sulfur dioxide handling at the Valencia WRP facility are presented in Tables 3-2 through 3-5.

Table 3-2

Equipment HAZOP, Chlorination Station

Reference: Valencia WRP, Chlorination System Piping and Instrument Diagram

Node 1: Ton-containers on Trunnion

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Flow*						
NO	Ton-container	1. Container suspended on lifting beam.	Power failure.	Stays in place, if system holds.	-	a. Brake on hoist b. Emergency plant power.
NO	Ton-container	2. Container dropped from lifting beam.	Lifting beam cable clamp failure.	Possible chlorine release if damaged.	Provide regular maintenance on lifting equipment.	Steel valve protecting hood on container.
LOW	Ton-container flexible	3. Development of cracks on stress.	Corrosion, mechanical stress, use beyond safe equipment life.	Liquid chlorine release	a. Develop regular program of replacing pigtails at least once per year or sooner if stress or discoloration (copper showing through cadmium coating) are apparent. b. Proper operator training. c. Develop specific procedures to handle these emergencies.	a. Leak is likely to develop when pressure is applied. Operator will be present, and he would close the chlorine valve on the ton-container quickly. b. SCBA is available at the chlorination facility. c. "B" Kit is provided.
LOW	Ton-container	4. Pinhole or very small leak at fusible plugs.	Corrosion	Minor chlorine leak	See Deviation 3 (b, c)	-
HIGH	Ton-container	5. Connection opens when pressure applied.	Threads at end of pigtail worn or corroded	Liquid chlorine release from the ton-container. Normal response of the operator would be to shut-off the container valve within one minute. However, it is possible that the operator may panic and flee, leaving the container valve open. In this situation, the other operator is expected to don an SCBA and shut-off container valve within approximately 15 minutes.	a. Proper operator training. b. Develop specific procedures to handle these emergencies.	a. Probability is reduced by using yoke connection. b. Two operators are present during time of connection. c. SCBA is available at the chlorination facility. d. Emergency eyewash/shower station is provided. e. Chlorine monitor is provided. f. "B" Kit is provided.

* Flow to environment

Table 3-2 (Continued)

Equipment HAZOP, Chlorination Station

Reference: Valencia WRP, Chlorination System Piping and Instrument Diagram

Node 1: Ton-containers on Trunnion (Continued)

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Flow* HIGH	Ton-container flexible connection (pigtail)	6. Rupture of pigtail connected to containers.	Earthquake, causing a differential movement between container and pigtail.	Liquid chlorine release from the three ton-containers on-line. Upon alert, the operator is expected to respond within 15 minutes. When operators are not present, response time can take up to 1 hour.	It has been decided to convert the process to use sodium hypochlorite instead of chlorine.	Chlorine monitor is provided.
HIGH	Ton-container valve	7. Valve cannot be closed during an emergency.	Solid impurity particle caught in valve.	Chlorine leak of short duration if suggested actions followed.	See Deviation 5.	a. SCBA is available. b. Chlorine monitor is provided.
Pressure HIGH	Ton-container	8. Container ends change shape from convex inward to concave.	a. Overfilling of container by the supplier, causing overpressure on temperature rise. b. Amine impurities in chlorine form nitrogen trichloride, which explodes when all chlorine is removed, causing bulging of ends (not experienced in recent years).	No safety consequences if container holds (as expected).	-	a. Container ends change shape, providing pressure relief (no recent experience of this happening). b. Containers are not directly exposed to the sun.
Temperature HIGH	Ton-container	9. Fusible plugs melt (158°F). Three plugs are present at each container end.	Nearby fire	Chlorine release	Add to procedures that nobody is permitted to use welding torches in the immediate proximity of ton-container or chlorine handling equipment.	No flammable material stored in the vicinity of the chlorination station.

* Flow to environment

Table 3-2 (Continued)

Equipment HAZOP, Chlorination Station

Reference: Valencia WRP, Chlorination System Piping and Instrument Diagram

Node 1: Ton-containers on Trunnion (Continued)

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
General Safety	System	10. Extra piping connections in mainifold.	-	-	a. Change existing piping manifold piping to a common line to process for tank and ton-containers. b. Eliminate unused ton-container piping and valve connections.	-

* Flow to environment

Table 3-2 (Continued)

Equipment HAZOP, Chlorination Station

Reference: Valencia WRP, Chlorination System Piping and Instrument Diagram

Node 2: Chlorine Tank-Trailer to Chlorine Storage Tanks

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Flow (to process) NO	Piping sections between valves where no expansion chamber is present.	11. Chlorine trapped in pipe section.	Excess Flow Valve (EFV, set to shut when a flow rate of 7,000 lb/hr is reached) shuts off flow temporarily (caused by liquid angle valves opened or closed too fast or excess air padding).	No safety consequence for short pipe sections. For longer sections, pipe may rupture if liquid is trapped followed by a climatic temperature rise.	Provide expansion chambers on the liquid line.	Occurs during loading operation where operators will notice the loss of flow.
NO	Piping sections between valves where an expansion chamber is provided.	12. Chlorine trapped in pipe section followed by temperature rise.	Both valves closed due to operator error, followed by temperature rise.	Rupture disk breaks, expansion chamber fills up with liquid chlorine, providing relief. Note: Climatic expansion is about 5%; chambers provide from 20% to 100% additional volume.	Operational procedures achieving quick emptying of chamber and replacement of rupture disk, otherwise expansion chamber will be inoperative and not protect system.	a. Pressure switches to expansion chambers are wired to the control room, to alert operators of disc rupture b. Fill lines are purged after loading. c. Pressure gauges upstream of rupture disc are checked daily.
NO	Piping sections between valves where an expansion chamber is provided.	13. The rupture disc in the expansion chamber breaks; chamber fills up with liquid chlorine.	Any liquid chlorine valve opened or closed too fast, causing hammer effect.	Expansion chamber is now inoperative.	a. Specific operational procedures. b. Proper operator training.	See Deviation 12.
LOW	System	14. Inadequate chlorine supply (inefficient transfer).	a. Incorrect valve throttling, especially during transfer. b. Valves partially closed.	a. Safety not affected under normal conditions. b. During earthquakes, partial closure of valves would prevent EFV from seating due to the lower flow rate present.	Proper operator training	a. System designed to handle under normal conditions.

* Flow to environment

Table 3-2 (Continued)

Equipment HAZOP, Chlorination Station

Reference: Valencia WRP, Chlorination System Piping and Instrument Diagram

Node 2: Chlorine Tank-Trailer to Chlorine Storage Tanks (Continued)

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Flow* LOW	Tank-Trailer Compressor	15. Valve left shut while compressor started.	Operator error.	Tank-trailer compressor pump heats up; compressor discharge may activate PSV generating temporary minor chlorine release.	-	Two operators present during transfer of chlorine.

* Flow to environment

Table 3-2 (Continued)

Equipment HAZOP, Chlorination Station

Reference: Valencia WRP, Chlorination System Piping and Instrument Diagram

Node 2: Chlorine Tank-Trailer to Chlorine Storage Tanks (Continued)

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Flow*						
LOW	Tank-trailer and storage tank angle valves	16. Leaking angle valve.	a. Leaking packing at storage tank or tank-trailer angle valves (most commonly at trailer). b. Loose valve connections.	Minor chlorine release to the atmosphere.	Specific mention in procedures to reject any delivery where tank-trailer valves are leaking.	a. Chlorine monitor is provided. b. C-kit is available.
LOW	Pipe connection to angle valves	17. Bad connection.	Corrosion on piping (discoloration); worn threads on piping	Minor chlorine release to the atmosphere.	None	a. Connections checked with ammonia. b. Chlorine monitors.
LOW	Piping system	18. Leaking piping (at valve unions, gaskets, flanges, O-rings).	Defect, wear, corrosion, or bad connection	Chlorine release.	Regular preventive maintenance.	a. Connections checked with ammonia. b. Chlorine monitors.
HIGH	Flex line unions (on tank-trailer side)	19. Leaking O-ring	Worn O-ring	Minor chlorine release to the atmosphere.	None	Occurs only on transfer, when operators are present.
HIGH	Flex line (on tank-trailer side)	20. Minor cracks at flex hose.	Corrosion caused by chlorine (discoloration will be seen on flex hose).	Minor chlorine release to the atmosphere (actually observed).	Regular preventive maintenance.	a. Occurs only on transfer, when operators are present. b. Chlorine monitors.
EXCESS	Delivery line	21. Flex line rupture (on tank-trailer side) or pipe rupture (on storage tank side)	Earthquake	Chlorine released to the environment.	Provide automatic/remotely-operated shut-off valves to all angle valves	a. Chlorine monitors. b. Anchoring for tank is redesigned to improve earthquake resistance. c. Presence of excess flow valves.
Pressure						
LOW	System	See LOW Flow.				

* Flow to environment

Table 3-2 (Continued)

Equipment HAZOP, Chlorination Station

Reference: Valencia WRP, Chlorination System Piping and Instrument Diagram

Node 2: Chlorine Tank-Trailer to Chlorine Storage Tanks (Continued)

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Temperature HIGH	Relief valve at tank-trailer	22. Overfilled tank-trailer (over 85% std. capacity)	a. High daytime temperature.	Minor chlorine release if relief valve operates properly, relieves pressure, then closes within 1 minute.	*	a. Deliveries are made in morning to avoid high temperatures during unloading. b. Chlorine monitors. c. "C" Kit is available. d. Trained operators wearing SCBA and other safety equipment present during chlorine transfer. e. Tank truck is insulated.
HIGH	System	23. Tank relief valve opens.	Nearby fire.	Chlorine released to the environment (see Deviation 22).	Specify fire emergency procedures.	a. Chlorine monitors. b. No combustible materials in the proximity.

* Flow to environment

Table 3-2 (continued)

Equipment HAZOP, Chlorination Station
Reference: Valencia WRP, Chlorination System Piping and Instrument Diagram

Node 3: Manifold to Evaporator

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Flow (to process) NO	Piping sections between valves where an expansion chamber is provided.	Same as Deviations 12 and 13.	-	-	-	-
Flow* LOW	Piping	24. Corrosion (especially at threads)	Wear, aging	Possible chlorine leaks	-	a. Chlorine monitors b. Regular program of changing piping.

* Flow to environment

Table 3-2 (Continued)

Equipment HAZOP, Chlorination Station
Reference: Valencia WRP, Chlorination System Piping and Instrument Diagram

Node 4: Evaporator

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Flow (to process) NO	Evaporator	25. Interruption of chlorine flow.	Heater fails OFF (wear, aging, thermostat failure)	Low temperature alarm switch in evaporator unit activates. Electric operator provides automatic shutoff of the pressure regulator (pressure reducing valve).	Clean and inspect evaporator components at least once per year per manufacturer's recommendations.	Interruption of chlorine flow will trigger low chlorine residual alarm within five minutes.
EXCESS	Evaporator	26. Overheating of chlorine.	a. Fails ON (thermostat failure on HIGH, possibly from used contacts) of failure of operator to refill.	Water may boil over (a drain is provided). A water high temperature switch connected to a local audible alarm and to the control room will activate. Overheated chlorine will return to the chlorine storage tank.	Same as Deviation 25.	a. High temperature alarm. b. Water level checked every round (two rounds each shift).
Pressure EXCESS	Evaporator	27. Trapped chlorine.	Chlorine trapped by closure of downstream valves (operator error or automatic closure).	Minor chlorine release, PSV opens.	-	a. Chlorine monitor is provided. b. Interruption of chlorine flow will trigger low chlorine residual alarm within five minutes.

* Flow to environment

Table 3-2 (Continued)

Equipment HAZOP, Chlorination Station
Reference: Valencia WRP, Chlorination System Piping and Instrument Diagram

Node 5: Filter and Pressure Regulator

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Pressure HIGH	Filter	28. Inadequate chlorine flow.	Filter clogged.	No safety consequences if partially clogged. Same as Deviation 27 if completely closed.	Regular maintenance	-
HIGH	Pressure regulator	29. Pressure regulator valve sticks open.	Mechanical failure, aging	A higher pressure than 40 psig (ranging up to 80 psig) is experienced downstream of the regulator.	-	a. Pressure regulator inspected once per year. b. System will withstand 80 psig. c. Pressure indicator provided.
Flow* LOW	Pressure regulator	30. Failure of pressure regulator diaphragm.	Wear, aging cause the diaphragm to leak (e.g. through a small hole).	Small amount of chlorine vented outside the chlorination building from pressure regulator.	-	a. Pressure regulators cleaned and inspected once per year. b. Chlorine monitors.

* Flow to environmental

Table 3-2 (Continued)

Equipment HAZOP, Chlorination Station
Reference: Valencia WRP, Chlorination System Piping and Instrument Diagram

Node 6: Chlorinators to Ejectors

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Existing Suggested Action	Safety Features
Flow* LOW	Vacuum regulator (chlorinator system) - high pressure side	31. Failure of vacuum regulator diaphragm.	Wear, aging cause the diaphragm to leak (e.g. through a small hole).	Small amount of chlorine vented from the chlorinator outside the chlorination building.	-	a. Vacuum regulator cleaned and inspected once per year.
LOW	Vacuum regulator (chlorinator system) - vacuum side	32. Vacuum regulator valve sticks open.	Mechanical failure, aging	Vacuum side of vacuum regulator sees pressure greater than atmospheric. Vacuum regulator pressure relief valve discharges small amount of chlorine outside the chlorination building.	-	a. Pressure relief valve protects integrity of chlorinator. b. Chlorine monitors.
Flow (to process) REVERSE	Ejector	33. Backflow of water into chlorine line.	Loss of vacuum from ejector malfunction or inadequate water pressure	No safety consequence (plastic pipe will not corrode).	-	Two check valves, at ejector and at chlorinator, prevent water backflow.

* Flow to environmental

Table 3-2 (Continued)

Equipment HAZOP, Chlorination Station
Reference: Valencia WRP, Chlorination System Piping and Instrument Diagram

Node 7: Scrubber

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Existing Suggested Action	Safety Features
Flow NO	Scrubber	34. Scrubber inoperative.	a. Power failure	No chlorine scrubbing in case of release	-	Valencia has an emergency generator.
			b. Pump failure	Same as a.	-	Procedure states that scrubber pump is checked prior to any connecting operation (pump is outside the chlorination building).
			c. Chlorine monitors which activate scrubber fail.	Same as a.	-	Monitor operation is checked weekly. Instrument faults are alarmed locally and in the control room.
			d. Ventilation louvers stay open.	Less efficient chlorine scrubbing in case of release	Add specific mention in procedures to inspect and maintain louvers periodically.	-
Flow NO	Scrubber	35. Scrubber inoperative (continued).	e. Ventilation dampers within the scrubber system stay open.	Some partially scrubbed chlorine released to the sulfur dioxide building, then to atmosphere.	Same - but dampers instead of louvers	-
			f. Demister clogged. Nozzles on packed tower and/or venturi clogged.	Same as d.	Add specific mention in procedures to inspect and maintain nozzles and venturi periodically.	-
			g. Scrubber pump switch may have been left OFF or isolation valves may have been left closed.	Same as a.	Add specific mention in procedures.	-
			h. Caustic converted to carbonate from absorption of carbon dioxide.	Scrubber efficiency decreased.	-	Caustic strength verified monthly. Level gage present.

* Flow to environment

Table 3-3

Procedure HAZOP, Chlorination Station

Reference: Valencia WRP Chlorination System O & M Manual Section 12

Procedure 1: Routine Startup for One Chlorinator

Guide Word / Parameter	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Procedure performed incorrectly	Section 12.3.3a.5 and 12.3.3.a.6	1. Inlet and outlet valves of the evaporator are closed and heater is operating.	Plant operator error	Pressure inside evaporator increases; chlorine may vent through the pressure relief valve.	Proper operator training	a. High temperature alarm b. Chlorine monitor

Table 3-3 (Continued)
Procedure HAZOP, Chlorination Station
Reference: Valencia WRP Chlorination System O & M Manual Section 12

Procedure 2: Routine Startup and Shutdown for One Evaporator

Guide Word / Parameter	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Procedure omitted	Section 12.3.5.b	2. Rotameter at chlorinator not checked.	Plant operator error	Chlorine remains in chlorinator taken out of service. No saftey consequence during normal operation since the chlorinator is usually under vacuum.	-	Specific mention in procedures to evacuate the chlorinator.

Table 3-3 (Continued)
Procedure HAZOP, Chlorination Station
Reference: Valencia WRP Chlorination System O & M Manual Section 12

Procedure 3: Delivery and Unloading of Ton-Containers

Guide Word / Parameter	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Procedure performed incorrectly	General	3. No protection equipment such as self-contained breathing apparatus (SCBA) put on.	Plant operator error	Possible injury to one or both operators in case of chlorinerelease.	-	Specific procedures mention use of protective equipment during the hookup and disconnection of the containers.
Procedure performed incorrectly	General	4. Only one operator present.	Plant operator error	No backup incase of accident. Possible injury to operator in case of chlorine release.	-	Procedure clearly states that a standby operator has to be present.
Procedure performed incorrectly	General	5. Container rolls and drops from truck.	Incorrect truck placement.	Ton containers may be dented but chlorine release are not expected.	Operators should emphasize to the truck driver to apply truck brakes and position chocks to stop truck wheels.	Steel valve-protecting hoods on containers.
Procedure performed incorrectly	General	6. Container dropped from lifting beam on other full containers.	a. Operator error. b. Lifting beam cable failure.	Ton-containers may be dented but chlorine release is not expected.	Provide a maintenance schedule for lifting equipment.	a. Steel valve-protecting hoods on containers. b. Containers are not connected during the unloading operation.

Table 3-3 (Continued)
Procedure HAZOP, Chlorination Station
Reference: Valencia WRP Chlorination System O & M Manual Section 12

Procedure 3: Delivery and Unloading of Ton-Containers (Continued)

Guide Word / Parameter	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Procedure performed incorrectly	Section 12.3.8.o	7. Valves not in vertical line.	Plant operator error.	Liquid chlorine may enter the vapor line. Upon connection, liquid chlorine may enter the system and damage the chlorinators. Chlorine release if sulfonator is sufficiently damaged. (NOTE: Current procedures withdraw chlorine gas and evaporators are not turned on).		a. Trunnions are provided for easier rotation of containers. b. Procedures state to allow 24 hours before connecting pigtails and putting containers on-line.
Procedure step omitted	Section 12.3.8e	8. Pressure gauges are not verified to zero reading.	Plant operator error	Chlorine remaining in system will be released when disconnection is performed.	Proper operator training	a. Procedure clearly states to check pressure gauge. b. Chlorine monitor.

Table 3-3 (Continued)
Procedure HAZOP, Chlorination Station
Reference: Valencia WRP Chlorination System O & M Manual Section 12

Procedure 4: Connection of Chlorine Containers to the Chlorination System

Guide Word / Parameter	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Procedure performed incorrectly	Section 12.3.9d	9. Container valve surface not cleaned during hook-up	Plant operator error	Minor chlorine leaks may develop	Proper operator training	a. Specific mention in procedures to clean surface and inspect valve threads. b. Check for chlorine leaks are performed at end of connection. c. Chlorine monitor.
Procedure performed incorrectly	Section 12.3.9e	10. Use of corroded (green or pink) valves, nuts, or flexible connections (pigtails).	Plant operator error	Chlorine leaks may develop	Proper operator training	a. Specific mention in procedures to inspect connector for deterioration. b. Check for chlorine leaks are performed at end of connection. c. Chlorine monitor.

Table 3-3 (Continued)
Procedure HAZOP, Chlorination Station
Reference: Valencia WRP Chlorination System O & M Manual Section 12

Procedure 5: Chlorine Bulk Unloading

Guide Word / Parameter	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Procedure step omitted	Section 12.3.10.a	11. No protection equipment [self-contained breathing apparatus (SCBA)].	Plant operator error	Possible injury to workers in case of chlorine release	Proper operator training.	a. Specific procedures mention use of protective equipment during unloading operation. b. Chlorine monitor.
Procedure step omitted	Section 12.3.10.a	12. Only the tank truck operator is present.	Plant operator error	No backup in case of accident - possible injury to worker and chlorine release	Proper operator training.	a. Procedure clearly states that the plant operator has to be present as standby. b. Chlorine monitor.
Procedure step omitted	Section 12.3.10.e	13. When opening valve, ammonia vapor check for leaks not done.	Tank truck operator error and plant operator error.	Chlorine leaks may go unnoticed during the transfer operation.	Proper operator training to observe that checks for leaks are conducted.	a. Procedure clearly states that checks for leaks with ammonia vapor be done when making and breaking connections. b. Chlorine monitor.
Procedure performed incorrectly	Section 12.3.10.g	14. Incomplete purging of supplier feed line upon completion of liquid chlorine transfer.	Tank truck operator and plant operator error.	Chlorine remaining in the feed lines released to atmosphere.	Proper operator training to verify that purging is done.	Procedures specifically mention to purge transfer hose with nitrogen.
Procedure performed incorrectly	General	15. Tank truck backs into delivery manifold.	Tank truck operator error.	Delivery manifold may be damaged.	Provide guard posts in front of delivery manifold (being implemented).	

Table 3-3 (Continued)
Procedure HAZOP, Chlorination Station
Reference: Valencia WRP Chlorination System O & M Manual Section 12

Procedure 6: Emergency Leak Treatment System (Scrubber)

Guide Word / Parameter	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Incorrect procedure	Section 130.1	16. Unclear procedures	Incomplete wiring	No safety consequences (clarification)	Revise last statement to "the system...treating chlorine or sulfur dioxide leaks in the chlorine or sulfur dioxide areas."	-
Incorrect procedure	Section 130.2	17. Detectors set incorrectly	Incorrect procedure	Chlorine or sulfur dioxide detectors may activate false alarms leading to decreased operator alertness.	Change detector setting to 6 ppm for chlorine gas and 15 ppm for sulfur dioxide gas.	-
Incorrect procedure	Section 130.3.2.1.b	18. Unclear procedure	Incomplete wiring	No safety consequences (clarification)	Add "off or remote position" to clarify end of sentence.	-
Incorrect procedure	Section 130.3.2.1e	19. Inefficient procedure	Incorrect procedure	Check of caustic solution pH may not be an efficient check for solution effectiveness.	Replace this procedure with "scrubber solution tank level"	-
Incomplete procedure	Section 130.3.2.2.9	20. Unclear procedure	Incomplete procedure	No safety consequences (clarification)	Add "by operating vent fans." to end of sentence.	-
Incorrect procedure	Section 130.3.2.2.b	21. Procedure is placed in wrong section.	Incorrect procedure	No safety consequences (clarification)	Move this procedure under monthly checks, Section 130.3.4.	-
Incomplete procedure	Section 130.3.4	22. Procedure does not state when to test defined system.	Incomplete procedure	Unclear procedure	Add "monthly" in front of follows in the first statement.	-
Incomplete procedure	Section 130.4	23. Incorrect procedure included.	Incomplete procedure	Incorrect system description	Replace "Emergency Leak Scrubber - low pH" with "High Temperature Alarm - Caustic Solution".	-

Table 3-3 (Continued)
Procedure HAZOP, Chlorination Station
Reference: Valencia WRP Chlorination System O & M Manual Section 12

Procedure 6: Emergency Leak Treatment System (Scrubber) (Continued)

Guide Word / Parameter	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Incorrect procedure	Section 130.5.1	24. Incorrect system description	Incorrect procedure	No safety consequences (clarification)	Replace "Chlorine and Sulfur Dioxide Bulk Storage Flow-Low" with "Caustic Solution Flow-Low Alarm"	-
Incorrect procedure	Section 130.5.2	25. Procedure is not applicable to system.	Incorrect procedure	No safety consequences (clarification)	Delete this line.	-
Incorrect procedure	Section 130.5.3	26. Incorrect system description	Incorrect procedure	No safety consequences (clarification)	Delete "It will shutdown the recirculation pumps" and add "Alarm" to the title.	
Procedure omitted	Section 130.3.2.1.d	27. Chlorine contact tank valve left open.	Plant operator error	Scrubber will not operate; caustic solution drains to the chlorine contact tank. If leak occurs, possible chlorine release.	a. Provide a check sheet when performing the operation. b. Hang tags "close" c. Add spool downstream from the valve.	Caustic solution Flow-low Indicator Alarm.
Procedure omitted	Section 130.3.2.1.d	28. Scrubber tank drain valve is left open.	Plant operator error	Caustic solution drains from tank and scrubber will be inoperative. If leak occurs, possible chlorine release.	a. Replace this valve with another type of valve; ball valves have been known to "gum" up. b. Add cap on valve.	a. Caustic solution Flow-low Indicator Alarm b. Periodic hydroxide alkalinity test
Procedure omitted	Section 130.3.2.1.d	29. Valve from washwater system left off.	Plant operator error	Caustic solution will be diluted and scrubber will be inoperative. If chlorine leak occurs, possible chlorine release.	Tag valve "Close".	Caustic solution Flow-low Indicator Alarm

Table 3-4

Equipment HAZOP, Dechlorination Station

Reference: Valencia WRP Dechlorination System Piping and Instrument Diagram

Node 1: Ton-containers on Trunnion

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Flow*						
NO	Ton-container	1. Container suspended on lifting beam.	Power failure.	Stays in place, if system holds.	-	a. Brake on hoist b. Emergency plant power.
NO	Ton-container	2. Container dropped from lifting beam.	Lifting beam cable clamp failure.	Possible sulfur dioxide release if damaged.	Provide regular maintenance on lifting equipment.	Steel valve protecting hood on container.
LOW	Ton-container flexible connection (pigtail)	3. Development of cracks on stress.	Corrosion, mechanical stress, use beyond safe equipment life.	Liquid sulfur dioxide release	a. Develop regular program of replacing pigtails at least once per year or sooner if stress or discoloration (copper showing through cadmium coating) are apparent. b. Proper operator training. c. Develop specific procedures to handle these emergencies.	a. Leak is likely to develop when pressure is applied. Operator will be present, and he would close the sulfur dioxide valve on the ton-container quickly. b. SCBA is available at the dechlorination facility. c. "B" Kit is provided.
LOW	Ton-container	4. Pinhole or very small leak at fusible plugs.	Corrosion	Minor sulfur dioxide leak	See Deviation 1 (b, c)	-
HIGH	Ton-container	5. Connection opens when pressure applied.	Threads at end of pigtail worn or corroded	Liquid sulfur dioxide release from the ton-container. Normal response of the operator would be to shut-off the container valve within one minute. However, it is possible that the operator may panic and flee, leaving the container valve open. In this situation, the other operator is expected to don an SCBA and shut-off container valve within approximately 15 minutes.	a. Proper operator training. b. Develop specific procedures to handle these emergencies.	a. Probability is reduced by using yoke connection. b. Two operators are present during time of connection. c. SCBA is available at the dechlorination facility. d. Emergency eyewash/shower station is provided. e. Sulfur dioxide monitor is provided. f. "B" Kit is provided.

* Flow to environment

Table 3-4 (Continued)

Equipment HAZOP, Dechlorination Station

Reference: Valencia WRP Dechlorination System Piping and Instrument Diagram

Node 1: Ton-containers on Trunnion (Continued)

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Flow*						
EXCESS	Ton-container flexible connection (pigtail)	6. Rupture of pigtail connected to containers.	Earthquake, causing a differential movement between container and pigtail.	Liquid sulfur dioxide release from the three ton-containers on-line. Upon alert, the operator is expected to respond within 15 minutes. When operators are not present, response time can take up to 1 hour.	It has been decided to convert the process to use sodium bisulfite instead of sulfur dioxide.	Sulfur dioxide monitor is provided.
LOW	Ton-container valve	7. Valve cannot be closed during an emergency.	Solid impurity particle caught in valve.	Sulfur dioxide leak of short duration if suggested actions followed.	See Deviation 5.	a. SCBA is available. b. Sulfur dioxide monitor is provided.
Pressure						
HIGH	Ton-container	8. Container ends change shape from convex inward to concave.	a. Overfilling of container by the supplier, causing overpressure on temperature rise.	No safety consequences if container holds (as expected).	-	a. Container ends change shape, providing pressure relief (no recent experience of this happening). b. Containers are not directly exposed to the sun.
Temperature						
HIGH	Ton-container	9. Fusible plugs melt (158°F). Three plugs are present at each container end.	Nearby fire	Sulfur dioxide release	Add to procedures that nobody is permitted to use welding torches in the immediate proximity of ton-container or sulfur dioxide handling equipment.	No flammable material stored in the vicinity of the chlorination station.

* Flow to environment

Table 3-4

Equipment HAZOP, Dechlorination Station

Reference: Valencia WRP Dechlorination System Piping and Instrument Diagram

Node 2: Sulfer Dioxide Tank-Trailer to Sulfur Dioxide Storage Tanks

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Flow (to process) NO	Piping sections between closed valves where no expan-sion chamber is present.	10. Liquid sulfur dioxide trapped in pipe section.	Excess Flow Valve (EFV, set to shut when a flow rate of 7,000 lb/hr is reached) shuts off flow temporarily (caused by liquid angle valves opened or closed too fast or excess air padding).	No safety consequence for short pipe sections. For longer sections, pipe may rupture if liquid is trapped followed by a climatic temperature rise.	Provide expansion chambers on the liquid line.	Occurs during loading operation where operators will notice the loss of flow.
NO	Piping sections between closed valves where an expansion chamber is provided.	11. Liquid sulfur dioxide trapped in pipe section followed by temperature rise.	Both valves closed due to operator error, followed by temperature rise.	Rupture disk breaks, expansion chamber fills up with liquid sulfur dioxide, providing relief. Note: Climatic expansion is about 5%; chambers provide from 20% to 100% additional volume.	a. Operational procedures achieving quick emptying of chamber and replacement of rupture disk, otherwise expansion chamber will be inoperative and not protect system.	a. Pressure switches to expansion chambers are wired to the control room, to alert operators of disc rupture b. Fill lines are purged after loading. c. Pressure gauges upstream of rupture disks are checked daily
LOW	System	12. Inadequate sulfur dioxide supply (inefficient transfer).	a. Incorrect valve throttling, especially during transfer. b. Valves partially closed.	a. Safety not affected under normal conditions. b. During earthquakes, partial closure of valves would prevent EFV from seating due to the lower flow rate present.	Proper operator training	a. System designed to handle under normal conditions.
REVERSE	System	13. Reverse flow of sulfur dioxide into compressor	Compressor failure	Sulfur dioxide could contact air in the compressor which may cause fire and sulfur dioxide release.	Install a check valve	Presence of operators during sulfur dioxide transfer

* Flow to environment

Table 3-4 (Continued)

Equipment HAZOP, Dechlorination Station

Reference: Valencia WRP Dechlorination System Piping and Instrument Diagram

Node 2: Sulfer Dioxide Tank-Trailer to Sulfur Dioxide Storage Tanks (Continued)

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Flow* LOW	Tank-Trailer Compressor	14. Valve left shut while compressor started.	Operator error.	Tank-trailer compressor pump heats up; compressor discharge may activate PSV generating temporary minor sulfur dioxide release.	-	Two operators present during transfer of sulfur dioxide.
Flow* LOW	Tank-trailer and storage tank angle valves	15. Leaking angle valve.	a. Leaking packing at storage tank or tank-trailer angle valves (most commonly at trailer). b. Loose valve connections.	Minor sulfur dioxide release to the atmosphere.	Specific mention in procedures to reject any delivery where tank-trailer valves are leaking.	a. Sulfur dioxide monitor is provided. b. C-kit is available.
LOW	Pipe connection to angle valves	16. Bad connection.	Corrosion on piping (discoloration); worn threads on piping	Minor sulfur dioxide release to the atmosphere.	None	a. Connections checked with ammonia. b. Sulfur dioxide monitor is provided.
LOW	Piping system	17. Leaking piping (at valve unions, gaskets, flanges, O-rings).	Defect, wear, corrosion, or bad connection	Sulfur dioxide release.	Regular preventive maintenance.	a. Connections checked with ammonia. b. Sulfur dioxide monitor is provided.
HIGH	Flex line unions (on tank-trailer side)	18. Leaking O-ring	Worn O-ring	Minor sulfur dioxide release to the atmosphere.	None	Occurs only on transfer, when operators are present.
HIGH	Flex line (on tank-trailer side)	19. Minor cracks at flex hose.	Corrosion caused by sulfur dioxide (discoloration will be seen on flex hose).	Minor sulfur dioxide release to the atmosphere (actually observed).	Regular preventive maintenance.	a. Occurs only on transfer, when operators are present. b. Sulfur dioxide monitor is provided.

* Flow to environment

Table 3-4 (Continued)

Equipment HAZOP, Dechlorination Station

Reference: Valencia WRP Dechlorination System Piping and Instrument Diagram

Node 2: Sulfer Dioxide Tank-Trailer to Sulfur Dioxide Storage Tanks (Continued)

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
EXCESS	Flex line	20. Flex line rupture (on tank-trailer side) or pipe rupture (on storage tank side)	Earthquake	Sulfur dioxide released to the environment.	Provide automatic/remotely-operated shut-off valves to all angle valves.	a. Sulfur dioxide monitor is provided. b. Anchoring for tank is redesigned to improve earthquake resistance. c. Presence of excess flow valves.
HIGH	Relief Valve at tank trailer	21. Overfilled tank trailer (over 85% standard capacity)	a. High day time temperature b. Vendor error	a. Minor sulfur dioxide releases if relief valve operates properly. Relieves pressure than closes within minutes. b. If relief valve is stuck open, sulfur dioxide will be released to the environment for approximately 15 minutes.	-	a. Deliveries are made in morning to avoid high temperatures during unloading b. Sulfur dioxide monitor is provided c. C-kit is available

* Flow to environment

Table 3-4 (Continued)

Equipment HAZOP, Dechlorination Station

Reference: Valencia WRP Dechlorination System Piping and Instrument Diagram

Node 2: Sulfer Dioxide Tank-Trailer to Sulfur Dioxide Storage Tanks (Continued)

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Temperature HIGH	Relief valve at tank-trailer	22. Overfilled tank-trailer (over 85% std. capacity)	a. High daytime temperature.	Minor sulfur dioxide release if relief valve operates properly, relieves pressure, then closes within 1 minute.	-	a. Sulfur dioxide monitor is provided. b. "C" Kit is available. c. Trained operators wearing SCBA and other safety equipment present during sulfur dioxide transfer. d. Tank trailer is insulated
HIGH	System	23. Tank relief valve opens.	Nearby fire.	Sulfur dioxide released to the environment (see Deviation 21).	Specify fire emergency procedures.	a. Sulfur dioxide monitor is provided. b. No combustible materials in the proximity.

* Flow to environment

Table 3-4

Equipment HAZOP, Dechlorination Station

Reference: Valencia WRPDechlorination System Piping and Instrument Diagram

Node 3: Manifold to Evaporator

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Flow (to process) NO	Piping sections between valves where an expansion chamber is provided.	Same as Deviations 11 and 12.	-	-	-	-
Flow (to process) LOW	Piping	24. Corrosion (especially at threads)	Wear, aging	Possible sulfur dioxide leaks	-	a. Sulfur dioxide monitor is provided b. Regular program of changing piping.

* Flow to environment

Table 3-4 (Continued)

Equipment HAZOP, Dechlorination Station

Reference: Valencia WRP Dechlorination System Piping and Instrument Diagram

Node 4: Evaporator

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Flow (to process) NO	Evaporator	25. Interruption of sulfur dioxide flow.	Heater fails OFF (wear, aging, thermostat failure)	Low temperature alarm switch in evaporator unit activates. Electric operator provides automatic shutoff of the pressure regulator (pressure reducing valve).	Clean and inspect evaporator components at least once per year per manufacturer's recommendations.	Interruption of sulfur dioxide flow will trigger high chlorine residual alarm within five minutes.
EXCESS	Evaporator	26. Overheating of sulfur dioxide.	a. Fails ON (thermostat failure on HIGH, possibly from used contacts) of failure of operator to refill.	Water may boil over (a drain is provided). A water high temperature switch connected to a local audible alarm and to the control room will activate. Overheated sulfur dioxide will return to the sulfur dioxide storage tank.	Same as Deviation 25.	High temperature alarm.
Pressure EXCESS	Evaporator	27. Trapped sulfur dioxide.	Sulfur dioxide trapped by closure of downstream valves (operator error or automatic closure).	Minor sulfur dioxide release, PSV opens.	-	a. Sulfur dioxide monitor is provided.

* Flow to environment

Table 3-4 (Continued)

Equipment HAZOP, Stage IV Dechlorination Station

Reference: Valencia WRP Dechlorination System Piping and Instrument Diagram

Node 5: Filter and Pressure Regulator

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Pressure HIGH	Filter	28. Inadequate sulfur dioxide flow.	Filter clogged.	No safety consequences if partially clogged. Same as Deviation 27 if completely closed.	Regular maintenance	-
HIGH	Pressure regulator	29. Pressure regulator valve sticks open.	Mechanical failure, aging	A higher pressure than 40 psig (ranging up to 80 psig) is experienced downstream of the regulator.	-	a. Pressure regulator inspected once per year. b. System will withstand 80 psig. c. Pressure indicator provided.
Flow* LOW	Pressure regulator	30. Failure of pressure regulator diaphragm.	Wear, aging cause the diaphragm to leak (e.g. through a small hole).	Small amount of sulfur dioxide vented outside the dechlorination building from pressure regulator.	-	a. Pressure regulators cleaned and inspected once per year. b. Sulfur dioxide monitors.

* Flow to environmental

Table 3-4 (Continued)

Equipment HAZOP, Dechlorination Station

Reference: Valencia WRP Dechlorination System Piping and Instrument Diagram

Node 6: Sulfonators to Ejectors

Parameter/ Guide Word	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Flow*						
LOW	Vacuum regulator (chlorinator system) - high pressure side	31. Failure of vacuum regulator diaphragm.	Wear, aging cause the diaphragm to leak (e.g. through a small hole).	Small amount of sulfur dioxide vented from the sulfonator outside the dechlorination building.	-	Vacuum regulator cleaned and inspected once per year.
LOW	Vacuum regulator (chlorinator system) - vacuum side	32. Vacuum regulator valve sticks open.	Mechanical failure, aging	Vacuum side of vacuum regulator sees pressure greater than atmospheric. Vacuum regulator pressure relief valve discharges small amount of sulfur dioxide outside the dechlorination building.	-	a. Pressure relief valve protects integrity of sulfonator. b. Sulfur dioxide monitor is provided.
REVERSE	Ejector	33. Backflow of water into sulfur dioxide line.	Loss of vacuum from ejector malfunction or inadequate water pressure	No safety consequence (plastic pipe will not corrode)	-	Two check valves, at ejector and at sulfonator, prevent water backflow.

* Flow to environmental

Table 3-5

Procedure HAZOP, Dechlorination Station

Reference: Valencia WRP Chlorination System O & M Manual Section 13

Procedure 1: Routine Startup for One Chlorinator

Guide Word / Parameter	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Procedure performed incorrectly	Section 12.3.3a.5 and 12.3.3.a.6	1. Inlet and outlet valves of the evaporator are closed and heater is operating.	Plant operator error	Pressure inside evaporator increases; chlorine may vent through the pressure relief valve.	Proper operator training	a. High temperature alarm b. Chlorine monitor

Table 3-5 (Continued)
Procedure HAZOP, Dechlorination Station
Reference: Valencia WRP Chlorination System O & M Manual Section 13

Procedure 2: Routine Startup and Shutdown for One Evaporator

Guide Word / Parameter	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Procedure omitted	Section 12.3.5.b	2. Rotameter at chlorinator not checked.	Plant operator error	Chlorine remains in chlorinator taken out of service. No saftey consequence during normal operation since the chlorinator is usually under vacuum.	-	Specific mention in procedures to evacuate the chlorinator.

Table 3-5 (Continued)
Procedure HAZOP, Dechlorination Station
Reference: Valencia WRP Chlorination System O & M Manual Section 13

Procedure 3: Delivery and Unloading of Ton-Containers

Guide Word / Parameter	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Procedure performed incorrectly	General	3. No protection equipment such as self-contained breathing apparatus (SCBA) put on.	Plant operator error	Possible injury to one or both operators in case of chlorinerelease.	-	Specific procedures mention use of protective equipment during the hookup and disconnection of the containers.
Procedure performed incorrectly	General	4. Only one operator present.	Plant operator error	No backup incase of accident. Possible injury to operator in case of chlorine release.	-	Procedure clearly states that a standby operator has to be present.
Procedure performed incorrectly	General	5. Container rolls and drops from truck.	Incorrect truck placement.	Ton containers may be dented but chlorine release are not expected.	Operators should emphasize to the truck driver to apply truck brakes and position chocks to stop truck wheels.	Steel valve-protecting hoods on containers.
Procedure performed incorrectly	General	6. Container dropped from lifting beam on other full containers.	a. Operator error. b. Lifting beam cable failure.	Ton-containers may be dented but chlorine release is not expected.	Provide a maintenance schedule for lifting equipment.	a. Steel valve-protecting hoods on containers. b. Containers are not connected during the unloading operation.

Table 3-5 (Continued)
Procedure HAZOP, Dechlorination Station
Reference: Valencia WRP Chlorination System O & M Manual Section 13

Procedure 3: Delivery and Unloading of Ton-Containers (Continued)

Guide Word / Parameter	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Procedure performed incorrectly	Section 12.3.8.o	7. Valves not in vertical line.	Plant operator error.	Liquid chlorine may enter the vapor line. Upon connection, liquid chlorine may enter the system and damage the chlorinators. Chlorine release if sulfonator is sufficiently damaged. (NOTE: Current procedures withdraw chlorine gas and evaporators are not turned on).	-	a. Trunnions are provided for easier rotation of containers. b. Procedures state to allow 24 hours before connecting pigtails and putting containers on-line.
Procedure step omitted	Section 12.3.8e	8. Pressure gauges are not verified to zero reading.	Plant operator error	Chlorine remaining in system will be released when disconnection is performed.	Proper operator training	a. Procedure clearly states to check pressure gauge. b. Chlorine monitor.

Table 3-5 (Continued)
Procedure HAZOP, Dechlorination Station
Reference: Valencia WRP Chlorination System O & M Manual Section 13

Procedure 4: Connection of Chlorine Containers to the Chlorination System

Guide Word / Parameter	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Procedure performed incorrectly	Section 12.3.9d	9. Container valve surface not cleaned during hook-up	Plant operator error	Minor chlorine leaks may develop	Proper operator training	a. Specific mention in procedures to clean surface and inspect valve threads. b. Check for chlorine leaks are performed at end of connection. c. Chlorine monitor.
Procedure performed incorrectly	Section 12.3.9e	10. Use of corroded (green or pink) valves, nuts, or flexible connections (pigtails).	Plant operator error	Chlorine leaks may develop	Proper operator training	a. Specific mention in procedures to inspect connector for deterioration. b. Check for chlorine leaks are performed at end of connection. c. Chlorine monitor.

Table 3-5 (Continued)
Procedure HAZOP, Dechlorination Station
Reference: Valencia WRP Chlorination System O & M Manual Section 13

Procedure 5: Chlorine Bulk Unloading

Guide Word / Parameter	Item	Deviation	Causes	Consequences	Suggested Action	Existing Safety Features
Procedure step omitted	Section 12.3.10.a	11. No protection equipment [self-contained breathing apparatus (SCBA)].	Plant operator error	Possible injury to workers in case of chlorine release	Proper operator training.	a. Specific procedures mention use of protective equipment during unloading operation. b. Chlorine monitor.
Procedure step omitted	Section 12.3.10.a	12. Only the tank truck operator is present.	Plant operator error	No backup in case of accident - possible injury to worker and chlorine release	Proper operator training.	a. Procedure clearly states that the plant operator has to be present as standby. b. Chlorine monitor.
Procedure step omitted	Section 12.3.10.e	13. When opening valve, ammonia vapor check for leaks not done.	Tank truck operator error and plant operator error.	Chlorine leaks may go unnoticed during the transfer operation.	Proper operator training to observe that checks for leaks are conducted.	a. Procedure clearly states that checks for leaks with ammonia vapor be done when making and breaking connections. b. Chlorine monitor.
Procedure performed incorrectly	Section 12.3.10.g	14. Incomplete purging of supplier feed line upon completion of liquid chlorine transfer.	Tank truck operator and plant operator error.	Chlorine remaining in the feed lines released to atmosphere.	Proper operator training to verify that purging is done.	Procedures specifically mention to purge transfer hose with nitrogen.
Procedure performed incorrectly	General	15. Tank truck backs into delivery manifold.	Tank truck operator error.	Delivery manifold may be damaged.	Provide guard posts in front of delivery manifold (being implemented).	

SECTION 4

SEISMIC ANALYSIS

This section includes the seismic assessment performed for the Valencia Wastewater Treatment Facility chlorine and sulfur dioxide systems. It is divided into two parts: (1) seismicity and (2) earthquake engineering analysis. The latter part, which includes conclusions and recommendations, was performed by Yogi Patel, Principal, Buyaz and Patel, Inc., a company specializing in structural and earthquake engineering analyses following an actual walk-through of the facilities.

4.1 SEISMICITY

4.1.1 Topography

The Valencia Wastewater Treatment Facility is located in the Transverse Ranges Geomorphic Province. The site is underlain by recent alluvial deposits. These deposits are primarily unconsolidated and poorly sorted gravels, sands, silts, and clays from alluvial fan, flood plain, and streambed deposits. The Valencia facility lies within the Santa Clara River Valley. Topographically, the site is flat, with a slope of approximately one degree directed west towards the Pacific Ocean.

4.1.2 Faulting And Seismicity

Several major fault zones and numerous smaller faults are located throughout the Valencia region, some within a few miles of the site. Active or potentially active faults located within 50 miles of the site include the San Andreas, Newport-Inglewood, Santa Ynez, Garlock, Big Pine, and San Gabriel Fault Zones, and the Santa Monica-Hollywood-Raymond Hill-Cucamonga and Santa Susana-San Fernando-Sierra Madre Fault Systems (see Figure 4-1). A complete summary of these faults is found in Table 4-1. These faults are capable of generating moderate to large damaging earthquakes and associated surface rupture (Table 4-2). A major earthquake on one of the faults discussed below would have the potential to cause strong ground motion at the site. Historical records indicate that activity on these faults includes surface rupture during historic (past 200 years), Holocene (past 11,000 years), and late Quaternary (past 750,000 years) time.

The San Andreas, Newport-Inglewood, San Fernando, Garlock, Cucamonga, Raymond Hill, and part of the San Gabriel Fault Zones are considered "active", and are designated as fault-rupture hazard zones under the Alquist-Priolo Special Studies Zones Act of 1972 (Hart, 1988). With the exception of the San Gabriel, Cucamonga, and Raymond Hill Faults, these faults have documented historic surface displacement. The Valencia facility does not lie within a Special Studies Zone. Due to the close proximity of the site to the San Gabriel Fault Zone, the site has the potential for surface rupture.

Two scales exist to measure earthquakes, the Richter Scale (M) and the Modified Mercalli Scale (see Tables 4-3 and 4-4). The Richter Scale measures the magnitude

figure 4-1

Table 4-1 - Fault Zone Descriptions

FAULT ZONE	DESCRIPTION
San Andreas Fault Zone	This right-lateral strike slip fault system is comprised of numerous subparallel faults in a zone over two miles wide. This zone extends as a continuous surface feature about 620 miles from Cape Mendecino to Banning. Beyond Banning, the fault extends through the Salton Trough, into Mexico and the Gulf of California. The southern extensions of the fault disappear under the alluvial deposits of sand and gravel that cover the lower part of California. The latest activity ranges from late Quaternary to historic time. The fault lies 18 miles northeast of the site.
Newport-Inglewood Structural Zone	This structural zone manifests itself as a line of positive topographic features or hills underlain by producing oil fields. Seismic evidence indicates that a deep seated "master" fault probably underlies the zone, but drilling has not yet uncovered it. The zone exhibits right-lateral movement, with the exception of two faults at Dominguez Hills and Seal Beach. Evidence suggests left-lateral displacement along these two faults. Activity on this zone has occurred in late Quaternary, Holocene, and possibly historic time. This zone is located 30 miles southeast of the site.
Whittier-Elsinore Fault Zone	This zone is located within 45 miles of the site. It is a major northwest-trending group of faults that extend for more than 120 miles. Fault motion along this zone is complex, and includes strike slip, normal, and reverse faulting along different faults within the zone. The fault zone is seismically active. However, primarily small earthquakes are associated with this zone.

Santa Susana-San Fernando-Sierra Madre Fault System	This system is comprised of a series of independent, arcuate fault segments. These north-dipping reverse or reverse left-oblique faults extend across approximately 65 miles of the Transverse Ranges north of Los Angeles. Late Quaternary to historic surface rupture has been noted on this system. This fault system is located 8 miles south of the Valencia site.
Santa Monica-Hollywood-Raymond Hill-Cucamonga Fault System	This group of faults form the southern boundary of the Transverse Ranges and are known as the Frontal Fault System. These faults, which exhibit reverse or reverse left-oblique, and possibly left-lateral strike slip movement, have produced Late Quaternary and Holocene surface rupture. This fault system is located 27 miles south of the site.
Santa Ynez Fault Zone	This fault zone lies approximately 21 miles northwest of the site. The Santa Ynez Fault Zone contains 1 to 7 strands in a zone approximately one-half mile wide and 200 miles long. This left lateral strike-slip fault which exhibits late Quaternary surface expression near Lake Cachuma.
San Gabriel Fault Zone	This fault zone is a principle structural element of the Transverse Ranges, extending more than 80 miles in an arcuate path from the eastern San Gabriel Mountains into the eastern Ventura Basin. This fault zone consists of several en echelon normal or normal right-oblique faults, in a zone up to 1,500 feet wide. Most of this fault zone is considered inactive, however, Holocene activity is attributed to the central portion near Castaic. This fault zone is located less than one mile from the site.

Holser Fault	The Holser Fault is a reverse fault which consists of several closely spaced strands which extend for approximately 20 miles. At Saugus, the Holser Fault branches to the northwest from the San Gabriel Fault, and may be part of the San Gabriel Fault Zone. The Holser fault lies within 1 mile of the site. Late Quaternary surface expression has been recorded on this fault.
San Cayetano Fault	This reverse fault, comprised of 2 strands, is approximately 64 miles in length and located within 18 miles of the site. This fault zone is associated with scattered small earthquakes near its trace, and late Holocene surface expression.
Oak Ridge Fault	This reverse fault is comprised of one to three strands, in a zone almost one-half mile wide and 30 miles long. This fault is associated with late Quaternary surface rupture. Numerous closely associated small earthquakes have occurred near the western end of the Oak Ridge fault. It may also be the possible source of the 1952 Santa Barbara earthquake (M 6.8). This fault is located within 16 miles of the site.

Table 4-2

Maximum Probable and Credible Earthquakes and Estimated Peak Ground Accelerations
Valencia Wastewater Treatment Facility, Santa Clarita, California

Fault Zone	Approximate Distance from Site (mile)	Estimated Total Fault Length (mile)	Maximum Magnitude of Historical Earthquakes (Richter)	Probable Maximum Rupture Length for Maximum Earthquake (mile)	Corresponding Range of Maximum Earthquake Magnitudes (Richter)	Maximum Probable Earthquake Magnitude (Richter)	Maximum Credible Earthquake Magnitude (Richter)	Estimated Peak Ground Accelerations * (g)
Big Pine	36	60	--	30 or less	6.0 - 7.5	6.0	7.5	0.04/0.15
Santa Ynez	21	100+	5.5 (1926)	30 or less	6.6 - 7.5	6.6	7.5	0.16/0.26
Newport-Inglewood	31	55	6.3 (1933)	27 or less	6.6 - 7.6	6.6	7.6	0.10/0.19
Frontal Fault	27	60+	5.9 (1973)	30 or less	6.6 - 7.7	6.6	7.7	0.11/0.23
Garlock	33	150	? (1952)	30 or less	6.0 - 7.5	6.0	7.5	0.05/0.16
Santa Susana-Sierra Madre-San Fernando	8	65	6.4 (1971)	30 or less	6.6 - 7.7	6.6	7.7	0.37/0.46
San Gabriel	<1	80	--	30 or less	6.6 - 7.7	6.6	7.7	0.70/0.71
Oak Ridge	16	30	--	30 or less	6.6 - 7.5	6.6	7.5	0.21/0.31
San Andreas	19	700+	8.3+ (est.) (1857)	200 or less	7.7 - 8.4	7.7	8.4	0.29/0.35

* Estimated peak ground accelerations based upon maximum probable/credible earthquake
Source: Engineering-Science

Table 4-3

MODIFIED MERCALLI INTENSITY SCALE OF 1931

The Modified Mercalli scale measures the intensity of an earthquake's effects in a given locality. Values on the Modified Mercalli intensity scale range from I to XII. The most commonly used adaptation covers the range of intensity from the conditions of "I-not felt except by very few, favorably situated," to "XII-damage total, lines of sight disturbed, objects thrown into the air." While an earthquake has only one magnitude, it can have many intensities, which decrease with distance from the epicenter.

I Not felt except by a very few under especially favorable circumstances.

II Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.

III Felt quite noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration like passing of truck. Duration estimated.

IV During the day felt indoors by many, outdoors by few. At night some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.

V Felt by nearly everyone, many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles and other tall objects sometimes noticed. Pendulum clocks may stop.

VI Felt by all, many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.

VII Everybody runs outdoors. Damage negligible in building of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.

VIII Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motor cars disturbed.

IX Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.

X Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.

XI Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.

XII Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.

Source: California Division of Mines and Geology (1979)

Table 4-4

COMPARISON OF MAGNITUDE AND INTENSITY

Richter Magnitude		Expected Modified Mercalli Maximum Intensity (at epicenter)
2	I-II	Usually detected only by instruments
3	III	Felt indoors
4	IV-V	Felt by most people; slight damage
5	VI-VII	Felt by all; many frightened and run outdoors; damage minor to moderate
6	VII-VIII	Everybody runs outdoors; damage moderate to major
7	IX-X	Major damage
8	X-XII	Total and major damages

Source: California Division of Mines and Geology (1979)

of the earthquake or the amount of energy released on a logarithmic scale, while the Mercalli Scale describes the intensity of earthquake-induced ground motion. Unless otherwise stated, computer models of the faults listed below show a Modified Mercalli intensity of VII+ at the site (Evernden and Thomson, 1985).

San Andreas Fault Zone

The San Andreas Fault Zone is located approximately 19 miles northeast of the site. Numerous historic earthquakes have occurred along the fault, including several major earthquakes. Twelve major earthquakes have been recorded in the Los Angeles region on this fault over the last 2,000 years, at intervals ranging from 100 to 200 years and averaging one large event approximately every 132 years (Sieh et al., 1989).

There is a combined 44 percent probability of a M 7.5 event occurring along either the Mojave or San Bernardino segments of the San Andreas Fault Zone in southern California during the 30 year period between 1990 and 2020 (Ward and Page, 1990), generating strong or intense ground motion in the region. A seismic event similar to the M 8.3+ 1857 Fort Tejon earthquake would produce Modified

Mercalli intensities of about VIII+ at the Valencia facility (Davis et al., 1982; Evernden and Thomson, 1985).

Newport-Inglewood Structural Zone

The Newport-Inglewood Structural Zone, located 30 miles southeast of the site, manifests itself as a line of positive topographic features or hills. Analysts speculate that a deep seated "master" fault underlies the zone (Toppozada et al., 1988). Continuous seismic activity exists along this zone, and Woodford et al. (1954) have suggested as much as 5,000 feet of right lateral offset.

The impact of a large or major earthquake along this zone has been studied extensively (Evernden and Thomson, 1985; Toppozada et al., 1988, 1989). A major event along this zone may produce moderate to strong ground motion at the Valencia facility. Computer modeling of a hypothetical M 6.5 (Evernden and Thomson, 1985; Ziony et al., 1985) earthquake along the northern portion of the zone indicate Modified Mercalli intensities of VI+ at the site.

Garlock and Big Pine Fault Zones

The Garlock Fault Zone is located approximately 33 miles north of the site. It is a major fault zone comprised of numerous east-northeast trending oblique-slip faults which extends for a distance of 150 miles from the San Andreas Fault Zone to the Death Valley Fault Zone. Primary motion is left-lateral strike-slip, with a significant vertical component. As much as 40 miles of left-lateral offset has occurred along the Garlock Fault Zone (Iacopi, 1973).

Although the Garlock Fault Zone was once very active (Iacopi, 1973), only numerous small earthquakes (M 4.0 to M 4.9) have occurred along this fault zone during the 20th century. Surface rupture has been noted for earthquakes in 1952 and possibly 1971 (Jennings, 1988). Lamar et al. (1973) have assigned a recurrence intervals of 2 to 10 years for a M 6.0 earthquake, and 30 to 90 years for a M 7.0 earthquake on the Garlock Fault Zone. An earthquake of M 6.0 to 7.0 would generate moderate to strong ground motion at the Valencia site.

It is believed that the Big Pine Fault Zone was the western extension of the Garlock Fault Zone, prior to being displaced six miles to the north by the San Andreas Fault Zone (Iacopi, 1973). The Big Pine Fault Zone is also comprised of east-northeast trending oblique-slip faults. The Valencia facility lies approximately 40 miles southeast of the Big Pine Fault. The Big Pine Fault extends west from the San Andreas Fault Zone for at least 50 miles.

Santa Ynez Fault Zone

The Santa Ynez Fault Zone is comprised of several individual faults located approximately 21 miles northwest of the site. The fault zone runs from offshore through the central part of the Santa Ynez Mountains, transecting the Transverse Ranges Province for over 110 miles (Jennings, 1988). Vertical movement along these reverse or thrust faults has created part of the Santa Ynez Mountains and nearby hills.

Faults within the Santa Ynez Fault Zone have been active during the Quaternary and Holocene (Jennings, 1988). The most notable recent earthquake along the Santa Ynez Fault was the M 5.5 earthquake of 1926. The 1927 (M 7.5) Point Arguello earthquake may have originated on an offshore extension of this fault zone. This fault zone is considered active (Jennings, 1988; Wesson et al., 1974) and capable of generating damaging earthquakes. A moderate or major earthquake along this zone would be capable of generating moderate to strong ground motions at the Valencia site.

Santa Monica-Hollywood-Raymond Hill-Cucamonga Fault System

The Santa Monica-Hollywood-Raymond Hill-Cucamonga Fault System, also known as the Frontal Fault System, is comprised of several individual faults located within 27 miles of the site. The Frontal Fault System forms the southern boundary of the Transverse Ranges. Vertical movement along these north dipping reverse or thrust faults has created the Santa Monica Mountains and nearby hills. Weber et al. (1980) also suggest at least 15 miles of left-lateral movement along this fault system.

Faults within this system have been active within Quaternary and Holocene time (Crook et al., 1987; Hill et al., 1979; Webber, 1980). Holocene displacement has been documented for the Raymond Hill Fault, and has also been inferred for the Hollywood Fault (Ziony and Jones, 1989). The most notable recent earthquake along this system was the M 5.9 Point Mugu earthquake of February 21, 1973. Faults within this system are considered capable of producing moderate to strong ground shaking at the site.

San Gabriel Fault Zone

The San Gabriel Fault Zone is a principle structural element of the Transverse Ranges. It extends more than 80 miles in an arcuate path from the eastern San Gabriel Mountains into eastern Ventura Basin. This fault zone which consists of several en echelon normal or normal right oblique faults in a zone up to 1500 feet wide, is located less than 1 mile from the site. Most of this fault zone is considered inactive, however, Holocene activity is attributed to the central portion near Castaic. A moderate or major earthquake along the potentially active portion of this fault is capable of causing strong to intense ground motion at the site.

Santa Susana-San Fernando-Sierra Madre Fault System

The Santa Susana-San Fernando-Sierra Madre Fault System, located within 8 miles of the Valencia facility, is comprised of a series of independent, arcuate fault segments. Individual segments range in length from 9 to 20 miles. These north dipping reverse or thrust faults extend across approximately 64 miles of the Transverse Ranges north of Los Angeles. The 1971 San Fernando earthquake (M 6.4) is the most extensively studied earthquake occurring along this fault system (Oakeshott, 1975; Yerkes et al., 1974; Wesson et al., 1974). This fault system is active and capable of generating moderate to major earthquakes with associated strong or intense ground motions in the project area.

4.1.3 SEISMICALLY-INDUCED LIQUEFACTION AND LATERAL SPREADING POTENTIAL

Strong ground motions can cause various types of ground failures, including liquefaction. Liquefaction occurs during extended periods of groundshaking, when porewater pressures increase and water-saturated sediments are temporarily altered from a solid to a liquid state. Liquefaction is most likely to occur in unconsolidated, granular sediments which are water saturated less than 30 feet below the ground surface (Tinsley et al., 1985). Due to the Valencia facility site's close proximity to the Santa Clara River, it is expected that the depth to groundwater in the area is shallow (less than 30 feet). Davis et al. (1982) identified a high potential for liquefaction at the Valencia site.

Lateral spreading is the lateral displacement of surficial sediments as a result of liquefaction in a subsurface layer. It is most likely to occur where loose, water saturated sandy sedimentary deposits are situated near a free face, such as storm drain channels, sloughs and waterfront areas (Tinsley and Youd, 1985). Due to the nearly flat topography (less than one degree slope), potential for lateral spreading at the site is low.

If liquefaction occurs at depth, and slopes are too gentle to permit lateral displacement, ground oscillation is likely to occur. Overlying sediments may oscillate on liquefied sediments underneath, causing damage to structures and sub-grade facilities. The Valencia facility is expected to experience strong ground motion, equivalent to about VIII+ on the Modified Mercalli Scale, from an earthquake along the San Andreas Fault and other fault zones.

4.1.4 SEISMICALLY-INDUCED LANDSLIDE POTENTIAL

Slopes onsite and nearby are flat (approximately one degree). Slopes of less than 10 degrees are usually not subject to landslides. Therefore, the probability of seismically-induced landsliding is considered low at the site.

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SEISMIC ASSESSMENT OF STRUCTURES

CHLORINE AND SULFUR DIOXIDE HANDLING SYSTEMS

VALENCIA DISTRICT #32 WATER RECLAMATION PLANT

LOS ANGELES COUNTY SANITATION DISTRICT

MARCH 1992

REGISTERED PROFESSIONAL ENGINEER
DANIEL WEINGART
No. S3616
Exp. 6/30/95
STRUCTURAL
STATE OF CALIFORNIA

BEYAZ & PATEL, INC. CONSULTING ENGINEERS

INTRODUCTION

The Los Angeles County Sanitation District operates the Valencia District #32 Water Reclamation Plant on The Old Road in Valencia, CA. Chlorine and sulfur dioxide are used at the facility for disinfection and dechlorination of the treated wastewater, respectively. Approximately 2.50 tons of chlorine and 1.75 tons of sulfur dioxide are consumed per week. Chlorine and sulfur dioxide are each classified as an Acutely Hazardous Material (AHM) subject to Risk Management and Prevention Program (RMPP) requirements.

This report summarizes our findings which are based on visual observations during a site visit on February 26, 1992 and the "Seismic Assessment Report" prepared by Engineering-Science, Inc., Pasadena, California. Our findings, however, are not based on review of any other documents in connection with the facility. The seismicity report indicates that a site specific peak ground acceleration of 0.71 g can be expected during a maximum credible earthquake. It also indicates a high potential for seismically-induced liquefaction and lateral spreading.

METHODOLOGY

To facilitate the seismic assessment, a site walk-through was performed to:

(1) Identify existing earthquake mitigation measures and to determine the seismic ruggedness and general condition of the chlorine and sulfur dioxide systems.

(2) Identify structural weak links of the chlorine and sulfur dioxide systems.

(3) Estimate adequacy of the chlorine and sulfur dioxide cylinders and the 2,700 gallon chlorine and sulfur dioxide storage tanks and other equipment anchorages in terms of strength and ductility.

(4) Determine adequacy and continuity of lateral bracing and supports for the piping.

(5) Determine flexibility of the piping for relative displacement of supporting structures and equipment components during an earthquake, since an overconstrained pipe could result in an abrupt failure.

(6) Determine the possibility of structural failure, which may lead to failure of the systems containing chlorine and sulfur dioxide.

(7) Identify measures that could be undertaken to mitigate the release of chlorine and sulfur dioxide.

A. CHLORINE & SULFUR DIOXIDE BUILDING

A one-story masonry block wall building contains the chlorine storage area, the sulfur dioxide storage area and a combined chlorination/sulfonation room. A masonry wall separates the chlorine and sulfur dioxide storage areas. The building, which has a wood frame roof and plywood diaphragm, is relatively new and appears to be in sound structural condition. However, some settlement and tilting due to liquefaction and lateral spreading may occur.

B. CHLORINE STORAGE ROOM

The chlorine storage room contains three 1-ton cylinders, a 2,700-gallon horizontal tank that was built in 1987 and related piping.

The 2,700-gallon tank is supported on two steel saddles, one at the front and one at the rear of the tank. The ends of each saddle are held in position by steel snubbers bolted to the floor slab with four 5/8" diameter bolts. The four snubbers appear to be adequate to resist seismic base shear and tension due to overturning during a major earthquake.

Three 1-ton horizontal chlorine cylinders, mounted on trunnions, are located adjacent to the 2,700-gallon tank. The cylinders are connected to the trunnions with tie-straps which must be kept properly tensioned to adequately anchor the cylinders to resist seismic forces. The trunnions were bolted to the floor slab and appear to be sufficiently anchored.

The chlorine vapor line has flexible connectors where necessary. The remainder of the chlorine piping system appears to be adequately braced to resist seismic forces in any direction. The 1-ton cylinders are connected to the main chlorine piping through pigtail type flexible pipes at their discharge end.

Visual observation indicates that the chlorine system is not in danger of release due to the collapse of any adjacent structure during a major earthquake.

Conclusions and Recommendations:

1. The chlorine storage tank appears to be properly anchored to resist forces imposed during a major earthquake.

2. The chlorine piping appears to be properly braced to resist seismic forces in any direction.

3. Maintain sufficient tension in the tie-straps to properly anchor the 1-ton cylinders to the trunnions.

C. SULFUR DIOXIDE STORAGE ROOM

The sulfur dioxide storage room contains a 2,700-gallon horizontal sulfur dioxide storage tank that was built in 1986, three 1-ton cylinders and related piping.

The 2,700-gallon tank is anchored to the floor in a similar manner as the chlorine storage tank. Four snubbers, with four bolts per snubber, anchor the tank to the floor slab to resist seismic forces in any direction.

Three 1-ton horizontal sulfur dioxide cylinders, mounted on trunnions, are located adjacent to the 2,700-gallon tank. The cylinders are connected to the trunnions with tie-straps which must be kept properly tensioned to adequately anchor the cylinders to resist seismic forces. The trunnions were bolted to the floor slab and appear to be sufficiently anchored.

The piping at the 2,700-gallon tank appears to be adequately braced to resist forces in all directions, however, a flexible connector should be installed between the tank and the fill line piping. The 1-ton cylinders are connected to the main piping through pigtail type flexible pipes at their discharge end.

Visual observation indicates that the sulfur dioxide system is not in danger of release due to the collapse of any adjacent structure during a major earthquake.

Conclusions and Recommendations:

1. Maintain sufficient tension in the tie-straps to properly anchor the 1-ton cylinders to the trunnions.

2. Install a flexible connector in the fill line piping.

D. CHLORINATION/SULFONATION ROOM

The combined chlorination/sulfonation room which is adjacent to the storage rooms contains two Fischer & Porter chlorinators, two sulfonators, two chlorine evaporators and two sulfur dioxide evaporators. Each unit is anchored to the floor slab with four bolts which appear to be adequate to resist seismic forces in any direction.

The chlorinator and sulfonator piping appear to be adequately braced to resist seismic forces in any direction. However, the chlorine piping located above the sulfonator units is too flexible in the direction parallel to the sulfonator units. Therefore, we recommend that an additional brace be provided to anchor this piping to the masonry wall adjacent to the end sulfonator unit. Also, we recommend that the vertical section of the sulfur dioxide solution line (located in the corner of the room) be braced to the masonry wall, as it appears to be too flexible as well.

Conclusions and Recommendations:

1. Provide an additional brace for the chlorine piping located above the sulfonator units.

2. Provide additional bracing for the vertical section of the sulfur dioxide solution line.

PIPING SEISMIC WALKDOWN WORK SHEET

SYSTEM DESCRIPTION	LINE ~~NUMBER~~	LOCATION	DRAWING NO.
SULFUR DIOXIDE	FILL LINE	TOP OF STORAGE TANK	–

CONCLUSION

- ☐ ACCEPTABLE
- ☒ ACCEPTABLE but modification suggested
- ☐ UNACCEPTABLE see "comments"
- ☐ INACCESSIBLE acceptability not determined

ENGINEER DAN INEINGART

DATE 2-26-92

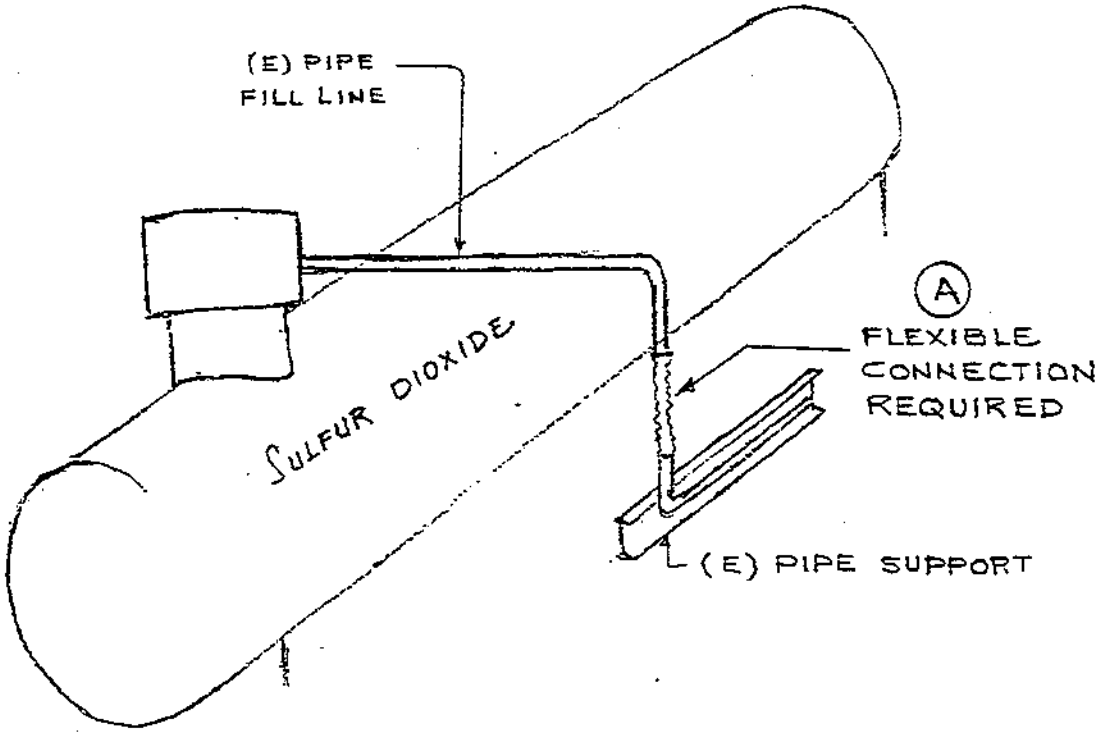
RECOMMENDED RANKING SLT, SLT, MOD INSPECTION ATTRIBUTES

	YES	NO	INAC	COMMENTS
PIPING				
DAMAGED		X		
CORROSION		X		
FLG/THRD/JTS				N.A.
BURIED RUN		X		
ADEQUATE BRANCH FLEXIBILITY		X		(A) FLEXIBLE CONNECTOR REQUIRED. REFER TO SKETCH ON PAGE 2.
RIGIDLY SPANS COMPONENTS	X			
SUPPORTS				
PIPE SPANS OK	X			
MISSING HARDWARE		X		
CORROSION		X		
HARDWARE DAMAGED/LOOSE		X		
SEISMIC INTERACTION				
ADEQUATE CLEARANCE	X			
ADJ COMPONENTS SECURE	X			
CLEARANCE AT AOV'S/MOV'S				N.A.

SEISMIC WALKDOWN WORK SHEET

SYSTEM DESCRIPTION	LINE ~~NUMBER~~	LOCATION	DRAWING NO.
SULFUR DIOXIDE	FILL LINE	TOP OF STORAGE TANK	–

COMMENTS - SKETCHES



PIPING SEISMIC WALKDOWN WORK SHEET

SYSTEM DESCRIPTION	LINE ~~NUMBER~~	LOCATION	DRAWING NO.
CHLORINE	CHLORINATOR	ABOVE SULFONATOR UNITS	—

CONCLUSION

- ☐ ACCEPTABLE
- ☒ ACCEPTABLE but modification suggested
- ☐ UNACCEPTABLE see "comments"
- ☐ INACCESSIBLE acceptability not determined

ENGINEER DAN WEINGART

DATE 2-26-92

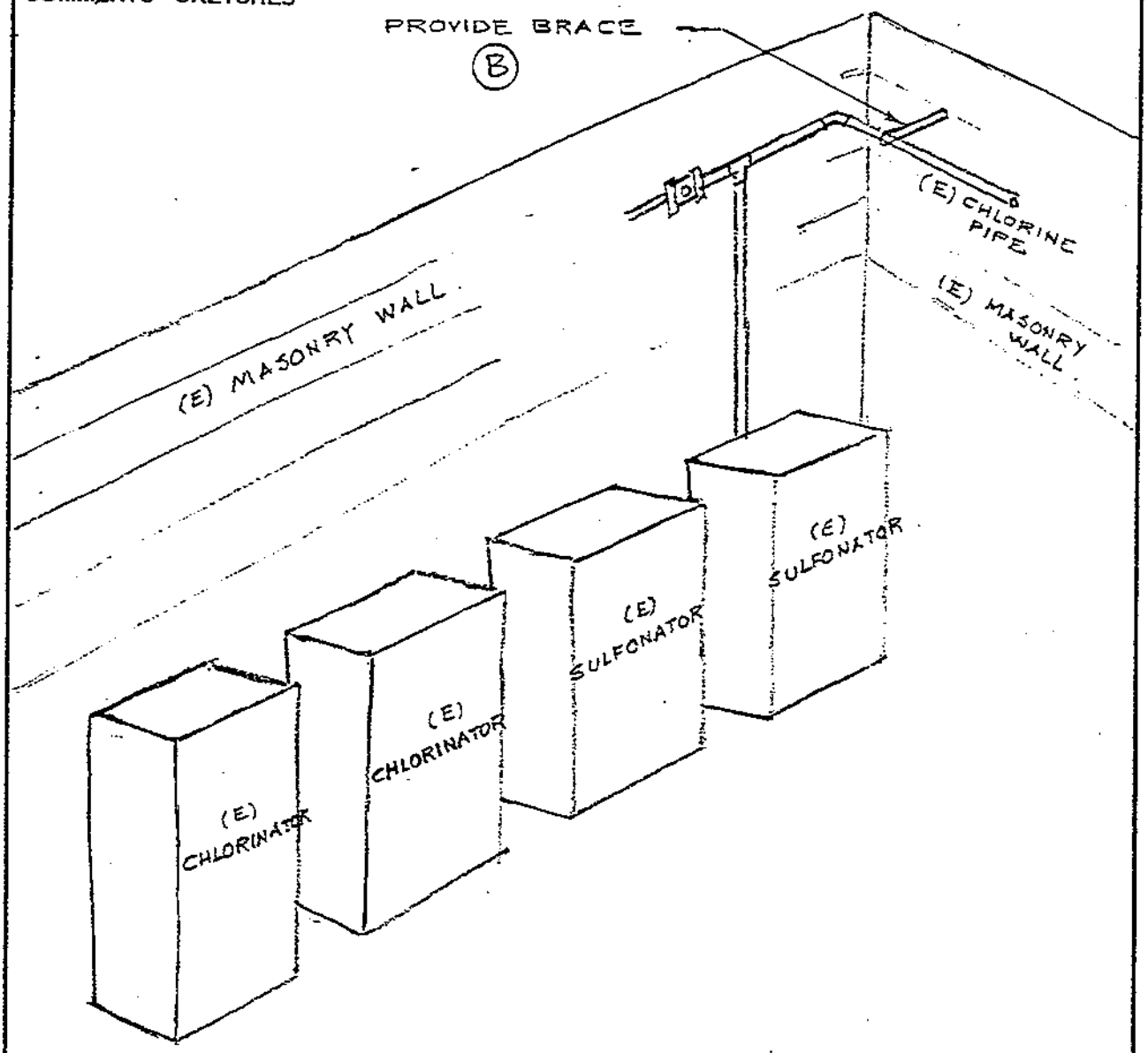
INSPECTION ATTRIBUTES

	YES	NO	INAC	COMMENTS
PIPING				
DAMAGED		X		
CORROSION		X		
FLG/THRD/JTS				N.A.
BURIED RUN		X		
ADEQUATE BRANCH FLEXIBILITY	X			
RIGIDLY SPANS COMPONENTS	X			
SUPPORTS				
PIPE SPANS OK	X			
MISSING HARDWARE	X			(B) ADDITIONAL BRACE REQUIRED - REFER TO SKETCH ON PAGE 4.
CORROSION		X		
HARDWARE DAMAGED/LOOSE		X		
SEISMIC INTERACTION				
ADEQUATE CLEARANCE	X			
ADJ COMPONENTS SECURE	X			
CLEARANCE AT AOV'S/MOV'S				N.A.

SEISMIC WALKDOWN WORK SHEET

SYSTEM DESCRIPTION	LINE ~~NUMBER~~	LOCATION	DRAWING NO.
CHLORINE	CHLORINATOR	ABOVE SULFONATOR UNITS	–

COMMENTS - SKETCHES



PIPING SEISMIC WALKDOWN WORK SHEET

SYSTEM DESCRIPTION	LINE ~~NUMBER~~	LOCATION	DRAWING NO.
SULFUR DIOXIDE	SULFUR DIOXIDE SOLUTION LINE	CORNER OF CHL/SUL ROOM	—

CONCLUSION

- ☐ ACCEPTABLE
- ☒ ACCEPTABLE but modification suggested
- ☐ UNACCEPTABLE see "comments"
- ☐ INACCESSIBLE acceptability not determined

ENGINEER DAN WEINGART

DATE 2-26-92

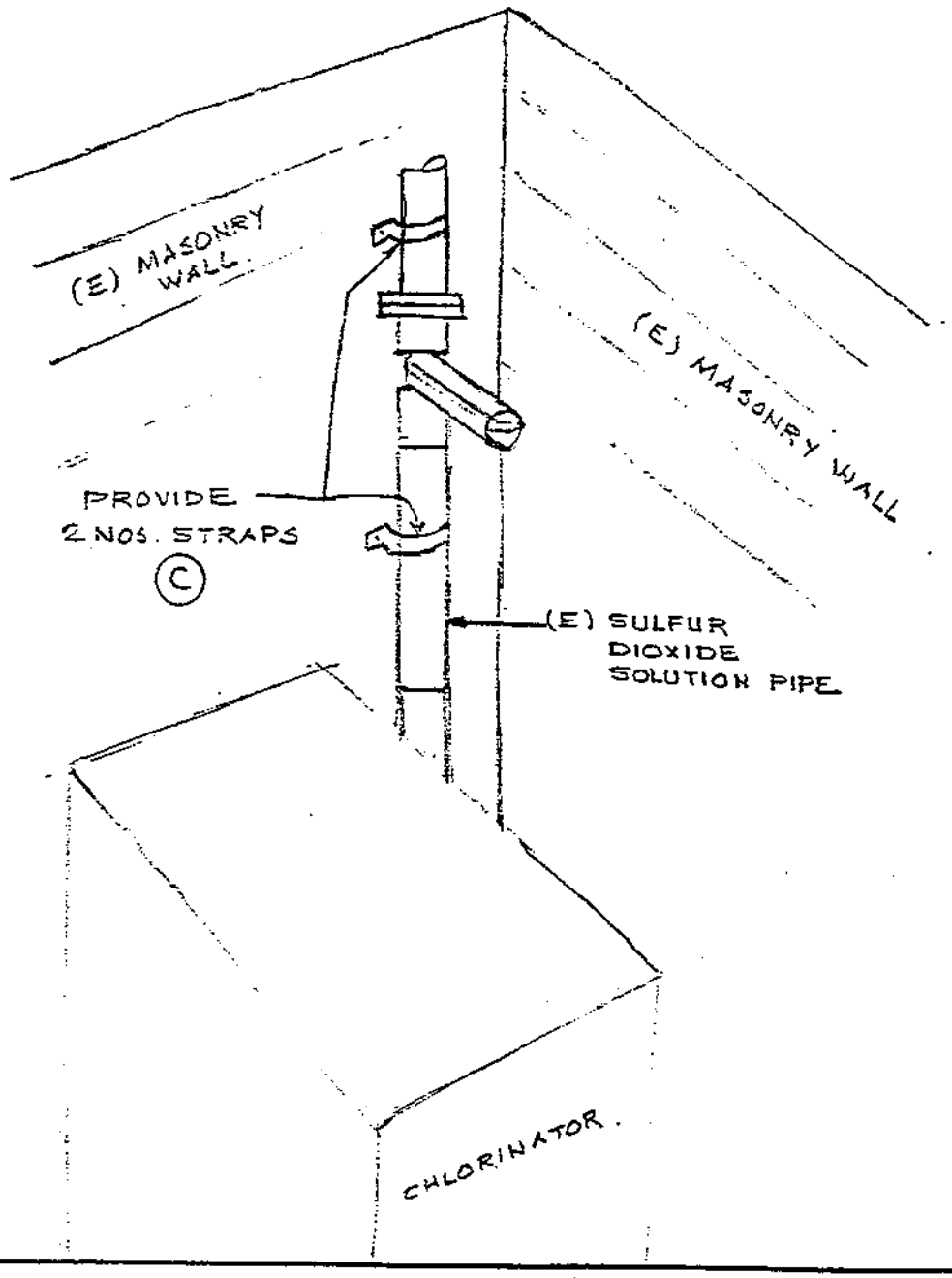
INSPECTION ATTRIBUTES

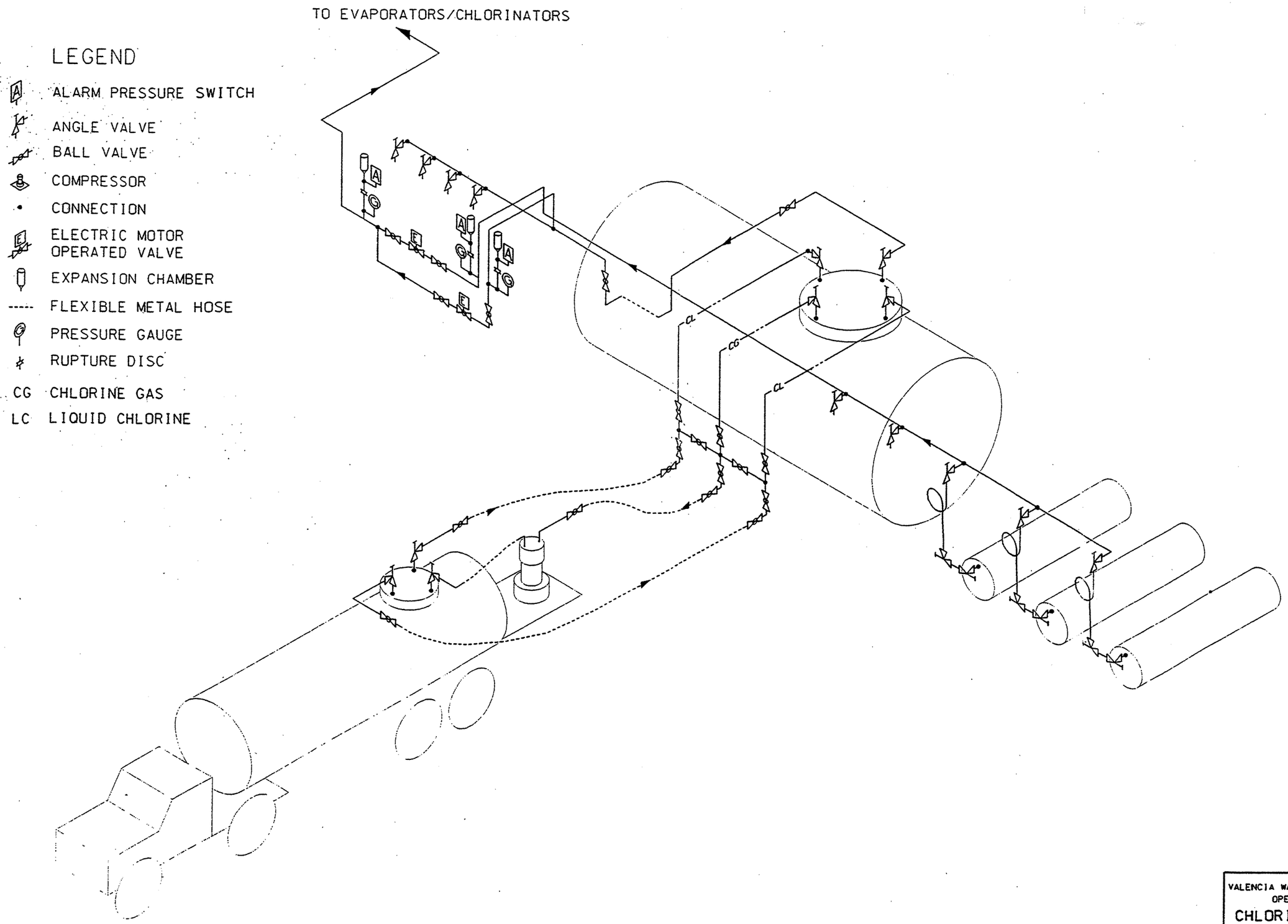
	YES	NO	INAC	COMMENTS
PIPING				
DAMAGED		X		
CORROSION		X		
FLG/THRD/JTS				N.A.
BURIED RUN		X		
ADEQUATE BRANCH FLEXIBILITY	X			
RIGIDLY SPANS COMPONENTS	X			
SUPPORTS				
PIPE SPANS OK	X			
MISSING HARDWARE	X			(C) ADDITIONAL BRACE REQUIRED - REFER TO SKETCH ON PAGE 6.
CORROSION		X		
HARDWARE DAMAGED/LOOSE		X		
SEISMIC INTERACTION				
ADEQUATE CLEARANCE	X			
ADJ COMPONENTS SECURE	X			
CLEARANCE AT AOV'S/MOV'S				N.A.

SEISMIC WALKDOWN WORK SHEET

SYSTEM DESCRIPTION	LINE ~~NUMBER~~	LOCATION	DRAWING NO.
SULFUR DIOXIDE	SULFUR DIOXIDE SOLUTION LINE	CORNER OF CAL/SUL ROOM	—

COMMENTS - SKETCHES

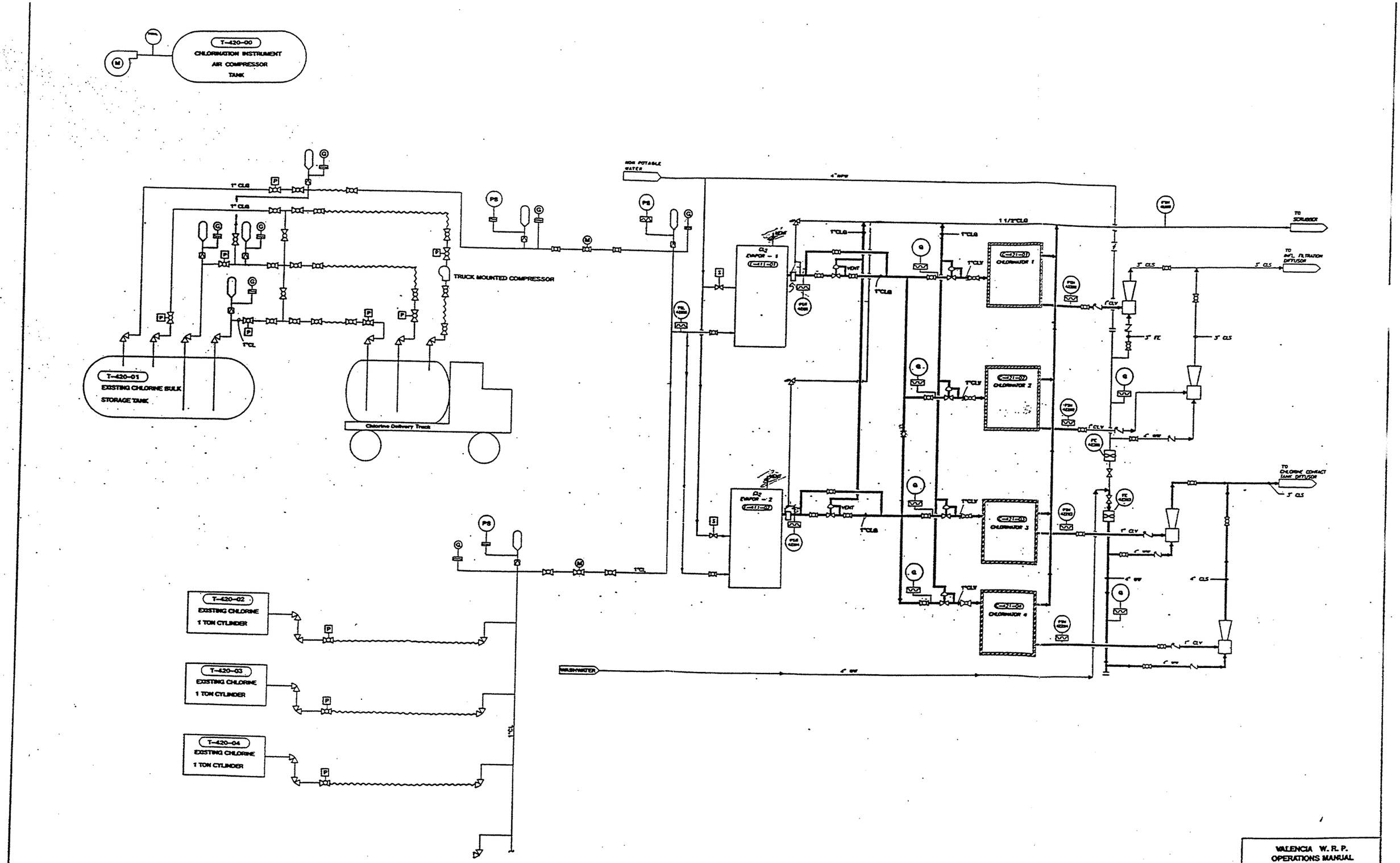




VALENCIA WATER RECLAMATION PLANT
OPERATIONS MANUAL

CHLORINE UNLOADING
& STORAGE SYSTEM
STAGE THREE

032295



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VALENCIA W. R. P.
OPERATIONS MANUAL

CHLORINATION SYSTEM
P & ID

12. CHLORINATION SYSTEM

12.1 Purpose and Intent. The chlorination system is provided to prevent the spread of waterborne diseases by chemically treating the plant effluent to kill the organisms which spread disease known as pathogens. Chlorine is a potent oxidizing agent which is toxic to living tissue. When placed in water, chlorine forms a combination of strong acids that burn and kill or de-activate the infectious microorganisms including bacteria, viruses, protozoans and parasites. The specific water discharge requirement (specified in Order No. 89-129) satisfied by chlorination is given below:

"...the wastes shall be considered adequately disinfected if at some point in the treatment process the median most probable number (MPN) of coliform organisms does not exceed 2.2 per 100 ml."

12.2 Design. The system is designed to meet this requirement by withdrawing liquid chlorine from one ton containers or liquid or gas from a bulk storage tank. When ton containers are employed for chlorine storage, the liquid is withdrawn from a container, evaporated to the gas phase, mixed with water and then injected into the plant flow. The process is the same for the bulk tank except that chlorine already in the gas phase can be withdrawn from the tank then mixed with water and then injected in to the plant flow. The treated flow is detained in chlorine contact tanks Nos. 1, 2, 3 and 4 for proper disinfection. A schematic of normal operation is given in Figure 12-1.

The chlorination system consists of chlorine unloading and storage facilities for one 13.5-ton bulk storage unit, T-42000 and three 1-ton container, chlorinators, Nos. C-421-1 through C-421-4, evaporators, Nos. E-411-01 and E-411-02 diffusers, residual analyzers, emergency leak treatment system, which handles both chlorine or sulfur dioxide leaks, and other piping and equipment. Most of the equipment is located in the Chlorination Building. The storage area may be converted to 1-ton containers by removing the supplier provided 13.5 ton storage tank and installing trunnions and tiedowns for seven(7) additional 1-ton containers.

One mixer and two chlorine solution diffusers are in the chlorine mixing chamber located at the southeast corner of the chlorine contact tanks. Control valves on the inlet side of each diffuser regulate the spilt of chlorine solution between the diffusers. After the chlorine solution is mixed with the plant flow, the mixture is detained in the chlorine contact tanks. A sampling pump at the inlet (Channel No. 4) pumps continuously to new residual analyzer No. 1 in the Chlorination Building and second sample pump at outlet (Channel No. 5) of the chlorine contact tanks pump continuously to a new residual analyzer located adjacent to the chlorine contact tank at southwest corner. One chlorine solution diffuser is located at the filter bypass structure to introduce chlorine prior to filtration. A sampling connection at the filter feed pump station discharge provides a continuous sample to the residual analyzer located in the Chlorination Building.

12.2.1 Chlorine Contact Tanks: Four parallel chlorine contact tanks Nos. T-424-01 through T-424-04 provide a detention time of 2.3 hours at maximum design flow. Each tank is baffled for three pass flows through it with a 36-inch square sluice gate in the influent end (from distribution channel No. 4), and a 7 foot × 1.5 foot stoplog opening in the effluent end. Tanks may be taken out of

service by closing the respective sluice gate and stoplog opening. Each tank can be dewatered through the 6-inch drain line located in gallery No. 5 up to the drain elevation. Remaining water from the tank will be removed by use of submersible pumps in the sump pit provided at each tank.

Pan type skimmers (one per tank) are provided at the tank outlet discharge to skim floatable solids to the drain line in Gallery No. 5.

12.2.2 Mixing Equipment:

a. General. The mixer is located in distribution channel No. 4 at the influent 60-inch RGRCP. The mixer uniformly mixes the chlorine solution into the plant flow.

b. Mixer. The mixer is centrally mounted on top of the mixing chamber with the mixing shaft and impeller entering the chamber from above. The mixer motor is controlled by an ON-OFF switch locally and at a main ON-OFF switch on switchboard No. 26 in the Chlorination Building.

c. Motor. A 5 hp, 1760 rpm, 460 volt motor powers the mixer through a Delroyd gear reducer (30:1) and 5-1/2 foot shaft.

12.2.3 Evaporators: Two evaporators, E-411-01 and E-411-02 both are always on with one in operation and one on standby, convert the liquid chlorine withdrawn from the storage tanks to gas. When gas is withdrawn from the bulk storage tank, the evaporator serves to heat the gas to prevent re-liquefaction. Both evaporators have a capacity of 8,000 lbs/day. Either evaporator can be used to supply any of the four chlorinators.

12.2.4 Chlorinators: Two solution-feed (8,000 lbs./day) chlorinators, C-421-03 and C-421-04, electronically regulate the rate of chlorine feed for disinfection of the water in the chlorine contact tanks by means of a compound loop control system. A second set of 2 chlorinators C-421-01 and C-421-02 (3,000 lbs./day) are provided to regulate the rate of chlorine feed for the pre-filtration demand. This prefiltration chlorination is used to keep the bed of the filter clean.

The two plant disinfection chlorinators for chlorine addition at the chlorine contact mixing basin are controlled based on the summed effluent flow signals from individual filters and the residual chlorine concentration as measured by the sample/analysis system at the chlorine contact tank mixing basin. Back up control is provided using the plant influent flow.

The second set of chlorinators for chlorine addition prior to filtration is controlled based on the summed effluent flow signals from individual filters and the residual chlorine concentration measured by the sample/analyzer system at the filter feed pump discharge line. Back up control is provided using the plant influent flow or effluent flow rates.

Manual Chlorination can be achieved by manually adding HTH (calcium hypochlorite) into channel No. 4 at the flash mixer. Cl_2 residual on control panel No. 3 shall be monitored to control the dosage. Calcium hypochlorite is a stable, nonflammable material that cannot be ignited. Contact with heat, acids or

oxidizable materials may cause fire. Recommended protection when handling HTH consists of clear goggles or face shield with plastic or rubber glass.

12.2.5 Residual Chlorine Analyzers: Four residual analyzers control and monitor the chlorination and dechlorination system.

Analyzer No. AE-93303 samples the influent end (channel No. 4) of the chlorine contact chambers. It measures the amount of chlorine successfully dissolved in solution minus any instantaneous chlorine demands in the plant flow. This analyzer has a residual chlorine controller used for controlling the disinfection chlorinators. The reading is recorded at control panel No. 3.

Analyzer No. AE-93402 samples the chlorine residual at the effluent of the chlorination contact effluent channel. This signal is used to control the sulfur dioxide in a feed forward open loop control system.

Analyzer No. AE-32100 samples the filter feed pump discharge and provides a continuous record of the chlorine residual. This residual is used to control prefiltration chlorination.

Analyzer No. AE-93401 is used to monitor the plant effluent chlorine residual.

12.3 Operation.

12.3.1 Automatic Switchover: The bulk storage tank and the three 1-ton cylinders are connected to two different manifolds. The automatic switchover automatically switches from one manifold to another. The automatic switchover system is composed of two motorized chlorine ball valves and four ball valves mounted on the west wall of the chlorine storage room and a pressure switch mounted in the piping downstream of the evaporators. The system will empty chlorine storage on one manifold and then automatically switch to the second manifold. The second manifold system will then become the operating system and the original manifold system can be supplied with chlorine without interrupting the flow of chlorine.

Each manifold is regulated by a motorized ball valve. As all the liquid chlorine is withdrawn, the pressure begins to drop. At a preset minimum pressure, the pressure switch closes the valve on the empty manifold and opens the valve on the manifold with a full container. As the first valve is caused to operate, a light shall begin flashing in the storage room and at Control Panel 3, indicating the transfer has been made and that the exhausted supply must be replaced.

The automatic switch over system is designed for operation with ton containers on both manifolds. As long as the bulk storage tank is available on manifold, the bulk storage tank will be the primary source chlorine. It is filled while still in service which means that the one ton containers on the other manifold serve only as back up for the bulk storage tank should it ever be completely depleted.

If the system fails to increase in pressure after a variable time period has elapsed following transfer, an alarm shall be activated.

12.3.2 Ventilation Fans are located as follows:

No.	Location
1	Chlorinator/Sulfonator Room
1	Cl_2 Storage Room
1	SO_2 Storage Room

The fans operate continuously. Power is supplied from switchboard No. 26.

12.3.3 Routine Startup and Shutdown for One Evaporator:

a. Startup

1. Fill the water chamber with water. Be sure the drain valve is closed.

2. Check to see that water temperature control switch is set for a maximum of 180°F. Set the water low temperature switch 20°F below the control thermostat setting. Set the water high temperature switch 15°F above the control thermostat setting. Make sure the power supply is turned on.

3. Wait until the water temperature is above 160°F. The normal operating temperature range is from 160 to 180°F.

4. Make sure the appropriate valves on the transfer line between the storage tank and the evaporator are open.

5. Slowly open the appropriate Cl_2 inlet valve to the evaporator.

6. Open the gas outlet valve. The evaporator is ready for service.

b. Shutdown

1. With the evaporator connected to the in-service chlorinator, close the liquid inlet valve.

2. When the evaporator gas pressure drops to zero, close the Cl^2 gas inlet valve on chlorinator.

3. The power should be left on because this is now the standby evaporator.

4. Start up the other evaporator.

12.3.4 Routine Startup for One Chlorinator: Chlorinator control is performed by the DCS to control either pre-filtration and or disinfection chlorination. The control modes available for either of these systems includes flow paced-residual trimmed, flow paced only or residual control only. To activate a chlorinator for either prefiltration or disinfection chlorination, the following steps must be followed.

a. At the OIU complete the following.

1. Make sure the switch for the feed valve for the bulk storage tank is in remote position.

2. Verify that the chlorine mixer in Channel No. 4 is on.

3. Verify that the correct feed valve is open.

4. At the OIU select either FLOW-PACED RESIDUAL-TRIMMED, FLOW PACED, or RESIDUAL CHLORINE.

5. Select either the plant influent flow or the summed filter effluent flow.

6. Select an output signal for the respective residual analyzer that will be substituted for the analyzer should it fail.

b. At the chlorination room complete the following.

1. Open all valves in the solution line.

2. Open the ejector water supply valve.

3. Open the gas supply valve to the chlorinator.

12.3.5 Temporary Shutdown:

a. Close the gas supply valve to the chlorinator.

b. Continue to operate the chlorinator until the rotameter float falls to zero, indicating gas flow and pressure.

c. Close the ejector water supply valve.

d. Close the valves in the solution line.

e. Turn off the selector switch and turn off the power switch at the chlorinator.

NOTE: Do not use the gas rate valve knob as a shutoff valve as this may not result in a complete shut off.

The rotameter, chlorine flow rate adjustment knob (manual), H_2O pressure gauge, gas pressure gauge, and vacuum gauge are located on the front of the chlorinators.

12.3.6 Chlorine Storage Building: It is strongly recommended that the operator study the section on Chlorine Handling in the Chlorine Institute Manual, Chlorine Institute and Fischer and Porter booklet "Handling Chlorine Liquid and Gas from Container to Dispenser", which is included in the instruction book for chlorination equipment.

12.3.7 Safety Precautions for Chlorine Handling:

UNDER NO CIRCUMSTANCES IS ANY OPERATION TO BE CARRIED OUT AT CHLORINE UNLOADING AND STORAGE FACILITY WITHOUT TWO PERSONS BEING IN ATTENDANCE.

a. General. Chlorine is a dangerous and highly toxic chemical but can be handled and stored safely if safe procedures are followed and precautions adhered to rigidly.

b. Properties of Chlorine. The gas is recognized by its greenish-yellow color and disagreeable, sharp, penetrating odor. Since chlorine is two-and-a-half times heavier than air, the gas tends to settle on the ground and in low spots. Dry chlorine is non-corrosive to steel or other metals. In the presence of moisture, chlorine becomes highly reactive and corrosive.

c. Effects on the Body. Chlorine ingested by the body reacts with body moisture to become extremely corrosive. It is injurious to the eyes, nose, lungs, and breathing passageways. Chlorine in the lungs causes coughing and difficult breathing. At high concentrations, chlorine is dangerous to health and can result in death after a few deep breaths.

d. Contact with Liquid Chlorine. Liquid chlorine coming in contact with the body will cause a chemical burn. Remove contaminated clothing and flush the skin with water. Use the deluge showers and eye baths located on the outside east and west walls of the Chlorination Building for emergency treatment.

e. First Aid Measures. (Based on the Chlorine Institute Recommendations.) The following first aid measures are recommended for persons exposed to chlorine.

1. Carry the patient from the gas area.

DO NOT ENTER AREA WITHOUT BREATHING APPARATUS!!!

Patient should be kept in a warm room (about 70°F). Supply blankets if necessary. Keep the patient warm and quiet. Rest is essential.

2. Place the patient on his back with the head and back elevated.

3. CALL A PHYSICIAN IMMEDIATELY.

4. Remove any clothing which has been splashed with liquid chlorine and flush all exposed areas with water, if the condition of the patient permits it.

5. Oxygen administered under pressure is mandatory. This should be continued until the patient stops coughing.

6. Milk may be given in mild cases to relieve throat irritation.

7. If breathing has apparently ceased, start mouth-to-mouth resuscitation immediately.

8. Provide first aid as may have been prescribed for emergencies until the paramedics arrive.

f. Breathing Apparatus. Three self-contained breathing apparatus units are stored in yellow painted metal box located at the porch on the outside wall of the Control Building. The operator who is to make or break any chlorine connection must be wearing an air mask with a self-contained air supply.

THE STANDBY OPERATOR SHALL AT ALL TIMES BE IN FULL VIEW OF THE OPERATOR MAKING OR BREAKING ANY CHLORINE CONNECTION. AN AIR MASK WITH A SELF-CONTAINED AIR SUPPLY SHALL BE WORN BY THE STANDBY OPERATOR IN A READY TO USE CONDITION.

In case of any difficulty or when a chlorine leak occurs, the standby operator shall immediately don the air mask and assist the other operator as needed.

g. Detection of Chlorine Leaks. Chlorine gas leak sensors located in the Chlorinator Room and the Chlorine Storage Room continuously analyze samples of air taken from these two locations in the chlorination building. When chlorine is detected in any of the above mentioned areas, the leak detectors send a signal to alarm annunciators on Control Panel No. 3 and the DCS actuating the alarm allotted for the event, closing the emergency shutoff valves, and starting up emergency leak treatment system. A malfunction of the leak detector should also activate an alarm.

h. Elimination of Chlorine Leaks. The precautions listed below should be followed concerning leaks.

1. The chlorine leak detector should activate one of the chlorine leak alarms if it is functioning properly. However, always be on the alert and take shallow breaths when entering the Chlorination Room. An undetected chlorine leak could be in Progress.

2. When a chlorine leak is suspected, at least two authorized persons wearing self-contained breathing equipment shall investigate immediately. One operator shall enter the chlorine area and evaluate the magnitude of the problem. The second operator, while retaining visual contact, will remain outside and upwind of the area wearing his self-contained breathing unit.

ALL OTHER PERSONNEL MUST BE EVACUATED FROM THE IMMEDIATE AREA OF THE CHLORINE UNLOADING FACILITY. REMEMBER, GASEOUS CHLORINE IS 2-1/2 TIMES HEAVIER THAN AIR AND WILL TRAVEL WITH THE PREVAILING WIND AND WILL ACCUMULATE IN LOW SPOTS. KEEP TO THE UPWIND SIDE OF THE CHLORINE LEAK.

3. After closing the appropriate isolation valves and evaluating the severity of the problem, the operator shall exit the area and review the problem and possible solution with the second operator. If it is a major leak such as a leak at the storage tank manway, call the Fire Department. If it is a minor leak, the following steps are applicable.

4. To find a leak, hold a small plastic bottle filled with commercial ammonia under the suspected area and squeeze the bottle gently. In the presence of a chlorine leak, a dense white cloud will be formed.

DO NOT POUR AMMONIA SOLUTION ON VALVES OR PIPING.

5. If a leak is found, shut off the chlorine valves on either side of the leak.

   a) Leaks around valve stems can usually be stopped by tightening the valve stem packing.

   b) Leaks at flexible connectors: After the residual chlorine has been exhausted, tighten the connecting flanges and/or replace the flange gaskets.

   c) Leaks in pipes: After residual chlorine has been exhausted, replace the defective piping.

DO NOT ATTEMPT TO REPAIR PIPE BY WELDING. CHLORINE AND STEEL PIPE WILL "BURN" WHEN HEATED TO 500°F. DO NOT SPRAY WATER ON A CHLORINE LEAK. WATER WILL DO NOTHING MORE THAN MAKE THE LEAK WORSE.

i. Depending on the severity of the leak, one of the following procedures shall be followed:

<u>Major Leak</u> (i.e., a ruptured cylinder line)

1. Immediately call Fire Department, Telephone (805) 259-2111.

2. Call your supervisor.

<u>Minor Leak</u> (i.e., a leaking packing gland)

3. Make necessary repairs.

4. Call your supervisor to inform him of intended course of action and give him your name and telephone number where you may be reached.

For your information only: "DO NOT ATTEMPT TO NEUTRALIZE LEAKING CHLORINE, LET THE FIRE DEPARTMENT DO IT", chlorine can be neutralized as follows:

It is possible to provide for the safe disposal of chlorine from leaking cylinders or ton containers. It is illegal to ship a leaking or defective containers. Chlorine distributors have suitable containers, such as several large empty drums or barrels, which can be used to prepare an aqueous solution of either caustic soda, soda ash or hydrated lime. Approximately 125 pounds of caustic soda; 300 pounds of soda ash; or 125 pounds of hydrated lime is required to react with 100 pounds of chlorine. When using caustic soda or soda ash, enough water must be added to dissolve the alkaline material. This will require approximately 40 gallons of water when using caustic soda and approximately 100 gallons of water when using soda ash. Since hydrated lime is insoluble, enough water must be added to form a slurry of suitable consistency for good reaction. Approximately 80 gallons of water will prove sufficient. The chlorine is disposed of by bubbling it into the alkali through an iron pipe or rubber tube properly weighted to hold it under the surface. When using hydrated lime, the slurry must be continuously held in suspension by mechanical or hand agitation.

j. Chlorine Institute Emergency Kit 'C'. In the chlorine storage room, there is a green metal box which is the emergency kit. It contains the tools and equipment required to seal off a leaking angle or safety valve on the chlorine storage tanks or the chlorine tank truck. Training sessions on how to use the kit are periodically conducted by the Crew Chiefs and/or the Supervisor of Operations. Operators who are unfamiliar with the kit should first read the instruction booklet published by the Chlorine Institute titled, "Chlorine Institute Emergency Kit 'C'". Ask the Supervisor of Operations for a copy.

The emergency kit has a numbered seal on the latch. Enter this number and the reason for opening the kit on the seal record sheet which is stored inside of the box.

12.3.8 Chlorine 1-Ton Container Loading and Unloading at the Storage Room: The following operations should be performed:

a. Open the doors to the chlorine storage room and confirm that the fans are on.

b. Park the truck with 1-ton containers under outside extension of the monorail crane.

c. Close the valves on the containers that are to be replaced.

d. Draw a vacuum on the appropriate regulator system of chlorine gas by using the "on line" chlorinator.

e. All pressure gauges should go to zero before proceeding further.

f. Don breathing apparatus mask and turn on the unit. Start at container furthest from the vacuum source. Disconnect the flexible connector at the container valve outlet while testing for excess chlorine gas with ammonia.

g. Replace the cap on the container valve outlet. Close the valve on the manifold. Proceed to the next container, until all containers are disconnected. Put other system on line to continue chlorination process, after all pigtails disconnected.

h. Replace the valve protection hood and secure the set screws.

i. Remove the container tie-down straps.

j. Unload one full container to the "spare" trunnions nearest the doors using monorail and container grab. The standby operator should record the container number, tare weight, and gross weight of each container shipped or received.

k. Load an empty container onto the truck.

l. Unload a full container into the space created by Step k.

m. Repeat the loading and unloading for as many containers as are being delivered and, finally, replace the last empty container with the full container originally placed in the "spare" trunnions.

n. Remove the valve protection hood from each full container.

o. Rotate the full container so that the container valves are on a vertical axis in relation to each other.

p. Secure the containers with the tie-down straps. Neatly fold up the tie-down straps that are not in use.

q. Store the monorail and container grab at the southernmost end of the storage room.

r. Allow 24 hours before connecting pigtails and putting on line.

12.3.9 Connection of Chlorine Containers to the Chlorination System: The following procedures should be followed:

a. Don the breathing apparatus.

b. Confirm the complete closure of container valves (2).

c. Remove the cap from the upper valve outlet on the container while at the same time testing for chlorine gas with ammonia.

d. Remove any gasket or chlorine residue from the container valve outlet. Use a wire brush to make a clean mating surface. Inspect valve threads. If valve threads worn, roll the container and use other valve.

e. Inspect flexible connector for deterioration.

   1. If it is necessary to replace a flexible connection, only a lead gasket should be used between the flexible connector and the chlorine gas line valve (main manifold).

   2. Only fiber gaskets are to be used between the flexible connector and the container valve outlet.

f. Connect the flexible connector to the container. Connect all pigtails before opening any valves.

g. Using a 3/8-inch square box wrench, momentarily open, and then close the upper valve on the container. Usually, the valve can be opened by striking the end of the wrench with the palm of the hand. If the valve is unduly difficult to operate, the valve stem packing nut may be loosened and then retightened after the valve is opened or closed.

h. Test for chlorine gas leaks with ammonia. If a leak is found, attempt to tighten flexible connector, if leak persists, remove and inspect connector end for foreign particles or faulty gasket. Install new gasket.

i. If no leaks are found, open the appropriate container valve stems one-half to one turn.

j. Open the appropriate chlorine gas line valves (manifold).

k. Replace the container set on the appropriate regulator system.

l. Recheck all connections and valves for chlorine gas leaks with ammonia.

12.3.10 Operating Procedures for Unloading Bulk Chlorine from Chlorine Tank Truck to Storage Tank:

a. The bulk tank truck operator performs all the work associated with the unloading of the tank truck. District personnel shall standby with self contained breathing apparatus donned as a precautionary measure while the tank truck operator connects and disconnects the chlorine hoses and completes the delivery. The tank truck comes equipped with a chlorine gas compressor, four transfer hoses with

valves at each end of the hose and nitrogen gas for purging chlorine lines.

b. The tank truck driver lays out the four transfer hoses.

c. Two transfer hoses are connected to the two liquid valves on the tanker. The other end of these hoses are connected to the liquid valves on the delivery manifold against the west wall of the chlorine storage building.

d. One end of the third transfer hose is connected to one of the gas valves on the tank truck and the other end is connected to the discharge of the compressor. The fourth hose is connected to the suction side of the compressor and the other end is connected to the gas valve on the delivery manifold.

e. The tank truck driver then opens each valve one at a time to check for leaks. He works from the tank truck manway to the storage tank.

f. After all valves are open, the compressor is started and gas is withdrawn from the bulk storage tank and forced into the tank truck. The pressure differential caused by the compressor forces liquid out of the tank truck and into the bulk tank.

g. After the transfer is complete, the transfer hoses are purged with nitrogen gas from a nitrogen tank mounted on the delivery truck.

12.4 Indicating Lights and Alarms.

12.4.1 Indicating Lights:

Status	Location
Chlorination-Flow Paced Residual-Trimmed Auto Mode	DCS

12.4.2 Alarms:

Alarm Condition	Location
Chlorine Storage Level Low	Chlorination Room
Liquid Expansion Vessel Pressure High	Storage and Chlorination Room
Chlorine Evaporator Temperature High	Chlorination Room
Chlorine Evaporator Temperature Low	Chlorination Room
Chlorine Evaporator Water Level Low	Chlorination Room
Chlorine Gas Venting	Chlorination Room
Chlorine Evaporator Gas Pressure Low	Chlorination Room
Chlorinator Vacuum Failure	Chlorination Room
Pre-filtration Sample Pump Failure	Channel No. 4
Disinfection Sample Pump Failure	Channel No. 4
Chlorination Area Emergency	Chlorine Storage Area

Alarm Condition	Location
Emergency Shower Actuated	Eyewash and Shower
Pre-filtration Manual Mode	DCS
Disinfection Manual Mode	DCS
Chlorination-Influent Flow Pacing Signal Failure	DCS
Chlorination-Filter Effluent Flow Pacing Signal Failure	DCS

12.5 Operating Problems and Solutions. This section covers some of the more common operating problems which may occur periodically and prevent the chlorination system from operating in a normal fashion. In most situations, the Supervisor of Operations should be consulted regarding operational problems of the system. A list of problems and solutions is given below:

Symptom	Probable Cause	Remedy
Flow meter fails to indicate gas flow.	Gas supply valves(s) closed or storage tank empty. Pressure regulating valve closed (usually caused by low or high evaporator temperature).	Open gas supply valves or change storage tanks. Remedy evaporator's problem or switch evaporators.
Insufficient ejector vacuum.	Water supply or solution line valve closed.	Open valve on water supply or solution line.
Gas flow rate cannot be controlled.	Condensate gas vapor in chlorinator.	Contact instrumentation personnel.
Dirty vacuum regulator valve.		Contact instrumentation personnel.
Maximum gas flow rate products a residual which is too low.	Air leakage on the upstream side of flow meter. High plant flow. Excessive chlorine demand.	Check seals at pipe connection. Put an additional chlorinator and evaporator on line. Eliminate cause of excessive demand by making process changes.
Chlorinator capacity range too low for operating conditions.		Refer to "Changing the Capacity Range" in instruction manual.
Minimum gas flow rate produces too high residual in the treated process water.	The low end of the chlorinator capacity range is too high for operating conditions.	Refer to "Changing the Capacity Range" high in instruction manual.

Symptom	Probable Cause	Remedy
Chlorinator feed rate is erratic.		Contact instrumentation personnel.
Flow meter continues to indicate flow when ejector water supply valve is closed.		Contact instrumentation personnel

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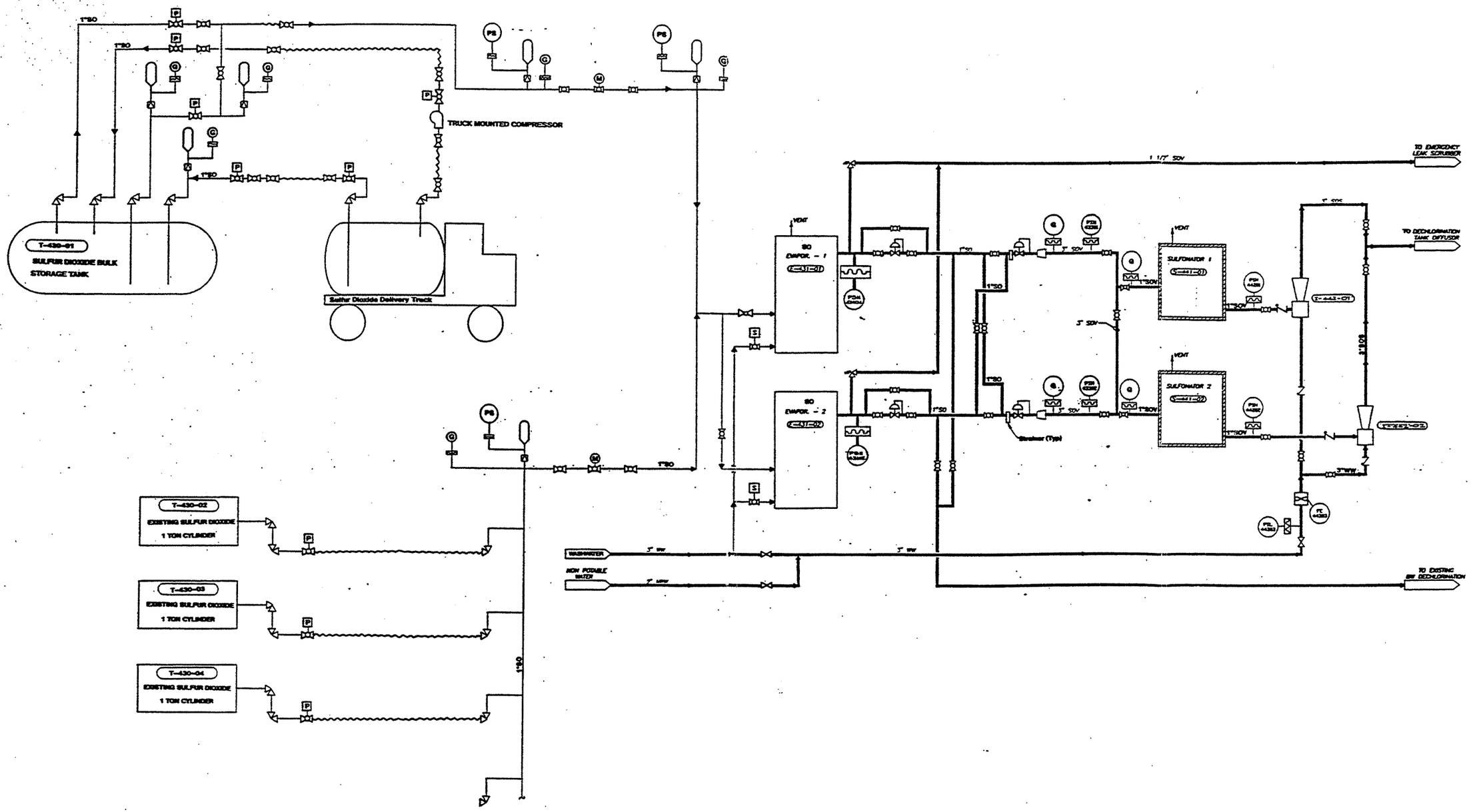
Figure 12.1 Chlorination System

Figure 12.2 Chlorine/Sulfur Dioxide Emergency Leak Scrubber System



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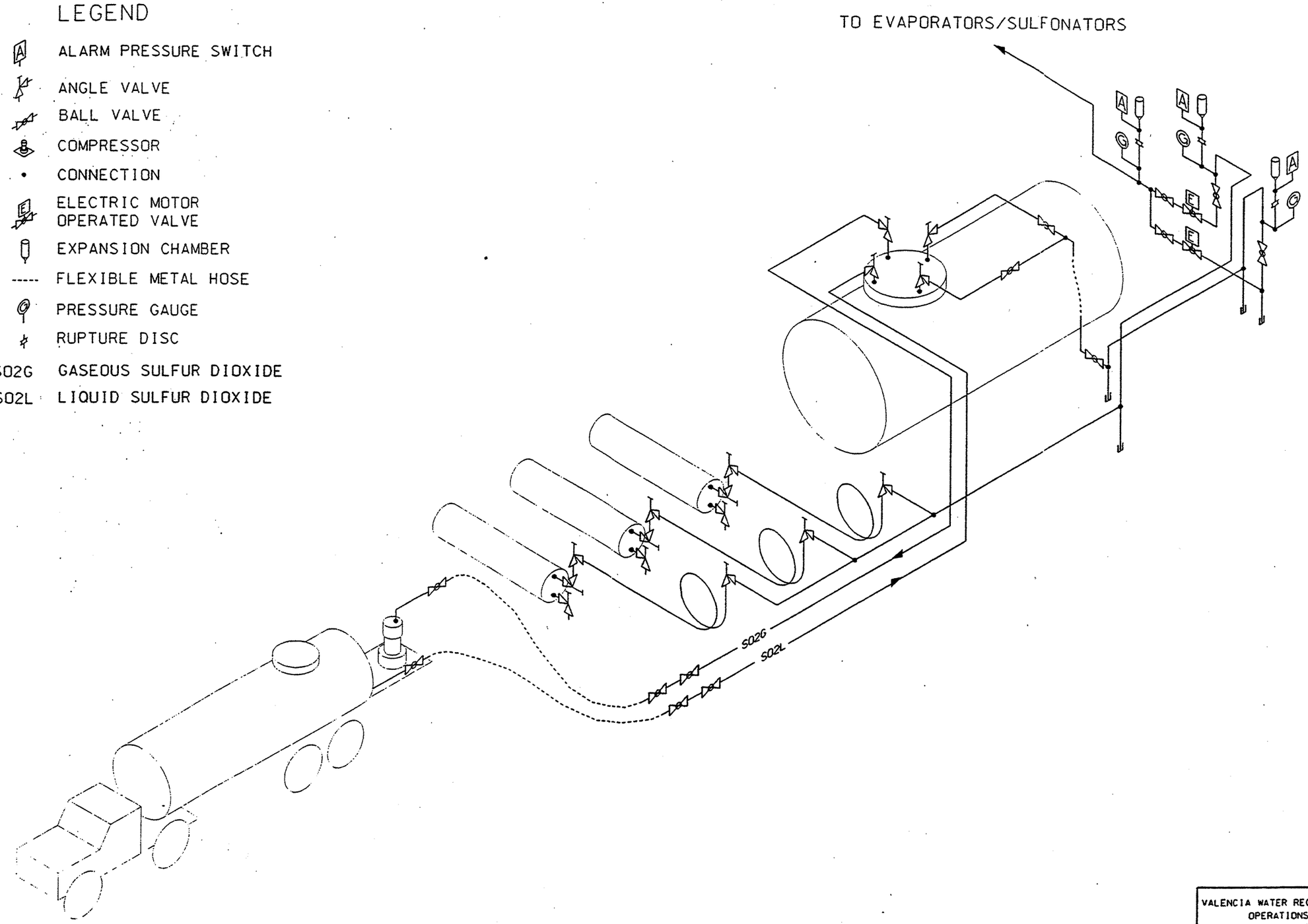
OPERATIONS MANUAL
DECHLORINATION SYSTEM
P & ID

LEGEND

- ALARM PRESSURE SWITCH
- ANGLE VALVE
- BALL VALVE
- COMPRESSOR
- CONNECTION
- ELECTRIC MOTOR OPERATED VALVE
- EXPANSION CHAMBER
- FLEXIBLE METAL HOSE
- PRESSURE GAUGE
- RUPTURE DISC
- SO2G GASEOUS SULFUR DIOXIDE
- SO2L LIQUID SULFUR DIOXIDE



VALENCIA WATER RECLAMATION PLANT
OPERATIONS MANUAL

SO2 UNLOADING
& STORAGE SYSTEM
STAGE THREE

032314

13. DECHLORINATION SYSTEM

13.1 Purpose and Intent. Dechlorination, using sulfur dioxide, removes the chlorine residual from the plant effluent before discharging to the Santa Clara River. Sulfur dioxide reacts with the chlorine remaining in the effluent which forms harmless byproducts. This is required to meet waste discharge requirements specified in Order No. 89-129 by the California Regional Water Quality Control Board, Los Angeles Region. The order prohibits more than 0.1 mg/l of residual chlorine at any time in the discharge.

13.2 Design. The system is designed to meet this requirement by withdrawing liquid sulfur dioxide from one ton containers or gas from a bulk storage tank. When ton containers are employed for sulfur dioxide storage, the liquid is withdrawn from a container, evaporated to the gas phase, mixed with water and then injected into the plant flow. The process is the same for bulk tanks except that sulfur dioxide already in the gas phase is withdrawn from the tanks then mixed with water and then injected in to the plant flow. The dechlorination system consists of sulfur dioxide unloading and storage facilities for one 13.5-ton bulk storage tank, T-43000, three 1-ton cylinders, sulfonators, diffusers, residual chlorine analyzer, and other piping and equipment. The sulfonators are located next to Channel No. 5, along side chlorine contact tank No. 1, while the evaporators are located at the chlorination building. Two diffusers are located in the mixing chamber preceding the sulfur dioxide contact chamber. Control valves on the inlet side of each diffuser regulate the split of sulfur dioxide solution between the diffusers. After the sulfur dioxide solution is mixed with the chlorinated effluent, the mixture is detained in the sulfur dioxide contact tank T-443-01 and then discharged to the Santa Clara River. Figure 13-1 shows a schematic of the dechlorination system. An emergency leak treatment system is described in detail in Section 130 and a schematic of the system is shown on Figure 12-2.

13.2.1 Sulfonators: Two sulfonators, S-441-01 and 02, dispense sulfur dioxide to the plant effluent in the sulfur dioxide mixing chamber. The sulfonators, one in service with one in standby mode, receive dosage control signals from the DCS. The DCS combines the signals from the residual chlorine analyzer AIT-93402 and a flow rate signal from the V-notch weir cut in the stoplog at the effluent end of the sulfur dioxide contact tank. The combined signal is then fed to the in service sulfonator which controls the sulfur dioxide addition based on these inputs. Both sulfonators have a 4,000 pounds per day capacity and are the V-notch type with the capability to expand the capacity to 4,700 lbs/day. Sulfur dioxide is stored in 1-ton containers as well as an SO_2 storage tank located at the chlorination building.

13.2.2 Evaporators: Two evaporators, E-431-01 and 02, are provided to convert the liquid sulfur dioxide withdrawn from the storage containers, to gas. Each evaporator has a capacity of 4,450 lbs/day and can be used to supply either sulfonator.

13.2.3 Residual Chlorine Analyzers: Chlorine analyzer No. 93402 samples the residual at the effluent of the chlorination contact effluent channel. This signal is used to control the sulfonators in a feed forward, open loop control system. Chlorine Analyzer No. 93401 is used to monitor the plant effluent

chlorine residual. These analyzers are located at the sulfonator station near Channel 5 and chlorine contact tank No. 1.

13.2.4 Mixer: The mixer uniformly combines the sulfur dioxide solution into the chlorinated plant effluent. A 5 hp, 1760 rpm, 460 volt motor powers the mixer through a Delroyd gear reducer (30:1) and 5-1/2 foot shaft.

13.3 Operation.

13.3.1 Automatic Switchover: The bulk storage tank and the three 1-ton containers are connected to two different manifolds. The automatic switchover automatically switches from one manifold to another. The automatic switchover is composed of two motorized chlorine ball valves and four ball valves mounted on the north wall of the sulfur dioxide storage room and a pressure switch mounted in the piping downstream of the evaporators. The system will empty sulfur dioxide storage on one manifold and then automatically switch to the second manifold. The second manifold system will then become the operating systems and the original manifold system can be supplied with sulfur dioxide without interrupting the flow of sulfur dioxide.

Each manifold is regulated by a motorized ball valve. As all the liquid chlorine is withdrawn, the pressure begins to drop. At a preset minimum pressure, the pressure switch located down stream of the evaporators, closes the supply valve on the empty manifold and after a variable time period of from 0-30 seconds, opens the valve on the manifold with the full container. As the first valve is caused to operate, a light shall begin flashing in the storage room and at control Panel 3, indicating the transfer has been made and that the exhausted supply must be replaced. If the system fails to increase in pressure, after a variable time period has elapsed following a transfer, an alarm shall be activated.

The automatic switch over system is designed for operation with ton containers on both manifolds. As long as the bulk storage tank is available on manifold, the bulk storage tank will be the primary source sulfur dioxide. It is filled while still in service which means that the one ton containers on the other manifold serve only as back up for the bulk storage tank should it ever be completely depleted.

13.3.2 Routine Startup for One Sulfonator (Other Sulfonator in Service): Sulfonator control is performed by the DCS. To activate a sulfonator for dechlorination, the following steps must be followed.

a. At The OIU complete the following:

1. Make sure the switch for the feed valve for the bulk storage tank is in remote position.

2. Verify that the sulfur dioxide mixer is on.

3. Verify that the correct feed valve is open.

4. At the OIU, the Status signal DECHLORINATION-AUTO MODE shall be generated.

b. At the sulfonation station complete the following:

1. Turn on the power switch for the respective sulfonator.

2. Open all valves in the solution line.

3. Open the ejector water supply line.

4. Open the gas supply valve to the sulfonator.

13.3.3 Temporary Shutdown of Sulfonator:

a. Close the gas supply valve to the sulfonator.

b. Continue to operate the sulfonator until the flow meter float falls to zero, indicating zero gas flow and pressure.

c. Close the ejector water supply line.

d. Close the valves in the solution line.

e. Turn off the selector switch and turn off the power switch at the sulfonator.

NOTE: Do not use the gas rate valve as a shutoff valve as this may not result in a complete shut-off.

The rotameter, sulfonator flow rate adjustment knob (manual), H_2O pressure gauge, gas pressure gauge, and vacuum gauge are located in front of the sulfonators.

13.3.4 Manual Dechlorination: If both sulfonators are out of service, dechlorination may be accomplished by manually adding sodium bisulfite (powder form) to the turbulent area in the sodium sulfur dioxide contact chamber by the flash mixer.

13.3.5 Routine Startup and Shutdown for One Evaporator:

a. Startup

1. Fill the water chamber with water. Be sure the drain valve is closed.

2. Check to see that water temperature control switch is set for a maximum of 180°F. Make sure the power supply is turned on. Set the water low temperature switch 20°F below the control thermostat setting. Set the water high temperature switch 15°F above the control thermostat setting.

3. Wait until the water temperature is above 160°F. The normal operating temperature range is from 160° to 180°F.

4. Make sure the appropriate valves on the transfer line between the storage tank and the evaporator are open.

5. Slowly open the appropriate SO_2 inlet valve to the evaporator.

6. Open the gas outlet valve. The evaporator is ready for service.

b. Shutdown

1. With the evaporator connected to the in-service sulfonator, close the liquid inlet valve.

2. When evaporator gas pressure drops to zero, close the SO_2 gas inlet valve on the sulfonator.

3. The power should be left on because this is now the standby evaporator.

4. Start-up the other evaporator.

13.3.6 Removing the Sulfur Dioxide Contact Chamber from Service:

a. Close the two stoplog openings at the inlet of the sulfur dioxide mixing chamber.

b. Remove the stoplog at the inlet to the bypass channel.

c. Dewater the chamber by connecting the 3-inch drain fitting to the 6-inch drain pipe with flexible hose in Gallery No. 3.

13.3.7 Safety Precautions for Sulfur Dioxide Handling:

UNDER NO CIRCUMSTANCES IS ANY OPERATION TO BE CARRIED OUT AT THE SULFUR DIOXIDE UNLOADING AND STORAGE FACILITIES WITHOUT TWO PERSONS IN ATTENDANCE.

It is strongly recommended that the operators study the section on sulfur dioxide handling in the Sulfur Dioxide Chemical Safety Data Sheet (SD-52), Manufacturing Chemists Association. This is on file at the treatment plant.

a. General. Sulfur dioxide is a dangerous and highly irritating chemical but can be handled and stored safely if safe precautions are followed, and precautions rigidly adhered to.

b. Properties. Sulfur dioxide is an extremely active chemical when moist and is very suffocating in high concentrations. It is 2.25 times heavier than air and has no color. It has an intensely irritating pungent odor. Sulfur dioxide does not corrode steel or other common metals. However, in the presence of moisture, it is highly corrosive and requires special material of construction for handling.

c. Effects on Body. Due to its combining with moisture in the respiratory tract it is a powerful respiratory irritant. In

sufficient concentrations sulfur dioxide gas will damage the mucous membranes and respiratory system. It can be detected by its intensely pungent irritating odor in concentrations as low as 3.0 parts per million; even 1.0 part per million concentration may produce slight irritation after several hours of exposure. In higher concentrations, the severely irritating effect of the gas makes it unlikely that any person would be able to remain in a sulfur dioxide contaminated atmosphere unless he were unconscious or trapped. Inhalation of this gas in concentrations of 8 to 12 parts per million in air causes throat irritation, coughing, constriction of the chest, tearing and smarting of the eyes. 150 parts per million is so extremely irritating that it can be endured only for a few minutes. 500 parts per million can be so acutely irritating to the upper respiratory tract that it causes a sense of suffocation, even with the first breath.

Contact with liquid sulfur dioxide causes skin and eye burns due to the freezing effect of this liquid. Remove contaminated clothing and flush the skin with water. Use the deluge showers and eye baths located on the outside east and west walls of the Chlorination Building for emergency treatment.

d. Breathing Apparatus. Three self-contained breathing apparatus units are stored in the yellow painted metal box located at the porch on the outside wall of the Control Building. The operator who is to make or break any sulfur dioxide connection must be wearing an air mask with a self-contained air supply.

> THE STANDBY OPERATOR SHALL AT ALL TIMES BE IN FULL VIEW OF THE OPERATOR MAKING OR BREAKING ANY SULFUR DIOXIDE CONNECTION. AN AIR MASK WITH A SELF-CONTAINED AIR SUPPLY SHALL BE WORN BY THE STANDBY OPERATOR IN A READY TO USE CONDITION.

e. First Aid Measures. The first aid measures covered in Section 12.3.7 Part e of the manual in general also supply in concept for persons exposed to sulfur dioxide.

f. Detection of Sulfur Dioxide Leaks. A sulfur dioxide gas leak detector located in Control Panel 3 continuously analyzes samples of air taken from the Chlorinator Room and the Sulfur Dioxide Storage Room. When sulfur dioxide is detected in any of the above mentioned areas, the leak detector sends a signal to alarm annunciators on Control Panel Nos. 3 and the DCS, actuating the alarm allotted for the event closing the emergency shutoff valves, and starting up the chlorine and sulfur dioxide emergency leak treatment system A malfunction of the leak detector should also activate an alarm.

g. Elimination of Sulfur Dioxide Leaks. The precautions listed below should be followed concerning leaks.

1. The sulfur dioxide leak detector should activate one of the sulfur dioxide leak alarms if it is functioning properly. However, always be on the alert and take shallow breaths when entering the Chlorination Room or sulfur dioxide storage room. An undetected sulfur dioxide leak could be in Progress.

2. When a sulfur dioxide leak is suspected, at least two authorized persons wearing self-contained breathing equipment shall investigate immediately. One operator shall enter the sulfur dioxide area and evaluate the magnitude of the problem. The second operator, while retaining visual contact, will remain outside and upwind of the area wearing his self-contained breathing unit.

> ALL OTHER PERSONNEL MUST BE EVACUATED FROM THE IMMEDIATE AREA OF THE SULFUR DIOXIDE UNLOADING FACILITY. REMEMBER, GASEOUS SULFUR DIOXIDE IS 2-1/4 TIMES HEAVIER THAN AIR AND WILL TRAVEL WITH THE PREVAILING WIND AND WILL ACCUMULATE IN LOW SPOTS. KEEP TO THE UPWIND SIDE OF THE SULFUR DIOXIDE LEAK.

3. After closing the appropriate isolation valves and evaluating the severity of the problem, the operator shall exit the area and review the problem and possible solution with the second operator. If it is a major leak such as a leak at the storage tank manway, call the Fire Department. If it is a minor leak, the following steps are applicable.

4. To find a leak, hold a small plastic bottle filled with commercial ammonia under the suspected area and squeeze the bottle gently. In the presence of a sulfur dioxide leak, a dense white cloud will be formed.

> DO NOT POUR AMMONIA SOLUTION ON VALVES OR PIPING.

5. If a leak is found, shut off the sulfur dioxide valves on either side of the leak.

   a) Leaks around valve stems can usually be stopped by tightening the valve stem packing.

   b) Leaks at flexible connectors: After the residual sulfur dioxide has been exhausted, tighten the connecting flanges and/or replace the flange gaskets.

   c) Leaks in pipes: After residual sulfur dioxide has been exhausted, replace the defective piping.

h. Depending on the severity of the leak, one of the following procedures shall be followed:

1. Major Leak (i.e., a ruptured line, vessel or container)

   a) Immediately call the Fire Department at (805) 259-2111 and request extra MSA air bottles.

   b) Call the supervisor.

2. Minor Leak (i.e., a leaking packing gland)

   a) Call the supervisor to inform him of the intended course of action.

   b) Make the necessary repairs.

      1) Leaks around the valve stems can usually be stopped by tightening the valve stem packing by no more than one-half turn at a time. Allow time for the sulfur dioxide to dissipate between tightenings.

      2) Leaks at flexible connectors: After the residual sulfur dioxide has been exhausted, tighten the connecting flanges and/or replace the flange gaskets.

      3) Leaks in pipe: After the residual sulfur dioxide has been exhausted, replace the defective piping. DO NOT ATTEMPT TO REPAIR PIPE BY WELDING.

      4) Leaks in containers: Rotate container so that only sulfur dioxide gas escapes. Use the Chlorine Institute Emergency Kit "B" for repairing leaks on one ton sulfur dioxide containers. The kit is located in the Chlorine Storage Building.

13.3.8 Sulfur Dioxide Loading and Unloading at the Storage Room (One Ton Containers). The following operations should be performed.

a. Open the doors to sulfur dioxide storage room and confirm that the fans are working.

b. Park the truck under the outside extension of the monorail crane.

c. Close the valves on the containers that are to be replaced.

d. Draw a vacuum on the appropriate regulator system of sulfur dioxide gas by using the on-line sulfonator.

e. All pressure gauges should go to zero before proceeding further.

f. Don the breathing apparatus mask and turn on unit. Start at the container furthest from the vacuum source. Disconnect the flexible connector at the container valve outlet while testing for excess sulfur dioxide gas with ammonia.

g. Replace the cap on the container valve outlet. Close the valve on the manifold. Proceed to the next container until all containers are disconnected. Put other SO_2 system on line to continue dechlorination process, after all pigtails are disconnected.

h. Replace the valve protection hood and secure the set screw.

i. Remove the container tie-down straps.

j. Unload one full container to the "spare" trunnions nearest the doors using monorail and container grab. The standby operator should record the container number, tare weight, and gross weight of each container shipped or received.

k. Load an empty container onto the truck.

l. Unload a full container into the space created by Step k.

m. Repeat the loading and unloading for as many containers as are being delivered and, finally, replace the last empty container with the full container originally placed in the spare trunnions.

n. Remove the valve protection hood from each full container.

o. Rotate the full container so that the container valves are on a vertical axis in relation to each other.

p. Secure the containers with the tie-down straps. Neatly fold up the tie-down straps that are not in use.

q. Store the monorail and container grab at the southernmost end of the storage room.

r. Allow 24 hours before connecting pigtails and putting on line.

13.3.9 Connection of Sulfur Dioxide Containers to the Sulfonation System: The following operations should be performed:

a. Don the breathing apparatus.

b. Confirm the complete closure of container valves (2).

c. Remove the cap from the upper valve outlet on the container while at the same time testing for sulfur dioxide gas with ammonia.

d. Remove any gasket or sulfur dioxide residue from the container valve outlet. Use a wire brush to make a clean mating surface. Inspect valve threads. If valve threads worn, roll the container and use other valve.

e. Inspect the flexible connector for deterioration.

1. If it is necessary to replace a flexible connection, only a lead gasket should be used between the flexible connector and the sulfur dioxide gas line valve (main manifold).

2. Only fiber gaskets are to be used between the flexible connector and the container valve outlet.

f. Connect the flexible connector to container. Connect all pigtails before opening any valves.

g. Using a 3/8" square box wrench, momentarily open, and then close the upper valve on the container. Usually, the valve can be opened by striking the end of the wrench with the palm of the hand. If the valve is unduly difficult to operate, the valve stem packing nut may be loosened and then retightened after the valve is opened or closed.

h. Test for sulfur dioxide gas leaks with ammonia.

i. If no leaks are found, open the appropriate container valve stems one-half to one turn.

j. Open the appropriate sulfur dioxide gas line valves (manifold).

k. Place the container set on the appropriate regulator system.

l. Recheck all connections and valves for sulfur dioxide gas leaks with ammonia.

13.3.10 Operating procedures for Unloading Bulk Sulfur Dioxide from Chlorine Tank Truck to Storage Tank:

a. The bulk tank truck operator performs all the work associated with the unloading of the tank truck. District personnel shall standby with self contained breathing apparatus donned as a precautionary measure while the tank truck operator connects and disconnects the sulfur dioxide hoses and completes the delivery. The tank truck comes equipped with a sulfur dioxide gas compressor, four transfer hoses with valves at each end of the hose and nitrogen gas for purging sulfur dioxide lines.

b. The tank truck driver lays out the three transfer hoses.

c. One transfer hoses is connected to one of the two liquid valves on the tanker. The other end of this hose is connected to the liquid valve on the delivery manifold.

d. One end of the second transfer hose is connected to one of the gas valves on the tank truck and the other end is connected to the discharge of the compressor. The third hose is connected to the suction side of the compressor and the other end is connected to the gas valve on the delivery manifold.

e. The tank truck driver then opens each valve one at a time to check for leaks.

f. After all valves are open, the compressor is started and gas is withdrawn from the bulk storage tank and forced into the tank truck. The pressure differential caused by the compressor forces liquid out of the tank truck and into the bulk tank.

g. After the transfer is complete, the transfer hoses are purged with nitrogen gas from a nitrogen tank mounted on the delivery truck.

13.4 Indicating Lights and Alarms.

13.4.1 Alarms:

Alarm Condition	Location
Sulfur Dioxide Storage Level Low	Control Panel No. 3
Liquid Sulfur Dioxide Expansion Vessel Pressure High	Control Panel No. 3
Sulfur Dioxide Evaporator Temperature High	Control Panel No. 3
Sulfur Dioxide Evaporator Temperature Low	Control Panel No. 3
Sulfur Dioxide Evaporator Water Level Low	Control Panel No. 3
Sulfur Dioxide Gas Venting	Control Panel No. 3
Sulfur Dioxide Evaporator Gas Pressure Low	Control Panel No. 3
Chlorine Contact Tank Failure	Control Panel No. 3
Final Effluent Sample Pump Failure	Control Panel No. 3
High Chlorine Residual Chlorine Contact Tank Effluent	Control Panel No. 3
Plant Effluent High Chlorine Residual	Control Panel No. 3
Emergency Shower Activated Sulfonator Pad	Control Panel No. 3
Dechlorination Manual Mode	DCS
Dechlorination Effluent Flow Pacing Signal Failure	DCS
Chlorination Filter Effluent Flow Pacing Signal Failure	DCS

13.5 Operating Problems and Solutions. The operating problems and solutions covered in Section 12.5 of the manual (chlorination) in general, also apply in concept to the dechlorination system. The evaporators, sulfonators and chlorinators, as well as the piping systems, are basically the same.

* * * * *

Figure 13.1 Dechlorination System

PREVENTIVE (FAILSAFE) AND CONTINGENCY (CLEANUP) PLANS FOR CONTROLLING ACCIDENTAL DISCHARGES AND FOR MINIMIZING THE EFFECT OF SUCH EVENTS AT THE COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY TECHNICAL REPORT

PURPOSE

This report is being submitted to the Regional Water Quality Control Board (RWQCB), Los Angeles Region, to comply with requirement E-14 of the Standard Provisions and General Monitoring and Reporting Requirements of the following NPDES Permits:

FACILITY	NPDES PERMIT NO.
Joint Water Pollution Control Plant	CA0053813
Long Beach Water Reclamation Plant	CA0054119
Los Coyotes Water Reclamation Plant	CA0054011
San Jose Creek Water Reclamation Plant	CA0053911
Whittier Narrows Water Reclamation Plant	CA0053716
Pomona Water Reclamation Plant	CA0053619
Saugus Water Reclamation Plant	CA0054313
Valencia Water Reclamation Plant	CA0054216

INTRODUCTION

The Sanitation Districts of Los Angeles County (Districts) are a confederation of independent special districts that serve the wastewater and solid waste management needs for the majority of the population in Los Angeles County. The Districts' sewerage system includes approximately 1,200 miles of sewers and 50 pumping plants that convey wastewater generated within the Districts' service boundaries to one of 11 wastewater treatment plants strategically located within Los Angeles County (see District map, attached). Fifteen of the Districts are parties to a Joint Outfall Agreement. They jointly own, operate and maintain sewers, pumping plants, treatment plants, and other sanitation works collectively called the Joint Outfall System (JOS). The Districts' largest treatment plant is Joint Water Pollution Control Plant (JWPCP) which is located in the City of Carson. It provides advanced primary treatment for an average flow of 330 mgd, of which approximately 190 mgd receives secondary treatment. The combined flow is then disinfected and discharged to the ocean at Whites Point, nearly two miles offshore at a depth of approximately 200 feet. All wastewater solids produced at the JWPCP, including the solids from the six upstream water reclamation plants (WRPs) undergo anaerobic digestion and dewatering at the JWPCP. The six upstream plants in the JOS - the Long Beach, Los Coyotes, San Jose Creek, Whittier Narrows, Pomona, and La Canada WRPs provide primary, secondary, and tertiary treatment. Currently, these plants produce an average of 150 mgd of reclaimed water collectively. Biosolids produced at these plants are returned to the sewer and are treated at the JWPCP. Four additional plants located in Lancaster, Palmdale, and Santa Clarita Valley (Saugus and Valencia) operate to serve the wastewater management needs of those communities. Due to the interrelated nature of these facilities, this report will address the preventive and contingency plans for all the sewers and treatment plants.

PREVENTIVE MEASURES - SEWERS AND PUMPING PLANTS

As evidenced by the record of wastewater overflows reported to the RWQCB, the Districts have been extremely effective in preventing overflows that can be anticipated, such as power or mechanical equipment failures. There have been no overflows due to loss of power or mechanical failure in the last four years. Overflows that did occur were caused by vandalism, inadvertent damage by contractors working adjacent to Districts' structures, failure of non-Districts' structures during major storms, and inflows due to street flooding in heavy rains. In each incident, prompt remedial action by Districts' forces prevented any environmental damage or public health concerns. Preventive measures in place consist of the following:

- Central Alarm System for all remote facilities, staffed continuously
- Permanent on site emergency generators at critical facilities
- Centrally dispatched portable emergency generators and engine driven pumps
- Staff cross trained for more than one facility
- Sewer maintenance and inspection program (see discussion below)
- Flow monitoring for advance planning and design of sewers and plant expansions

Districts' staff have aggressively implemented those measures proven most effective in preventing overflows, namely providing backup power and the means for emergency bypass of pumping plants. On site backup power is provided for critical facilities (those handling high flow or remotely located). Backup power is provided through Southern California Edison's Preferred/Emergency service, and/or on site automatic start generator. In addition, the central alarm system, located at the continuously staffed Long Beach Main Pumping Plant, provides immediate notification of loss of power, high water level, or loss of communication. Staff, and if needed, a portable emergency generator and portable pumps, can be immediately dispatched. Some of the pumping plants are designed for bypass using a submersible pump. Gravity bypass or temporary storage is possible at some others. The specific measures in place at each pumping plant are summarized in Table 1.

In recent years, sewerage systems throughout the United States, including the Districts, have shown an accelerated rate of corrosion in concrete sewer pipe. This phenomenon is primarily due to a Federal program designed to reduce the amount of heavy metals entering the sewers from industry. The removal of such metals has resulted in greater sulfide generation, which accelerates sewer corrosion. The Districts currently spend approximately $5 million per year on chemicals to reduce the rate of sulfide production and increase the life of impacted sewers. Districts' field staff also have developed an innovative caustic spraying system that applies the chemicals directly to the sewer crown to reduce the effects of sulfide generation. In addition, major sewer rehabilitation contracts are ongoing and scheduled during the next several fiscal years. During this past fiscal year, the Districts spent approximately $22 million on 21 sewer replacement and rehabilitation projects.

PREVENTIVE MEASURES - TREATMENT PLANTS

Preventive measures at the treatments plants include many of the same features as those noted for the sewerage system, plus some additional features. These measures are summarized in Table 2 and discussed below.

The largest, and most critical facilities; JWPCP, Los Coyotes WRP and San Jose Creek WRP are staffed 24 hours a day. The remaining facilities, staffed during the day shift, are remotely monitored at the 24 hr. facilities after hours. Staff at Los Coyotes WRP are trained to respond to alarms at Long Beach WRP. Staff at San Jose Creek WRP respond to Whittier Narrows and Pomona WRP. For the Saugus and Valencia plants, in addition to remote monitoring at San Jose Creek, a "chatterbox" system calls the alarms to a preset list of operations staff, who then respond. The last "name" on the call list is the San Jose Creek WRP which is staffed 24 hours a day.

All treatment plants are provided with more than one means of backup power. At the JWPCP, electricity is provided by the on site combined cycle power plant (CCPP). Full backup power is provided by Southern California Edison. Additional generators can provide power to critical portions of the plant, if both primary sources fail. In addition, the CCPP has "black start" capability, so that the power plant can be restarted in an emergency without power from Edison. The primary effluent pump station operates on digester gas, with propane backup, if necessary, and its own independent power supply. Water reclamation plants are equipped with Edison's "Preferred/Emergency" service, which means Edison will supply power from an alternate substation in case of failure of the primary one. At the San Jose Creek WRP, this is taken one step further, as the east and west plants are supplied by separate on site Edison substations, each of which is capable of supplying both plants in an emergency. In addition, all WRPs, with the exception of Whittier Narrows, have on site diesel or gasoline powered generators capable of running at a minimum, influent pumps, primary treatment, disinfection and lighting.

The design of the treatment plants protects against overflows caused by power failures, mechanical failure, or operator error. Redundancy is planned into the design for all plants. For example, the influent pump stations at the treatment plants are equipped to pump peak flow even if the largest pump fails. At the Joint Water Pollution Control Plant, runoff drains to stormwater pump stations which are valved to return the flow to the headworks in all but the heaviest of rainstorms. The Joint Outfall water reclamation plants are capable of full or partial bypass to the JWPCP for up to several hours at a time. In case of power failure to influent pumps, the valve directing flow into the plant fails so as to direct the flow into the bypass sewer, without operator intervention. Additional bypass can be achieved by sewer maintenance crews re-routing the flow to alternate sewers, if needed. The Saugus water reclamation plant is capable of partial bypass to the Valencia WRP. Each treatment plant has a Stormwater Pollution Prevention Plan (SWPPP) in accordance with EPA's Industrial Stormwater Permit, as administered by the RWQCB. These plans document the measures for prevention, mitigation, and abatement of chemical or wastewater overflows within the plants.

The effectiveness of these preventive measures is proven by the absence of any overflow to the environment from any of the water reclamation plants, and no impact to the environment or public health from a system that provides for conveyance and treatment of over 500 mgd. of wastewater.

CONTINGENCY PLANS - SEWERS, PUMPING PLANTS, AND TREATMENT PLANTS

The measures discussed in the previous sections of this report have proven effective for the predictable and localized events that could cause overflows from sewers, pumping plants, or treatment plants. In addition, the Districts have in place a contingency plan to cover area wide events, such as heavy rains or an earthquake, that may impact multiple facilities. At the crux of this plan is an "Activation Matrix" which spells out the emergency conditions under which employees will report to work. This matrix does <u>not</u> depend on employees being notified if the situation is severe or communications unreliable. Employees have been trained to recognize those situations where they are

expected to report to assigned work locations immediately. The effectiveness of this plan was demonstrated in the early hours following the Northridge earthquake of January 17, 1994, when immediate response by a number of critical employees enabled the recovery to proceed rapidly.

Each treatment plant has an "Integrated Emergency Response Plan" that is site specific. The plan covers procedures for personnel medical emergencies, evacuation procedures, and mitigation and abatement procedures for hazardous chemicals. The plan conforms to multiple regulatory requirements, including Title 8, §3220, Emergency Action Plan, §3221, Fire Prevention Plan, §5192 Emergency Response to Hazardous Substances Releases, and Title 22, §66265.50-66265.56, Contingency Plan and Emergency Procedures.

Effective communications are essential for effective emergency response. In addition to the telemetry system discussed previously, the Districts have provided to critical employees 2 way radios on the County Wide Integrated Radio System (CWIRS). The radios have proven invaluable on a daily basis, and since the employees use them routinely, they are familiar with them when needed for emergency use as well. In the early hours following the Northridge earthquake, CWIRS radios were the only means of communication between the heavily impacted Santa Clarita facilities and the JOS, from which supplies and manpower were dispatched.

The strength of the Districts preventive and contingency plans rests in the regional nature of the Districts and the ability to stockpile equipment and supplies for use at multiple facilities. Tables 3 and 4 list pumps, piping, and equipment located at sewer maintenance yards and treatment plants. This information is included in the Emergency Response Plan at each facility. In addition the Districts have prepared, and update annually, an Emergency Telephone Directory containing home and cellular telephone numbers for key personnel, and a directory of emergency contractors and equipment suppliers.

When the Districts becomes aware of an overflow or potential overflow, via alarms or individual notification, emergency crews are immediately dispatched. Portable pumps and emergency generators are set up, if needed, to route the wastewater around the damaged site. Sandbags are set up to contain the wastewater, and the water is pumped to the nearest manhole. To complete the cleanup, the area is flushed with clean water, treated with dry chlorine, and the water used to clean the site is also pumped to the sewer. If the wastewater reaches a stormwater channel, any water already in the channel is contained with sandbags at a downstream location, and pumped to the sewer. Bacterial measurements are taken at the site and a control location, and continued on a daily basis until measurements return to background level.

The Districts are committed to preventing, through planning and effective response, all wastewater overflows due to power failure or other causes for which a design can be implemented. There will always be occasional unanticipated overflows caused by factors outside the Districts' control, such as vandalism or other unavoidable causes. Even in those cases, the Districts have taken steps to minimize recurrence, such as strengthening security. The Districts' track record indicates an ongoing commitment to preventing overflows as much as possible and effectively mitigating the impacts of those that do occur. While 100% reliability of the complex interaction of electrical and mechanical equipment in the pumping and treating of wastewater can never be guaranteed, it has been, and will continue to be, the goal of the Sanitation Districts to take whatever cost effective action is required to provide the highest reliability possible.

TABLE 1
COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY PUMPING PLANTS

Pumping Plant	Address	Central Alarm	P-E Service	On-site Generator	Storage	Gravity Bypass	Emergency Pumping Facilities
Abalone Cove	6031 Palo Verdes Drive South, 400' West of Narcissa Palos Verdes Estates (310) 541-0850	X	X	X			X
Allington Ave.	5758 East Allington Street Lakewood	scheduled for installation				X	
Beach Avenue	366 East Beach Avenue Inglewood (310) 673-0766	X				X	X
Bloomfield	12229 East 166th Street Cerritos (310) 926-3812	X					X
Bluff Cove	1500 Block Paseo Del Mar Palos Verdes Estates (310) 375-5073	X		X			
Castaic	28804 The Old Road Castaic (805) 257-2920	Remote to Valencia and Los Coyotes		X			
Clifton	5517 Linda Drive Redondo Beach (310) 375-8143	X		X			X
Central Gardens	Rear of 5240 East M.L. King Blvd. Lynwood (310) 631-7120	scheduled for installation				X	

Pumping Plant	Address	Central Alarm	P-E Service	On-site Generator	Storage	Gravity Bypass	Emergency Pumping Facilities
Coyote Creek	14025 Artesia Blvd. Cerritos (310) 926-6859	X					X
Davidson City	223rd & Wilmington Carson (310) 835-0063	X					X
Diamond St.	216 Diamond Street Redondo Beach (310) 376-4663	X		Under Construction		Partial	
District 27	18001 Pacific Coast Highway Malibu (310) 454-3481	X		X		X	X
Douglas Cut	1100 Block Palos Verdes Dr. W. Palos Verdes Estates (310) 375-5346	X		X			
Fawcett Avenue	1055 Lexham at Fawcett South El Monte (818) 442-4325	X					Vacuum Truck
Gardena 1 & 2	1919 W. Artesia Blvd. Gardena (310) 324-1801	X	X	X			X
Gertruda	1201 No. Catalina Redondo Beach (310) 370-0808	X				X	

Pumping Plant	Address	Central Alarm	P-E Service	On-site Generator	Storage	Gravity Bypass	Emergency Pumping Facilities
Green Lane	Green Lane between Nelson & Mathews, Redondo Beach (310) 376-4953	X			X		
Gridley Road	11405 Gridley Rd. c/o Artesia Cerritos (310) 924-7593	X					
Herondo	406 Herondo Street Redondo Beach (310) 376-4969	X					X
Hollywood-Rivera	Esplandade & Calle, Miramar Redondo Beach (310) 375-5064	X					
Indiana Street	S/E corner Indiana & Michigan Los Angeles (213) 263-8105	X			X		X
La Salle Avenue	21160 La Salle Avenue Los Angeles	scheduled for installation					X
Long Beach Main	1238 W. 16th Street Long Beach (310) 437-6520	Local	X	X			X
Long Beach Int.	6000 Block Atherton Long Beach (310) 431-1430	X				X	X
Long Lane	156 North Long Lane City Industry (818) 333-3983	X				X	

Pumping Plant	Address	Central Alarm	P-E Service	On-site Generator	Storage	Gravity Bypass	Emergency Pumping Facilities
Long Point	5672 W. Sea Cove Drive Palos Verdes (310) 377-2579	X					X
Lunada Bay	Mirola Plaza & Via Pacheco Palos Verdes Estates (310) 377-2126	X		X			X
Main Street	21028 South Main Street Carson (310) 830-8694	X	X				X
Malaga Cove #1	Via Arroyo & Paseo Del Mar Palos Verdes Estates (310) 375-5243	X					X Vacuum Truck
Malaga Cove #2	Via Almar between Arroyo & Via Del Puente Palos Verdes Estates (310) 375-5243	X					X Vacuum Truck
Marina #1	6065 E. Pacific Coast Highway Long Beach (310) 597-7583	X					X
Marina #2	W/Pacific Coast Highway 2800 South 4th Street Long Beach (310) 498-4637	X					X
Marina #3	In alley behind 7th & Ximeno Long Beach (310) 438-9109	X					X

Pumping Plant	Address	Central Alarm	P-E Service	On-site Generator	Storage	Gravity Bypass	Emergency Pumping Facilities
Peck Road	5425 Peck Road Arcadia (818) 443-5132	X					X Vacuum Truck
Pomona #1	2394 S. San Antonio Pomona (714) 620-2460	City		Engine pump			
Pomona #2	Garey & Philadelphia Pomona (714) 620-2486	City		Engine pump			
Pomona #3	1600 South Hamilton Pomona (714) 620-2490	City		Engine pump			
Pomona #4	2800 Ficus Street Pomona (714) 620-2496	City		Engine pump			
Rocket Street	In alley 200' north of South St., west of Bellflower Blvd.	scheduled for installation					X
Ruther Avenue	8032 Century Blvd. Paramount	scheduled for installation				X	
Slauson Avenue	Northside of Telegraph East of Slauson Montebello (213) 724-5818	X					
South Bay Cites Main	2616 The Strand Manhattan Beach (310) 545-1575	X	X	X			X

Pumping Plant	Address	Central Alarm	P-E Service	On-site Generator	Storage	Gravity Bypass	Emergency Pumping Facilities
Sea Cove	Seacove & Packet Drive Rancho Palos Verdes (310) 377-7088	X					X
Shoemaker	12901 Artesia Cerritos (310) 926-7169	X					X
Vesta Street	724 Vesta Street Inglewood (310) 677-1322	X	X	X			X
Western Avenue	Avenida Aprenda & Western Ave. San Pedro (310) 832-8177	X	X	X			X
Whites Point	3600 S. Western Avenue San Pedro (310) 547-5100	X			X		
Wilder Avenue	20300 Wilder Avenue Lakewood (310) 924-2762	X				X	
Pico Temporary	E/O Long Beach S/O Broadway Offramp Long Beach	Can be run if FM connected					

TABLE 2

TREATMENT PLANT	ADDRESS	CENTRAL ALARM	P-E SERVICE	ON-SITE GENERATOR	STORAGE	GRAVITY BYPASS	EMERGENCY PUMPING FACILITIES
JWPCP	24501 S. Figueroa Carson, CA 90745	24 hour staffing	CCPP & EDISON	CCPP	1-3 hrs	Yes, in serious emergency	Digester gas powered, Primary Effluent Pumps
LONG BEACH	7400 E. Willow Long Beach, CA 90815	Remote monitoring at Los Coyotes WRP	Yes	Yes, runs all unit processes with minimum aeration	1/2 hr - 1 hr.	50%	Standby capacity-can lose one large pump and still pump peak flow
LOS COYOTES	16515 Piuma Ave Cerritos	24 hour staffing	Yes	Yes, runs all unit processes with minimum aeration	1-2 hrs.	50-60% bypass	Same as above
SAN JOSE CREEK	1965 S. Workman Mill Road Whittier, CA 90601	24 hour staffing	2 Sub-stations	Yes, runs all unit processes except aeration	1-2 hrs.	30-50%	Same as above

TREATMENT PLANT	ADDRESS	CENTRAL ALARM	P-E SERVICE	ON-SITE GENERATOR	STORAGE	GRAVITY BYPASS	EMERCENCY PUMPING FACILITIES
WHITTIER NARROWS	301 N Rosemead Blvd El Monte, Ca 91733	Remote monitoring at San Jose Creek	Yes	No	No	100%	Same as above
POMONA	295 Humane Way Pomona, CA 91766	Remote monitoring at San Jose Creek	Yes	Yes, runs all unit processes with minimum aeration	No	100%	Same as above
LA CANADA	533 Meadowview Drive La Canada, CA 91011	Remote monitoring at San Jose Creek	No	Yes, runs all unit processes	No	100% under construction	Same as above
SAUGUS	26200 Springbrook Ave SAugus, CA 91350	Remote monitoring at San Jose Creek	Yes	Yes, runs all unit processes	4-6 hours in flow equalization	To Valencia	Same as above
VALENCIA	28185 The Old Road Valencia, CA 91335	Remote monitoring at San Jose Creek	500 kw cogenerator in parallel with Edison	Yes, runs all unit processes with minimum aeration	10 to 12 hours in flow equalization	No	Same as above

TABLE 3
SEWERS AND PUMPING PLANTS
EMERGENCY EQUIPMENT

Portable Generators, Unit	Location	kw	Volts	Start hp
A	Compton	225	480	150*
B	Compton	225	480	150*
C	Compton	275	480	200*
D	Castaic PP	275	480	200*
F	Compton	75	240/480	40
G	Long Beach Main PP	750	480	500
Small Generators	Compton/San Gabriel	2.5-6.0	120/240	

* Can be parallelled to start more than listed hp.

Pumps, Quantity	Location	Description	Capacity
1	San Gabriel	4" engine driven Barnes	0.5 MGD
1	Compton	4" engine driven Barnes	0.5 MGD
1	San Gabriel	6" engine driven self priming Gorman-Rupp	1.5 MGD
1	Compton	8" engine driven self priming Gorman-Rupp	3.0 MGD
1	Compton	12" engine driven Gorman-Rupp	6.5 MGD
1	Compton	4" 20 HP Wemco submersible	1.0 MGD
1	Compton	8"30 HP Flygt submersible	1.5 MGD
2	Compton	8" 88 HP Flygt high head submersible	3.0 MGD
2	Compton	12" 77 HP Flygt submersible	6.0 MGD

Vacuum Trucks, Quantity	Location	Capacity
1	Compton	5,500 gallons
2	Compton	2,500 gallons

For the piping listed in the following table, an assortment of joint fittings and elbows are also available:

Piping, Diameter	Length	Material	Location
6"	370'	Ductile Iron	J.O. "F" Unit 1 Odor Control Station
6"	50'	VCP	Compton and San Gabriel
8"	50'	VCP	Compton and San Gabriel
8"	1,200'	Aluminum	Compton and San Gabriel
10"	50'	VCP	Compton and San Gabriel
12"	50'	VCP	Compton and San Gabriel
12"	2,000'	Aluminum	Compton
12"	1,200'	Steel	JWPCP compost field
14"	2,000'	Steel	JWPCP compost field
15"	50'	VCP	Compton and San Gabriel
18"	50'	VCP	Compton and San Gabriel
18"	20'	RPMP	J.O."F" Odor Control Station
18"	10'	HDPE	JWPCP compost field
18"	56'	Cement line steel	J.O."F" Odor Control Station
20"	20'	Steel	J.O."F" Odor Control Station
21"	50'	VCP	Compton and San Gabriel
21"	25'	Cement line steel	J.O."F" Odor Control Station
24"	50'	VCP	Compton and San Gabriel
39"	30'	RPMP	J.O."F" Odor Control Station
60"	200'	RCP	JWPCP compost field
66"	200'	T-loc RCP	JWPCP compost field
72"	38'	HDPE	J.O."F" Unit 1 Odor Control Station

Pipe Repair Clamps, Quantity	Pipe Diameter/Pipe Material/Clamp Length
14	6"/steel/10",12",15
2	8"/steel/10"
1	8"/CIP/15
2	10"/steel/15"
1	10"/ACP/12"
1	12"/CIP/15"
5	12"/ACP/8"/12"/20"
3	14"/steel/10"/15"
1	14"/ACP/15"
2	16"/CIP/15"
2	16"/ACP/20"
3	18"/ACP/15"20"
3	20"/ACP/15"
4	24"/steel/20"
2	24"/CIP/20"

Inflatable Sewer Plugs, Quantity	Size Range	Location
4/2	8"-10"	Compton/San Gabriel
3	8"-12"	Compton
2/1	12"-15"	Compton/San Gabriel
3	12"-18"	Compton
2	15"-30"	Compton
7	24"-48"	Compton
1	54"	Compton
1	66"	Compton
1	72"	Compton
2	78"	Compton

TABLE 4
INLAND PLANTS
EMERGENCY EQUIPMENT

Pumps, Quantity	Size	Description
1	10"	Gorman Rupp Self Priming, diesel powered, trailer mounted - Capacity 5 MGD at the SJCWRP
1	10"	Flygt Submersible electric powered capacity 5 MGD at WNWRP
1	6"	Peabody Barnes, gasoline powered, trailer mounted - capacity 3 MGD at SJCWRP
1	6"	Flygt Submersible electric powered, capacity 3 MGD at WNWRP
1	2-1/2"	Ingersoll Rand, air-powered, capacity 0.3 MGD at SJCWRP
1	6"	Gorman Rupp, self priming, diesel powered, on an emergency trailer. Capacity - 2 MGD at Valencia WRP
1	6"	Gorman Rupp, self priming, diesel powered, on an emergency trailer. Capacity - 2 MGD at Palmdale WRP
1	10"	Gorman Rupp, self priming diesel powered, trailer mounted. Capacity - 5 MGD at Palmdale WRP
1	8"	Flygt Submersible, electric powered Capacity - 3.2 MGD, at Valencia WRP

Piping, Diameter	Length	Description
500'	6"	Aluminum with victaulic fittings on emergency trailer at Palmdale WRP
500'	6"	Aluminum with vitualic fittings on emergency trailer at Valencia WRP
1500'	10"	Aluminum with victaulic fittings currently in use for effluent discharge at Palmdale WRP
400'	10"	Aluminum with victualic fittings on emergency trailer at WNWRP

OTHER EQUIPMENT

1 10' yard Vactor at Palmdale WRP

2 5000 gallon vacuum trucks at Valencia WRP

Emergency lights on emergency trailer at Valencia WRP

Emergency lights on emergency trailer at Palmdale WRP

1 Emergency generator for emergency lights in desert

6 Emergency lighting with portable generator (2 - LC, 4 - SJC)

STORM WATER MONITORING AND REPORTING PROGRAM

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

VALENCIA WATER RECLAMATION PLANT

PERMIT IDENTIFICATION NUMBER: 4B19S007154

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INTRODUCTION

STORM WATER MONITORING AND REPORTING PROGRAM
INTRODUCTION
Background and Summary

The 1987 amendments to the Clean Water Act added a section to regulate municipal and industrial stormwater discharges. In November 1990 EPA published final regulations that establish application requirements for stormwater permits. The regulations allow states to issue general or individual permits

In order to reduce the administrative burden associated with stormwater discharges, the State Water Resources Control Board elected, initially, to issue a statewide general permit that applies to all industrial stormwater discharge categories except construction. Construction activities greater than 5 acres are regulated under a separate statewide general permit. The industrial activities permit was adopted by the State Board on Nov. 19, 1991 and amended on September 17, 1992. Facilities required to be covered include sewage treatment works with design flow greater than or equal to 1 MGD.

The Districts applied to the State Water Resources Control Board for coverage under the general statewide permit for all eight sewage treatment plants with NPDES permits. The Board has assigned the following permit identification numbers:

	Permit Identification No.
Joint Water Pollution Control Plant	4B19S007080
Long Beach WRP	Not yet received
Los Coyotes WRP	4B19S007149
Pomona WRP	4B19S007152
San Jose Creek WRP	4B19S007150
Saugus WRP	4A19S007153
Valencia WRP	4B19S007154
Whittier Narrows WRP	4B19S007151

As NPDES permits come up for renewal, they will be revised to include stormwater provisions. The NPDES permits for the seven WRPS are due for renewal in 1994. The JWPCP permit is due for renewal in 1996.

The permit generally requires dischargers to:
1. develop and implement a storm water pollution prevention plan,
2. perform monitoring of discharges to storm water systems, and
3. eliminate non-storm water discharges to storm water systems.

A storm water pollution prevention plan (SWPPP) and a monitoring program have been prepared for each treatment plant. These constitute an ongoing process to eliminate non-storm water discharges.

The table of contents, which precedes this introduction, is a concise summary of the monitoring and reporting program. The program consists of eight tasks. Detailed instructions and necessary forms for each task follow this introduction. Supplementary information is described briefly below and in more detail in the rest of this introduction.

Page 3 of this introduction contains the required certification for the monitoring program.

Page 4 contains a one page summary of tasks and responsibilities for the monitoring program.

Page 5 contains a graph of average rainfall for use in forecasting when it may be necessary to perform wet weather tasks.

Pages 6, 7, and 8 contain a list of significant chemicals stored, and descriptions and maps of the storm water drainage systems at each facility.

Pages 9-13 contain relevant monitoring and reporting requirements which have been excerpted from the permit.

The permit, in general, requires each facility to sample and analyze its storm water runoff. However there is a provision for group monitoring which allows a group of facilities to reduce the monitoring effort; a smaller number of facilities may be considered to have runoff representative of the entire group and sampling may be performed on the subset of the group. On November 25, 1992, the Districts submitted a request for group monitoring in which sampling at the Los Coyotes WRP will be representative of runoff from seven Districts' WRPs: Long Beach, Los Coyotes, Pomona, San Jose Creek, Saugus, Valencia, and Whittier Narrows. The Joint Water Pollution Control Plant is not part of the group. Sampling, consequently, will be conducted only at Los Coyotes WRP and the Joint Water Pollution Control Plant. All of the remaining tasks will be performed at all eight plants.

STORM WATER MONITORING AND REPORTING PROGRAM
INTRODUCTION
Certification

Facility Name: Valencia Water Reclamation Plant

Permit Identification Number: 4B19S007154

I certify that the monitoring program presented herein has been developed and implemented for the subject facility in accordance with the requirements of the General Permit for Storm Water Discharges Associated with Industrial Activities.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly reponsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

David W. Snyder
Signature

March 9, 1993
Date Signed

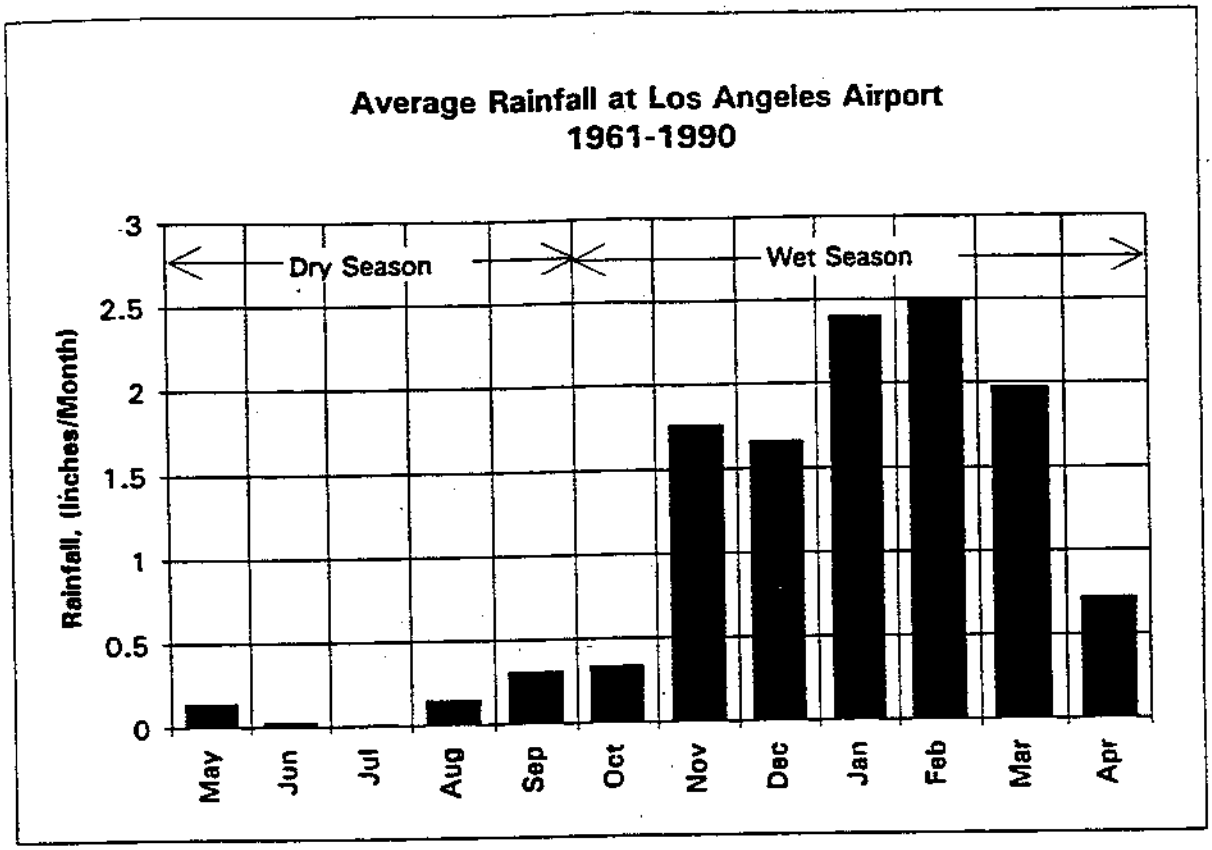
David W. Snyder,
Supervising Engineer, Monitoring Section

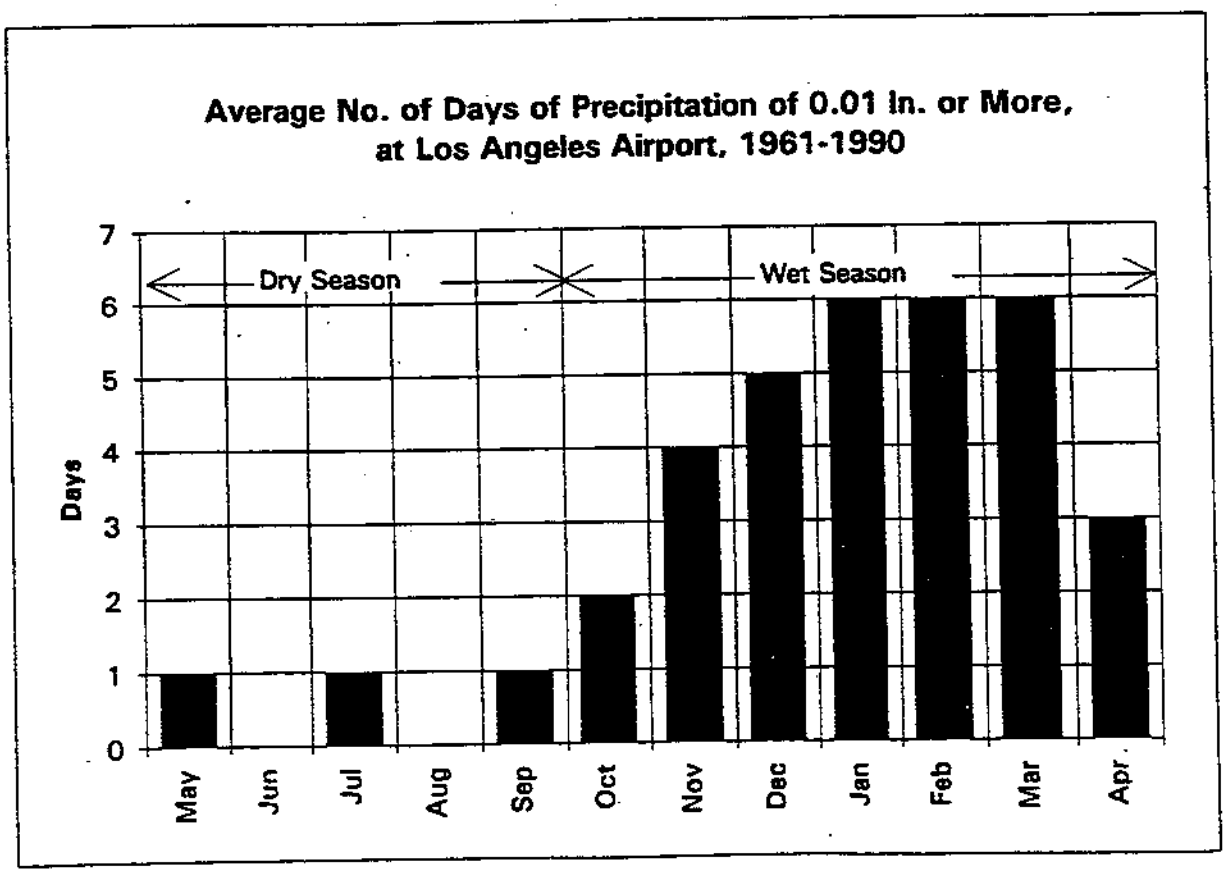
STORM WATER MONITORING AND REPORTING PROGRAM
INTRODUCTION
Schedule of Tasks and Responsibilities (Supervisor's responsibilities are shaded)

TASK NO.	1	2	3	4	5	6	7	8
TASK	ANNUAL SITE INSPECTION	DRY SEASON OBSER-VATIONS	WET SEASON VISUAL OBSER-VATIONS	NONCOM-PLIANCE REPORTS	SAMPLING AND ANALYSIS	ANNUAL REPORT	TASK CHECK	TOXIC POLLUTANT ANALYSIS REDUCTION
TO BE DONE BY	Plant Supervisor	Plant Supervisor	Operator	Plant Supervisor and Wunderlich	Operator (Do only at Los Coyotes and JWPCP)	Monitoring Section	Monitoring Section	Laboratory and Monitoring Sections
SEASON Month								
DRY May Jun Jul Aug Sep	X (1)	X X		Due within 30 days of identification of noncompliance (3)		Due by July 1 (5)	Do on the 20th of each month	Do when a pollutant is not detected in significant quantities in 2 consecutive samples
WET Oct Nov Dec Jan Feb Mar Apr			Do during 1st hour of 1 storm event per month with "significant discharge" (2)		1/season during 1992-93. 2/season afterwards (4)			

Notes:

1. Annual Site Inspection may be done anytime. For the 1992-93 storm water year, it must be done before May 1, 1993. In future years, it should be conducted in conjunction with the August Dry Weather Observation.
2. "Significant storm discharge" is a continuous discharge of storm water for approximately one hour or more.
3. Actual noncompliance generally means dry season runoff or wet season runoff containing pollutants from industrial (O & M) activities at the treatment plant and must be reported to the Regional Board. Actual and potential noncompliance problems should be identified and corrected.
4. A storm event which is sampled must be preceded by at least 3 working days of dry weather. Collect the grab sample during the first 30 minutes of the discharge. If this is impracticable, collect the grab sample as soon as practicable thereafter.
5. The storm year is assumed to be May 1 - Apr 30. This allows 2 months to meet the annual report deadline of Jul 1.


Average Rainfall at Los Angeles Airport
1961-1990
Dry Season
Wet Season
Rainfall, (inches/Month)
3
2.5
2
1.5
1
0.5
0
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr


Average No. of Days of Precipitation of 0.01 In. or More,
at Los Angeles Airport, 1961-1990
Dry Season
Wet Season
Days
7
6
5
4
3
2
1
0
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr

STORM WATER MONITORING AND REPORTING PROGRAM
INTRODUCTION
Significant Chemicals Stored at LACSD Sewage Treatment Plants

CHEMICAL	JWPCP	LONG BEACH WRP	LOS COYOTES WRP	POMONA WRP	SAN JOSE CREEK WRP	WHITTIER NARROWS WRP	SAUGUS WRP	VALENCIA WRP
INORGANIC CHEMICALS								
Alum		X	X	X	X	X	X	X
Calcium Hypochlorite		X	X	X	X	X	X	X
Caustic Soda	X				X			X
Chromate	X							
Ferric Chloride	X	X	X		X		X	X
Ferrous Chloride	X				X			X
Hydrochloric Acid	X							X
Lime	X							X
Phosphate	X							
Sodium Hypochlorite	X							
Sodium Metabisulfite							X	X
Sulfuric Acid	X							
VEHICLE FUELS AND OILS								
Diesel Fuel	X	X	X		X		X	X
Gasoline	X			X	X			
Oil-Lube	X	X	X	X	X	X	X	X
Oil-Waste	X	X	X	X	X	X	X	X
PAINTS AND SOLVENTS								
Paint Products	X		X		X			X
Miscellaneous Solvents	X		X		X			X
Trichloroethane	X							
DEFOAMANTS AND POLYMERS								
Defoamants	X	X	X	X	X	X	X	X
Polymer-Anionic	X	X	X	X	X			X
Polymer-Cationic	X	X	X	X	X	X	X	X
OTHER								
Activated Carbon	X							
Corrosion inhibitor	X							
Freon	X							
Kleen Blast	X							
Microbiocide	X							
Oxygen Scavenger	X							

Note: This list does not include gaseous chemicals such as chlorine.

STORM WATER MONITORING AND REPORTING PROGRAM
PART B: FACILITY INFORMATION
Drainage Areas at Valencia WRP

Drainage Area	Acres	Facilities in Area	Discussion
			It's impractical to deal with the drainage issue because of construction presently underway at the plant.

STORM WATER MONITORING AND REPORTING PROGRAM
INTRODUCTION
Relevant Permit Requirements for Tasks 1 - 8

Note: These requirements are excerpted from the Statewide General Industrial Activities Storm Water Discharge Permit (as amended September 17, 1992).

Section B: MONITORING PROGRAM AND REPORTING REQUIREMENTS

1. Implementation

A monitoring program shall be developed and implemented for each facility covered by this general permit. It shall be certified in accordance with the signatory requirements contained in Standard Provision C.9. A description of the monitoring program shall be retained on site and made available upon request of a representative of the Regional Water Board an/or local agency which receives the storm water discharge.

4. General Requirements for Monitoring Programs

d. A quality assurance/quality control program to assure that:

i. All elements of the monitoring program are conducted, and

11. All monitoring is conducted by trained personnel.

e. Procedures and schedules by which the effectiveness of the monitoring program in achieving the objectives can be evaluated.

5. Specific Requirements for Monitoring Program

a. Annual Site Inspection

i Conduct a minimum annual inspection of the facility site to identify areas contributing to a storm water discharge associated with industrial activity and to evaluate whether measures to reduce pollutant loadings identified in the SWPPP are adequate and properly implemented in accordance with the terms of the general permit or whether additional control measures are needed. A record of the annual inspection must include the date of the inspection, the individual(s) who performed the inspection, and the observations.

ii. Certify, based on the annual site inspection, that the facility is in compliance with the requirements of this general permit and its SWPPP. The certification and inspection records must be signed and certified in accordance with Standard Provisions 9 and 10 of Section C of this general permit. Any noncompliance shall be reported in accordance with Section, B.17.

b. Dry Season Observations

No less than twice during the dry season (May through September), all dischargers shall observe and/or test for the presence of non-storm water discharges at all storm water discharge locations. At minimum, all dischargers shall conduct visual observations of flows to determine the presence of stains, sludges, odors, and other abnormal conditions. Dye tests, TV line surveys, and/or analysis and validation of accurate piping schematics may be conducted if appropriate. Records shall be maintained of the description of the method used, date of testing, locations observed, and test results.

c. Wet Season Visual Observations

During the wet season (October through April), all dischargers shall conduct visual observations of all storm water discharge locations during the first hour of one storm event per month that produces significant storm discharge[1] to observe the presence of floating and suspended materials, oil and grease, discolorations, turbidity, and odor, etc. Feedlots (subject to federal effluent limitations guidelines in 40 CFR Part 412) that are in compliance with Sections 2560 to 2565, Article 6 Chapter 15, Title 23, California Code of Regulations, shall, instead, conduct monthly inspections of their containment facilities to detect leaks and ensure maintenance of adequate freeboard.

d. Sampling and Analysis

During the wet season (October through April), dischargers unless exempted per Section B.9 (through self-certification or certification by a local agency) shall collect and analyze samples of storm water discharge from at least one storm event during the 1992/93 wet season and two storm events during each subsequent wet season which produce significant storm water discharge. The samples should be analyzed for:

i. pH, total suspended solids (TSS), specific conductance, and total organic carbon (TOC). Oil and grease (O&G) may be substituted for TOC; and

ii. Toxic chemicals and other pollutants that are likely to be present in storm water discharge in significant quantities.

6. Toxic Pollutant Analysis Reduction

Samples shall be analyzed for toxic chemicals and other pollutants as identified in Sections B.5.d.ii for at least two consecutive sampling events. If toxic chemicals or other pollutants are not detected in significant quantities after two consecutive sampling events, the facility may eliminate that toxic chemical or pollutant from future sampling events. A discharger may analyze for alternative representative parameters (e.g. whole effluent toxicity) as a substitute for the toxic chemicals and other pollutants identified in Section B.5.d.ii as long as the discharger submits the alternative monitoring procedures and justification to the appropriate Regional Water Board prior to use.

---

[1] "Significant storm water discharge" is a continuous discharge of storm water for approximately one hour or more.

Unless otherwise instructed by the Regional Water Board, dischargers may use the alternative monitoring procedures submitted.

11. Sample Locations

Samples shall be collected from all locations where storm water is discharged. Samples must represent the quality and quantity of storm water discharged from the facility. If a facility discharges storm water at multiple locations, the discharger may sample a reduced number of locations if it is established and documented in the monitoring program that storm water discharges from different locations are substantially identical.

12. Sampling Procedures

Sampling shall consist of a grab sample from a storm event that produces significant storm water discharge that is preceded by at least three (3) working days of dry weather. The grab sample should be taken during the first thirty minutes of the discharge. If the collection of the grab sample during the first 30 minutes is impracticable, the grab sample can be taken as soon as practicable thereafter, and the discharger shall explain in the annual monitoring report why the grab sample could not be taken in the first 30 minutes. A discharger may select alternative monitoring procedures (e.g. composite sampling) as long as the discharger has submitted the proposed procedures and justification to the appropriate Regional Water Board prior to use. Unless otherwise instructed by the Regional Water Board, dischargers may use the alternative monitoring procedure submitted.

13. Visual Observation and Sample Collection Exceptions

a. When a discharger is unable to collect any of the required samples or perform visual observations due to adverse climatic conditions (drought, extended freeze, dangerous weather conditions, etc.), a description of why the sampling or visual observations could not be conducted, including documentation of all significant storm water discharge events must be submitted along with the annual monitoring report.

b. Dischargers are required to collect samples and perform visual observations only if significant storm water discharges commence during scheduled facility operating hours[2], or within two hours following scheduled facility operating hours. Dischargers are required to perform visual observations only within daylight hours. If dischargers do not collect samples or perform visual observations during a significant storm water discharge due to these exceptions, the discharger shall include documentation in the annual monitoring report.

[2] "Scheduled facility operating hours" are the time periods when the facility is staffed to conduct any function related to industrial activity, including routine maintenance, but excluding time periods where only emergency response, security, and/or janitorial services are performed.

14. Standard Methods

All sampling and sample preservation shall be in accordance with the current edition of "Standard Methods for the Examination of Water and Wastewater" (American Public Health Association). All monitoring instruments and equipment shall be calibrated and maintained in accordance with manufacturers' specifications to ensure accurate measurements. All analyses must be conducted according to test procedures under 40 CFR Part 136, unless other test procedures have been specified in this general permit or by the Regional Water Board. All metals shall be reported as total metals. All analyses shall be conducted at a laboratory certified for such analysis by the State Department of Health Services. Dischargers may conduct their own laboratory analyses only if the discharger has sufficient capability (qualified employees, laboratory equipment, etc.) to adequately perform the test procedures.

16 Annual Report

All dischargers shall submit an annual report by July 1 of each year to the Executive Officer of the Regional Water Board responsible for the area in which the facility is located and to the local agency (if requested).

The report shall include a summary of visual observations and sampling results, the certification required in Section B.5.a.ii, and information as required in Section B.13. The report shall be signed and certified in accordance with Standard Provisions 9 and 10 of Section C of this general permit. The first report will be due July 1, 1993.

17. Noncompliance Reporting

Dischargers who cannot certify compliance in accordance with Section B.16 above and/or who have had other instances of noncompliance must notify the appropriate Regional Water Board and/or, upon request, the local agency that receives the storm water drainage. The notifications shall identify the type(s) of noncompliance, describe the actions necessary to achieve compliance, and include a time schedule, subject to the modifications by the Regional Water Board, indicating when compliance will be achieved. Noncompliance notifications must be submitted within 30 days of identification of noncompliance.

Section C: STANDARD PROVISIONS

9. Signatory Requirements

a. All Notices of Intent submitted to the State Water Board shall be signed as follows:

(3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

b. All reports, certification, or other information required by the general permit or requested by the Regional Water Board, State Water Board, USEPA, or other local storm water management agency shall be signed by a person described above or by a duly authorized representative. A person is a duly authorized representative only if:

(1) the authorization is made in writing by a person described above and retained as part of the Storm Water Pollution Prevention Plan.

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator, superintendent, or position equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

(3) If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization must be attached to the Storm Water Pollution Plan prior to submittal of any reports, certifications, or information signed by the authorized representative.

10. Certification

Any person signing documents under Provision 9 shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly reponsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

11. Reporting Requirements

a. Planned changes: The discharger shall give notice to the Regional Water Board and local storm water management agency as soon as possible of any planned physical alteration or additions to the general permitted facility. Notice is required under this provision only when the alteration or addition could significantly change the nature or increase the quantity of pollutants discharged.

b. Anticipated noncompliance: The discharger will give advance notice to the Regional Water Board and local storm water management agency of any planned changes in the permitted facility or activity which may result in noncompliance with general permit requirements.

c. Compliance schedules: Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this general permit shall be submitted no later than 14 days following each schedule date.

d. Noncompliance reporting: The discharger shall report any noncompliance at the time monitoring reports are submitted. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times and, if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

TASK 1

ANNUAL SITE INSPECTION

STORM WATER MONITORING AND REPORTING PROGRAM
TASK 1: ANNUAL SITE INSPECTION
Instructions

1. Requirements
Relevant storm water permit requirements are given above in the introduction.
   - Annual site inspection requirements are given in Section B.5.a.
   - Compliance certification and noncompliance reporting requirements are given in sections B.5.a.ii, B.16, B.17, C.9, and C.10.

2. Who performs the inspection?
The WRP Supervisor performs the inspection and fills out the forms.
The Water Reclamation Plants Section Head (Wunderlich) signs the certification statement.

3. When to Inspect?
We have defined the storm water year as May 1 - April 30.
For the 1992-93 storm water year, conduct the annual site inspection before May 1, 1993.
In future years, conduct the annual site inspection in August, in conjunction with one of the two dry season observations.

4. What to Inspect?
Use the facility map and description of drainage areas, facilities and discharge locations presented above in the Introduction.

5. What forms should be used?
Use all the forms for Task 1 on pages 2-7:
   - annual site inspection form
   - chemical checklist (3 pages)
   - hazardous waste hauling record (record each load hauled during the previous storm water year (May 1 - Apr 30))
   - certification statement (to be signed by the Water Reclamation Plants Section Head (Wunderlich)).

   In addition, use:
   - noncompliance report form (from task 4, if needed)
   - dry season observation form (from Task 2)

6. Missing Information, Noncompliance Notifications and Explanations
If any information required by the forms cannot be obtained attach an explanation.

There can be two kinds of noncompliance: actual and potential. An actual noncompliance occurs when there is wet weather runoff that has been contaminated by O & M activities or dry weather runoff. A potential noncompliance, of course, has not yet occurred, but requires preventive measures to prevent such occurrence. Examples of potential noncompliance are lack of roofing or secondary containment. Fill out the noncompliance report form in task 4 for either kind of noncompliance. Wunderlich and Ackerman will notify the Regional Board, as required, within 30 days of identification of an actual noncompliance. A potential noncompliance need not be reported. Both types of noncompliance report will be used by the CSD to correct the cause of the noncompliance.

STORM WATER MONITORING AND REPORTING PROGRAM
TASK 1: ANNUAL SITE INSPECTION
Annual Site Inspection Form

Facility name: _____

Name of inspector: _____ (WRP Supervisor)

Date of this inspection: _____

Date of previous inspection: _____

1. Are material loading, unloading and access areas sloped to provide immediate drainage to the plant sewer, not to a storm drain?
   Yes____ No____

2 If any of the following activities have taken place since the last inspection, are control measures adequate to prevent industrial runoff?
   - outdoor storage,
   - outdoor manufacturing, or
   - outdoor processing activities including activities that generate significant quantities of dust or particulates? (You need not include activities in which a non-toxic sandblasting agent was used and precautions were taken to minimize the production of dust.)

   Yes____ No____

3. Have the following good housekeeping procedures been observed?
   - prompt sweep up and proper disposal of any spilled dry chemical, metal shavings, sandblasting agents, etc.;
   - prompt hose down of any liquid chemical spills into plant drains leading to sewers tributary to the wastewater treeatment process;
   - storage of chemicals only in approved, pre-designated locations with secondary containment; and
   - inspection of chemical storage areas as part of routine plant rounds.

   Yes____ No____

4. Have the operators participated in the training program?
   Yes____ No____

5. Have there been any non-storm water discharges since the last inspection? (See pages 3-5 of task 1.)
   Yes____ No____

6. Have any spills or leaks of toxic or hazardous pollutants to storm water taken place since the last inspection? (See pages 3-5 of Task 1.)
   Yes____ No____

7. Explain no answers to # 1-4 or yes answers to # 5-6 with the noncompliance form in task 4.

STORM WATER MONITORING AND REPORTING PROGRAM
TASK 1: ANNUAL SITE INSPECTION
Chemical Checklist

Facility name: _____ Date of this inspection: _____

1. Answer yes or no below. Add other chemicals if not listed. Don't include gaseous chemicals (e.g. chlorine).

(A) Chemical	(B) Is the Chemical Stored at this Facility?	(C) Is it stored under a roof?	(D) Is there secondary containment?	(E) Any non-storm discharges since last inspection?	(F) Any spills or leaks to storm water since last inspection?
Inorganic Chemicals					
Alum					
Calcium Hypochlorite					
Caustic					
Ferric Chloride					
Ferrous Chloride					
Hydrochloric Acid					
Lime					

2. If yes appears in columns C, D, E or F, attach an explanation using the noncompliance report form in task 4.

STORM WATER MONITORING AND REPORTING PROGRAM
TASK 1: ANNUAL SITE INSPECTION
Chemical Checklist

Facility name: _____ Date of this inspection: _____

1. Answer yes or no below. Add other chemicals if not listed. Don't include gaseous chemicals (e.g. chlorine).

(A) Chemical	(B) Stored at This Facility?	(C) Is There Secondary Containment?	(D) Is it stored under a roof?	(E) Any non-storm discharges since last inspection?	(F) Any spills or leaks to storm water since last inspection?
Vehicle Fuels and Oils, Paints and Solvents					
Diesel Fuel					
Gasoline					
Paints and Paint Solvents					
Oil, Lube					
Oil, Waste					

2. If yes appears in columns C, D, E or F, attach an explanation using the noncompliance report form in task 4.

STORM WATER MONITORING AND REPORTING PROGRAM
TASK 1: ANNUAL SITE INSPECTION
Chemical Checklist

Facility name: _____ Date of this inspection: _____

1. Answer yes or no below. Add other chemicals if not listed. Don't include gaseous chemicals (e.g. chlorine).

(A) Chemical	(B) Stored at This Facility?	(C) Is There Secondary Containment?	(D) Is it stored under a roof?	(E) Any non-storm discharges since last inspection?	(F) Any spills or leaks to storm water since last inspection?
Defoamants & Polymers					
Defoamant					
Polymer, Anionic					
Polymer, Cationic					
Other					

2. If yes appears in columns C, D, E or F, attach an explanation using the noncompliance report form in task 4.

STORM WATER MONITORING AND REPORTING PROGRAM
TASK 1: ANNUAL SITE INSPECTION
Hazardous Waste Hauling Record

Facility name: _____ Storm water year ending: April 30, 199__

Hauling Date	Hauler's Name	Material Hauled	Amount Hauled	Recorded by

STORM WATER MONITORING AND REPORTING PROGRAM
TASK 1: ANNUAL SITE INSPECTION
Certification of Compliance

Facility Name: _____

I certify based on the annual site inspection, that this facility, with the exceptions described in this report, is in compliance with the requirements of its Storm Water Pollution Prevention Plan and the General Permit for Storm Water Discharges Associated with Industrial Activities.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly reponsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____ Signature

_____ Date Signed

Richard S. Wunderlich,
Water Reclamation Plant Section Head

TASK 2

DRY SEASON OBSERVATIONS

STORM WATER MONITORING AND REPORTING PROGRAM
TASK 2: DRY SEASON OBSERVATIONS
Instructions

1. Requirements
Relevant storm water permit requirements for the monitoring and reporting program are given above in the Introduction.
   - Dry season observation requirements are given in Section B.5.b.
   - Noncompliance reporting requirements are given in section B.17.

2. Who performs the observation?
The WRP Supervisor performs the observation and fills out the form.

3. When to Observe?
We have defined the storm water year as May 1 - April 30. No dry season observation can be made for the 1992-93 storm water year because the dry season has already passed. Beginning with the 1993-94 storm water year, two dry season observations should be performed, during May and August, at the beginning and near the end of the dry season. This allows time for makeup observations before the September 30 end of the dry season in case a scheduled observation is missed. For convenience, one of the dry seasons observations should be conducted together with Task 1, Annual Site Inspection.

4. What to Observe?
Use the facility map and description of drainage areas, facilities and discharge locations presented above in the introduction.

5. What form should be used?
Dry Season Observation Form (for Task 2 on page 2)
Noncompliance report form (from task 4, if needed))

6. Missing Information, Noncompliance Notifications and Explanations
If any information required by the forms cannot be obtained attach an explanation.

There can be two kinds of noncompliance: actual and potential. An actual noncompliance occurs when there is wet weather runoff that has been contaminated by O & M activities or dry weather runoff. A potential noncompliance, of course, has not yet occurred, but requires preventive measures to prevent such occurrence. Examples of potential noncompliance are lack of roofing or secondary containment. Fill out the noncompliance report form in task 4 for either kind of noncompliance. Wunderlich and Ackerman will notify the Regional Board, as required, within 30 days of identification of an actual noncompliance. A potential noncompliance need not be reported. Both types of noncompliance report will be used by the CSD to correct the cause of the noncompliance.

STORM WATER MONITORING AND REPORTING PROGRAM
TASK 2: DRY SEASON OBSERVATIONS
Dry Season Observation Form

Facility name: _____

Name of observer: _____ (WRP Supervisor)

Date of inspection: _____

1. Was there a discharge to a storm drain at any discharge location at this facility?
   Yes_____ No_____

2. If yes, complete this form. Use a separate copy for each discharge location where a discharge was observed.

Discharge location: _____ (Refer to Introduction section)

Condition	Were any of these conditions observed?
Flows (Estimate gal/min and duration)	
Stains	
Sludges	
Odors	
Debris in catch basins (Indicate catch basins)	
Other abnormal conditions	

3. In addition, discuss the problem, corrective measures, and time schedule using the noncompliance report form in task 4.

TASK 3

WET SEASON VISUAL OBSERVATIONS

STORM WATER MONITORING AND REPORTING PROGRAM
TASK 3: WET SEASON VISUAL OBSERVATIONS
Instructions

1. Requirements
   Relevant storm water permit requirements for the monitoring and reporting program are given above in the introduction:
   - Wet season visual observation requirements are in Section B.5.c.
   - Observation exception requirements are in section B.13.
   - Noncompliance reporting requirements are in section B.17.

2. Who performs the observation?
   The WRP Supervisor, or an operator designated by him, performs the observation and fills out the form.

3. When to Observe?
   The wet season is October 1-April 30.
   Conduct visual observations of all storm water discharge locations during the first hour of one storm event per month that produces significant storm discharge. Visual observations are required to be performed only within daylight hours and only if significant storm water discharges commence during hours when the facility is staffed or within two hours afterwards.
   "Significant storm water discharge" is a continuous discharge of storm water for approximately one hour or more.

4. What to Observe?
   Use the facility map and description of discharge locations presented above in the Introduction.

5. What form should be used?
   Use the forms for Task 2 on pages 2-3:
   - wet season visual observation form
   - noncompliance report form (If needed. Must be completed by WRP Supervisor.)

6. Missing Information, Noncompliance Notifications and Explanations
   If any information required by the forms cannot be obtained attach an explanation.

   There can be two kinds of noncompliance: actual and potential. An actual noncompliance occurs when there is wet weather runoff that has been contaminated by O & M activities or dry weather runoff. A potential noncompliance, of course, has not yet occurred, but requires preventive measures to prevent such occurrence. Examples of potential noncompliance are lack of roofing or secondary containment. Fill out the noncompliance report form in task 4 for either kind of noncompliance. Wunderlich and Ackerman will notify the Regional Board, as required, within 30 days of identification of an actual noncompliance. A potential noncompliance need not be reported. Both types of noncompliance report will be used by the CSD to correct the cause of the noncompliance.

STORM WATER MONITORING AND REPORTING PROGRAM
TASK 3: WET SEASON VISUAL OBSERVATIONS
Wet Season Visual Observation Report Form

Facility name: _____

Name of observer: _____ (Operator)

Date of inspection: _____

1. Use a separate copy of this form for each discharge location.

   Discharge location: _____ (Refer to Introduction)

2. Indicate with a yes or no whether any of the following conditions were observed.

(A) CONDITION	(B) INDUSTRIAL SOURCE? (Due to O&M activities)	(C) NONINDUSTRIAL SOURCE? (e.g. Leaves or Dust)
Floating Materials		
Suspended Materials		
Oil and Grease		
Discolorations		
Turbidity		
Odor		

3. If yes appears in column B, discuss the problem, corrective measures and time schedule using the noncompliance report form in task 4.

STORM WATER MONITORING AND REPORTING PROGRAM
TASK 8: TOXIC POLLUTANT ANALYSIS REDUCTION
Instructions

1. Requirements
   Relevant storm water permit requirements for the monitoring and reporting program are given above in the introduction.
   - toxic pollutant analysis reduction requirements are given in Section B.6.

2. Who will do the Reduction?
   Laboratory Section (Seitz) and Monitoring Section (Ackerman)

3. The Reduction
   a. The requirements state that if toxic chemicals or other pollutants are not detected in significant quantities after two consecutive sampling events, the facility may eliminate that toxic chemical or pollutant from future sampling events.
   b. The entire set of priority pollutants was selected as the standard list of chemicals for storm water monitoring.
   c. After two analyses have been completed, Seitz and Ackerman will determine which chemicals can be deleted from the next round of sampling and analysis.

TASK 4

NONCOMPLIANCE REPORTING

STORM WATER MONITORING AND REPORTING PROGRAM
TASK 4 NONCOMPLIANCE REPORTING
Instructions

1. Requirements

Relevant storm water permit requirements for the monitoring and reporting program are given above in the Introduction.

- Noncompliance reporting and compliance certification requirements are given in sections B.17, B.16, B.5.a.ii, B.13, C.9, and C.10.

2. Analysis of Requirements

Briefly, the requirements state that dischargers who

a. cannot certify based on the annual site inspection, that the facility is in compliance with
   i. the requirements of this general permit and
   ii. its Storm Water Pollution Prevention Plan, or
b. have had other instances of noncompliance, or
c. cannot certify that the annual report was prepared in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted and that information, the information submitted, is, true, accurate, and complete

must notify the Regional Water Board. The notifications shall

d. identify the type(s) of noncompliance,
e. describe the actions necessary to achieve compliance, and
f. include a time schedule, subject to the modifications by the Regional Water Board, indicating when compliance will be achieved, and
g. be submitted to the Regional Board within 30 days of identification of noncompliance.

Our interpretation of these requirements is that, generally, there may be two kinds of noncompliance: actual and potential. An actual noncompliance occurs when there is wet weather runoff that has been contaminated by O & M activities or dry weather runoff. The Regional Board must be notified within 30 days of identification of an actual noncompliance. A potential noncompliance, of course, will not yet have occurred, but will require preventive measures to prevent such an occurrence. Examples of potential noncompliance are lack of roofing or secondary containment. A potential noncompliance need not be reported to the Board. Most instances of noncompliance will be discovered as part of Task 1, Annual Site Inspection; Task 2, Dry Season Observations; or Task 3, Wet Season Visual Observations. A noncompliance report form (see page 2 of this task) must be filled out for each noncompliance. Both types of noncompliance report will be used by CSD management to correct the cause of the noncompliance.

3. Preparation and Submittal of the Noncompliance Report

Noncompliance report forms, both actual and potential, will be prepared by the WRP Supervisor; corrective measures will be initiated by the WRP Section Head (Wunderlich).

Reports of actual noncompliance will be prepared by the WRP Section Head (Wunderlich) and Monitoring Section (Ackerman) before submittal to the Regional Board. They must be submitted within 30 days of identification of the noncompliance.

STORM WATER MONITORING AND REPORTING PROGRAM
TASK 4: NONCOMPLIANCE REPORTING
Noncompliance Report Form

Facility name: _____

Discharge location: _____ (Refer to Introduction, above)

Reported by: _____ (WRP Supervisor)

Date of identification of noncompliance: _____

Type of noncompliance: Indicate whether it is actual (dry weather runoff or wet weather runoff contaminated by O & M activities) or potential (e.g. lack of roofing or secondary containment)

Actual _____ Potential _____

Description of noncompliance: _____

_____

_____

_____

_____

Corrective measures: _____

_____

_____

_____

_____

Time schedule to achieve compliance. _____

_____

_____

_____

_____

TASK 5

SAMPLING AND ANALYSIS

STORM WATER MONITORING AND REPORTING PROGRAM
TASK 5: SAMPLING AND ANALYSIS
Instructions

1. Requirements

Relevant storm water permit requirements for the monitoring and reporting program are given above in the introduction.

- Sampling and analysis requirements are given in Sections B.5.d, B.11, B.12, and B.14.
- Sample collection exception requirements are given in section B.13.
- Group monitoring requirements are given in section B.10, but this section is not presented above in the introduction; refer, instead, to an unedited copy of the permit.

The storm water permit, as indicated above, permits group monitoring to be conducted. This allows for representative sampling to be done if it is demonstrated that the facilities included in the group monitoring program are sufficiently similar. The Districts have applied for approval of a group monitoring program in which sampling at Los Coyotes WRP will be representative of all seven Districts' tertiary treatment plants. Group monitoring at Los Coyotes WRP will, therefore, be conducted in anticipation of approval by the State or Regional Board. **Consequently, sampling and analysis will not be conducted at the other six water reclamation plants: Long Beach, Pomona, San Jose Creek, Saugus, Valencia, and Whittier Narrows.**

TASK 6

ANNUAL REPORT

STORM WATER MONITORING AND REPORTING PROGRAM
TASK 6: ANNUAL REPORT
Instructions

1. Requirements
   Relevant storm water permit requirements for the monitoring and reporting program are given above in the Introduction:
   - Annual report requirements are given in section B.16 and must include:
   - Summary of visual observations and sampling, as specified in sections B.5.a.i, B.5.b, B.5.c, and B.5.d,
   - Certification of compliance, based on the annual site inspection, as specified in section B.5.a.ii,
   - Noncompliance reporting requirements as specified in section B.17.
   - Visual observation and sample collection exception requirements as specified in section B.13.
   - Certification of the annual report as specified in sections, C.9, and C.10.

2. Who Prepares the Annual Report
   Monitoring Section (Ackerman)

3. When to Report
   The annual report deadline is July 1.

4. What to Include in the Report
   The annual report should include monitoring results for the previous storm water year, May 1-April 30. The contents should include the following:
   a. certification of compliance with the storm water permit and storm water pollution prevention plan from Task 1,
   b. facility,
   c. discharge locations,
   d. summary of monitoring observations and results from task 1 (annual site inspection), task 2 (dry weather observations, task 3 (wet weather visual observations), and task 5 (sampling and analyses).
   e. discussion of visual observation and sample collection exceptions (missing monitoring data).
   f. discussion of instances of noncompliance with the requirements of the storm water permit, or the storm water pollution prevention plan, or any other instances of noncompliance.
   g. certification of annual report.

5. Who Receives the Annual Report
   Executive Officer of RWQCB

STORM WATER MONITORING AND REPORTING PROGRAM
TASK 6: ANNUAL REPORT
Certification of Annual Report

Facility Name: _____

Permit Identification Number: _____

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly reponsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____ _____
Signature Date Signed

David W. Snyder,
Supervising Engineer, Monitoring Section

TASK 7

MONITORING QUALITY ASSURANCE/QUALITY CONTROL

STORM WATER MONITORING AND REPORTING PROGRAM
TASK 7: MONITORING QA/QC
Instructions

1. Requirements
   Relevant storm water permit requirements for the monitoring and reporting program are given above in the introduction.
   - Quality assurance and quality control requirements are given in Sections B.4.d and B.4.e.

2. Who will do the QA/QC?
   Monitoring Section (Ackerman)

3. The QA/QC Program
   This program is designed to insure that all tasks in the monitoring program are performed on schedule.
   a. Copies of all forms and reports will be sent to Ackerman.
   b. On the 20th of each month Ackerman will go over the task list (tasks 1-6) to see whether they have been performed and will check whether forms and reports have been received.
   c. Ackerman will notify responsible staff of any deficiencies and request that they be corrected.
   d. Ackerman will ensure that reports of noncompliance are sent as required.
   e. Ackerman will prepare the annual report.

TASK 8

TOXIC POLLUTANT ANALYSIS REDUCTION

STORM WATER MONITORING AND REPORTING PROGRAM
TASK 8: TOXIC POLLUTANT ANALYSIS REDUCTION
Instructions

1. Requirements
   Relevant storm water permit requirements for the monitoring and reporting program are given above in the introduction.
   - toxic pollutant analysis reduction requirements are given in Section B.6.

2. Who will do the Reduction?
   Laboratory Section (Seitz) and Monitoring Section (Ackerman)

3. The Reduction
   a. The requirements state that if toxic chemicals or other pollutants are not detected in significant quantities after two consecutive sampling events, the facility may eliminate that toxic chemical or pollutant from future sampling events.
   b. The entire set of priority pollutants was selected as the standard list of chemicals for storm water monitoring.
   c. After two analyses have been completed, Seitz and Ackerman will determine which chemicals can be deleted from the next round of sampling and analysis.

Stormwater Pollution Prevention Plan

for the

Los Angeles County Sanitation Districts
Valencia Water Reclamation Plant
1965 S. Workman Mill Road
Whittier, CA 90607

Date Prepared: September 30, 1992

Date Revised:_____

STORMWATER POLLUTION PREVENTION PLAN

The Valencia Water Reclamation Plant provides primary, secondary, and tertiary treatment for approximately 11 million gallons of wastewater per day. This plant produces high quality water for discharge to the Santa Clara River.

The Stormwater Pollution Prevention Plan (SWPPP) follows the format established in Section A of the General Industrial Storm Water Permit.

DESCRIPTION OF POTENTIAL SOURCES

a. Topographic map

A topographic map extending one quarter mile or more beyond the boundary of the Valencia WRP, showing the facility boundaries, surface water bodies and the stormwater discharge points is included as Attachment 1.

b. Site Map

Two site maps are included as Attachment 2. The first map, Valencia Storm Drain Collection System and Drainage Map shows:

i. The storm water conveyance and discharge structures;
ii. An outline of the storm water drainage areas for each storm water discharge point;
iii. Paved areas and buildings;
iv. Location of existing storm water structural control measures.

There are no surface waters or vehicle service areas on site. Areas of potential soil erosion along the river banks are being graded and paved under the current expansion contract (Stage IV).

The second map, Hazardous Chemical Inventory Site Plan, shows chemical storage areas constituting potential areas of pollutant contact. As discussed later, control measures prevent actual pollutant contact with stormwater.

c. Narrative Description

Note: Photographs and a brief description of significant materials handling are included as Attachment 3.

i. A list of "significant materials" that are used and stored at the Valencia WRP is included as Attachment 4. There have been no spills or leaks in significant quantities in storm water discharge after November 19, 1988.

ii. Materials, equipment and vehicle management practices: Employees use good housekeeping procedures as described below (5c.). Hazardous chemical storage areas provide secondary containment. Used oil is stored in a tank indoors, and is hauled away by a licensed transporter for recycling.

iii. Material loading, unloading and access areas are sloped to provide immediate drainage. Where possible, fill points are located inside of the spill containment.

iv. Existing structural and non-structural control measures to reduce pollutants in storm water discharge: These consist primarily of secondary containment for hazardous chemicals and training of personnel in good housekeeping techniques.

v. Industrial storm water discharge treatments. Good housekeeping procedures are followed at all times.

vi. Methods of onsite storage and disposal of significant materials: As stated previously, significant materials are stored indoors or with secondary containment. Disposal of hazardous waste is provided by licensed haulers. Good housekeeping procedures are followed at all times.

vii. Outdoor storage, manufacturing, and processing activities including activities that generate significant quantities of dust or particulates: All processes that may produced significant quantities of dust or particulates are conducted indoors with the exception of sandblasting of large equipment. A non-toxic sandblasting agent is used and precautions are taken to minimize the production of dust. Good housekeeping procedures are followed at all times.

d. List of Pollutants

A list of hazardous chemicals that are stored and used on site is included as Attachment 4. This list is the same as reported to the local Administering Agency (Los Angeles County Fire Department) under the requirements of Chapter 6.95 of the California Health and Safety Code. None of these chemicals have reasonable potential to be present in storm water discharge in significant quantities due to the control measures (spill containment, good housekeeping) described in this plan.

e. Size and Percent Impervious

The size of the Valencia WRP is estimated at 10 acres. It is approximately 70% impervious.

f. List of Significant Spills

There have been no significant spills or leaks of toxic or hazardous pollutants to storm water that have occurred after November 19, 1988.

g. Summary of existing sampling data

There is no existing sampling data describing pollutants in stormwater discharge at the Valencia WRP. Sampling conducted at other, similar Districts' facilities (water reclamation plants) revealed no signficant pollutants (tested for priority pollutants).

STORMWATER MANAGEMENT CONTROLS

a. Stormwater Pollution Prevention Personnel

The Water Reclamation Plants Section Head has the overall responsibility for developing, implementing and revising the Plan. Development and revisions are conducted by Water Reclamation Plants and other Districts' engineering staff. Implementation is the responsibility of field supervisors.

b. Preventive Maintenance

Preventive maintenance procedures and operational checks are described in Attachment 5. The preventive maintenance procedures are also part of the Valencia computerized maintenance system which indicates to the maintenance crews on a weekly basis, what procedures are required.

c. Good Housekeeping

Good housekeeping procedures are observed in all areas of the Valencia WRP, and by all personnel; operations, maintenance, instrumentation and electrical. These procedures are provided in writing in the O&M manuals and periodic memos. These procedures include the following:

Prompt sweeping up and properly disposing of any spilled dry chemical, metal shavings, sandblasting agents, etc.

Prompt hose down of any liquid chemical spills into plant drains leading to sewers tributary to the wastewater treatment process.

Storage of chemicals only in approved, pre-designated locations with secondary containment.

Inspection of chemical storage areas as part of routine rounds.

d. Spill Prevention and Response

All deliveries of chemicals are coordinated through the Supervisor of Valencia WRP Operations. No deliveries are made without the presence of Districts' personnel. It is assumed that all chemical storage areas, as shown on the attached site map have the potential for chemical spills. Any spills that exceed the ability of the attending operator to immediately clean up are reported to the control room for assistance and coordination. Valencia WRP personnel are trained in hazardous waste emergency response procedures per CFR 1910.120.

In the unlikely event of a spill, the storm drains would be blocked using sand bags. The area would be rinsed with water. Spreading sand or absorbent material over the area and shoveling it away or using squeegees to direct the water back into the plant would be the methods used to clean the spills.

Procedures listed on the Material Safety Data Sheets are used for the cleanup of hazardous chemicals.

Chemical - specific control measures are shown in Attachment 3.

e. Stormwater Management Practices

Stormwater management practices consist of daily inspection of chemical storage areas, good housekeeping practices and spill containment for significant chemicals, and semi-annual catch basin maintenance.

f. Sediment and Erosion Prevention

All areas of potential erosion are paved or landscaped. Portions of the plant subject to potential erosion are being graded and paved under the Valencia Stage IV construction contract.

g. Employee Training

Annual employee training will be conducted covering all aspects of the Plan including spill response, good housekeeping, and material management practices.

h. Inspections

A general inspection is performed semiannually by the Operations Supervisor, per the checklist in Attachment 5. This includes checking progress on problems found in the previous inspection, and inspection for new problems. These inspections are documented and reports distributed through the Water Reclamation Plants Section Head. The chemical stations are inspected daily. Two times per day, as part of plant rounds, potential problem areas are checked, and any problems are reported to the Operation supervisor.

Elimination of Non-stormwater Discharges

This certifies that non-stormwater discharges, such as illicit connections, improper dumping, spills, or leakage from storage tanks or transfer areas, have been eliminated. Minor quantities of irrigation return water, that meet the NPDES permit requirements for the facility may on occasion flow offsite, however this does not constitute a violation of water reclamation requirements.

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

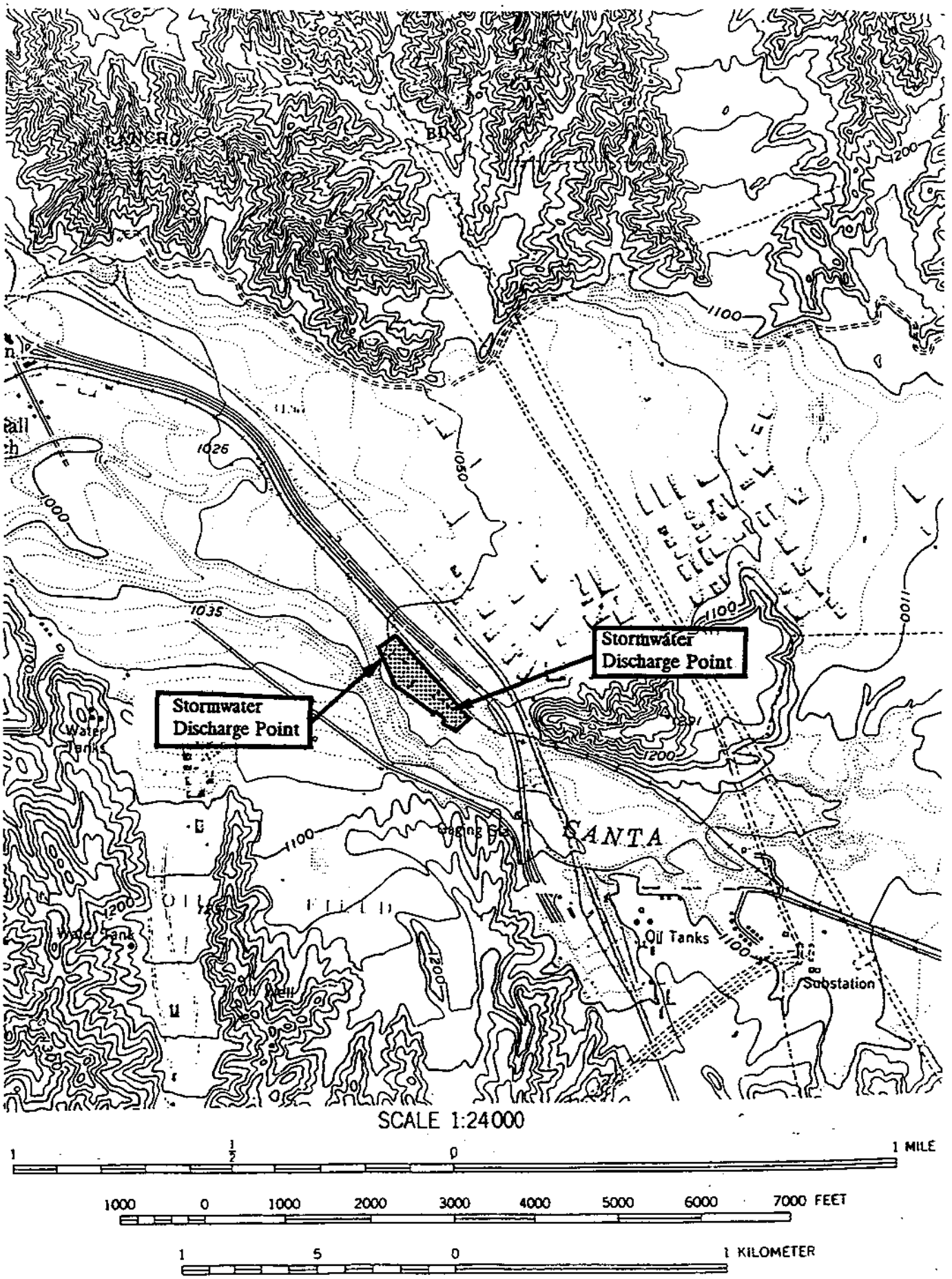
R. Wunderlich

Rich Wunderlich
Section Head
Water Reclamation Plants

ATTACHMENT 1

TOPOGRAPHIC MAP

VALENCIA WATER RECLAMATION PLANT

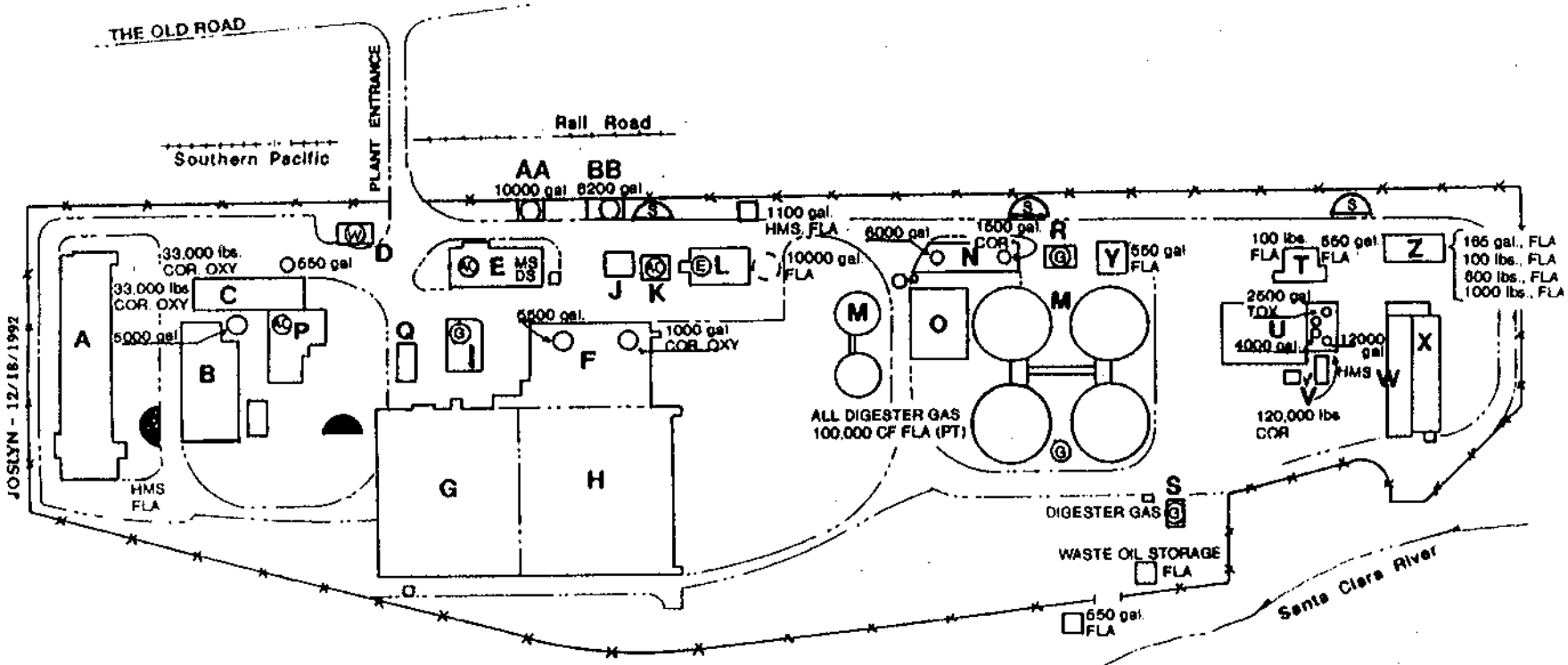


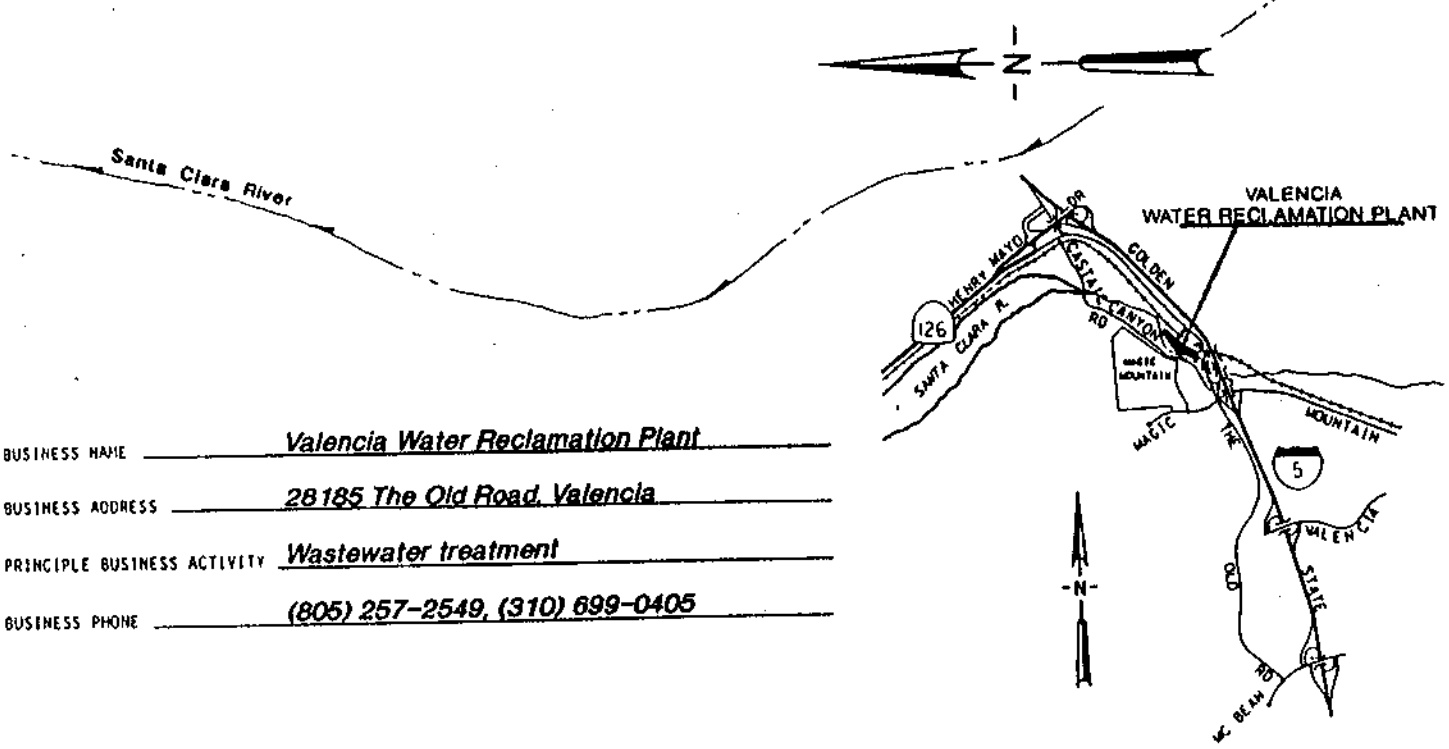
Valencia Water Reclamation Plant
Topogaphic Map

ATTACHMENT 2

SITE MAPS

VALENCIA WATER RECLAMATION PLANT





A = CHLORINE CONTACT TANKS
B = INERT MEDIA FILTERS
C = CHLORINATION & MAINTENANCE BLDG.
D = NON-POTABLE WATER PUMP STA.
E = CONTROL BLDG.
F = PRIMARY SED. TANKS
G = FINAL SED. TANKS
H = AERATION TANKS
I = COMPRESSOR STA.
J = COMMINUTOR STRUCTURE
K = INFLUENT PUMP STA.
L = POWER SERVICE ENCLOSURE
M = DIGESTION TANKS
N = DISSOLVED AIR FLOATION UNIT & SCRUBBER STA.
O = DISSOLVED AIR FLOATION UNIT
P = MAINTENANCE BLDG.
Q = FILTER FEED & RETURN SLUDGE PUMP CONTROL BLDG.
R = DIGESTER HEATING BLDG.
S = WASTE GAS FLARING STA.
T = TRUCK MAINTENANCE BLDG.
U = SLUDGE DEWATERING BLDG.
V = CHEMICAL HANDLING AREA
W = DIGESTER CLEANING TANK
X = FILTRATE STORAGE TANK
Y = POWER GENERATION BLDG.
Z = MAINTENANCE BLDG.
AA = FERRIC CHLORIDE STA.
BB = POLYMER STA.

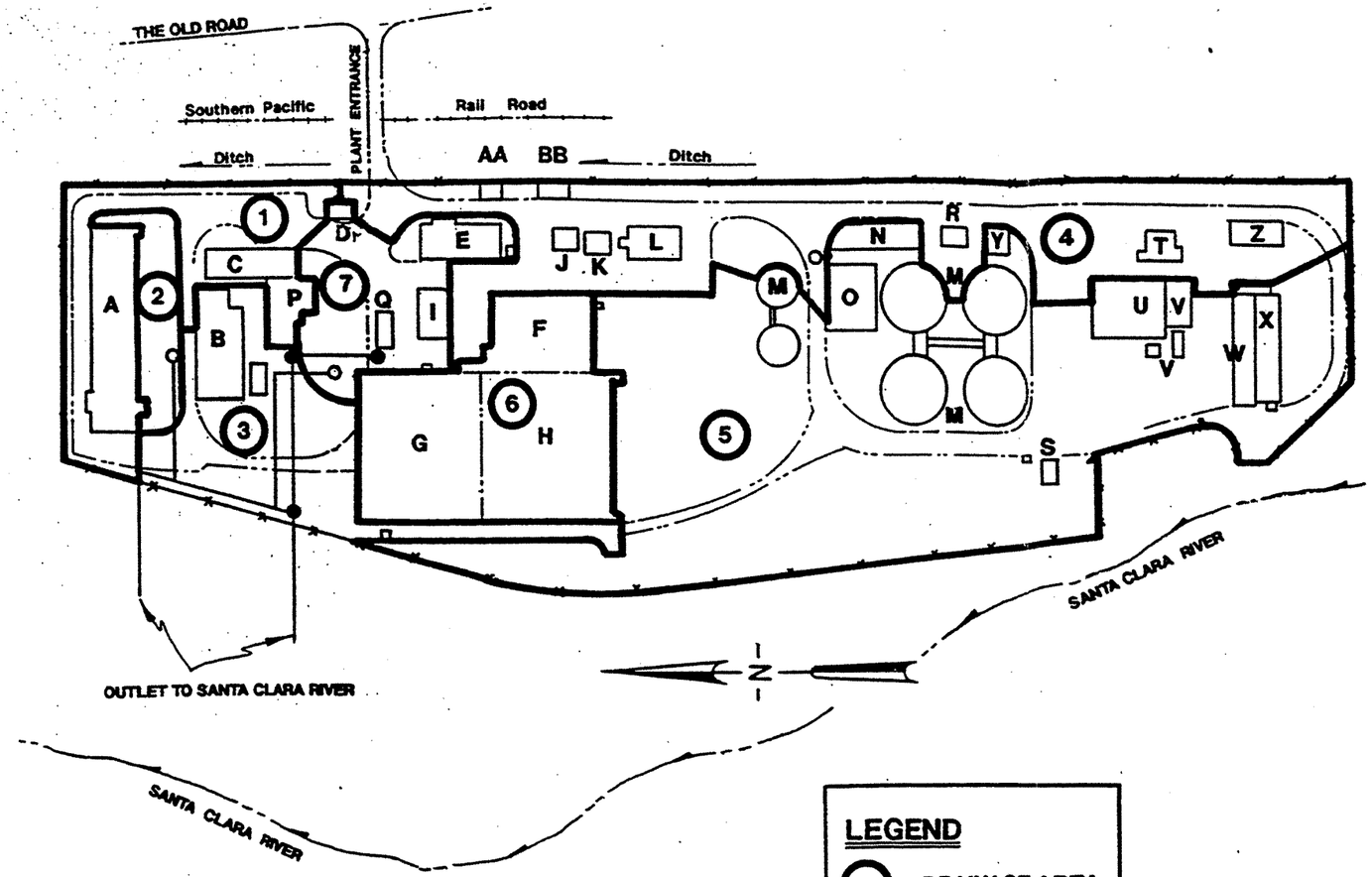
BUSINESS NAME *Valencia Water Reclamation Plant*

BUSINESS ADDRESS *28185 The Old Road, Valencia*

PRINCIPLE BUSINESS ACTIVITY *Wastewater treatment*

BUSINESS PHONE *(805) 257-2549, (310) 699-0405*

VALENCIA WATER RECLAMATION PLANT
STORM DRAIN COLLECTION SYSTEM & DRAINAGE MAP



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X = FILTRATE STORAGE TANK
Y = POWER GENERATION BLDG.
Z = MAINTENANCE BLDG.
AA = FERRIC CHLORIDE STA.
BB = POLYMER STA.

LEGEND

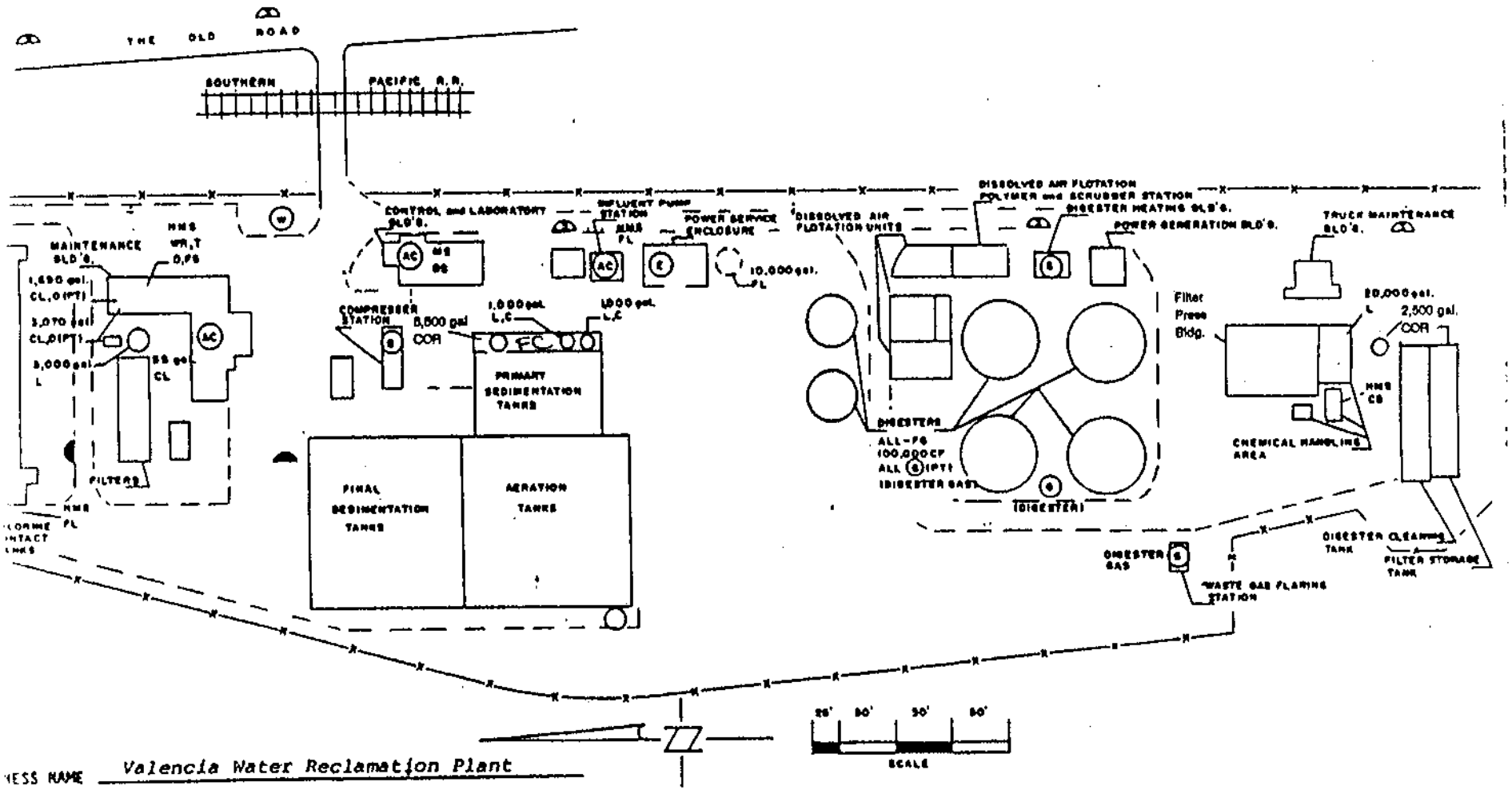
- DRAINAGE AREA
- CATCH BASIN
- MANHOLE

NOTE: TANKS & CONTAINMENT DIKES DRAIN TO THE TREATMENT PLANT.

Drainage Area Explanation

Area	Description	Drains To
1	North and East of Chlorine Contact Tanks	Santa Clara River (Overland Flow)
2	South of Chlorine Contact Tanks	Santa Clara River (Through Drain)
3	West of Filters	Santa Clara River (Overland Flow)
4	East Perimeter of Plant	Santa Clara River through Ditch next to Railroad
5	South West Portion of Plant	Santa Clara River (Overland Flow)
6	Primary and Secondary Treatment Facilities	Treatment Plant
7	Plant Entrance	Santa Clara River (Through Drain)

032424



ESS NAME *Valencia Water Reclamation Plant*

ESS ADDRESS *28185 The Old Road, Valencia*

CIPLE BUSINESS ACTIVITY *Wastewater treatment*

ESS PHONE *(805) 257-2549*

ATTACHMENT 3

PHOTOGRAPHS

VALENCIA WATER RECLAMATION PLANT

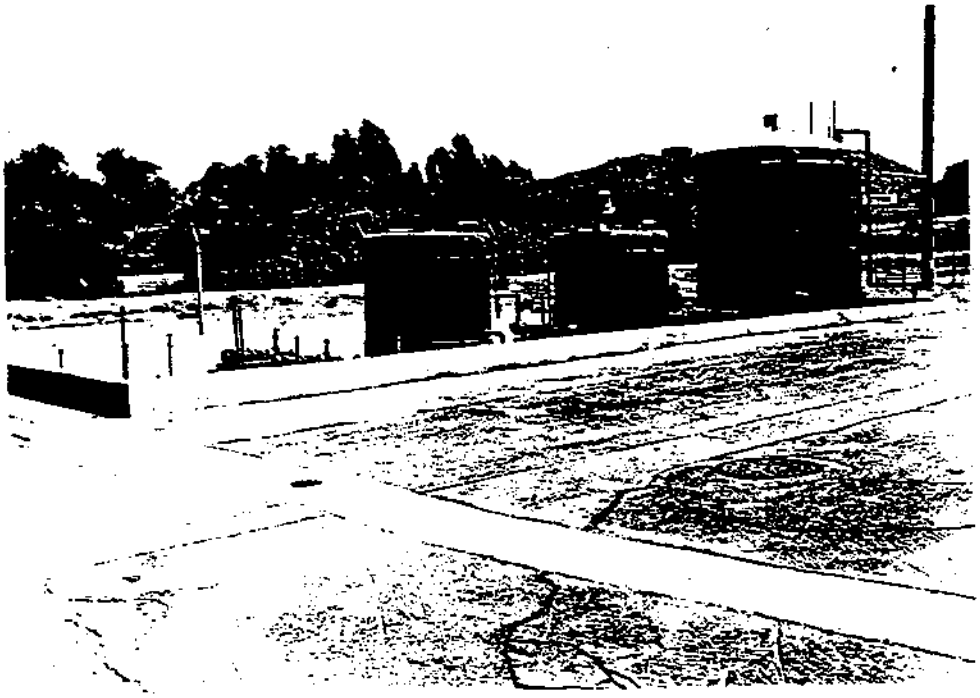
VALENCIA WATER RECLAMATION PLANT

West side of plant, bordering Santa Clara River. Construction of paved area and retaining wall to prevent erosion is in progress.

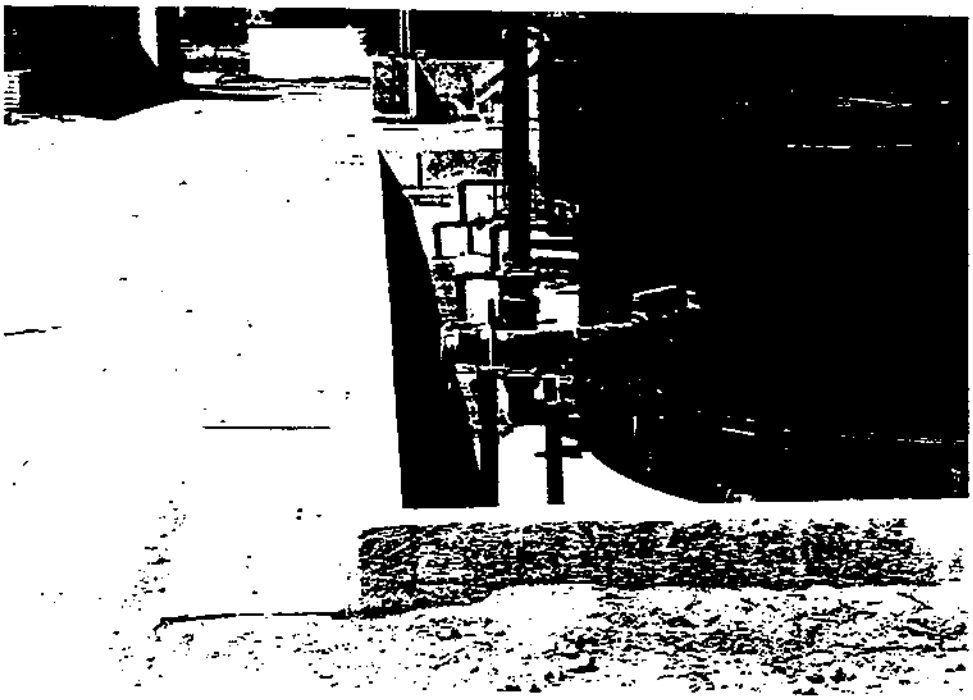
VALENCIA WATER RECLAMATION PLANT

Top: Sodium Metabisulfite in SO_2 Building.
Bottom: HTH in Cl_2 Building. Floors in both buildings slope to floor drains which discharge to plant influent

VALENCIA WATER RECLAMATION PLANT

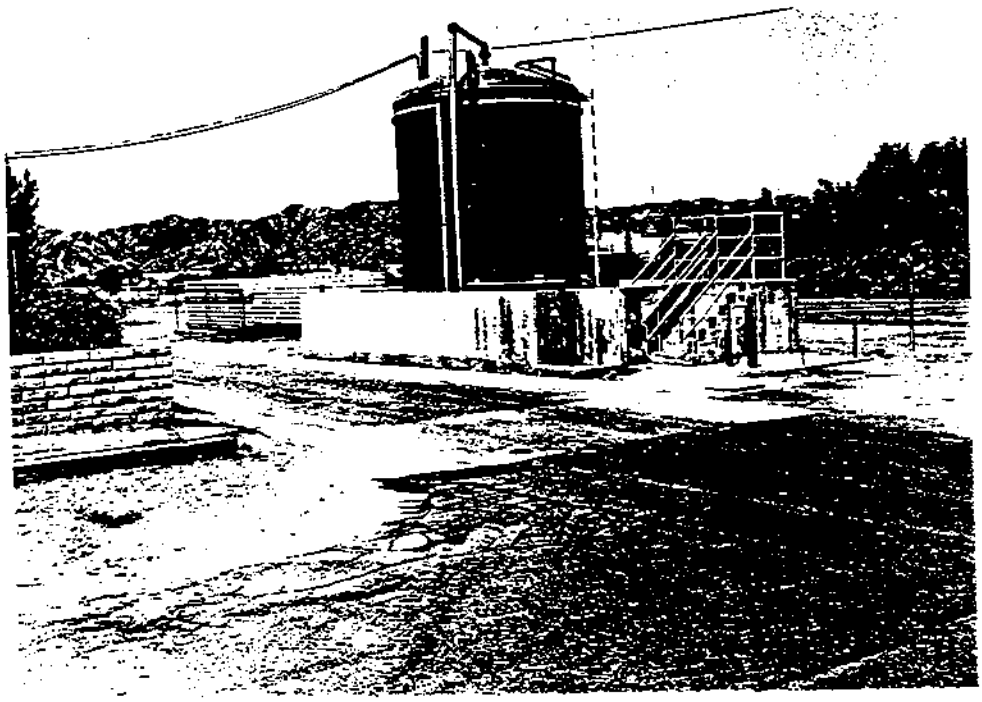


Influent anionic polymer addition station. Spill containment is adequate.

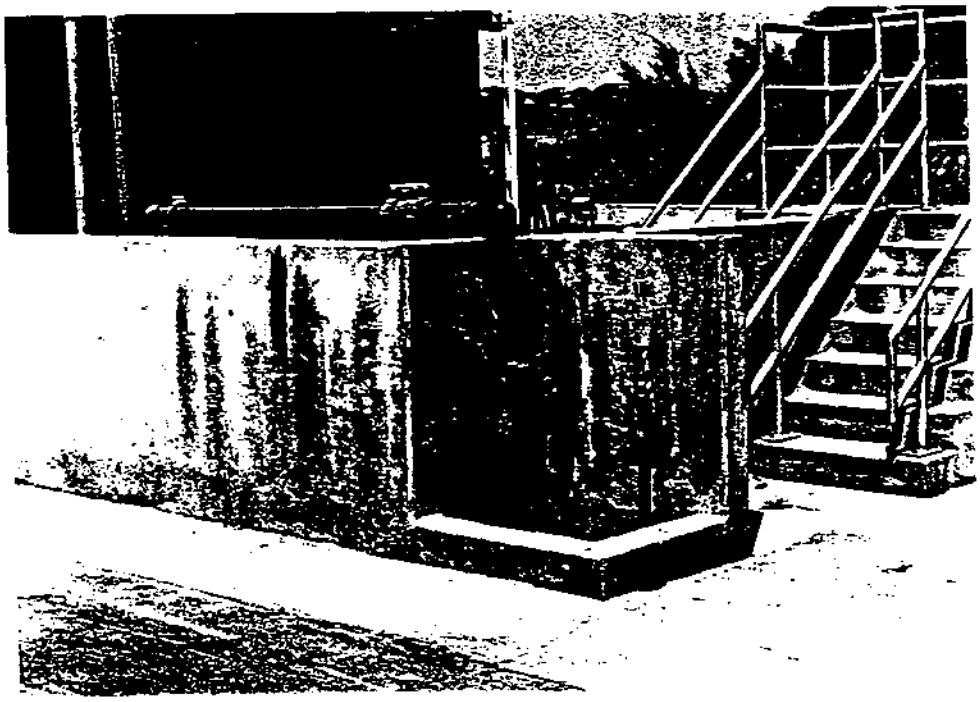


Close-up of fill point on influent anionic polymer station.

VALENCIA WATER RECLAMATION PLANT

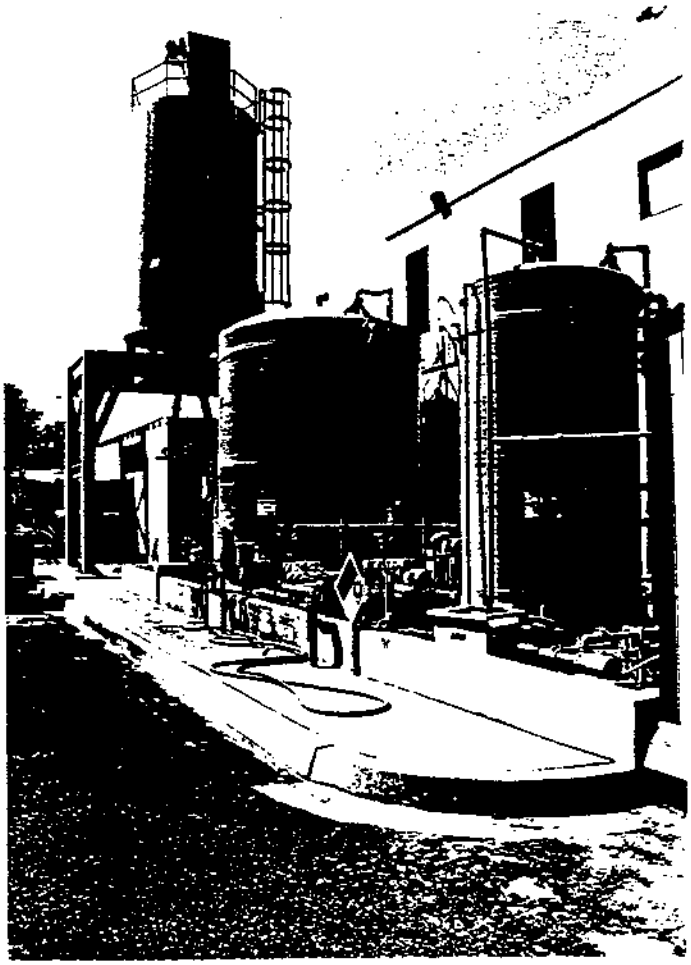


Influent ferric chloride addition station. Complete spill containment is provided. Bottom photo shows closeup of fill point which drains to plant influent.



VALENCIA WATER RECLAMATION PLANT

Hydrochloric acid and ferric chloride storage south of filter press building. Spill containment sufficient to contain the entire contents of one tank is provided. In addition, area drains to digester cleanings dewatering pad, which discharges to plant influent. ⇒



⇐ Lime slaking at filter press building. Area drains to digester cleaning pad which discharges to plant influent.

ATTACHMENT 4

CHEMICAL LIST

VALENCIA WATER RECLAMATION PLANT

ATTACHMENT 4

HAZARDOUS CHEMICAL INVENTORY
VALENCIA WRP

Chemical	Location
Hydrochloric Acid	South of Filter Press Building
Ferrous Chloride	East of Primary Tanks
Chlorine*	North end of Site in Maintenance Building
Sulfur Dioxide*	North end of Site in Maintenance Building
Dry Polymer	North end of Site in Maintenance Building
Sodium Bisulfite	North end of Site in Maintenance Building
HTH	North end of Site in Maintenance Building
Oxygen*	North end of Site in Maintenance Building
Xylene*	North end of Site in Maintenance Building
Diesel Fuel	Southeast of Power Service Enclosure, Underground Storage Tank
Alum	North central of Site between Filters and Maintenance Building
Lube Oil	Northeast of Power Service Enclosure in Flammable Storage Bldg.
Polymer	South end of Site, Chemical Storage Building south of Filter Press Building
Caustic	East of Primary Tanks
Ferric Chloride	East of Primary Tanks and south of Filter Press Bldg.
Lime	South of Filter Press Building in Chemical Storage
Phosphoric Acid	East of Filter Press Building
Defoamant	West of Chlorine Contact Tanks
Digester Gas*	Digestion Tanks

* Potential release would be to air, not stormwater

ATTACHMENT 5

INSPECTION CHECKLIST

VALENCIA WATER RECLAMATION PLANT

Date:_____

STORMWATER POLLUTION PREVENTION CHECKLIST

Plant:_____ Operator:_____

This checklist shall be completed at least two times per year, with one inspection to be prior to the start of the rainy season.

Stormwater Conveyance Systems

Catch Basins:

	Yes	No
Debris found? If yes, indicate location below:		
Evidence of dry weather flow? If yes, indicate source:		

Sampling Point:

Accessible?

Other corrective action required?

Explain any YES answers below:

Chemical Handling Facilities:

Complete the following page for all chemicals used at this facility (see attachment 4)

Facility Name: _____

Chemical	Condition of Spill Containment	Evidence of Spills?	Piping or other leaks?	Other comments

CORRECTIVE ACTION REQUIRED AS A RESULT OF THIS INSPECTION

List items needing correction in the categories below:

	W.O. # & Date Issued	Date Completed	Initials

Stormwater Conveyance System

Chemical Handling Facilities

ATTACHMENT 6

NOTICE OF INTENT

VALENCIA WATER RECLAMATION PLANT

State of California
State Water Resources Control Board

NOTICE OF INTENT
FOR
GENERAL PERMIT TO DISCHARGE STORM WATER ASSOCIATED WITH INDUSTRIAL ACTIVITY

MARK ONLY ONE ITEM
1. [X] Existing Facility
2. [ ] New Facility
3. [ ] Change of Information
WDID # _____

I. OWNER/OPERATOR

Name: Los Angeles County Sanitation Districts

Mailing Address: P.O. Box 4998

City: Whittier

Contact Person: Frances Garrett

A. Owner/Operator Type: (Check one)
1. [ ] City 2. [ ] County 3. [ ] State 4. [ ] Federal
5. [X] Special District 6. [ ] Government Combo 7. [ ] Private

State: CA Zip: 90607-4998 Phone: (310) 699-7411

B. 1. [ ] Owner 2. [ ] Operator 3. [X] Owner/Operator

II. FACILITY SITE INFORMATION

Facility Name: Valencia Water Reclamation Plant

Street Address: 28185 The Old Road

City: Valencia

County: Los Angeles

Contact Person: Paul Prestia

State: CA Zip: 91335- Phone: (805) 257-2549

Parcel Number(s) (If more than 4 apply to facility, enter additional numbers in SECTION IX. A):

A. 2826-006-900 B. 2826-006-901 C. _____ D. _____

III. BILLING ADDRESS

Send Billing Statements To: A. [X] Owner/Operator B. [ ] Facility C. [ ] Other (Specify in SECTION IX. B)

IV. RECEIVING WATER INFORMATION

A. Does your facility's storm water discharge directly to: (Check one)

1. [ ] Storm drain system

Owner of storm drain system: (Name) _____

2. [X] Directly to waters of U.S. (e.g., river, lake, creek, ocean)
3. [ ] Indirectly to waters of U.S.

B. Name of closest receiving water:

Santa Clara River

V. INDUSTRIAL INFORMATION

A. SIC Code(s):

1. 4952 2. 3. 4.

B. Type of Business:

POTW

C. Industrial activities at facility: (Check all that apply)

1. [ ] Manufacturing
2. [ ] Vehicle Maintenance
3. [ ] Hazardous Waste Treatment, Storage, or Disposal Facility (RCRA Subtitle C)
4. [ ] Material Storage
5. [ ] Vehicle Storage
6. [ ] Material Handling
7. [X] Wastewater Treatment
8. [ ] Power Generation
9. [ ] Recycling
10. [ ] Landfill
99. [ ] Other _____

32-04.01-00

STATE OF CALIFORNIA - CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

PETE WILSON, Governor

STATE WATER RESOURCES CONTROL BOARD
PAUL R. BONDERSON BUILDING
901 P STREET
P.O. BOX 100
SACRAMENTO, CALIFORNIA 95812-0100

(916) 657-1146
FAX: (916)657-2388

1992 OCT 30 PM 2:02

FRANCES GARRETT
L.A. COUNTY SANITATION DIST
P.O. BOX 4998
WHITTIER CA 90607-4998

October 25, 1992

STATUS OF YOUR NOTICE OF INTENT

Enclosed is a revised permit package for the STATEWIDE GENERAL INDUSTRIAL ACTIVITIES STORM WATER DISCHARGE PERMIT, under which you are currently registered as a permittee. The revisions to the permit package are: a revised, expanded "fact sheet", minor technical or editorial amendments to the permit, replacement of the entire Section B: Monitoring Requirements with generally less difficult monitoring requirements, and minor modifications to the Notice of Intent form. We particularly wish to draw your attention to the new Section B: Monitoring Requirements.

Your receipt of this letter is acknowledgement of your registration as a general permittee according to the information you submitted on your Notice of Intent to Comply with the terms of the General Permit.

FACILITY DESCRIPTION

Owner: L.A. COUNTY SANITATION DIST
Facility: VALENCIA WATER RECLAMATION PLA
Facility Address: 28185 THE OLD ROAD
City: VALENCIA County: LOS ANGELES
Type of Business: POTW

Your permit identification number is 4B19S007154. Please use this number in any future communications with the State Water Resources Control Board or appropriate Regional Water Quality Control Board regarding this permit.

Dischargers are required to resubmit an amended NOI to reflect a change in owner/operator or operational status. Upon notification to the State Water Board that your facility is no longer operational or is no longer to be covered by the General Permit, it will be removed from the roll of general permittees.

If you have any questions regarding permit requirements, please call the Regional Water Quality Control Board at (213)266-7500.

Sincerely,

AM

Archie H. Matthews, Chief
Regulatory Section
Division of Water Quality

osnin
arrett

State of California
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

MONITORING AND REPORTING PROGRAM NO. 2960
for
COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY
(Saugus Water Reclamation Plant)
(NPDES NO. CA0054313)

I. REPORTING REQUIREMENTS

The Discharger shall implement this monitoring program on the effective date of this Order. All monitoring reports shall be submitted monthly, by the fifteenth day of the second month following each monthly sampling period, addressed to the Regional Board, Attention: Technical Support. The first monitoring report under this Program is due by September 15, 1995, and will cover the monitoring period of July 1995. Quarterly monitoring shall be performed during the months of February, May, August and November. Semiannual monitoring shall be performed during the months of February and August. Annual monitoring shall be performed during the month of August.

The analysis shall specify the USEPA analytical method used and its Method Detection Limit (MDL). For the purpose of reporting compliance with effluent limitations, performance goals, receiving water limitations, analytical data shall be reported with an actual numerical value or "nondetected (ND)" with the MDL indicated for the analytical method used. The maximum allowed MDLs are those published by the USEPA (MDLs for priority pollutants are listed in Attachment 1). The Discharger shall not use a MDL higher than that published by the USEPA unless the Discharger can demonstrate that a particular detection limit is not attainable and obtains approval for a higher MDL from the Executive Officer.

The Discharger shall submit an annual report containing a discussion of the previous year's effluent and receiving water monitoring data, as well as graphical and tabular summaries of the data. This annual report is due by April 1st of the year following data collection.

The Discharger shall inform the Regional Board well in advance of any construction activity proposed that can potentially affect compliance with applicable requirements.

Revised June 12, 1995

II. REGIONAL MONITORING PROGRAM

1. Pursuant to the Code of Federal Regulations [40 CFR §122.41(j) and §122.48(b)], the monitoring program for a discharger receiving a National Pollutant Discharge Elimination System (NPDES) permit must determine compliance with NPDES permit terms and conditions, and demonstrate that State water quality standards are met.

2. Since compliance monitoring focuses on the effects of the point source discharge, it is not designed to assess impacts from other sources of pollution (e.g., non-point source runoff, aerial fallout) nor to evaluate the current status of important ecological resources on a regional basis.

   The Regional Board is planning to develop and implement a comprehensive monitoring program for each watershed in the region. The goal is to establish regional programs to address public health concerns, monitor trends in natural resources, assess regional impacts from all contaminant sources, and ensure protection of beneficial uses.

3. Substantial changes to the compliance monitoring program for the Saugus Water Reclamation Plant will be required to fulfill the goals of regional monitoring, while retaining the compliance monitoring component required to evaluate the potential impacts from the NPDES discharge. Revisions to the Saugus program will be made under the direction of USEPA and LA Regional Board as necessary to accomplish this goal, and may include a reduction or increase in the number of parameters to be monitored, the frequency of monitoring, or the number and size of samples collected.

4. Until such time when a regional monitoring program is developed, the Discharger shall perform the analyses described in the following monitoring program.

III. INFLUENT MONITORING REQUIREMENTS

(Footnotes on pages T-8 through T-11)

Influent monitoring is required to:

- determine compliance with NPDES permit conditions and water quality standards,

- assess treatment plant performance, and
- assess the effectiveness of the pretreatment program.

Sampling stations shall be established at each point of inflow to the sewage treatment plant and shall be located upstream of any in-plant return flows and where representative samples of the influent can be obtained. The date of sampling shall be reported with the analytical values determined.

Samples for influent $BOD_5$20°C and suspended solids shall be obtained on the same day that effluent $BOD_5$20°C and suspended solids samples are obtained in order to demonstrate percent removal.

Constituent	Units	Type of Sample	Minimum Frequency of Analysis
Flow	mgd	recorder/totalizer	continuous[1]
Suspended solids	mg/l	24-hr composite	weekly
$BOD_5$20°C	mg/l	24-hr composite	weekly
Chromium VI[2]	µg/l	24-hr composite	semiannually
Pesticides[3]	µg/l	24-hr composite	semiannually
Remaining EPA priority pollutants (excluding asbestos, Attachment T-1)	µg/l	24-hr composite	semiannually

IV. EFFLUENT MONITORING REQUIREMENTS

(Footnotes on pages T-8 through T-11)

Effluent monitoring is required to:

- determine compliance with NPDES permit conditions,
- identify operational problems and improve plant performance, and
- provide information on wastewater characteristics and flows for use in interpreting water quality and biological data.

An effluent sampling station shall be established for each point of discharge and shall be located downstream of any in-plant return flows where representative samples of the effluent (after receiving all treatment) can be obtained. Effluent samples may be obtained at a single station provided that station is representative of the effluent quality at all discharge points. Any changes in sampling station locations shall be approved by the Executive Officer.

The following shall constitute the effluent monitoring program:

Constituent	Units	Type of Sample	Minimum Frequency of Analysis
Total waste flow	mgd	recorder	continuous[1]
Turbidity[4]	NTU	recorder	continuous[1]
Total residual chlorine	mg/l	recorder	continuous[1]
Temperature	°F	grab	daily
pH	pH units	grab	daily
Settleable solids	ml/l	grab	daily
Suspended solids	mg/l	24-hour composite	daily
Total coliforms[4]	MPN/100 ml	grab	daily
Oil and grease	mg/l	grab	weekly
BOD_5 20°C	mg/l	24-hour composite	weekly[5]
Total dissolved solids	mg/l	24-hour composite	monthly
Sulfate	mg/l	24-hour composite	monthly
Chloride	mg/l	24-hour composite	monthly
Ammonia nitrogen	µg/l	24-hour composite	monthly
Nitrate nitrogen	mg/l	24-hour composite	monthly
Nitrite nitrogen	mg/l	24-hour composite	monthly
Organic nitrogen	mg/l	24-hour composite	monthly
Total nitrogen	mg/l	24-hour composite	monthly
Boron	mg/l	24-hour composite	monthly
Fluoride	mg/l	24-hour composite	monthly
Detergents (as MBAS)	mg/l	24-hour composite	monthly
Chronic toxicity[6]	TU_c	24-hour composite	monthly
Antimony	µg/l	24-hour composite	quarterly
Arsenic	µg/l	24-hour composite	quarterly
Barium	µg/l	24-hour composite	quarterly
Cadmium	µg/l	24-hour composite	quarterly
Chromium (VI)[2]	µg/l	24-hour composite	quarterly
Copper	µg/l	24-hour composite	quarterly
Iron	µg/l	24-hour composite	quarterly
Lead	µg/l	24-hour composite	quarterly
Mercury	µg/l	24-hour composite	quarterly
Nickel	µg/l	24-hour composite	quarterly
Selenium	µg/l	24-hour composite	quarterly
Silver	µg/l	24-hour composite	quarterly
Zinc	µg/l	24-hour composite	quarterly
Cyanide[7]	µg/l	grab	quarterly
Endrin[8]	µg/l	24-hour composite	quarterly
Lindane	µg/l	24-hour composite	quarterly
Methoxychlor	µg/l	24-hour composite	quarterly

Constituent	Units	Type of Sample	Minimum Frequency of Analysis
Toxaphene	µg/l	24-hour composite	quarterly
2,4-D	µg/l	24-hour composite	quarterly
2,4,5-TP (Silvex)	µg/l	24-hour composite	quarterly
Halomethanes[12]	µg/l	grab	quarterly
Tetrachloroethylene	µg/l	grab	quarterly
Methylene chloride	µg/l	grab	quarterly
1,2-Dichloroethane	µg/l	grab	quarterly
p-Dichlorobenzene	µg/l	24-hour composite	quarterly
DDT[9]	µg/l	24-hour composite	semiannually
PAHs[10]	µg/l	24-hour composite	semiannually
PCBs[11]	µg/l	24-hour composite	semiannually
Pesticides[3]	µg/l	24-hour composite	semiannually
Remaining EPA priority pollutants[13]	µg/l (excluding asbestos)	24-hour composite	semiannually
Radioactivity[14]	pCi/l	24-hour composite	semiannually
Acute toxicity[15]	TUa	24-hour composite	annually[16]

V. RECEIVING WATER MONITORING REQUIREMENTS
(Footnotes on pages T-8 through T-11)

A. Receiving water stations shall be established at the following locations:

Station No.	Description
R-A	Santa Clara River, 300 feet upstream of point of discharge to river.
R-B	Santa Clara River, 300 feet downstream of point of discharge to river.

B. The following analyses shall be conducted on grab samples collected from each station:

Constituent	Units	Minimum Frequency of Analysis
Temperature	°F	weekly
pH	pH units	weekly
Total coliform	MPN/100 ml	weekly
Residual chlorine	mg/l	weekly
Dissolved oxygen	mg/l	weekly
Nitrate nitrogen	mg/l	quarterly
Nitrite nitrogen	mg/l	quarterly

Constituent	Units	Minimum Frequency of Analysis
Ammonia nitrogen	mg/l	quarterly
Organic nitrogen	mg/l	quarterly
Total nitrogen	mg/l	quarterly
Total phosphate	mg/l	quarterly
Total dissolved solids	mg/l	quarterly
Sulfate	mg/l	quarterly
Chlorides	mg/l	quarterly
Chronic toxicity[6]	TU_c	quarterly
Acute toxicity[15]	TU_a	annually
MBAS	mg/l	annually
Arsenic	µg/l	annually
Cadmium	µg/l	annually
Chromium	µg/l	annually
Copper	µg/l	annually
Lead	µg/l	annually
Mercury	µg/l	annually
Nickel	µg/l	annually
Zinc	µg/l	annually
Cyanide[7]	µg/l	annually
Phenolic compounds	µg/l	annually
PAHs[10]	µg/l	annually
PCBs[11]	µg/l	annually

1. In the event of a spill or bypass of raw or partially treated sewage into the Santa Clara River, total and fecal coliform analyses shall be made on grab samples collected at all potentially affected downstream receiving water and at least one unaffected upstream receiving water. Coliform samples shall be collected on the date of the spill or bypass, if possible, and daily on each of the following four days.

2. At the time of sampling, the following observations shall be made at all the sampling stations and the times of the observations shall be noted:
   a) Estimate of flow
   b) Odor of water
   c) Color of Water
   d) Occurrence of significant storm runoff (river only)
   e) Presence of floating solids (Type)
   f) Presence of any sludge banks or deposits, grease, oil, foam, or visible solids of waste origin
   g) Tide and wind conditions
   h) Presence of any aquatic plant growth, sessile or floating

i) Any unusual occurrence

3. The time, date, and weather conditions at the time of sampling shall be reported.

4. The color of the effluent shall be contrasted with that of the receiving water and reported descriptively.

5. Receiving water samples shall not be taken during or within 48 hours following the flow of rainwater runoff in the Santa Clara River.

6. Weekly sampling may be omitted at stations R-A and R-B if weather and flow conditions would endanger personnel collecting receiving water samples. The monthly monitoring report shall note such occasions.

7. Weekly sampling may be omitted at Stations R-A and R-B on any occasion when no flow is observed in the river. Monthly monitoring report shall note such occasions.

8. The results of receiving water monitoring and observations shall be submitted with the effluent monitoring reports.

VI. GROUNDWATER MONITORING

Underground receiving water sampling stations shall be established at well No. 4N/16W-16R1.

The following analyses on grab samples shall constitute the groundwater monitoring program:

Constituent	Units	Minimum Frequency of Analysis
Nitrate - N plus Nitrite -N	mg/l	semi-annually
Total dissolved solids	mg/l	semi-annually
Chloride	mg/l	semi-annually
Sulfate	mg/l	semi-annually

The results of groundwater monitoring shall be submitted with the effluent monitoring reports.

VII. STORM WATER MONITORING AND REPORTING

The Discharger shall implement the attached Storm Water Monitoring and Reporting Program (Attachment T-2).

VIII. FOOTNOTES

1/ Where continuous monitoring of a constituent is required, the following shall be reported:

Total waste flow - Total daily flow and peak daily flow (24-hour basis);

Total chlorine residual - maximum daily value (24-hour basis);

Turbidity - Maximum daily value, total amount of time each day that turbidity exceeded five (5) turbidity units, the flow-proportioned average daily value, and the monthly mean value.

2/ For Cr(VI) analysis, the appropriate sampling and analytical method must be used.

3/ Pesticides are, for purposes of this order, those six constituents referred to in 40 CFR Part 125.58 (m) (demeton, guthion, malathion, mirex, methoxychlor, and parathion).

4/ Coliform and turbidity samples shall be obtained at some point in the treatment process at a time when wastewater flow and characteristics are most demanding on the treatment facilities, filtration, and disinfection procedures.

5/ If any result of weekly BOD analysis yields 90% or greater of the 30-day average limit, the frequency of analyses shall be increased to daily within one week of knowledge of the test result for at least one month and compliance with the 7-day and 30-day average BOD limits is demonstrated; after which the frequency shall revert to weekly.

6/ Initial screening shall be conducted using a minimum of three test species with approved test protocols to determine the most sensitive test organism for chronic toxicity testing. The initial screening process shall be

conducted for a minimum of three months, but not to exceed five months, to account for potential variability of the effluent/receiving water. If possible, the test species used during the screening process should include a fish, an invertebrate and an aquatic plant.

After the initial screening period, chronic toxicity testing may be limited to the most sensitive test species. However, the initial screening process shall be repeated annually, with a minimum of three test species with approved test protocols, to ensure use of the most sensitive species for chronic toxicity testing.

Dilution and control waters for the effluent should be obtained from an unaffected area of the receiving waters. Standard dilution water may be used if the above source exhibits toxicity greater than 1.0 TU_c. The sensitivity of the test organisms to a reference toxicant shall be determined concurrently with each batch of bioassay tests and reported with the test results.

Chronic toxicity shall be expressed and reported as toxic units, where: $TU_c = 100/NOEC$

The No Observable Effect Concentration (NOEC) is expressed as the maximum percent effluent/receiving water that causes no observable effect on a test organism, as determined by the result of a critical life stage toxicity test.

Except with prior approval from the Regional Board (Executive Officer) and USEPA, ammonia shall not be removed from the bioassay samples. The wastewater used for the toxicity test shall be analyzed for ammonia, and the result , along with an interpretation, shall be submitted with the toxicity data. If the test result is greater than the permit limitation, parallel tests of 100% effluent without ammonia removal and 100% effluent with ammonia removed shall be conducted.

7/ The recovery of free cyanide from metal complexes must be comparable to that achieved by Standard Methods 412 F, G, and H (Standard Methods for the Examination of Water and Wastewater; Joint Editorial Board, American Public Health Association, American Water Works Association, and Water Pollution Control Federation [Water Environment Federation]; Most recent edition).

8/ ENDRIN shall mean the sum of endrin and endrin aldehyde.

9/ DDT shall mean the sum of the p,p' and o,p' isomers of DDT, DDD, and DDE.

10/ PAHs (polynuclear aromatic hydrocarbons) shall mean the sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,12-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[ah]anthracene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene, and pyrene.

11/ PCBs (polychlorinated biphenyls) shall mean the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260.

12/ HALOMETHANES shall mean the sum of bromoform, chloroform, bromomethane, chloromethane, chlorodibromomethane, and dichlorobromomethane.

13/ For volatile organics, grab samples shall be collected instead of 24-hour composite.

14/ Radioactivity determinations of gross and net beta activity, in picocuries per liter, shall be made within 48 hours following preparation of composite samples. The overall efficiency of the counting system, size of sample and counting time shall be such that radioactivity can be determined to a sensitivity of ten picocuries per liter with a 95% confidence limit not to exceed 50 percent.

15/ By methods specified in "Methods for Measuring the Acute Toxicity of Effluent to Freshwater and Marine Organisms" (March 1985, EPA/600/4-85/013). Submission of bioassay results should include the information noted on pages 45 through 49 of the "Methods" where appropriate. The fathead minnow (Pimephales promelas) shall be used as the test species.

Except with prior approval from the LA Regional Board (Executive Officer) and USEPA, ammonia shall not be removed from the bioassay samples. The wastewater used for the toxicity test shall be analyzed for ammonia, and the result, along with an interpretation, shall be submitted with the toxicity data. If the test result is greater than the permit limitation, parallel tests of

100% effluent without ammonia removal and 100% effluent with ammonia removed shall be conducted.

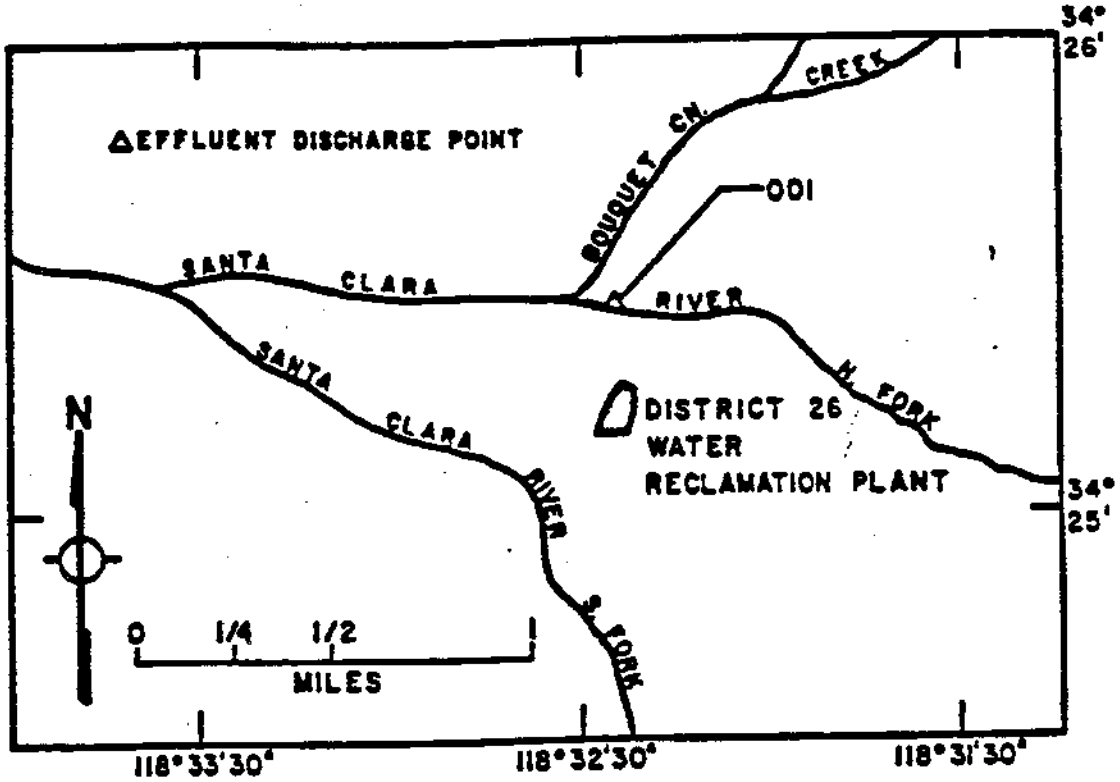
16/ In lieu of conducting the standard acute toxicity test with fathead minnow, the Discharger may elect to report the results from the first 48 hours of the chronic toxicity test as acute toxicity test results.

Ordered by: Richard A. Harris for
ROBERT P. GHIRELLI, D.Env.
Executive Officer

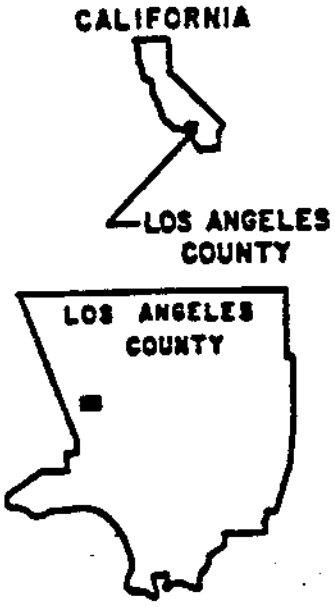
Date: June 12, 1995

/hdn

FIGURE 1



SOURCE: USGS QUADRANGLE MAP - NEWHALL



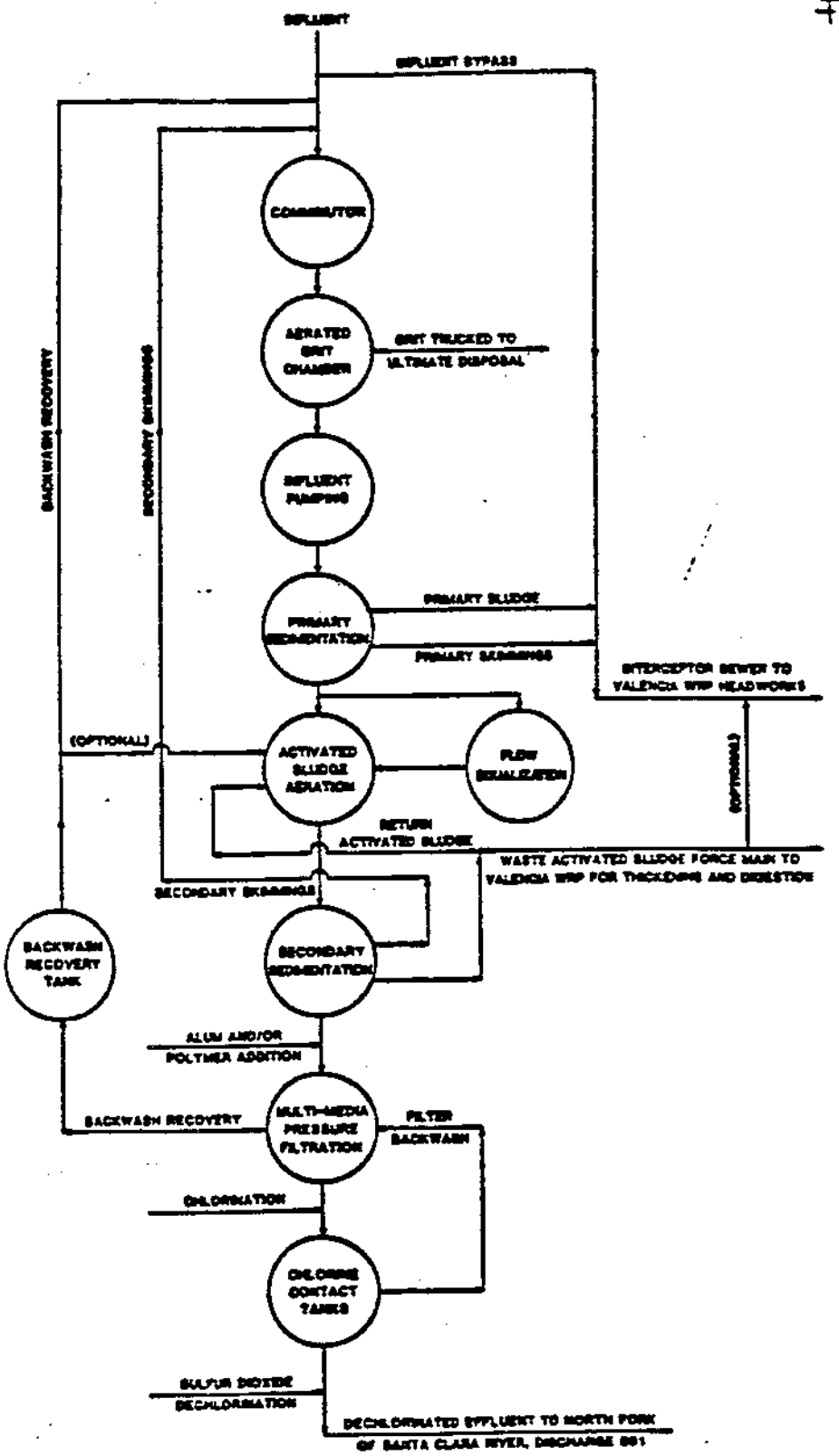
LOCATION MAP

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

SAUGUS WRP-SAUGUS, CA.

FEBRUARY 1994

FIGURE 2



SCHEMATIC OF WASTEWATER FLOW

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

SAUGUS WRP – SAUGUS, CA.

FEBRUARY 1994

STATE OF CALIFORNIA—ENVIRONMENTAL PROTECTION AGENCY

PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
11 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500
FAX: (213) 266-7600

June 20, 1995

Mr. Charles W. Carry
Chief Engineer and General Manager
County Sanitation Districts of Los Angeles County
1955 Workman Mill Road
Whittier, CA 90607-4998

WASTE DISCHARGE REQUIREMENTS, VALENCIA WATER RECLAMATION PLANT
(NPDES Permit No. CA0054216, Compliance File No. CI-4993)

Our letter dated May 4, 1995, transmitted tentative requirements for your discharge of treated municipal and industrial wastewater from the subject facility to Santa Clara River.

Pursuant to Division 7 of the California Water Code, this Regional Board at a public hearing held on June 12, 1995, reviewed the tentative requirements, considered all factors in the case, and adopted Order No. 95-081 (copy attached) relative to this waste discharge. This Order serves as a permit under the National Pollutant Discharge Elimination System (NPDES), and expires on May 10, 2000. Section 13376 of the California Water Code requires that an application for a new permit must be filed at least 180 days before the expiration date.

The "Monitoring and Reporting Program" requires you to implement the monitoring program on the effective date of this Order. Your first monitoring report is due by September 15, 1995. All monitoring reports should be sent to the Regional Board, ATTN: Technical Support Unit.

Please reference all technical and monitoring reports to our Compliance File No. 4993. We would appreciate it if you would not combine other reports, such as progress or technical, with your monitoring reports but would submit each type of report as a separate document.

To save printing and postage costs, the Standard Provisions (Attachment N), the USEPA Published MDL List (Attachment 1), the Ammonia Tables 3-2 and 3-4 (Attachment 2), the Requirements for the Pretreatment Annual Report (Attachment 3), the Stormwater Monitoring and Reporting Program (Attachment T-2), and the State Water Resources Control Board's General NPDES permits for discharge of storm water associated with industrial activity (Order No. 91-13-DWQ, as amended by Order No. 92-12-DWQ, Attachment S-I) and

construction activity (Order No. 92-08-DWQ, Attachment S-C) are being sent only to the Discharger. These documents may be reviewed in our office or a copy will be mailed upon request.

If you have any questions, please contact Harry Nguyen at (213) 266-7618.

Joshua M. Workman

JOSHUA M. WORKMAN
Senior Water Resource
Control Engineer

Enclosure(s)

/hdn

cc: James Kassel, State Water Resources Control Board,
Division of Water Quality
Jorge Leon, State Water Resources Control Board,
Office of Chief Counsel
Department of Fish and Game, Region 5

Environmental Protection Agency, Region 9,
Permits/Pretreatment Section (W-5-1)
U.S. Army Corps of Engineers
NOAA, National Marine Fisheries Service
Department of Interior, U.S. Fish and Wildlife Service

Los Angeles County, Department of Public Works,
Waste Management Division
Los Angeles County, Department of Health Services
Ventura County Department of Environmental Health

South Coast Air Quality Management District

City of Santa Clarita

Santa Clarita County Water District
Newhall County Water District
Valencia Water Company
Surfriders Foundation
Heal the Bay

State of California
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

ORDER NO. 95-081

NPDES NO. CA0054216

WASTE DISCHARGE REQUIREMENTS FOR COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY (Valencia Water Reclamation Plant)

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board), finds:

1. County Sanitation Districts of Los Angeles County (hereinafter CSDLAC or Discharger) discharge treated wastewater from the Valencia Water Reclamation Plant (WRP) under waste discharge requirements contained in Order No. 89-129 (NPDES No. CA0054216), adopted by this Regional Board on December 4, 1989.

2. CSDLAC have filed a Report of Waste Discharge (RWD) and have applied for renewal of their waste discharge requirements and National Pollutant Discharge Elimination System (NPDES) permit. The RWD also includes information about the plant expansion. Completion of construction and operation of the additional facilities will be during the life of the permit in consideration; therefore, this permit reflects these changes in the plant capacity.

3. The Valencia WRP, located at 28185 The Old Road, Valencia, is a tertiary wastewater treatment plant with a design capacity of 11 million gallons per day (mgd). The plant design capacity will increase to 12.6 mgd after completing the construction of an additional aeration tank and secondary sedimentation tank and structural modifications of the existing secondary tanks damaged by the January 17, 1994, Northridge Earthquake. Treatment consists of comminution, primary sedimentation, flow equalization, activated sludge biological treatment, secondary sedimentation, coagulation, inert media filtration, chlorination and dechlorination. Waste activated sludge, concentrated by air floatation, is blended with primary sludge and is anaerobically digested.

   The Valencia WRP is a part of CSDLAC's regional system, known as the Santa Clarita Joint Sewerage System, which combines two water reclamation plants: Valencia WRP (District No. 32) and

Saugus WRP (District No. 26). The regional system allows sludge and excess flows from the Saugus WRP to be diverted to the Valencia WRP for treatment and disposal.

Figures 1 and 2 show the location of the plant and the schematic of wastewater flow.

4. The Valencia WRP discharges tertiary treated municipal and industrial wastewater into the Santa Clara River, a water of the United States, through Discharge Serial No. 001 (Latitude 34°25'47", Longitude 118°35'27"). The Discharge Serial No. 001 is located 2,000 feet downstream from The Old Road Bridge, above the estuary.

5. The RWD describes the 1993 discharge as follows:

Constituent	Unit	Effluent Annual Average
Flow	mgd	9.02
pH	pH unit	7.01
Temperature	°F	74-79
BOD	mg/l	7
Chemical oxygen demand	mg/l	40
Suspended solids	mg/l	< 3
Total dissolved solids	mg/l	821

6. The U.S. Environmental Protection Agency (USEPA) and the Regional Board have classified this discharge as a major discharge.

7. A portion of the treated effluent is reclaimed for landscape irrigation and is regulated under Order No. 87-48, adopted by this Board on April 27, 1987.

8. Digested biosolids and solids separated by screening are combined, dewatered by filter press, and then land applied for agricultural purposes with option of landfill disposal. The grit is dried and currently disposed of at the Chiquita Canyon Landfill.

9. The Valencia WRP is currently undergoing various expansions. The Stage-IV Expansion, which increased the plant design capacity from 7.5 mgd to 11 mgd, was completed in November 1994. After the January 17, 1994, Northridge Earthquake, an additional aeration tank and sedimentation tank are being constructed to accommodate modifications/repairs of the damaged existing tanks. After the completion of the modifications, expected in May 1996, the plant design capacity will increase to 12.6 mgd. The Stage-V Expansion, currently

being designed, will further increase the plant capacity. The exact capacity increase is undetermined at this time because CSDLAC have not fully evaluated the benefits of flow equalization. Construction is scheduled to be completed by January 1997. The solids processing expansion, which would provide additional solids handling for the plant Stage-V Expansion, is also being designed and the construction is scheduled to be completed by July 1997.

After the Stage-IV expansion, the plant has 6 influent pumps, 9 primary sedimentation tanks, 2 primary effluent flow equalization basins, 6 aeration tanks, 7 final sedimentation tanks, 3 filter feed pumps, 8 pressure filters, 3 chlorine contact tanks, 3 dissolved air floatation units, and 3 flares.

10. The Board adopted a revised Water Quality Control Plan for the Santa Clara River Basin (4A) on June 13, 1994. The plan contains water quality objectives for the Santa Clara River.

11. The beneficial uses of the receiving water (Santa Clara River) are: (a) potential - municipal and domestic water supply; (b) existing - industrial service and process supply, agricultural supply, groundwater recharge, freshwater replenishment, contact and non-contact water recreation, warm freshwater habitat, wildlife habitat, preservation of rare and endangered species, migration of aquatic organisms (downstream from the boundary of the hydrologic areas 403.40 and 403.50), and wetland habitat.

12. There is public contact in the downstream areas; hence, the quality of wastewater discharged to the Santa Clara River must be such that no health hazard is created.

13. In 1993, the chloride concentrations of the final effluent ranged from 112 mg/l to 170 mg/l (annual average 142 mg/l). The daily maximum chloride limit in Order No. 89-129 was 100 mg/l. On March 26, 1990, the Board adopted Resolution No. 90-004, which stated that because of the long term drought in California, the Board would temporarily not enforce the chloride limit where violations were primarily due to increased chloride concentrations in imported water. However, if a discharge exceeds the chloride limitation, Resolution No. 90-004 requires the discharger to take measures to reduce chlorides in the waste discharge. CSDLAC have fully complied with this provision and have not exceeded the interim limits and guidelines for chloride contained in Resolution No. 90-004.

14. This discharge is subject to USEPA's 304(l) regulations which prescribe biological and other laboratory testing procedures and toxicity limits, particularly chronic toxicity, for the implementation of USEPA's "Policy for the Development of Water Quality-based Permit Limitations for Toxic Pollutants" (49 FR 9016, dated March 9, 1984).

15. To implement Section 405(d) of the Clean Water Act, on February 19, 1993, USEPA promulgated 40 CFR part 503 to regulate the use and disposal of municipal sewage sludge. This permit implements the regulations and it is the responsibility of the discharger to comply with said regulations, which are enforceable by USEPA.

16. Pursuant to Section 402(p) of the Clean Water Act and 40 CFR Parts 122, 123, and 124, the State Water Resources Control Board (State Board) adopted a general NPDES permit to regulate stormwater discharges associated with industrial activity (State Board Order No. 91-13-DWQ adopted in November 1991, amended by Order No. 92-12-DWQ adopted in September 1992) and construction activity (State Board Order No. 92-008-DWQ adopted in August 1992). Stormwater discharges from Valencia WRP are subject to requirements under these general permits.

17. Pursuant to 40 CFR Part 403, CSDLAC developed and have implemented a USEPA approved industrial wastewater pretreatment program.

18. Effluent limitations, national standards of performance, toxic and pretreatment effluent standards, regulations, requirements, and/or guidelines established pursuant to Sections 208(b), 301, 302, 303(d), 304, 306, 307, and 405 of the Clean water Act, and amendments thereto, are applicable to the discharges.

19. Except for constituents imposed in the previous permit, no numerical limit is prescribed for any toxic constituent that is consistently not detectable in the effluent and where it has been determined that there is a very low probability of causing or contributing to excursions in water quality standards. A narrative limit to comply with all water quality objectives is provided in lieu of such numerical limits.

20. The requirements contained in this Order are based on the Basin Plan, other Federal and State plans, policies, guidelines, and best engineering judgment; and, as they are met, will be in conformance with the goals of the aforementioned water quality control plans and will protect and maintain existing beneficial uses of the receiving waters.

21. The Discharger's monitoring data during 1989-1994 consistently showed high effluent quality. To maintain the plant performance, effluent quality performance goals are prescribed in this Order. This approach requires the Discharger to maintain its treatment efficiency, while recognizing normal variations in treatment plant operations, influent quality, and sampling and analytical techniques. However, this approach does not address substantial changes in plant operations that may occur in the future and could affect the quality of the treated effluent. As such, the performance goals may be modified by the Executive Officer, if warranted.

    For pollutants which have been routinely detected in the effluent, the performance goals are statistically set at the 95th percentile of the 1989-1994 performance data. At the 95th percentile, it is expected that one sample in twenty would exceed the goal in the long term.

    For other pollutants whose effluent monitoring data have consistently showed non-detectable levels or occasionally detected at levels less than the Practical Quantitation Level (PQL), the effluent quality performance goals are set at the PQL. The PQL is determined by multiplying the USEPA published method detection limit (MDL) or the Discharger's MDL approved by the Executive Officer with the factor five (5) for carcinogens and ten (10) for non-carcinogens.

22. The issuance of waste discharge requirements for this discharge is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code (California Environmental Quality Act) in accordance with Water Code Section 13389.

The Regional Board has notified the discharger and interested agencies and persons of its intent to issue waste discharge requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.

The Regional Board, in a public hearing, heard and considered all comments pertaining to the discharge and to the tentative requirements.

This Order shall serve as a National Pollutant Discharge Elimination System permit pursuant to Section 402 of the Federal Clean Water Act or amendments thereto, and shall take effect at the end of ten days from the date of its adoption provided the Regional Administrator, USEPA, has no objections.

IT IS HEREBY ORDERED that County Sanitation Districts of Los Angeles County, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Federal Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

I. DISCHARGE REQUIREMENTS

A. Effluent Limitations

1. Wastes discharged shall be limited to treated municipal and industrial wastewater only, as proposed.

2. The pH of wastes discharged shall at all times be within the range of 6.0 and 9.0.

3. The temperature of wastes discharged shall not exceed 100°F.

4. The discharge of an effluent from Discharge Serial No. 001 with constituents in excess of the following limits is prohibited:

a. Conventional and nonconventional pollutants:

		Discharge Limitations		
Constituent	Units	30-day Average[1]	7-day Average[1]	Daily Maximum[2]
BOD_5 20°C	mg/l	20	30	45
	lbs/day[3]	1,835	2,752	4,128
Suspended solids	mg/l	15	40	45
	lbs/day[3]	1,376	3,670	4,128
Settleable solids	ml/l	0.1	---	0.3
Oil and grease	mg/l	10	---	15
	lbs/day[3]	917	---	1,376
Total dissolved solids	mg/l	---	---	1,000
	lbs/day[3]	---	---	91,740
Sulfate	mg/l	---	---	400
	lbs/day[3]	---	---	36,696
Chloride[4]	mg/l	---	---	100
	lbs/day[3]	---	---	9,174

Constituent	Units	Discharge Limitations Daily Maximum[2/]
Boron	mg/l	1.5
	lbs/day[3/]	138
Nitrate + Nitrite (as Nitrogen)	mg/l	10
	lbs/day[3/]	917
Fluoride	mg/l	1.6
	lbs/day[3/]	147
Detergents (as MBAS)	mg/l	0.5
	lbs/day[3/]	46

1/ As defined in Standard Provisions, Attachment N.

2/ Except for grab samples, the daily maximum effluent concentration limit shall apply to flow-weighted 24-hour composite samples.

3/ Based on the plant design flow rate of 11 mgd. The mass discharge rate limitations will accordingly be modified upon certification and approval of increased treatment capacity. During events such as storms in which the flow exceeds the plant design capacity, the mass discharge rate limitations will be tabulated using the same concentration limits and the actual flow rates.

4/ In accordance with the Resolution 90-004, the chloride limitation shall not be considered to be violated unless the effluent concentrations of chlorides exceed 250 mg/l or water supply concentrations plus 85 mg/l, whichever is less.

b. Toxic pollutants:

Constituent	Units	Discharge Limitations 30-day Average[5/]
Antimony	µg/l	6[6/]
	lbs/day[3/]	0.550
Arsenic	µg/l	50[6/]
	lbs/day[3/]	4.59
Barium	µg/l	1,000[6/]
	lbs/day[3/]	91.7
Beryllium	µg/l	4[6/]
	lbs/day[3/]	0.367
Cadmium	µg/l	5[6/]
	lbs/day[3/]	0.459

Constituent	Units	Discharge Limitations 30-day Average[5]
Chromium (VI)[7]	µg/l	50[6]
	lbs/day[3]	4.59
Iron	µg/l	300[6]
	lbs/day[3]	27.5
Lead	µg/l	50[6]
	lbs/day[3]	4.59
Mercury	µg/l	2[6]
	lbs/day[3]	0.183
Nickel	µg/l	100[6]
	lbs/day[3]	9.17
Selenium	µg/l	10[6]
	lbs/day[3]	0.917
Silver	µg/l	50[6]
	lbs/day[3]	4.59
Zinc	µg/l	5,000[6]
	lbs/day[3]	459
Cyanide[8]	µg/l	5.2
	lbs/day[3]	0.477
Endrin[9]	µg/l	2
	lbs/day[3]	0.183
RHC-gamma → Lindane	µg/l	0.2
	lbs/day[3]	0.0183
Methoxychlor	µg/l	40
	lbs/day[3]	3.67
Toxaphene	µg/l	3
	lbs/day[3]	0.275
2,4-D	µg/l	70
	lbs/day[3]	6.42
2,4,5-TP (Silvex)	µg/l	10
	lbs/day[3]	0.917

Constituent	Units	Discharge Limitations 30-day Average[5/]
Halomethanes[10/]	µg/l	100
	lbs/day[3/]	9.17
Tetrachloroethylene	µg/l	5
	lbs/day[3/]	0.459
Carbon tetrachloride	µg/l	0.5
	lbs/day[3/]	0.0459
1,1,1-Trichloroethane	µg/l	200
	lbs/day[3/]	18.35
p-Dichlorobenzene	µg/l	5
	lbs/day[3/]	0.459
Di(2-ethylhexyl) phthalate	µg/l	4
	lbs/day[3/]	0.367

5/ Compliance may be determined from a single analysis or from the average of the initial analysis and three additional analyses taken one week apart once the results of the initial analysis are obtained.

6/ Based on total recoverable metals. These limits may be modified to total dissolved metals if the Discharger requests and has conducted a study on the water-effect ratio (WER) according to the USEPA guidance document and/or state protocols, if available.

7/ The Discharger may, at his option, meet this limitation as total chromium.

8/ The recovery of free cyanide from metal complexes must be comparable to that achieved by Standard Methods 412 F, G, and H (Standard Methods for the Examination of Water and Wastewater; Joint Editorial Board, American Public Health Association, American Water Works Association, and Water Pollution Control Federation [Water Environment Federation]; Most recent edition).

9/ ENDRIN shall mean the sum of endrin and endrin aldehyde.

10/ HALOMETHANES shall mean the sum of bromoform, chloroform, bromomethane, chloromethane, chlorodibromomethane, and dichlorobromomethane.

5. Radioactivity of the wastes discharged shall not exceed the limits specified in Title 22, Chapter 15, Article 5, Section 64443, of the California Code of Regulations, or subsequent revisions.

6. The arithmetic mean of BOD_5 20°C and suspended solids values, by weight, for effluent samples collected in a period of 30 consecutive calendar days shall not exceed

15 percent of the arithmetic mean of values, by weight, for influent samples collected at approximately the same time during the same period.

7. The wastes discharged to water courses shall at all times be adequately disinfected. For the purpose of this requirement, the wastes shall be considered adequately disinfected if the median number of coliform organisms at some point in the treatment process does not exceed 2.2 per 100 milliliters, and the number of coliform organisms does not exceed 23 per 100 milliliters in more than one sample within any 30-day period. The median value shall be determined from the bacteriological results of the last seven (7) days for which analysis have been completed. Samples shall be collected at a time when wastewater flow and characteristics are most demanding on treatment facilities and disinfection processes.

8. The wastes discharged to water courses shall have received treatment equivalent to that of filtered wastewater. Filtered wastewater means oxidized and coagulated wastewater which has been passed through natural undisturbed soils or filter media, such as sand or diatomaceous earth, so that the turbidity of the filtered wastewater does not exceed (a) a daily average of 2 Nephelometric turbidity units (NTU's), (b) and does not exceed 5 NTU's more than 5 percent of the time (72 minutes) during any 24 hour period.

   "Oxidized wastewater" means wastewater in which the organic matter has been stabilized, is nonputrescible, and contains dissolved oxygen. "Coagulated wastewater" means oxidized wastewater in which colloidal and finely divided suspended matter have been destabilized and agglomerated upstream of a filter by the addition of suitable floc-forming chemicals.

   NTU means a measurement of turbidity as determined by the ratio of the intensity of light scattered by the sample to the intensity of incident light using approved laboratory methods.

9. Acute Toxicity Limitation:

   a. The acute toxicity of the effluent shall be such that the average survival in the undiluted effluent for any three (3) consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test producing less than 70% survival.

b. If the discharge consistently exceeds the acute toxicity limitation, a toxicity reduction evaluation (TRE) is required. The TRE shall include all reasonable steps to identify the source(s) of toxicity. Once the source of toxicity is identified, the Discharger shall take all reasonable steps necessary to reduce toxicity to the required level.

B. Effluent Quality Performance Goals

The Discharger shall make best efforts to maintain the following effluent quality goals. Any exceedance of any goal shall trigger an investigation by the Discharger on the cause of the exceedance. The Discharger shall report to the Regional Board on a quarterly basis any exceedance of any of these effluent quality goals. If exceedance of any particular goal persists on two succeeding quarterly monitoring periods, the Discharger shall submit with the second quarterly report the investigation results including but not limited to the description of the exceedance, cause(s) of the exceedance, and proposed corrective measures, if necessary. If the exceedance of any goal becomes chronic, the Discharger shall proceed to implement the proposed action plan to correct the exceedance. The Executive Officer may modify the action plan.

The Executive Officer may modify any of the performance goals if the Discharger requests and has demonstrated that the change is warranted.

		Effluent Quality Performance Goals	
Constituent	Units	30-day Average	Daily Maximum
BOD_5 20°C	mg/l	11[11/]	---
Suspended solids	mg/l	4[11/]	---
Arsenic	µg/l	---	5[11/]
Cadmium	µg/l	---	5[11/]
Chromium (VI)[7/]	µg/l	---	30[11/]
Copper	µg/l	---	30[11/]
Lead	µg/l	---	48[11/]
Mercury	µg/l	---	PQL[12/]
Nickel	µg/l	---	42[11/]
Selenium	µg/l	---	2[11/]
Silver	µg/l	---	8[11/]
Zinc	µg/l	---	125[11/]
Phenol	µg/l	---	20[11/]
Chloroform	µg/l	---	16[11/]
Bromodichloromethane	µg/l	---	3[11/]

Constituent	Units	Effluent Quality Performance Goals 30-day Average	Daily Maximum
Dibromochloromethane	µg/l	---	2[11/]
Bromoform	µg/l	---	1[11/]
1,1,1-Trichloroethane	µg/l	---	4[11/]
Tetrachloroethylene	µg/l	---	3[11/]
Remaining priority pollutants	µg/l	---	PQL[12/]

11/ Numerical effluent quality performance goals were derived statistically using effluent performance data for the period of 1989 through 1994. Effluent values (X_i) are assumed to be lognormally distributed. The use of logarithmic transformation equation, $Y_i = Ln\ (X_i)$, results in effluent values (Y_i) that are normally distributed. Effluent quality performance goals are determined by the equation:

$$X_{.95} = \exp\ [u_n + (Z_{.95})\ (\sigma_n)]$$

where $X_{.95}$ = discharge effluent quality performance goal at the 95th percentile of the normal distribution.

u_n = mean of the distribution of the average of n values transformed.

$Z_{.95}$ = z-value from the Table of Areas under the Standard Normal Curve, equal to 1.645 at 95 percent.

σ_n = standard deviation of the distribution of the average of n values transformed.

Exp is an exponential to the base "e" value = 2.7183

12/ PQL (Practical Quantitation Limit) shall be determined by multiplying the USEPA published method detection limit (MDL) (Attachment 1) or the Discharger's MDL approved by the Executive Officer with the factor five (5) for carcinogens and ten (10) for non-carcinogens.

C. Receiving Water Limitations

1. The temperature of the receiving water at any time or place and within any given 24-hour period shall not be increased by more than 5°F (or above 70°F if the ambient receiving water temperature is less than 60°F) as a result of the wastes discharged.

2. The pH of the receiving water shall not be depressed below 6.5 or raised above 8.5 as a result of wastes discharged. Ambient pH levels shall not be changed more than 0.5 units from natural conditions.

3. The dissolved oxygen in the receiving water shall not be depressed below 5 mg/l as a result of the wastes discharged.

4. The residual chlorine in the receiving water shall not exceed 0.1 mg/l as a result of the wastes discharged.

5. The fecal coliform concentration in the receiving water shall not exceed a log mean of 200/100 ml (based on a minimum of not less than four samples for any 30-day period), nor shall more than 10 % of total samples during any 30-day period exceed 400/100 ml as a result of the wastes discharged.

6. The wastes discharged shall not produce concentrations of toxic substances in the receiving water that are toxic to or cause detrimental physiological responses in human, animal, or aquatic life.

7. The wastes discharged shall not contain substances that result in increases in the BOD which adversely affect beneficial uses of the receiving waters.

8. The wastes discharged shall not contain biostimulatory substances in concentrations that promote aquatic growth to the extent that such growth causes nuisance or adversely affects beneficial uses of the receiving waters.

9. The wastes discharged shall not cause the receiving waters to contain any substance in concentrations that adversely affect any designated beneficial use.

10. The wastes discharged shall not alter the color of the receiving waters; create a visual contrast with the natural appearance of the water; nor cause aesthetically undesirable discoloration of the receiving waters.

11. The wastes discharged shall not degrade surface water communities and populations, including vertebrate, invertebrate, and plant species.

12. The wastes discharged shall not result in problems due to breeding of mosquitos, gnats, black flies, midges, or other pests.

13. The wastes discharged shall not result in visible floating particulates, foams, and oil and grease in the receiving waters.

14. The wastes discharged shall not contain any individual pesticide or combination of pesticides in concentrations that adversely affect beneficial uses of the receiving

waters. There shall be no increase in pesticide concentrations found in bottom sediments or aquatic life.

15. The wastes discharged shall not alter the natural taste, odor, and color of fish, shellfish, or other surface water resources used for human consumption.

16. The wastes discharged shall not increase the turbidity of the receiving waters to the extent that such an increase causes nuisance or adversely affects beneficial uses.

D. Receiving Water Objective

1. To protect aquatic life, ammonia in receiving waters shall not exceed concentrations specified in Tables 3-2 and 3-4 of the Basin Plan (Attachment 2) as a result of the wastes discharged, subject to the following conditions:

   The Discharger shall have up to 8 years following the adoption of this Order (i) to make the necessary adjustments/improvements to meet these objectives; or (ii) to conduct studies leading to an approved less restrictive site specific objective for ammonia. If it is determined that there is an immediate threat or impairment of beneficial uses due to ammonia, the objectives in Tables 3-2 and 3-4 of Attachment 2 shall apply and the timing of compliance will be determined on a case-by-case basis.

2. To protect underlying groundwater basins, ammonia shall not be present in the wastes discharged at levels that when oxidized to nitrate will pose a threat to ground water.

3. There shall be no chronic toxicity in ambient waters as a result of wastes discharged.

   If the chronic toxicity in the receiving water downstream of the discharge point consistently exceeds 1.0 TU_c in a critical life stage test, the Discharger shall determine if the cause of the exceedance is the wastes discharged. If it is determined that the wastes discharged caused the exceedance, the Discharger shall conduct a toxicity reduction evaluation (TRE). The TRE shall include all reasonable steps to identify the sources of toxicity. Once the sources are identified, the Discharger shall take all reasonable steps to reduce toxicity to meet the objective.

II. SLUDGE REQUIREMENTS

For biosolids management, the Discharger must comply with all requirements of 40 CFR Parts 257, 258, 501, and 503, including all monitoring, recordkeeping, and reporting requirements.

Since the State of California, hence the Regional Board, has not been delegated the authority to implement the sludge program, enforcement of the sludge requirements contained in this Order and permit shall be the sole responsibility of USEPA.

III. PRETREATMENT REQUIREMENTS

1. This Order includes the discharger's pretreatment program as previously submitted to this Regional Board. Any change to the program shall be reported to the Regional Board and USEPA in writing and shall not become effective until approved by the Executive Officer.

2. The Discharger shall implement and enforce its approved pretreatment program. The Discharger shall be responsible and liable for the performance of all pretreatment requirements contained in Federal Regulations 40 CFR Part 403 including subsequent regulatory revisions thereof. Where Part 403 or subsequent revision places mandatory actions upon the Discharger as Control Authority but does not specify a timetable for completion of the actions, the Discharger shall complete the required actions within six months from the effective date of this Order or the effective date of the Part 403 revisions, whichever comes later. For violations of pretreatment requirements, the Discharger shall be subject to enforcement actions, penalties, fines, and other remedies by the Regional Board, USEPA, or other appropriate parties, as provided in the Clean Water Act. The Regional Board or USEPA may initiate enforcement action against an industrial user for non-compliance with acceptable standards and requirements as provided in the Clean Water Act and/or the California Water Code.

3. The Discharger shall enforce the requirements promulgated under Sections 307(b), 307(c), 307(d), and 402(b) of the Federal Clean Water Act. The Discharger shall cause industrial users subject to the Federal Categorical Standards to achieve compliance no later than the date specified in those requirements or, in the case of a new industrial user, upon commencement of the discharge.

4. The Discharger shall perform the pretreatment functions as required in Federal Regulations 40 CFR Part 403 including, but not limited to:

   a. Implement the necessary legal authorities as provided in 40 CFR 403.8(f)(1);

   b. Enforce the pretreatment requirements under 40 CFR 403.5 and 403.6;

   c. Implement the programmatic functions as provided in 40 CFR 403.8(f)(2); and

   d. Provide the requisite funding of personnel to implement the pretreatment program as provided in 40 CFR 403.8(f)(3).

5. The Discharger shall submit annually a report to the Regional Board, the State Board, and the Environmental Protection Agency, Region 9, describing the discharger's pretreatment activities over the previous twelve months. In the event the discharger is not in compliance with any conditions or requirements of this permit, then the discharger will also include the reasons for non-compliance and state how and when the discharger shall comply with such conditions and requirements. This annual report is due on April 1 of each year and shall contain, but not be limited to, the information required in the attached "Requirements for Pretreatment Annual Report." (Attachment 3), or an approved revised version thereof.

IV. <u>REQUIREMENTS AND PROVISIONS</u>

1. Treatment capacity of 12.6 mgd or greater shall not become effective until the Discharger has submitted a report to the Regional Board certifying that treatment capacity is available to treat up to 12.6 mgd or greater of wastewater.

2. Discharge of wastes to any point other than specifically described in this order and permit is prohibited and constitute a violation thereof.

3. The Discharger shall comply with all applicable effluent limitations, national standards of performance, toxic and pretreatment effluent standards, and all federal regulations established pursuant to Sections 301, 302, 303(d), 304, 306, 307, 316, and 405 of the Clean Water Act and amendments thereto.

4. This Order includes the attached Monitoring and Reporting Program (Attachment T). If there is any conflict between provisions stated in the Monitoring and Reporting Program and the Standard Provisions, those provisions stated in the former prevail.

5. This Order includes the attached "Standard Provisions and General Monitoring and Reporting Requirements" (Standard Provisions, Attachment N). If there is any conflict between provisions stated hereinbefore and the attached "Standard Provisions", those provisions stated hereinbefore prevail.

6. This Order includes the requirements of the State Water Resources Control Board's General NPDES permits for discharges of storm water associated with industrial activity (Order No. 91-13-DWQ, as amended by Order No. 92-12-DWQ, Attachment S-I) and construction activity (Order No. 92-08-DWQ, Attachment S-C) and amendments thereto.

7. The Discharger shall provide standby or emergency power facilities and/or storage capacity or other means so that in the event of plant upset or outage due to power failure or other cause, discharge of raw or inadequately treated sewage does not occur.

8. The Discharger shall protect the facility from inundation which could occur as a result of a flood having a predicted frequency of once in 100 years.

9. This Order may be modified, revoked, and reissued or terminated in accordance with the provisions of 40 CFR Parts 122.44, 122.62, 122.63, 122.64, 125.62, and 125.64.

V. EXPIRATION DATE

This Order expires on May 10, 2000.

The Discharger must file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations, not later than 180 days in advance of the expiration date as application for issuance of new waste discharge requirements.

VI. RESCISSION

Order No. 89-129, adopted by this Board on December 4, 1989, is hereby rescinded.

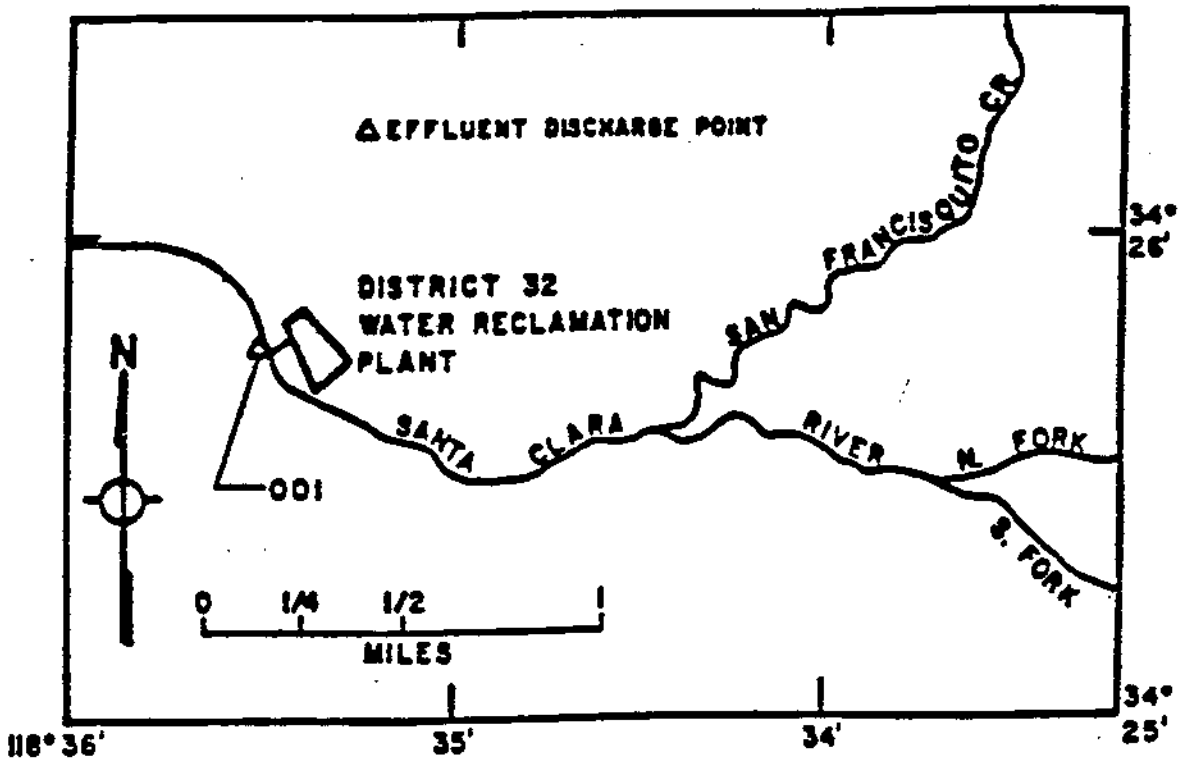
CSDLAC, Valencia WRP NPDES No. CA0054216
Order No. 95-081

I, Robert P. Ghirelli, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, Los Angeles Region on June 12, 1995.

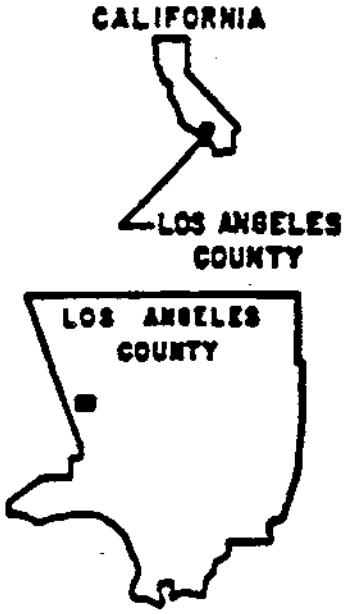
ROBERT P. GHIRELLI, D.Env.
Executive Officer

/hdn

FIGURE 1



SOURCE: USGS QUADRANGLE MAP - NEWHALL



LOCATION MAP

COUNTY SANITATION DISTRICTS OF
LOS ANGELES COUNTY

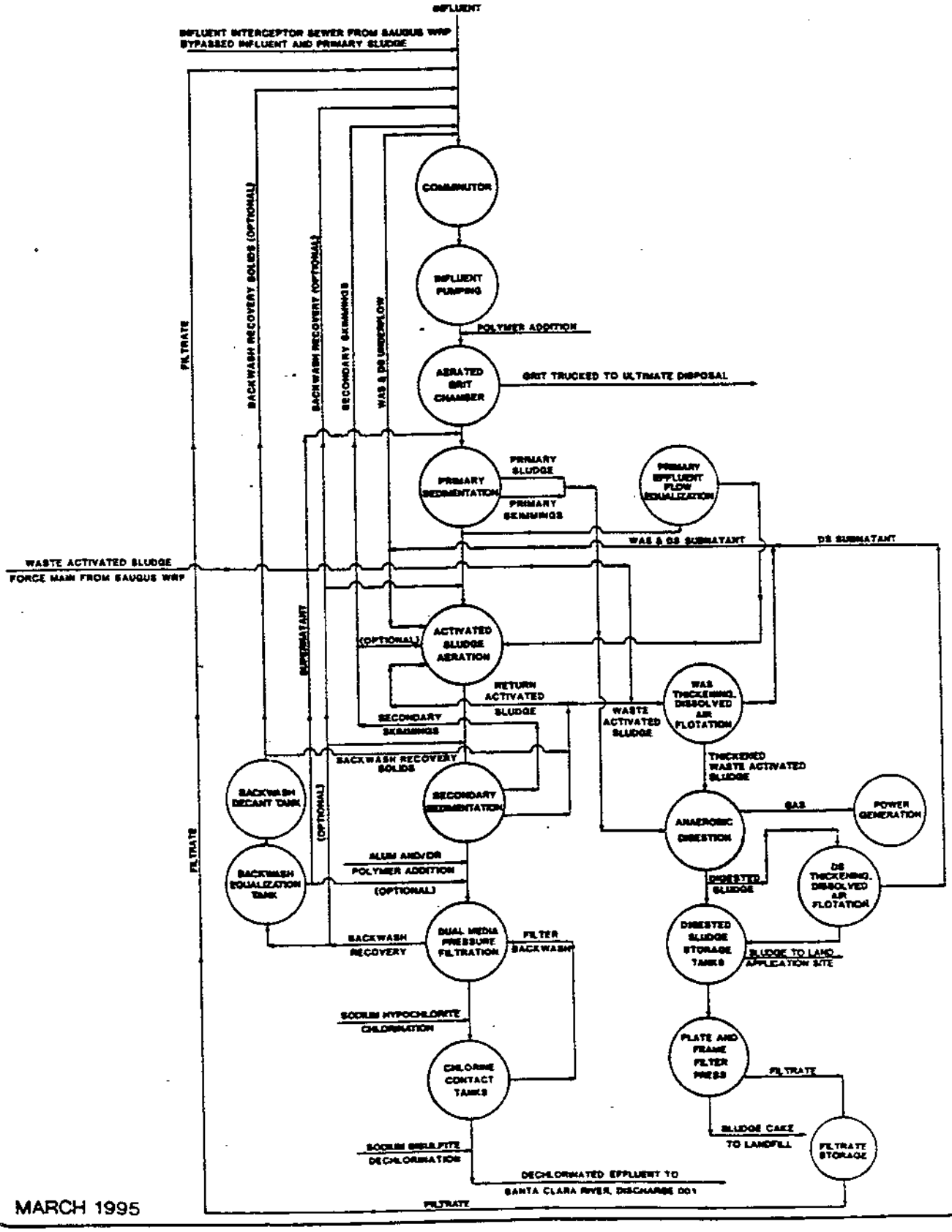
VALENCIA WRP-VALENCIA, CA.

FEBRUARY 1994 PAGE 1 OF 1

FIGURE 2

VALENCIA WRP

Process Schematic



MARCH 1995

State of California
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

MONITORING AND REPORTING PROGRAM NO. 4993
for
COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY
(Valencia Water Reclamation Plant)
(NPDES NO. CA0054216)

I. REPORTING REQUIREMENTS

The Discharger shall implement this monitoring program on the effective date of this Order. All monitoring reports shall be submitted monthly, by the fifteenth day of the second month following each monthly sampling period, addressed to the Regional Board, Attention: Technical Support. The first monitoring report under this Program is due by September 15, 1995, and will cover the monitoring period of July 1995. Quarterly monitoring shall be performed during the months of February, May, August and November. Semiannual monitoring shall be performed during the months of February and August. Annual monitoring shall be performed during the month of August.

The analysis shall specify the USEPA analytical method used and its Method Detection Limit (MDL). For the purpose of reporting compliance with effluent limitations, performance goals, receiving water limitations, analytical data shall be reported with an actual numerical value or "nondetected (ND)" with the MDL indicated for the analytical method used. The maximum allowed MDLs are those published by the USEPA (MDLs for priority pollutants are listed in Attachment 1). The Discharger shall not use a MDL higher than that published by the USEPA unless the Discharger can demonstrate that a particular detection limit is not attainable and obtains approval for a higher MDL from the Executive Officer.

The Discharger shall submit an annual report containing a discussion of the previous year's effluent and receiving water monitoring data, as well as graphical and tabular summaries of the data. This annual report is due by April 1st of the year following data collection.

The Discharger shall inform the Regional Board well in advance of any construction activity proposed that can potentially affect compliance with applicable requirements.

Revised June 12, 1995

II. REGIONAL MONITORING PROGRAM

1. Pursuant to the Code of Federal Regulations [40 CFR §122.41(j) and §122.48(b)], the monitoring program for a discharger receiving a National Pollutant Discharge Elimination System (NPDES) permit must determine compliance with NPDES permit terms and conditions, and demonstrate that State water quality standards are met.

2. Since compliance monitoring focuses on the effects of the point source discharge, it is not designed to assess impacts from other sources of pollution (e.g., non-point source runoff, aerial fallout) nor to evaluate the current status of important ecological resources on a regional basis.

   The Regional Board is planning to develop and implement a comprehensive monitoring program for each watershed in the region. The goal is to establish regional programs to address public health concerns, monitor trends in natural resources, assess regional impacts from all contaminant sources, and ensure protection of beneficial uses.

3. Substantial changes to the compliance monitoring program for the Valencia Water Reclamation Plant will be required to fulfill the goals of regional monitoring, while retaining the compliance monitoring component required to evaluate the potential impacts from the NPDES discharge. Revisions to the Valencia program will be made under the direction of USEPA and LA Regional Board as necessary to accomplish this goal, and may include a reduction or increase in the number of parameters to be monitored, the frequency of monitoring, or the number and size of samples collected.

4. Until such time when a regional monitoring program is developed, the Discharger shall perform the analyses described in the following monitoring program.

III. INFLUENT MONITORING REQUIREMENTS

(Footnotes on pages T-8 through T-11)

Influent monitoring is required to:

- determine compliance with NPDES permit conditions and water quality standards,

- assess treatment plant performance, and
- assess the effectiveness of the pretreatment program.

Sampling stations shall be established at each point of inflow to the sewage treatment plant and shall be located upstream of any in-plant return flows and where representative samples of the influent can be obtained. The date of sampling shall be reported with the analytical values determined.

Samples for influent $BOD_5$20°C and suspended solids shall be obtained on the same day that effluent $BOD_5$20°C and suspended solids samples are obtained in order to demonstrate percent removal.

Constituent	Units	Type of Sample	Minimum Frequency of Analysis
Flow	mgd	recorder/totalizer	continuous[1]
Suspended solids	mg/l	24-hour composite	weekly
$BOD_5$20°C	mg/l	24-hour composite	weekly
Chromium[2]	µg/l	24-hour composite	semiannually
Pesticides[3]	µg/l	24-hour composite	semiannually
EPA priority pollutants (excluding asbestos, Attachment T-1)	µg/l	24-hour composite	semiannually

IV. EFFLUENT MONITORING REQUIREMENTS
(Footnotes on pages T-8 through T-11)

Effluent monitoring is required to:

- determine compliance with NPDES permit conditions,
- identify operational problems and improve plant performance,
- provide information on wastewater characteristics and flows for use in interpreting water quality and biological data.

An effluent sampling station shall be established for each point of discharge and shall be located downstream of any in-plant return flows where representative samples of the effluent (after receiving all treatment) can be obtained. Effluent samples may be obtained at a single station provided that station is representative of the effluent quality at all discharge points. Any changes in sampling station locations shall be approved by the Executive Officer.

The following shall constitute the effluent monitoring program:

Constituent	Units	Type of Sample	Minimum Frequency of Analysis
Total waste flow	mgd	recorder	continuous[1]
Turbidity[4]	NTU	recorder	continuous[1]
Total residual chlorine	mg/l	recorder	continuous[1]
Temperature	°F	grab	daily
pH	pH units	grab	daily
Settleable solids	ml/l	grab	daily
Suspended solids	mg/l	24-hour composite	daily
Total coliforms[4]	MPN/100 ml	grab	daily
Oil and grease	mg/l	grab	weekly
BOD_5 20°C	mg/l	24-hour composite	weekly[5]
Total dissolved solids	mg/l	24-hour composite	monthly
Sulfate	mg/l	24-hour composite	monthly
Chloride	mg/l	24-hour composite	monthly
Ammonia nitrogen	mg/l	24-hour composite	monthly
Nitrate nitrogen	mg/l	24-hour composite	monthly
Nitrite nitrogen	mg/l	24-hour composite	monthly
Organic nitrogen	mg/l	24-hour composite	monthly
Total nitrogen	mg/l	24-hour composite	monthly
Boron	mg/l	24-hour composite	monthly
Fluoride	mg/l	24-hour composite	monthly
Detergents (as MBAS)	mg/l	24-hour composite	monthly
Chronic toxicity[6]	TU_c	24-hour composite	monthly
Antimony	µg/l	24-hour composite	quarterly
Arsenic	µg/l	24-hour composite	quarterly
Barium	µg/l	24-hour composite	quarterly
Beryllium	µg/l	24-hour composite	quarterly
Cadmium	µg/l	24-hour composite	quarterly
Chromium (VI)[2]	µg/l	24-hour composite	quarterly
Copper	µg/l	24-hour composite	quarterly
Iron	µg/l	24-hour composite	quarterly
Lead	µg/l	24-hour composite	quarterly
Mercury	µg/l	24-hour composite	quarterly
Nickel	µg/l	24-hour composite	quarterly
Selenium	µg/l	24-hour composite	quarterly
Silver	µg/l	24-hour composite	quarterly
Zinc	µg/l	24-hour composite	quarterly
Cyanide[7]	µg/l	grab	quarterly
Endrin[8]	µg/l	24-hour composite	quarterly
Lindane	µg/l	24-hour composite	quarterly
Methoxychlor	µg/l	24-hour composite	quarterly
Toxaphene	µg/l	24-hour composite	quarterly

Constituent	Units	Type of Sample	Minimum Frequency of Analysis
2,4-D	µg/l	24-hour composite	quarterly
2,4,5-TP (Silvex)	µg/l	24-hour composite	quarterly
Halomethanes[12]	µg/l	grab	quarterly
Tetrachloroethylene	µg/l	grab	quarterly
Carbon tetrachloride	µg/l	grab	quarterly
1,1,1-Trichloroethane	µg/l	grab	quarterly
p-Dichlorobenzene	µg/l	24-hour composite	quarterly
Di(2-ethylhexyl) phthalate	µg/l	24-hour composite	quarterly
Pesticides[3]	µg/l	24-hour composite	semiannually
DDT[9]	µg/l	24-hour composite	semiannually
PAHs[10]	µg/l	24-hour composite	semiannually
PCBs[11]	µg/l	24-hour composite	semiannually
Remaining EPA priority pollutants[13]	µg/l	24-hour composite (excluding asbestos)	semiannually
Radioactivity[14]	pCi/l	24-hour composite	semiannually
Acute toxicity[15]	TU_a	24-hour composite	annually[16]

V. SOLIDS HANDLING MONITORING REQUIREMENTS

A monthly report shall be provided, noting the moisture content, weight, and volume of screenings, sludges, grit, and other solids removed from the wastewater. The point(s) from which these wastes were obtained and the disposal sites to which waste solids are transported should be specified in the monthly reports.

A representative sample of biosolids shall be analyzed for priority pollutants and pesticides, at least semiannually. Samples shall typify the character of sludge or biosolids that is ready for ultimate disposal at a sanitary landfill. The biosolids shall be a composite sample of a minimum of 12 discrete samples taken at equal time intervals over the 24-hour period.

VI. RECEIVING WATER MONITORING REQUIREMENTS

(Footnotes on pages T-8 through T-11)

A. Receiving water stations shall be established at the following locations:

Station No.	Description
R-C	Santa Clara River, 300 feet upstream of point of discharge to river.
R-D	Santa Clara River, 300 feet downstream of point of discharge to river.
R-E	Santa Clara River, 1.6 miles upstream of Chiquita Canyon Road.

B. The following analyses shall be conducted on grab samples collected from each station:

Constituent	Units	Minimum Frequency of Analysis
Temperature	°F	weekly
pH	pH units	weekly
Total coliform	MPN/100 ml	weekly
Residual chlorine	mg/l	weekly
Dissolved oxygen	mg/l	weekly
Nitrate nitrogen	mg/l	quarterly
Nitrite nitrogen	mg/l	quarterly
Ammonia nitrogen	mg/l	quarterly
Organic nitrogen	mg/l	quarterly
Total nitrogen	mg/l	quarterly
Total phosphate	mg/l	quarterly
Total dissolved solids	mg/l	quarterly
Sulfate	mg/l	quarterly
Chlorides	mg/l	quarterly
Chronic toxicity[6]	TU_c	quarterly
Acute toxicity[15]	TU_a	annually
MBAS	mg/l	annually
Arsenic	µg/l	annually
Cadmium	µg/l	annually
Chromium	µg/l	annually
Copper	µg/l	annually
Lead	µg/l	annually
Mercury	µg/l	annually
Nickel	µg/l	annually
Zinc	µg/l	annually
Cyanide[7]	µg/l	annually
Phenolic compounds	µg/l	annually
PAHs[10]	µg/l	annually
PCBs[11]	µg/l	annually

1. In the event of a spill or bypass of raw or partially treated sewage into the Santa Clara River, total and fecal coliform analyses shall be made on grab samples collected at all potentially affected downstream receiving water and at least one unaffected upstream receiving water. Coliform samples shall be collected on the date of the spill or bypass, if possible, and daily on each of the following four days.

2. At the time of sampling, the following observations shall be made at all the sampling stations and the times of the observations shall be noted:
   a) Estimate of flow
   b) Odor of water
   c) Color of Water
   d) Occurrence of significant storm runoff (river only)
   e) Presence of floating solids (Type)
   f) Presence of any sludge banks or deposits, grease, oil, foam, or visible solids of waste origin
   g) Tide and wind conditions
   h) Presence of any aquatic plant growth, sessile or floating
   i) Any unusual occurrence

3. The time, date, and weather conditions at the time of sampling shall be reported.

4. The color of the effluent shall be contrasted with that of the receiving water and reported descriptively.

5. Receiving water samples shall not be taken during or within 48 hours following the flow of rainwater runoff in the Santa Clara River.

6. Weekly sampling may be omitted at stations R-C, R-D and R-E if weather and flow conditions would endanger personnel collecting receiving water samples. The monthly monitoring report shall note such occasions.

7. Weekly sampling may be omitted at Station R-C on any occasion when no flow is observed in the river. Monthly monitoring report shall note such occasions.

8. The results of receiving water monitoring and observations shall be submitted with the effluent monitoring reports.

VII. GROUNDWATER MONITORING

Underground receiving water sampling stations shall be established at well No. 4N/17W-14Q2.

The following analyses on grab samples shall constitute the groundwater monitoring program:

Constituent	Units	Minimum Frequency of Analysis
Nitrate - N plus Nitrite -N	mg/l	semi-annually
Total dissolved solids	mg/l	semi-annually
Chloride	mg/l	semi-annually
Sulfate	mg/l	semi-annually

The results of groundwater monitoring shall be submitted with the effluent monitoring reports.

VIII. STORM WATER MONITORING AND REPORTING

The Discharger shall implement the attached Storm Water Monitoring and Reporting Program (Attachment T-2).

IX. FOOTNOTES

1/ Where continuous monitoring of a constituent is required, the following shall be reported:

Total waste flow - Total daily flow and peak daily flow (24-hour basis);

Total chlorine residual - maximum daily value (24-hour basis);

Turbidity - Maximum daily value, total amount of time each day that turbidity exceeded five (5) turbidity units, the flow-proportioned average daily value, and the monthly mean value.

2/ For Cr(VI) analysis, the appropriate sampling and analytical method must be used.

3/ Pesticides are, for purposes of this Order, those six constituents referred to in 40 CFR Part 125.58 (m) (demeton, guthion, malathion, mirex, methoxychlor, and parathion).

4/ Coliform and turbidity samples shall be obtained at some point in the treatment process at a time when wastewater flow and characteristics are most demanding on the treatment facilities, filtration, and disinfection procedures.

5/ If any result of weekly BOD analysis yields 90% or greater of the 30-day average limit, the frequency of analyses shall be increased to daily within one week of knowledge of the test result for at least one month and compliance with the 7-day and 30-day average BOD limits is demonstrated; after which the frequency shall revert to weekly.

6/ Initial screening shall be conducted using a minimum of three test species with approved test protocols to determine the most sensitive test organism for chronic toxicity testing. The initial screening process shall be conducted for a minimum of three months, but not to exceed five months, to account for potential variability of the effluent/receiving water. If possible, the test species used during the screening process should include a fish, an invertebrate and an aquatic plant.

After the initial screening period, chronic toxicity testing may be limited to the most sensitive test species. However, the initial screening process shall be repeated annually, with a minimum of three test species with approved test protocols, to ensure use of the most sensitive species for chronic toxicity testing.

Dilution and control waters for the effluent should be obtained from an unaffected area of the receiving waters. Standard dilution water may be used if the above source exhibits toxicity greater than 1.0 TU_c. The sensitivity of the test organisms to a reference toxicant shall be determined concurrently with each batch of bioassay tests and reported with the test results.

Chronic toxicity shall be expressed and reported as toxic units, where: $TU_c = 100/NOEC$

The No Observable Effect Concentration (NOEC) is expressed as the maximum percent effluent/receiving water that causes no observable effect on a test organism, as determined by the result of a critical life stage toxicity test.

Except with prior approval from the Regional Board (Executive Officer) and USEPA, ammonia shall not be removed from the bioassay samples. The wastewater used for the toxicity test shall be analyzed for ammonia, and the result, along with an interpretation, shall be submitted with the toxicity data. If the test result is greater than the permit limitation, parallel tests of 100% effluent without ammonia removal and 100% effluent with ammonia removed shall be conducted.

7/ The recovery of free cyanide from metal complexes must be comparable to that achieved by Standard Methods 412 F, G, and H (Standard Methods for the Examination of Water and Wastewater; Joint Editorial Board, American Public Health Association, American Water Works Association, and Water Pollution Control Federation [Water Environment Federation]; Most recent edition).

8/ ENDRIN shall mean the sum of endrin and endrin aldehyde.

9/ DDT shall mean the sum of the p,p' and o,p' isomers of DDT, DDD, and DDE.

10/ PAHs (polynuclear aromatic hydrocarbons) shall mean the sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,12-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[ah]anthracene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene, and pyrene.

11/ PCBs (polychlorinated biphenyls) shall mean the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260.

12/ HALOMETHANES shall mean the sum of bromoform, chloroform, bromomethane, chloromethane, chlorodibromomethane, and dichlorobromomethane.

13/ For volatile organics, grab samples shall be collected instead of 24-hour composite.

14/ Radioactivity determinations of gross and net beta activity, in picocuries per liter, shall be made within 48 hours following preparation of composite samples. The overall efficiency of the counting system, size of sample and counting time shall be such that radioactivity can be determined to a sensitivity of ten picocuries per liter with a 95% confidence limit not to exceed 50 percent.

15/ By methods specified in "Methods for Measuring the Acute Toxicity of Effluent to Freshwater and Marine Organisms" (March 1985, EPA/600/4-85/013). Submission of bioassay results should include the information noted on pages 45 through 49 of the "Methods" where appropriate. The fathead minnow (Pimephales promelas) shall be used as the test species.

Except with prior approval from the LA Regional Board (Executive Officer) and USEPA, ammonia shall not be removed from the bioassay samples. The wastewater used for the toxicity test shall be analyzed for ammonia, and the result, along with an interpretation, shall be submitted with the toxicity data. If the test result is greater than the permit limitation, parallel tests of 100% effluent without ammonia removal and 100% effluent with ammonia removed shall be conducted.

16/ In lieu of conducting the standard acute toxicity test with fathead minnow, the Discharger may elect to report the results from the first 48 hours of the chronic toxicity test as acute toxicity test results.

Ordered by: Richard A. Stetson for
ROBERT P. GHIRELLI, D.Env.
Executive Officer

Date: June 12, 1995

/hdn

STATE OF CALIFORNIA—ENVIRONMENTAL PROTECTION AGENCY PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
' CENTRE PLAZA DRIVE
:TEREY PARK, CA 91754-2156
3) 266-7500
FAX: (213) 266-7600

June 20, 1995

Mr. Charles W. Carry
Chief Engineer and General Manager
County Sanitation Districts of Los Angeles County
1955 Workman Mill Road
Whittier, CA 90607-4998

WASTE DISCHARGE REQUIREMENTS, SAUGUS WATER RECLAMATION PLANT
(NPDES No. CA0054313, CI-2960)

Our letter dated May 4, 1995, transmitted tentative requirements for your discharge of treated municipal and industrial wastewater from the subject facility to Santa Clara River.

Pursuant to Division 7 of the California Water Code, this Regional Board at a public hearing held on June 12, 1995, reviewed the tentative requirements, considered all factors in the case, and adopted Order No. 95-080 (copy attached) relative to this waste discharge. This Order serves as a permit under the National Pollutant Discharge Elimination System (NPDES), and expires on May 10, 2000. Section 13376 of the California Water Code requires that an application for a new permit must be filed at least 180 days before the expiration date.

The "Monitoring and Reporting Program" requires you to implement the monitoring program on the effective date of this Order. Your first monitoring report is due by September 15, 1995. All monitoring reports should be sent to the Regional Board, ATTN: Technical Support Unit.

Please reference all technical and monitoring reports to our Compliance File No. 2960. We would appreciate it if you would not combine other reports, such as progress or technical, with your monitoring reports but would submit each type of report as a separate document.

To save printing and postage costs, the Standard Provisions (Attachment n), the USEPA Published MDL List (Attachment 1), the Ammonia Tables 3-2 and 3-4 (Attachment 2), the Requirements for the Pretreatment Annual Report (Attachment 3), the Stormwater Monitoring and Reporting Program (Attachment T-2), and the State Water Resources Control Board's General NPDES permits for discharge of storm water associated with industrial activity (Order No. 91-13-DWQ, as amended by Order No. 92-12-DWQ, Attachment S-I) and

construction activity (Order No. 92-08-DWQ, Attachment S-C) are being sent only to the Discharger. These documents may be reviewed in our office or a copy will be mailed upon request.

If you have any questions, please contact Harry Nguyen at (213) 266-7618.

Joshua M. Workman

JOSHUA M. WORKMAN
Senior Water Resource
Control Engineer

Enclosure(s)

/hdn

cc: James Kassel, State Water Resources Control Board,
Division of Water Quality
Jorge Leon, State Water Resources Control Board,
Office of Chief Counsel
Department of Fish and Game, Region 5

Environmental Protection Agency, Region 9,
Permits/Pretreatment Section (W-5-1)
U.S. Army Corps of Engineers
NOAA, National Marine Fisheries Service
Department of Interior, U.S. Fish and Wildlife Service

Los Angeles County, Department of Public Works,
Waste Management Division
Los Angeles County, Department of Health Services
Ventura County Department of Environmental Health

South Coast Air Quality Management District

City of Santa Clarita

Santa Clarita County Water District
Newhall County Water District
Valencia Water Company
Surfriders Foundation
Heal the Bay

State of California
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

ORDER NO. 95-080

NPDES NO. CA0054313

WASTE DISCHARGE REQUIREMENTS FOR COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY (Saugus Water Reclamation Plant)

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board), finds:

1. County Sanitation Districts of Los Angeles County (hereinafter CSDLAC or Discharger) discharge treated wastewater from the Saugus Water Reclamation Plant (WRP) under waste discharge requirements contained in Order No. 89-130 (NPDES No. CA0054313), adopted by this Regional Board on December 4, 1989.

2. CSDLAC have filed a Report of Waste Discharge (RWD) and have applied for renewal of their waste discharge requirements and National Pollutant Discharge Elimination System (NPDES) permit.

3. The Saugus WRP, located at 26200 Springbrook Avenue, Saugus, is a tertiary wastewater treatment plant with a design capacity of 6.5 million gallons per day (mgd). Treatment consists of comminution, primary sedimentation, flow equalization, activated sludge biological treatment, secondary sedimentation, inert media filtration, chlorination, and dechlorination. No facilities are provided for solids processing at the plant. All sewage solids separated from the wastewater are transported, via a sludge force main, to the Valencia WRP for treatment and disposal.

   The Saugus WRP is a part of CSDLAC's regional system, known as the Santa Clarita Joint Sewerage System, which combines two water reclamation plants: Valencia WRP (District No. 32) and Saugus WRP (District No. 26). The regional system allows biosolids, solids, and excess flows from the Saugus WRP to be diverted to the Valencia WRP for treatment and disposal.

   Figures 1 and 2 show the location of the plant and the schematic of wastewater flow.

Revised June 12, 1995

4. The Saugus WRP discharges tertiary treated municipal and industrial wastewater to North Fork Santa Clara River, a water of the United States, through Discharge Serial No. 001 (Latitude 34°25'23", Longitude 118°32'24"). The Discharge Serial No. 001 is located 400 feet downstream from Bouquet Canyon Road, above the estuary.

5. The RWD describes the 1993 discharge as follows:

Constituent	Unit	Effluent Annual Average
Flow	mgd	6.32
pH	pH unit	7.2-7.4
Temperature	°F	72-78
BOD	mg/l	7
Chemical oxygen demand	mg/l	31
Suspended solids	mg/l	< 2
Total dissolved solids	mg/l	710

6. The U.S. Environmental Protection Agency (USEPA) and the Regional Board have classified this discharge as a major discharge.

7. A portion of the treated effluent is reclaimed for landscape irrigation and is regulated under Order No. 87-49, adopted by this Board on April 27, 1987.

8. The Board adopted a revised Water Quality Control Plan for the Santa Clara River Basin (4A) on June 13, 1994. The plan contains water quality objectives for the Santa Clara River.

9. The beneficial uses of the receiving water (Santa Clara River) are: (a) potential - municipal and domestic water supply; (b) existing - industrial service and process supply, agricultural supply, groundwater recharge, freshwater replenishment, contact and non-contact water recreation, warm freshwater habitat, wildlife habitat, preservation of rare and endangered species, migration of aquatic organisms (downstream from the boundary of the hydrologic areas 403.40 and 403.50), and wetland habitat.

10. There is public contact in the downstream areas; hence, the quality of wastewater discharged to the Santa Clara River must be such that no health hazard is created.

11. In 1993, the chloride concentrations of the final effluent ranged from 100 mg/l to 125 mg/l (annual average 110 mg/l). The daily maximum chloride limit in Order No. 89-130 was 100 mg/l. On March 26, 1990, the Board adopted Resolution No. 90-

004, which stated that because of the long term drought in California, the Board would temporarily not enforce the chloride limit where violations were primarily due to increased chloride concentrations in imported water. However, if a discharge exceeds the chloride limitation, Resolution No. 90-004 requires the discharger to take measures to reduce chlorides in the waste discharge. CSDLAC have fully complied with this provision and have not exceeded the interim limits and guidelines for chloride contained in Resolution No. 90-004.

12. This discharge is subject to USEPA's 304(l) regulations which prescribe biological and other laboratory testing procedures and toxicity limits, particularly chronic toxicity, for the implementation of USEPA's "Policy for the Development of Water Quality-based Permit Limitations for Toxic Pollutants" (49 FR 9016, dated March 9, 1984).

13. Pursuant to Section 402(p) of the Clean Water Act and 40 CFR Parts 122, 123, and 124, the State Water Resources Control Board (State Board) adopted a general NPDES permit to regulate stormwater discharges associated with industrial activity (State Board Order No. 91-13-DWQ adopted in November 1991, amended by Order No. 92-12-DWQ adopted in September 1992). Stormwater discharges from Saugus WRP are subject to requirements under this general permit.

14. Pursuant to 40 CFR Part 403, CSDLAC developed and have implemented a USEPA approved industrial wastewater pretreatment program.

15. Effluent limitations, national standards of performance, toxic and pretreatment effluent standards, regulations, requirements, and/or guidelines established pursuant to Sections 208(b), 301, 302, 303(d), 304, 306, 307, and 405 of the Clean water Act, and amendments thereto, are applicable to the discharges.

16. Except for constituents imposed in the previous permit, no numerical limit is prescribed for any toxic constituent that is consistently not detectable in the effluent and where it has been determined that there is a very low probability of causing or contributing to excursions in water quality standards. A narrative limit to comply with all water quality objectives is provided in lieu of such numerical limits.

17. The requirements contained in this Order are based on the Basin Plan, other Federal and State plans, policies, guidelines, and best engineering judgment; and, as they are met, will be in conformance with the goals of the aforementioned water quality control plans and will protect

and maintain existing beneficial uses of the receiving waters.

18. The Discharger's monitoring data during 1989-1993 consistently showed high effluent quality. To maintain the plant performance, effluent quality performance goals are prescribed in this Order. This approach requires the Discharger to maintain its treatment efficiency, while recognizing normal variations in treatment plant operations, influent quality, and sampling and analytical techniques. However, this approach does not address substantial changes in plant operations that may occur in the future and could affect the quality of the treated effluent. As such, the performance goals may be modified by the Executive Officer, if warranted.

    For pollutants which have been routinely detected in the effluent, the performance goals are statistically set at the 95th percentile of the 1989-1993 performance data. At the 95th percentile, it is expected that one sample in twenty would exceed the goal in the long term.

    For other pollutants whose effluent monitoring data have consistently showed non-detectable levels or occasionally detected at levels less than the Practical Quantitation Level (PQL), the effluent quality performance goals are set at the PQL. The PQL is determined by multiplying the USEPA published method detection limit (MDL) or the Discharger's MDL approved by the Executive Officer with the factor five (5) for carcinogens and ten (10) for non-carcinogens.

19. The issuance of waste discharge requirements for this discharge is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code (California Environmental Quality Act) in accordance with Water Code Section 13389.

The Regional Board has notified the discharger and interested agencies and persons of its intent to issue waste discharge requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.

The Regional Board, in a public hearing, heard and considered all comments pertaining to the discharge and to the tentative requirements.

This Order shall serve as a National Pollutant Discharge Elimination System permit pursuant to Section 402 of the Federal Clean Water Act or amendments thereto, and shall take effect at the end of ten days from the date of its adoption provided the Regional Administrator, USEPA, has no objections.

IT IS HEREBY ORDERED that County Sanitation Districts of Los Angeles County, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Federal Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

I. DISCHARGE REQUIREMENTS

A. Effluent Limitations

1. Wastes discharged shall be limited to treated municipal wastewater only, as proposed.

2. The pH of wastes discharged shall at all times be within the range of 6.0 and 9.0.

3. The temperature of wastes discharged shall not exceed 100°F.

4. The discharge of an effluent from Discharge Serial No. 001 with constituents in excess of the following limits is prohibited:

a. Conventional and nonconventional pollutants:

		Discharge Limitations		
Constituent	Units	30-day Average[1]	7-day Average[1]	Daily Maximum[2]
BOD_5 20°C	mg/l	20	30	45
	lbs/day[3]	1,084	1,626	2,439
Suspended solids	mg/l	15	40	45
	lbs/day[3]	813	2,168	2,439
Settleable solids	ml/l	0.1	---	0.3
Oil and grease	mg/l	10	---	15
	lbs/day[3]	542	---	813
Total dissolved solids	mg/l	---	---	1,000
	lbs/day[3]	---	---	54,210
Sulfate	mg/l	---	---	400
	lbs/day[3]	---	---	21,684
Chloride[4]	mg/l	---	---	100
	lbs/day[3]	---	---	5,421

Constituent	Units	Discharge Limitations Daily Maximum[2/]
Boron	mg/l	1.5
	lbs/day[3/]	81.3
Nitrate + Nitrite (as Nitrogen)	mg/l	10
	lbs/day[3/]	542
Fluoride	mg/l	1.6
	lbs/day[3/]	86.7
Detergents (as MBAS)	mg/l	0.5
	lbs/day[3/]	27.1

1/ As defined in Standard Provisions, Attachment N.

2/ Except for grab samples, the daily maximum effluent concentration limit shall apply to flow-weighted 24-hour composite samples.

3/ Based on the plant design capacity of 6.5 mgd. During events such as extended rainfalls in which the flow exceeds the plant design capacity, the mass discharge rate limitations shall be tabulated using the same concentration limits and the plant actual flowrates.

4/ In accordance with the Resolution 90-004, the chloride limitation shall not be considered to be violated unless the effluent concentrations of chlorides exceed 250 mg/l or water supply concentrations plus 85 mg/l, whichever is less.

b. Toxic pollutants:

Constituent	Units	Discharge Limitations 30-day Average[5/]
Antimony	µg/l	6[6/]
	lbs/day[3/]	325
Arsenic	µg/l	50[6/]
	lbs/day[3/]	2.71
Barium	µg/l	1,000[6/]
	lbs/day[3/]	54.2
Cadmium	µg/l	5[6/]
	lbs/day[3/]	0.271
Chromium (VI)[7/]	µg/l	50[6/]
	lbs/day[3/]	2.71

Constituent	Units	Discharge Limitations 30-day Average[5]
Iron	µg/l	300[6]
	lbs/day[3]	16.3
Lead	µg/l	50[6]
	lbs/day[3]	2.71
Mercury	µg/l	2[6]
	lbs/day[3]	0.108
Nickel	µg/l	100[6]
	lbs/day[3]	5.42
Selenium	µg/l	10[6]
	lbs/day[3]	0.542
Silver	µg/l	50[6]
	lbs/day[3]	2.71
Zinc	µg/l	5,000[6]
	lbs/day[3]	271
Cyanide[8]	µg/l	5.2
	lbs/day[3]	0.282
Endrin[9]	µg/l	2
	lbs/day[3]	0.108
Lindane	µg/l	0.2
	lbs/day[3]	0.0108
Methoxychlor	µg/l	40
	lbs/day[3]	2.17
Toxaphene	µg/l	3
	lbs/day[3]	0.163
2,4-D	µg/l	70
	lbs/day[3]	3.79
2,4,5-TP (Silvex)	µg/l	10
	lbs/day[3]	0.542
Halomethanes[10]	µg/l	100
	lbs/day[3]	5.42

Constituent	Units	Discharge Limitations 30-day Average[5/]
Tetrachloroethylene	µg/l lbs/day[3/]	5 0.271
Methylene chloride	µg/l lbs/day[3/]	5 0.271
1,2-Dichloroethane	µg/l lbs/day[3/]	0.5 0.0271
p-Dichlorobenzene	µg/l lbs/day[3/]	5 0.271

5/ Compliance may be determined from a single analysis or from the average of the initial analysis and three additional analyses taken one week apart once the results of the initial analysis are obtained.

6/ Based on total recoverable metals. These limits may be modified to total dissolved metals if the Discharger requests and has conducted a study on the water-effect ratio (WER) according to the USEPA guidance document and/or state protocols, if available.

7/ The Discharger may, at his option, meet this limitation as total chromium.

8/ The recovery of free cyanide from metal complexes must be comparable to that achieved by Standard Methods 412 F, G, and H (Standard Methods for the Examination of Water and Wastewater; Joint Editorial Board, American Public Health Association, American Water Works Association, and Water Pollution Control Federation [Water Environment Federation]; Most recent edition).

9/ ENDRIN shall mean the sum of endrin and endrin aldehyde.

10/ HALOMETHANES shall mean the sum of bromoform, bromomethane, chloroform, chloromethane, chlorodibromomethane, and dichlorobromomethane.

5. Radioactivity of the wastes discharged shall not exceed the limits specified in Title 22, Chapter 15, Article 5, Section 64443, of the California Code of Regulations, or subsequent revisions.

6. The arithmetic mean of BOD_5 20°C and suspended solids values, by weight, for effluent samples collected in a period of 30 consecutive calendar days shall not exceed 15 percent of the arithmetic mean of values, by weight, for influent samples collected at approximately the same time during the same period.

7. The wastes discharged to water courses shall at all times be adequately disinfected. For the purpose of this

requirement, the wastes shall be considered adequately disinfected if the median number of coliform organisms at some point in the treatment process does not exceed 2.2 per 100 milliliters, and the number of coliform organisms does not exceed 23 per 100 milliliters in more than one sample within any 30-day period. The median value shall be determined from the bacteriological results of the last seven (7) days for which analysis have been completed. Samples shall be collected at a time when wastewater flow and characteristics are most demanding on treatment facilities and disinfection processes.

8. The wastes discharged to water courses shall have received treatment equivalent to that of filtered wastewater. Filtered wastewater means oxidized and coagulated wastewater which has been passed through natural undisturbed soils or filter media, such as sand or diatomaceous earth, so that the turbidity of the filtered wastewater does not exceed (a) a daily average of 2 Nephelometric turbidity units (NTU's), (b) and does not exceed 5 NTU's more than 5 percent of the time (72 minutes) during any 24 hour period.

   "Oxidized wastewater" means wastewater in which the organic matter has been stabilized, is nonputrescible, and contains dissolved oxygen. "Coagulated wastewater" means oxidized wastewater in which colloidal and finely divided suspended matter have been destabilized and agglomerated upstream of a filter by the addition of suitable floc-forming chemicals.

   NTU means a measurement of turbidity as determined by the ratio of the intensity of light scattered by the sample to the intensity of incident light using approved laboratory methods.

9. <u>Acute Toxicity Limitation</u>:

   a. The acute toxicity of the effluent shall be such that the average survival in the undiluted effluent for any three (3) consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test producing less than 70% survival.

   b. If the discharge consistently exceeds the acute toxicity limitation, a toxicity reduction evaluation (TRE) is required. The TRE shall include all reasonable steps to identify the source(s) of toxicity. Once the source(s) of toxicity is (are) identified, the Discharger shall take

all reasonable steps necessary to reduce toxicity to the required level.

B. Effluent Quality Performance Goals

The Discharger shall make best efforts to maintain the following effluent quality goals. Any exceedance of any goal shall trigger an investigation by the Discharger on the cause of the exceedance. The Discharger shall report to the Regional Board on a quarterly basis any exceedance of any of these effluent quality goals. If exceedance of any particular goal persists on two succeeding quarterly monitoring periods, the Discharger shall submit with the second quarterly report the investigation results including but not limited to the description of the exceedance, cause(s) of the exceedance, and proposed corrective measures, if necessary. If the exceedance of any goal becomes chronic, the Discharger shall proceed to implement the proposed action plan to correct the exceedance. The Executive Officer may modify the action plan.

The Executive Officer may modify any of the performance goals if the Discharger requests and has demonstrated that the change is warranted.

		Effluent Quality Performance Goals	
Constituent	Units	30-day Average	Daily Maximum
BOD_5 20°C	mg/l	11 11/	---
Suspended solids	mg/l	3 11/	---
Arsenic	µg/l	---	7 11/
Chromium (VI) 7/	µg/l	---	20 11/
Copper	µg/l	---	20 11/
Lead	µg/l	---	40 11/
Mercury	µg/l	---	PQL 12/
Nickel	µg/l	---	30 11/
Selenium	µg/l	---	2 11/
Silver	µg/l	---	5 11/
Zinc	µg/l	---	58 11/
Phenol	µg/l	---	18 11/
Methylene chloride	µg/l	---	2 11/
Chloroform	µg/l	---	12 11/
Bromodichloromethane	µg/l	---	3 11/
Dibromochloromethane	µg/l	---	6 11/
Bromoform	µg/l	---	5 11/
Remaining priority pollutants	µg/l	---	PQL 12/

11/ Numerical effluent quality performance goals were derived statistically

using effluent performance data for the period of 1989 through 1993. Effluent values (X_i) are assumed to be lognormally distributed. The use of logarithmic transformation equation, $Y_i = Ln\ (X_i)$, results in effluent values (Y_i) that are normally distributed. Effluent quality performance goals are determined by the equation:

$$X_{.95} = \exp\ [u_n + (Z_{.95})\ (\sigma_n)]$$

where $X_{.95}$ = discharge effluent quality performance goal at the 95th percentile of the normal distribution.

u_n = mean of the distribution of the average of n values transformed.

$Z_{.95}$ = z-value from the Table of Areas under the Standard Normal Curve, equal to 1.645 at 95 percent.

σ_n = standard deviation of the distribution of the average of n values transformed.

Exp is an exponential to the base "e" value = 2.7183

12/ PQL (Practical Quantitation Limit) shall be determined by multiplying the USEPA published method detection limit (MDL) (Attachment 1) or the Discharger's MDL approved by the Executive Officer with the factor five (5) for carcinogens and ten (10) for non-carcinogens.

C. Receiving Water Limitations

1. The temperature of the receiving water at any time or place and within any given 24-hour period shall not be increased by more than 5°F (or above 70°F if the ambient receiving water temperature is less than 60°F) as a result of the wastes discharged.

2. The pH of the receiving water shall not be depressed below 6.5 or raised above 8.5 as a result of wastes discharged. Ambient pH levels shall not be changed more than 0.5 units from natural conditions.

3. The dissolved oxygen in the receiving water shall not be depressed below 5 mg/l as a result of the wastes discharged.

4. The residual chlorine in the receiving water shall not exceed 0.1 mg/l as a result of the wastes discharged.

5. The fecal coliform concentration in the receiving water shall not exceed a log mean of 200/100 ml (based on a minimum of not less than four samples for any 30-day period), nor shall more than 10 % of total samples during any 30-day period exceed 400/100 ml as a result of the wastes discharged.

6. The wastes discharged shall not produce concentrations of toxic substances in the receiving water that are toxic to

or cause detrimental physiological responses in human, animal, or aquatic life.

7. The wastes discharged shall not contain substances that result in increases in the BOD which adversely affect beneficial uses of the receiving waters.

8. The wastes discharged shall not contain biostimulatory substances in concentrations that promote aquatic growth to the extent that such growth causes nuisance or adversely affects beneficial uses of the receiving waters.

9. The wastes discharged shall not cause the receiving waters to contain any substance in concentrations that adversely affect any designated beneficial use.

10. The wastes discharged shall not alter the color of the receiving waters; create a visual contrast with the natural appearance of the water; nor cause aesthetically undesirable discoloration of the receiving waters.

11. The wastes discharged shall not degrade surface water communities and populations, including vertebrate, invertebrate, and plant species.

12. The wastes discharged shall not result in problems due to breeding of mosquitos, gnats, black flies, midges, or other pests.

13. The wastes discharged shall not result in visible floating particulates, foams, and oil and grease in the receiving waters.

14. The wastes discharged shall not contain any individual pesticide or combination of pesticides in concentrations that adversely affect beneficial uses of the receiving waters. There shall be no increase in pesticide concentrations found in bottom sediments or aquatic life.

15. The wastes discharged shall not alter the natural taste, odor, and color of fish, shellfish, or other surface water resources used for human consumption.

16. The wastes discharged shall not increase the turbidity of the receiving waters to the extent that such an increase causes nuisance or adversely affects beneficial uses.

D. Receiving Water Objective

1. To protect aquatic life, ammonia in receiving waters shall not exceed concentrations specified in Tables 3-2 and 3-4 of the Basin Plan (Attachment 2) as a result of the wastes discharged, subject to the following conditions:

   The Discharger shall have up to 8 years following the adoption of this Order (i) to make the necessary adjustments/improvements to meet these objectives; or (ii) to conduct studies leading to an approved less restrictive site specific objective for ammonia. If it is determined that there is an immediate threat or impairment of beneficial uses due to ammonia, the objectives in Tables 3-2 and 3-4 of Attachment 2 shall apply and the timing of compliance will be determined on a case-by-case basis.

2. To protect underlying groundwater basins, ammonia shall not be present in the wastes discharged at levels that when oxidized to nitrate will pose a threat to ground water.

3. There shall be no chronic toxicity in ambient waters as a result of wastes discharged.

   If the chronic toxicity in the receiving water downstream of the discharge point consistently exceeds 1.0 TU_c in a critical life stage test, the Discharger shall determine if the cause of the exceedance is the wastes discharged. If it is determined that the wastes discharged caused the exceedance, the Discharger shall conduct a toxicity reduction evaluation (TRE). The TRE shall include all reasonable steps to identify the sources of toxicity. Once the sources are identified, the Discharger shall take all reasonable steps to reduce toxicity to meet the objective.

II. PRETREATMENT REQUIREMENTS

1. This Order includes the discharger's pretreatment program as previously submitted to this Regional Board. Any change to the program shall be reported to the Regional Board and EPA in writing and shall not become effective until approved by the Executive Officer.

2. The Discharger shall implement and enforce its approved pretreatment program. The Discharger shall be responsible and liable for the performance of all pretreatment requirements contained in Federal Regulations 40 CFR Part 403 including subsequent regulatory revisions thereof. Where Part 403 or subsequent revision places mandatory actions upon the Discharger as Control Authority but does not specify a timetable for completion of the actions, the Discharger shall complete the required actions within six months from the effective date of this Order and permit or the effective date of the Part 403 revisions, whichever comes later. For violations of pretreatment requirements, the Discharger shall be subject to enforcement actions, penalties, fines, and other remedies by the Regional Board, EPA, or other appropriate parties, as provided in the Clean Water Act. The Regional Board or USEPA may initiate enforcement action against an industrial user for non-compliance with acceptable standards and requirements as provided in the Clean Water Act and/or the California Water Code.

3. The Discharger shall enforce the requirements promulgated under Sections 307(b), 307(c), 307(d), and 402(b) of the Federal Clean Water Act. The Discharger shall cause industrial users subject to the Federal Categorical Standards to achieve compliance no later than the date specified in those requirements or, in the case of a new industrial user, upon commencement of the discharge.

4. The Discharger shall perform the pretreatment functions as required in Federal Regulations 40 CFR Part 403 including, but not limited to:

   a. Implement the necessary legal authorities as provided in 40 CFR 403.8(f)(1);

   b. Enforce the pretreatment requirements under 40 CFR 403.5 and 403.6;

   c. Implement the programmatic functions as provided in 40 CFR 403.8(f)(2); and

   d. Provide the requisite funding of personnel to implement the pretreatment program as provided in 40 CFR 403.8(f)(3).

5. The Discharger shall submit annually a report to the Regional Board, the State Board, and the Environmental Protection Agency, Region 9, describing the discharger's

pretreatment activities over the previous twelve months. In the event the discharger is not in compliance with any conditions or requirements of this permit, then the discharger will also include the reasons for non-compliance and state how and when the discharger shall comply with such conditions and requirements. This annual report is due on April 1 of each year and shall contain, but not be limited to, the information required in the attached "Requirements for Pretreatment Annual Report." (Attachment 3), or an approved revised version thereof.

III. REQUIREMENTS AND PROVISIONS

1. Discharge of wastes to any point other than specifically described in this order is prohibited and constitute a violation thereof.

2. The Discharger shall comply with all applicable effluent limitations, national standards of performance, toxic and pretreatment effluent standards, and all federal regulations established pursuant to Sections 301, 302, 303(d)., 304, 306, 307, 316, and 405 of the Clean Water Act and amendments thereto.

3. This Order includes the attached Monitoring and Reporting Program (Attachment T). If there is any conflict between provisions stated in the Monitoring and Reporting Program and the Standard Provisions, those provisions stated in the former prevail.

4. This Order includes the attached "Standard Provisions and General Monitoring and Reporting Requirements" (Standard Provisions, Attachment N). If there is any conflict between provisions stated hereinbefore and the attached "Standard Provisions", those provisions stated hereinbefore prevail.

5. This Order includes the requirements of the State Water Resources Control Board's General NPDES permits for discharges of storm water associated with industrial activity (Order No. 91-13-DWQ, as amended by Order No. 92-12-DWQ, Attachment S-I) and amendments thereto.

6. The Discharger shall provide standby or emergency power facilities and/or storage capacity or other means so that in the event of plant upset or outage due to power failure or other cause, discharge of raw or inadequately treated sewage does not occur.

7. The Discharger shall protect the facility from inundation which could occur as a result of a flood having a predicted frequency of once in 100 years.

8. This Order may be modified, revoked, and reissued or terminated in accordance with the provisions of 40 CFR Parts 122.44, 122.62, 122.63, 122.64, 125.62, and 125.64.

IV. EXPIRATION DATE

This Order expires on May 10, 2000.

The Discharger must file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations, not later than 180 days in advance of the expiration date as application for issuance of new waste discharge requirements.

V. RESCISSION

Order No. 89-130, adopted by this Board on December 4, 1989, is hereby rescinded.

I, Robert P. Ghirelli, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, Los Angeles Region on June 12, 1995.

ROBERT P. GHIRELLI, D.Env.
Executive Officer

/hdn

Appendix 6.0

THE LEVANDER COMPANY, INC. 30429 Via Cambron, Rancho Palos Verdes, CA 90275 (310) 265-5555
FAX (310) 265-5557

MEMORANDUM

To: **Newhall Ranch Company**
Attention: Mr. David M. Crowder

Date: **July 9, 1996**

From: **Dale H. Levander**

File: **1453**

Subject: **REVISED PROJECTIONS OF NEWHALL RANCH POLICE PROTECTION COSTS**

Table 1 presents the subject projections, based on:

- Staffing and equipment projections provided to you by the Sheriff, relayed to me in your FAX of June 18, and my subsequent discussions with Lieutenant Robert D. Elson of the Sheriff's Department.
- Assumptions regarding incremental increases during each five-year period.
- Cost factors provided by the Sheriff for both personnel and equipment.
- Indications of useful life for equipment items provided by the Sheriff.

Our dollar projections for year 25 reconcile with those of the Sheriff.

The summary on page 1 indicates that:

- Revised projections by year 25 are 90% higher than those contained in the January report, amounting to a $1.9 million increase in that year.
- This increase by year 25 (including an added 5.0% general administration cost) amounts to 12.2% of projected surplus for General Fund services contained in the January report. .
- This increase by year 25 (also including an added 5.0% general administration cost) amount to 9.6% of projected surplus for all services combined contained in the January report.

I will welcome your comments and questions.

WP44:1453Rep9

Table 1
REVISED POLICE PROTECTION COST ESTIMATES
NEWHALL RANCH SPECIFIC PLAN
(IN 1996 CONSTANT DOLLARS)

1453PPC2
SL500
07/09/96

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
	$000's															
RECAP OF REVISED PROJECTIONS PER PAGES 2-4 ($)																
Personnel	55,564,642	2,436,694	6,737,912	12,179,297	16,515,817	17,712,923	221,474	369,124	492,991	616,858	738,248	1,014,715	1,169,026	1,354,869	1,509,898	1,659,605
Equipment Capital Expenditure	2,249,684	88,452	266,733	473,506	676,544	744,449	8,029	13,382	17,931	22,347	26,763	38,846	46,902	53,616	60,329	67,040
Equipment Operations	1,577,815	62,260	169,315	331,570	473,225	521,445	5,652	9,419	12,621	15,730	18,838	27,466	33,251	38,058	42,861	47,663
Total	59,412,142	2,589,407	7,193,961	12,984,373	17,665,585	18,978,817	235,155	391,925	523,543	654,935	783,849	1,081,047	1,279,178	1,446,341	1,612,888	1,774,507
TOTAL PROJECTED COSTS IN JANUARY 1996 REPORT ($)	30,044,000	1,338,000	3,823,000	6,484,000	8,698,000	9,723,000	98,000	195,000	285,000	342,000	418,000	537,000	653,000	774,000	880,000	979,000
REVISION INCREASE IN PROJECTED COSTS ($)	29,368,142	1,251,407	3,370,961	6,520,373	8,969,585	9,255,817	137,155	196,925	238,543	312,935	365,849	544,047	626,178	672,341	732,888	795,507
---% Increase	97.8	93.5	88.2	100.9	103.1	95.2	140.0	101.0	83.7	91.5	87.5	101.3	95.9	86.9	83.3	81.3
IMPACT ON PROJECTED SURPLUS FOR GENERAL FUND SERVICES																
Projected in January 1996 Report	231,447,000	8,555,000	28,382,000	50,552,000	67,128,000	76,800,000	729,000	1,215,000	1,605,000	2,230,000	2,776,000	3,826,000	4,444,000	5,954,000	6,705,000	7,453,000
Less Above Increase + 5.0% Gen Admin	30,836,549	1,313,977	3,539,509	6,846,391	9,418,065	9,718,607	144,013	206,771	250,470	328,581	384,142	571,249	657,487	705,958	769,533	835,283
Revised Projection	200,610,451	7,241,023	24,842,491	43,735,609	57,709,935	67,081,393	584,987	1,008,229	1,354,530	1,901,419	2,391,858	3,254,751	3,786,513	5,248,042	5,935,467	6,617,717
---% Decrease	13.3	15.4	12.5	13.5	14.0	12.7	19.8	17.0	15.6	14.7	13.8	14.9	14.8	11.9	11.5	11.2
IMPACT ON PROJECTED SURPLUS FOR ALL SERVICES COMBINED																
Projected in January 1996 Report	332,286,000	12,512,000	39,554,000	76,450,000	96,420,000	107,350,000	2,052,000	1,379,000	2,643,000	1,800,000	4,636,000	6,761,000	5,464,000	8,382,000	9,754,000	11,173,000
Less Above Increase + 5.0% Gen Admin	30,836,549	1,313,977	3,539,509	6,846,391	9,418,065	9,718,607	144,013	206,771	250,470	328,581	384,142	571,249	657,487	705,958	769,533	835,283
Revised Projection	301,449,451	11,198,023	36,014,491	69,603,609	87,001,935	97,631,393	1,907,987	1,172,229	2,392,530	1,471,419	4,253,858	6,189,751	4,626,513	5,676,042	6,984,467	10,337,717
---% Decrease	9.3	10.5	8.9	9.0	9.8	9.1	7.0	15.0	9.5	18.3	8.3	8.4	12.0	11.1	7.9	7.5

Continued on next page.....

1453PPC2
SL500
07/09/96

Table 1
REVISED POLICE PROTECTION COST ESTIMATES
NEWHALL RANCH SPECIFIC PLAN
(IN 1996 CONSTANT DOLLARS)

Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
	$000's														
RECAP OF REVISED PROJECTIONS PER PAGES 2-4 ($)															
Personnel	2,012,175	2,247,089	2,444,530	2,641,128	2,834,374	3,046,837	3,188,479	3,310,280	3,427,636	3,542,565	3,542,565	3,542,565	3,542,565	3,542,565	3,542,565
Equipment Capital Expenditure	79,611	87,992	94,984	101,974	108,945	120,928	128,917	135,575	142,233	148,890	148,890	148,890	148,890	148,890	148,890
Equipment Operations	56,140	61,792	66,502	71,212	75,922	84,432	90,106	94,834	99,563	104,289	104,289	104,289	104,289	104,289	104,289
Total	2,147,927	2,396,874	2,606,016	2,814,314	3,019,241	3,252,198	3,407,502	3,540,690	3,669,432	3,795,763	3,795,763	3,795,763	3,795,763	3,795,763	3,795,763
TOTAL PROJECTED COSTS IN JANUARY 1996 REPORT ($)	1,100,000	1,209,000	1,278,000	1,369,000	1,488,000	1,586,000	1,660,000	1,762,000	1,812,000	1,856,000	1,889,000	1,918,000	1,947,000	1,975,000	1,994,000
REVISION INCREASE IN PROJECTED COSTS ($)	1,047,927	1,187,874	1,328,016	1,445,314	1,531,241	1,666,198	1,727,502	1,778,690	1,857,432	1,939,763	1,906,763	1,877,763	1,848,763	1,820,763	1,801,763
---% Increase	95.3	98.3	103.9	102.6	102.9	105.1	102.8	100.9	102.5	104.5	100.9	97.9	95.0	92.2	90.4
IMPACT ON PROJECTED SURPLUS FOR GENERAL FUND SERVICES															
Projected in January 1996 Report	8,634,000	9,503,000	10,223,000	10,690,000	11,332,000	11,787,000	12,660,000	13,763,000	14,231,000	14,707,000	15,137,000	15,253,000	15,379,000	15,484,000	15,537,000
Less Above Increase + 5.0% Gen Admin	1,100,324	1,247,288	1,394,416	1,496,580	1,607,603	1,749,508	1,813,877	1,867,624	1,950,304	2,036,751	2,002,101	1,971,651	1,941,201	1,911,601	1,891,651
Revised Projection	7,533,676	8,255,732	8,828,584	9,393,420	9,724,197	10,017,492	10,846,123	11,895,376	12,280,696	12,670,249	13,134,899	13,281,349	13,437,799	13,582,199	13,645,149
---% Decrease	12.7	13.1	13.6	13.7	14.2	14.9	14.3	13.6	13.7	13.8	13.2	12.9	12.6	12.3	12.2
IMPACT ON PROJECTED SURPLUS FOR ALL SERVICES COMBINED															
Projected in January 1996 Report	13,319,000	14,797,000	15,709,000	14,361,000	16,264,000	19,178,000	16,028,000	19,859,000	20,347,000	21,008,000	21,572,000	21,784,000	22,058,000	22,307,000	19,629,000
Less Above Increase + 5.0% Gen Admin	1,100,324	1,247,288	1,394,416	1,496,580	1,607,603	1,749,508	1,813,877	1,867,624	1,950,304	2,036,751	2,002,101	1,971,651	1,941,201	1,911,601	1,891,651
Revised Projection	12,216,676	13,549,732	14,314,584	12,864,420	16,656,197	17,428,492	14,214,123	17,991,376	18,396,696	18,971,249	19,569,899	19,812,349	20,116,799	20,395,199	17,737,149
---% Decrease	8.3	8.4	8.9	10.4	8.8	9.1	11.3	9.4	9.6	9.7	9.3	9.1	8.8	8.6	9.6

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Table 1 (Continued.....page 2)
REVISED POLICE PROTECTION COST ESTIMATES
NEWHALL RANCH SPECIFIC PLAN
(IN 1998 CONSTANT DOLLARS)

1453PPC2
SL500
07/09/98

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
	$000's															
PERSONNEL																
Added Personnel (#)																
Sergeant	2.50	0.00	1.00	1.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.20	0.17	0.17	0.16
Deputy--Patrol	11.00	4.00	2.00	3.00	2.00	0.00	1.20	0.80	0.67	0.67	0.66	0.60	0.40	0.34	0.33	0.33
Deputy--Non-Patrol	3.00	0.00	1.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.20	0.16	0.17	0.17
Detective	2.50	0.00	1.00	1.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.20	0.17	0.17	0.16
Station Desk Operations Assistant (SDOA)	3.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.20	0.17	0.17	0.16
Community Service Officer (CSO)	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.20	0.17	0.17	0.16
Secretary	3.50	1.00	1.00	0.50	1.00	0.00	0.30	0.20	0.17	0.17	0.16	0.30	0.20	0.17	0.17	0.16
Telephone Operator	2.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	28.50	5.00	8.00	9.50	6.00	0.00	1.50	1.00	0.84	0.84	0.82	2.40	1.60	1.35	1.35	1.30
Cumulative Personnel (#)																
Sergeant	2.50	0.00	1.00	2.00	2.50	2.50	0.00	0.00	0.00	0.00	0.00	0.30	0.50	0.67	0.84	1.00
Deputy--Patrol	11.00	4.00	6.00	9.00	11.00	11.00	1.20	2.00	2.67	3.34	4.00	4.60	5.00	5.34	5.67	6.00
Deputy--Non-Patrol	3.00	0.00	1.00	3.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.30	0.50	0.66	0.83	1.00
Detective	2.50	0.00	1.00	2.00	2.50	2.50	0.00	0.00	0.00	0.00	0.00	0.30	0.50	0.67	0.84	1.00
Station Desk Operations Assistant (SDOA)	3.00	0.00	1.00	2.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.30	0.50	0.67	0.84	1.00
Community Service Officer (CSO)	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.30	0.50	0.67	0.84	1.00
Secretary	3.50	1.00	2.00	2.50	3.50	3.50	0.30	0.50	0.67	0.84	1.00	1.30	1.50	1.67	1.84	2.00
Telephone Operator	2.00	0.00	0.00	1.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	28.50	5.00	13.00	22.50	28.50	28.50	1.50	2.50	3.34	4.18	5.00	7.40	9.00	10.35	11.70	13.00
Annual Costs--See Factors Below ($)																
Sergeant	6,078,593	0	562,329	1,411,769	1,980,894	2,123,600	0	0	0	0	0	50,966	84,944	113,625	142,706	169,886
Deputy--Patrol	30,469,016	2,160,123	4,351,315	6,524,520	8,439,360	8,993,699	198,228	327,044	436,603	546,183	654,087	752,200	817,609	873,208	927,169	981,131
Deputy--Non-Patrol	4,586,786	0	338,242	1,184,511	1,533,017	1,533,017	0	0	0	0	0	30,660	51,101	67,453	84,827	102,201
Detective	3,976,653	0	367,879	923,588	1,295,913	1,389,272	0	0	0	0	0	33,343	55,571	74,465	93,359	111,142
Station Desk Operations Assistant (SDOA)	3,604,087	0	315,338	791,660	1,268,022	1,429,026	0	0	0	0	0	28,581	47,634	63,830	80,025	95,268
Community Service Officer (CSO)	583,241	0	105,436	159,268	159,268	159,268	0	0	0	0	0	9,556	15,927	21,342	26,757	31,854
Secretary	4,762,638	278,571	699,373	981,310	1,330,576	1,472,607	25,248	42,080	58,367	70,695	84,180	109,409	126,241	140,548	154,855	168,321
Telephone Operator	1,323,648	0	0	202,649	508,766	512,233	0	0	0	0	0	0	0	0	0	0
Total	55,564,842	2,438,694	6,737,912	12,179,297	16,515,817	17,712,923	221,474	369,124	492,991	616,858	738,248	1,014,715	1,199,026	1,354,669	1,509,698	1,659,805

Annual Cost Factors ($)	Per Individual	Relief Factor	Per Sched Individual
Sergeant	132,725.00	1.28	169,888.00
Deputy--Patrol	102,201.12	1.60	163,521.79
Deputy--Non-Patrol	102,201.12	1.00	102,201.12
Detective	111,141.79	1.00	111,141.79
Station Desk Operations Assistant (SDOA)	59,542.75	1.60	95,268.40
Community Service Officer (CSO)	31,853.69	1.00	31,853.69
Secretary	52,600.26	1.60	84,160.42
Telephone Operator	38,264.58	1.60	61,223.33

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Table 1 (Continued.....page 2)
REVISED POLICE PROTECTION COST ESTIMATES
NEWHALL RANCH SPECIFIC PLAN
(IN 1998 CONSTANT DOLLARS)

1453PPC2
SL500
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Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
	$000's														
PERSONNEL															
Added Personnel (#)															
Sergeant	0.30	0.20	0.17	0.17	0.16	0.15	0.10	0.09	0.08	0.08					
Deputy--Patrol	0.90	0.60	0.50	0.50	0.50	0.60	0.40	0.34	0.33	0.33					
Deputy--Non-Patrol	0.60	0.40	0.33	0.33	0.34	0.00	0.00	0.00	0.00	0.00					
Detective	0.30	0.20	0.17	0.17	0.16	0.15	0.10	0.09	0.08	0.08					
Station Desk Operations Assistant (SDOA)	0.30	0.20	0.17	0.17	0.16	0.30	0.20	0.17	0.17	0.16					
Community Service Officer (CSO)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
Secretary	0.15	0.10	0.09	0.08	0.08	0.30	0.20	0.17	0.17	0.16					
Telephone Operator	0.30	0.20	0.17	0.17	0.16	0.30	0.20	0.17	0.17	0.16					
Total	2.85	1.90	1.60	1.59	1.56	1.60	1.20	1.03	1.00	0.97	0.00	0.00	0.00	0.00	0.00
Cumulative Personnel (#)															
Sergeant	1.30	1.50	1.67	1.84	2.00	2.15	2.25	2.34	2.42	2.50	2.50	2.50	2.50	2.50	2.50
Deputy--Patrol	6.90	7.50	8.00	8.50	9.00	9.60	10.00	10.34	10.67	11.00	11.00	11.00	11.00	11.00	11.00
Deputy--Non-Patrol	1.60	2.00	2.33	2.66	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Detective	1.30	1.50	1.67	1.84	2.00	2.15	2.25	2.34	2.42	2.50	2.50	2.50	2.50	2.50	2.50
Station Desk Operations Assistant (SDOA)	1.30	1.50	1.67	1.84	2.00	2.30	2.50	2.67	2.84	3.00	3.00	3.00	3.00	3.00	3.00
Community Service Officer (CSO)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Secretary	2.15	2.25	2.34	2.42	2.50	2.80	3.00	3.17	3.34	3.50	3.50	3.50	3.50	3.50	3.50
Telephone Operator	0.30	0.50	0.67	0.84	1.00	1.30	1.50	1.67	1.84	2.00	2.00	2.00	2.00	2.00	2.00
Total	15.85	17.75	19.35	20.94	22.50	24.30	25.50	26.53	27.53	28.50	28.50	28.50	28.50	28.50	28.50
Annual Costs--See Factors Below ($)															
Sergeant	220,854	254,832	283,713	312,594	339,778	365,259	382,246	397,538	411,129	424,720	424,720	424,720	424,720	424,720	424,720
Deputy--Patrol	1,128,300	1,228,413	1,308,174	1,389,935	1,471,696	1,569,809	1,635,218	1,690,815	1,744,778	1,798,740	1,798,740	1,798,740	1,798,740	1,798,740	1,798,740
Deputy--Non-Patrol	163,522	204,402	238,129	271,855	306,603	306,603	306,603	306,603	306,603	306,603	306,603	306,603	306,603	306,603	306,603
Detective	144,464	168,713	185,607	204,501	222,284	238,955	250,069	260,072	268,963	277,854	277,854	277,854	277,854	277,854	277,854
Station Desk Operations Assistant (SDOA)	123,849	142,903	159,098	175,294	190,537	219,117	238,171	254,367	270,562	285,805	285,805	285,805	285,805	285,805	285,805
Community Service Officer (CSO)	31,854	31,854	31,854	31,854	31,854	31,854	31,854	31,854	31,854	31,854	31,854	31,854	31,854	31,854	31,854
Secretary	180,945	169,361	186,935	203,668	210,401	235,649	252,481	266,789	281,096	294,561	294,561	294,561	294,561	294,561	294,561
Telephone Operator	18,367	30,612	41,020	51,428	61,223	79,590	91,835	102,243	112,651	122,447	122,447	122,447	122,447	122,447	122,447
Total	2,012,175	2,247,089	2,444,630	2,641,128	2,834,374	3,046,837	3,188,479	3,310,260	3,427,636	3,542,585	3,542,585	3,542,585	3,542,585	3,542,585	3,542,585

Annual Cost Factors ($)

Sergeant
Deputy--Patrol
Deputy--Non-Patrol
Detective
Station Desk Operations Assistant (SDOA)
Community Service Officer (CSO)
Secretary
Telephone Operator

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Table 1 (Continued.....page 3)
REVISED POLICE PROTECTION COST ESTIMATES
NEWHALL RANCH SPECIFIC PLAN
(IN 1996 CONSTANT DOLLARS)

1453PPC2
SL500
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Item	25-Year Total	Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
		5-Year Totals														
	$000's															
EQUIPMENT CAPITAL EXPENDITURES (AMMORTIZED)																
Added Equipment Item (#)																
B&W Sedan	11.00	2.00	3.00	3.00	3.00	0.00	0.60	0.40	0.34	0.33	0.33	0.90	0.60	0.50	0.50	0.50
Handheld Radio	12.00	2.00	3.00	4.00	3.00	0.00	0.60	0.40	0.34	0.33	0.33	0.90	0.60	0.50	0.50	0.50
Battery	12.00	2.00	3.00	4.00	3.00	0.00	0.60	0.40	0.34	0.33	0.33	0.90	0.60	0.50	0.50	0.50
Charger (Multi)	2.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.20	0.17	0.17	0.16
Shotgun	6.00	2.00	2.00	2.00	0.00	0.00	0.60	0.40	0.34	0.33	0.33	0.60	0.40	0.34	0.33	0.33
Bean Bag Shotgun	6.00	2.00	2.00	2.00	0.00	0.00	0.60	0.40	0.34	0.33	0.33	0.60	0.40	0.34	0.33	0.33
Taser	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.20	0.17	0.17	0.16
Total	50.00	10.00	15.00	15.00	10.00	0.00	3.00	2.00	1.70	1.65	1.65	4.50	3.00	2.52	2.50	2.48
Cumulative Equipment Item (#)																
B&W Sedan	11.00	2.00	5.00	8.00	11.00	11.00	0.60	1.00	1.34	1.67	2.00	2.90	3.50	4.00	4.50	5.00
Handheld Radio	12.00	2.00	5.00	9.00	12.00	12.00	0.60	1.00	1.34	1.67	2.00	2.90	3.50	4.00	4.50	5.00
Battery	12.00	2.00	5.00	9.00	12.00	12.00	0.60	1.00	1.34	1.67	2.00	2.90	3.50	4.00	4.50	5.00
Charger (Multi)	2.00	0.00	1.00	1.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.30	0.50	0.67	0.84	1.00
Shotgun	6.00	2.00	4.00	6.00	6.00	6.00	0.60	1.00	1.34	1.67	2.00	2.60	3.00	3.34	3.67	4.00
Bean Bag Shotgun	6.00	2.00	4.00	6.00	6.00	6.00	0.60	1.00	1.34	1.67	2.00	2.60	3.00	3.34	3.67	4.00
Taser	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.30	0.50	0.67	0.84	1.00
Total	50.00	10.00	25.00	40.00	50.00	50.00	3.00	5.00	6.70	8.35	10.00	14.50	17.50	20.02	22.52	25.00
Annual Costs -- See Factors Below ($)																
B&W Sedan	1,892,876	75,232	226,494	397,218	587,942	625,989	6,629	11,382	15,251	19,007	22,763	33,007	39,836	45,526	51,217	56,908
Handheld Radio	334,093	12,295	37,014	71,071	102,114	111,600	1,116	1,860	2,492	3,108	3,720	5,394	6,510	7,440	8,370	9,300
Battery	3,592	132	398	764	1,098	1,200	12	20	27	33	40	58	70	80	90	100
Charger (Multi)	4,259	0	530	500	1,330	1,600	0	0	0	0	0	46	60	107	134	160
Shotgun	6,590	397	997	1,597	1,800	1,800	36	60	80	100	120	156	180	200	220	240
Bean Bag Shotgun	6,590	397	997	1,597	1,800	1,800	36	60	80	100	120	156	180	200	220	240
Taser	1,695	0	305	460	460	460	0	0	0	0	0	28	46	62	77	92
Total	2,249,684	88,452	266,733	473,506	676,544	744,449	6,029	13,382	17,931	22,347	26,763	38,848	46,902	53,616	60,329	67,040

Annual Cost Factors ($)	Total Cost Per Item	Replace Schedule (Years)	Annual Cost Per Item
B&W Sedan	34,144.83	3.00	11,381.61
Handheld Radio	9,300.00	5.00	1,860.00
Battery	100.00	5.00	20.00
Charger (Multi)	800.00	5.00	160.00
Shotgun	300.00	5.00	60.00
Bean Bag Shotgun	300.00	5.00	60.00
Taser	460.00	5.00	92.00

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Table 1 (Continued.....page 3)
REVISED POLICE PROTECTION COST ESTIMATES
NEWHALL RANCH SPECIFIC PLAN
(IN 1998 CONSTANT DOLLARS)

1453PPC2
SL500
07/09/96

Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
	$000's														
EQUIPMENT CAPITAL EXPENDITURES (AN															
Added Equipment Item (#)															
B&W Sedan	0.90	0.60	0.50	0.50	0.50	0.90	0.60	0.50	0.50	0.50					
Handheld Radio	1.20	0.80	0.67	0.67	0.66	0.90	0.60	0.50	0.50	0.50					
Battery	1.20	0.80	0.67	0.67	0.66	0.90	0.60	0.50	0.50	0.50					
Charger (Multi)	0.00	0.00	0.00	0.00	0.00	0.30	0.20	0.17	0.17	0.16					
Shotgun	0.60	0.40	0.34	0.33	0.33	0.00	0.00	0.00	0.00	0.00					
Bean Bag Shotgun	0.60	0.40	0.34	0.33	0.33	0.00	0.00	0.00	0.00	0.00					
Taser	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
Total	4.50	3.00	2.52	2.50	2.48	3.00	2.00	1.67	1.67	1.66	0.00	0.00	0.00	0.00	0.00
Cumulative Equipment Item (#)															
B&W Sedan	5.90	6.50	7.00	7.50	8.00	8.90	9.50	10.00	10.50	11.00	11.00	11.00	11.00	11.00	11.00
Handheld Radio	8.20	7.00	7.67	8.34	9.00	9.90	10.50	11.00	11.50	12.00	12.00	12.00	12.00	12.00	12.00
Battery	8.20	7.00	7.67	8.34	9.00	9.90	10.50	11.00	11.50	12.00	12.00	12.00	12.00	12.00	12.00
Charger (Multi)	1.00	1.00	1.00	1.00	1.00	1.30	1.50	1.67	1.84	2.00	2.00	2.00	2.00	2.00	2.00
Shotgun	4.60	5.00	5.34	5.67	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Bean Bag Shotgun	4.60	5.00	5.34	5.67	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Taser	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Total	29.50	32.50	35.02	37.52	40.00	43.00	45.00	46.67	48.34	50.00	50.00	50.00	50.00	50.00	50.00
Annual Costs-- See Factors Below ($)															
B&W Sedan	67,151	73,980	79,671	85,362	91,053	101,295	108,125	113,816	119,507	125,198	125,198	125,198	125,198	125,198	125,198
Handheld Radio	11,532	13,020	14,266	15,512	16,740	18,414	19,530	20,460	21,390	22,320	22,320	22,320	22,320	22,320	22,320
Battery	124	140	153	167	180	198	210	220	230	240	240	240	240	240	240
Charger (Multi)	160	160	160	160	160	208	240	267	294	320	320	320	320	320	320
Shotgun	276	300	320	340	360	360	360	360	360	360	360	360	360	360	360
Bean Bag Shotgun	276	300	320	340	360	360	360	360	360	360	360	360	360	360	360
Taser	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Total	79,611	87,992	94,984	101,974	108,945	120,928	128,917	135,575	142,233	148,890	148,890	148,890	148,890	148,890	148,890

Annual Cost Factors ($)

B&W Sedan
Handheld Radio
Battery
Charger (Multi)
Shotgun
Bean Bag Shotgun
Taser

Continued on next page.....

Table 1 (Continued.....page 4)
REVISED POLICE PROTECTION COST ESTIMATES
NEWHALL RANCH SPECIFIC PLAN
(IN 1998 CONSTANT DOLLARS)

1453PPC2
SL500
07/09/96

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
	$000's															
EQUIPMENT OPERATIONS																
Added Equipment Item (#)																
Patrol Car Oper/Maint (# Cars)	11.00	2.00	3.00	3.00	3.00	0.00	0.60	0.40	0.34	0.33	0.33	0.90	0.60	0.50	0.50	0.50
D-Ring	48.00	8.00	12.00	16.00	12.00	0.00	2.40	1.60	1.34	1.33	1.33	3.60	2.40	2.00	2.00	2.00
Antenna	12.00	2.00	3.00	4.00	3.00	0.00	0.60	0.40	0.34	0.33	0.33	0.90	0.60	0.50	0.50	0.50
Shotgun Rounds	2.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.20	0.17	0.17	0.16
Beanbag Rounds	50.00	16.00	16.00	18.00	0.00	0.00	4.80	3.20	2.67	2.67	2.66	4.80	3.20	2.67	2.67	2.66
Beanbag Gun Case	12.00	4.00	4.00	4.00	0.00	0.00	1.20	0.80	0.67	0.67	0.66	1.20	0.80	0.67	0.67	0.66
Taser Cartridge	20.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	4.00	3.34	3.33	3.33
Total	155.00	32.00	59.00	45.00	19.00	0.00	9.60	6.40	5.36	5.33	5.31	17.70	11.80	9.85	9.84	9.81
Cumulative Equipment Item (#)																
Patrol Car Oper/Maint (# Cars)	11.00	2.00	5.00	8.00	11.00	11.00	0.60	1.00	1.34	1.67	2.00	2.90	3.50	4.00	4.50	5.00
D-Ring	48.00	8.00	20.00	36.00	48.00	48.00	2.40	4.00	5.34	6.67	8.00	11.60	14.00	16.00	18.00	20.00
Antenna	12.00	2.00	5.00	9.00	12.00	12.00	0.60	1.00	1.34	1.67	2.00	2.90	3.50	4.00	4.50	5.00
Shotgun Rounds	2.00	0.00	1.00	1.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.30	0.50	0.67	0.84	1.00
Beanbag Rounds	50.00	16.00	32.00	50.00	50.00	50.00	4.80	8.00	10.67	13.34	16.00	20.80	24.00	26.67	29.34	32.00
Beanbag Gun Case	12.00	4.00	8.00	12.00	12.00	12.00	1.20	2.00	2.67	3.34	4.00	5.20	6.00	6.67	7.34	8.00
Taser Cartridge	20.00	0.00	20.00	20.00	20.00	20.00	0.00	0.00	0.00	0.00	0.00	6.00	10.00	13.34	16.67	20.00
Total	155.00	32.00	91.00	136.00	155.00	155.00	9.60	16.00	21.36	26.69	32.00	49.70	61.50	71.35	81.19	91.00
Annual Costs---See Factors Below ($)																
Patrol Car Oper/Maint (# Cars)	1,546,683	61,473	185,070	324,570	464,070	511,500	5,580	9,300	12,462	15,631	18,800	28,970	32,550	37,200	41,850	46,500
D-Ring	8,621	317	955	1,634	2,635	2,860	29	48	64	80	96	139	168	192	216	240
Antenna	1,371	50	152	292	419	456	5	8	10	13	15	22	27	31	34	38
Shotgun Rounds	7,986	0	993	1,500	2,493	3,000	0	0	0	0	0	90	150	201	252	300
Beanbag Rounds	4,460	261	657	1,086	1,236	1,236	24	40	53	66	79	103	119	132	145	158
Beanbag Gun Case	2,636	159	399	639	720	720	14	24	32	40	48	62	72	80	88	96
Taser Cartridge	6,039	0	1,089	1,650	1,650	1,650	0	0	0	0	0	99	165	220	275	330
Total	1,577,815	62,260	189,315	331,570	473,228	521,445	5,652	9,419	12,621	15,730	18,838	27,466	33,251	38,056	42,861	47,663

Annual Cost Factors ($)	Total Cost Per Item
Patrol Car Oper/Maint (# Cars)	9,300.00
D-Ring	12.00
Antenna	7.63
Shotgun Rounds	300.00
Beanbag Rounds	4.95
Beanbag Gun Case	12.00
Taser Cartridge	16.50

Source: Los Angeles County Sheriff's Department; The Levander Company, Inc.

Table 1 (Continued.....page 4)
REVISED POLICE PROTECTION COST ESTIMATES
NEWHALL RANCH SPECIFIC PLAN
(IN 1998 CONSTANT DOLLARS)

1453PPC2
SL500
07/09/98

Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
	$000's														
EQUIPMENT OPERATIONS															
Added Equipment Item (#)															
Patrol Car Oper/Maint (# Cars)	0.90	0.60	0.50	0.50	0.50	0.90	0.60	0.50	0.50	0.50	0.00	0.00	0.00	0.00	0.00
D-Ring	4.80	3.20	2.67	2.67	2.66	3.60	2.40	2.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00
Antenna	1.20	0.80	0.67	0.67	0.66	0.90	0.60	0.50	0.50	0.50	0.00	0.00	0.00	0.00	0.00
Shotgun Rounds	0.00	0.00	0.00	0.00	0.00	0.30	0.20	0.17	0.17	0.16	0.00	0.00	0.00	0.00	0.00
Beanbag Rounds	5.40	3.60	3.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Beanbag Gun Case	1.20	0.80	0.67	0.67	0.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taser Cartridge	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	13.50	9.00	7.51	7.51	7.48	5.70	3.80	3.17	3.17	3.16					
Cumulative Equipment Item (#)															
Patrol Car Oper/Maint (# Cars)	5.90	6.50	7.00	7.50	8.00	8.90	9.50	10.00	10.50	11.00	11.00	11.00	11.00	11.00	11.00
D-Ring	24.80	28.00	30.67	33.34	36.00	39.60	42.00	44.00	46.00	48.00	48.00	48.00	48.00	48.00	48.00
Antenna	6.20	7.00	7.67	8.34	9.00	9.90	10.50	11.00	11.50	12.00	12.00	12.00	12.00	12.00	12.00
Shotgun Rounds	1.00	1.00	1.00	1.00	1.00	1.30	1.50	1.67	1.84	2.00	2.00	2.00	2.00	2.00	2.00
Beanbag Rounds	37.40	41.00	44.00	47.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Beanbag Gun Case	9.20	10.00	10.67	11.34	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
Taser Cartridge	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Total	104.50	113.50	121.01	128.52	136.00	141.70	145.50	146.67	151.64	155.00	155.00	155.00	155.00	155.00	155.00
Annual Costs---See Factors Below ($)															
Patrol Car Oper/Maint (# Cars)	54,670	60,450	65,100	69,750	74,400	82,770	88,350	93,000	97,650	102,300	102,300	102,300	102,300	102,300	102,300
D-Ring	288	336	368	400	432	475	504	528	552	576	576	576	576	576	576
Antenna	47	53	59	64	69	76	80	84	88	92	92	92	92	92	92
Shotgun Rounds	300	300	300	300	300	390	450	501	552	600	600	600	600	600	600
Beanbag Rounds	165	203	218	233	248	248	248	248	248	248	248	248	248	248	248
Beanbag Gun Case	110	120	128	136	144	144	144	144	144	144	144	144	144	144	144
Taser Cartridge	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330
Total	56,140	61,792	66,502	71,212	75,922	84,432	90,106	94,834	99,563	104,289	104,289	104,289	104,289	104,289	104,289

Annual Cost Factors ($)

Patrol Car Oper/Maint (# Cars)
D-Ring
Antenna
Shotgun Rounds
Beanbag Rounds
Beanbag Gun Case
Taser Cartridge

Source: Los Angeles County Sheriff's Departm

Table 1
SUMMARY REVENUE & EXPENDITURE PROJECTIONS
FOR OPERATONS & CAPITAL FACILITY ITEMS BY SERVICE CATEGORY
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Illustrative Years: Year 5 2004	Year 10 2009	Year 15 2014	Year 20 2019	Year 25 2024
	$000's										
GENERAL FUND SERVICES											
Operations											
Revenues	481,976	33,862	75,049	108,295	129,699	135,071	8,760	17,629	23,385	26,636	27,029
Expenditures	281,365	26,620	50,207	64,560	71,989	67,989	6,369	11,012	13,661	13,966	13,383
Net Surplus/(Deficit)	200,611	7,241	24,842	43,736	57,710	67,082	2,392	6,617	9,724	12,670	13,646
---% to Expenditures	71.3	27.2	49.5	67.7	80.2	98.7	37.6	60.1	71.2	90.7	102.0
---Cumulative	200,611	7,241	32,084	75,819	133,529	200,611	7,241	32,084	75,819	133,529	200,611
Capital Facilities											
Revenues	15,076	4,397	3,612	3,341	2,654	1,072	797	626	684	342	143
Expenditures	15,076	4,397	3,612	3,341	2,654	1,072	797	626	684	342	143
Net Surplus/(Deficit)	(0)	0	0	0	0	0	0	0	0	0	0
---Cumulative	0	0	0	0	0	0	0	0	0	0	0
Operations & Cap Facil Combined											
Revenues	497,052	38,259	78,662	111,636	132,353	136,143	9,558	18,255	24,069	26,978	27,172
Expenditures	296,441	31,017	53,819	67,900	74,643	69,061	7,166	11,637	14,345	14,308	13,526
Net Surplus/(Deficit)	200,611	7,241	24,842	43,736	57,710	67,082	2,392	6,617	9,724	12,670	13,646
---Cumulative	200,611	7,241	32,084	75,819	133,529	200,611	7,241	32,084	75,819	133,529	200,611
FIRE PROTECTION SERVICES											
Operations											
Revenues	159,143	6,674	20,187	34,953	46,161	51,168	2,152	5,268	7,985	9,827	10,428
Expenditures	92,918	5,200	13,130	17,550	27,300	29,738	1,300	3,510	3,510	5,948	5,948
Net Surplus/(Deficit)	66,225	1,474	7,057	17,403	18,861	21,430	852	1,758	4,475	3,880	4,481
---% to Expenditures	71.3	28.3	53.7	99.2	69.1	72.1	65.5	50.1	127.5	65.2	75.3
---Cumulative	66,225	1,474	8,531	25,934	44,795	66,225	1,474	8,531	25,934	44,795	66,225
Capital Facilities											
Revenues	8,362	1,706	2,498	2,189	1,480	488	344	499	386	167	54
Expenditures	6,330	2,100	1,980	0	2,250	0	0	0	0	0	0
Net Surplus/(Deficit)	2,032	(394)	518	2,189	(770)	488	344	499	386	167	54
---Cumulative	2,032	(394)	124	2,313	1,544	2,032	(394)	124	2,313	1,544	2,032
Operations & Cap Facil Combined											
Revenues	167,504	8,380	22,685	37,142	47,642	51,656	2,495	5,767	8,370	9,994	10,483
Expenditures	99,248	7,300	15,110	17,550	29,550	29,738	1,300	3,510	3,510	5,948	5,948
Net Surplus/(Deficit)	68,257	1,080	7,575	19,592	18,092	21,918	1,195	2,257	4,860	4,047	4,535
---Cumulative	68,257	1,080	8,655	28,247	46,339	68,257	1,080	8,655	28,247	46,339	68,257

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Table 1 (Continued.....page 2)
SUMMARY REVENUE & EXPENDITURE PROJECTIONS
FOR OPERATONS & CAPITAL FACILITY ITEMS BY SERVICE CATEGORY
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Illustrative Years: Year 5	Year 10	Year 15	Year 20	Year 25
	$000's										
LIBRARY SERVICES											
Operations											
Revenues	32,621	1,385	4,119	7,106	9,459	10,552	442	1,072	1,629	2,019	2,157
Expenditures	20,647	920	2,627	4,442	5,976	6,682	287	673	1,023	1,275	1,370
Net Surplus/(Deficit)	11,974	465	1,492	2,664	3,483	3,870	155	399	606	744	786
---% to Expenditures	58.0	50.5	56.8	60.0	58.3	57.9	54.0	59.4	59.3	58.3	57.4
---Cumulative	11,974	465	1,957	4,621	8,104	11,974	465	1,957	4,621	8,104	11,974
Capital Facilities											
Revenues	8,292	1,677	2,254	2,084	1,606	672	289	401	428	212	91
Expenditures	8,292	0	2,597	2,989	0	2,706	0	0	0	0	2,706
Net Surplus/(Deficit)	(0)	1,677	(343)	(905)	1,606	(2,035)	289	401	428	212	(2,615)
---Cumulative	(0)	1,677	1,334	428	2,035	(0)	1,677	1,334	428	2,035	(0)
Operations & Cap Facil Combined											
Revenues	40,914	3,062	6,372	9,190	11,065	11,224	731	1,473	2,057	2,231	2,248
Expenditures	28,939	920	5,223	7,432	5,976	9,388	287	673	1,023	1,275	4,077
Net Surplus/(Deficit)	11,974	2,142	1,149	1,759	5,090	1,835	444	800	1,035	956	(1,829)
---Cumulative	11,974	2,142	3,291	5,049	10,139	11,974	2,142	3,291	5,049	10,139	11,974
STREET MAINTENANCE SERVICES											
Operations											
Revenues	25,992	1,143	3,306	5,621	7,526	8,396	360	850	1,291	1,605	1,719
Expenditures	21,063	881	2,633	4,542	6,102	6,904	281	682	1,048	1,308	1,422
Net Surplus/(Deficit)	4,929	262	673	1,079	1,424	1,492	78	168	243	297	297
---% to Expenditures	23.4	29.7	25.5	23.7	23.3	21.6	27.9	24.7	23.2	22.7	20.9
---Cumulative	4,929	262	934	2,013	3,437	4,929	262	934	2,013	3,437	4,929
Capital Facilities											
None.....											
STREET LIGHTING SERVICES											
Operations											
Revenues	9,832	418	1,245	2,146	2,850	3,173	134	324	492	608	648
Expenditures	9,492	388	1,180	2,051	2,759	3,114	123	307	473	591	640
Net Surplus/(Deficit)	340	30	65	95	90	60	10	17	18	16	8
---% to Expenditures	3.6	7.8	5.5	4.6	3.3	1.9	8.3	5.4	3.8	2.8	1.2
---Cumulative	340	30	95	190	280	340	30	95	190	280	340
Capital Facilities											
None.....											

Continued on next page.....

Table 1 (Continued.....page 3)
SUMMARY REVENUE & EXPENDITURE PROJECTIONS
FOR OPERATONS & CAPITAL FACILITY ITEMS BY SERVICE CATEGORY
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Illustrative Years: Year 5	Year 10	Year 15	Year 20	Year 25
	$000's										
FLOOD CONTROL MAINTENANCE SERVICES											
Operations											
Revenues	21,079	870	2,615	4,567	6,130	6,896	279	686	1,048	1,315	1,411
Expenditures	5,742	428	905	1,223	1,535	1,651	144	208	272	330	330
Net Surplus/(Deficit)	15,337	442	1,710	3,344	4,595	5,245	135	478	776	985	1,081
---% to Expenditures	267.1	103.3	188.9	273.3	299.4	317.8	93.9	229.6	284.9	298.4	327.4
---Cumulative	15,337	442	2,152	5,496	10,092	15,337	442	2,152	5,496	10,092	15,337
Capital Facilities											
None.....											
TRANSIT SERVICES											
Operations											
Revenues	10,323	460	1,313	2,221	2,988	3,341	144	336	511	638	685
Expenditures	10,323	460	1,313	2,221	2,988	3,341	144	336	511	638	685
Net Surplus/(Deficit)	0	0	0	0	0	0	0	0	0	0	0
---% to Expenditures	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
---Cumulative	0	0	0	0	0	0	0	0	0	0	0
Capital Facilities											
None.....											
TOTAL ALL SERVICES COMBINED											
Operations											
Revenues	740,967	44,812	107,835	164,910	204,813	218,597	12,270	26,165	36,340	42,648	44,077
Expenditures	441,551	34,898	71,996	96,590	118,649	119,418	8,648	16,728	20,498	24,056	23,779
Net Surplus/(Deficit)	299,417	9,914	35,839	68,320	86,164	99,179	3,622	9,437	15,842	18,592	20,299
---% to Expenditures	67.8	28.4	49.8	70.7	72.6	83.1	41.9	56.4	77.3	77.3	85.4
---Cumulative	299,417	9,914	45,753	114,073	200,238	299,417	9,914	45,753	114,073	200,238	299,417
Capital Facilities											
Revenues	31,730	7,780	8,364	7,613	5,741	2,232	1,429	1,526	1,499	721	288
Expenditures	29,699	6,497	8,189	6,330	4,904	3,779	797	626	684	342	2,849
Net Surplus/(Deficit)	2,032	1,283	175	1,283	837	(1,547)	632	900	814	379	(2,561)
---Cumulative	2,032	1,283	1,458	2,742	3,578	2,032	1,283	1,458	2,742	3,578	2,032
Operations & Cap Facil Combined											
Revenues	772,697	52,592	116,199	172,523	210,554	220,829	13,699	27,691	37,839	43,369	44,366
Expenditures	471,249	41,395	80,185	102,920	123,553	123,196	9,445	17,353	21,183	24,398	26,628
Net Surplus/(Deficit)	301,448	11,198	36,014	69,604	87,001	97,632	4,254	10,337	16,656	18,971	17,738
---Cumulative	301,448	11,198	47,211	116,815	203,816	301,448	11,198	47,211	116,815	203,816	301,448

Source: The Levander Company, Inc.

Table 2
SUMMARY REVENUE & EXPENDITURE PROJECTIONS
OPERATIONS ITEMS ONLY FOR YEAR 25 (ANNUAL AT FULL BUILDOUT)
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	General Fund Services	Fire Protection Services	Library Services	Street Maint Services	Street Lighting Services	Fl Con Maint Services	Transit Services	Total
	$000's							
REVENUES								
Property Taxes	12,481	10,428	1,544	407	512	796	0	26,169
Sales Taxes--Basic	3,533	0	0	0	0	0	0	3,533
Sales Taxes--Propositions	1,493	0	0	548	0	0	685	2,727
Utility Users Tax	2,153	0	0	0	0	0	0	2,153
Vehicle License Fees	5,065	0	0	0	0	0	0	5,065
Highway Users Tax	0	0	0	765	0	0	0	765
Benefit Assessments	45	0	562	0	136	615	0	1,358
Library Contribution	0	0	0	0	0	0	0	0
All Other	2,257	0	50	0	0	0	0	2,307
Total	27,029	10,428	2,157	1,719	648	1,411	685	44,077
EXPENDITURES								
Police Protection Services (Sheriff)	3,796	0	0	0	0	0	0	3,796
Animal Care & Control Services	145	0	0	0	0	0	0	145
Parks & Recreation Services	1,806	0	0	0	0	0	0	1,806
County-Wide Services	6,565	0	0	0	0	0	0	6,565
General Administration	534	0	0	0	0	0	0	534
Library Contribution	0	0	0	0	0	0	0	0
Other Departmental Operations	0	5,948	1,370	1,422	640	330	685	10,396
All Other	537	0	0	0	0	0	0	537
Total	13,383	5,948	1,370	1,422	640	330	685	23,779
NET SURPLUS/(DEFICIT)	13,646	4,481	786	297	8	1,081	0	20,299

Note: See Appendix Tables A1 for interim-year summary projections. See Appendix Tables A2.1-A2.7 for detailed annual projections.

Source: The Levander Company, Inc.

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FISCAL IMPACT ANALYSIS OF NEWHALL RANCH –IN UNINCORPORATED LOS ANGELES COUNTY–

Prepared for
The Newhall Ranch Company

January 1996

economics and management consultants

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Introduction

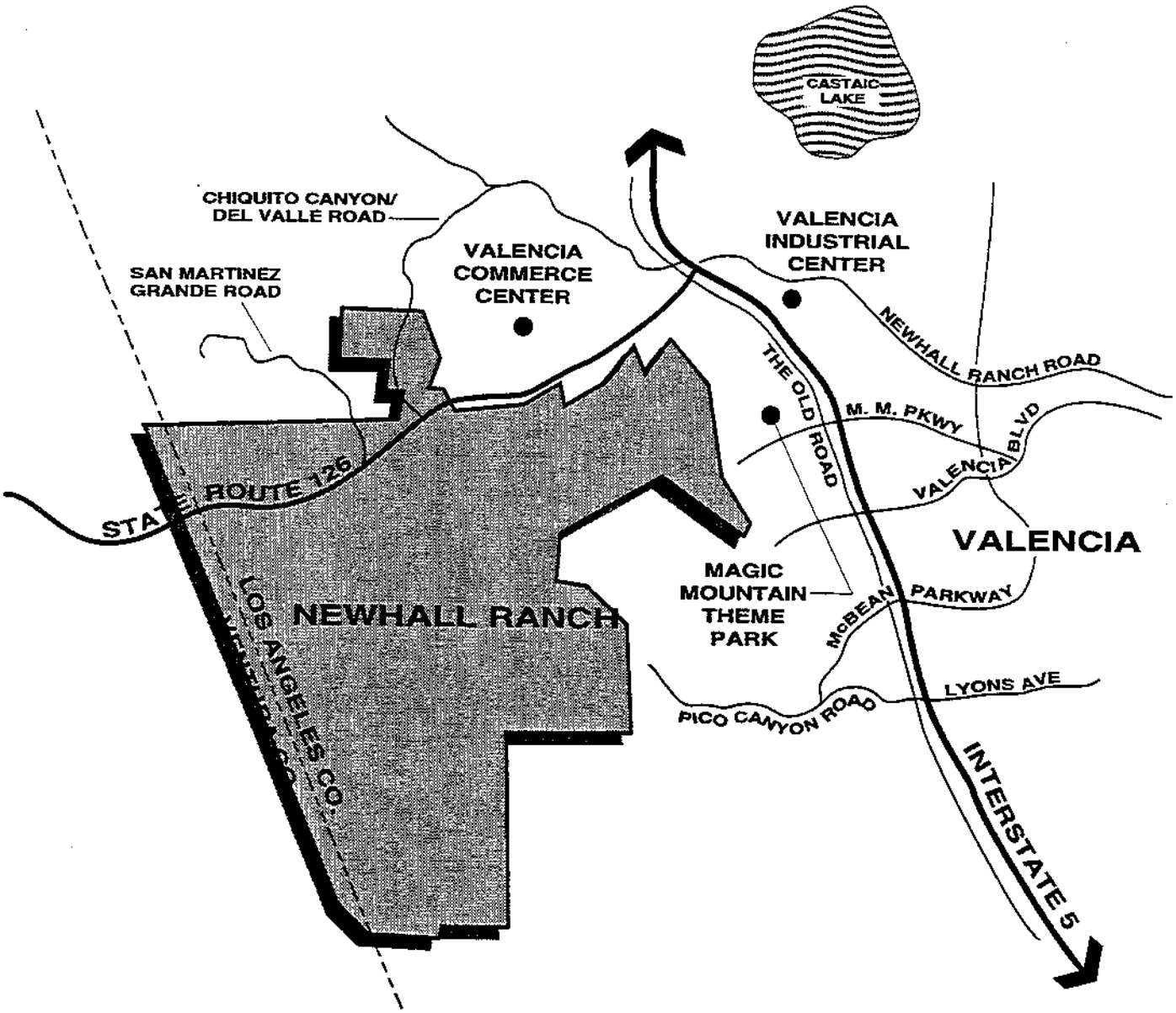
At the request of Newhall Ranch Company, we have prepared this fiscal impact analysis of the 11,964-acre Newhall Ranch, identified in Exhibit 1 and located in unincorporated Los Angeles County. This analysis covers the governmental services to be provided to future residents, commercial establishments, and business park establishments in Newhall Ranch by Los Angeles County operating departments. Our purpose has been to provide the developer an objective assessment of future Newhall development on County finances, this in turn to assist the developer in explaining impacts to affected County Departments during the development approval process. In addition, we have compared sales tax revenues to be received by the City of Santa Clarita with possible added City street maintenance and other circulation costs to arise from Newhall Ranch development.

Fiscal projections for Los Angeles County are divided into seven categories, reflecting fiscal and operational responsibility, as follows: (1) General fund services, which include local police protection (by the Sheriff), animal care and control, parks and recreation services, and a variety of County-wide services, (2) fire protection services, (3) library services, (4) road maintenance services, (5) street lighting services, (6) flood control services, and (7) transit services.

An accepted revenue-cost methodology has been utilized, including: (1) utilization of 1995 constant dollars, (2) case study analysis of those significant revenue and expenditure items which are directly measurable against new development activity, (3) utilization of appropriate projection factors (per capita, per residential unit, per square foot, per acre, per lane-mile, etc.), (4) assumption that the level of governmental services to be provided to the area under study will be equal to those currently prevailing in unincorporated Los Angeles County, and (5) assumption that existing sources of revenue will prevail.

This analysis utilizes information from the following sources: (1) discussions with officials of Los Angeles County and the City of Santa Clarita, identified in Appendix F, (2) land use and other development measures from the Newhall Ranch Specific Plan and environmental impact report (EIR) documents, prepared by FORMA Design Inc. and Impact Sciences, respectively, with additional detail provided by Newhall Ranch Company staff and consultants, (3) prospective development values and timing from Newhall Ranch Company market research, (4) current assessed values of Newhall Ranch from Los Angeles County Assessor rolls, (5) property tax rate breakdowns from the Los Angeles County Auditor/Controller, and (6) residential taxable purchase factors from our analysis of regional purchase factors related to housing values and resident incomes.

This report is summary in nature, presenting principal findings and conclusions, including an Executive Summary in Section I following. An appendix to this report contains detailed computer projections, supporting research data, and a list of County officials contacted.



NEWHALL RANCH™

EXHIBIT 1
BOUNDARY & LOCATION MAP

I.

EXECUTIVE SUMMARY

Key development measures of Newhall Ranch at buildout after a projected 25-year development period starting Year 2000 are as follows:

Residential Units	24,680
Commercial/Business Park Building Space	5.72 Million SF
Population	68,524
New Development Value	$5.6 Billion
Annual Taxable Sales To LA County	$321.2 Million
Annual Taxable Sales to City of Santa Clarita	$207.0 Million

The above dollar measures are expressed in 1995 constant dollars.

Newhall Ranch will have a highly favorable fiscal impact on Los Angeles County. As summarized in Table 1 immediately following, Newhall Ranch will generate the following amount of surplus (also in 1995 constant dollars) to the County for the seven service categories combined:

- $332.3 million during the 25-year development period.
- $19.6 million in Year 25 and $22.2 million annually thereafter, the latter figure equal to surplus projected for Year 25 operations only (that is, excluding capital facilities which will be completed by Year 25).

We believe it particularly important to future County fiscal health that 70% of the projected 25-year surplus and also 70% of surplus generated after Year 25 will be derived from the County's the General Fund, where the County is currently experiencing its principal financial difficulties. The other County operations are in large measure protected from fiscal deficits because of separate taxing and assessment capabilities. It is the General Fund which has to support County operations which are heavily impacted by lower income sectors of our society, particularly in the areas of public assistance and health care.

Table 1
SUMMARY REVENUE & EXPENDITURE PROJECTIONS
FOR OPERATONS & CAPITAL FACILITY ITEMS BY SERVICE CATEGORY
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Illustrative Years: Year 5 2004	Year 10 2009	Year 15 2014	Year 20 2019	Year 25 2024
	$000's										
GENERAL FUND SERVICES											
Operations											
Revenues	481,976	33,862	75,049	108,295	129,699	135,071	8,760	17,629	23,385	26,636	27,029
Expenditures	250,529	25,307	46,667	57,714	62,571	58,270	5,985	10,176	12,053	11,929	11,491
Net Surplus/(Deficit)	231,447	8,554	28,382	50,582	67,128	76,800	2,776	7,453	11,332	14,707	15,537
---% to Expenditures	92.4	33.8	60.8	87.6	107.3	131.8	46.4	73.2	94.0	123.3	135.2
---Cumulative	231,447	8,554	36,937	87,519	154,647	231,447	8,554	36,937	87,519	154,647	231,447
Capital Facilities											
Revenues	15,076	4,397	3,612	3,341	2,654	1,072	797	626	684	342	143
Expenditures	15,076	4,397	3,612	3,341	2,654	1,072	797	626	684	342	143
Net Surplus/(Deficit)	(0)	0	0	0	0	0	0	0	0	0	0
---Cumulative	0	0	0	0	0	0	0	0	0	0	0
Operations & Cap Facil Combined											
Revenues	497,052	38,259	78,662	111,636	132,353	136,143	9,558	18,255	24,069	26,978	27,172
Expenditures	265,605	29,704	50,279	61,054	65,224	59,343	6,782	10,802	12,737	12,271	11,634
Net Surplus/(Deficit)	231,447	8,554	28,382	50,582	67,128	76,800	2,776	7,453	11,332	14,707	15,537
---Cumulative	231,447	8,554	36,937	87,519	154,647	231,447	8,554	36,937	87,519	154,647	231,447
FIRE PROTECTION SERVICES											
Operations											
Revenues	159,143	6,674	20,187	34,953	46,161	51,168	2,152	5,268	7,985	9,827	10,428
Expenditures	92,918	5,200	13,130	17,550	27,300	29,738	1,300	3,510	3,510	5,948	5,948
Net Surplus/(Deficit)	66,225	1,474	7,057	17,403	18,861	21,430	852	1,758	4,475	3,880	4,481
---% to Expenditures	71.3	28.3	53.7	99.2	69.1	72.1	65.5	50.1	127.5	65.2	75.3
---Cumulative	66,225	1,474	8,531	25,934	44,795	66,225	1,474	8,531	25,934	44,795	66,225
Capital Facilities											
Revenues	8,362	1,706	2,498	2,169	1,480	488	344	499	386	167	54
Expenditures	6,330	2,100	1,980	0	2,250	0	0	0	0	0	0
Net Surplus/(Deficit)	2,032	(394)	518	2,169	(770)	488	344	499	386	167	54
---Cumulative	2,032	(394)	124	2,313	1,544	2,032	(394)	124	2,313	1,544	2,032
Operations & Cap Facil Combined											
Revenues	167,504	8,380	22,685	37,142	47,642	51,656	2,495	5,767	8,370	9,994	10,483
Expenditures	99,248	7,300	15,110	17,550	29,550	29,738	1,300	3,510	3,510	5,948	5,948
Net Surplus/(Deficit)	68,257	1,080	7,575	19,592	18,092	21,918	1,195	2,257	4,860	4,047	4,535
---Cumulative	68,257	1,080	8,655	28,247	46,339	68,257	1,080	8,655	28,247	46,339	68,257

Continued on next page.....

Table 1 (Continued.....page 2)
SUMMARY REVENUE & EXPENDITURE PROJECTIONS
FOR OPERATONS & CAPITAL FACILITY ITEMS BY SERVICE CATEGORY
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Illustrative Years: Year 5	Year 10	Year 15	Year 20	Year 25
	$000's										
LIBRARY SERVICES											
Operations											
Revenues	32,621	1,385	4,119	7,106	9,459	10,552	442	1,072	1,629	2,019	2,157
Expenditures	20,647	920	2,627	4,442	5,976	6,682	287	673	1,023	1,275	1,370
Net Surplus/(Deficit)	11,974	465	1,492	2,664	3,483	3,870	155	399	606	744	786
---% to Expenditures	58.0	50.5	56.8	60.0	58.3	57.9	54.0	59.4	59.3	58.3	57.4
---Cumulative	11,974	465	1,957	4,621	8,104	11,974	465	1,957	4,621	8,104	11,974
Capital Facilities											
Revenues	8,292	1,677	2,254	2,084	1,606	672	289	401	428	212	91
Expenditures	8,292	0	2,597	2,989	0	2,706	0	0	0	0	2,706
Net Surplus/(Deficit)	(0)	1,677	(343)	(906)	1,606	(2,035)	289	401	428	212	(2,615)
---Cumulative	(0)	1,677	1,334	428	2,035	(0)	1,677	1,334	428	2,035	(0)
Operations & Cap Facil Combined											
Revenues	40,914	3,062	6,372	9,190	11,065	11,224	731	1,473	2,057	2,231	2,248
Expenditures	28,939	920	5,223	7,432	5,976	9,388	287	673	1,023	1,275	4,077
Net Surplus/(Deficit)	11,974	2,142	1,149	1,759	5,090	1,835	444	800	1,035	956	(1,829)
---Cumulative	11,974	2,142	3,291	5,049	10,139	11,974	2,142	3,291	5,049	10,139	11,974
STREET MAINTENANCE SERVICES											
Operations											
Revenues	25,992	1,143	3,306	5,621	7,526	8,396	360	850	1,291	1,605	1,719
Expenditures	21,063	881	2,633	4,542	6,102	6,904	281	682	1,048	1,308	1,422
Net Surplus/(Deficit)	4,929	262	673	1,079	1,424	1,492	78	168	243	297	297
---% to Expenditures	23.4	29.7	25.5	23.7	23.3	21.6	27.9	24.7	23.2	22.7	20.9
---Cumulative	4,929	262	934	2,013	3,437	4,929	262	934	2,013	3,437	4,929
Capital Facilities											
None.....											
STREET LIGHTING SERVICES											
Operations											
Revenues	9,832	418	1,245	2,146	2,850	3,173	134	324	492	608	648
Expenditures	9,492	388	1,180	2,051	2,759	3,114	123	307	473	591	640
Net Surplus/(Deficit)	340	30	65	95	90	60	10	17	18	16	8
---% to Expenditures	3.6	7.8	5.5	4.6	3.3	1.9	8.3	5.4	3.8	2.6	1.2
---Cumulative	340	30	95	190	280	340	30	95	190	280	340
Capital Facilities											
None.....											

Continued on next page.....

Table 1 (Continued.....page 3)
SUMMARY REVENUE & EXPENDITURE PROJECTIONS
FOR OPERATONS & CAPITAL FACILITY ITEMS BY SERVICE CATEGORY
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Illustrative Years: Year 5	Year 10	Year 15	Year 20	Year 25
	$000's										
FLOOD CONTROL MAINTENANCE SERVICES											
Operations											
Revenues	21,079	870	2,615	4,567	6,130	6,696	279	686	1,048	1,315	1,411
Expenditures	5,742	428	905	1,223	1,535	1,651	144	208	272	330	330
Net Surplus/(Deficit)	15,337	442	1,710	3,344	4,595	5,245	135	478	776	985	1,081
---% to Expenditures	267.1	103.3	188.9	273.3	299.4	317.8	93.9	229.6	284.9	298.4	327.4
---Cumulative	15,337	442	2,152	5,496	10,092	15,337	442	2,152	5,496	10,092	15,337
Capital Facilities											
None.....											
TRANSIT SERVICES											
Operations											
Revenues	10,323	460	1,313	2,221	2,988	3,341	144	336	511	638	685
Expenditures	10,323	460	1,313	2,221	2,988	3,341	144	336	511	638	685
Net Surplus/(Deficit)	0	0	0	0	0	0	0	0	0	0	0
---% to Expenditures	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
---Cumulative	0	0	0	0	0	0	0	0	0	0	0
Capital Facilities											
None.....											
TOTAL ALL SERVICES COMBINED											
Operations											
Revenues	740,967	44,812	107,835	164,910	204,813	218,597	12,270	26,165	36,340	42,648	44,077
Expenditures	410,714	33,585	68,456	89,744	109,230	109,699	8,264	15,892	18,891	22,019	21,887
Net Surplus/(Deficit)	330,253	11,227	39,379	75,166	95,583	108,897	4,006	10,272	17,450	20,629	22,190
---% to Expenditures	80.4	33.4	57.5	83.8	87.5	99.3	48.5	64.6	92.4	93.7	101.4
---Cumulative	330,253	11,227	50,606	125,772	221,355	330,253	11,227	50,606	125,772	221,355	330,253
Capital Facilities											
Revenues	31,730	7,780	8,364	7,613	5,741	2,232	1,429	1,526	1,499	721	288
Expenditures	29,699	6,497	8,189	6,330	4,904	3,779	797	626	684	342	2,849
Net Surplus/(Deficit)	2,032	1,283	175	1,283	837	(1,547)	632	900	814	379	(2,561)
---Cumulative	2,032	1,283	1,458	2,742	3,578	2,032	1,283	1,458	2,742	3,578	2,032
Operations & Cap Facil Combined											
Revenues	772,697	52,592	116,199	172,523	210,554	220,829	13,699	27,691	37,839	43,369	44,366
Expenditures	440,413	40,082	76,645	96,074	114,134	113,478	9,061	16,518	19,575	22,361	24,736
Net Surplus/(Deficit)	332,284	12,510	39,554	76,449	96,420	107,351	4,638	11,173	18,264	21,008	19,629
---Cumulative	332,284	12,510	52,064	128,514	224,934	332,284	12,510	52,064	128,514	224,934	332,284

Source: The Levander Company, Inc.

As indicated in Table 1, financial projections are divided between ongoing operations and capital facilities. Over the 25-year development period, ongoing operations will account for 96% of total revenues and 99% of total surplus. These operations will yield a positive cash flow to the County from Year 1 forward; that is, a positive cash flow for is projected for the seven services combined (general fund, fire protection, library services, street maintenance, street lighting, flood control, and transit). As shown in Appendix Tables A1 and A2.2, the only service which will experience a short-term operations deficit will be fire protection:

- Which is projected to have a deficit of $346 thousand in Year 2, the first year of operating a new engine company.

- But this deficit will be more than offset by a surplus of $476 thousand projected for Year 1.

Financial projections presented in Table 1 also demonstrate that the County will have a large margin-of-safety in its financial coverage of ongoing operations. To illustrate, projected operations cash surplus for all services combined is projected to be equal to 80.4% of projected expenditures during the 25-year development period and 101.4% by Year 25 and thereafter. Further enhancing this safety factor, projected County revenues do not take into account any possible additional State or Federal grants which may become available to assist in law enforcement, fire protection, library services, flood control services, or transit services.

Table 2 summarizes key revenue and expenditure items for Year 25 operations and illustrates the major importance of property taxes to surplus generation. These taxes are projected to equal 59.4% of total revenues in Year 25. This high level of property taxes reflects:

- Project values which are high in relation to the County at large (as the projected new development value of $5.6 billion equates to $82,326 per capita, 49% higher that the existing County average of $55,238).

- A 45.835% share of the $1.00 per $100 assessed value property tax rate to agencies covered by this analysis; 21.923% for the general fund, 18.168% for fire protection services, and 5.744% divided among library, street maintenance, street lighting, and flood control services, as identified in Appendix Tables A2.1 through A2.6.

As noted earlier, property tax projections are in 1995 constant dollars, an approach common to fiscal impact analysis throughout the State. We recognize that property taxes are limited to a maximum 2.0% annual escalation, compared to an average inflation rate of 4.1% in recent years (since 1981). However, as illustrated in Appendix Table C3, after considering an assumed average property ownership turnover of once each seven years, the

Table 2
SUMMARY REVENUE & EXPENDITURE PROJECTIONS
OPERATIONS ITEMS ONLY FOR YEAR 25 (ANNUAL AT FULL BUILDOUT)
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	General Fund Services	Fire Protection Services	Library Services	Street Maint Services	Street Lighting Services	Fl Con Maint Services	Transit Services	Total
	$000's							
REVENUES								
Property Taxes	12,481	10,428	1,544	407	512	796	0	26,169
Sales Taxes--Basic	3,533	0	0	0	0	0	0	3,533
Sales Taxes--Propositions	1,493	0	0	548	0	0	685	2,727
Utility Users Tax	2,153	0	0	0	0	0	0	2,153
Vehicle License Fees	5,065	0	0	0	0	0	0	5,065
Highway Users Tax	0	0	0	765	0	0	0	765
Benefit Assessments	45	0	562	0	136	615	0	1,358
Library Contribution	0	0	0	0	0	0	0	0
All Other	2,257	0	50	0	0	0	0	2,307
Total	27,029	10,428	2,157	1,719	648	1,411	685	44,077
EXPENDITURES								
Police Protection Services (Sheriff)	1,994	0	0	0	0	0	0	1,994
Animal Care & Control Services	145	0	0	0	0	0	0	145
Parks & Recreation Services	1,806	0	0	0	0	0	0	1,806
County-Wide Services	6,565	0	0	0	0	0	0	6,565
General Administration	444	0	0	0	0	0	0	444
Library Contribution	0	0	0	0	0	0	0	0
Other Departmental Operations	0	5,948	1,370	1,422	640	330	685	10,396
All Other	537	0	0	0	0	0	0	537
Total	11,491	5,948	1,370	1,422	640	330	685	21,887
NET SURPLUS/(DEFICIT)	15,537	4,481	786	297	8	1,081	0	22,190

Note: See Appendix Tables A1 for interim-year summary projections. See Appendix Tables A2.1-A2.7 for detailed annual projections.

Source: The Levander Company, Inc.

net impact of utilizing constant dollars is to overstate property taxes by an estimated 5.9% by Year 25. This factor could be easily offset by property value increases in Newhall Ranch somewhat in excess of general inflation rates, which is a distinct possibility. Also, were our projections to reflect inflation-rate increases in both revenues (property taxes and other) and expenditures, projected cash surplus would be much larger than that shown by our analysis. We judge our approach appropriately conservative.

As illustrated in Table 3, capital facility costs of $29.7 million are projected for the 25-year development period, for park, fire protection, and library facilities. No capital facility costs are projected for street maintenance, street lighting, and flood control maintenance services, as these facilities will be provided through developer funding; and any transit facilities required will be funded by the County through its ongoing contract with the City of Santa Clarita.

Projected capital facility funding of $31.7 million during the 25-year development period will exceed capital facility costs of $29.7 million, yielding a net surplus of $2.0 million. This funding will be derived from a combination of benefit assessments, mitigation fees, and developer contributions. Park and library facilities are projected to be a breakeven situation. Fire facilities are projected to yield the indicated $2.0 million surplus, a result of projected costs less than the present mitigation fee of 18.2 cents per square foot of building space.

As shown in Appendix Tables A2.1 and A2.3, during the 25-year development period the park and library facility costs are projected to be directly offset by revenues. As shown in Appendix Table A2.2, fire facilities will show a deficit in several years immediately following the installation of engine companies and new stations; but on a cumulative basis fire facility funding will yield a surplus five of the first nine years of development and a surplus from Year 10 and beyond. Also, on a cumulative basis, fire protection service operating surplus will offset the short-term capital deficits in all but one year, this being a cumulative deficit of $115 thousand in Year 4.

The City of Santa Clarita will obtain an estimated 35% of taxable purchases to be made by Newhall Ranch residents. Sales taxes to be received by City from these purchases are projected to be:

- $35.6 million during the 25-year development period, collected on taxable purchases at City stores of $3.2 billion.

- $2.3 million annually by Year 25, collected on taxable sales at City stores of $207 million annually.

The principal additional costs to be incurred by the City to serve Newhall Ranch are street maintenance costs, conservatively estimated at $501 thousand annually, equal to 22.3% of projected sales taxes. Consequently, an estimated $1.8 million annual surplus is

Table 3
SUMMARY REVENUE & EXPENDITURE PROJECTIONS
CAPITAL FACILITY ITEMS ONLY FOR THE TOTAL 25-YEAR DEVELOPMENT PERIOD
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	General Fund Services	Fire Protection Services	Library Services	Street Maint Services	Street Lighting Services	Fl Con Maint Services	Transit Services	Total
	$000's							
REVENUES								
Mitigation Fees	0	8,362	8,292	0	0	0	0	16,654
Benefit Assessments	3,545	0	0	0	0	0	0	3,545
Developer Contribution	11,531	0	0	0	0	0	0	11,531
Vehicle License Fees	0	0	0	0	0	0	0	0
Benefit Assessments	0	0	0	0	0	0	0	0
All Other	0	0	0	0	0	0	0	0
Total	15,076	8,362	8,292	0	0	0	0	31,730
EXPENDITURES								
Police Facilities (Sheriff)	0	0	0	0	0	0	0	0
Animal Care & Control Facilities	0	0	0	0	0	0	0	0
Park Facilities	15,076	0	0	0	0	0	0	15,076
Other Departmental Facilities	0	6,330	8,292	0	0	0	0	14,622
Total	15,076	6,330	8,292	0	0	0	0	29,699
NET SURPLUS/(DEFICIT)	(0)	2,032	(0)	0	0	0	0	2,032

Note: See Appendix Tables A1 for interim-year summary projections. See Appendix Tables A2.1-A2.7 for detailed annual projections.

Source: The Levander Company, Inc.

expected to accrue to the benefit of the City upon the buildout of Newhall Ranch.

The projected 25-year development period is the developer's best estimate of residential and commercial/business park facility absorption at this time. Actual construction of residential and commercial/business park facilities will be in response to market conditions over the development period; and needed infrastructure will be commensurate with implementation of the Newhall Ranch Specific Plan through tentative tract maps.

This report contains projections of property taxes for all agencies covered by this analysis, as identified in foregoing Table 3. In addition to detailed Auditor/Controller property tax rate allocations for these agencies, Appendix Table C2 provides allocations for all other agencies receiving property tax shares, allocations which can be used to make additional property tax projections as might be appropriate.

Please refer to Section IV through Section X of this report for discussion of each of the individual service categories and to Appendix Tables A1 through A6 for detailed projections for each of these categories.

II.

DEVELOPMENT PROGRAM

1. CONTENT OF SECTION

This section discusses a variety of physical measures which reflect projected Newhall Ranch development and which are used as the basis for projecting a variety of County revenues and expenditures, as discussed subsequently in the report.

2. LAND USE, BUILDING FACILITIES, AND DEVELOPMENT SCHEDULE

Projected land uses are summarized in Table 4, reflecting categorization found in Table 2-1 of the Newhall Ranch Specific Plan. Utilizing these base measures combined with the specific plan's grading plan, Newhall Ranch staff and ourselves have prepared the residential, commercial, and business park development program summarized in Table 5 and detailed in Appendix Tables A3 and A4. Table 5 also reflects a projected 25-year buildout schedule.

3. PUBLIC STREETS

At time of buildout Newhall Ranch will contain an estimated 249.59 lane-miles of public streets to be dedicated to and maintained by the County, including:

- 83.79 lane-miles of major and secondary highways and collector streets, based upon scaling of the specific plan.
- 165.80 lane-miles of neighborhood streets, based upon prototypical factors of 35 lane-feet of street per residential unit and 100 lane-feet of street per acre of business park.

These measures exclude State Highway 126, which will be maintained by the State. Major secondary highway and collector streets and neighborhood streets are assumed to be constructed in proportion to development of residential, commercial, and business park facilities, as indicated Appendix Table A3.

Table 4
LAND USE PLAN STATISTICAL SUMMARY
NEWHALL RANCH SPECIFIC PLAN

	Gross Acres	Dwelling Units
Residential		
Estates (1)	1,234	523
Low	877	1,917
Low Medium	2,013	6,951
Medium	858	7,931
High	148	2,850
Subtotal Residential	5,130	20,172
Mixed–Use & Non–Residential		
Mixed Use (2)	598	4,493
Commercial	91	
Business Park	256	
Visitor Serving	37	
Subtotal Mixed Use/Non–Residential	982	4,493
Major Open Areas		
High Country (1) (3)	3,950	15
River Corridor	813	
Community Open Area	1,089	
Subtotal Major Open Areas	5,852	15
Total	11,964	24,680

Land Use Overlays (4)	Acre Allocation
12 Neighborhood Parks	60
3 Community Parks	274
Lake	15
Golf Course	180
5 Elementary Schools	35
1 Middle School	20
1 High School	40
1 Wastewater Reclamation Plant	15
1 Library	1
2 Fire Stations	2
1 Electrical Substation	2
Arterial Roads	331

Footnotes:
(1) Each estate lot is permitted (1) secondary unit, which may increase the total number of dwelling units by 538 (including the 15 units in the High Country).
(2) Mixed–use may includes commercial & residential uses.
(3) Fifteen (15) estate lots are planned within the High Country SMA.
(4) These acreage allocations are included within the gross acres indicated for various land uses.

Note: The development quantities shown in Appendix Table A3 are derived from the Newhall Ranch Specific Plan, Table II–1.

Source: Newhall Ranch Company; The Levander Company, Inc.

Table 5
SUMMARY DEVELOPMENT SCHEDULE BY YEAR
NEWHALL RANCH SPECIFIC PLAN

	Residential Units (#)									Comml/Bus Pk Bldg Sp (SF)						
	Estate Detached Sales	Low Detached Sales	Low Med Detached Sales	Medium Detached Sales	Medium Attached Sales	High Attached Sales	High Attached Rental	Mixed Use Sales	Total	Comml Retail	Comml Non-Retail	Comml Eat & Dr	Comml Hotel	Comml Office	Business Park	Total
FIVE-YEAR TOTALS																
Years 1-5	142	549	1,652	243	1,373	416	416	0	4,991	122,461	33,571	12,668	0	200,000	0	368,701
Years 6-10	252	847	1,993	453	1,530	330	330	972	6,707	237,409	65,083	24,560	60,000	500,000	600,000	1,487,052
Years 11-15	144	521	2,071	363	1,683	333	333	754	6,202	196,088	53,755	20,285	60,000	634,000	495,000	1,459,128
Years 16-20	0	0	1,035	560	1,454	346	346	1,040	4,781	517,642	141,906	53,549	0	791,000	218,000	1,722,097
Years 21-25	0	0	0	0	272	0	0	1,727	1,999	86,399	23,685	8,938	0	364,000	0	483,022
Total	538	1,917	6,951	1,619	6,312	1,425	1,425	4,493	24,680	1,159,999	318,001	120,000	120,000	2,489,000	1,513,000	5,720,000
ANNUAL																
Year 1	27	158	386	207	160	99	99	0	1,136	0	0	0	0	0	0	0
Year 2	27	158	386	0	423	99	99	0	1,192	0	0	0	0	0	0	0
Year 3	27	75	386	0	423	99	99	0	1,109	0	0	0	0	0	0	0
Year 4	27	0	307	0	163	99	99	0	695	122,461	33,571	12,668	0	100,000	0	268,701
Year 5	34	158	387	36	204	20	20	0	859	0	0	0	0	100,000	0	100,000
Year 6	68	158	387	327	0	99	99	208	1,346	0	0	0	60,000	100,000	0	160,000
Year 7	53	158	387	126	261	99	99	208	1,391	0	0	0	0	100,000	0	100,000
Year 8	53	157	445	0	423	99	99	208	1,484	237,409	65,083	24,560	0	100,000	0	427,052
Year 9	51	157	387	0	423	33	33	208	1,292	0	0	0	0	100,000	400,000	500,000
Year 10	27	217	387	0	423	0	0	140	1,194	0	0	0	0	100,000	400,000	500,000
Year 11	53	177	387	326	38	99	99	208	1,387	0	0	0	60,000	100,000	495,000	655,000
Year 12	43	128	519	37	376	36	36	130	1,305	71,373	19,566	7,383	0	100,000	0	198,323
Year 13	27	0	387	0	423	0	0	0	837	124,715	34,189	12,902	0	134,000	0	305,806
Year 14	21	157	391	0	423	99	99	208	1,398	0	0	0	0	100,000	0	100,000
Year 15	0	59	387	0	423	99	99	208	1,275	0	0	0	0	200,000	0	200,000
Year 16	0	0	387	327	56	99	99	208	1,176	0	0	0	0	200,000	0	200,000
Year 17	0	0	387	233	129	99	99	208	1,155	122,461	33,571	12,668	0	291,000	0	459,701
Year 18	0	0	261	0	423	99	99	208	1,090	214,870	58,904	22,228	0	100,000	100,000	496,003
Year 19	0	0	0	0	423	49	49	208	729	90,155	24,715	9,326	0	100,000	118,000	342,197
Year 20	0	0	0	0	423	0	0	208	631	90,155	24,715	9,326	0	100,000	0	224,197
Year 21	0	0	0	0	272	0	0	208	480	86,399	23,685	8,938	0	100,000	0	219,022
Year 22	0	0	0	0	0	0	0	416	416	0	0	0	0	100,000	0	100,000
Year 23	0	0	0	0	0	0	0	416	416	0	0	0	0	100,000	0	100,000
Year 24	0	0	0	0	0	0	0	416	416	0	0	0	0	64,000	0	64,000
Year 25	0	0	0	0	0	0	0	271	271	0	0	0	0	0	0	0
Total	538	1,917	6,951	1,619	6,312	1,425	1,425	4,493	24,680	1,159,999	318,001	120,000	120,000	2,489,000	1,513,000	5,720,000

Note: See Apendix Table A3 for other development quantities.

Source: The Levander Company, Inc.

4. STREET LIGHTS

Newhall Ranch will contain an estimated 4,742 street lights at buildout, to be maintained by the County, most likely through contract with Southern California Edison. This estimate is based on a factor of 19 lights per lane mile, a factor which in turn is based on standard spacing of 140 lineal feet between lights on neighborhood streets and 70 lineal feet on major streets. This spacing equates to 38 lights per lineal mile for neighborhood streets and 75 lights per lineal mile for major streets. The factor of 19 lights per lane mile is based on an average of two lanes for neighborhood streets and four lanes for major streets.

Street light construction is projected to be proportional to and concurrent with related street development. Please refer to Appendix Table A3 for detailed scheduling.

5. TRAFFIC SIGNALS

Newhall Ranch will contain an estimated 15 traffic signals, to be maintained by the County. As indicated in Appendix Table A3, timing is projected at one signal in each of the first five development years, followed thereafter by one signal each second year thereafter.

6. PUBLIC PARKS

Newhall Ranch will contain a total of 349 acres of public parks, in the form of:

- 113 acres of active park areas, in the form of 60 acres of neighborhood parks (12 parks of five acres each) and 53 acres of active areas within three community parks.
- 221 acres of nature park within the three community parks.
- A 15-acre lake.

This analysis assumes that these park areas will be maintained by the County. As indicated in Appendix Table A3, park construction is projected rather evenly over the first 18 years of development, with some reduction during the final seven years.

7. GOLF COURSE

Newhall Ranch will contain an 18-hole golf course of 180 acres, which this analysis assumes will be privately owned and, scheduled for opening in Year 6.

8. TRAILS

Capital facilities to be constructed and maintained by the County will include a 16-acre regional river trail. An additional 98 acres of community and local trails will be constructed by the developer but maintained by the County. Development of the regional river trail is projected to occur over the first five years of development, with the community and local trails projected for development over the first 20 years of development.

9. FLOOD CONTROL FACILITIES

At buildout, Newhall Ranch will contain the following flood control facilities to be maintained by Los Angeles County:

- 77,910 lineal feet of open channel and river embankment.
- 123,830 lineal feet of underground pipe and catch basins (storm drains).
- 23 debris basins and desilting inlets.
- 15 water quality basins.

Maintenance costs are keyed to the following schedules:

- Completion of the open channel and river embankment facilities in even increments over the first five years of development.
- Completion of the underground pipe and catch basins (storm drains) in even increments over the first 20 years of the 25-year development period.
- Completion of the debris basins, desilting inlets, and water quality basins in approximately equal increments over the first 20 years of the 25-year development period.

Please refer to Appendix Table A3 for detailed annual schedules.

III.

DEVELOPMENT MEASURES

1. CONTENT OF SECTION

This section discusses prospective Newhall Ranch population, new development value, taxable sales to the County, taxable Sales to the City of Santa Clarita, and hotel room sales to the County. These measures are computed on the basis of application of factors against foregoing physical measures (residential units, commercial building space, etc.) and--with the exception of Santa Clarita taxable sales--are used in projecting a variety of County revenues and expenditures, as discussed subsequently in this report.

2. POPULATION

Total population projected at buildout is 68,524. This figure is based upon the following average unit occupancy factors:

- 3.17 residents per household for detached units, excluding estate units.
- 5.17 residents per household for the detached estate lots, to account for an additional maximum possible 2.00 residents of each of the secondary units which will be permitted on these lots.
- 2.38 residents per household for attached units.

These factors are those used in the Newhall Ranch environmental impact report. Please refer to Appendix Tables A3 and A4 for detailed projections.

3. NEW DEVELOPMENT VALUE

At buildout, Newhall Ranch new development value is projected to be $5.6 billion, expressed in 1995 constant dollars. This valuation will equate to $82,326 per capita, 49% higher than the existing per capita level in Los Angeles County of $55,238. This projected value, based on Newhall Ranch Company market research, is keyed to the following factors:

- Residential unit values ranging from $75 thousand for rental apartments to $750 thousand for estate-type detached units, with a weighted average value of $205,396 per unit.

- Commercial value of $120 per square foot for retail-type tenant space and eating and drinking facilities, $110 per square foot for office facilities, and $72 thousand per room for hotel facilities.

- Business park value of $55 per square foot.

- Golf course value of $9.0 million, including clubhouse facilities.

Existing assessed value of the property is $5.2 million, as detailed from Assessor rolls in Appendix Table C1. This amount is equal to 0.1% of projected new development value at buildout of $5.6 billion. Property tax projections are based on assessed value increases, which at buildout will equal 99.9% of the projected new development value.

Please refer to Appendix Tables A4 and A5 for detailed projections of new development values.

4. TAXABLE SALES TO LOS ANGELES COUNTY

At buildout as detailed in Appendix Tables A4 and A5, Newhall Ranch will generate taxable sales to Los Angeles County of $321.2 million annually, as follows:

- $244.3 million annual taxable sales of Newhall Ranch retail and business park establishments, including sales to Newhall Ranch residents and non-residents.

- $76.9 million annual taxable purchases by Newhall Ranch residents at stores elsewhere in unincorporated Los Angeles County retail outlets; at stores not within Newhall Ranch.

Projected taxable sales of commercial and business park facilities are based upon the following underlying factors:

- **Retail and Restaurant/Eating and Drinking.** Total establishment sales are estimated at $160 per square foot annually for retail and $300 per square foot annually for restaurant/eating and drinking facilities, these factors derived from our analysis of sales performance of commercial projects throughout Southern California.

- **Business Park.** Sales of these facilities are estimated at $15 per square foot annually, a conservative figure based on Southern California experience which we have measured.

Total resident taxable purchases are based upon regional experience keyed to housing values and resident income levels. Specifically, resident taxable purchases have been estimated on a per-capita basis as follows: (1) resident household incomes estimated at one-third of housing values and (2) resident taxable purchases estimated at 35% of per household income levels. In support of this estimate is Appendix Table D2, which indicates that taxable sales in Los Angeles County and the six-county region are equal to approximately 41% of resident incomes. The 35% factor takes into consideration that a portion of these taxable sales are to non-residents of the County and region.

As indicated in Appendix Table A4, we estimate that Newhall Ranch taxable purchases will be geographically distributed as follows:

- 32% to stores within Newhall Ranch.
- 13% to stores elsewhere in unincorporated Los Angeles County.
- 35% to stores in the City of Santa Clarita.
- 20% to all other stores.

These factors are based on the following dual evaluation of prospective sales distribution:

- Capture analysis based on preliminary estimates of future store strengths, considering existing Santa Clarita performance and anticipated Newhall Ranch facilities, documented in Appendix Table D3.
- Capture analysis based on projections prepared by Austin-Foust Associates, Inc., the developer's traffic consultants for the EIR and the project, modified by an estimate of average purchases per trip for each of the four geographic factors, documented in Appendix Table D4.

Santa Clarita's existing retail strength is measured in Appendix Table D2, which compares its per-unit and per-capita taxable sales with those of the six-county region.

5. TAXABLE SALES TO THE CITY OF SANTA CLARITA

These sales are estimated at $207.0 million annually at buildout, utilizing the 35% capture factor noted above.

6. HOTEL ROOM SALES TO LOS ANGELES COUNTY

These sales at buildout are projected at $4.65 million annually, based on the following factors:

- 200 rooms with average room rate of $85 per day.
- 75% average occupancy rate.

Please refer to Appendix Tables A4 and A5 for detailed projections.

IV.

GENERAL FUND SERVICES

1. SUMMARY PROJECTIONS

As indicated in Table 6 immediately following, Newhall Ranch will generate a cash surplus to the County General Fund of $231.4 million during the 25-year development period and $15.5 million annually by Year 25. The fiscal model is set up so that any projected deficit in library services will be offset by a general fund contribution. However, as discussed in connection with library services, no such offset will be required because of adequate revenue coverage in that area of services.

While a major surplus for the County General Fund is projected, it will be up to the County Board of Supervisors to see that adequate funded is directed to Newhall Ranch services to cover projected costs herein. This is because no detailed mechanism is presently in place to automatically insure that such funding is directed to the local level.

Please refer to Appendix Tables 2.1 and 6.1 for detailed projections and underlying financial factors.

2. NON-DEPARTMENTAL REVENUES

(1) Secured Property Tax

General fund property taxes are computed at 21.923% share of the $1.00 per $100 assessed value property tax rate. As indicated in Appendix Table C2, The County general fund's present share of the $1.00 rate is 22.823% (which includes the stated General Fund share of 22.810% plus the Accumulated Capital Outlay Fund share of 0.13%). As indicated in the table, this percentage is a weighted average of Auditor/Controller allocations in the four tax rate areas (TRA's) in which Newhall Ranch is located. From the 22.823% share we have deducted 0.90% as a transfer to a future street lighting district, as discussed in Section VIII of this report, leaving the above-noted net figure of 21.923%.

(2) Unsecured Property Tax

Unsecured taxes are estimated at 10% of secured property taxes, applicable to commercial and industrial valuations only.

Table 6
SUMMARY REVENUE & EXPENDITURE PROJECTIONS
GENERAL FUND SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Illustrative Years: Year 5 2004	Year 10 2009	Year 15 2014	Year 20 2019	Year 25 2024
	$000's										
NON-DEPARTMENTAL REVENUES											
Property Taxes	190,746	8,040	24,245	41,918	55,303	61,241	2,589	6,321	9,575	11,766	12,481
Sales Tax	46,326	1,114	4,711	9,162	13,753	17,586	447	1,334	2,050	3,307	3,533
Utility Users' Tax	31,817	1,293	3,883	6,843	9,288	10,510	412	1,021	1,571	2,000	2,153
Vehicle License Fees	76,311	3,401	9,708	16,419	22,086	24,697	1,062	2,486	3,779	4,714	5,065
All Other	30,535	1,790	4,926	7,563	8,139	8,117	446	1,086	1,581	1,617	1,628
Total Revenues	375,735	15,638	47,472	81,906	108,569	122,150	4,955	12,248	18,556	23,403	24,861
LOCAL SERVICE NET EXPEND											
Police Protection	10,461	668	1,831	2,591	2,881	2,289	229	415	621	458	501
Animal Care & Control	2,189	98	278	471	633	708	30	71	108	135	145
Parks & Recreation	25,858	1,372	3,488	5,489	7,326	8,183	440	859	1,252	1,580	1,669
Development Control	0	0	0	0	0	0	0	0	0	0	0
Total Local Service Net Expenditures	38,508	2,338	5,598	8,551	10,841	11,180	699	1,345	1,982	2,173	2,315
SUBTOTAL NET SURPLUS/(DEFICIT)	337,227	13,300	41,875	73,355	97,728	110,970	4,256	10,903	16,574	21,230	22,547
OTHER NET EXPENDITURES											
County-Wide Services											
Judicial	28,575	1,274	3,635	6,148	8,270	9,248	398	931	1,415	1,765	1,897
Detention & Correction	14,690	655	1,869	3,161	4,252	4,754	204	479	728	907	975
Public Assistance	10,200	455	1,298	2,195	2,952	3,301	142	332	505	630	677
Health Services	9,539	425	1,214	2,052	2,761	3,087	133	311	472	589	633
Mental Health	3,685	164	469	793	1,067	1,193	51	120	183	228	245
Recreation & Cultural Services	3,603	161	458	775	1,043	1,166	50	117	178	223	239
Other	0	0	0	0	0	0	0	0	0	0	0
Total County-WideNet Expenditures	98,909	4,408	12,583	21,282	28,626	32,010	1,376	3,222	4,899	6,109	6,565
General Administration	6,871	337	909	1,492	1,973	2,160	104	228	344	414	444
General Fund Contribution to Library	0	0	0	0	0	0	0	0	0	0	0
Total Other Net Expenditures	105,780	4,745	13,492	22,773	30,600	34,170	1,480	3,451	5,243	6,524	7,009
TOTAL NET SURPLUS/(DEFICIT)	231,447	8,554	28,382	50,582	67,128	76,800	2,776	7,453	11,332	14,707	15,537
---Cumulative	231,447	8,554	36,937	87,519	154,647	231,447	8,554	36,937	87,519	154,647	231,447

Continued on next page.....

Table 6 (Continued.....Page 2)
SUMMARY REVENUE & EXPENDITURE PROJECTIONS
GENERAL FUND SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Illustrative Years: Year 5 2004	Year 10 2009	Year 15 2014	Year 20 2019	Year 25 2024
	$000's										
RECAP BY OPER VS CAPITAL FACILITY REVENUES & EXPENDITURES											
Operations											
Revenues	481,976	33,862	75,049	108,295	129,699	135,071	8,760	17,629	23,385	26,636	27,029
Expenditures	250,529	25,307	46,667	57,714	62,571	58,270	5,985	10,176	12,053	11,929	11,491
Net Surplus/(Deficit)	231,447	8,554	28,382	50,582	67,128	76,800	2,776	7,453	11,332	14,707	15,537
---% to Expenditures	92.4	33.8	60.8	87.6	107.3	131.8	46.4	73.2	94.0	123.3	135.2
---% to Expend Excl Dev Control	139.5	112.0	133.0	141.9	140.3	143.7	115.9	137.4	138.3	143.9	141.8
---Cumulative	231,447	8,554	36,937	87,519	154,647	231,447	8,554	36,937	87,519	154,647	231,447
Capital Facilities											
Revenues	15,076	4,397	3,612	3,341	2,654	1,072	797	626	684	342	143
Expenditures	15,076	4,397	3,612	3,341	2,654	1,072	797	626	684	342	143
Net Surplus/(Deficit)	(0)	0	0	0	0	0	0	0	0	0	0
---Cumulative	0	0	0	0	0	0	0	0	0	0	0
Operations & Cap Facil Combined											
Revenues	497,052	38,259	78,662	111,636	132,353	136,143	9,558	18,255	24,069	26,978	27,172
Expenditures	265,605	29,704	50,279	61,054	65,224	59,343	6,782	10,802	12,737	12,271	11,634
Net Surplus/(Deficit)	231,447	8,554	28,382	50,582	67,128	76,800	2,776	7,453	11,332	14,707	15,537
---Cumulative	231,447	8,554	36,937	87,519	154,647	231,447	8,554	36,937	87,519	154,647	231,447

Note: See Appendix Table A2.1 for detailed annual expenditures.

Source: The Levander Company, Inc.

(3) Sales Tax

Sales taxes to be received by the County general fund are estimated at 1.10% of taxable sales to be realized by Los Angeles County as a result of Newhall Ranch development. This factor includes the statutory 1.00% County share plus an additional 0.1% to account for receipts of "unallocated" sales taxes provided by the State, as indicated in Appendix Table D1.

(4) Transient Occupancy Tax

This revenue is estimated at 12.0% of projected hotel room sales. On September 15, 1995, the County Board of Supervisors increased this rate to 14.0%. However, a question exists among County staff concerning current legal proceedings which may not permit this increase. In the interest of conservatism, we have used the 12.0% figure.

(5) Utility Users Tax

This revenue is estimated at $27.45 per capita and 4.7 cents per square foot of commercial and business park building space. The residential factor is computed at 75% of the County's current budget level of $36.60 per capita, computed on the basis of unincorporated area population as indicated in Appendix Table B1, reflecting regional experience that approximately 25% of this tax is attributable to non-residential sources. The commercial and business park factor is based on an assumed "equivalent dwelling unit" of 1,600 square feet of building space ($27.45 per capita multiplied by 2.73 average residents per unit divided by 1,600 square feet).

(6) Business License Tax

Business license tax revenues are disregard in this analysis.

(7) Licenses, Permits, and Franchises

This revenue is estimated at $5.98 per capita, based on the County's 1995-96 proposed budget. The principal source of this revenue is cable television fees.

(8) Vehicle License Fee

This revenue is estimated at $73.92 per capita, based on the County's current per capita budget level, computed on the basis of total County population as indicated in Appendix Table B1. This factor covers both in-lieu and realignment payments made by the State.

(9) Deed Transfer Tax

Deed transfer taxes collected on initial residential unit sales are estimated at $1.10 per $1,000 of new development value. Property transfer taxes on resales of residential units are estimated at 12.6 cents per $1,000 valuation annually, projected to start Year 2. This factor is based on:

- Average seven-year residential sales turnover rate.
- 80% of the $1.10 per $1,000 valuation factor mentioned above, conservatively average unencumbered value.

Our analysis assumes that these factors are applicable only to sales-type residential units, not rental residential properties and commercial and business park properties.

3. POLICE PROTECTION SERVICES (SHERIFF)

(1) Operating Expenditures

These expenditures are estimated at $29.10 per capita per year. The basis of this factor is the following estimate of service requirements at buildout of Newhall Ranch provided by Sheriff Department staff:

- Two one-deputy day cars and two one-deputy PM cars, at an annual cost of $227,000 each.
- One two-deputy early AM car and one two-deputy overlap car, at an annual cost of $447,000 each.
- One school resource deputy to work with the high school administration and students, at a cost of $106,400 per year.
- One-half community relations deputy, at a cost of $45,150 per year, computed at 50% of $90,300 per year for a full deputy.
- One-half SANE (Substance Abuse Narcotics Education) deputy, at a cost of $40,700 per year, computed at 50% of $81,400 per year for a full deputy.

Total costs at buildout are estimated at $1,994,250 per year, which is equal to the aforementioned factor of $29.10 per capita at the projected buildout population for Newhall Ranch of 68,524.

The above cost factors for cars and sworn officers are based on the Sheriff Department's existing contract rates for cities. These expenditure factors cover all costs of providing local service, including costs of payroll and benefits, cars and other equipment and supplies, and local and regional administrative overhead. Excluded are certain Sheriff's Department costs which are included in this analysis as area-wide service costs, discussed subsequently in this section of the report.

Total staffing of 14.8 sworn officers would be required to provide the above projected service, as follows:

- 1.6 sworn officers for each of the one-deputy cars, after allowing for vacations, holidays, and sick-leave, which for the four cars computes to 6.4 sworn officers.

- Similarly, 3.2 sworn officers for each of the two-deputy cars, which for the two cars computes to 6.4 sworn officers.

- 2.0 sworn officers for the three support positions projected above.

At the projected buildout population of 68,524, this staffing equates to 0.22 sworn officers per 1,000 population--0.19 for the patrol services in the one-deputy and two-deputy cars and 0.03 for the three support positions. In comparison, the current level of service provided by the Santa Clarita Sheriff's station is as follows:

	# Sworn Officers	Population	# Sw Off/ 1,000 Pop
City of Santa Clarita			
Patrol	74	127,930	0.58
Support	42		0.33
Total	116		0.91
Unincorporated Area			
Patrol	30	40,000	0.75
Support	5		0.13
Total	35		0.88

Three principal factors account for differences between projected Newhall Ranch requirements and existing City staffing levels:

- The absence of required deputies for traffic patrol in Newhall Ranch, which will be handled by the State Highway Patrol; and which would require an additional ten cars and 16 sworn officers, which in turn would increase the

level of patrol staffing from projected 12.8 sworn officers to 28.8 (additional ten cars with 16 sworn officers), which would increase the staffing level for patrol from 0.19 sworn officers per 1,000 population to 0.42, which in turn would equal 72% of the City level.

- A much higher level of support-position staffing in the City than in unincorporated areas (0.33 sworn officers per 1,000 in the City of Santa Clarita versus 0.13 in the unincorporated Santa Clarita station area), a matter of individual City choice and budgeting; a level of staffing which from a practical standpoint cannot be foreseen in unincorporated Los Angeles County.

The principal differences between projected Newhall Ranch staffing levels of 0.22 sworn officers per 1,000 population and the existing levels in the Santa Clarita station's unincorporated area are:

- The highly concentrated development nature of Newhall Ranch as opposed to the unincorporated area.

- The master-planned self-contained nature of Newhall Ranch, with a high percentage of home ownership and other community attributes which tend to reduce Sheriff protection requirements.

These considerations are reflected in Department staff projections.

(2) Capital Facility Expenditures

This analysis assumes that police protection services will be provided from the existing

Santa Clarita Sheriff station. Thus, no capital facility expenditures are projected in this analysis.

(3) Proposition 172 Sales Taxes

These revenues are derived from a special half-cent sales tax enacted to assist in replacing revenues to counties and cities in the area of public protection as a result of educational revenue augmentation fund property tax transfers enacted by the state. They are projected at 0.465% of taxable sales generated at Newhall Ranch and other County stores, as discussed in Section III. The basis of this factor is as follows:

- Specified sales tax rate of 0.5%, for public protection purposes.

- Plus the additional 10% as discussed in Section III, which brings the total effective rate to 0.55%.

- Of which 84.5% is directed to the Sheriff's Department, the balance to the District Attorney, per the County's proposed 1995-96 budget.

Distribution by the State of sales taxes collected is based on rather complex formula. Initially, all tax revenues collected will be directed to the city or county in which the sales originate. However, the formula specifies a maximum distribution equal to the amount of property tax loss experienced by the jurisdiction as a result of the aforementioned State-enacted property tax transfers to local school districts. Because of these maximums, it is possible that the Sheriff will receive taxes as a result of Newhall Ranch Development not only from sales of County merchants, but also from sales of merchants in the City of Santa Clarita and elsewhere. To be conservative, we have disregarded this possibility.

4. ANIMAL CARE AND CONTROL SERVICES

Operating costs are estimated at $2.12 per capita, based on the County's 1995-96 proposed budget per capita level indicated in Appendix Table B1. This per-capita factor is computed on the basis of unincorporated area population. No capital facility costs are projected in this analysis.

5. PARKS AND RECREATION SERVICES

(1) Facilities to Be Operated and Maintained

This analysis assumes that all park and trails facilities identified in Section II will be maintained by the County Parks and Recreation Department; namely, 113 acres of active park areas, 221 acres of nature park areas, a 15-acre lake, a 16-acre regional river trail, and 98 acres of community and local trails.

(2) Recreation Services Expenditures

Recreation service costs are estimated at $6.00 per capita annually, based on the County's 1995-96 proposed budget, documented in Appendix Table B1. This factor is computed on the basis of recreation service and park police costs before deduction of operating revenues, plus a 4.5% overhead factor.

(3) Park Maintenance Expenditures

Annual park maintenance expenditures are estimated at $6,400 per acre for active park areas and $640 per acre for the nature park and lake areas. The active park estimate of $6,400 per area includes the following elements:

- Assumed contract maintenance of $2,029 per acre, covering principal landscaping and water service operations, based on a detailed tabulation of recent County experience provided to us by Department staff.

- Water costs of $2,054 per acre, computed at 4.1 acre-feet of water per year at a cost of $501 per acre-foot (1.15 per CCF), the cost factor reflecting the Valencia Water Company's current pricing of $0.90 per CCF plus an assumed increase before Year 2000 of $0.25 per CCF (in 1995 constant dollars), to result from source cost increases.

- An additional $2,000 per acre to cover equipment and facility repair and landscape fertilization.

- A departmental overhead charge of 4.5%, which amounts to $274 per acre.

The resultant total of $6,357 per acre has been rounded up to $6,400. The factor for the nature park and lake areas is computed at 10% of active park costs. Both factors used are reasonable in relation to regional experience and in our judgment appropriately conservative.

(4) Trail Maintenance Expenditures

Annual trail maintenance expenditures are estimated at $6,400 per acre for the regional river trail and $4,267 per acre for community and local trails. The regional river trail park factor is equal to that for active parks; the community and local trails factor is computed at two-thirds of the regional river trail. These factors are realistic in light of regional experience.

(5) Park and Recreation Fee Revenues

These revenues are estimated at $1.35 per capita annually, based on the County's 1995-96 proposed budget, documented in Appendix Table B1.

(6) Proposition A Park and Recreation Assessments

These revenues are estimated at $10.00 per residential and 0.9 cents per square foot of commercial and business park building space annually, divided as follows:

- 15.0% for operational purposes; $1.50 per residential unit and 0.135 cents per square foot.

- 82.5% for capital facility purposes; $8.25 per residential unit and 0.7425 cents per square foot.

- 2.5% for administration of the assessment program, a factor disregarded in this analysis in terms of both revenues and costs.

These factors are based on a weighted average of benefit points specified in the benefit assessment document for various types of development. A small assessment is made against undeveloped land based on acreage, but limited to a maximum of $109.40 maximum assessment for any given Assessor parcel. This amount of assessment would equal approximately $7 thousand annually for existing undeveloped Newhall Ranch properties, a figure which would diminish as development occurs. We have disregarded this additional revenue in the projections.

Proposition A assessments were approved by the electorate in 1992. They will expire in the Year 2015, nine years before projected buildout of Newhall Ranch. Our projections are based on the assumption that these assessments will be replaced by equivalent revenues.

(7) Capital Facility Costs--Parks Improvements

These costs are estimated at $108,900 per acre ($2.50 per square foot) for active park areas and $4,356 per acre ($0.10 per square foot) for passive park areas, based on developer estimates. These factors are for improvements only, as land will be contributed by the developer.

(8) Capital Facility Costs--Trails Improvements

These costs are estimated at $108,900 per acre ($2.50 per square foot) for the Regional River Trail, based on developer estimates. These factors are for improvements only, as land will be contributed by the developer. No capital facility costs are projected for community and local trails, as these will be funded and constructed by the developer during the course of development.

(9) Developer Capital Contribution

This analysis assumes that the developer will make up any funding deficiencies for capital facilities; namely, expenditures less the aforementioned Proposition A assessments.

6. DEVELOPMENT CONTROL SERVICES

These services cover County activity during the development process, involving zoning, building inspection, engineering, and related activity. Our analysis assumes a breakeven situation, with both service expenditures and revenues estimated at 1.5% of new development values. This factor is based on regional experience and Los Angeles County policy.

7. COUNTY-WIDE SERVICES

Expenditure factors used in this analysis are based on net per-capita costs reflected in the County's 1995-96 proposed budget as shown in Appendix Table B1, as follows:

	Expenditure Per Capita Unadjusted	Adjustment Factor (%)	Expenditure Per Capita Adjusted
Judicial	$ 36.90	75	$ 27.68
Detention/Correction	18.97	75	14.23
Sheriff County-Wide	32.97	75	24.73
Other Protection	2.99	100	2.99
Public Assistance	49.40	20	9.88
Health Services	46.21	20	9.24
Mental Health	3.57	100	3.57
Recreation & Cultural	3.49	100	3.49

Net costs as shown in Appendix Table B1 are those borne by the County's general fund, after receipt of a variety of revenues, particularly State and Federal assistance. The factors used in the projections are those shown in the right-hand column above, reflecting our judgment that Newhall Ranch residents' per-capita service costs will be substantially less than County averages. To illustrate, the public assistance and health services will be required in large measure to serve lower-income residents, not residents of Newhall Ranch with average home values in excess of $200 thousand and average per-capita incomes in excess of $24 thousand annually. While criminal activity is found in all communities, we judge it reasonable to expect that detention/correction service requirements will be less in Newhall Ranch than in the County at large.

8. GENERAL ADMINISTRATION SERVICES

These expenditures are estimated at 5.0% of other expenditures. This factor is based on the County's 1995-96 proposed budget shown in Appendix Table B1, which indicates that the present level of general administration costs is 7.7%, as follows:

Total Net County Costs	$ 2,250,833
Less Net General Costs (= Gen Admin Costs)	161,364
Net Other Costs (= Direct Costs)	2,089,469
% Gen Admin Costs to Direct Costs	7.7

Our use of the 5.0% factor reflects future economies of scale. Many of the County's principal administrative functions are relatively fixed in size and will not increase in proportion to Newhall Ranch growth.

V.

FIRE PROTECTION SERVICES

1. SUMMARY PROJECTIONS

As indicated in Table 7 immediately following, Newhall Ranch will generate a cash surplus to County fire services of $66.2 million from operations and $2.0 million from capital facilities during the 25-year development period. In Year 25 and beyond, an operations surplus of $4.5 million is projected. Please refer to Appendix Tables 2.2 and 6.2 for detailed projections and underlying financial factors.

2. STATION AND PARAMEDIC FACILITIES

By buildout, it is estimated that Newhall Ranch will require the operation of three fire stations, a paramedic unit, and a ladder truck, to be operated by the Los Angeles County Fire Department. Station and engine facilities are projected to be installed in accordance with the following schedule.

- A temporary station at the end of Year 1, to include a temporary structure and a fire engine.
- A full station by the end of Year 3, replacing the temporary station, probably at a different site, but utilizing the initial fire engine.
- A second station in Year 8, including an engine.
- A third station in Year 17, including an engine.

The paramedic unit is projected to be installed concurrent with the opening of the second station. The ladder truck is projected to be installed concurrent with the opening of the third station. This schedule is highly preliminary, subject to detailed review by the developer and the Fire Department during the course of development.

3. OPERATING REVENUES

The only operating revenues projected are secured and unsecured property taxes. As indicated in Appendix Table C2, the Department's share of the $1.00 per $100 assessed value tax rate is 18.168%. This factor is applied to projected increases in assessed values. Unsecured property taxes are estimated at 10% of secured property taxes.

Table 7
SUMMARY REVENUE & EXPENDITURE PROJECTIONS
FIRE PROTECTION SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Illustrative Years: Year 5 2,004	Year 10 2,009	Year 15 2,014	Year 20 2,019	Year 25 2,024
	$000's										
OPERATING REVENUES & EXPENDITURES											
Revenues											
Property Taxes--Secured	156,767	6,650	19,976	34,474	45,425	50,242	2,138	5,203	7,875	9,657	10,240
Property Taxes--Unsecured	2,376	24	211	479	736	925	14	65	110	171	189
Service Fees	0	0	0	0	0	0	0	0	0	0	0
State Assistance	0	0	0	0	0	0	0	0	0	0	0
Total	159,143	6,674	20,187	34,953	46,161	51,168	2,152	5,268	7,985	9,827	10,428
Expenditures											
Engine/Station Operations	66,300	5,200	10,400	13,000	18,200	19,500	1,300	2,600	2,600	3,900	3,900
Ladder Truck Operations	10,238	0	0	0	4,550	5,688	0	0	0	1,138	1,138
Total	92,918	5,200	13,130	17,550	27,300	29,738	1,300	3,510	3,510	5,948	5,948
Net Surplus/(Deficit)	66,225	1,474	7,057	17,403	18,861	21,430	852	1,758	4,475	3,880	4,481
---% to Expenditures	71.3	28.3	53.7	99.2	69.1	72.1	65.5	50.1	127.5	65.2	75.3
---Cumulative	66,225	1,474	8,531	25,934	44,795	66,225	1,474	8,531	25,934	44,795	66,225
CAPITAL FACILITY REVENUES & EXPENDITURES											
Revenues											
Mitigation Fees	8,362	1,706	2,498	2,189	1,480	488	344	499	386	167	54
Other	0	0	0	0	0	0	0	0	0	0	0
Total	8,362	1,706	2,498	2,189	1,480	488	344	499	386	167	54
Expenditures											
Engine	750	250	250	0	250	0	0	0	0	0	0
Ladder Truck	350	0	0	0	350	0	0	0	0	0	0
Total	6,330	2,100	1,980	0	2,250	0	0	0	0	0	0
Net Surplus/(Deficit)	2,032	(394)	518	2,189	(770)	488	344	499	386	167	54
---Cumulative	2,032	(394)	124	2,313	1,544	2,032	(394)	124	2,313	1,544	2,032
TOTAL OPERATING & CAPITAL FACILITY REVENUES & EXPENDITURES COMBINED											
Revenues	167,504	8,380	22,685	37,142	47,642	51,656	2,495	5,767	8,370	9,994	10,483
Expenditures	99,248	7,300	15,110	17,550	29,550	29,738	1,300	3,510	3,510	5,948	5,948
Net Surplus/(Deficit)	68,257	1,080	7,575	19,592	18,092	21,918	1,195	2,257	4,860	4,047	4,535
---Cumulative	68,257	1,080	8,655	28,247	46,339	68,257	1,080	8,655	28,247	46,339	68,257

Note: See Appendix Table A2.2 for detailed annual expenditures.

Source: The Levander Company, Inc.

4. OPERATING EXPENDITURES

Annual operating expenditures are estimated at:

- $1.3 million for each fire station, including the initial temporary station.
- $910 thousand for the paramedic unit.
- $1,137,500 for the ladder truck, computed at 70% of a full truck operation.

These factors were provided by Department staff.

5. CAPITAL FACILITY REVENUES

Concurrent with development, the fire service is projected to receive a developer mitigation fee of 18.2 cents per square foot of residential, commercial, and business park building space. This is the Department's mitigation fee to become effective in August 1995.

6. CAPITAL FACILITY EXPENDITURES

These expenditures are estimated as follows:

- $250 thousand for each of the three engines.
- $200 thousand for the temporary station and related equipment.
- $1.65 million for each of the three permanent stations and related equipment.
- $350 thousand for the ladder truck, computed at 70% of a full-truck cost.

These factors, provided by County staff, are based on County construction of the facilities and were indicated to be a possible worst-case situation. The developer may choose to construct the facilities in lieu of the mitigation fee of 18.2 cents, in which case the County will not receive the projected $2.0 surplus noted above.

VI.

LIBRARY SERVICES

1. SUMMARY PROJECTIONS

As indicated in Table 8 immediately following, Newhall Ranch will generate an operations surplus to County library services of $12.0 million during the 25-year development period and $786 thousand annually by Year 25. Projected capital facility costs of $8.3 million will be equal to projected mitigation fee revenues, a breakeven situation. Please refer to Appendix Tables 2.3 and 6.3 for detailed projections and underlying financial factors.

2. LIBRARY FACILITIES

By buildout, Newhall Ranch is projected to require the operation of a library facility with total building space of 23,983 square feet and 137,048 volumes, based on existing Department standards of 0.35 square feet of building space and 2.0 volumes per capita. Library development is projected to be in three increments in Year 7, Year 14, and Year 25, as indicated in Appendix Table A3. This analysis assumes that the facilities to be built will be keyed in terms of sizing and timing to mitigation fee revenues collected during the course of development.

3. OPERATING REVENUES

(1) Property Taxes

As indicated in Appendix Table C2, the Library Department's share of the $1.00 per $100 assessed value tax rate is 2.732%. This factor is applied to projected increases in assessed values. Unsecured property taxes are estimated at 10% of secured property taxes for commercial and business park facilities only, this factor based on regional experience.

(2) Benefit Assessment

This annual revenue, to be received as a result of formation in 1995 of Community Facilities District No. 8, is projected at $21.70 per residential unit and $4.70 per 1,000 square feet of commercial and industrial development. The residential factor is a weighted average of two factors:

- $22.00 per residential unit for detached single-family and attached sales condominium type units.

Table 8
SUMMARY REVENUE & EXPENDITURE PROJECTIONS
LIBRARY SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Illustrative Years: Year 5 2,004	Year 10 2,009	Year 15 2,014	Year 20 2,019	Year 25 2,024
	$000's										
OPERATING REVENUES & EXPENDITURES											
Revenues											
Property Taxes--Secured	23,574	1,000	3,004	5,184	6,831	7,555	321	762	1,184	1,452	1,540
Property Taxes--Unsecured	54	1	5	11	17	21	0	1	2	4	4
Benefit Assessment (CFD No. 8)	6,240	351	1,014	1,749	2,393	2,732	110	264	405	517	562
Service Fees	465	21	59	100	134	150	6	15	23	29	31
State Assistance	269	13	37	62	84	94	4	9	14	18	19
General Fund Contribution	0	0	0	0	0	0	0	0	0	0	0
Total	32,621	1,385	4,119	7,106	9,459	10,552	442	1,072	1,629	2,019	2,157
Expenditures											
Library Operations	20,647	920	2,627	4,442	5,976	6,682	287	673	1,023	1,275	1,370
Net Surplus/(Deficit)	11,974	465	1,492	2,664	3,483	3,870	155	399	606	744	786
---% to Expenditures	58.0	50.5	56.8	60.0	58.3	57.9	54.0	59.4	59.3	58.3	57.4
---Cumulative	11,974	465	1,957	4,621	8,104	11,974	465	1,957	4,621	8,104	11,974
CAPITAL FACILITY REVENUES & EXPENDITURES											
Revenues											
Mitigation Fees	8,292	1,677	2,254	2,084	1,606	672	289	401	428	212	91
Expenditures											
Library Facilities & Volumes	8,292	0	2,597	2,989	0	2,706	0	0	0	0	2,706
Net Surplus/(Deficit)	(0)	1,677	(343)	(906)	1,606	(2,035)	289	401	428	212	(2,615)
---Cumulative	(0)	1,677	1,334	428	2,035	(0)	1,677	1,334	428	2,035	(0)
TOTAL OPERATING & CAPITAL FACILITY REVENUES & EXPENDITURES COMBINED											
Revenues	40,914	3,062	6,372	9,190	11,065	11,224	731	1,473	2,057	2,231	2,248
Expenditures	28,939	920	5,223	7,432	5,976	9,388	287	673	1,023	1,275	4,077
Net Surplus/(Deficit)	11,974	2,142	1,149	1,759	5,090	1,835	444	800	1,035	956	(1,829)

Note: See Appendix Table A2.3 for detailed annual expenditures.

Source: The Levander Company, Inc.

- $16.50 per residential unit for attached rental units.

A similar weighted-average approach has been used for a rather complex list of commercial and industrial uses:

- With indicated one-acre usage to be the equivalent of 7.0 equivalent single-family units.

- With benefit ratios applied (in relation to residential) ranging from 75% for office usage to 50% for retail uses to 25% for service station and public storage uses.

These factors have been weighted against projected Newhall Ranch land use and building facilities. The assessment procedure also calls for assessing vacant properties as well, with a limit of $96.25 per parcel per year. Total assessments against Newhall Ranch at this time are approximately $6 thousand annually, an assessment which will be reduced over time as assessments for new development are made. This minor factor has been disregarded in the analysis.

(3) Service Fees

These fees are estimated at 45 cents per capita annually. This factor is based on the Department's proposed 1995-96 budget estimate of $1.5 million, divided by its current service area population of 3.32 million.

(4) State Assistance

This assistance revenue is estimated at 28 cents per capita annually, based on the Department's proposed 1995-96 budget estimate of $924 thousand.

(5) General Fund Contribution

The Department's proposed 1995-96 budget calls for a general fund contribution of $10.0 million. Essentially the Department is asking the Board of Supervisors to make up its funding shortage for the forthcoming year. On this basis, we have established the fiscal model so that any operating shortfall will be funded by general fund contribution. However, as indicated in Appendix Table 2.3 no shortfall is projected for Newhall Ranch. Property taxes will be sufficient to cover operating costs.

4. OPERATING EXPENDITURES

Annual operating expenditures are estimated $20.00 per capita. This factor is based on the Department's operating levels in 1990-91 and 1991-92, which have been subsequently reduced.

5. CAPITAL FACILITY REVENUES

Concurrent with development, the Department will receive a projected developer mitigation fee of $336 per residential unit. This is an interim estimate of the district, intended to be sufficient to cover projected capital facility costs. This fee is subject to revision upon the completion of a cost and fee study by the district.

6. CAPITAL FACILITY EXPENDITURES

Capital facility costs are projected $336 per residential unit. This figure is equal the above-noted mitigation fee revenue of $336 per residential unit. The actual cost of the facilities and who will build them is a matter for subsequent determination. It is possible that the developer could construct the facilities in lieu of the mitigation fees.

VII.

STREET MAINTENANCE SERVICES

1. SUMMARY PROJECTIONS

As indicated in Table 9 immediately following, Newhall Ranch will generate an operations surplus of $4.9 million during the 25-year development period and $297 thousand annually by Year 25. No capital facility revenues or expenditures are projected. Please refer to Appendix Tables 2.4 and 6.4 for detailed projections and underlying financial factors.

2. STREET FACILITIES

As discussed earlier, at buildout, Newhall Ranch is projected to have 249.59 lane-miles of public streets and 15 traffic signals. As indicated in Appendix Table A3, the streets will be developed rather evenly over the first 18 years of development, with some reduction for the final seven years. Five traffic signals are projected to be installed in the first five years of development, with the remaining ten signals installed over the remaining 20 years of the development period.

3. OPERATING REVENUES

(1) Property Taxes

As indicated in Appendix Table C2, the County road maintenance services will receive a property tax share of 0.714 % of the $1.00 per $100 assessed value tax rate (assigned to Road District #5). This factor is applied to projected increases in assessed values. Unsecured property taxes are estimated at 10% of secured property taxes for commercial and business park facilities only, this factor based on regional experience.

(2) Highway Users Tax

This revenue is estimated at $11.16 per capita, based on the County's existing budget levels, using total County population to compute the per-capita amount.

(3) Proposition C Sales Tax

This revenue is projected at $8.00 per capita, based on current Public Works Department staff estimates. While the revenue is collected on the basis of half-cent sales tax, all revenues derived from Newhall Ranch taxable sales will be pooled at the County level. Of

Table 9
SUMMARY REVENUE & EXPENDITURE PROJECTIONS
STREET MAINTENANCE SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Illustrative Years: Year 5 2,004	Year 10 2,009	Year 15 2,014	Year 20 2,019	Year 25 2,024
	$000's										
OPERATING REVENUES & EXPENDITURES											
Revenues											
Property Taxes--Secured	6,161	261	785	1,355	1,765	1,975	84	204	309	380	402
Property Taxes--Unsecured	51	1	5	10	16	20	0	1	2	4	4
Highway Users' Tax	11,521	513	1,466	2,479	3,334	3,729	160	375	571	712	765
Proposition C Sales Tax (20%)	8,259	368	1,051	1,777	2,390	2,673	115	269	409	510	548
Total	25,992	1,143	3,306	5,621	7,526	8,396	360	850	1,291	1,605	1,719
Expenditures											
Street Maintenance	20,354	832	2,531	4,397	5,917	6,676	265	659	1,015	1,268	1,373
Traffic Signal Maintenance	710	50	102	145	185	228	17	23	33	40	50
Total	21,063	881	2,633	4,542	6,102	6,904	281	682	1,046	1,308	1,422
Net Surplus/(Deficit)	4,929	262	673	1,079	1,424	1,492	78	168	243	297	297
---% to Expenditures	23.4	29.7	25.5	23.7	23.3	21.6	27.9	24.7	23.2	22.7	20.9
---Cumulative	4,929	262	934	2,013	3,437	4,929	262	934	2,013	3,437	4,929
CAPITAL FACILITY REVENUES & EXPENDITURES											
-----None											

Note: See Appendix Table A2.4 for detailed annual expenditures.

Source: The Levander Company, Inc.

the total amount, 20% will be redistributed to cities and the County for road maintenance on a population basis.

4. OPERATING EXPENDITURES

(1) Street Maintenance

Annual operating expenditures are estimated at $5,500 per lane-mile. This factor includes approximately $4,800 per lane-mile for ongoing street maintenance operations, including signing and striping, and $700 per lane-mile for periodic slurry coats and 1.5-inch overlays. The latter cost factor is based on a slurry coat in Year 7 and Year 14 and an overlay in Year 21, in accordance with current Department policy.

(2) Traffic Signal Maintenance

This cost is estimated at $3,300 per signal per year, based on County staff estimate.

5. CAPITAL FACILITY REVENUES AND EXPENDITURES

This analysis projects no capital revenues or expenditures for the County, as all streets within Newhall Ranch are assumed to be constructed by the developer, subject to County review and approval.

VIII.

STREET LIGHTING SERVICES

1. SUMMARY PROJECTIONS

As indicated in Table 10 immediately following, Newhall Ranch development will result in a near-breakeven fiscal situation for street lighting services--a surplus of $340 thousand during the 25-year development period and $8 thousand in Year 25 and thereafter. No capital facilities are included in our projections. Please refer to Appendix Tables 2.5 and 6.5 for detailed projections and underlying financial factors.

2. STREET LIGHT FACILITIES

As discussed earlier, at buildout, Newhall Ranch is projected to have 4,742 street lights. As indicated in Appendix Table A3, the street lights will be developed concurrently with arterial and neighborhood streets.

3. OPERATING REVENUES

(1) Property Taxes

As indicated in Appendix Table C2, County street lighting services are projected to receive a property tax share of 0.90% of the $1.00 per $100 assessed value tax rate, a share to be transferred from the general fund at time of establishing a street lighting district. This factor is preliminary, based on a review of recent transfers for similar districts, but subject to detailed determination at time of district formation.

(2) Benefit Assessment

This revenue is estimated at $5.50 per residential unit, based on a review of current County practice in existing districts. This is an average figure, intended to cover the anticipated mix of detached and attached residential units in Newhall Ranch.

4. OPERATING EXPENDITURES

Annual operating expenditures are estimated at $135.00 per street light. This is a weighted average figure, reflecting a cost of $160 per year for arterial street lights and

Table 10
SUMMARY REVENUE & EXPENDITURE PROJECTIONS
STREET LIGHTING SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Illustrative Years: Year 5 2,004	Year 10 2,009	Year 15 2,014	Year 20 2,019	Year 25 2,024
	$000's										
OPERATING REVENUES & EXPENDITURES											
Revenues											
Property Taxes--Secured	7,766	329	990	1,708	2,250	2,489	106	258	390	478	507
Property Taxes--Unsecured	65	1	6	13	20	25	0	2	3	5	5
Benefit Assessment	2,001	88	250	425	579	659	27	64	98	125	136
Total	9,832	418	1,245	2,146	2,850	3,173	134	324	492	608	648
Expenditures											
SCE Payment & Administration	9,492	388	1,180	2,051	2,759	3,114	123	307	473	591	640
Net Surplus/(Deficit)	340	30	65	95	90	60	10	17	18	16	8
---% to Expenditures	3.6	7.8	5.5	4.6	3.3	1.9	8.3	5.4	3.8	2.8	1.2
---Cumulative	340	30	95	190	280	340	30	95	190	280	340
CAPITAL FACILITY REVENUES & EXPENDITURES											
-----None											

Note: See Appendix Table A2.5 for detailed annual expenditures.

Source: The Levander Company, Inc.

$120 per year for neighborhood street lights. This factor includes $13.50 per year for County administration and the balance for payments to Southern California Edison, who will install and operate the lights.

5. CAPITAL FACILITY REVENUES AND EXPENDITURES

This analysis projects no capital revenues or expenditures for the County. Street light facilities will be installed and owned by Southern California Edison, with capital costs funded directly by the developer.

IX.

FLOOD CONTROL SERVICES

1. SUMMARY PROJECTIONS

As indicated in Table 11 immediately following, Newhall Ranch is projected to yield an operations surplus of:

- $15.3 million during the 25-year development period, equal to 2.7 times projected operating costs of $5.7 million.
- $1.1 million annually at buildout, equal to more than triple projected operating costs of $330 thousand annually.

No capital facilities are projected, as these will be provided by the developer. Please refer to Appendix Tables 2.6 and 6.6 for detailed annual projections and underlying financial factors.

The above projections are incremental to Newhall Ranch and definable operations and facilities therein. No consideration has been given to possible cost impacts on operations elsewhere in the County's system. To the extent that County staff may wish to consider such costs, the large projected surplus should be more than adequate to cover them.

2. FLOOD CONTROL FACILITIES

As discussed in Section II, at buildout Newhall Ranch will contain: (1) 77,910 lineal feet of open channel and river embankment, scheduled to be completed in the first five years of the 25-year development period and (2) 123,830 lineal feet of underground pipe and catch basins, 23 debris basins and desilting ponds, and 15 water quality basins, these three types of facilities to be completed during the first 20 years of the 25-year development period.

3. OPERATING REVENUES

(1) Property Taxes

As indicated in Appendix Table C2, County flood control services will receive a property tax share of 1.398% of the $1.00 per $100 assessed value tax rate. This share is the total of two allocations, as indicated in the table.

Table 11
SUMMARY REVENUE & EXPENDITURE PROJECTIONS
FLOOD CONTROL SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Illustrative Years: Year 5 2,004	Year 10 2,009	Year 15 2,014	Year 20 2,019	Year 25 2,024
	$000's										
OPERATING REVENUES & EXPENDITURES											
Revenues											
Property Taxes---Secured	12,063	512	1,537	2,653	3,495	3,866	164	400	606	743	788
Property Taxes---Unsecured	101	1	9	20	31	39	1	3	5	7	8
Benefit Assessment	8,916	356	1,069	1,894	2,604	2,991	114	283	437	565	615
Total	21,079	870	2,615	4,567	6,130	6,896	279	686	1,048	1,315	1,411
Expenditures											
Maint--Open Chan & River Embk	1,828	238	397	397	397	397	79	79	79	79	79
Maint--UG Pipe & Catch Basins	1,977	96	255	415	574	638	32	64	96	128	128
Maint--Debris Basins & Desilt Inits	1,160	52	149	246	340	373	19	39	58	75	75
	0	0	0	0	0	0	0	0	0	0	0
Total	5,742	428	905	1,223	1,535	1,651	144	208	272	330	330
Net Surplus/(Deficit)	15,337	442	1,710	3,344	4,595	5,245	135	478	776	985	1,081
---% to Expenditures	267.1	103.3	188.9	273.3	299.4	317.8	93.9	229.6	284.9	298.4	327.4
---Cumulative	15,337	442	2,152	5,496	10,092	15,337	442	2,152	5,496	10,092	15,337

CAPITAL FACILITY REVENUES & EXPENDITURES

-----None

Note: See Appendix Table A2.6 for detailed annual expenditures.

Source: The Levander Company, Inc.

(2) Benefit Assessment

This revenue is estimated at $21.77 per residential unit and 1.36 cents per square foot of commercial and business park building space. These factors are based on our review of benefit factors, adjusted to provide a revenue of $615 thousand annually at buildout, this figure computed by Department staff based on detailed projected land uses.

A current assessment of $9,722 per year is made against Newhall Ranch properties, an assessment which will be reduced over time as assessments for new development are made. We have disregarded this additional revenue in our projections.

4. OPERATING EXPENDITURES

Annual maintenance costs for the four types of flood-control facilities are estimated as follows:

- $1.02 per lineal foot for open channel and river embankment.
- $1.03 per lineal foot for underground pipe and catch basins (storm drains).
- $3,240 each for debris basins and desilting inlets.
- $3,240 each for water quality basins.

These cost factors, which have been provided by Sikand Engineering, include a base estimate derived from discussions with County personnel plus a 20% factor for contingency and miscellaneous overhead.

5. CAPITAL FACILITY REVENUES AND EXPENDITURES

This analysis projects no capital revenues or expenditures for the County, as all flood control facilities within Newhall Ranch will be constructed by the developer, subject to County review and approval.

X.

TRANSIT SERVICES

1. SUMMARY PROJECTIONS

As indicated in Table 12 immediately following, Newhall Ranch is projected to yield a financial breakeven to County transit service operations. Please refer to Appendix Tables 2.7 and 6.7 for detailed annual projections and underlying financial factors. No capital facility revenues or expenditures are projected.

2. TRANSIT SERVICES AND FACILITIES

Transit operations and related equipment are projected to be administered by the City of Santa Clarita, under contract to the County, in accordance with current County practice. In this regard, it is assumed that all equipment used by the City to service Newhall Ranch residents will be part of a fully integrated system, covering both City and County areas. Current services provided to Los Angeles County by the City include fixed route bus service, paratransit service (Dial-a-Ride) for the elderly and disabled, and commuter service between Santa Clarita and Los Angeles.

No specific service requirements have been mandated for transit service. The City has recently hired Mike Fajans of Berkeley to undertake a transit analysis, scheduled for completion at the end of March 1996. This analysis will cover unincorporated County areas, including Newhall Ranch. Among other things, an objective of the analysis is to determine appropriate levels and types of service in the City and also to the extent possible in the unincorporated area served by the City. Irrespective, while appropriate levels of service may be determined on the basis of a study and related policy objectives, in the absence of mandates, future service Newhall Ranch in practice will be dependent on available funding and is at the discretion of Los Angeles County.

3. OPERATING REVENUES

(1) Proposition A Sales Tax

This revenue is projected at $10.00 per capita per year, based on current Public Works Department staff estimates. While the revenue is collected on the basis of half-cent sales tax, all revenues derived from Newhall Ranch taxable sales will be pooled at the County level. Of the total amount of such taxes, 25% will be redistributed to cities and the County for transit operations on a population basis. At the present time, County funding for

Table 12
SUMMARY REVENUE & EXPENDITURE PROJECTIONS
TRANSIT SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Illustrative Years: Year 5 2,004	Year 10 2,009	Year 15 2,014	Year 20 2,019	Year 25 2,024
	$000's										
OPERATING REVENUES & EXPENDITURES											
Revenues											
Proposition A Sales Tax (25%)	10,323	460	1,313	2,221	2,988	3,341	144	336	511	638	685
Expenditures											
Transit Service Operations	10,323	460	1,313	2,221	2,988	3,341	144	336	511	638	685
Net Surplus/(Deficit)	0	0	0	0	0	0	0	0	0	0	0
---% to Expenditures	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
---Cumulative	0	0	0	0	0	0	0	0	0	0	0
CAPITAL FACILITY REVENUES & EXPENDITURES											
-----None											

Note: See Appendix Table A2.7 for detailed annual expenditures.

Source: The Levander Company, Inc.

service to unincorporated areas of the Santa Clarita Valley is limited to Proposition A sales tax revenues.

(2) Other Revenues

No other projected revenues are included in this analysis. However, in the event that costs of services required for Newhall Ranch are determined by the County to exceed the Proposition A sales tax revenue of $10 per capita per year, additional revenues will have to be identified at that time. Such revenues could possibly be obtained from:

- Fare-box collections from yet undetermined fixed-route bus routes and commuter services.
- Allocations of Proposition A sales tax revenues derived from elsewhere in the County.
- Allocations of funds from the major surplus projected for the County's general fund.
- Possible State or Federal grants, not evaluated in this analysis.

The sources and magnitudes of such funding if needed are a matter for subsequent determination by the County at its discretion.

4. OPERATING EXPENDITURES

In this analysis, operating expenditu/res are projected to be $10 per capita annually, directly equal to revenues. Thus, we have assumed that the County will contract with the City of Santa Clarita only for services which are fundable from the above Proposition A sales tax revenues derived only from Newhall Ranch residents.

The projected level of expenditures is low in relation to two current budget levels:

- The County's current annual contract with the City of Santa Clarita for services of approximately $959,000; equal to approximately $24 per capita based on total area population of about 40,000 in the total unincorporated area of the Santa Clarita Valley; equal to $30 to $40 per capita if we consider only the people in the area currently receiving City service.
- The City's 1995-96 budget for transit services of $7.8 million, which equates to approximately $61 per capita based on the City's January 1995 population of 127,930 as reported by the State Department of Finance.

In all likelihood, operating costs to serve Newhall Ranch will exceed the projected level of $10.00 per capita. However, as noted earlier they will be constrained by available funding; and thus a breakeven financial situation will continue to prevail.

5. CAPITAL FACILITY REVENUES AND EXPENDITURES

No capital facilities are projected in this analysis. Any capital facility items required for transit service are assumed to be included in an operations contract with the City of Santa Clarita.

XI.

CITY OF SANTA CLARITA

1. SUMMARY PROJECTIONS

As a result of Newhall Ranch development, the City of Santa Clarita will receive sales taxes estimated at:

- $35.1 million during the projected 25-year development period, collected on taxable sales of City merchants to Newhall Ranch residents of $3.2 billion.

- $2.27 million annually by Year 25, collected on taxable sales of City merchants to Newhall Ranch residents of $207.0 million annually.

In comparison, City street maintenance costs attributable to additional Newhall Ranch traffic at buildout are estimated on a conservative basis at $501,000, equal to 22.1% of projected sales taxes. Consequently, an estimated $1.8 million annual surplus is expected to accrue to the benefit of the City upon buildout.

2. SALES TAXES TO THE CITY

At buildout Newhall Ranch residents will have made the following taxable purchases at retail establishments in the City of Santa Clarita:

- $3.2 billion during the 25-year development period, which will have generated sales taxes to the City of $35.1 million.

- $204.6 million annually in Year 25 and beyond, which will generate sales taxes of $2.251 million annually.

These taxable sales projections are based the City's capturing a 35% share of all Newhall Ranch taxable purchases, as discussed in foregoing Section III, Subsection 4 of this report. Sales taxes to the City are computed at 1.10% of taxable sales. See Section IV, Subsection 2(3) of this report for more information on this factor.

Please refer to Appendix Tables A4 and A5 for detailed taxable sales projections for the City of Santa Clarita.

3. PROJECTED TRAFFIC VOLUMES

As a basis for evaluating future City cost increases to serve additional traffic generated by Newhall Ranch development at buildout, Austin-Faust Associates have prepared the following estimates of vehicle miles traveled (VMT):

Existing VMT in the City	475,550
VMT in the City @ Newhall Ranch & General Plan Buildout	
Added by Newhall Ranch	96,360
Added by Other General Plan Development	964,390
Total	1,060,750
---Newhall Ranch As % of Future VMT in City	9.1%

It should be noted that neighborhood streets account for an estimated 43.3% of total lane-miles in the City, and that the above VMT measures cover only major arterial streets.

4. ESTIMATED CITY STREET MAINTENANCE COSTS

These costs attributable to Newhall Ranch are estimated at $501 thousand annually at full buildout in Year 25 and thereafter, computed as follows:

- The above-noted projected annual VMT arising from Newhall Ranch development of 96,360.
- At an annual cost of $5.20 per VMT.

This latter factor is based on:

- The City's 1995-96 budget for street maintenance, which is approximately $2.5 million, a figure which includes allowance for departmental and City-wide administrative overhead, as detailed in Appendix Table E1.
- Divided by the City's existing VMT level of 475,550, noted above.

The City's 1995-96 budget of $2.5 million for street maintenance equates to 3,595 per lane-mile, based on an estimated 688 lane-miles in the City, a cost level which falls within the experience range of most Southern California cities. Under the assumption that this cost level continues in the City, the projected Newhall Ranch cost impact of $501 thousand would accommodate maintenance of an additional 139 lane-miles of streets in the City ($501 thousand divided by $3,595 per lane-mile).

It is our judgment that the $501 thousand annual cost estimate is highly conservative for several reasons:

- The City's $2.5 million street maintenance budget, on which the $5.20 per VMT cost factor is based, includes maintenance costs for the City's neighborhood streets, which as noted earlier account for an estimated 43.3% of the total lane-miles in the City.

- A significant portion of City street maintenance costs are not related to traffic, but rather are a function of weather, aging, and other factors, possibly to the extent of 50% or more.

- The two overhead allowances are based on current levels, and thus do not take into account likely economies of scale.

Even so, projected cost levels are well below projected sales tax revenues, which can be used to cover costs not only of street maintenance but also other municipal functions.

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Appendix A

DETAILED PROJECTIONS

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Table A1
SUMMARY FINANCIAL PROJECTIONS---ALL SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
	$000's															
GENERAL FUND SERVICES																
Operations																
Revenues	481,976	33,862	75,049	108,295	129,699	135,071	5,218	6,277	6,732	6,875	8,760	12,055	12,923	15,917	16,525	17,629
Expenditures	250,529	25,307	46,667	57,714	62,571	58,270	4,489	5,062	5,127	4,845	5,985	8,229	8,479	9,963	9,820	10,176
Net Surplus/(Deficit)	231,447	8,554	28,382	50,582	67,128	76,800	729	1,215	1,605	2,230	2,776	3,826	4,444	5,954	6,705	7,453
---% to Expenditures	92.4	33.8	60.8	87.6	107.3	131.8	16.2	24.0	31.3	46.0	46.4	46.5	52.4	59.8	68.3	73.2
---Cumulative	231,447	8,554	36,937	87,519	154,647	231,447	729	1,944	3,549	5,779	8,554	12,380	16,825	22,779	29,484	36,937
Capital Facilities																
Revenues	15,076	4,397	3,612	3,341	2,654	1,072	974	974	936	714	797	768	756	791	673	626
Expenditures	15,076	4,397	3,612	3,341	2,654	1,072	974	974	936	714	797	768	756	791	673	626
Net Surplus/(Deficit)	(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
---Cumulative	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operations & Cap Facil Combined																
Revenues	497,052	38,259	78,662	111,636	132,353	136,143	6,192	7,251	7,670	7,589	9,558	12,822	13,679	16,708	17,198	18,255
Expenditures	265,605	29,704	50,279	61,054	65,224	59,343	5,463	6,036	6,065	5,559	6,782	8,996	9,235	10,754	10,493	10,802
Net Surplus/(Deficit)	231,447	8,554	28,382	50,582	67,128	76,800	729	1,215	1,605	2,230	2,776	3,826	4,444	5,954	6,705	7,453
---Cumulative	231,447	8,554	36,937	87,519	154,647	231,447	729	1,944	3,549	5,779	8,554	12,380	16,825	22,779	29,484	36,937
FIRE PROTECTION SERVICES																
Operations																
Revenues	159,143	6,674	20,167	34,953	46,161	51,168	476	954	1,376	1,714	2,152	2,789	3,374	4,074	4,682	5,268
Expenditures	92,918	5,200	13,130	17,550	27,300	29,738	0	1,300	1,300	1,300	1,300	1,300	1,300	3,510	3,510	3,510
Net Surplus/(Deficit)	66,225	1,474	7,057	17,403	18,861	21,430	476	(346)	76	414	852	1,489	2,074	564	1,172	1,758
---% to Expenditures	71.3	28.3	53.7	99.2	69.1	72.1	N/A	(26.6)	6.0	31.8	65.5	114.5	159.6	16.1	33.4	50.1
---Cumulative	66,225	1,474	8,531	25,934	44,795	66,225	476	130	209	622	1,474	2,962	5,037	5,601	6,773	8,531
Capital Facilities																
Revenues	8,362	1,706	2,498	2,169	1,480	488	378	384	338	263	344	478	461	547	512	499
Expenditures	6,330	2,100	1,980	0	2,250	0	0	450	0	1,650	0	0	0	1,980	0	0
Net Surplus/(Deficit)	2,032	(394)	518	2,169	(770)	488	378	(66)	338	(1,387)	344	478	461	(1,433)	512	499
---Cumulative	2,032	(394)	124	2,313	1,544	2,032	378	312	650	(737)	(394)	84	546	(887)	(375)	124
Operations & Cap Facil Combined																
Revenues	167,504	8,380	22,665	37,142	47,642	51,656	854	1,338	1,717	1,976	2,495	3,267	3,836	4,622	5,194	5,767
Expenditures	99,248	7,300	15,110	17,550	29,550	29,738	0	1,750	1,300	2,950	1,300	1,300	1,300	5,490	3,510	3,510
Net Surplus/(Deficit)	68,257	1,080	7,575	19,592	18,092	21,918	854	(412)	417	(974)	1,195	1,967	2,536	(868)	1,684	2,257
---Cumulative	68,257	1,080	8,655	28,247	46,339	68,257	854	442	859	(115)	1,080	3,047	5,582	4,714	6,398	8,655

Continued on next page.....

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Table A1
SUMMARY FINANCIAL PROJECTIONS --ALL SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
	$000's														
GENERAL FUND SERVICES															
Operations															
Revenues	20,187	21,098	20,607	23,019	23,365	24,109	25,878	26,921	26,155	26,636	26,906	26,789	27,069	27,278	27,029
Expenditures	11,553	11,595	10,383	12,129	12,053	12,342	13,219	13,157	11,923	11,929	11,769	11,536	11,690	11,784	11,491
Net Surplus/(Deficit)	8,634	9,503	10,223	10,890	11,332	11,767	12,660	13,763	14,231	14,707	15,137	15,253	15,379	15,494	15,537
---% to Expenditures	74.7	82.0	98.5	89.8	94.0	95.3	95.8	104.6	119.4	123.3	128.6	132.2	131.6	131.5	135.2
---Cumulative	45,571	55,073	65,296	76,187	87,519	99,286	111,945	125,709	139,940	154,647	169,784	185,037	200,416	215,910	231,447
Capital Facilities															
Revenues	779	696	437	744	684	673	649	589	401	342	248	224	229	229	143
Expenditures	779	696	437	744	684	673	649	589	401	342	248	224	229	229	143
Net Surplus/(Deficit)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
---Cumulative	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operations & Cap Facil Combined															
Revenues	20,966	21,794	21,043	23,763	24,069	24,782	26,527	27,510	26,555	26,978	27,154	27,013	27,298	27,507	27,172
Expenditures	12,332	12,291	10,820	12,873	12,737	13,015	13,868	13,747	12,324	12,271	12,017	11,760	11,919	12,013	11,634
Net Surplus/(Deficit)	8,634	9,503	10,223	10,890	11,332	11,767	12,660	13,763	14,231	14,707	15,137	15,253	15,379	15,494	15,537
---Cumulative	45,571	55,073	65,296	76,187	87,519	99,286	111,945	125,709	139,940	154,647	169,784	185,037	200,416	215,910	231,447
FIRE PROTECTION SERVICES															
Operations															
Revenues	5,945	6,549	6,964	7,510	7,985	8,429	8,928	9,365	9,612	9,827	10,002	10,125	10,249	10,363	10,428
Expenditures	3,510	3,510	3,510	3,510	3,510	3,510	5,948	5,948	5,948	5,948	5,948	5,948	5,948	5,948	5,948
Net Surplus/(Deficit)	2,435	3,039	3,454	4,000	4,475	4,919	2,980	3,418	3,665	3,880	4,054	4,178	4,301	4,416	4,481
---% to Expenditures	69.4	86.6	98.4	114.0	127.5	140.1	50.1	57.5	61.6	65.2	68.2	70.2	72.3	74.2	75.3
---Cumulative	10,966	14,005	17,459	21,459	25,934	30,853	33,833	37,251	40,915	44,795	48,850	53,027	57,328	61,744	66,225
Capital Facilities															
Revenues	574	472	317	440	386	355	395	357	206	167	136	101	101	95	54
Expenditures	0	0	0	0	0	0	2,250	0	0	0	0	0	0	0	0
Net Surplus/(Deficit)	574	472	317	440	386	355	(1,855)	357	206	167	136	101	101	95	54
---Cumulative	698	1,170	1,487	1,927	2,313	2,668	813	1,170	1,376	1,544	1,680	1,781	1,883	1,977	2,032
Operations & Cap Facil Combined															
Revenues	6,519	7,021	7,282	7,950	8,370	8,784	9,323	9,722	9,818	9,994	10,138	10,227	10,350	10,458	10,483
Expenditures	3,510	3,510	3,510	3,510	3,510	3,510	8,198	5,948	5,948	5,948	5,948	5,948	5,948	5,948	5,948
Net Surplus/(Deficit)	3,009	3,511	3,772	4,440	4,860	5,274	1,125	3,775	3,871	4,047	4,190	4,279	4,403	4,511	4,535
---Cumulative	11,664	15,175	18,946	23,386	28,247	33,521	34,646	38,421	42,292	46,339	50,529	54,808	59,211	63,722	68,257

Continued on next page.....

Table A1 (Continued.....page 2)
SUMMARY FINANCIAL PROJECTIONS – –ALL SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

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Item	25–Year Total	5–Year Totals Years 1–5	Years 6–10	Years 11–15	Years 16–20	Years 21–25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
	$000's															
LIBRARY SERVICES																
Operations																
Revenues	32,621	1,385	4,119	7,106	9,459	10,552	99	199	289	356	442	570	691	831	954	1,072
Expenditures	20,647	920	2,627	4,442	5,976	6,682	67	134	196	235	287	369	449	532	605	673
Net Surplus/(Deficit)	11,974	465	1,492	2,664	3,483	3,870	31	65	93	121	155	201	242	300	350	399
---% to Expenditures	58.0	50.5	56.8	60.0	58.3	57.9	46.3	48.1	47.6	51.2	54.0	54.5	54.0	56.4	57.8	59.4
---Cumulative	11,974	465	1,957	4,621	8,104	11,974	31	96	189	310	465	666	908	1,208	1,557	1,957
Capital Facilities																
Revenues	8,292	1,677	2,254	2,084	1,606	672	382	401	373	234	289	452	467	499	434	401
Expenditures	8,292	0	2,597	2,989	0	2,706	0	0	0	0	0	0	2,597	0	0	0
Net Surplus/(Deficit)	(0)	1,677	(343)	(906)	1,606	(2,035)	382	401	373	234	289	452	(2,129)	499	434	401
---Cumulative	(0)	1,677	1,334	428	2,035	(0)	382	782	1,155	1,388	1,677	2,129	0	499	933	1,334
Operations & Cap Facil Combined																
Revenues	40,914	3,062	6,372	9,190	11,065	11,224	480	599	662	589	731	1,022	1,158	1,330	1,389	1,473
Expenditures	28,939	920	5,223	7,432	5,976	9,388	67	134	196	235	287	369	3,046	532	605	673
Net Surplus/(Deficit)	11,974	2,142	1,149	1,759	5,090	1,835	413	465	466	354	444	653	(1,887)	798	784	800
---Cumulative	11,974	2,142	3,291	5,049	10,139	11,974	413	878	1,344	1,698	2,142	2,795	908	1,706	2,490	3,291
STREET MAINTENANCE SERVICES																
Operations																
Revenues	25,992	1,143	3,306	5,621	7,526	8,396	83	166	242	293	360	463	562	669	762	850
Expenditures	21,063	881	2,633	4,542	6,102	6,904	62	126	186	225	281	362	447	532	611	682
Net Surplus/(Deficit)	4,929	262	673	1,079	1,424	1,492	21	40	55	67	78	101	115	137	151	168
---% to Expenditures	23.4	29.7	25.5	23.7	23.3	21.6	33.9	31.4	29.7	29.9	27.9	27.9	25.7	25.8	24.7	24.7
---Cumulative	4,929	262	934	2,013	3,437	4,929	21	61	116	184	262	363	478	615	766	934
Capital Facilities																
None.....																
STREET LIGHTING SERVICES																
Operations																
Revenues	9,832	418	1,245	2,146	2,850	3,173	30	60	87	107	134	172	209	252	289	324
Expenditures	9,492	388	1,180	2,051	2,759	3,114	27	56	82	99	123	161	199	239	274	307
Net Surplus/(Deficit)	340	30	65	95	90	60	2	4	5	9	10	12	10	13	14	17
---% to Expenditures	3.6	7.8	5.5	4.6	3.3	1.9	8.6	7.5	5.9	8.6	8.3	7.2	4.9	5.4	5.1	5.4
---Cumulative	340	30	95	190	280	340	2	7	11	20	30	42	52	64	79	95
Capital Facilities																
None.....																

Continued on next page.....

Table A1 (Continued.....page 2)
SUMMARY FINANCIAL PROJECTIONS – –ALL SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

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Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
	$000's														
LIBRARY SERVICES															
Operations															
Revenues	1,208	1,330	1,412	1,527	1,629	1,724	1,826	1,918	1,972	2,019	2,057	2,085	2,113	2,140	2,157
Expenditures	756	831	878	955	1,023	1,090	1,155	1,211	1,245	1,275	1,298	1,318	1,338	1,358	1,370
Net Surplus/(Deficit)	452	499	534	573	606	634	672	707	727	744	759	767	776	783	786
---% to Expenditures	59.9	60.0	60.8	60.0	59.3	58.2	58.2	58.4	58.4	58.3	58.4	58.2	58.0	57.7	57.4
---Cumulative	2,409	2,908	3,442	4,014	4,621	5,255	5,926	6,633	7,360	8,104	8,863	9,630	10,405	11,188	11,974
Capital Facilities															
Revenues	466	438	281	470	428	395	388	366	245	212	161	140	140	140	91
Expenditures	0	0	0	2,989	0	0	0	0	0	0	0	0	0	0	2,706
Net Surplus/(Deficit)	466	438	281	(2,520)	428	395	388	366	245	212	161	140	140	140	(2,615)
---Cumulative	1,800	2,238	2,520	(0)	428	824	1,212	1,578	1,823	2,035	2,196	2,336	2,476	2,615	(0)
Operations & Cap Facil Combined															
Revenues	1,674	1,768	1,693	1,997	2,057	2,119	2,214	2,284	2,217	2,231	2,218	2,225	2,253	2,280	2,248
Expenditures	756	831	878	3,944	1,023	1,090	1,155	1,211	1,245	1,275	1,298	1,318	1,338	1,358	4,077
Net Surplus/(Deficit)	918	937	815	(1,947)	1,035	1,029	1,060	1,073	972	956	920	907	915	923	(1,829)
---Cumulative	4,209	5,146	5,961	4,014	5,049	6,078	7,138	8,211	9,183	10,139	11,059	11,966	12,881	13,804	11,974
STREET MAINTENANCE SERVICES															
Operations															
Revenues	956	1,052	1,114	1,208	1,291	1,373	1,455	1,525	1,568	1,605	1,634	1,657	1,681	1,705	1,719
Expenditures	771	848	900	976	1,048	1,111	1,175	1,233	1,275	1,308	1,336	1,358	1,383	1,405	1,422
Net Surplus/(Deficit)	185	204	214	232	243	262	279	292	293	297	297	299	298	300	297
---% to Expenditures	23.9	24.1	23.8	23.8	23.2	23.6	23.8	23.7	23.0	22.7	22.3	22.0	21.6	21.3	20.9
---Cumulative	1,119	1,323	1,537	1,770	2,013	2,275	2,555	2,847	3,140	3,437	3,735	4,034	4,332	4,632	4,929
Capital Facilities															
None.....															
STREET LIGHTING SERVICES															
Operations															
Revenues	365	402	427	461	492	520	551	578	594	608	619	627	636	643	648
Expenditures	347	383	406	441	473	503	531	558	576	591	603	613	623	634	640
Net Surplus/(Deficit)	17	19	21	20	18	17	19	20	18	16	16	14	12	10	8
---% to Expenditures	5.0	4.9	5.1	4.5	3.8	3.4	3.6	3.6	3.1	2.8	2.6	2.3	1.9	1.6	1.2
---Cumulative	112	131	152	172	190	207	227	246	264	280	296	310	322	332	340
Capital Facilities															
None.....															

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Table A1 (Continued.....page 3)
SUMMARY FINANCIAL PROJECTIONS - -ALL SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

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Item	25-Year Total	5-Year Totals Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
	$000's															
FLOOD CONTROL																
MAINTENANCE SERVICES																
Operations																
Revenues	21,079	870	2,615	4,567	6,130	6,696	61	124	181	225	279	359	436	527	608	686
Expenditures	5,742	428	905	1,223	1,535	1,651	29	58	86	112	144	157	169	179	192	208
Net Surplus/(Deficit)	15,337	442	1,710	3,344	4,595	5,245	33	67	95	113	135	202	266	348	416	478
---% to Expenditures	267.1	103.3	188.9	273.3	299.4	317.8	113.4	115.8	109.7	101.4	93.9	129.2	157.0	194.2	216.9	229.6
---Cumulative	15,337	442	2,152	5,496	10,092	15,337	33	99	194	307	442	645	911	1,258	1,675	2,152
Capital Facilities																
None.....																
TRANSIT SERVICES																
Operations																
Revenues	10,323	460	1,313	2,221	2,988	3,341	34	67	98	118	144	184	224	268	302	336
Expenditures	10,323	460	1,313	2,221	2,988	3,341	34	67	98	118	144	184	224	268	302	336
Net Surplus/(Deficit)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
---% to Expenditures	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
---Cumulative	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital Facilities																
None.....																
TOTAL ALL SERVICES COMBINED																
Operations																
Revenues	740,967	44,812	107,635	164,910	204,813	218,597	6,001	7,848	9,007	9,687	12,270	16,592	18,420	22,536	24,123	26,165
Expenditures	410,714	33,585	68,456	89,744	109,230	109,699	4,709	6,603	7,076	8,733	8,264	10,761	11,268	15,220	15,314	15,892
Net Surplus/(Deficit)	330,253	11,227	39,379	75,166	95,583	108,897	1,292	1,044	1,932	2,954	4,006	5,830	7,152	7,316	8,808	10,272
---% to Expenditures	80.4	33.4	57.5	83.8	87.5	99.3	27.4	15.4	27.3	43.9	48.5	54.2	63.5	48.1	57.5	64.6
---Cumulative	330,253	11,227	50,606	125,772	221,355	330,253	1,292	2,336	4,268	7,221	11,227	17,058	24,210	31,526	40,334	50,606
Capital Facilities																
Revenues	31,730	7,760	6,364	7,613	5,741	2,232	1,734	1,758	1,649	1,210	1,429	1,698	1,685	1,837	1,619	1,526
Expenditures	29,699	6,497	6,189	6,330	4,904	3,779	974	1,424	938	2,364	797	768	3,352	2,771	673	626
Net Surplus/(Deficit)	2,032	1,263	175	1,283	837	(1,547)	760	334	711	(1,154)	632	930	(1,668)	(934)	948	900
---Cumulative	2,032	1,263	1,458	2,742	3,578	2,032	760	1,094	1,805	651	1,283	2,214	546	(388)	558	1,458
Operations & Cap Facil Combined																
Revenues	772,697	52,592	116,199	172,523	210,554	220,829	7,734	9,606	10,656	10,897	13,699	18,290	20,104	24,373	25,742	27,691
Expenditures	440,413	40,082	76,645	96,074	114,134	113,478	5,683	8,227	8,013	9,097	9,061	11,529	14,620	17,991	15,987	16,518
Net Surplus/(Deficit)	332,284	12,510	39,554	76,449	96,420	107,351	2,052	1,379	2,643	1,800	4,638	6,761	5,484	6,382	9,754	11,173
---Cumulative	332,284	12,510	52,064	128,514	224,934	332,284	2,052	3,430	6,073	7,872	12,510	19,271	24,755	31,137	40,892	52,064

Source: The Levander Company, Inc.

Table A1 (Continued.....page 3)
SUMMARY FINANCIAL PROJECTIONS --ALL SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

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Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
	$000's														
FLOOD CONTROL															
MAINTENANCE SERVICES															
Operations															
Revenues	776	854	908	981	1,046	1,110	1,180	1,243	1,282	1,315	1,342	1,362	1,381	1,400	1,411
Expenditures	221	231	243	256	272	282	295	308	321	330	330	330	330	330	330
Net Surplus/(Deficit)	556	623	664	725	776	828	885	935	962	985	1,012	1,032	1,051	1,070	1,081
---% to Expenditures	251.5	270.4	273.0	283.0	284.9	293.8	300.1	304.0	300.0	298.4	306.5	312.5	318.4	324.1	327.4
---Cumulative	2,708	3,331	3,995	4,721	5,496	6,325	7,209	8,145	9,107	10,092	11,103	12,135	13,186	14,256	15,337
Capital Facilities															
None.....															
TRANSIT SERVICES															
Operations															
Revenues	376	415	439	477	511	545	577	605	623	638	649	659	669	679	685
Expenditures	376	415	439	477	511	545	577	605	623	638	649	659	669	679	685
Net Surplus/(Deficit)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
---% to Expenditures	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
---Cumulative	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital Facilities															
None.....															
TOTAL ALL SERVICES COMBINED															
Operations															
Revenues	29,815	31,700	31,870	35,185	36,340	37,811	40,394	42,155	41,805	42,648	43,208	43,304	43,798	44,209	44,077
Expenditures	17,536	17,813	16,760	18,744	18,891	19,383	22,699	23,019	21,910	22,019	21,933	21,762	21,981	22,137	21,887
Net Surplus/(Deficit)	12,279	13,887	15,110	16,441	17,450	18,428	17,495	19,136	19,895	20,629	21,275	21,542	21,817	22,072	22,190
---% to Expenditures	70.0	78.0	90.2	87.7	92.4	95.1	76.4	83.1	90.8	93.7	97.0	99.0	99.3	99.7	101.4
---Cumulative	62,865	76,772	91,882	108,323	125,772	144,200	161,695	180,831	200,727	221,355	242,631	264,173	285,990	308,062	330,253
Capital Facilities															
Revenues	1,819	1,606	1,036	1,654	1,499	1,422	1,432	1,313	852	721	546	465	470	464	288
Expenditures	779	696	437	3,733	684	673	2,899	589	401	342	249	224	229	229	2,849
Net Surplus/(Deficit)	1,040	910	599	(2,080)	814	750	(1,467)	723	451	379	297	241	241	235	(2,561)
---Cumulative	2,498	3,408	4,007	1,927	2,742	3,491	2,025	2,748	3,199	3,578	3,876	4,117	4,358	4,593	2,032
Operations & Cap Facil Combined															
Revenues	31,634	33,306	32,906	36,838	37,839	39,233	41,826	43,468	42,657	43,369	43,754	43,769	44,268	44,672	44,366
Expenditures	18,316	18,509	17,197	22,477	19,575	20,055	25,798	23,608	22,311	22,361	22,181	21,986	22,209	22,365	24,736
Net Surplus/(Deficit)	13,319	14,797	15,709	14,361	18,264	19,178	16,028	19,859	20,347	21,008	21,572	21,784	22,058	22,307	19,629
---Cumulative	65,363	80,160	95,869	110,250	128,514	147,692	163,720	183,579	203,926	224,934	246,506	268,290	290,348	312,655	332,284

Source: The Levander Company, Inc.

Table A2.1
FINANCIAL PROJECTION DETAILS--GENERAL FUND SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

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01/04/96

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
	$000's															
NON-DEPARTMENTAL REVENUES																
Property Tax--Secured	169,168	8,024	24,104	41,600	54,814	60,626	574	1,151	1,663	2,055	2,579	3,337	4,040	4,865	5,584	6,278
Property Tax--Unsecured	1,578	16	140	318	489	615	0	0	0	7	9	15	18	29	36	43
Sales Tax	48,326	1,114	4,711	9,162	13,753	17,586	44	88	127	409	447	500	552	1,105	1,220	1,334
Transient Occupancy Tax	9,773	0	1,396	2,792	2,792	2,792	0	0	0	0	0	279	279	279	279	279
Utility Users' Tax	31,617	1,293	3,683	6,843	9,286	10,510	93	184	269	336	412	532	646	780	904	1,021
Business License Tax	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Licenses, Permits & Franchises	8,173	275	765	1,328	1,767	1,998	20	40	59	70	86	110	134	159	181	201
Vehicle License Fees	76,311	3,401	9,708	16,419	22,086	24,697	249	496	724	870	1,062	1,363	1,658	1,965	2,235	2,486
Deed Transfer Tax--New	5,459	1,215	1,661	1,441	848	294	280	282	249	154	249	342	332	351	323	312
Deed Transfer Tax--Resale	9,130	300	1,084	2,001	2,712	3,033	0	32	64	93	111	139	178	216	257	294
Other Revenues	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Revenues	375,735	15,638	47,472	81,908	108,569	122,150	1,260	2,274	3,155	3,994	4,955	6,619	7,837	9,749	11,019	12,248
LOCAL SERVICE NET EXPEND																
Police Protection																
Operating Expenditures																
Police Protection Expenditures	30,044	1,339	3,622	6,464	8,695	9,723	98	195	285	342	418	537	653	774	860	979
Less Proposition 172 Sales Tax Revenu	19,583	471	1,991	3,873	5,614	7,434	18	37	54	173	189	211	233	467	516	564
Net Operating Expenditures	10,461	868	1,631	2,591	2,881	2,289	80	158	231	170	229	325	420	307	364	415
Capital Facility Expenditures																
Sheriff Station	0	0	0	0	0	0										
Total Net Expenditures	10,461	868	1,631	2,591	2,881	2,289	80	158	231	170	229	325	420	307	364	415
Animal Care & Control																
Operating Expenditures																
Animal Care & Control Operations	2,169	98	278	471	633	708	7	14	21	25	30	39	48	56	64	71
Capital Facility Expenditures	0	0	0	0	0	0										
Total Net Expenditures	2,169	98	278	471	633	708	7	14	21	25	30	39	48	56	64	71

Source: The Levander Company, Inc.

Table A2.1
FINANCIAL PROJECTION DETAILS---GENERAL FUND SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

1453CR2A
SL500
01/04/98

Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
	$000's														
NON-DEPARTMENTAL REVENUES															
Property Tax--Secured	7,078	7,797	8,284	8,936	9,502	10,030	10,611	11,118	11,403	11,652	11,853	11,998	12,142	12,276	12,356
Property Tax--Unsecured	53	58	66	68	73	78	89	101	108	113	119	121	124	125	125
Sales Tax	1,469	1,870	1,963	2,011	2,050	2,087	2,380	2,878	3,103	3,307	3,499	3,509	3,518	3,527	3,533
Transient Occupancy Tax	558	558	558	558	558	558	558	558	558	558	558	558	558	558	558
Utility Users' Tax	1,166	1,279	1,359	1,468	1,571	1,673	1,784	1,884	1,948	2,000	2,042	2,074	2,106	2,136	2,153
Business License Tax	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Licenses, Permits & Franchises	226	248	263	285	306	326	345	362	372	381	388	394	400	406	410
Vehicle License Fees	2,793	3,071	3,247	3,529	3,779	4,028	4,267	4,474	4,603	4,714	4,798	4,871	4,944	5,018	5,065
Deed Transfer Tax--New	343	333	206	308	251	233	226	189	103	97	73	60	60	60	39
Deed Transfer Tax--Resale	329	359	407	430	466	494	521	547	569	501	592	600	607	614	621
Other Revenues	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Revenues	14,016	15,384	16,352	17,597	18,556	19,508	20,781	22,111	22,767	23,403	23,922	24,185	24,459	24,722	24,861
LOCAL SERVICE NET EXPEND															
Police Protection															
Operating Expenditures															
Police Protection Expenditures	1,100	1,209	1,278	1,389	1,466	1,566	1,680	1,762	1,812	1,856	1,889	1,918	1,947	1,975	1,994
Less Proposition 172 Sales Tax Revenu	621	706	830	850	867	882	1,006	1,216	1,312	1,398	1,479	1,483	1,487	1,491	1,493
Net Operating Expenditures	479	503	448	539	621	704	674	545	500	458	410	435	460	485	501
Capital Facility Expenditures															
Sheriff Station															
Total Net Expenditures	479	503	448	539	621	704	674	545	500	458	410	435	460	485	501
Animal Care & Control															
Operating Expenditures															
Animal Care & Control Operations	80	88	93	101	108	116	122	128	132	135	138	140	142	144	145
Capital Facility Expenditures															
Total Net Expenditures	80	88	93	101	108	116	122	128	132	135	138	140	142	144	145

Source: The Levander Company, Inc.

Table A2.1(Continued.....page 2)
FINANCIAL PROJECTION DETAILS--GENERAL FUND SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

1453CR2A
SL500
01/04/96

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
	$000's															
LOCAL SERVICE NET EXPEND CONTINUED.....																
Parks & Recreation																
Operating Expenditures																
Recreation Services	6,194	276	768	1,333	1,793	2,005	20	40	59	71	86	111	135	160	181	202
Maintenance--Active Parks	10,640	465	1,327	2,250	3,086	3,511	34	68	100	120	144	186	227	269	306	340
Maintenance--Passive Parks	2,226	97	278	472	646	734	7	14	21	25	30	39	47	56	64	71
Maintenance--Regional Trails	2,355	307	512	512	512	512	20	41	61	62	102	102	102	102	102	102
Maint--Local & Community Trails	6,481	314	836	1,359	1,862	2,091	21	42	63	84	105	125	146	167	188	209
Subtotal	27,896	1,459	3,741	5,925	7,918	8,851	103	205	304	381	467	563	657	755	842	924
Less Park & Recreation Fee Revenues	1,394	62	177	300	403	451	5	9	13	16	19	25	30	36	41	45
Less Prop A Pk & Recr Assmt (15.0%)	644	25	76	137	189	218	2	3	5	7	8	10	12	15	18	20
Net Operating Expenditures	25,858	1,372	3,488	5,489	7,326	8,183	96	193	285	358	440	528	615	704	783	859
Capital Facility Expenditures																
Active Parks	12,305	2,450	3,332	3,082	2,450	991	577	577	545	338	414	708	697	730	621	577
Passive Parks	1,028	204	280	259	203	82	48	48	45	28	35	60	59	61	52	48
Regional Trails	1,742	1,742	0	0	0	0	348	348	348	348	348	0	0	0	0	0
Community & Local Trails	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	15,076	4,397	3,612	3,341	2,654	1,072	974	974	938	714	797	768	756	791	673	626
Less Prop A Pk & Recr Assmt (82.5%)	3,545	137	418	753	1,039	1,197	9	19	28	36	44	56	68	84	98	112
Less Developer Contribution	11,531	4,260	3,194	2,587	1,615	(125)	965	955	909	678	753	711	687	707	575	514
Net Capital Facility Expenditures	(0)	0	0	(0)	0	0	0	0	0	0	0	0	0	0	0	0
Total Net Expenditures	25,858	1,372	3,488	5,489	7,326	8,183	96	193	285	358	440	528	615	704	783	859
Development Control																
Operating Expenditures	84,620	17,666	25,332	22,080	14,724	4,818	3,933	3,954	3,505	2,685	3,589	5,190	4,810	5,650	4,931	4,751
Less Service Fees	84,620	17,666	25,332	22,080	14,724	4,818	3,933	3,954	3,505	2,685	3,589	5,190	4,810	5,650	4,931	4,751
Net Surplus/(Deficit)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Local Service Net Expend	38,508	2,338	5,598	6,551	10,641	11,180	163	365	537	553	699	892	1,082	1,067	1,212	1,345
SUBTOTAL NET SURPLUS/(DEFICIT)	337,227	13,300	41,675	73,355	97,728	110,970	1,077	1,909	2,617	3,441	4,256	5,726	6,755	8,662	9,608	10,903

Source: The Levander Company, Inc.

Table A2.1(Continued.....page 2)
FINANCIAL PROJECTION DETAILS--GENERAL FUND SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

1453CR2A
SL500
01/04/96

Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
	$000's														
LOCAL SERVICE NET EXPEND															
CONTINUED.....															
Parks & Recreation															
Operating Expenditures															
Recreation Services	227	249	264	286	307	327	346	363	374	383	389	395	401	407	411
Maintenance--Active Parks	362	420	444	484	521	557	593	625	646	665	678	691	703	716	723
Maintenance--Passive Parks	60	88	93	101	109	117	124	131	135	139	142	144	147	149	151
Maintenance--Regional Trails	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102
Maint--Local & Community Trails	230	251	272	293	314	335	355	376	397	418	418	418	418	418	418
Subtotal	1,021	1,110	1,174	1,267	1,353	1,438	1,521	1,597	1,655	1,707	1,730	1,751	1,772	1,793	1,806
Less Park & Recreation Fee Revenues	51	56	59	64	69	74	76	82	84	86	88	89	90	92	93
Less Prop A Pk & Recr Assmt (15.0%)	23	26	27	29	32	34	36	38	40	41	42	43	44	44	45
Net Operating Expenditures	947	1,029	1,088	1,173	1,252	1,331	1,407	1,477	1,531	1,580	1,601	1,619	1,638	1,657	1,669
Capital Facility Expenditures															
Active Parks	719	643	403	688	632	621	599	545	370	316	229	207	212	212	131
Passive Parks	61	54	34	58	53	52	50	45	30	26	20	17	17	17	12
Regional Trails	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Community & Local Trails	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	779	696	437	744	684	673	649	589	401	342	248	224	229	229	143
Less Prop A Pk & Recr Assmt (62.5%)	128	140	149	162	174	185	198	211	219	226	232	236	240	244	246
Less Developer Contribution	651	556	287	582	511	488	451	379	182	116	17	(12)	(11)	(15)	(103)
Net Capital Facility Expenditures	0	0	0	(0)	0	0	0	0	0	0	0	0	0	0	0
Total Net Expenditures	947	1,029	1,088	1,173	1,252	1,331	1,407	1,477	1,531	1,580	1,601	1,619	1,638	1,657	1,669
Development Control															
Operating Expenditures	5,476	4,927	3,338	4,478	3,881	3,614	3,977	3,473	1,952	1,708	1,375	989	989	929	537
Less Service Fees	5,476	4,927	3,338	4,478	3,881	3,614	3,977	3,473	1,952	1,708	1,375	989	989	929	537
Net Surplus/(Deficit)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Local Service Net Expend	1,506	1,620	1,629	1,814	1,982	2,150	2,204	2,151	2,163	2,173	2,148	2,193	2,239	2,285	2,315
SUBTOTAL NET SURPLUS/(DEFICIT)	12,510	13,764	14,723	15,784	16,574	17,356	18,578	19,960	20,604	21,230	21,775	21,992	22,220	22,437	22,547

Source: The Levander Company, Inc.

Table A2.1(Continued.....page 3)
FINANCIAL PROJECTION DETAILS--GENERAL FUND SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

1453CR2A
SL500
01/04/96

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
OTHER NET EXPENDITURES	$000's															
County-Wide Services																
Judicial	28,575	1,274	3,635	6,148	8,270	9,248	93	186	271	326	398	511	621	736	837	931
Detention & Correction	14,690	655	1,869	3,161	4,252	4,754	48	96	139	167	204	262	319	378	430	479
Sheriff County-Wide	25,530	1,138	3,248	5,493	7,389	8,262	83	166	242	291	355	456	555	658	748	832
Other Protection	3,087	138	393	664	893	999	10	20	29	35	43	55	67	80	90	101
Public Assistance	10,200	455	1,298	2,195	2,952	3,301	33	66	97	116	142	182	222	263	299	332
Health Services	9,539	425	1,214	2,052	2,761	3,087	31	62	90	109	133	170	207	246	279	311
Mental Health	3,685	164	469	793	1,067	1,193	12	24	35	42	51	66	80	95	108	120
Recreation & Cultural Services	3,603	161	458	775	1,043	1,166	12	23	34	41	50	64	78	93	106	117
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Net Expenditures	98,909	4,408	12,583	21,282	28,626	32,010	323	643	938	1,127	1,376	1,767	2,149	2,548	2,897	3,222
General Administration	6,871	337	909	1,492	1,973	2,160	25	50	74	84	104	133	162	181	205	228
General Fund Contribution to Library	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Net Expenditures	105,780	4,745	13,492	22,773	30,600	34,170	348	694	1,012	1,211	1,480	1,900	2,311	2,728	3,102	3,451
TOTAL NET SURPLUS/(DEFICIT)	231,447	8,554	28,382	50,582	67,128	76,800	729	1,215	1,605	2,230	2,776	3,826	4,444	5,954	6,705	7,453
---Cumulative	231,447	8,554	36,937	87,519	154,647	231,447	729	1,944	3,549	5,779	8,554	12,380	16,825	22,779	29,484	36,937
RECAP BY OPER VS CAPITAL FACILITY REVENUES & EXPENDITURES																
Operations																
Revenues	481,976	33,862	75,049	108,295	129,699	135,071	5,218	6,277	6,732	6,875	8,760	12,055	12,923	15,917	16,525	17,629
Expenditures	250,529	25,307	46,667	57,714	62,571	58,270	4,489	5,062	5,127	4,645	5,985	8,229	8,479	9,963	9,820	10,176
Net Surplus/(Deficit)	231,447	8,554	28,382	50,582	67,128	76,800	729	1,215	1,605	2,230	2,776	3,826	4,444	5,954	6,705	7,453
---% to Expenditures	92.4	33.8	60.8	87.6	107.3	131.8	16.2	24.0	31.3	48.0	46.4	46.5	52.4	59.8	68.3	73.2
---% to Expend Excl Dev Control	139.5	112.0	133.0	141.9	140.3	143.7	131.0	109.6	99.0	113.8	115.9	125.9	121.1	138.0	137.2	137.4
---Cumulative	231,447	8,554	36,937	87,519	154,647	231,447	729	1,944	3,549	5,779	8,554	12,380	16,825	22,779	29,484	36,937
Capital Facilities																
Revenues	15,076	4,397	3,612	3,341	2,654	1,072	974	974	938	714	797	768	756	791	673	626
Expenditures	15,076	4,397	3,612	3,341	2,654	1,072	974	974	938	714	797	768	756	791	673	626
Net Surplus/(Deficit)	(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
---Cumulative	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operations & Cap Facil Combined																
Revenues	497,052	38,259	78,662	111,636	132,353	136,143	6,192	7,251	7,670	7,589	9,558	12,822	13,679	16,708	17,198	18,255
Expenditures	265,605	29,704	50,279	61,054	65,224	59,343	5,463	6,036	6,065	5,359	6,782	8,996	9,235	10,754	10,493	10,802
Net Surplus/(Deficit)	231,447	8,554	28,382	50,582	67,128	76,800	729	1,215	1,605	2,230	2,776	3,826	4,444	5,954	6,705	7,453
---Cumulative	231,447	8,554	36,937	87,519	154,647	231,447	729	1,944	3,549	5,779	8,554	12,380	16,825	22,779	29,484	36,937

Source: The Levander Company, Inc.

Table A2.1(Continued.....page 3)
FINANCIAL PROJECTION DETAILS – –GENERAL FUND SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

1453CR2A
SL500
01/04/96

Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
OTHER NET EXPENDITURES	$000's														
County–Wide Services															
Judicial	1,046	1,150	1,216	1,321	1,415	1,508	1,598	1,675	1,723	1,765	1,797	1,824	1,851	1,879	1,897
Detention & Correction	538	591	625	679	728	775	821	861	886	907	924	938	952	966	975
Sheriff County–Wide	934	1,028	1,086	1,181	1,264	1,348	1,428	1,497	1,540	1,577	1,605	1,630	1,654	1,679	1,695
Other Protection	113	124	131	143	153	163	173	181	186	191	194	197	200	203	205
Public Assistance	373	411	434	472	505	538	570	598	615	630	641	651	661	671	677
Health Services	349	384	406	441	472	503	533	559	575	589	600	609	618	627	633
Mental Health	135	148	157	170	183	195	206	216	222	228	232	235	239	242	245
Recreation & Cultural Services	132	145	153	167	178	190	201	211	217	223	227	230	233	237	239
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Net Expenditures	3,620	3,981	4,208	4,574	4,699	5,221	5,531	5,799	5,966	6,109	6,219	6,314	6,409	6,504	6,565
General Administration	256	280	292	319	344	369	387	398	406	414	418	425	432	439	444
General Fund Contribution to Library	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Net Expenditures	3,876	4,261	4,500	4,893	5,243	5,589	5,918	6,197	6,372	6,524	6,637	6,739	6,841	6,943	7,009
TOTAL NET SURPLUS/(DEFICIT)	8,634	9,503	10,223	10,890	11,332	11,767	12,660	13,763	14,231	14,707	15,137	15,253	15,379	15,494	15,537
---Cumulative	45,571	55,073	65,296	76,187	87,519	99,286	111,945	125,709	139,940	154,647	169,784	185,037	200,416	215,910	231,447
RECAP BY OPER VS CAPITAL FACILI															
REVENUES & EXPENDITURES															
Operations															
Revenues	20,187	21,098	20,607	23,019	23,385	24,109	25,878	26,921	26,155	26,636	26,906	26,769	27,069	27,278	27,029
Expenditures	11,553	11,595	10,383	12,129	12,053	12,342	13,219	13,157	11,923	11,929	11,769	11,536	11,690	11,784	11,491
Net Surplus/(Deficit)	8,634	9,503	10,223	10,890	11,332	11,767	12,660	13,763	14,231	14,707	15,137	15,253	15,379	15,494	15,537
---% to Expenditures	74.7	82.0	98.5	89.8	94.0	95.3	95.8	104.6	119.4	123.3	128.6	132.2	131.6	131.5	135.2
---% to Expend Excl Dev Control	142.1	142.5	145.1	142.3	138.3	134.8	137.0	142.1	142.7	143.9	145.8	144.6	143.7	142.7	141.8
---Cumulative	45,571	55,073	65,296	76,187	87,519	99,286	111,945	125,709	139,940	154,647	169,784	185,037	200,416	215,910	231,447
Capital Facilities															
Revenues	779	698	437	744	684	673	649	569	401	342	248	224	229	229	143
Expenditures	779	698	437	744	684	673	649	569	401	342	248	224	229	229	143
Net Surplus/(Deficit)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
---Cumulative	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operations & Cap Facil Combined															
Revenues	20,966	21,794	21,043	23,763	24,069	24,782	26,527	27,510	26,555	26,978	27,154	27,013	27,298	27,507	27,172
Expenditures	12,332	12,291	10,820	12,873	12,737	13,015	13,868	13,747	12,324	12,271	12,017	11,760	11,919	12,013	11,634
Net Surplus/(Deficit)	8,634	9,503	10,223	10,890	11,332	11,767	12,660	13,763	14,231	14,707	15,137	15,253	15,379	15,494	15,537
---Cumulative	45,571	55,073	65,296	76,187	87,519	99,286	111,945	125,709	139,940	154,647	169,784	185,037	200,416	215,910	231,447

Source: The Levander Company, Inc.

Table A2.2
FINANCIAL PROJECTION DETAILS--FIRE PROTECTION SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

1453CR2A
SL500
01/04/96

Item	25-Year Total	Years 1-5 (5-Year Totals)	Years 6-10 (5-Year Totals)	Years 11-15 (5-Year Totals)	Years 16-20 (5-Year Totals)	Years 21-25 (5-Year Totals)	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
	$000's															
OPERATING REVENUES & EXPEND																
Revenues																
Property Taxes--Secured	156,767	6,650	19,976	34,474	45,425	50,242	476	954	1,378	1,703	2,138	2,766	3,348	4,031	4,628	5,203
Property Taxes--Unsecured	2,376	24	211	479	736	925	0	0	0	10	14	23	27	43	54	65
Service Fees	0	0	0	0	0	0										
State Assistance	0	0	0	0	0	0										
Total	159,143	6,674	20,187	34,953	46,161	51,168	476	954	1,378	1,714	2,152	2,789	3,374	4,074	4,682	5,268
Expenditures																
Engine/Station Operations	66,300	5,200	10,400	13,000	18,200	19,500	0	1,300	1,300	1,300	1,300	1,300	1,300	2,600	2,600	2,600
Paramedic Operations	16,380	0	2,730	4,550	4,550	4,550	0	0	0	0	0	0	0	910	910	910
Ladder Truck Operations	10,238	0	0	0	4,550	5,688	0	0	0	0	0	0	0	0	0	0
Total	92,918	5,200	13,130	17,550	27,300	29,738	0	1,300	1,300	1,300	1,300	1,300	1,300	3,510	3,510	3,510
Net Surplus/(Deficit)	66,225	1,474	7,057	17,403	18,861	21,430	476	(346)	78	414	852	1,489	2,074	564	1,172	1,758
---% to Expenditures	71.3	28.3	53.7	99.2	69.1	72.1	N/A	(26.6)	6.0	31.8	65.5	114.5	159.6	16.1	33.4	50.1
---Cumulative	66,225	1,474	8,531	25,934	44,795	66,225	476	130	209	622	1,474	2,962	5,037	5,601	6,773	8,531
CAPITAL FACILITY REV & EXPEND																
Revenues																
Mitigation Fees	8,362	1,706	2,498	2,169	1,460	488	378	384	338	283	344	478	461	547	512	499
Other	0	0	0	0	0	0										
Total	8,362	1,706	2,498	2,169	1,460	488	378	384	338	283	344	478	461	547	512	499
Expenditures																
Engine	750	250	250	0	250	0		250						250		
Temporary Structure/Furnish/Equip	200	200	0	0	0	0		200								
Permanent Structure/Furnish/Equip	4,950	1,650	1,650	0	1,650	0				1,650				1,650		
Paramedic Squad Truck	80	0	80	0	0	0								80		
Ladder Truck	350	0	0	0	350	0										
Total	6,330	2,100	1,980	0	2,250	0	0	450	0	1,650	0	0	0	1,980	0	0
Net Surplus/(Deficit)	2,032	(394)	518	2,169	(770)	488	378	(66)	338	(1,367)	344	478	461	(1,433)	512	499
---Cumulative	2,032	(394)	124	2,313	1,544	2,032	378	312	650	(737)	(394)	84	546	(887)	(375)	124
TOTAL OPER & CAPITAL FACIL REVENUES & EXPEND COMBINED																
Revenues	167,504	8,380	22,685	37,142	47,642	51,656	854	1,338	1,717	1,976	2,495	3,267	3,836	4,622	5,194	5,767
Expenditures	99,248	7,300	15,110	17,550	29,550	29,738	0	1,750	1,300	2,950	1,300	1,300	1,300	5,490	3,510	3,510
Net Surplus/(Deficit)	68,257	1,080	7,575	19,592	18,092	21,918	854	(412)	417	(974)	1,195	1,967	2,536	(868)	1,684	2,257
---Cumulative	68,257	1,080	8,655	28,247	46,339	68,257	854	442	859	(115)	1,080	3,047	5,582	4,714	6,398	8,655

Source: The Levander Company, Inc.

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Table A2.2
FINANCIAL PROJECTION DETAILS--FIRE PROTECTION SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

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367																
368	Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
369																
370																
371		$000's														
372	**OPERATING REVENUES & EXPEND**															
373																
374	Revenues															
375	Property Taxes--Secured	5,665	6,462	6,865	7,407	7,875	8,312	8,793	9,214	9,450	9,657	9,823	9,943	10,062	10,175	10,240
376	Property Taxes--Unecured	80	87	99	103	110	117	134	152	162	171	179	183	186	189	189
377	Service Fees															
378	State Assistance															
379	Total	5,945	6,549	6,964	7,510	7,985	8,429	8,928	9,365	9,612	9,827	10,002	10,125	10,249	10,363	10,428
380																
381	Expenditures															
382	Engine/Station Operations	2,600	2,600	2,600	2,600	2,600	2,600	3,900	3,900	3,900	3,900	3,900	3,900	3,900	3,900	3,900
383	Paramedic Operations	910	910	910	910	910	910	910	910	910	910	910	910	910	910	910
384	Ladder Truck Operations	0	0	0	0	0	0	1,138	1,138	1,138	1,138	1,138	1,138	1,138	1,138	1,138
385	Total	3,510	3,510	3,510	3,510	3,510	3,510	5,948	5,948	5,948	5,948	5,948	5,948	5,948	5,948	5,948
386																
387	Net Surplus/(Deficit)	2,435	3,039	3,454	4,000	4,475	4,919	2,980	3,418	3,665	3,880	4,054	4,176	4,301	4,416	4,481
388	---% to Expenditures	69.4	86.6	98.4	114.0	127.5	140.1	50.1	57.5	61.6	65.2	68.2	70.2	72.3	74.2	75.3
389	---Cumulative	10,966	14,005	17,459	21,459	25,934	30,853	33,833	37,251	40,915	44,795	48,850	53,027	57,328	61,744	66,225
390																
391	**CAPITAL FACILITY REV & EXPEND**															
392																
393	Revenues															
394	Mitigation Fees	574	472	317	440	386	355	395	357	206	167	136	101	101	95	54
395	Other															
396	Total	574	472	317	440	386	355	395	357	206	167	136	101	101	95	54
397																
398	Expenditures															
399	Engine							250								
400	Temporary Structure/Furnish/Equip															
401	Permanent Structure/Furnish/Equip							1,650								
402	Paramedic Squad Truck															
403	Ladder Truck							350								
404	Total	0	0	0	0	0	0	2,250	0	0	0	0	0	0	0	0
405																
406	Net Surplus/(Deficit)	574	472	317	440	386	355	(1,855)	357	206	167	136	101	101	95	54
407	---Cumulative	698	1,170	1,487	1,927	2,313	2,668	813	1,170	1,376	1,544	1,680	1,781	1,883	1,977	2,032
408																
409	**TOTAL OPER & CAPITAL FACIL**															
410	**REVENUES & EXPEND COMBINED**															
411																
412	Revenues	6,519	7,021	7,282	7,950	8,370	8,784	9,323	9,722	9,818	9,994	10,138	10,227	10,350	10,458	10,483
413	Expenditures	3,510	3,510	3,510	3,510	3,510	3,510	8,198	5,948	5,948	5,948	5,948	5,948	5,948	5,948	5,948
414	Net Surplus/(Deficit)	3,009	3,511	3,772	4,440	4,860	5,274	1,125	3,775	3,871	4,047	4,190	4,279	4,403	4,511	4,535
415	---Cumulative	11,664	15,175	18,946	23,386	28,247	33,521	34,646	38,421	42,292	46,339	50,529	54,808	59,211	63,722	68,257
416																
417																
418																
419																

420 Source: The Levander Company, Inc.

Table A2.3
FINANCIAL PROJECTION DETAILS---LIBRARY SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

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Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
	$000's															
OPERATING REVENUES & EXPEND																
Revenues																
Property Taxes---Secured	23,574	1,000	3,004	5,184	6,831	7,555	72	143	207	256	321	416	503	606	696	782
Property Taxes---Unsecured	54	1	5	11	17	21	0	0	0	0	0	1	1	1	1	1
Benefit Assessment (CFD No. 8)	8,240	351	1,014	1,749	2,393	2,732	25	51	75	91	110	140	171	205	235	264
Service Fees	465	21	59	100	134	150	2	3	4	5	6	8	10	12	14	15
State Assistance	289	13	37	62	84	94	1	2	3	3	4	5	6	7	8	9
General Fund Contribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	32,621	1,385	4,119	7,106	9,459	10,552	99	199	289	356	442	570	691	831	954	1,072
Expenditures																
Library Operations	20,647	920	2,627	4,442	5,976	6,682	67	134	196	235	287	369	449	532	605	673
Net Surplus/(Deficit)	11,974	465	1,492	2,664	3,483	3,870	31	65	93	121	155	201	242	300	350	399
---% to Expenditures	56.0	50.5	56.8	60.0	58.3	57.9	N/A	48.1	47.6	51.2	54.0	54.5	54.0	56.4	57.8	59.4
---Cumulative	11,974	465	1,957	4,621	8,104	11,974	31	96	189	310	465	666	908	1,208	1,557	1,957
CAPITAL FACILITY REV & EXPEND																
Revenues																
Mitigation Fees	8,292	1,677	2,254	2,084	1,606	672	382	401	373	234	289	452	467	499	434	401
---Cumulative	8,292	1,677	3,931	6,014	7,621	8,292	382	782	1,155	1,388	1,677	2,129	2,597	3,095	3,529	3,931
Expenditures																
Library Facilities & Volumes	8,292	0	2,597	2,989	0	2,706							2,597			
---Cumulative	8,292	0	2,597	5,586	5,586	8,292	0	0	0	0	0	0	2,597	2,597	2,597	2,597
Net Surplus/(Deficit)	(0)	1,677	(343)	(906)	1,606	(2,035)	382	401	373	234	289	452	(2,129)	499	434	401
---Cumulative	(0)	1,677	1,334	428	2,035	(0)	382	782	1,155	1,388	1,677	2,129	0	499	933	1,334
TOTAL OPER & CAPITAL FACIL REVENUES & EXPEND COMBINED																
Revenues	40,914	3,062	6,372	9,190	11,065	11,224	480	599	662	589	731	1,022	1,158	1,330	1,389	1,473
Expenditures	28,939	920	5,223	7,432	5,976	9,388	67	134	196	235	287	369	3,045	532	605	673
Net Surplus/(Deficit)	11,974	2,142	1,149	1,759	5,090	1,835	413	465	466	354	444	653	(1,887)	798	784	800
---Cumulative	11,974	2,142	3,291	5,049	10,139	11,974	413	878	1,344	1,698	2,142	2,795	908	1,706	2,490	3,291

Source: The Levander Company, Inc.

Table A2.3
FINANCIAL PROJECTION DETAILS---LIBRARY SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

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Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
	$000's														
OPERATING REVENUES & EXPEND															
Revenues															
Property Taxes--Secured	882	972	1,032	1,114	1,184	1,250	1,322	1,365	1,421	1,452	1,477	1,495	1,513	1,530	1,540
Property Taxes--Unsecured	2	2	2	2	2	3	3	3	4	4	4	4	4	4	4
Benefit Assessment (CFD No. 6)	297	326	346	376	405	431	459	485	502	517	528	538	547	557	562
Service Fees	17	19	20	21	23	25	26	27	28	29	29	30	30	31	31
State Assistance	11	12	12	13	14	15	16	17	17	18	18	18	19	19	19
General Fund Contribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,208	1,330	1,412	1,527	1,629	1,724	1,826	1,918	1,972	2,019	2,057	2,085	2,113	2,140	2,157
Expenditures															
Library Operations	756	831	878	955	1,023	1,090	1,155	1,211	1,245	1,275	1,298	1,318	1,338	1,358	1,370
Net Surplus/(Deficit)	452	499	534	573	606	634	672	707	727	744	759	767	776	783	786
---% to Expenditures	59.8	60.0	60.8	60.0	59.3	58.2	58.2	58.4	58.4	58.3	58.4	58.2	58.0	57.7	57.4
---Cumulative	2,409	2,908	3,442	4,014	4,621	5,255	5,926	6,633	7,360	8,104	8,863	9,630	10,405	11,188	11,974
CAPITAL FACILITY REV & EXPEND															
Revenues															
Mitigation Fees	466	438	281	470	428	395	388	366	245	212	161	140	140	140	91
---Cumulative	4,397	4,835	5,116	5,586	6,014	6,410	6,798	7,164	7,409	7,621	7,782	7,922	8,062	8,201	8,292
Expenditures															
Library Facilities & Volumes				2,989											2,706
---Cumulative	2,597	2,597	2,597	5,586	5,586	5,586	5,586	5,586	5,586	5,586	5,586	5,586	5,586	5,586	8,292
Net Surplus/(Deficit)	466	438	281	(2,520)	428	395	388	366	245	212	161	140	140	140	(2,615)
---Cumulative	1,800	2,238	2,520	(0)	428	824	1,212	1,578	1,823	2,035	2,196	2,336	2,476	2,615	(0)
TOTAL OPER & CAPITAL FACIL REVENUES & EXPEND COMBINED															
Revenues	1,674	1,768	1,693	1,997	2,057	2,119	2,214	2,284	2,217	2,231	2,218	2,225	2,253	2,260	2,248
Expenditures	756	831	878	3,944	1,023	1,090	1,155	1,211	1,245	1,275	1,298	1,318	1,338	1,358	4,077
Net Surplus/(Deficit)	918	937	815	(1,947)	1,035	1,029	1,060	1,073	972	956	920	907	915	923	(1,829)
---Cumulative	4,209	5,146	5,961	4,014	5,049	6,078	7,138	8,211	9,183	10,139	11,059	11,966	12,881	13,804	11,974

Source: The Levander Company, Inc.

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Table A2.4
FINANCIAL PROJECTION DETAILS--STREET MAINTENANCE SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	25-Year Total	5-Year Totals Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
	$000's															
OPERATING REVENUES & EXPEND																
Revenues																
Property Taxes--Secured	6,161	261	765	1,355	1,765	1,975	19	38	54	67	84	109	132	158	182	204
Property Taxes--Unsecured	51	1	5	10	16	20	0	0	0	0	0	0	1	1	1	1
Highway Users' Tax	11,521	513	1,466	2,479	3,334	3,729	36	75	109	131	160	206	250	297	337	375
Proposition C Sales Tax (20%)	8,259	368	1,051	1,777	2,390	2,673	27	54	78	94	115	148	179	213	242	269
Total	25,992	1,143	3,306	5,621	7,526	8,396	83	168	242	293	360	463	562	669	762	850
Expenditures																
Street Maintenance	20,354	832	2,531	4,397	5,917	6,676	59	120	177	212	265	345	427	512	588	659
Traffic Signal Maintenance	710	50	102	145	185	228	3	7	10	13	17	17	20	20	23	23
Total	21,063	881	2,633	4,542	6,102	6,904	62	126	186	225	281	362	447	532	611	682
Net Surplus/(Deficit)	4,929	262	673	1,079	1,424	1,492	21	40	55	67	78	101	115	137	151	168
---% to Expenditures	23.4	29.7	25.5	23.7	23.3	21.6	N/A	31.4	29.7	29.9	27.9	27.9	25.7	25.8	24.7	24.7
---Cumulative	4,929	262	934	2,013	3,437	4,929	21	61	116	184	262	363	478	615	766	934
CAPITAL FACILITY REV & EXPEND																
-----None																

Source: The Levander Company, Inc.

Table A2.4
FINANCIAL PROJECTION DETAILS--STREET MAINTENANCE SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

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Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
	$000's														
OPERATING REVENUES & EXPEND															
Revenues															
Property Taxes--Secured	231	254	270	291	309	327	346	362	371	380	386	391	395	400	402
Property Taxes--Unsecured	2	2	2	2	2	3	3	3	4	4	4	4	4	4	4
Highway Users' Tax	422	464	490	533	571	608	644	676	695	712	724	735	746	758	765
Proposition C Sales Tax (20%)	302	332	351	382	409	436	462	484	498	510	519	527	535	543	548
Total	956	1,052	1,114	1,208	1,291	1,373	1,455	1,525	1,568	1,605	1,634	1,657	1,681	1,705	1,719
Expenditures															
Street Maintenance	745	821	870	946	1,015	1,078	1,139	1,196	1,235	1,268	1,293	1,315	1,337	1,359	1,373
Traffic Signal Maintenance	26	26	30	30	33	33	36	38	40	40	43	43	46	46	50
Total	771	848	900	976	1,048	1,111	1,175	1,233	1,275	1,308	1,336	1,358	1,383	1,405	1,422
Net Surplus/(Deficit)	185	204	214	232	243	262	279	292	293	297	297	299	298	300	297
---% to Expenditures	23.9	24.1	23.8	23.8	23.2	23.6	23.8	23.7	23.0	22.7	22.3	22.0	21.6	21.3	20.9
---Cumulative	1,119	1,323	1,537	1,770	2,013	2,275	2,555	2,847	3,140	3,437	3,735	4,034	4,332	4,632	4,929
CAPITAL FACILITY REV & EXPEND															
-----None															

Source: The Levander Company, Inc.

Table A2.5
FINANCIAL PROJECTION DETAILS---STREET LIGHTING SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

1453CR2A
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01/04/96

Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
	$000's															
OPERATING REVENUES & EXPEND																
Revenues																
Property Taxes---Secured	7,766	329	990	1,708	2,250	2,489	24	47	68	84	106	137	166	200	229	258
Property Taxes---Unsecured	65	1	6	13	20	25	0	0	0	0	0	1	1	1	1	2
Benefit Assessment	2,001	88	250	425	579	659	6	13	19	23	27	35	43	51	58	64
Total	9,832	418	1,245	2,146	2,850	3,173	30	60	87	107	134	172	209	252	289	324
Expenditures																
SCE Payment & Administration	9,492	388	1,180	2,051	2,759	3,114	27	56	82	99	123	161	199	239	274	307
Net Surplus/(Deficit)	340	30	65	95	90	60	2	4	5	9	10	12	10	13	14	17
---% to Expenditures	3.6	7.6	5.5	4.6	3.3	1.9	8.6	7.5	5.9	8.6	8.3	7.2	4.9	5.4	5.1	5.4
---Cumulative	340	30	95	190	280	340	2	7	11	20	30	42	52	64	79	95
CAPITAL FACILITY REV & EXPEND																
-----None																

Source: The Levander Company, Inc.

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Table A2.5
FINANCIAL PROJECTION DETAILS---STREET LIGHTING SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
	$000's														
OPERATING REVENUES & EXPEND															
Revenues															
Property Taxes---Secured	291	320	340	367	390	412	436	456	468	476	487	493	498	504	507
Property Taxes---Unsecured	2	2	3	3	3	3	4	4	4	5	5	5	5	5	5
Benefit Assessment	72	79	84	91	98	105	111	117	121	125	127	130	132	134	136
Total	365	402	427	461	492	520	551	578	594	608	619	627	636	643	648
Expenditures															
SCE Payment & Administration	347	383	406	441	473	503	531	558	576	591	603	613	623	634	640
Net Surplus/(Deficit)	17	19	21	20	18	17	19	20	18	16	16	14	12	10	8
---% to Expenditures	5.0	4.9	5.1	4.5	3.6	3.4	3.6	3.6	3.1	2.8	2.6	2.3	1.9	1.6	1.2
---Cumulative	112	131	152	172	190	207	227	246	264	280	296	310	322	332	340
CAPITAL FACILITY REV & EXPEND															
-----None															

Source: The Levander Company, Inc.

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Table A2.6
FINANCIAL PROJECTION DETAILS--FLOOD CONTROL SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	25-Year Total	5-Year Totals Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
	$000's															
OPERATING REVENUES & EXPEND																
Revenues																
Property Taxes--Secured	12,063	512	1,537	2,653	3,495	3,866	37	73	106	131	164	213	258	310	356	400
Property Taxes--Unsecured	101	1	9	20	31	39	0	0	0	0	1	1	1	2	2	3
Benefit Assessment	8,916	358	1,069	1,894	2,604	2,991	25	51	75	94	114	145	177	215	250	283
Total	21,079	870	2,615	4,567	6,130	6,896	61	124	181	225	279	359	436	527	608	686
Expenditures																
Maint--Open Chan & River Embk	1,828	238	397	397	397	397	16	32	48	64	79	79	79	79	79	79
Maint--UG Pipe & Catch Basins	1,977	96	255	415	574	638	6	13	19	26	32	38	45	51	57	64
Maint--Debris Basins & Desilt Inlts	1,160	52	149	246	340	373	3	6	10	13	19	23	26	29	32	39
Maint--Open Water Quality Basins	776	42	104	165	224	243	3	6	10	10	13	16	19	19	23	26
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	5,742	428	905	1,223	1,535	1,651	29	58	88	112	144	157	169	179	192	208
Net Surplus/(Deficit)	15,337	442	1,710	3,344	4,595	5,245	33	67	95	113	135	202	266	348	416	478
---% to Expenditures	267.1	103.3	188.9	273.3	299.4	317.8	N/A	115.8	109.7	101.4	93.9	129.2	157.0	194.2	216.9	229.6
---Cumulative	15,337	442	2,152	5,496	10,092	15,337	33	99	194	307	442	645	911	1,258	1,675	2,152
CAPITAL FACILITY REV & EXPEND																
-----None																

Source: The Levander Company, Inc.

Table A2.6
FINANCIAL PROJECTION DETAILS--FLOOD CONTROL SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

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Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
	$000's														
OPERATING REVENUES & EXPEND															
Revenues															
Property Taxes--Secured	451	497	528	570	606	640	677	709	727	743	756	765	774	783	788
Property Taxes--Unsecured	3	4	4	4	5	5	6	6	7	7	8	8	8	8	8
Benefit Assessment	322	353	375	407	437	466	497	528	548	565	578	589	599	609	615
Total	776	854	908	981	1,048	1,110	1,180	1,243	1,282	1,315	1,342	1,362	1,381	1,400	1,411
Expenditures															
Maint--Open Chan & River Embk	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79
Maint--UG Pipe & Catch Basins	70	77	83	89	96	102	108	115	121	128	128	128	128	128	128
Maint--Debris Basins & Desilt Inlts	42	45	49	52	58	62	65	68	71	75	75	75	75	75	75
Maint--Open Water Quality Basins	29	29	32	36	39	39	42	45	49	49	49	49	49	49	49
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	221	231	243	256	272	282	295	308	321	330	330	330	330	330	330
Net Surplus/(Deficit)	556	623	664	725	776	828	885	935	962	985	1,012	1,032	1,051	1,070	1,081
---% to Expenditures	251.5	270.4	273.0	283.0	284.9	293.8	300.1	304.0	300.0	298.4	306.5	312.5	318.4	324.1	327.4
---Cumulative	2,708	3,331	3,995	4,721	5,496	6,325	7,209	8,145	9,107	10,092	11,103	12,135	13,186	14,256	15,337
CAPITAL FACILITY REV & EXPEND															
-----None															

Source: The Levander Company, Inc.

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Table A2.7
FINANCIAL PROJECTION DETAILS--TRANSIT SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	25-Year Total	5-Year Totals Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
	$000's															
OPERATING REVENUES & EXPEND																
Revenues																
Proposition A Sales Tax (25%)	10,323	460	1,313	2,221	2,988	3,341	34	67	98	118	144	184	224	266	302	336
Expenditures																
Transit Service Operations	10,323	460	1,313	2,221	2,988	3,341	34	67	98	118	144	184	224	266	302	336
Net Surplus/(Deficit)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
---% to Expenditures	0.0	0.0	0.0	0.0	0.0	0.0	N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
---Cumulative	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPITAL FACILITY REV & EXPEND																
-----None																

Source: The Levander Company, Inc.

Table A2.7
FINANCIAL PROJECTION DETAILS - - TRANSIT SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

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Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
	$000's														
OPERATING REVENUES & EXPEND															
Revenues															
Proposition A Sales Tax (25%)	378	415	439	477	511	545	577	605	623	638	649	659	669	679	685
Expenditures															
Transit Service Operations	378	415	439	477	511	545	577	605	623	638	649	659	669	679	685
Net Surplus/(Deficit)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
---% to Expenditures	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
---Cumulative	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPITAL FACILITY REV & EXPEND															
-----None															

Source: The Levander Company, Inc.

Table A3
DEVELOPMENT SCHEDULE
NEWHALL RANCH SPECIFIC PLAN

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Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
RESIDENTIAL UNITS COMPLETED																
Estate Detached, Sales Units	538	142	252	144	0	0	27	27	27	27	34	68	53	53	51	27
Low Detached, Sales Units	1,917	549	847	521	0	0	158	158	75	0	158	158	158	157	157	217
Low Medium Detached, Sales Units	6,951	1,852	1,993	2,071	1,035	0	386	386	386	307	387	387	387	445	387	387
Medium Detached, Sales Units	1,619	243	453	383	560	0	207	0	0	0	36	327	126	0	0	0
Medium Attached, Sales Units	6,312	1,373	1,530	1,683	1,454	272	160	423	423	163	204	0	261	423	423	423
High Attached, Sales Units	1,425	416	330	333	346	0	99	99	99	99	20	99	99	99	33	0
High Attached, Rental Units	1,425	416	330	333	346	0	99	99	99	99	20	99	99	99	33	0
Mixed Use, Sales Units	4,493	0	972	754	1,040	1,727	0	0	0	0	0	208	208	208	208	140
Total	24,680	4,991	6,707	6,202	4,781	1,999	1,136	1,192	1,109	695	859	1,346	1,391	1,484	1,292	1,194
---Cumulative	24,680	4,991	11,698	17,900	22,681	24,680	1,136	2,328	3,437	4,132	4,991	6,337	7,728	9,212	10,504	11,698
RESIDENTIAL ACRES DEVELOPED																
Estate Detached, Sales Units	324.1	85.5	151.6	86.7	0.0	0.0	16.3	16.3	16.3	16.3	20.5	41.0	31.9	31.9	30.7	16.3
Low Detached, Sales Units	472.1	135.2	208.6	128.3	0.0	0.0	38.9	38.9	18.5	0.0	38.9	38.9	38.9	38.7	38.7	53.4
Low Medium Detached, Sales Units	1,108.3	295.3	317.8	330.2	165.0	0.0	61.5	61.5	61.5	48.9	61.7	61.7	61.7	71.0	61.7	61.7
Medium Detached, Sales Units	103.0	15.5	28.8	23.1	35.8	0.0	13.2	0.0	0.0	0.0	2.3	20.8	8.0	0.0	0.0	0.0
Medium Attached, Sales Units	401.9	87.4	97.4	107.2	92.6	17.3	10.2	26.9	26.9	10.4	13.0	0.0	16.6	26.9	26.9	26.9
High Attached, Sales Units	48.2	14.1	11.2	11.3	11.7	0.0	3.3	3.3	3.3	3.3	0.7	3.3	3.3	3.3	1.1	0.0
High Attached, Rental Units	48.2	14.1	11.2	11.3	11.7	0.0	3.3	3.3	3.3	3.3	0.7	3.3	3.3	3.3	1.1	0.0
Mixed Use, Sales Units	184.3	0.0	39.9	30.9	42.7	70.8	0.0	0.0	0.0	0.0	0.0	8.5	8.5	8.5	8.5	5.7
Total	2,690.1	647.1	866.6	729.0	359.3	88.2	146.8	150.4	129.9	82.3	137.7	177.6	172.4	183.7	168.8	164.1
COM/B PK BL SP COMP ($000's SF)																
Commercial--Retail Tenant	1,160.0	122.5	237.4	196.1	517.6	86.4	0.0	0.0	0.0	122.5	0.0	0.0	0.0	237.4	0.0	0.0
Commercial--Non-Retail Tenant	316.0	33.6	65.1	53.8	141.9	23.7	0.0	0.0	0.0	33.6	0.0	0.0	0.0	65.1	0.0	0.0
Commercial--Eating & Drinking	120.0	12.7	24.6	20.3	53.5	8.9	0.0	0.0	0.0	12.7	0.0	0.0	0.0	24.6	0.0	0.0
Hotel (200 Rooms)	120.0	0.0	60.0	60.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.0	0.0	0.0	0.0	0.0
Office	2,469.0	200.0	500.0	634.0	791.0	384.0	0.0	0.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Business Park	1,513.0	0.0	800.0	495.0	218.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	400.0	400.0
Total	5,720.0	368.7	1,687.1	1,459.1	1,722.1	483.0	0.0	0.0	0.0	268.7	100.0	160.0	100.0	427.1	500.0	500.0
CUM COM/B PK BL SP (000's SF)																
Commercial--Retail Tenant	1,160.0	122.5	359.9	556.0	1,073.6	1,160.0	0.0	0.0	0.0	122.5	122.5	122.5	122.5	359.9	359.9	359.9
Commercial--Non-Retail Tenant	316.0	33.6	98.7	152.4	294.3	316.0	0.0	0.0	0.0	33.6	33.6	33.6	33.6	98.7	98.7	98.7
Commercial--Eating & Drinking	120.0	12.7	37.2	57.5	111.1	120.0	0.0	0.0	0.0	12.7	12.7	12.7	12.7	37.2	37.2	37.2
Hotel (200 Rooms)	120.0	0.0	60.0	120.0	120.0	120.0	0.0	0.0	0.0	0.0	0.0	60.0	60.0	60.0	60.0	60.0
Office	2,469.0	200.0	700.0	1,334.0	2,125.0	2,469.0	0.0	0.0	0.0	100.0	200.0	300.0	400.0	500.0	600.0	700.0
Business Park	1,513.0	0.0	800.0	1,295.0	1,513.0	1,513.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	400.0	800.0
Total	5,720.0	368.7	2,055.6	3,514.9	5,237.0	5,720.0	0.0	0.0	0.0	268.7	368.7	528.7	628.7	1,055.6	1,555.6	2,055.6

Source: Newhall Ranch Company; The Levander Company, Inc.

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Table A3
DEVELOPMENT SCHEDULE
NEWHALL RANCH SPECIFIC PLAN

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727 Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
730															
731 **RESIDENTIAL UNITS COMPLETED**															
732															
733 Estate Detached, Sales Units	53	43	27	21	0	0	0	0	0	0	0	0	0	0	0
734 Low Detached, Sales Units	177	128	0	157	59	0	0	0	0	0	0	0	0	0	0
735 Low Medium Detached, Sales Units	387	519	387	391	387	387	387	261	0	0	0	0	0	0	0
736 Medium Detached, Sales Units	326	37	0	0	0	327	233	0	0	0	0	0	0	0	0
737 Medium Attached, Sales Units	38	376	423	423	423	56	129	423	423	423	272	0	0	0	0
738 High Attached, Sales Units	99	36	0	99	99	99	99	99	49	0	0	0	0	0	0
739 High Attached, Rental Units	99	36	0	99	99	99	99	99	49	0	0	0	0	0	0
740 Mixed Use, Sales Units	208	130	0	208	208	208	208	208	208	208	208	416	416	416	271
741 Total	1,387	1,305	837	1,398	1,275	1,176	1,155	1,090	729	631	480	416	416	416	271
742 ---Cumulative	13,085	14,390	15,227	16,625	17,900	19,076	20,231	21,321	22,050	22,681	23,161	23,577	23,993	24,409	24,680
743															
744 **RESIDENTIAL ACRES DEVELOPED**															
745															
746 Estate Detached, Sales Units	31.9	25.9	16.3	12.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
747 Low Detached, Sales Units	43.6	31.5	0.0	38.7	14.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
748 Low Medium Detached, Sales Units	61.7	82.8	61.7	62.3	61.7	61.7	61.7	41.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
749 Medium Detached, Sales Units	20.7	2.4	0.0	0.0	0.0	20.8	14.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
750 Medium Attached, Sales Units	2.4	23.9	26.9	26.9	26.9	3.6	8.2	26.9	26.9	26.9	17.3	0.0	0.0	0.0	0.0
751 High Attached, Sales Units	3.3	1.2	0.0	3.3	3.3	3.3	3.3	3.3	1.7	0.0	0.0	0.0	0.0	0.0	0.0
752 High Attached, Rental Units	3.3	1.2	0.0	3.3	3.3	3.3	3.3	3.3	1.7	0.0	0.0	0.0	0.0	0.0	0.0
753 Mixed Use, Sales Units	8.5	5.3	0.0	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	17.1	17.1	17.1	11.1
754 Total	175.6	174.2	104.9	155.8	118.4	101.3	100.0	83.8	38.8	35.5	25.9	17.1	17.1	17.1	11.1
755															
756 **COM/B PK BL SP COMP ($000's SF)**															
757															
758 Commercial--Retail Tenant	0.0	71.4	124.7	0.0	0.0	0.0	122.5	214.9	90.2	90.2	86.4	0.0	0.0	0.0	0.0
759 Commercial--Non-Retail Tenant	0.0	19.6	34.2	0.0	0.0	0.0	33.6	58.9	24.7	24.7	23.7	0.0	0.0	0.0	0.0
760 Commercial--Eating & Drinking	0.0	7.4	12.9	0.0	0.0	0.0	12.7	22.2	9.3	9.3	8.9	0.0	0.0	0.0	0.0
761 Hotel (200 Rooms)	60.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
762 Office	100.0	100.0	134.0	100.0	200.0	200.0	291.0	100.0	100.0	100.0	100.0	100.0	100.0	64.0	0.0
763 Business Park	495.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	118.0	0.0	0.0	0.0	0.0	0.0	0.0
764 Total	655.0	198.3	305.8	100.0	200.0	200.0	459.7	496.0	342.2	224.2	219.0	100.0	100.0	64.0	0.0
765															
766 **CUM COM/B PK BL SP (000's SF)**															
767															
768 Commercial--Retail Tenant	359.9	431.2	556.0	556.0	556.0	556.0	678.4	893.3	983.4	1,073.6	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0
769 Commercial--Non-Retail Tenant	98.7	118.2	152.4	152.4	152.4	152.4	186.0	244.9	269.6	294.3	318.0	318.0	318.0	318.0	318.0
770 Commercial--Eating & Drinking	37.2	44.6	57.5	57.5	57.5	57.5	70.2	92.4	101.7	111.1	120.0	120.0	120.0	120.0	120.0
771 Hotel (200 Rooms)	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0
772 Office	800.0	900.0	1,034.0	1,134.0	1,334.0	1,534.0	1,825.0	1,925.0	2,025.0	2,125.0	2,225.0	2,325.0	2,425.0	2,489.0	2,489.0
773 Business Park	1,295.0	1,295.0	1,295.0	1,295.0	1,295.0	1,295.0	1,295.0	1,395.0	1,513.0	1,513.0	1,513.0	1,513.0	1,513.0	1,513.0	1,513.0
774 Total	2,710.8	2,909.1	3,214.9	3,314.9	3,514.9	3,714.9	4,174.6	4,670.6	5,012.8	5,237.0	5,456.0	5,556.0	5,656.0	5,720.0	5,720.0

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780 Source: Newhall Ranch Company; The

Table A3 (Continued.....page 2)
DEVELOPMENT SCHEDULE
NEWHALL RANCH SPECIFIC PLAN

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Item	25-Year Total	Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
		---------- 5-Year Totals ----------														
COMM LAND AREA DEVEL (ACRES)																
Commercial--Retail Tenant	112.5	11.9	23.0	19.0	50.2	8.4	0.0	0.0	0.0	11.9	0.0	0.0	0.0	23.0	0.0	0.0
Commercial--Non-Retail Tenant	30.8	3.3	6.3	5.2	13.8	2.3	0.0	0.0	0.0	3.3	0.0	0.0	0.0	6.3	0.0	0.0
Commercial--Eating & Drinking	11.6	1.2	2.4	2.0	5.2	0.9	0.0	0.0	0.0	1.2	0.0	0.0	0.0	2.4	0.0	0.0
Hotel (200 Rooms)	3.0	0.0	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0
Office	76.0	6.1	15.3	19.4	24.2	11.1	0.0	0.0	0.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Business Park	116.0	0.0	61.3	36.0	16.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.7	30.7
Total	350.0	22.5	109.8	85.0	110.0	22.7	0.0	0.0	0.0	19.4	3.1	4.6	3.1	34.8	33.7	33.7
---Cum	350.0	22.5	132.3	217.3	327.3	350.0	0.0	0.0	0.0	19.4	22.5	27.0	30.1	64.9	98.6	132.3
TOTAL R/C/BP LAND AR DEV (AC)	3,040.1	669.5	976.4	814.0	469.3	110.8	146.8	150.4	129.9	101.7	140.8	182.2	175.5	218.5	202.5	197.8
---Cumulative	3,040.1	669.5	1,646.0	2,459.9	2,929.3	3,040.1	146.8	297.1	427.0	528.7	669.5	851.7	1,027.2	1,245.6	1,448.2	1,646.0
HOTEL ROOMS (#)	200	0	100	100	0	0	0					100				
---Cumulative	200	0	100	200	200	200	0	0	0	0	0	100	100	100	100	100
GOLF COURSE HOLES (#)	18	0	18	0	0	0						18				
---Cumulative	18	0	18	18	18	18	0	0	0	0	0	18	18	18	18	18
STREETS ADDED (LANE-MILES)																
Major Streets Added																
Major	7.50															
Secondary	38.20															
Limited Collector	4.60															
Collector	33.20															
Total	83.70															
Riverwood	11.61	11.33	0.28	0.00	0.00	0.00	3.18	3.18	2.95	1.84	0.18	0.07	0.07	0.07	0.07	0.00
Oak Valley	15.90	0.00	0.00	15.70	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potrero Valley	20.79	0.00	18.64	2.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.12	3.12	4.45	3.94	4.01
Long Canyon	10.81	3.71	7.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.71	2.51	2.51	1.04	0.75	0.29
The Mesas	24.66	0.00	0.00	5.10	13.84	5.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	83.79	15.04	26.02	22.95	14.04	5.74	3.18	3.18	2.95	1.84	3.89	5.70	5.70	5.56	4.76	4.30
---Cumulative	83.79	15.04	41.06	64.01	78.05	83.79	3.18	6.36	9.31	11.15	15.04	20.74	26.44	32.00	36.76	41.06
Neighborhood Streets Added																
Factors	35.0	Lane-Feet Per Residential Unit														
	100.0	Lane-Feet Per Business Park Acre														
# Lane Lineal Feet	875,400	174,685	240,879	220,865	169,006	69,965	39,760	41,720	38,815	24,325	30,065	47,110	48,685	51,940	48,287	44,657
# Lane Miles	165.80	33.08	45.62	41.83	32.01	13.25	7.53	7.90	7.35	4.61	5.69	8.92	9.22	9.84	9.15	8.50
---Cumulative	165.80	33.08	78.71	120.54	152.54	165.80	7.53	15.43	22.78	27.39	33.08	42.01	51.23	61.06	70.21	78.71
Total All Streets Added	249.59	48.12	71.64	64.78	46.05	18.99	10.71	11.08	10.30	6.45	9.58	14.62	14.92	15.40	13.91	12.80
---Cumulative	249.59	48.12	119.77	184.55	230.59	249.59	10.71	21.79	32.09	38.54	48.12	62.75	77.67	93.06	106.97	119.77
TRAFFIC SIGNALS ADDED (#)	15	5	2	3	2	3	1	1	1	1	1		1		1	
---Cumulative	15	5	7	10	12	15	1	2	3	4	5	5	6	6	7	7

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DEVELOPMENT SCHEDULE
NEWHALL RANCH SPECIFIC PLAN

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Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
COMM LAND AREA DEVEL (ACRES)															
Commercial--Retail Tenant	0.0	6.9	12.1	0.0	0.0	0.0	11.9	20.8	8.7	8.7	8.4	0.0	0.0	0.0	0.0
Commercial--Non-Retail Tenant	0.0	1.9	3.3	0.0	0.0	0.0	3.3	5.7	2.4	2.4	2.3	0.0	0.0	0.0	0.0
Commercial--Eating & Drinking	0.0	0.7	1.3	0.0	0.0	0.0	1.2	2.2	0.9	0.9	0.9	0.0	0.0	0.0	0.0
Hotel (200 Rooms)	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Office	3.1	3.1	4.1	3.1	6.1	6.1	8.9	3.1	3.1	3.1	3.1	3.1	3.1	2.0	0.0
Business Park	38.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	9.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	42.5	12.6	20.8	3.1	6.1	6.1	25.2	39.4	24.1	15.1	14.6	3.1	3.1	2.0	0.0
---Cum	174.8	187.4	208.1	211.2	217.3	223.4	248.7	288.1	312.2	327.3	341.9	345.0	348.0	350.0	350.0
TOTAL R/C/BP LAND AR DEV (AC)	216.1	186.6	125.7	158.9	124.5	107.4	125.2	123.2	62.9	50.6	40.4	20.1	20.1	19.0	11.1
---Cumulative	1,864.1	2,050.9	2,176.6	2,335.4	2,459.9	2,567.4	2,692.6	2,815.8	2,878.7	2,929.3	2,969.7	2,989.8	3,010.0	3,029.0	3,040.1
HOTEL ROOMS (#)	100														
---Cumulative	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
GOLF COURSE HOLES (#)															
---Cumulative	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
STREETS ADDED (LANE-MILES)															
Major Streets Added															
Major															
Secondary															
Limited Collector															
Collector															
Total															
Riverwood	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oak Valley	4.17	4.68	3.32	1.82	1.71	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potrero Valley	1.61	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Long Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
The Mesas	0.00	0.00	0.00	2.69	2.41	3.44	3.44	3.08	2.08	1.80	1.36	1.20	1.20	1.20	0.78
Total	5.78	5.22	3.32	4.51	4.12	3.64	3.44	3.08	2.08	1.80	1.36	1.20	1.20	1.20	0.78
---Cumulative	46.84	52.06	55.38	59.89	64.01	67.65	71.09	74.17	76.25	78.05	79.41	80.61	81.81	83.01	83.79
Neighborhood Streets Added															
Factors															
# Lane Lineal Feet	52,340	45,675	29,295	48,930	44,625	41,160	40,425	38,917	26,420	22,065	16,800	14,560	14,560	14,560	9,485
# Lane Miles	9.91	8.65	5.55	9.27	8.45	7.80	7.66	7.37	5.00	4.18	3.18	2.76	2.76	2.76	1.80
---Cumulative	88.62	97.27	102.82	112.08	120.54	128.33	135.99	143.36	148.36	152.54	155.73	158.48	161.24	164.00	165.80
Total All Streets Added	15.69	13.87	8.87	13.78	12.57	11.44	11.10	10.45	7.08	5.98	4.54	3.96	3.96	3.96	2.58
---Cumulative	135.46	149.33	158.20	171.97	184.55	195.98	207.08	217.53	224.61	230.59	235.14	239.09	243.05	247.01	249.59
TRAFFIC SIGNALS ADDED (#)	1		1		1		1		1		1		1		1
---Cumulative	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15

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Table A3 (Continued.....page 3)
DEVELOPMENT SCHEDULE
NEWHALL RANCH SPECIFIC PLAN

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Item	25-Year Total	Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
		---------- 5-Year Totals ----------														
STREET LIGHTS ADDED (#)																
Factor	19.0 Lights Per Lane-Mile															
# Lights	4,742	914	1,361	1,231	875	361	203	211	196	122	182	278	283	293	264	243
---Cumulative	4,742	914	2,276	3,506	4,381	4,742	203	414	610	732	914	1,192	1,476	1,768	2,032	2,276
PARKS ADDED (ACRES)																
Active Parks	113.0	22.5	30.6	28.3	22.5	9.1	5.3	5.3	5.0	3.1	3.8	6.5	6.4	6.7	5.7	5.3
Nature Parks & Lake	236.0	46.9	64.3	59.4	46.7	18.7	11.1	11.1	10.3	6.4	8.0	13.7	13.5	14.0	12.0	11.1
Total	349.0	69.4	94.9	87.7	69.2	27.8	16.4	16.4	15.3	9.5	11.8	20.2	19.9	20.7	17.7	16.4
CUMULATIVE PARKS (ACRES)																
Active Parks	113.0	22.5	53.1	81.4	103.9	113.0	5.3	10.6	15.6	18.7	22.5	29.0	35.4	42.1	47.8	53.1
Nature Parks & Lake	236.0	46.9	111.2	170.6	217.3	236.0	11.1	22.2	32.5	38.9	46.9	60.6	74.1	88.1	100.1	111.2
Total	349.0	69.4	164.3	252.0	321.2	349.0	16.4	32.8	48.1	57.6	69.4	89.6	109.5	130.2	147.9	164.3
TRAILS ADDED (ACRES)																
Regional River Trail	16.0	16.0	0.0	0.0	0.0	0.0	3.2	3.2	3.2	3.2	3.2					
Community & Local Trails	98.0	24.5	24.5	24.5	24.5	0.0	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
Total	114.0	40.5	24.5	24.5	24.5	0.0	8.1	8.1	8.1	8.1	8.1	4.9	4.9	4.9	4.9	4.9
CUMULATIVE TRAILS (ACRES)																
Regional River Trail	16.0	16.0	16.0	16.0	16.0	16.0	3.2	6.4	9.6	12.8	16.0	16.0	16.0	16.0	16.0	16.0
Community & Local Trails	98.0	24.5	49.0	73.5	98.0	98.0	4.9	9.8	14.7	19.6	24.5	29.4	34.3	39.2	44.1	49.0
Total	114.0	40.5	65.0	89.5	114.0	114.0	8.1	16.2	24.3	32.4	40.5	45.4	50.3	55.2	60.1	65.0
FLOOD CONTROL FACIL ADDED																
Open Channel & River Embank (LF)	77,910	77,910	0	0	0	0	15,582	15,582	15,582	15,582	15,582					
Underground Pipe & Ctch Basins (LF)	123,830	30,958	30,958	30,958	30,958	0	6,192	6,192	6,192	6,192	6,192	6,192	6,192	6,192	6,192	6,192
Debris Basins & Desilting Inlets (#)	23.0	6.0	6.0	6.0	5.0	0.0	1.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.0	2.0
Water Quality Basins (#)	15.0	4.0	4.0	4.0	3.0	0.0	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0
CUM FLOOD CONTROL FACIL																
Open Channel & River Embank (LF)	77,910	77,910	77,910	77,910	77,910	77,910	15,582	31,164	46,746	62,328	77,910	77,910	77,910	77,910	77,910	77,910
Underground Pipe & Ctch Basins (LF)	123,830	30,958	61,915	92,873	123,830	123,830	6,192	12,383	18,575	24,766	30,958	37,149	43,341	49,532	55,724	61,915
Debris Basins & Desilting Inlets (#)	23.0	6.0	12.0	18.0	23.0	23.0	1.0	2.0	3.0	4.0	6.0	7.0	8.0	9.0	10.0	12.0
Water Quality Basins (#)	15.0	4.0	8.0	12.0	15.0	15.0	1.0	2.0	3.0	3.0	4.0	5.0	6.0	6.0	7.0	8.0

Source: Newhall Ranch Company; The Levander Company, Inc.

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DEVELOPMENT SCHEDULE
NEWHALL RANCH SPECIFIC PLAN

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Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
STREET LIGHTS ADDED (#)															
Factor															
# Lights	298	264	168	262	239	217	211	199	135	114	86	75	75	75	49
---Cumulative	2,574	2,837	3,006	3,268	3,506	3,724	3,934	4,133	4,268	4,381	4,468	4,543	4,618	4,693	4,742
PARKS ADDED (ACRES)															
Active Parks	6.6	5.9	3.7	6.3	5.8	5.7	5.5	5.0	3.4	2.9	2.1	1.9	1.9	1.9	1.2
Nature Parks & Lake	13.9	12.3	7.8	13.3	12.1	11.9	11.5	10.3	7.0	6.0	4.5	3.8	3.8	3.8	2.8
Total	20.5	18.2	11.5	19.6	17.9	17.6	17.0	15.3	10.4	8.9	6.6	5.7	5.8	5.8	4.0
CUMULATIVE PARKS (ACRES)															
Active Parks	59.7	65.6	69.3	75.6	81.4	87.1	92.6	97.6	101.0	103.9	106.0	107.9	109.8	111.8	113.0
Nature Parks & Lake	125.1	137.4	145.2	158.5	170.6	182.5	194.0	204.3	211.3	217.3	221.8	225.6	229.4	233.2	236.0
Total	184.8	203.0	214.5	234.1	252.0	269.6	286.6	301.9	312.3	321.2	327.8	333.5	339.3	345.0	349.0
TRAILS ADDED (ACRES)															
Regional River Trail															
Community & Local Trails	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9					
Total	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	0.0	0.0	0.0	0.0	0.0
CUMULATIVE TRAILS (ACRES)															
Regional River Trail	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Community & Local Trails	53.9	58.8	63.7	68.6	73.5	78.4	83.3	88.2	93.1	98.0	98.0	98.0	98.0	98.0	98.0
Total	69.9	74.8	79.7	84.6	89.5	94.4	99.3	104.2	109.1	114.0	114.0	114.0	114.0	114.0	114.0
FLOOD CONTROL FACIL ADDED															
Open Channel & River Embank (LF)															
Underground Pipe & Ctch Basins (LF)	6,192	6,192	6,192	6,192	6,192	6,192	6,192	6,192	6,192	6,192					
Debris Basins & Desilting Inlets (#)	1.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0					
Water Quality Basins (#)	1.0		1.0	1.0	1.0		1.0	1.0	1.0						
CUM FLOOD CONTROL FACIL															
Open Channel & River Embank (LF)	77,910	77,910	77,910	77,910	77,910	77,910	77,910	77,910	77,910	77,910	77,910	77,910	77,910	77,910	77,910
Underground Pipe & Ctch Basins (LF)	68,107	74,298	80,490	86,681	92,873	99,064	105,256	111,447	117,639	123,830	123,830	123,830	123,830	123,830	123,830
Debris Basins & Desilting Inlets (#)	13.0	14.0	15.0	16.0	18.0	19.0	20.0	21.0	22.0	23.0	23.0	23.0	23.0	23.0	23.0
Water Quality Basins (#)	9.0	9.0	10.0	11.0	12.0	12.0	13.0	14.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0

Source: Newhall Ranch Company; The

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Table A4
DEVELOPMENT FACTORS
NEWHALL RANCH SPECIFIC PLAN

RESIDENTIAL FACTORS	# Units	Population Per Unit	Population #	Land Area (Acres)	Building Area Per Unit (SF)	Building Area Amount (000'sSF)	New Dev Value Per Unit ($)	New Dev Value Per SF ($)	New Dev Value Amount ($000's)	Total Tax Pur Per Capita ($)	Total Tax Pur Amount ($000's)	Tax Purchases @ Newhall Rch Estab % of Total	Tax Purchases @ Newhall Rch Estab Per Cap ($)	Tax Purchases @ Newhall Rch Estab Total ($000's)
							In 1995 Constant $							
Estate Detached, Sales Units	538	5.17	2,781	324.10	4,500	2,421	750,000	166.67	403,500	16,925	47,075	32.0	5,416	15,064
Low Detached, Sales Units	1,917	3.17	6,077	472.10	3,000	5,751	360,000	120.00	690,120	13,249	80,514	32.0	4,240	25,764
Low Medium Detached, Sales Units	8,951	3.17	22,035	1,108.30	2,200	15,292	275,000	125.00	1,911,525	10,121	223,011	32.0	3,239	71,364
Medium Detached, Sales Units	1,619	3.17	5,132	103.00	1,250	2,024	175,000	140.00	283,325	6,441	33,055	32.0	2,061	10,577
Medium Attached, Sales Units	6,312	2.38	15,023	401.90	1,100	6,943	143,000	130.00	902,616	7,010	105,305	32.0	2,243	33,698
High Attached, Sales Units	1,425	2.38	3,392	46.20	1,000	1,425	125,000	125.00	178,125	6,127	20,781	32.0	1,961	6,650
High Attached, Rental Units	1,425	2.38	3,392	46.20	1,000	1,425	75,000	75.00	106,875	3,676	12,469	32.0	1,176	3,990
Mixed Use, Sales Units	4,493	2.38	10,693	164.30	1,100	4,942	132,000	120.00	593,076	6,471	69,192	32.0	2,071	22,142
Total/Average	24,680	2.78	68,524	2,690.10	1,630	40,223	205,396	126.03	5,069,162	8,631	591,402	32.0	2,762	189,249

	Tax Pur @ LACo Stores Excl Newhall Rch Estab % of Total	Tax Pur @ LACo Stores Per Cap ($)	Tax Pur @ LACo Stores Total ($000's)	Tax Purchases @ Santa Clarita Stores % of Total	Tax Purchases @ Santa Clarita Stores Per Cap ($)	Tax Purchases @ Santa Clarita Stores Total ($000's)	Tax Purchases @ All Other Stores % of Total	Tax Purchases @ All Other Stores Per Cap ($)	Tax Purchases @ All Other Stores Total ($000's)
	In 1995 Constant $								
Estate Detached, Sales Units	13.0	2,200	6,120	35.0	5,924	16,476	20.0	3,385	9,415
Low Detached, Sales Units	13.0	1,722	10,467	35.0	4,637	28,180	20.0	2,650	16,103
Low Medium Detached, Sales Units	13.0	1,316	28,991	35.0	3,542	78,054	20.0	2,024	44,602
Medium Detached, Sales Units	13.0	837	4,297	35.0	2,254	11,569	20.0	1,286	6,611
Medium Attached, Sales Units	13.0	911	13,690	35.0	2,453	36,857	20.0	1,402	21,061
High Attached, Sales Units	13.0	797	2,702	35.0	2,145	7,273	20.0	1,225	4,156
High Attached, Rental Units	13.0	478	1,621	35.0	1,287	4,364	20.0	735	2,494
Mixed Use, Sales Units	13.0	641	8,995	35.0	2,265	24,217	20.0	1,294	13,836
Total/Average	13.0	1,122	76,882	35.0	5,146	206,991	20.0	2,941	118,280

GOLF COURSE FACTORS

# Holes	18
Land Area (Acres)	180
Land Area Per Hole (Acres)	10.00
New Deval Value (In 1995 Constant Dollars)	
Per Hole ($)	500,000
Amount ($000's)	9,000

HOTEL ROOM SALES FACTORS

Daily Room Rate ($--1995 Con $)	85.00
Average Occupancy (%)	75.0
Average Building Space Per Room (SF)	600
Annual Room Sales Per SF Bl Sp ($--1995	38.78
Total Annual Room Sales 200 Rooms ($000's	4,654

COMMERCIAL FACTORS	Bldg Space Total (000'sSF)	Bldg Space Per Ac (SF)	Land Area (Acres)	New Dev Val Per SF ($)	New Dev Val Amount ($000's)	Total Tax Sales Per SF ($)	Total Tax Sales Amount ($000's)	Taxable Sales of NRch Stores From All Sources % of Total	Taxable Sales of NRch Stores From All Sources Per SF ($)	Taxable Sales of NRch Stores From All Sources Amount ($000's)	Source of NHRch Establishment Sales NHRch Residents ($000's)	Source of NHRch Establishment Sales Non-Residents ($000's)	Source of NHRch Establishment Sales % to NHRch Residents
				In 1995 Constant $									
Commercial--Retail Tenant	1,160.0	10,310	112.52	120.00	139,200	160.00	185,600	100.0	160.00	185,600	158,504	27,096	85.4
Commercial--Non-Retail Tenant	318.0	10,310	30.84	120.00	38,160	0.00	0	0.0	0.00	0	0	0	N/A
Commercial--Eating & Drinking	120.0	10,310	11.64	120.00	14,400	300.00	36,000	100.0	300.00	36,000	30,744	5,256	85.4
Hotel (200 Rooms)	120.0	40,000	3.00	120.00	14,400	0.00	0	0.0	0.00	0		0	N/A
Office	2,489.0	32,750	76.00	110.00	273,790	0.00	0	0.0	0.00	0		0	N/A
Business Park	1,513.0	13,043	116.00	55.00	83,215	15.00	22,695	100.0	15.00	22,695		22,695	0.0
Total/Average	5,720.0	16,343	350.00	98.46	563,165		244,295	100.0		244,295	189,249	55,046	77.5

Source: Newhall Ranch Company; The Levander Company, Inc.

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Table A5
DEVELOPMENT MEASURES
NEWHALL RANCH SPECIFIC PLAN

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967

968 Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
970																
971																
972 **POPULATION ADDED**																
973 Estate Detached, Sales Units	2,781	734	1,303	744	0	0	140	140	140	140	176	352	274	274	264	140
974 Low Detached, Sales Units	6,077	1,740	2,685	1,652	0	0	501	501	238	0	501	501	501	498	498	688
975 Low Medium Detached, Sales Units	22,035	5,871	6,318	6,565	3,281	0	1,224	1,224	1,224	973	1,227	1,227	1,227	1,411	1,227	1,227
976 Medium Detached, Sales Units	5,132	770	1,436	1,151	1,775	0	656	0	0	0	114	1,037	399	0	0	0
977 Medium Attached, Sales Units	15,023	3,268	3,641	4,008	3,461	647	381	1,007	1,007	388	486	0	621	1,007	1,007	1,007
978 High Attached, Sales Units	3,392	990	785	793	823	0	236	236	236	236	48	236	236	236	79	0
979 High Attached, Rental Units	3,392	990	785	793	823	0	236	236	236	236	48	236	236	236	79	0
980 Mixed Use, Sales Units	10,693	0	2,313	1,795	2,475	4,110	0	0	0	0	0	495	495	495	495	333
981 Total	68,524	14,364	19,267	17,497	12,639	4,758	3,372	3,342	3,079	1,972	2,598	4,082	3,989	4,155	3,647	3,394
982																
983 **CUMULATIVE POPULATION**																
984 Estate Detached, Sales Units	2,781	734	2,037	2,781	2,781	2,781	140	279	419	558	734	1,086	1,360	1,634	1,897	2,037
985 Low Detached, Sales Units	6,077	1,740	4,425	6,077	6,077	6,077	501	1,002	1,239	1,239	1,740	2,241	2,742	3,240	3,737	4,425
986 Low Medium Detached, Sales Units	22,035	5,871	12,189	18,754	22,035	22,035	1,224	2,447	3,671	4,644	5,871	7,098	8,324	9,735	10,962	12,189
987 Medium Detached, Sales Units	5,132	770	2,206	3,357	5,132	5,132	656	656	656	656	770	1,807	2,206	2,206	2,206	2,206
988 Medium Attached, Sales Units	15,023	3,268	6,909	10,915	14,375	15,023	381	1,388	2,394	2,782	3,268	3,268	3,889	4,896	5,902	6,909
989 High Attached, Sales Units	3,392	990	1,775	2,568	3,392	3,392	236	471	707	942	990	1,226	1,461	1,697	1,775	1,775
990 High Attached, Rental Units	3,392	990	1,775	2,568	3,392	3,392	236	471	707	942	990	1,226	1,461	1,697	1,775	1,775
991 Mixed Use, Sales Units	10,693	0	2,313	4,108	6,583	10,693	0	0	0	0	0	495	990	1,485	1,980	2,313
992 Total	68,524	14,364	33,631	51,128	63,767	68,524	3,372	6,714	9,793	11,765	14,364	18,446	22,434	26,590	30,237	33,631
993																
994 **NEW DEV VAL ADD EA YR ($000's)**																
995																
996 **Residential**																
997 Estate Detached, Sales Units	403,500	106,500	189,000	108,000	0	0	20,250	20,250	20,250	20,250	25,500	51,000	39,750	39,750	38,250	20,250
998 Low Detached, Sales Units	690,120	197,640	304,920	187,560	0	0	56,880	56,880	27,000	0	56,880	56,880	56,880	56,520	56,520	78,120
999 Low Medium Detached, Sales Units	1,911,525	509,300	548,075	569,525	284,625	0	106,150	106,150	106,150	84,425	106,425	106,425	106,425	122,375	106,425	106,425
1000 Medium Detached, Sales Units	283,325	42,525	79,275	63,525	98,000	0	38,225	0	0	0	6,300	57,225	22,050	0	0	0
1001 Medium Attached, Sales Units	902,616	198,339	218,790	240,669	207,922	38,696	22,680	60,489	60,489	23,309	29,172	0	37,323	60,489	60,489	60,489
1002 High Attached, Sales Units	178,125	52,000	41,250	41,625	43,250	0	12,375	12,375	12,375	12,375	2,500	12,375	12,375	12,375	4,125	0
1003 High Attached, Rental Units	106,875	31,200	24,750	24,975	25,950	0	7,425	7,425	7,425	7,425	1,500	7,425	7,425	7,425	2,475	0
1004 Mixed Use, Sales Units	593,076	0	128,304	99,528	137,280	227,964	0	0	0	0	0	27,456	27,456	27,456	27,456	18,480
1005 Total Residential	5,069,162	1,135,504	1,534,364	1,335,407	797,027	266,660	282,185	263,569	233,689	147,784	228,277	318,786	309,684	326,390	295,740	283,764
1006																
1007 **Commercial**																
1008 Commercial--Retail Tenant	139,200	14,695	28,489	23,531	62,117	10,368	0	0	0	14,695	0	0	0	28,489	0	0
1009 Commercial--Non-Retail Tenant	38,160	4,029	7,810	6,451	17,029	2,842	0	0	0	4,029	0	0	0	7,810	0	0
1010 Commercial--Eating & Drinking	14,400	1,520	2,947	2,434	6,426	1,073	0	0	0	1,520	0	0	0	2,947	0	0
1011 Hotel (200 Rooms)	14,400	0	7,200	7,200	0	0	0	0	0	0	0	7,200	0	0	0	0
1012 Office	273,790	22,000	55,000	69,740	87,010	40,040	0	0	0	11,000	11,000	11,000	11,000	11,000	11,000	11,000
1013 Business Park	83,215	0	44,000	27,225	11,990	0	0	0	0	0	0	0	0	0	22,000	22,000
1014 Total Commercial	563,165	42,244	145,446	136,580	184,572	54,323	0	0	0	31,244	11,000	18,200	11,000	50,246	33,000	33,000
1015																
1016 **Golf Course**	9,000	0	9,000	0	0	0	0	0	0	0	0	9,000	0	0	0	0
1017																
1018																
1019																

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Table A5
DEVELOPMENT MEASURES
NEWHALL RANCH SPECIFIC PLAN

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968 Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
969															
970															
971															
972 **POPULATION ADDED**															
973 Estate Detached, Sales Units	274	222	140	109	0	0	0	0	0	0	0	0	0	0	0
974 Low Detached, Sales Units	561	406	0	498	187	0	0	0	0	0	0	0	0	0	0
975 Low Medium Detached, Sales Units	1,227	1,645	1,227	1,239	1,227	1,227	1,227	627	0	0	0	0	0	0	0
976 Medium Detached, Sales Units	1,033	117	0	0	0	1,037	739	0	0	0	0	0	0	0	0
977 Medium Attached, Sales Units	90	895	1,007	1,007	1,007	133	307	1,007	1,007	1,007	647	0	0	0	0
978 High Attached, Sales Units	236	86	0	236	236	236	236	236	117	0	0	0	0	0	0
979 High Attached, Rental Units	236	86	0	236	236	236	236	236	117	0	0	0	0	0	0
980 Mixed Use, Sales Units	495	309	0	495	495	495	495	495	495	495	495	990	990	990	645
981 Total	4,152	3,766	2,373	3,819	3,387	3,363	3,239	2,600	1,735	1,502	1,142	990	990	990	645
982															
983 **CUMULATIVE POPULATION**															
984 Estate Detached, Sales Units	2,311	2,533	2,673	2,781	2,781	2,781	2,781	2,781	2,781	2,781	2,781	2,781	2,781	2,781	2,781
985 Low Detached, Sales Units	4,986	5,392	5,392	5,890	6,077	6,077	6,077	6,077	6,077	6,077	6,077	6,077	6,077	6,077	6,077
986 Low Medium Detached, Sales Units	13,415	15,061	16,287	17,527	18,754	19,981	21,207	22,035	22,035	22,035	22,035	22,035	22,035	22,035	22,035
987 Medium Detached, Sales Units	3,240	3,357	3,357	3,357	3,357	4,394	5,132	5,132	5,132	5,132	5,132	5,132	5,132	5,132	5,132
988 Medium Attached, Sales Units	7,000	7,894	8,901	9,908	10,915	11,048	11,355	12,362	13,368	14,375	15,023	15,023	15,023	15,023	15,023
989 High Attached, Sales Units	2,011	2,097	2,097	2,332	2,568	2,804	3,039	3,275	3,392	3,392	3,392	3,392	3,392	3,392	3,392
990 High Attached, Rental Units	2,011	2,097	2,097	2,332	2,568	2,804	3,039	3,275	3,392	3,392	3,392	3,392	3,392	3,392	3,392
991 Mixed Use, Sales Units	2,608	3,118	3,118	3,613	4,108	4,603	5,098	5,593	6,088	6,583	7,078	8,068	9,058	10,048	10,693
992 Total	37,763	41,549	43,922	47,741	51,128	54,491	57,729	60,530	62,265	63,767	64,909	65,899	66,889	67,879	68,524
993															
994 **NEW DEV VAL ADD EA YR ($000's)**															
995															
996 **Residential**															
997 Estate Detached, Sales Units	39,750	32,250	20,250	15,750	0	0	0	0	0	0	0	0	0	0	0
998 Low Detached, Sales Units	63,720	46,060	0	56,520	21,240	0	0	0	0	0	0	0	0	0	0
999 Low Medium Detached, Sales Units	106,425	142,725	106,425	107,525	106,425	106,425	106,425	71,775	0	0	0	0	0	0	0
1000 Medium Detached, Sales Units	57,050	6,475	0	0	0	57,225	40,775	0	0	0	0	0	0	0	0
1001 Medium Attached, Sales Units	5,434	53,768	60,489	60,489	60,489	6,008	18,447	60,489	60,489	60,489	38,896	0	0	0	0
1002 High Attached, Sales Units	12,375	4,500	0	12,375	12,375	12,375	12,375	12,375	6,125	0	0	0	0	0	0
1003 High Attached, Rental Units	7,425	2,700	0	7,425	7,425	7,425	7,425	7,425	3,675	0	0	0	0	0	0
1004 Mixed Use, Sales Units	27,456	17,160	0	27,456	27,456	27,456	27,456	27,456	27,456	27,456	27,456	54,912	54,912	54,912	35,772
1005 Total Residential	319,635	305,658	187,164	287,540	235,410	218,914	212,903	179,520	97,745	87,945	66,352	54,912	54,912	54,912	35,772
1006															
1007 **Commercial**															
1008 Commercial--Retail Tenant	0	8,585	14,966	0	0	0	14,695	25,764	10,819	10,819	10,388	0	0	0	0
1009 Commercial--Non-Retail Tenant	0	2,348	4,103	0	0	0	4,029	7,069	2,966	2,966	2,842	0	0	0	0
1010 Commercial--Eating & Drinking	0	886	1,548	0	0	0	1,520	2,667	1,119	1,119	1,073	0	0	0	0
1011 Hotel (200 Rooms)	7,200	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1012 Office	11,000	11,000	14,740	11,000	22,000	22,000	32,010	11,000	11,000	11,000	11,000	11,000	11,000	7,040	0
1013 Business Park	27,225	0	0	0	0	0	0	5,500	6,490	0	0	0	0	0	0
1014 Total Commercial	45,425	22,799	35,357	11,000	22,000	22,000	52,254	52,020	32,394	25,904	25,283	11,000	11,000	7,040	0
1015															
1016 **Golf Course**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1017															
1018															
1019															

1020 Continued on next page.....

Table A5 (Continued.....page 2)
DEVELOPMENT MEASURES
NEWHALL RANCH SPECIFIC PLAN

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Item	25-Year Total	Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
		---------- 5-Year Totals ----------														
NEW DEV VAL ADDED EACH YEAR CONTINUED ($000's).....																
Total New Devel Value	5,641,327	1,177,746	1,688,810	1,471,987	981,599	321,183	262,185	263,569	233,689	179,028	239,277	345,986	320,684	376,636	328,740	316,764
---Cumulative	5,641,327	1,177,746	2,866,556	4,338,546	5,320,144	5,641,327	262,185	525,754	759,443	938,471	1,177,746	1,523,734	1,844,418	2,221,054	2,549,794	2,866,558
Total Sales Housing	4,962,287	1,104,304	1,509,614	1,310,432	771,077	266,860	254,760	256,144	226,264	140,359	228,777	311,361	302,259	318,965	293,265	283,764
---Cumulative	4,962,287	1,104,304	2,613,918	3,924,350	4,695,427	4,962,287	254,760	510,904	737,168	877,527	1,104,304	1,415,665	1,717,924	2,036,889	2,330,154	2,613,918
EXISTING ASSESSED VALUE	Total Amount ($000's):	5,205		Per Acre ($):			Total Land Area			435	Per Ac (	11,960 Acres)				
							Residential/Commercial Acres Onl			1,712	Per Ac (	3,040 Acres)				
EXIST ASSESSED VAL REPLACED--- WITHIN NEW DEV VAL ($000's)																
Residential	4,605	1,108	1,484	1,248	615	151	251	257	222	141	236	304	295	315	289	281
Commercial	599	38	188	146	188	39	0	0	0	33	5	8	5	60	58	58
Golf Course	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	5,205	1,146	1,672	1,394	804	190	251	257	222	174	241	312	300	374	347	339
ASSESSED VALUE INCREASE ANNUAL ADDITIONS ($000's)																
Initial AV	0	0	0	0	0	0	0									
Residential Increase	5,064,557	1,134,396	1,532,880	1,334,159	796,412	266,709	261,934	263,312	233,467	147,643	228,041	318,482	309,369	326,075	295,451	283,483
Commercial Increase	562,566	42,206	145,258	136,435	184,383	54,284	0	0	0	31,211	10,995	18,192	10,995	50,167	32,942	32,942
Golf Course Increase	9,000	0	9,000	0	0	0	0	0	0	0	0	9,000	0	0	0	0
Total	5,636,122	1,176,602	1,687,139	1,470,594	980,795	320,993	261,934	263,312	233,467	178,854	239,036	345,674	320,364	376,262	328,393	316,425
ASSESSED VALUE INCREASE CUMULATIVE ($000's)																
Initial AV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Residential Increase	5,064,557	1,134,396	2,667,277	4,001,436	4,797,847	5,064,557	261,934	525,245	758,712	906,355	1,134,396	1,452,878	1,762,267	2,088,342	2,383,794	2,667,277
Commercial Increase	562,566	42,206	187,464	323,899	508,282	562,566	0	0	0	31,211	42,206	60,398	71,393	121,579	154,522	187,464
Golf Course Increase	9,000	0	9,000	9,000	9,000	9,000	0	0	0	0	0	9,000	9,000	9,000	9,000	9,000
Total	5,636,122	1,176,602	2,863,740	4,334,334	5,315,129	5,636,122	261,934	525,245	758,712	937,566	1,176,602	1,522,276	1,842,660	2,218,922	2,547,315	2,863,740
ROOM SALES ADDED ($000's)	81,441	0	11,634	23,269	23,269	23,269	0	0	0	0	0	2,327	2,327	2,327	2,327	2,327

Source: The Levander Company, Inc.

Table A5 (Continued.....page 2)
DEVELOPMENT MEASURES
NEWHALL RANCH SPECIFIC PLAN

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Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
NEW DEV VAL ADDED EACH YEAR CONTINUED ($000's).....															
Total New Devel Value	365,060	328,457	222,521	298,540	257,410	240,914	265,157	231,540	130,139	113,849	91,635	65,912	65,912	61,952	35,772
----Cumulative	3,231,618	3,560,075	3,782,596	4,081,136	4,338,546	4,579,460	4,844,617	5,076,157	5,206,296	5,320,144	5,411,779	5,477,691	5,543,603	5,605,555	5,641,327
Total Sales Housing	312,210	302,958	187,164	280,115	227,985	211,469	205,478	172,095	94,070	87,945	66,352	54,912	54,912	54,912	35,772
----Cumulative	2,926,128	3,229,086	3,416,250	3,696,365	3,924,350	4,135,839	4,341,317	4,513,412	4,607,482	4,695,427	4,761,779	4,816,691	4,871,603	4,926,515	4,962,287
EXISTING ASSESSED VALUE															
EXIST ASSESSED VAL REPLACED-- WITHIN NEW DEV VAL ($000's)															
Residential	301	298	180	267	203	173	171	143	66	61	44	29	29	29	19
Commercial	73	22	36	5	10	10	43	68	41	26	25	5	5	3	0
Golf Course	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	373	320	215	272	213	184	214	211	108	87	69	34	34	33	19
ASSESSED VALUE INCREASE ANNUAL ADDITIONS ($000's)															
Initial AV															
Residential Increase	319,334	305,360	186,984	287,273	235,207	218,741	212,732	179,377	97,679	87,884	66,308	54,883	54,883	54,883	35,753
Commercial Increase	45,352	22,777	35,321	10,995	21,990	21,990	52,211	51,953	32,352	25,878	25,258	10,995	10,995	7,037	0
Golf Course Increase	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	364,687	328,137	222,306	298,268	257,197	240,730	264,943	231,329	130,031	113,762	91,565	65,878	65,878	61,919	35,753
ASSESSED VALUE INCREASE CUMULATIVE ($000's)															
Initial AV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Residential Increase	2,988,611	3,291,971	3,478,955	3,766,228	4,001,436	4,220,176	4,432,908	4,612,285	4,709,963	4,797,847	4,864,155	4,919,038	4,973,921	5,028,804	5,064,557
Commercial Increase	232,816	255,593	290,914	301,909	323,899	345,888	398,099	450,052	482,404	508,282	533,540	544,534	555,529	562,566	562,566
Golf Course Increase	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000
Total	3,228,427	3,556,564	3,778,869	4,077,137	4,334,334	4,575,064	4,840,007	5,071,336	5,201,367	5,315,129	5,406,695	5,472,572	5,538,450	5,600,369	5,636,122
ROOM SALES ADDED ($000's)	4,654	4,654	4,654	4,654	4,654	4,654	4,654	4,654	4,654	4,654	4,654	4,654	4,654	4,654	4,654

Source: The Levander Company, Inc.

Table A5 (Continued.....page 3)
DEVELOPMENT MEASURES
NEWHALL RANCH SPECIFIC PLAN

1453CR2A
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Item	25-Year Total	5-Year Totals: Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Year 1 2000	Year 2 2001	Year 3 2002	Year 4 2003	Year 5 2004	Year 6 2005	Year 7 2006	Year 8 2007	Year 9 2008	Year 10 2009
AN TX SALES INC TO LACO ($000's)																
NRch Resident Purchases @ Stores																
In LACo Excl Newhall Ranch Stores																
Estate Detached, Sales Units	112,294	4,687	17,631	28,779	30,599	30,599	307	614	921	1,229	1,615	2,389	2,992	3,595	4,175	4,482
Low Detached, Sales Units	190,521	9,855	26,223	47,775	52,334	52,334	863	1,725	2,135	2,135	2,998	3,860	4,723	5,560	6,437	7,622
Low Medium Detached, Sales Units	479,608	23,494	63,559	106,632	141,166	144,957	1,610	3,220	4,630	6,110	7,724	9,338	10,953	12,609	14,423	16,037
Medium Detached, Sales Units	68,053	2,843	8,902	13,956	20,867	21,485	549	549	549	549	645	1,513	1,847	1,847	1,847	1,847
Medium Attached, Sales Units	198,034	9,306	22,658	40,659	56,962	68,448	347	1,264	2,182	2,535	2,976	2,976	3,544	4,461	5,379	6,296
High Attached, Sales Units	44,006	2,666	6,321	6,846	12,666	13,508	188	375	563	751	769	976	1,164	1,352	1,414	1,414
High Attached, Rental Units	26,404	1,599	3,792	5,308	7,600	8,105	113	225	338	450	473	586	698	811	849	849
Mixed Use, Sales Units	61,543	0	8,110	14,102	23,524	37,808	0	0	0	0	0	416	833	1,249	1,666	1,946
Total Res Purch	1,200,664	54,450	157,196	266,056	345,717	377,244	3,976	7,974	11,518	13,760	17,222	22,057	26,754	31,704	36,189	40,493
Newhall RAnch Estab Sales to All																
Customers Incl NRch Residents																
Commercial--Retail Tenant	2,242,105	39,188	211,925	393,438	669,554	928,000	0	0	0	19,594	19,594	19,594	19,594	57,579	57,579	57,579
Commercial--Non-Retail Tenant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial--Eating & Drinking	434,890	7,601	41,106	76,313	129,870	180,000	0	0	0	3,801	3,801	3,801	3,801	11,168	11,168	11,168
Hotel (200 Rooms)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Office	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Business Park	333,765	0	16,000	97,125	105,165	113,475	0	0	0	0	0	0	0	0	6,000	12,000
Total Estab Sales	3,010,760	46,789	271,031	566,876	904,589	1,221,474	0	0	0	23,394	23,394	23,394	23,394	68,748	74,748	80,748
Total Tax Sales Increase To LACo	4,211,423	101,239	428,228	832,932	1,250,307	1,598,718	3,976	7,974	11,518	37,154	40,616	45,451	50,148	100,451	110,937	121,241
PROJECT RESIDENT PURCHASES																
@ STA CLARITA STORES ($000's)																
Estate Detached, Sales Units	302,330	12,617	47,469	77,481	82,381	82,381	827	1,654	2,481	3,307	4,349	6,431	8,054	9,678	11,239	12,066
Low Detached, Sales Units	512,942	26,534	75,984	128,625	140,900	140,900	2,323	4,645	5,748	5,748	8,070	10,393	12,716	15,023	17,331	20,521
Low Medium Detached, Sales Units	1,291,792	63,254	171,121	287,085	380,062	390,270	4,334	8,669	13,003	16,451	20,796	25,142	29,488	34,485	38,830	43,176
Medium Detached, Sales Units	183,219	7,653	23,967	37,573	56,181	57,846	1,479	1,479	1,479	1,479	1,736	4,073	4,973	4,973	4,973	4,973
Medium Attached, Sales Units	533,168	25,056	61,002	109,467	153,360	184,284	934	3,404	5,874	6,826	8,017	8,017	9,541	12,011	14,481	16,951
High Attached, Sales Units	118,478	7,176	17,017	23,816	34,101	36,367	505	1,011	1,516	2,021	2,123	2,629	3,134	3,639	3,808	3,808
High Attached, Rental Units	71,087	4,306	10,210	14,290	20,481	21,820	303	606	910	1,213	1,274	1,577	1,880	2,184	2,285	2,285
Mixed Use, Sales Units	219,540	0	16,450	37,967	63,333	101,790	0	0	0	0	0	1,121	2,242	3,363	4,484	5,239
Total Res Purch	3,232,556	146,596	423,221	716,304	930,778	1,015,658	10,706	21,468	31,011	37,045	46,366	59,384	72,029	85,357	97,433	109,020
RESIDEN BL SP COMPL (000's SF)																
Estate Detached, Sales Units	639	639	0	0	0	0	122	122	122	122	153	306	239	239	230	122
Low Detached, Sales Units	3,429	1,647	1,134	648	0	0	474	474	225	0	474	474	474	471	471	651
Low Medium Detached, Sales Units	6,178	4,074	2,541	1,563	0	0	849	849	849	675	851	851	851	979	851	851
Medium Detached, Sales Units	11,522	304	4,385	4,556	2,277	0	259	0	0	0	45	409	156	0	0	0
Medium Attached, Sales Units	3,230	1,510	566	454	700	0	176	465	465	179	224	0	287	465	465	465
High Attached, Sales Units	5,649	416	1,683	1,851	1,599	299	99	99	99	99	20	99	99	99	33	0
High Attached, Rental Units	1,425	416	330	333	346	0	99	99	99	99	20	99	99	99	33	0
Mixed Use, Sales Units	1,009	0	330	333	346	0	0	0	0	0	0	229	229	229	229	154
Total	13,949	9,006	1,069	629	1,144	1,900	2,077	2,108	1,859	1,174	1,788	2,467	2,435	2,581	2,312	2,243

Source: Newhall Ranch Company; The Levander Company, Inc.

Table A5 (Continued.....page 3)
DEVELOPMENT MEASURES
NEWHALL RANCH SPECIFIC PLAN

Item	Year 11 2010	Year 12 2011	Year 13 2012	Year 14 2013	Year 15 2014	Year 16 2015	Year 17 2016	Year 18 2017	Year 19 2018	Year 20 2019	Year 21 2020	Year 22 2021	Year 23 2022	Year 24 2023	Year 25 2024
AN TX SALES INC TO LACO ($000's)															
NRch Resident Purchases @ Stores															
In LACo Excl Newhall Ranch Stores															
Estate Detached, Sales Units	5,085	5,574	5,881	6,120	6,120	6,120	6,120	6,120	6,120	6,120	6,120	6,120	6,120	6,120	6,120
Low Detached, Sales Units	8,589	9,287	9,287	10,145	10,467	10,467	10,467	10,467	10,467	10,467	10,467	10,467	10,467	10,467	10,467
Low Medium Detached, Sales Units	17,651	19,816	21,430	23,061	24,675	26,289	27,903	28,991	28,991	28,991	28,991	28,991	28,991	28,991	28,991
Medium Detached, Sales Units	2,713	2,811	2,811	2,811	2,811	3,679	4,297	4,297	4,297	4,297	4,297	4,297	4,297	4,297	4,297
Medium Attached, Sales Units	6,379	7,194	8,111	9,029	9,946	10,068	10,346	11,265	12,182	13,100	13,690	13,690	13,690	13,690	13,690
High Attached, Sales Units	1,602	1,670	1,670	1,858	2,046	2,233	2,421	2,609	2,702	2,702	2,702	2,702	2,702	2,702	2,702
High Attached, Rental Units	961	1,002	1,002	1,115	1,227	1,340	1,453	1,565	1,621	1,621	1,621	1,621	1,621	1,621	1,621
Mixed Use, Sales Units	2,362	2,623	2,623	3,039	3,455	3,872	4,288	4,705	5,121	5,538	5,954	6,787	7,620	8,452	8,995
Total Res Purch	45,341	49,977	52,815	57,176	60,747	64,067	67,296	70,019	71,501	72,835	73,841	74,674	75,507	76,340	76,882
Newhall RAnch Estab Sales to All															
Customers Incl NRch Residents															
Commercial--Retail Tenant	57,579	68,999	88,953	88,953	88,953	88,953	108,547	142,926	157,351	171,776	185,600	185,600	185,600	185,600	185,600
Commercial--Non-Retail Tenant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial--Eating & Drinking	11,168	13,383	17,254	17,254	17,254	17,254	21,054	27,723	30,521	33,319	36,000	36,000	36,000	36,000	36,000
Hotel (200 Rooms)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Office	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Business Park	19,425	19,425	19,425	19,425	19,425	19,425	19,425	20,925	22,695	22,695	22,695	22,695	22,695	22,695	22,695
Total Estab Sales	88,173	101,807	125,632	125,632	125,632	125,632	149,026	191,574	210,567	227,790	244,295	244,295	244,295	244,295	244,295
Total Tax Sales Increase To LACo	133,513	151,784	178,447	182,808	186,379	189,699	216,322	261,593	282,068	300,625	318,136	318,969	319,802	320,635	321,177
PROJECT RESIDENT PURCHASES															
@ STA CLARITA STORES ($000's)															
Estate Detached, Sales Units	13,689	15,006	15,833	16,476	16,476	16,476	16,476	16,476	16,476	16,476	16,476	16,476	16,476	16,476	16,476
Low Detached, Sales Units	23,123	25,005	25,005	27,313	28,180	28,180	28,180	28,180	28,180	28,180	28,180	28,180	28,180	28,180	28,180
Low Medium Detached, Sales Units	47,522	53,350	57,695	62,066	66,432	70,777	75,123	78,054	78,054	78,054	78,054	78,054	78,054	78,054	78,054
Medium Detached, Sales Units	7,303	7,567	7,567	7,567	7,567	9,904	11,569	11,569	11,569	11,569	11,569	11,569	11,569	11,569	11,569
Medium Attached, Sales Units	17,173	19,369	21,638	24,308	26,778	27,105	27,859	30,329	32,799	35,269	36,857	36,857	36,857	36,857	36,857
High Attached, Sales Units	4,313	4,497	4,497	5,002	5,507	6,013	6,518	7,023	7,273	7,273	7,273	7,273	7,273	7,273	7,273
High Attached, Rental Units	2,588	2,698	2,698	3,001	3,304	3,608	3,911	4,214	4,364	4,364	4,364	4,364	4,364	4,364	4,364
Mixed Use, Sales Units	6,360	7,061	7,061	8,162	9,303	10,424	11,545	12,667	13,788	14,909	16,030	18,272	20,514	22,757	24,217
Total Res Purch	122,071	134,552	142,195	153,936	163,549	172,468	181,181	188,512	192,503	196,094	198,803	201,046	203,288	205,530	206,991
RESIDEN BL SP COMPL (000's SF)															
Estate Detached, Sales Units	239	194	122	95	0	0	0	0	0	0	0	0	0	0	0
Low Detached, Sales Units	531	384	0	471	177	0	0	0	0	0	0	0	0	0	0
Low Medium Detached, Sales Units	851	1,142	651	660	651	851	851	574	0	0	0	0	0	0	0
Medium Detached, Sales Units	408	46	0	0	0	409	291	0	0	0	0	0	0	0	0
Medium Attached, Sales Units	42	414	465	465	465	62	142	465	465	465	299	0	0	0	0
High Attached, Sales Units	99	36	0	99	99	99	99	99	49	0	0	0	0	0	0
High Attached, Rental Units	99	36	0	99	99	99	99	99	49	0	0	0	0	0	0
Mixed Use, Sales Units	229	143	0	229	229	229	229	229	229	229	229	458	458	458	298
Total	2,497	2,394	1,438	2,318	1,921	1,749	1,711	1,466	792	694	528	458	458	458	298

Source: Newhall Ranch Company; The

1453CR2A
SL500
01/04/96

Table A6.1
FINANCIAL FACTORS--GENERAL FUND SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	%	Per $1,000	Per Capita	Per Res Unit	Per SF Comm/Ind Bldg Sp	Per Hotel Room	Per Devel Acre	Per Lane/Lin Mile	Other	Comment
	Measure Applied									
NON--DEPARTMENTAL REVENUES	$ Per Measure									
Property Tax--Secured	21.923									
Property Tax--Unsecured	10.00									
Sales Tax	1.10									
Transient Occupancy Tax	12.00									
Utility Users' Tax			27.45		0.048					
Business License Tax					0.000					
Licenses, Permits & Franchises			5.98		0.0000					
Vehicle License Fees			73.92							
Deed Transfer Tax--New		1.100								
Deed Transfer Tax--Resale		0.128								
Other Revenues			0.00							
LOCAL SERVICE NET EXPEND										
Police Protection										
Police Protection Expenditures			29.10							
Less Proposition 172 Sales Tax Reven	0.465									
Sheriff Station										
Animal Care & Control										
Animal Care & Control Operations			2.12							
Parks & Recreation										
Operating Expenditures										
Recreation Services			6.00							
Maintenance--Active Parks							6,400			
Maintenance--Passive Parks							640			
Maintenance--Regional Trails							6,400			
Maint--Local & Community Trails							4,267			
Less Park & Recreation Fee Revenues			1.35							
Less Prop A Pk & Recr Assmt (15.0%)				1.50	0.00135					
Capital Facility Expenditures										
Active Parks							108,900			
Passive Parks							4,356			
Regional Trails							108,900			
Community & Local Trails							0			
Less Prop A Pk & Recr Assmt (82.5%)				8.25	0.007425					
Less Developer Contribution	100.0									

Continued on next page.....

Table A6.1 (Continued.....page 2)
FINANCIAL FACTORS---GENERAL FUND SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

1453CR2A
SL500
01/04/96

Item	%	Per $1,000	Per Capita	Per Res Unit	Per SF Comm/Ind Bldg Sp	Per Hotel Room	Per Devel Acre	Per Lane/Lin Mile	Other	Comment
	Measure Applied									
	$ Per Measure									
Development Control										
Operating Expenditures	1.50									
Less Service Fees	1.50									
OTHER NET EXPENDITURES										
County--Wide Services										
Judicial			27.68							
Detention & Correction			14.23							
Sheriff County-Wide			24.73							
Other Protection			2.99							
Public Assistance			9.88							
Health Services			9.24							
Mental Health			3.57							
Recreation & Cultural Services			3.49							
Other			0.00							
General Administration	5.00									

Source: Los Angeles County; The Levander Company, Inc.

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01/04/98

Table A6.2
FINANCIAL FACTORS - - FIRE PROTECTION SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	%	Per $1,000	Per Capita	Per Res Unit	Per SF Comm/Ind Bldg Sp	Per Hotel Room	Per Devel Acre	Per Lane/Lin Mile	Other	Comment
	Measure Applied									
OPERATING REVENUES & EXPEND		$ Per Measure								
Revenues										
Property Taxes - - Secured	18.168									
Property Taxes - - Unsecured	10.00									
Service Fees	Disregard									
State Assistance	Disregard									
Expenditures										
Engine/Station Operations									1,300,000 Each	
Paramedic Operations									910,000 Each	
Ladder Truck Operations									1,137,500 Each	
CAPITAL FACILITY REV & EXPEND										
Revenues										
Mitigation Fees									0.1820 $ Per SF Res & C/BP Bl Sp	
Other										
Expenditures										
Engine									250,000 Each	
Temporary Structure/Furnish/Equip									200,000 Each	
Permanent Structure/Furnish/Equip									1,650,000 Each	
Paramedic Squad Truck									60,000 Each	
Ladder Truck									350,000 Each	

Source: Los Angeles County; The Levander Company, Inc.

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01/04/96

Table A6.3
FINANCIAL FACTORS - - LIBRARY SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	%	Per $1,000	Per Capita	Per Res Unit	Per SF Comm/Ind Bldg Sp	Per Hotel Room	Per Devel Acre	Per Lane/Lin Mile	Other	Comment
	Measure Applied									
OPERATING REVENUES & EXPEND	$ Per Measure									
Revenues										
Property Taxes - - Secured	2.732									
Property Taxes - - Unsecured	10.00									
Benefit Assessment (CFD No. 8)				21.70	0.0047					
Service Fees			0.45							
State Assistance			0.28							
General Fund Contribution	100.00									
Expenditures										
Library Operations			20.00							
CAPITAL FACILITY REV & EXPEND										
Revenues										
Mitigation Fees				336.00						
Expenditures										
Library Facilities & Volumes	100.00									Cumulative Expenditures = % of Cumulative Mitigtion Fees

Source: Los Angeles County; The Levander Company, Inc.

1453CR2A
SL500
01/04/96

Table A6.4
FINANCIAL FACTORS---STREET MAINTENANCE SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

Item	%	Per $1,000	Per Capita	Per Res Unit	Per SF Comm/Ind Bldg Sp	Per Hotel Room	Per Devel Acre	Per Lane/Lin Mile	Other	Comment
	Measure Applied									
OPERATING REVENUES & EXPEND		$ Per Measure								
Revenues										
Property Taxes---Secured	0.714									
Property Taxes---Unsecured	10.000									
Highway Users' Tax			11.16							
Proposition C Sales Tax (20%)			8.00							
Expenditures										
Street Maintenance								5,500		
Traffic Signal Maintenance									3,300 Per Signal	
CAPITAL FACILITY REV & EXPEND										
-----None										

Source: Los Angeles County; The Levander Company, Inc.

Table A6.5
FINANCIAL FACTORS--STREET LIGHTING SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

1453CR2A
SL500
01/04/96

Item	%	Per $1,000	Per Capita	Per Res Unit	Per SF Comm/Ind Bldg Sp	Per Hotel Room	Per Devel Acre	Per Lane/Lin Mile	Other	Comment
	Measure Applied									
OPERATING REVENUES & EXPEND		$ Per Measure								
Revenues										
Property Taxes--Secured	0.900									
Property Taxes--Unsecured	10.00									
Benefit Assessment				5.50						
Expenditures										
SCE Payment & Administration									135.00 Per Street Light	
CAPITAL FACILITY REV & EXPEND										
-----None										

Source: Los Angeles County; The Levander Company, Inc.

Table A6.6
FINANCIAL FACTORS---FLOOD CONTROL MAINTENANCE SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

1453CR2A
SL500
01/04/96

Item	%	Per $1,000	Per Capita	Per Res Unit	Per SF Comm/Ind Bldg Sp	Per Hotel Room	Per Devel Acre	Per Lane/Lin Mile	Other	Comment
	Measure Applied									
OPERATING REVENUES & EXPEND	$ Per Measure									
Revenues										
Property Taxes--Secured	1.398									
Property Taxes--Unsecured	10.00									
Benefit Assessment				21.77	0.0138					
Expenditures										
Maint--Open Chan & River Embk									1.02 Per Lineal Foot	
Maint--UG Pipe & Catch Basins									1.03 Per Lineal Foot	
Maint--Debris Basins & Desilt Inlts									3,240 Per Each Basin/Inlet	
Maint--Open Water Quality Basins									3,240 Per Each Basin	
CAPITAL FACILITY REV & EXPEND										
-----None										

Source: Los Angeles County; The Levander Company, Inc.

Table A6.7
FINANCIAL FACTORS--TRANSIT SERVICES
NEWHALL RANCH SPECIFIC PLAN
(IN 1995 CONSTANT DOLLARS)

1453CR2A
SL500
01/04/96

Item	Measure Applied: %	Per $1,000	Per Capita	Per Res Unit	Per SF Comm/Ind Bldg Sp	Per Hotel Room	Per Devel Acre	Per Lane/Lin Mile	Other	Comment
OPERATING REVENUES & EXPEND		$ Per Measure								
Revenues										
Proposition A Sales Tax (25%)			10.00							
Expenditures										
Transit Service Operations	100.0									% of Revenues
CAPITAL FACILITY REV & EXPEND										
-----None										

Source: Los Angeles County; The Levander Company, Inc.

Appendix B

ANALYSIS OF LOS ANGELES COUNTY 1995-96 PROPOSED BUDGET

Table B1

SUMMARY OF DEPARTMENTAL 1995–96 PROPOSED BUDGETS

LOS ANGELES COUNTY GENERAL FUND

1446Bud2
SL494
06/28/95

Fund/Function	Total Expenditures	Less Int Transfers	Net Total	Revenue	Net County Cost	Net Cost/Capita @ Total Co Population	Net Cost/Capita @ Uninc Co Population
	$ 000's					$	
GENERAL							
Administrative Officer	31,633	17,253	14,380	9,659	4,721		
Affirmative Action Compliance	2,355	542	1,813	1,096	717		
Assessor	75,874	182	75,692	33,493	42,199		
Auditor–Controller	242,666	190,719	51,947	43,184	8,763		
Board of Supervisors	36,501	7,734	28,767	1,072	27,695		
Capital Projects Refurbishment	118,980	0	118,980	116,891	2,089		
County Counsel	32,985	18,687	14,298	12,835	1,463		
Employee Benefits	980,065	980,065	0	0	0		
Employee Relations Commission	0	0	0	0	0		
Facility Services	104,586	94,914	9,672	9,672	0		
Human Resources	18,206	5,057	13,149	11,100	2,049		
Innovation Fund	920	0	920	0	920		
Internal Services Department			0		0		
Extraordinary Maintenance	1,817	0	1,817	0	1,817		
Telephone Utilities	60,138	59,232	906	906	0		
Utilities	110,072	92,606	17,466	775	16,691		
Judgments & Damages/Insurance	14,828	0	14,828	0	14,828		
LA Co Capital Asset Leasing/Acquisition	35,350	35,350	0	2,098	(2,098)		
Nondepartmental Special Accounts	88,631	80	88,551	96,820	(8,269)		
Public Works––County Engineer	30,825	0	30,825	28,720	2,105		
Public Works––Pre–Co Impr Dist Studies	187	0	187	139	48		
Public Ways/Public Facilities	1,800	0	1,800	0	1,800		
Public Works––Reimbur for Sewer Const	210	0	210	210	0		
Registrar–Recorder/County Clerk	58,274	322	57,952	45,056	12,896		
Rent Expense	232,156	207,988	24,168	2,448	21,720		
Special Assessments	138	0	138	3	135		
Transitional Financing			0		0		
Treasurer & Tax Collector	54,164	9,731	44,433	35,358	9,075		
Total	2,333,361	1,720,462	612,899	451,535	161,364	17.45	
PUBLIC PROTECTION							
Police Protection––County–Wide Services							
Sheriff––Court Services	119,492	2,226	117,266	53,973	63,293	6.85	
Sheriff––Custody	356,124	4,110	352,014	142,573	209,441	22.66	
Sheriff––Detective Services	56,627	0	56,627	24,607	32,020	3.46	
Total	532,243	6,336	525,907	221,153	304,754	32.97	
Police Protection––Other							
Sheriff––Administration	275,153	593	274,560	59,790	214,770		
Sheriff––Patrol	311,679	788	310,891	264,652	46,239		
Total	586,832	1,381	585,451	324,442	261,009	28.23	
Fire Protection							
Forester & Fire Warden			0	0	0	0.00	

Continued on next page.....

Table B1 (Continued.....page 2)

SUMMARY OF DEPARTMENTAL 1995—96 PROPOSED BUDGETS

LOS ANGELES COUNTY GENERAL FUND

1446Bud2
SL494
06/28/95

Fund/Function	Total Expenditures	Less Int Transfers	Net Total	Revenue	Net County Cost	Net Cost/Capita @ Total Co Population	Net Cost/Capita @ Uninc Co Population
	$ 000's					$	
Judicial							
District Attorney	152,271	6,746	145,525	84,451	61,074	6.61	
District Attorney--Family Support	93,159	0	93,159	86,155	7,004	0.76	
Grand Jury	645	0	645	0	645	0.07	
Municipal & Justice Courts	0	0	0	0	0	0.00	
Public Defender	71,594	0	71,594	1,460	70,134	7.59	
Alternate Public Defender	18,642	0	18,642	0	18,642	2.02	
Trial Court Operations--GF Contributions	183,591	0	183,591	0	183,591	19.86	
Superior Court	0	0	0	0	0	0.00	
Total	519,902	6,746	513,156	172,066	341,090	36.90	
Detention & Correction							
Probation--Main	113,673	2,531	111,142	25,618	85,524	9.25	
Probation--Care of Juvenile Court Wards	4,732	0	4,732	682	4,050	0.44	
Probation--Juvenile Institutions	140,325	2,852	137,473	53,370	84,103	9.10	
Community Based Contracts	2,498	0	2,498	812	1,686	0.18	
Total	261,228	5,383	255,845	80,482	175,363	18.97	
Protection Inspection							
Ag Commissioner/Weights & Measures	17,021	636	16,385	14,036	2,349	0.25	
Other Protection							
Animal Care & Control	11,296	0	11,296	9,242	2,054	0.22	2.12
Consumer Affairs	1,468	24	1,444	802	642	0.07	
Criminal Justice Information System	17,850	16,100	1,750	1,750	0	0.00	
Coroner	11,528	45	11,483	1,536	9,947	1.08	
Emergency Preparedness & Response	3,005	0	3,005	100	2,905	0.31	
Federal & State Disaster Aid	119,500	0	119,500	119,500	0	0.00	
Fire Department--Lifeguards	6,977	0	6,977	0	6,977	0.75	
Human Relations Commission	1,091	0	1,091	50	1,041	0.11	
Local Agency Formation Commission	443	0	443	197	246	0.03	
Office of Ombudsman	272	0	272	0	272	0.03	
Regional Planning	6,951	0	6,951	3,386	3,565	0.39	3.68
Total	180,381	16,169	164,212	136,563	27,649	2.99	
Total Public Protection	2,097,607	36,651	2,060,956	948,742	1,112,214	120.31	
PUBLIC ASSISTANCE							
Children's Services							
Children & Family Services	335,352	0	335,352	297,916	37,436	4.05	
Maclaren Children's Center	22,448	0	22,448	16,085	6,363	0.69	
Children & Family Service Assistance Payme	426,682	0	426,682	397,627	29,055	3.14	
Total	784,482	0	784,482	711,628	72,854	7.88	

Continued on next page.....

Table B1 (Continued.....page 3)

SUMMARY OF DEPARTMENTAL 1995–96 PROPOSED BUDGETS

LOS ANGELES COUNTY GENERAL FUND

1446Bud2
SL494
06/28/95

Fund/Function	Total Expenditures	Less Int Transfers	Net Total	Revenue	Net County Cost	Net Cost/Capita @ Total Co Population	Net Cost/Capita @ Uninc Co Population
	$ 000's					$	
Other Public Assistance Services							
Community & Sr Cit Services--Admin	22,992	4,770	18,222	14,964	3,258	0.35	
Community & Sr Cit Services--Assistance	87,798	894	86,904	86,904	0	0.00	
Military & Veterans Affairs	1,425	1	1,424	673	751	0.08	
Total	112,215	5,665	106,550	102,541	4,009	0.43	
Public Social Services							
Administration	637,784	3,453	634,331	569,617	64,714	7.00	
Aid to Families with Dependent Children	2,147,071	0	2,147,071	2,091,758	55,313	5.98	
Indigent Aid	226,522	0	226,522	18,137	208,385	22.54	
In-Home Supportive Services	63,588	0	63,588	12,147	51,441	5.56	
Refugee Resettlement Program	2,933	0	2,933	2,933	0	0.00	
Special Circumstances	0	0	0	0	0	0.00	
Total	3,077,898	3,453	3,074,445	2,694,592	379,853	41.09	
Total Public Assistance	3,974,595	9,118	3,965,477	3,508,761	456,716	49.40	
HEALTH & SANITATION							
Health Services							
Health Services--Administration	177,134	4,507	172,627	76,097	96,530	10.44	
Health Services--Aids Programs	78,607	2,272	76,335	59,902	16,433	1.78	
Health Services--Alcohol & Drug Abuse	81,506	0	81,506	80,868	638	0.07	
Health Services--Calif Children Services	49,367	0	49,367	29,247	20,120	2.18	
Health Services--Health Care	482,000	0	482,000	482,000	0	0.00	
Health Services--Juvenile Court	14,405	9,916	4,489	1,534	2,955	0.32	
Health Services--Pend Health Reductions	(655,486)	0	(655,486)	0	(655,486)	(70.90)	
Health Services--Programs	175,373	1,289	174,084	107,816	66,268	7.17	
Health Services--State Realignment	0	0	0	89,243	(89,243)	(9.65)	
Health Services--Systems Recovery Unit	7,018	0	7,018	3,000	4,018	0.43	
Hospital Enterprise Funds (By Subtraction)	3,428,991	0	3,428,991	2,460,055	968,936	104.81	
Total (From Summary)	3,831,897	17,984	3,813,913	3,386,762	427,151	46.21	
Mental Health	401,333	5,299	396,034	362,999	33,035	3.57	
Total Health & Sanitation	4,233,230	23,283	4,209,947	3,749,761	460,186	49.78	
RECREATION & CULTURAL SERVICES							
EXCLUDING PARKS & RECREATION							
Beaches & Harbors	13,093	8,532	4,561		4,561	0.49	
Museum of Art	16,130	20	16,110	1,481	14,629	1.58	
Museum of Natural History	13,237	0	13,237	3,816	9,421	1.02	
Music & Performing Arts Commission	1,295	0	1,295	616	679	0.07	
Music Center Operations	7,445	0	7,445	4,450	2,995	0.32	
Total	51,200	8,552	42,648	10,363	32,285	3.49	

Continued on next page.....

Table B1 (Continued.....page 4)

SUMMARY OF DEPARTMENTAL 1995–96 PROPOSED BUDGETS

LOS ANGELES COUNTY GENERAL FUND

1446Bud2
SL494
06/28/95

Fund/Function	Total Expenditures	Less Int Transfers	Net Total	Revenue	Net County Cost	Net Cost/Capita @ Total Co Population	Net Cost/Capita @ Uninc Co Population
	$ 000's					$	
PARKS & RECREATION							
Regional Parks	10,737	0	10,737	9,486	1,251	0.14	1.29
Arboretum	3,234	0	3,234	1,325	1,909	0.21	1.97
Trails	440	0	440	338	102	0.01	0.11
Natural Areas	515	0	515	296	219	0.02	0.23
Local Park Maintenance	8,990	0	8,990	0	8,990	0.97	9.27
Facility Maintenance	7,990	4	7,986	1,193	6,793	0.73	7.00
Park Police	2,033	0	2,033	140	1,893	0.20	1.95
Recreation Services	3,535	0	3,535	1,310	2,225	0.24	2.29
Park Planning	946	0	946	577	369	0.04	0.38
Administration	14,615	0	14,615	40	14,575	1.58	15.03
Contract Services	2,887	608	2,279	14,236	(11,957)	(1.29)	(12.33)
Swimming Pools	2,010	36	1,974	275	1,699	0.18	1.75
Total	57,932	648	57,284	29,216	28,068	3.04	28.94
Subtotal	12,747,925	1,798,714	10,949,211	8,698,378	2,250,833	243.47	
NON–DEPARTMENTAL REVENUE							
Sales & Use Tax			0	33,784	(33,784)	3.65	
Deed Transfer Tax			0	23,437	(23,437)	2.54	
Transient Occupancy Tax			0	6,350	(6,350)	0.69	
Utility Users' Taxes			0	35,496	(35,496)	3.84	36.60
Business License Tax			0	7,500	(7,500)	0.81	
Licenses, Permits & Franchises			0	5,800	(5,800)	0.63	5.98
Rents, Concessions & Royalties			0	925	(925)	0.10	
Vehicle License Fees			0	683,349	(683,349)	73.92	704.55
Penalties on Delinquent Taxes			0	30,801	(30,801)	3.33	
Homeowners' Property Tax Relief			0	21,386	(21,386)	2.31	
Other Revenue			0	127,617	(127,617)	13.80	
Total			0	975,445	(975,445)	105.62	
GRAND TOTAL	12,747,925	1,798,714	10,949,211	9,674,823	1,274,388	137.85	
% General to Other Costs							
Excluding Non–Departmental Revenue	22.40		5.93		7.72		

Population 1/1/95 Per State Dept of Finance

Total County	9,244,646
Unincorporated Area Only	969,913

Source: Los Angeles County 1995–96 Proposed Budget; The Levander Company, Inc.

Appendix C

ASSESSOR AND AUDITOR/CONTROLLER DATA

Table C1
ASSESSOR PARCEL DATA
NEWHALL RANCH

1446APD1
SL494
05/17/95

Rec #	Assessor Parcel # Book	Page	Par	Owner	Use	Land Area (Acres)	Assessed Value (AV) Land ($)	Impr ($)	Other ($)	Total ($)	% Impr To Tot	Tot AV Per Acre ($)	TRA
	2826	1	28	Newhall Land & Farming Co		243.55	59,134	8,644		67,778	12.8	278	2472
	2826	1	29	Newhall Land & Farming Co		0.50	1,191			1,191	0.0	2,382	2472
	2826	1	30	Newhall Land & Farming Co		26.01	62,141			62,141	0.0	2,389	2472
	2826	2	15	Newhall Land & Farming Co		10.59	16,432			16,432	0.0	1,552	2634
	2826	3	10	Newhall Land & Farming Co		415.29	713,330	114,866		828,196	13.9	1,994	2634
	2826	3	12	Newhall Land & Farming Co		14.62	52,578			52,578	0.0	3,596	2634
	2826	3	13	Newhall Land & Farming Co		8.62	35,849			35,849	0.0	4,159	2634
	2826	3	14	Newhall Land & Farming Co		2.62	10,751			10,751	0.0	4,103	2634
	2826	4	17	Newhall Land & Farming Co		0.85	12,396			12,396	0.0	14,584	2634
	2826	4	18	Newhall Land & Farming Co		1.91	39,370	9,634		49,004	19.7	25,657	2634
	2826	4	23	Newhall Land & Farming Co		3.95	80,194	34,635		114,829	30.2	29,071	2634
	2826	4	26	Newhall Land & Farming Co		109.79	282,725	20,958		303,683	6.9	2,766	2634
	2826	4	27	Newhall Land & Farming Co		10.20	43,020			43,020	0.0	4,218	2634
	2826	4	28	Newhall Land & Farming Co		5.66	66,922			66,922	0.0	11,824	2634
	2826	5	8	Newhall Land & Farming Co		0.73	136			136	0.0	186	2634
	2826	5	12	Newhall Land & Farming Co		126.23	639,300	20,620		659,920	3.1	5,228	2634
	2826	5	13	Newhall Land & Farming Co		14.96	166,115			166,115	0.0	11,104	2634
	2826	6	9	Newhall Land & Farming Co		2.69	16,729			16,729	0.0	6,219	2634
	2826	11	17	Newhall Land & Farming Co		502.85	137,838			137,838	0.0	274	6709
	2826	11	18	Newhall Land & Farming Co		618.39	282,466			282,466	0.0	457	6709
	2826	11	19	Newhall Land & Farming Co		640.00	106,013			106,013	0.0	166	6709
	2826	11	20	Newhall Land & Farming Co		482.56	59,997			59,997	0.0	124	6709
	2826	11	21	Newhall Land & Farming Co		281.33	19,321			19,321	0.0	69	6709
	2826	11	22	Newhall Land & Farming Co		640.00	85,672			85,672	0.0	134	6709
	2826	11	23	Newhall Land & Farming Co		640.00	186,075	12,971		199,046	6.5	311	6709
	2826	11	24	Newhall Land & Farming Co		381.28	116,014	1,146		117,160	1.0	307	6709
	2826	11	25	Newhall Land & Farming Co		604.85	269,742			269,742	0.0	446	6709
	2826	11	26	Newhall Land & Farming Co		640.00	98,947			98,947	0.0	155	6709
	2826	11	27	Newhall Land & Farming Co		509.47	90,003			90,003	0.0	177	6709
	2826	12	9	Newhall Land & Farming Co		510.57	49,612			49,612	0.0	97	6709
	2826	12	10	Newhall Land & Farming Co		640.00	50,766			50,766	0.0	79	6709
	2826	12	11	Newhall Land & Farming Co		340.77	27,397			27,397	0.0	80	6709
	2826	12	12	Newhall Land & Farming Co		447.98	25,955			25,955	0.0	58	6709
	2826	12	13	Newhall Land & Farming Co		312.47	29,416			29,416	0.0	94	6709
	3271	3	19	Newhall Land & Farming Co		160.00	54,519			54,519	0.0	341	2638
	3272	23	5	Newhall Land & Farming Co		312.84	392,340	249,115	8,969	650,424	38.3	2,079	2472
	3272	24	3	Newhall Land & Farming Co		461.59	30,454			30,454	0.0	66	2472
	3272	24	4	Newhall Land & Farming Co		68.00	7,635			7,635	0.0	112	2472
	3272	36	1	Valencia Corporation		11.58	7,529			7,529	0.0	650	2472
	3272	38	2	Valencia Corporation		10.72	7,529			7,529	0.0	702	2472
	3272	38	8	Valencia Corporation		14.43	7,529			7,529	0.0	522	2472
	3272	38	12	Valencia Corporation		10.92	8,787			8,787	0.0	805	2472
	3272	38	13	Valencia Corporation		9.81	8,787			8,787	0.0	896	2472
	3272	38	14	Valencia Corporation		10.10	8,787			8,787	0.0	870	2472
	3272	38	15	Valencia Corporation		11.95	8,787			8,787	0.0	735	2472
	3272	38	16	Valencia Corporation		9.91	8,787			8,787	0.0	887	2472
	3272	38	17	Valencia Corporation		10.81	8,787			8,787	0.0	813	2472
	3272	38	18	Valencia Corporation		9.92	8,787			8,787	0.0	886	2472
	3272	38	19	Valencia Corporation		10.07	8,787			8,787	0.0	873	2472
	3272	39	7	Valencia Corporation		10.94	9,411	52,353		61,764	84.8	5,646	2472

Table C1
ASSESSOR PARCEL DATA
NEWHALL RANCH

1446APD1
SL494
05/17/95

Rec #	Assessor Parcel # Book	Page	Par	Owner	Use	Land Area (Acres)	Assessed Value (AV) Land ($)	Impr ($)	Other ($)	Total ($)	% Impr To Tot	Tot AV Per Acre ($)	TRA
	3272	39	8	Valencia Corporation		12.94	9,411			9,411	0.0	727	2472
	3272	39	9	Valencia Corporation		10.00	9,411			9,411	0.0	941	2472
	3272	39	11	Valencia Corporation		12.80	8,155			8,155	0.0	637	2472
	3272	39	12	Valencia Corporation		12.65	8,787			8,787	0.0	695	2472
	3272	39	13	Valencia Corporation		16.06	8,155			8,155	0.0	508	2472
	3272	39	14	Valencia Corporation		18.40	4,391			4,391	0.0	239	2472
	3272	39	15	Valencia Corporation		18.31	3,761			3,761	0.0	205	2472
	3272	39	16	Valencia Corporation		11.06	9,411			9,411	0.0	851	2472
	3272	39	17	Valencia Corporation		9.10	9,411			9,411	0.0	1,034	2472
	3272	40	8	Valencia Corporation		10.39	8,787			8,787	0.0	846	2472
	3272	40	9	Valencia Corporation		10.02	8,787			8,787	0.0	877	2472
	3272	40	10	Valencia Corporation		11.33	8,787			8,787	0.0	776	2472
	3272	40	11	Valencia Corporation		9.96	8,787			8,787	0.0	882	2472
	3272	40	12	Valencia Corporation		12.49	8,787			8,787	0.0	704	2472
	3272	40	13	Valencia Corporation		9.86	8,787			8,787	0.0	891	2472
	3272	40	14	Valencia Corporation		12.39	8,787			8,787	0.0	709	2472
	3272	40	15	Valencia Corporation		9.91	8,787			8,787	0.0	887	2472
	3272	40	16	Valencia Corporation		9.67	8,787			8,787	0.0	909	2472
	Total All Parcels					10,542.22	4,670,765	524,942	8,969	5,204,676	10.1	494	
	Totals By TRA												
	2472					1,460.99	805,165	310,112	8,969	1,124,246	27.6	770	
	2634					728.71	2,175,847	200,713	0	2,376,560	8.4	3,261	
	2638					160.00	54,519	0	0	54,519	0.0	341	
	6709					8,192.52	1,635,234	14,117	0	1,649,351	0.9	201	
						10,542.22	4,670,765	524,942	8,969	5,204,676	10.1	494	

Source: Los Angeles County Assessor; The Levander Company, Inc.

Table C2
PROPERTY TAX RATE ALLOCATIONS
NEWHALL RANCH

1446TRA1
SL494
07/08/95

Agency	TRA 2472	TRA 2634	TRA 2638	TRA 6709	Weighted Average[a]
Used in Fiscal Impact Analysis					
Los Angeles County General	23.359	30.236	23.359	22.041	22.810
L.A. County Accumulated Capital Outlay	0.013	0.011	0.013	0.013	0.013
L.A. County Library	2.832	2.251	2.832	2.755	2.732
Road District #5	0.736	0.611	0.736	0.719	0.714
Consol Fire Protection District of L.A. Co.	17.752	16.195	17.752	17.752	17.644
L.A. C. Fire--FFW	0.536	0.694	0.536	0.506	0.524
L.A. Co. Fl. Con. Dr. Imp. Dist. Maint.	0.219	0.166	0.219	0.212	0.210
L.A. Co. Flood Control Maintenance	1.240	0.938	1.240	1.200	1.188
Total	46.687	51.102	46.687	45.198	45.835
Other Non-School/Jr. College Agencies					
Other County/Non-School Age					
Southeast Mosquito Abatement District	0.032	0.032	0.032	0.032	0.032
Castaic Lake Water Agency	6.698	5.558	6.698	6.546	6.501
Castaic Water Dist Imp #88-15	0.000	0.000	0.000	0.000	0.000
Total	6.730	5.590	6.730	6.578	6.533
Schools & Jr College					
Educational Revenue Augmentation Fund	5.722	7.161	5.722	5.722	5.821
Educational Augmentation Fund Impound	13.188	13.188	13.188	13.188	13.188
County School Services	0.165	0.137	0.165	0.162	0.161
Children's Instil Tuition Fund	0.328	0.273	0.328	0.321	0.319
Newhall School District				9.456	7.348
Castaic Union School District	6.917	5.739	6.917		1.460
County School Service Fund--Newhall				0.907	0.705
Co School Service Fund--Castaic Union	1.347	1.118	1.347		0.284
Dev Center Handicapped Minor--Newhall				0.100	0.078
Dev Center Handicapped Minor--Castaic	0.118	0.098	0.118		0.025
Hart William S. Union High	9.447	7.839	9.447	9.232	9.169
Co School Services Fund--Hart, William S.	0.039	0.033	0.039	0.038	0.038
Hart, William S.--Elementary School Fund	4.971	4.125	4.971	4.858	4.825
Santa Clarita Community College	4.339	3.600	4.339	4.240	4.211
Total	46.581	43.311	46.581	48.224	47.632
Grand Total	99.998	100.003	99.998	100.000	100.000
Land Area (Acres)	1,460.99	728.71	160.00	8,192.52	10,542.22
---% of Total	13.86	6.91	1.52	77.71	100.00

[a] Weighting based on acreage.

Source: Los Angeles County Auditor-Controller; The Levander Company, Inc.

Table C3

EVALUATION OF INFLATOR/DEFLATOR ASSUMPTIONS

NEWHALL RANCH

1446ID1
07/10/95
SL494

BASE ASSUMPTIONS

7–Year Turnover, Starting Year 4

# Units	10
Unit Price	100,000
Annual Inflation Rate (%)	4.1
Prop Tax Max Infl Rate (%)	2.0

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
# Units Constructed	7									
# Units Turnover				1	1	1	1	1	1	1
VALUE @ FULL INFLATION										
Unit Value @ Full Inflation	100,000	104,100	108,368	112,811	117,436	122,251	127,264	132,481	137,913	143,568
Full Value @ Full Inflation	700,000	728,700	758,577	789,678	822,055	855,759	890,846	927,370	965,382	1,004,973
VALUE @ PROP 13 LIMITATION WITHOUT TURNOVER										
Unit Value @ Prop 13 Limitation	100,000	102,000	104,040	106,121	108,243	110,408	112,616	114,869	117,166	119,509
Full Value @ Prop 13 Limitation	700,000	714,000	728,280	742,846	757,703	772,857	788,314	804,080	820,162	836,565
DIFFERENCE IN UNIT VALUES	0	2,100	4,328	6,690	9,193	11,843	14,647	17,613	20,747	24,058
ASSESSED VALUES										
Turnover #1	100,000	102,000	104,040	112,811	115,067	117,369	119,716	122,110	124,553	127,044
Turnover #2	100,000	102,000	104,040	106,121	117,436	119,785	122,181	124,625	127,117	129,659
Turnover #3	100,000	102,000	104,040	106,121	108,243	122,251	124,696	127,190	129,734	132,329
Turnover #4	100,000	102,000	104,040	106,121	108,243	110,408	127,264	129,809	132,405	135,053
Turnover #5	100,000	102,000	104,040	106,121	108,243	110,408	112,616	132,481	135,131	137,834
Turnover #6	100,000	102,000	104,040	106,121	108,243	110,408	112,616	114,869	137,913	140,671
Turnover #7	100,000	102,000	104,040	106,121	108,243	110,408	112,616	114,869	117,166	143,568
Total	700,000	714,000	728,280	749,536	773,720	801,038	831,706	865,953	904,019	946,158
% AV TO VALUE @ FULL INFL	100.00	97.98	96.01	94.92	94.12	93.61	93.36	93.38	93.64	94.15
DEFLATOR % NEEDED YEAR 10 EQUALITY										
Deflator %	0.6720									
Resultant %	100.00	99.33	98.67	98.01	97.36	96.71	96.06	95.42	94.78	94.15
DEFLATOR % NEEDED FOR YEAR 25 EQUALITY										
Deflator %	0.2515									
Resultant %	100.00	99.75	99.50	99.25	99.00	98.75	98.50	98.26	98.01	97.76

Source: The Levander Company, Inc.

Table C3 — 1446ID1

EVALUATION OF INFLATOR/DEFLATOR ASSUMPTIONS — 07/10/95

NEWHALL RANCH — SL494

BASE ASSUMPTIONS

7-Year Turnover, Starting Year 4

Units

Unit Price

Annual Inflation Rate (%)

Prop Tax Max Infl Rate (%)

	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
# Units Constructed										
# Units Turnover	1	1	1	1	1	1	1	1	1	1
VALUE @ FULL INFLATION										
Unit Value @ Full Inflation	149,454	155,582	161,960	168,601	175,513	182,709	190,201	197,999	206,117	214,567
Full Value @ Full Inflation	1,046,177	1,089,071	1,133,723	1,180,205	1,228,594	1,278,966	1,331,404	1,385,991	1,442,817	1,501,972
VALUE @ PROP 13 LIMITATION WITHOUT TURNOVER										
Unit Value @ Prop 13 Limitation	121,899	124,337	126,824	129,361	131,948	134,587	137,279	140,024	142,825	145,681
Full Value @ Prop 13 Limitation	853,296	870,362	887,769	905,525	923,635	942,108	960,950	980,169	999,772	1,019,768
DIFFERENCE IN UNIT VALUES	27,554	31,244	35,136	39,240	43,565	48,123	52,922	57,975	63,292	68,886
ASSESSED VALUES										
Turnover #1	149,454	152,443	155,492	158,602	161,774	165,009	168,309	197,999	201,959	205,996
Turnover #2	132,253	155,582	158,693	161,867	165,104	168,406	171,775	175,210	206,117	210,239
Turnover #3	134,975	137,675	161,960	165,200	168,504	171,874	175,311	178,817	182,394	214,567
Turnover #4	137,754	140,509	143,320	168,601	171,973	175,412	178,920	182,499	186,149	189,872
Turnover #5	140,590	143,402	146,270	149,196	175,513	179,024	182,604	186,256	189,981	193,781
Turnover #6	143,485	146,355	149,282	152,267	155,313	182,709	186,364	190,091	193,893	197,771
Turnover #7	146,439	149,368	152,355	155,402	158,510	161,680	190,201	194,005	197,885	201,842
Total	984,950	1,025,333	1,067,372	1,111,134	1,156,691	1,204,115	1,253,484	1,304,877	1,358,377	1,414,070
% AV TO VALUE @ FULL INFL	94.15	94.15	94.15	94.15	94.15	94.15	94.15	94.15	94.15	94.15
DEFLATOR % NEEDED YEAR 10 EQUALITY										
Deflator %										
Resultant %										
DEFLATOR % NEEDED FOR YEAR 25 EQUALITY										
Deflator %										
Resultant %	97.52	97.27	97.03	96.79	96.54	96.30	96.06	95.82	95.58	95.34

Source: The Levander Company, Inc.

Table C3

EVALUATION OF INFLATOR/DEFLATOR ASSUMPTIONS

NEWHALL RANCH

1446ID1

07/10/95

SL494

BASE ASSUMPTIONS

7–Year Turnover, Starting Year 4

Units

Unit Price

Annual Inflation Rate (%)

Prop Tax Max Infl Rate (%)

	Year 21	Year 22	Year 23	Year 24	Year 25
# Units Constructed					
# Units Turnover	1	1	1	1	1
VALUE @ FULL INFLATION					
Unit Value @ Full Inflation	223,365	232,523	242,056	251,980	262,312
Full Value @ Full Inflation	1,563,553	1,627,659	1,694,393	1,763,863	1,836,181
VALUE @ PROP 13 LIMITATION WITHOUT TURNOVER					
Unit Value @ Prop 13 Limitation	148,595	151,567	154,598	157,690	160,844
Full Value @ Prop 13 Limitation	1,040,163	1,060,966	1,082,185	1,103,829	1,125,906
DIFFERENCE IN UNIT VALUES	74,770	80,956	87,458	94,290	101,468
ASSESSED VALUES					
Turnover #1	210,116	214,320	218,607	222,979	262,312
Turnover #2	214,444	218,733	223,107	227,569	232,121
Turnover #3	218,859	223,236	227,701	232,255	236,900
Turnover #4	223,365	227,832	232,389	237,036	241,777
Turnover #5	197,657	232,523	237,173	241,917	246,755
Turnover #6	201,726	205,760	242,056	246,897	251,835
Turnover #7	205,879	209,997	214,197	251,980	257,020
Total	1,472,047	1,532,401	1,595,229	1,660,634	1,728,720
% AV TO VALUE @ FULL INFL	94.15	94.15	94.15	94.15	94.15
DEFLATOR % NEEDED YEAR 10 EQUALITY					
Deflator %					
Resultant %					
DEFLATOR % NEEDED FOR YEAR 25 EQUALITY					
Deflator %					
Resultant %	95.10	94.86	94.62	94.39	94.15

Source: The Levander Company, Inc.

Appendix D

TAXABLE SALES DATA

Table D1
UNALLOCATED TAXABLE SALES ANALYSIS
AT STATE AND LOS ANGELES COUNTY LEVELS

1446TxS1
SL494
06/08/95

	1988	1989	1990	1991	1992	1993	Total
STATE OF CALIFORNIA							
Total Taxable Sales	249,755,187	270,514,571	280,123,937	269,604,658	271,603,803	271,410,662	1,613,012,818
Sales Identifiable to a County Location	243,480,785	263,907,856	277,037,249	266,903,984	269,318,801	269,465,561	1,590,114,236
Net Unallocated Sales	6,274,402	6,606,715	3,086,688	2,700,674	2,285,002	1,945,101	22,898,582
LOS ANGELES COUNTY							
Total Taxable Sales	72,246,949	77,706,186	80,285,389	75,417,049	74,655,812	73,000,967	453,312,352
Sales Identifiable to a City or Unincorporated Area Location	66,348,953	70,904,876	71,904,568	67,814,549	67,195,051	65,495,609	409,663,616
Net Unallocated Sales	5,897,986	6,801,310	8,380,821	7,602,500	7,460,761	7,505,358	43,648,736
% UNALLOCATED TO IDENTIFIABLE							
State of California	2.58	2.50	1.11	1.01	0.85	0.72	1.44
Los Angeles County	8.89	9.59	11.66	11.21	11.10	11.46	10.65
Total	11.47	12.10	12.77	12.22	11.95	12.18	12.09

Source: State Board of Equalization; The Levander Company, Inc.

Table D2
TAXABLE SALES ANALYSIS -- 1993
SOUTHERN CALIFORNIA 6-COUNTY REGION & CITY OF SANTA CLARITA

1446TS1
07/08/95
SL494

	Los Angeles County	Orange County	Ventura County	Riverside County	San Bernardino County	Total 5-County	San Diego County	Total 6-County	% LA County to 6-Co	City of Santa Clarita	% Santa Clarita to 6-Co
TAXABLE SALES ($000's)											
Apparel	3,415,914	1,165,259	193,172	395,084	320,529	5,489,958	892,222	6,382,180	53.52	42,457	0.67
General Merchandise	6,653,412	2,596,498	574,573	1,118,197	1,440,321	12,383,001	2,474,938	14,857,939	44.78	157,153	1.06
Drug	1,239,265	390,406	117,134	149,052	149,134	2,044,991	366,506	2,411,497	51.39	26,740	1.11
Food	3,544,795	1,184,804	314,053	653,556	736,744	6,433,952	1,227,909	7,661,861	46.27	67,377	0.88
Packaged Liquor	565,227	142,484	39,461	57,368	64,216	868,776	139,371	1,008,147	56.07	6,963	0.69
Eating & Drinking	6,666,819	2,306,451	474,426	849,961	895,360	11,193,017	2,105,137	13,298,154	50.13	90,691	0.68
Home Furnishings & Appliances	2,463,158	952,045	186,513	267,674	289,163	4,158,553	767,595	4,926,148	50.00	22,055	0.45
Building Materials & Farm Implements	3,281,593	1,239,825	365,580	654,377	688,063	6,229,438	1,220,683	7,450,121	44.05	33,293	0.45
Auto Dealers & Auto Supplies	7,742,820	2,732,226	1,102,004	1,227,707	1,465,291	14,270,048	2,670,626	16,940,674	45.71	263,222	1.55
Service Station	4,877,971	1,360,261	69,891	739,399	922,790	7,970,312	1,334,355	9,304,667	52.42	84,258	0.91
Other Retail Stores	6,886,670	2,742,451	476,227	604,328	754,101	11,463,777	2,042,040	13,505,817	50.99	85,665	0.64
Total	47,337,644	16,812,710	3,913,054	6,716,703	7,725,712	82,505,823	15,241,382	97,747,205	48.43	880,094	0.90
OCCUPIED HOUSING UNITS (JANUARY 1, 1993)	3,040,278	853,463	224,378	437,493	494,753	5,050,365	917,785	5,968,150	50.94	42,494	0.71
TAXABLE SALES PER OCCUPIED HOUSING UNIT ($)											
Apparel	1,124	1,365	861	903	648	1,087	972	1,069	105.07	999	93.43
General Merchandise	2,188	3,042	2,561	2,556	2,911	2,452	2,697	2,490	87.90	3,698	148.55
Drug	408	457	522	341	301	405	399	404	100.88	629	155.74
Food	1,166	1,388	1,400	1,494	1,489	1,274	1,338	1,284	90.82	1,586	123.51
Packaged Liquor	186	167	176	131	130	172	152	169	110.06	164	97.00
Eating & Drinking	2,193	2,702	2,114	1,943	1,810	2,216	2,294	2,228	98.41	2,134	95.78
Home Furnishings & Appliances	810	1,116	831	612	584	823	836	825	98.15	519	62.88
Building Materials & Farm Implements	1,079	1,453	1,629	1,496	1,391	1,233	1,330	1,248	86.47	783	62.76
Auto Dealers & Auto Supplies	2,547	3,201	4,911	2,806	2,962	2,826	2,910	2,839	89.72	6,194	218.22
Service Station	1,604	1,594	311	1,690	1,865	1,578	1,454	1,559	102.91	1,983	127.18
Other Retail Stores	2,265	3,213	2,122	1,381	1,524	2,270	2,225	2,263	100.10	2,021	89.31
Total	15,570	19,699	17,440	15,353	15,615	16,337	16,607	16,378	95.07	20,711	126.46
MEDIAN HOUSEHOLD INCOME (ANNUAL)											
1990 (Census)	35,012	45,945	45,614	33,146	33,481	38,746	35,048	38,473	95.99		0.00
1995 (UDS Estimate)	40,640	53,829	53,840	39,115	39,586	43,116	40,675	42,743	95.08		0.00
1993 (Interpolation)	38,389	50,675	50,550	36,727	37,144	40,568	38,424	40,235	95.41		0.00
% TAXABLE SALES PER OCCUPIED HOUSING UNIT TO MEDIAN HOUSEHOLD INCOME	40.6	38.9	34.5	41.8	42.0	40.3	43.2	40.7			

Continued on next page.....

Table D2 (Continued.....page 2)
TAXABLE SALES ANALYSIS -- 1993
SOUTHERN CALIFORNIA 6-COUNTY REGION & CITY OF SANTA CLARITA

1446TS1
07/08/95
SL494

	Los Angeles County	Orange County	Ventura County	Riverside County	San Bernardino County	Total 5-County	San Diego County	Total 6-County	% LA County to 6-Co	City of Santa Clarita	% Santa Clarita to 6-Co
POPULATION (JANUARY 1, 1993)	9,158,425	2,557,346	700,087	1,328,320	1,556,251	15,300,429	2,648,597	17,949,026	51.02	122,918	0.68
TAXABLE SALES PER CAPITA ($)											
Apparel	373	456	276	297	206	359	337	358	104.90	345	97.14
General Merchandise	726	1,015	821	842	926	809	934	828	87.76	1,279	154.45
Drug	135	153	167	112	96	134	138	134	100.72	218	161.92
Food	387	463	449	492	473	421	464	427	90.67	548	128.41
Packaged Liquor	62	56	56	43	41	57	53	56	109.88	57	100.86
Eating & Drinking	728	902	678	640	575	732	795	741	98.25	738	99.59
Home Furnishings & Appliances	269	372	266	202	186	272	290	274	98.00	179	65.38
Building Materials & Farm Implements	358	485	522	493	442	407	461	415	86.33	271	65.26
Auto Dealers & Auto Supplies	845	1,068	1,574	924	942	933	1,008	944	89.58	2,141	226.89
Service Station	533	532	100	557	593	521	504	518	102.74	685	132.23
Other Retail Stores	752	1,072	680	455	485	749	771	752	99.93	699	92.86
Total	5,169	6,574	5,589	5,057	4,964	5,392	5,755	5,446	94.91	7,160	131.48
PER CAPITA INCOME (ANNUAL)											
1990 (Census)	15,971	19,675	17,614	14,277	13,107	16,245	15,789	16,178	98.72		0.00
1995 (UDS Estimate)	18,665	23,281	21,128	16,778	15,285	19,029	18,401	18,936	98.57		0.00
1993 (Interpolation)	17,587	21,839	19,722	15,778	14,414	17,915	17,356	17,833	98.62		0.00
% TAXABLE SALES PER CAPITA TO PER CAPITA INCOME	29.4	30.1	28.3	32.0	34.4	30.1	33.2	30.5			

a
Included in "Other Retail Stores" category to prevent disclosure.

Continued on next page.....

Table D2 (Continued.....page 3)
TAXABLE SALES ANALYSIS -- 1993
SOUTHERN CALIFORNIA 6-COUNTY REGION & CITY OF SANTA CLARITA

1446TS1
07/08/95
SL494

	Los Angeles County	Orange County	Ventura County	Riverside County	San Bernardino County	Total 5-County	San Diego County	Total 6-County	% LA County to 6-Co	City of Santa Clarita	% Santa Clarita to 6-Co
% OF TOTAL TAXABLE SALES											
Apparel	7.22	6.93	4.94	5.88	4.15	6.65	5.85	6.53	110.52	4.82	73.88
General Merchandise	14.06	15.44	14.68	16.65	18.64	15.01	16.24	15.20	92.47	17.86	117.47
Drug	2.62	2.32	2.99	2.22	1.93	2.48	2.40	2.47	106.11	3.04	123.15
Food	7.49	7.05	8.03	9.73	9.54	7.80	8.06	7.84	95.53	7.66	97.67
Packaged Liquor	1.19	0.85	1.01	0.85	0.83	1.05	0.91	1.03	115.77	0.79	76.71
Eating & Drinking	14.08	13.72	12.12	12.65	11.59	13.57	13.81	13.60	103.52	10.30	75.74
Home Furnishings & Appliances	5.20	5.66	4.77	3.99	3.74	5.04	5.04	5.04	103.25	2.51	49.73
Building Materials & Farm Implements	6.93	7.37	9.34	9.74	8.91	7.55	8.01	7.62	90.95	3.78	49.63
Auto Dealers & Auto Supplies	16.36	16.25	28.16	18.28	16.97	17.30	17.52	17.33	94.38	29.91	172.57
Service Station	10.30	8.09	1.79	11.01	11.94	9.66	8.75	9.52	108.25	9.57	100.57
Other Retail Stores	14.55	16.31	12.17	9.00	9.76	13.89	13.40	13.82	105.29	9.76	70.63
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
POPULATION PER OCCUPIED HOUSING UNIT	3.01	3.00	3.12	3.04	3.15	3.03	2.89	3.01	100.16	2.89	96.18

Source: State Board of Equalization (Taxable Sales); State Department of Finance (Population & Housing); Urban Decision Systems, Inc. (Incomes); The Levander Company, Inc.

Table D3
RETAIL SALES CAPTURE ANALYSIS
BASED ON PRELIMINARY ESTIMATES OF STORE STRENGTHS
CONSIDERING EXISTING SANTA CLARITA PERFORMANCE & ANTICIPATED NEWHALL RANCH FACILITIES

1446TS1
07/08/95
SL494

Type of Retail Outlet	Total Per Capita Purchases	Estimated % Capture: Newhall Ranch Estab	Other LA County Estab	Santa Clarita Estab	All Other Estab	Total	Estimated $ Per Capita Capture: Newhall Ranch Estab	Other LA County Estab	Santa Clarita Estab	All Other Estab	Total
Apparel	356	25.0	15.0	45.0	15.0	100.0	89	53	160	53	356
General Merchandise	828	20.0	15.0	50.0	15.0	100.0	166	124	414	124	828
Drug	134	64.0	14.0	12.0	10.0	100.0	86	19	16	13	134
Food	427	64.0	14.0	12.0	10.0	100.0	273	60	51	43	427
Packaged Liquor	56	50.0	15.0	25.0	10.0	100.0	28	8	14	6	56
Eating & Drinking	741	50.0	15.0	25.0	10.0	100.0	370	111	185	74	741
Home Furnishings & Appliances	274	20.0	10.0	45.0	25.0	100.0	55	27	124	69	274
Building Materials & Farm Implements	415	30.0	10.0	45.0	15.0	100.0	125	42	187	62	415
Auto Dealers & Auto Supplies	944	5.0	5.0	60.0	30.0	100.0	47	47	566	283	944
Service Station	518	60.0	10.0	20.0	10.0	100.0	311	52	104	52	518
Other Retail Stores	752	25.0	15.0	45.0	15.0	100.0	188	113	339	113	752
Average % or Total $	5,446	31.9	12.1	39.7	16.4	100.0	1,738	656	2,159	892	5,446

a
1993 6 – County Average, per Appendix Table D2.

Source: The Levander Company, Inc.

1446SCA2
SL494

06/27/95

Table D4
RETAIL SALES CAPTURE ANALYSIS
BASED ON TRAFFIC VOLUME PROJECTIONS

Destination/Capture Area	Shopping Trips (% of Total)	Relative Purchases Per Trip ($ Index)	Total Purchases ($ Index)	% of Purchases
Stores within Newhall Ranch	50.0	100.00	50.00	32.3
Other Stores in Unincor LA County	22.5	100.00	22.50	14.5
Stores within City of Santa Clarita	17.5	300.00	52.50	33.9
All Other Stores	10.0	300.00	30.00	19.4
Total	100.0	155.00	155.00	100.0

Source: Newhall Ranch Company; Austin–Foust Associates, Inc.; The Levander Company, Inc.

Appendix E

CITY OF SANTA CLARITA BUDGET COMPARISONS

Table E1
CITY OF SANTA CLARITA BUDGET COMPARISONS

1453SCBd
SL500
01/06/96

PUBLIC WORKS BUDGET ($)

	1992–93 Actual	1993–94 Actual	1994–95 Budget	1995–96 Budget	4–Year Average
Street Maintenance	2,595,628	1,450,992	2,279,246	1,986,700	2,078,142
Waste Management	464,775	739,847	1,151,276	362,013	679,478
Transit	4,668,976	5,443,341	8,430,300	7,782,825	6,581,361
Vehicle Maintenance	210,493	227,543	228,190	252,990	229,804
Subtotal	7,939,872	7,861,723	12,089,012	10,384,528	9,568,784
Administration	421,099	445,684	508,522	498,475	468,445
Total	8,360,971	8,307,407	12,597,534	10,883,003	10,037,229
---% Admin to Subtotal	5.30	5.67	4.21	4.80	4.90

CITY–WIDE BUDGET ALL FUNDS 1995–96

Direct Departments

Engineering	5,802,837
Public Works	10,883,003
Public Safety	9,856,800
Parks, Recreation and Community Services	7,241,900
Community Development	6,206,475
Total	39,991,015

Indirect Departments

City Manager (Excl Reserves & Debt Service)	3,068,985
Administrative Services	4,440,695
Total	7,509,680

Total All Departments	47,500,695
---% Indirect to Direct (Overhead Rate)	18.78

STREET MAINTENANCE COSTS WITH ADMINISTRATIVE OVERHEAD 1995–96

Costs Per Above			1,986,700
Add Dept Ad Overhead	@	4.80 %	95,365
Subtotal			2,082,065
Add Citywide Ad Overhead	@	18.78 %	390,979
Total			2,473,044

Source: City of Santa Clarita; The Levander Company, Inc.

Appendix F

GOVERNMENTAL OFFICIALS CONTACTED

LOS ANGELES COUNTY

Chief Administrative Office

Anderson, Selma; Management Analyst, Intergovernmental Relations
Goodman, John Christopher; Management Analyst, Fin Mgt & Budget Operations
Kikkawa, Sidney; Management Analyst, Financial Management & Budget Operations
Yanashiro, Sharon; Assistant Administrative Officer

Sheriff's Department

Elson, Lieutenant Robert O.; Santa Clarita Sheriff Station
Quinn, Captain Michael I.; Santa Clarita Sheriff Station
Rampulla, Victor; Head, Financial Management
Shields, Earl M.; Operations Sergeant for Contract Law Enforcement Bureau

Fire Department

Gee, John Y.; Chief, Planning Division

Parks & Recreation Department

Kriste, Michael J.; Administrative Services Manager
Macumber, Bob; Administrative Services Manager
Reilly, Tom; Park Project Coordinator; Northern Region
Robertson, Curt; Administrator, Regional Park and Open Space District

Library Department

Flint, David; Director
Hanson, Roy V.; Head, Fiscal Services
Hungerford, Frederick M.; Head, Staff Services

Continued on next page.....

Appendix F (Continued)

GOVERNMENTAL OFFICIALS CONTACTED

Public Works Department

DeChellis, Patrick V.; Assistant Deputy Director; Programs Development Division
Gaydosh, Joseph D. P.E.; Street Lighting Section
Green, Terry; Supervisor, Palmdale Road Maintenance Division
Jonas, William B.; Assistant Deputy Director, Flood Maintenance Division
Squire, John; Section Head, Technical Services
Tong, Glen; Palmdale Road Maintenance Division
Witler, Barry, Traffic Modeling

Planning Department

Anderson, Richard
Holt, Pamela
Stark, Lee R. AICP; Regional Planner

Auditor/Controller

McCauley, Tyler; Deputy Auditor/Controller

CITY OF SANTA CLARITA

Kilcoyne, Ronald J.; Transportation Manager

Luppens, Dennis; Administrative Assistant & Budget Officer, Public Works Department

THE LEVANDER COMPANY, INC. 30429 Via Cambron, Rancho Palos Verdes, CA 90275 (310) 265-5555
FAX (310) 265-5557

MEMORANDUM

To: Newhall Ranch Company
Attention: Mr. David M. Crowder

Date: February 2, 1996

From: Dale H. Levander

File: 1453

Subject: **ESTIMATES OF NEWHALL RANCH FREEWAY/HIGHWAY AND OTHER TRANSIT-RELATED GOVERNMENTAL REVENUE GENERATION**

At your request, we have prepared an estimate of revenues which will be received by local, State, and Federal governmental agencies to be used for freeway, highway, commuter rail, and other transit purposes, both of a capital and ongoing operational nature. State revenues considered are those to be received by the California Department of Transportation (Caltrans), some of which are in turn redirected to the Metropolitan Transit Authority (MTA) in Los Angeles County.

In preparing the subject projections, we have utilized information from the following sources:

- Measures of population, housing, and taxable sales from the Fiscal Impact Analysis of Newhall Ranch (hereafter referred to as the FIA), prepared by The Levander Company, Inc., dated January 1996.
- Discussions with governmental officials concerning individual revenue items (and capital and ongoing maintenance costs in the case of Caltrans). These officials are identified in Appendix Table B1.
- Traffic projections prepared by Austin-Foust Associates.
- Gasoline pricing factor based on historic State sales and volume data provided by the State Board of Equalization (SBOE).
- Discussions with service station operators concerning gasoline sales as percentage of total sales volume.

In our analysis, we first identified all freeway/highway and other transit-related revenues which will result from development of Newhall Ranch. Next we divided these revenues into four principal categories: (1) those available to Caltrans for freeway and highway capital and operating purposes, (2) those available for rail and other transit facilities and operations, (3) those available to Los Angeles County and city governments for street, highway, and other transportation purposes, and (4) those to be directed to the Federal government for use out-of-state. All dollar estimates in this analysis are in current (1996) constant dollars.

1. SUMMARY CONCLUSIONS

As indicated in Table 1 immediately following, Newhall Ranch at buildout (assumed to be a 25-year period) will have and will be generating estimated freeway/highway and other transit-related revenues as follows:

	Year 25 (Annual)	Total Years 1-25
Caltrans	$ 10,907,174	$ 142,696,256
Other Transit	4,239,336	56,018,049
County/City Agencies	5,243,196	71,290,010
Out-of-State	2,555,685	31,946,061
Total	22,945,490	301,950,376

The above revenue estimates are based on current funding provisions and current levels of vehicle fleet fuel economy.

As shown in Table 1, revenues which are potentially available to Caltrans in Year 25 will equal approximately $159 per capita, compared to total current Caltrans expenditures of approximately $155 per capita. Please refer to Appendix Table A1 for detailed computations of individual revenue sources.

2. BASE MEASURES

Measures used in this analysis cover Year 25 buildout and the 25-year total development period. As indicated in Appendix Table A1, they include the following:

Table 1
NEWHALL RANCH FREEWAY/HIGHWAY
AND OTHER TRANSIT–RELATED REVENUE GENERATION
SUMMARY PROJECTIONS

	Revenue Recipient				
	Caltrans	Other Transit	County/City Agencies	Out–of–State Agencies	Total
YEAR 25 (ANNUAL @ BUILDOUT)					
State Gas Tax (Base + Proposition 111)	3,881,008	0	2,172,568	0	6,053,576
Federal Gas Tax	3,632,414	0	0	2,555,685	6,188,099
TP&D Sales Tax on Gasoline (Non–Hwy)	0	2,623,216	0	0	2,623,216
County Transportation Sales Tax	0	0	1,516,120	0	1,516,120
Los Angeles County Proposition A Sales Tax	1,292,896	1,131,284	808,060	0	3,232,240
Los Angeles County Proposition C Sales Tax	2,100,956	484,836	646,448	0	3,232,240
Total	10,907,274	4,239,336	5,243,196	2,555,685	22,945,490
---Per Capita	159.17	61.87	76.52	37.30	334.85
YEARS 1–25 TOTAL (TOTAL 25–YEAR DEVELOPMENT PERIOD)					
State Gas Tax (Base + Proposition 111)	48,512,595	0	27,157,095	0	75,669,689
Federal Gas Tax	45,405,177	0	0	31,946,061	77,351,238
TP&D Sales Tax on Gasoline (Non–Hwy)	0	32,790,199	0	0	32,790,199
County Transportation Sales Tax	0	0	23,227,850	0	23,227,850
Los Angeles County Proposition A Sales Tax	18,582,280	18,259,495	11,613,925	0	46,455,700
Los Angeles County Proposition C Sales Tax	30,196,205	6,968,355	9,291,140	0	46,455,700
Total	142,696,258	56,018,049	71,290,010	31,946,061	301,950,378
---Per Capita	3,455.62	1,356.57	1,726.40	773.82	7,312.21

Note: See Appendix Table A1 for detailed computations.

Source: Cal Dept of Transp (Caltrans); St Dept of Finance; State Bd of Equalization; State Dept of Motor Vehicles; The Levander Company, Inc.

- **Population and Housing Units.** From the Newhall Ranch FIA.

- **Vehicle Miles Travelled (VMT).** Year 25 estimates for Newhall Ranch prepared by Austin-Foust Associates; total for Years 1-25 calculated at 50% of Year 25; with an underlying factor of 7.4 miles per ADT.

- **Gasoline Usage.** Based on an estimated 23 miles per gallon, consistent with information provided by Caltrans, the California Energy Commission, and the Newhall Ranch EIR preparer.

- **Total Taxable Sales.** From Newhall Ranch FIA.

- **Gasoline Sales.** Estimated at $1.30 per gallon, based on 1994 data provided by the State Board of Equalization and discussions with service station operators.

As noted earlier, projected revenues in this analysis are based on current sources of revenues and current levels of fuel consumption. To the extent that increases occur in gasoline fuel efficiency (as measured by miles per gallon) and the use of alternative fuel sources, projected Newhall Ranch revenues would decrease unless alternate funding means were introduced. For example, were average fuel consumption to increase from the projected level of 23.0 miles per gallon to 30.0 miles per gallon (a probable maximum-increase scenario), projected revenues available for freeway/highway and other transit-related activities based on current funding sources would decrease by estimated 15%.

3. STATE GAS TAX

The State collects a gas tax of 18.0 cents per gallon of gasoline, a figure which includes:

- A tax of 9.0 cents per gallon in 1990.

- Increased as a result of Proposition 111 by 5.0 cents that year and 1.0 cents per year through 1994.

This tax is divided as follows:

- 6.46 cents (35.889%) to cities and counties (the latter for unincorporated areas); this amount technically intended for highway usage, but in reality available in cities for general fund activities.

- 11.54 cents (64.111%) to Caltrans for operations and capital facilities.

While the Executive Director of the California Transportation Commission is of the opinion that Caltrans' gas tax revenue is utilized primarily for operational purposes, from a technical standpoint this revenue is not restricted to a set percentage or amount for either operational or capital purposes.

4. FEDERAL GAS TAX

This tax is currently 18.4 cents per gallon of gasoline. Of this amount, 12.0 cents per gallon is directed to the Federal Highway Trust Fund, intended to be returned in large part to the states for capital facilities purposes. While the Federal government has discretion in the amount and timing of specific funding provided to the states, current law specifies that a minimum of 90% of Federal Highway Trust Fund revenues obtained from a given state be returned to this state. California is a "donor" state, in that it does not receive a full share return. For purposes of this analysis, we have assumed that Caltrans will receive the specified 90% minimum, with 10% remaining out-of-state. On this basis, Caltrans is projected to receive 10.8 cents per gallon, which equals 58.70% of the total 18.4% Federal gas tax.

5. TRANSPORTATION PLANNING & DEVELOPMENT (TP&D) SALES TAX ON GASOLINE

This revenue is obtained from sales taxes collected on gasoline sales. It is computed at the State's 6.0% portion of total sales taxes, which in Los Angeles County are currently 8.25%. This is a maximum amount, subject to rather complex formulas regarding funding availability within Caltrans. Irrespective, this funding is for rapid transit purposes, not for freeway and highway use.

6. COUNTY TRANSPORTATION SALES TAX

This revenue, applicable in all counties in the State, is drawn from a 0.25% portion of the sales tax, which as noted above total 8.25% in Los Angeles County. These funds are returned to each County's transportation funds.

7. LOS ANGELES COUNTY PROPOSITION A SALES TAX

This revenue is from a special 0.50% sales tax approved by voters in Los Angeles County, part of the total 8.25% sales tax collected in the County. These funds are specified for the following use:

- 25% to cities and counties (unincorporated portions) for street and highway usage.
- 35% for rapid transit rail.
- 40% discretionary; currently used primarily for bus services, but technically available for allocation to Caltrans projects.

Funds are administered by MTA. The proposition has no sunset clause.

8. LOS ANGELES COUNTY PROPOSITION C SALES TAX

This is a second 0.50% sales tax approved by the voters, specified for use as follows:

- 20% to cities and counties, similar to Proposition A.
- 5% for security, presently mainly for transit police.
- 10% for commuter rail capital facilities.
- 25% for transit-related highway capital improvements; thus potentially available in part at least for Caltrans activities, with recent allocations for development of HOV lanes in the County.
- 40% discretionary; currently used primarily for bonding of transit projects, but as with Proposition A technically available in part at least for Caltrans activities.

These funds also are administered by MTA.

APPENDIX

A. Supporting Tables

B. Governmental Officials Contacted

Table A1

NEWHALL RANCH FREEWAY/HIGHWAY
AND OTHER TRANSIT-RELATED REVENUE GENERATION
DETAILED COMPUTATIONS

1453Hwy3
SL500

02/01/96

	Year 25	Years 1-25 Average	Years 1-25 Total	Basis	Revenue Recipient
BASE MEASURES					
Population	88,524	41,294	41,294	County fiscal impact report projections	
Housing Units	24,650	14,558	14,558	County fiscal impact report projections	
Vehicle Miles Travelled Per Year (000's VMT)	773,512	388,756	9,568,905	50.0 % of yr 25 for yrs 1-25 average	
Gasoline Usage (Gallons)	33,630,973	16,815,487	420,387,163	23.0 miles per gallon	
Gasoline Sales ($)	43,720,265	21,860,132	546,503,312	1.30 $ per gallon	
Total Taxable Sales ($)	646,448,000	371,645,600	9,291,140,000	County fiscal impact report projections	
ALL FREEWAY/HIGHWAY-RELATED REVENUES ($)					
State Gas Tax (Base + Proposition 111)					
Local Subvention Share	2,172,568	1,086,284	27,157,095	35.889 % of total	City/Co Gov
Balance to Caltrans	3,881,008	1,940,504	48,512,595		Caltrans
Total	6,053,575	3,026,788	75,669,689	18.0 cents per gallon	
Federal Gas Tax					
To Other States & Non-Highway Trust Fund	2,555,885	1,277,942	31,948,051	41.30 % of total	Out-of-St
Balance to Caltrans	3,632,414	1,816,207	45,405,177		Caltrans
Total	6,188,099	3,094,050	77,351,238	18.4 cents per gallon	
TP&D Sales Tax on Gasoline (Non-Hwy)	2,623,216	1,311,608	32,790,189	6.0 % taxable sales---gasoline only	Oth Trans
County Transportation Sales Tax	1,816,120	929,114	23,227,850	0.25 % taxable sales	City/Co Gov
Los Angeles County Proposition A Sales Tax					
To Cities/County (Operations & Capital)	908,060	464,557	11,613,925	25.0 % of total	City/Co Gov
To Rail Transit (All Capital)]	1,131,284	650,360	16,259,485	35.0 % of total	Oth Trans
Discretionary (Operations & Capital)	1,292,896	743,291	18,582,280	40.0 % of total	Caltrans (a)
Total	3,232,240	1,858,228	46,455,700	0.50 % taxable sales (excludes unallocated extras)	
Los Angeles County Proposition C Sales Tax					
To Cities/County (Operations & Capital)	646,448	371,646	9,291,140	20.0 % of total	City/Co Gov
To Security (Transit Police & Related)	161,612	92,911	2,322,785	5.0 % of total	Oth Trans
To Commuter Rail (Capital Only)	323,224	185,823	4,645,570	10.0 % of total	Oth Trans
To Transit Related Hwy Impr (Capital Only)	908,060	464,557	11,613,925	25.0 % of total	Caltrans (a)
Discretionary (Operations & Capital)	1,292,896	743,291	18,582,280	40.0 % of total	Caltrans (a)
Total	3,232,240	1,858,228	46,455,700	0.50 % taxable sales (excludes unallocated extras)	
Total All Highway-Related Revenues	22,945,490	12,076,015	301,950,376		
---Per Capita	334.85	292.49	7,312.21		

Continued on next page.....

Table A1 (Continued.....page 2)
NEWHALL RANCH FREEWAY/HIGHWAY
DETAILED COMPUTATIONS

1453Hwy3
SL500
02/01/88

	Year 25	Year 1–25 Average	Year 1–25 Total	Basis	Revenue Recipient
PROBABLE EXCLUSIONS FROM CALTRANS FREEWAY/HIGHWAY USAGE					
State Gas Tax (Base + Proposition 111)					
Local Subvention Share	2,172,568	1,086,284	27,157,095	See page 1 of this table	Cty/Co Gov
Federal Gas Tax					
To Other States & Non–Highway Trust Fund	2,555,885	1,277,842	31,946,061	See page 1 of this table	Out–of–St
TP&D Sales Tax on Gasoline (Non–Hwy)	2,623,216	1,311,608	32,790,199	See page 1 of this table	Oth Trans
County Transportation Sales Tax	1,616,120	929,114	23,227,850	See page 1 of this table	Cty/Co Gov
Los Angeles County Proposition A Sales Tax					
To Cities/County (Operations & Capital)	808,060	464,557	11,613,925	See page 1 of this table	Cty/Co Gov
To Rail Transit (All Capital)]	1,131,284	650,380	16,259,495	* * * * * *	Oth Trans
Total	1,939,344	1,114,937	27,873,420		
Los Angeles County Proposition C Sales Tax					
To Cities/County (Operations & Capital)	646,448	371,646	9,291,140	See page 1 of this table	Cty/Co Gov
To Security (Transit Police & Related)	161,612	92,911	2,322,785	* * * * * *	Oth Trans
To Commuter Rail (Capital Only)	323,224	185,823	4,645,570	* * * * * *	Oth Trans
Total	1,131,284	650,380	16,259,495		
Total All Hwy–Related Rev Exclusions	12,038,216	6,370,165	159,254,120		
NET PROBABLE AVAILABLE FOR CALTRANS FREEWAY/HIGHWAY USAGE	10,907,274	5,707,850	142,696,258		
---Per Capita	159.17	136.22	3,455.62		

a
Possible allocation by MTA of all, part, or none to Caltrans.

Source: Cal Dept of Transp (Caltrans); St Dept of Finance; State Bd of Equalization; State Dept of Motor Vehicles; The Levander Company, Inc.

Table A2
STATE & COUNTY STATISTICAL MEASURES
RELATED TO HIGHWAY/FREEWAY FUEL CONSUMPTION & FUEL SALES

1453Hwy1
SL500
01/15/96

	State of California	Los Angeles County	Orange County	Marin County
DEMOGRAPHIC DATA 1/1/95				
Population	32,344,074	9,244,646	2,641,355	245,536
Housing Units	11,756,636	3,236,269	915,867	102,378
Population Per Housing Unit	2.75	2.86	2.88	2.40
TAXABLE SALES 1994				
Amount ($000's)				
Total	285,974,211	76,898,666	26,474,932	2,564,629
Service Station	16,512,028	4,922,250	1,256,014	125,378
Gasoline	15,465,798	4,582,624	1,169,349	82,146
---Est %	93.1	93.1	93.1	65.0
Per Capita ($)				
Total	8,842	8,318	10,023	10,445
Service Station	514	532	476	515
Gasoline	478	496	443	335
Per Residential Unit ($)				
Total	24,320	23,762	28,907	25,051
Service Station	1,413	1,521	1,371	1,234
Gasoline	1,315	1,416	1,277	802
VEHICLE REGISTRATIONS 12/31/94 (EXCLUDING FEE-EXEMPT VEHICLES)				
Number				
Automobiles	16,949,468	4,712,314	1,509,535	167,913
Trucks	5,366,373	1,005,059	328,560	33,618
Trailers	2,706,284	271,485	96,872	10,326
Motorcycles	527,686	110,560	40,471	5,994
Total	25,022,125	5,988,858	1,932,967	211,857
Per Capita				
Automobiles	0.52	0.51	0.57	0.68
Trucks	0.17	0.11	0.12	0.14
Trailers	0.08	0.03	0.04	0.04
Motorcycles	0.02	0.01	0.02	0.02
Total	0.77	0.65	0.73	0.86
Per Residential Unit				
Automobiles	1.44	1.46	1.65	1.64
Trucks	0.46	0.31	0.36	0.33
Trailers	0.23	0.08	0.11	0.10
Motorcycles	0.04	0.03	0.04	0.06
Total	2.13	1.85	2.11	2.07

Continued on next page.....

Table A2 (Continued.....page 2)
STATE & COUNTY STATISTICAL MEASURES
RELATED TO HIGHWAY/FREEWAY FUEL CONSUMPTION & FUEL SALES

1453Hwy1
SL500
01/15/96

	State of California	Los Angeles County	Orange County	Marin County
GASOLINE GALLONS 1994				
Average Price Per Gallon ($)	1.163			
Total Amount	13,298,192,664	3,940,347,429	1,005,459,187	70,632,588
Per Capita	411.1	428.2	380.7	287.7
Per Residential Unit	1,130.9	1,217.6	1,097.8	689.9
Per Vehicle (Total Vehicles)	531.5	657.9	520.2	333.4
MILEAGE 1994				
Average Miles Per Gallon	23.0			
Per Capita	9,456	9,803	8,755	6,616
Per Residential Unit	26,011	28,004	25,250	15,868
Per Vehicle (Total Vehicles)	12,224	15,133	11,984	7,668
1/2-CENT SALES TAX ON TOTAL TAXABLE SALES ($)				
Factor (% of Sales)	0.50	(Disregards allocations of unallocated @ State and county levels)		
Amount	1,429,871,055	384,493,330	132,374,660	12,823,145
Per Capita	44.21	41.59	50.12	52.23
Per Residential Unit	121.60	118.81	144.53	125.25
20% of Per Capita (Prop C Local)	8.84	8.32	10.02	10.45
25% of Per Capita (Prop A Local)	11.05	10.40	12.53	13.06

Source: State Dept of Finance; State Bd of Equalization; State Dept of Motor Vehicles; The Levander Company, Inc.

Table B1

GOVERNMENTAL OFFICIALS CONTACTED

LOS ANGELES COUNTY METROPOLITAN TRANSIT AUTHORITY (MTA)

Berlin, Rene; Manager, San Fernando Valley & North County Area Team
Feerst, Jody; Interim Manager, Congestion Management Program
Finnegan, Steve; Manager, Transportation Improvement Program
Kamhi, Victor; Project Manager IV, South Bay Area Team
Lewis, William; Manager, Special Projects

CALIFORNIA TRANSPORTATION COMMISSION

Oldham, Chuck; Deputy Director
Remen, Robert; Executive Director

CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS)

Azavedo, Dennis; Chief, Statewide Travel Analysis Branch
Halm, Al; Research Analyst
Kiff, Martin; Finance Director
Nordahl, Richard A.; Chief, Goods Movement Analysis Branch, Transp Planning

CALIFORNIA ENERGY COMMISSION

Stamets, Leigh; Energy Commission Supervisor II

CALIFORNIA DEPARTMENT OF MOTOR VEHICLES (DMV)

Crimitz, Mike; Research Analyst

STATE BOARD OF EQUALIZATION

Wang, Wun Chi; Research Analyst

STATE CONTROLLER'S OFFICE

Byall, Bill; Fiscal Analyst
Fong, Ann; Fiscal Analyst
Smart, David; Fiscal Analyst

LOS ANGELES COUNTY

DeChellis, Patrick; Assistant Deputy Director; Program Development Division
Goodman, John Christopher; Management Analyst, Fin Mgt & Budget Oper

Appendix 8.0

CHAPTER 22.24
AGRICULTURAL ZONES

PARTS:

1. General Regulations
2. A-1 Light Agricultural Zone
3. A-2 Heavy Agricultural Zone
4. A-2-H Zone — Heavy Agriculture, Including Hog Ranches

PART 1
GENERAL REGULATIONS

SECTIONS:

22.24.010 Establishment — Purpose.
22.24.020 Agricultural zones designated.
22.24.030 Use restrictions.
22.24.040 Wild animals prohibited — Exceptions.
22.24.050 Dogs.
22.24.060 Conditional use permits — Additional conditions imposed.

22.24.010 ESTABLISHMENT — PURPOSE. The agricultural zones are established to permit a comprehensive range of agricultural use in areas particularly suited for agricultural activities. Permitted uses are intended to encourage agricultural pursuits and such other uses required for, or desired by, the inhabitants of the community. An area so zoned may provide the land necessary to permit low-density single-family residential development and outdoor recreational and needed public and institutional facilities. *(Ord. 1494 Ch. 2 Art. 2 Sec. 230, 1927.)*

22.24.020 AGRICULTURAL ZONES DESIGNATED. As used in this Title 22, *agricultural zone* means Zone A-1, Zone A-2 or Zone A-2-H. *(Ord. 1494 Ch. 2 Art. 2 Sec. 231, 1927.)* .

22.24.030 USE RESTRICTIONS. A person shall not use any premises in any agricultural zone except as hereinafter specifically permitted in this Title 22, and subject to all regulations and conditions enumerated in this title. *(Ord. 1494 Ch. 2 Art. 2 Sec. 232,1927.)*

22.24.040 WILD ANIMALS PROHIBITED — EXCEPTIONS. A person shall not keep or maintain any wild animal of any age in any residential zone, whether such wild animal is kept or maintained for the personal use of the occupant or otherwise, except that for each dwelling unit the occupant may keep for his personal use:

A. The following wild animals:

A. The following wild animals:

- **Tropical fish excluding caribe.**
- **White mice and rats.**

B. The following wild animals, but in no event more than three such animals in any combination on a lot or parcel of land having an area of less than 10,000 square feet per dwelling unit:

- **Canaries.**
- **Chinchillas.**
- **Chipmunks.**
- **Finches.**
- **Gopher snakes.**
- **Guinea pigs.**
- **Hamsters.**
- **Hawks.**
- **King snakes.**
- **Marmoset monkeys.**
- **Mynah birds.**
- **Parrots,** parakeets, amazons, cockateels, cockatoos, lories, lorikeets, love birds, macaws and similar birds of the psittacine family.
- **Pigeons.**
- **Ravens.**
- **Squirrel monkeys.**
- **Steppe** legal eagles.
- **Toucans.**
- **Turtles.**
- **White doves.**

(Ord. 1494 Ch. 2 Art. 2 Sec. 232.3, 1927.)

22.24.050 DOGS. A person shall not keep or maintain any dog over four months of age in any agricultural zone, whether kept or maintained for the personal use of such person or otherwise, except that for each dwelling unit the occupant may keep for his personal use not more than three such dogs. *(Ord. 1494 Ch. 2 Art. 2 Sec. 232.5, 1927.)*

22.24.060 CONDITIONAL USE PERMITS — ADDITIONAL CONDITIONS IMPOSED. Every conditional use permit for any use listed in this section shall be subject to additional conditions as listed herein. The Hearing Officer, in granting the conditional use permit, may not change or modify any of the following, which are conditions of use:

A. **Health Retreats.**

1. Such retreat shall be located on a lot or parcel of land having an area of not less than two acres.

2. Not more than 10 persons, including staff, patrons and guests, shall be in residence at such retreat any one time; and

3. All activities shall be conducted as a part of a live-in health-care program only, the providing of services for persons maintaining residence for less than 24 hours shall be prohibited; and

4. All exercise, gymnasium, therapy and similar equipment, and areas used for sunbathing, shall be located within a building or shall be effectively screened so as not to be visible to surrounding property. Such screening shall consist of walls, screening fences or suitable landscaping; and

5. All patrons shall be transported to and from the premises unless otherwise expressly authorized by the Hearing Officer; and

6. Where visible to surrounding property, all structures housing such retreat shall be compatible with the dwellings and structures in the vicinity thereof; and

7. No signs shall be permitted in conjunction with such use.

B. **Plant Nursery, Retail.**

1. Such plant nursery shall be located on a lot or parcel of land having an area of not less than five acres.

2. Products offered for sale shall be limited to nursery stock and related materials incident to the planting, care and maintenance of plants, including fertilizer, pesticides, seeds and planting containers, but shall exclude general building materials, hardware or the sale and rental of tools other than for soil preparation and general landscaping.

3. All storage, display and sale of products other than nursery stock shall be conducted within a completely enclosed building or within an area enclosed by a solid wall or solid fence and gate not less than five feet nor more than six feet in height.

4. No storage shall be higher than the enclosure surrounding it. *(Ord. 85-0195, Sec. 9 (part); Ord. 1494 Ch. 2 Art. 2 Sec. 246, 1927.)*

PART 3 — CHAPTER 22.24
A-2 HEAVY AGRICULTURAL ZONE

SECTIONS:

22.24.120 Permitted uses.
22.24.130 Accessory uses.
22.24.140 Uses subject to Director's review and approval.
22.24.150 Uses subject to permits.
22.24.160 Wild animals prohibited — Exceptions.
22.24.170 Development standards.
22.24.180 Oil wells. Assignment of savings and loan certificates and shares.
22.24.190 Oil wells. Insurance agreement.

22.24.120 PERMITTED USES. Premises in Zone A-2 may be used for:

A. The following uses:

— **Adult residential** facilities, limited to six or fewer persons.

— **Crops** — Field, tree, bush, berry and row, including nursery stock.

— **Foster** family homes.

— **Group homes,** children, limited to six or fewer persons.

— **Residences,** single-family, subject to the standards provided in Section 22.20.105.

— **Small family** day care homes.

— **Small family** homes, children.

B. The following agricultural uses, provided all buildings or structures used in connection therewith shall be located not less than 50 feet from any street or highway or any building used or designed for human habitation:

— **Animal hospitals.**

— **Animal shelters** and pounds,

— **Aquaria.**

— **Dairies,** including the processing and sale of dairy products from milk lawfully produced on the premises on a lot or parcel of land having, as a condition of use, an area of not less than 10 acres.

— **Dog kennels.**

— **Dog training schools.**

— **Feed mills,** on a lot or parcel of land having, as a condition of use, an area of not less than five acres.

— **Greenhouses,** on a lot or parcel of land having, as a condition of use, an area of not less than one acre.

— **Hogs,** the maintenance of not to exceed five weaned hogs or pigs, subject as conditions of use, to the requirements of Subsection C of Section 22.24.070.

— **Livestock feed yards,** on a lot or parcel of land having, as a condition of use, an area of not less than 10 acres.

— **Livestock sales yards,** on a lot or parcel of land having, as a condition of use, an area of not less than five acres.

— **Manure,** the spreading, drying and sale of, provided no shaking or pulverizing machinery is used in connection therewith, on a lot or parcel of land

having, as a condition of use, an area of not less than 10 acres.

— **Mushroom farms.**

— **The raising of horses** and other equine, cattle, sheep and goats, including the breeding and training of such animals, on a lot or parcel of land having, as a condition of use, an area of not less than one acre, provided that:

a. On lots or parcels of land having an area of less than five acres, eight such animals may be kept or maintained per acre in conjunction with such use; and

b. On lots or parcels of land having an area of five acres or more, there shall be no limitation as to the number of such animals which may be kept or maintained in conjunction with such use.

— **Raising of poultry,** fowl, birds, rabbits, chinchilla, nutria, mice, frogs, fish, bees, earthworms, and other similar animals of comparable nature, form and size, including hatching, fattening, marketing, sale, slaughtering, dressing, processing and packing, and including eggs, honey or similar products derived therefrom, on a lot or parcel of land having, as a condition of use, an area of not less than one acre.

— **Riding academies and stables,** with the boarding of horses, on a lot or parcel of land having, as a condition of use, an area of not less than five acres.

— **Riding and hiking trails,** but excluding trails for motor vehicles.

— **Veterinaries.**

C. The following uses, provided they are located at least 300 feet from any public park, or any area in any residential zone:

— **Fairgrounds of a public character,** when permanently located, including such commercial uses as are normally accessory or appurtenant thereto.

— **Fruit and vegetable** packing plants.

— **Linseed, cottonseed and coconut oil** processing plants.

D. The following additional uses:

— **Campgrounds, picnic areas, trails** with overnight camping facilities, including fishermen's and hunters' camps, but not including structures for permanent human occupancy,

— **Camps, youth.**

— **Logging operations,** involving only the actual controlled cutting and removing of trees with no sawmill operations.

— **Oil wells,** including the installation and use of such equipment, structures and facilities as are necessary or convenient for all drilling and producing operations customarily required or incidental to usual oil field practice, including but not limited to, the initial separation of oil, gas and water, and for the storage, handling, recycling and transportation of such oil, gas and water to and from the premises. This subsection does not permit refineries or absorption plants. The use permitted by this subsection is subject to the following conditions, except that by specific action in each instance the Commission may waive or modify any one or more of such conditions if it finds that such waiver or modification will not result in material detriment to the public welfare or to the property of other persons located in the vicinity thereof:

1. Drilling shall not be within 300 feet of any residence, except the residence of the owner of the land on which the well is located, and except a residence

located on land which, at the time of the drilling of the well, is under lease to the person drilling the well.

2. If the drilling is within 500 feet of one or more residences and except a residence located on land which, at the time of the drilling of the well, is under lease to the person drilling the well, that:

a. All derricks used in connection with the drilling of the well shall be enclosed with fire-resistant and soundproofing material unless the heads of all families occupying any residence within 1,320 feet (one quarter mile) of the drilling site, other than of a residence described at the beginning of this paragraph 2, file a written waiver with the Commission.

b. All drilling and pumping equipment shall be operated by muffled internal-combustion engines or by electric motors;

c. Materials, equipment, tools or pipe used for either drilling or producing operations at the well hole shall not be delivered to or removed from the drilling site except between the hours of 8:00 a.m. and 6:00 p.m. of any day, except in case of emergency.

3. The derrick used pursuant to this section to drill any well hole or to repair, clean out, deepen or redrill any completed or drilling well, shall be removed within 90 days after completion or abandonment of any well.

4. Within 90 days after abandonment of any well, earthen sumps used in drilling or production, or both, shall be filled, and the drilling site restored as nearly as practicable to its original condition.

5. Any unattended earthen sump located within 1,320 feet (¼ mile) of the nearest highway, or within 2,640 feet (½ mile) of 20 or more residences shall be enclosed with a fence not less than five feet high, mounted on steel posts with not less than three strands of barbed wire around the top. Such fence shall be constructed of woven wire fencing or equivalent of not greater than six-inch mesh.

6. When private roads to wells are constructed, that portion of such roads lying within 200 feet of an oiled or surfaced public highway, or of an existing residence, shall be oiled or surfaced.

7. A well hole, derrick or tank shall not be placed within 20 feet of any public highway.

8. Except as provided in Section 22.24.180, a faithful performance bond of $2,000.00 shall be filed with the Board of Supervisors for each well for the first five wells. Where more than five wells are drilled, $10,000.00 in bonds shall be the total required of all oil operators. Either such bond shall include as obligees all persons who may be damaged or annoyed by such use, or a policy of insurance shall be filed with the Board of Supervisors having a maximum amount of recovery not less than the amounts required of a bond, directly insuring all persons who may be damaged or annoyed by such use:

9. All drilling and producing operations shall conform to all applicable fire and safety regulations.

10. Not more than two production tanks, neither to exceed 1,000 barrels capacity, shall remain on the premises following completion of production tests at each well; provided, however, that this condition shall not restrict the maintenance of additional tanks for storage and shipping.

11. Proven technological improvements in drilling and production

methods shall be adopted as they may become, from time to time, available if capable of reducing factors of nuisance and annoyance.

12. All drilling and production operations shall be conducted in such a manner as not to constitute a public nuisance.

13. Signs shall not be constructed, erected, maintained or placed on the premises, or any part thereof, except those required by law or ordinance to be displayed in connection with the drilling or maintenance of the well.

14. Suitable and adequate sanitary toilet and washing facilities shall be installed, and maintained to a clean and sanitary condition at all times.

— **Parks, playgrounds and beaches,** with all appurtenant facilities customarily found in conjunction therewith.

— **Youth hostels.**

(Ord. 85-0004, Sec. 30; Ord. 82-0130 Sec. 4 (part), 1982; Ord. 1494 Ch. 2 Art. 2 Sec. 242, 1927.)

22.24.130 ACCESSORY USES. Property in Zone A-2 may be used for:

A. The following accessory uses, subject to the same limitations and conditions provided in Section 22.20.080 (Zone R-1):

— **Accessory buildings** and structures.

— **Animals,** domestic and wild, maintained or kept as pets or for personal use as provided in Part 3 of Chapter 22.52.

— **Building materials,** storage of.

— **Detached living quarters** for guests or servants.

— **Living quarters** for servants, attached to such residence.

— **Room rentals.**

B. Stands for the display and sale of any products, the production of which is permitted in Zone A-2 by Section 22.24.120, and which have lawfully been produced on such lot or parcel of land, provided:

1. That said stand shall be exclusively of wood-framed construction (except the floor).

2. That said stand shall have a floor area of not more than 300 square feet.

3. That said stand shall be located not nearer than 20 feet from any street or highway upon which such lot or parcel fronts, or adjacent residences.

4. That said stand will be on a parcel of land not less than one acre in area.

C. Signs as provided in Part 10 of Chapter 22.52.

(Ord. 85-0004, Sec. 30; Ord. 1494 Ch. 2 Art. 2 Sec. 242.1, 1927.)

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22.24.140 USES SUBJECT TO DIRECTOR'S REVIEW AND APPROVAL. If site plans therefor are first submitted to and approved by the Director, premises in Zone A-2 may be used for:

A. The following uses, subject to the same limitations and conditions provided in Section 22.20.090 (Zone R-1):

– **Access to property** lawfully used for a purpose not permitted in Zone A-1.

– **Domestic violence shelters,** subject to the standards and limitations specified in Section 22.56.1758. *(Added by Ord. No. 88-0005, Eff. 1/12/88.)*

– **Grading projects,** off-site transport.

– **Large family** day care homes.

– **Mobilehomes** used as a residence during construction.

– **Model homes.**

– **Parking lots,** as a transitional use.

– **Real estate tract offices,** temporary.

– **Residential** care facilities.

B. The following additional uses:

– **Child care centers** where operated in conjunction with and incidental to a legally established accredited school offering instruction required to be taught by the Education Code.

– **Christmas** trees and wreaths, the sale of, between December 25th, both dates inclusive, to the extent permitted by other statutory and ordinance provisions. Any structures, facilities and materials used for the sale of trees and wreaths shall be removed from the premises by December 31st of the calendar year, and the property restored to a neat condition.

– **Group homes,** children, having seven or more children.

– **Schools,** through grade 12, accredited, including appurtenant facilities, which offer instruction required to be taught in the public schools by the Education Code of the State of California in which no pupil is physically restrained, but excluding trade or commercial schools.

– **Signs** as provided in Part 10 of Chapter 22.52.

(Ord. 85-0004, Sec. 31 and 32; Ord. 1494 Ch. 2 Sec. 242.2, 1927.)

22.24.150 USES SUBJECT TO PERMITS. Property in Zone A-2 may be used for:

A. The following uses, provided a conditional use permit has first been obtained as provided in Part 1 of Chapter 22.56, and while such permit is in full force and effect in conformity with the conditions of such permit for:

– **Adult day care facilities.**

– **Adult residential facilities,** having seven or more persons.

– **Airports.**

– **Amphitheaters** having a seating capacity of not to exceed 500 seats, but excluding drive-in theaters.

– **Arboretums** and horticultural gardens.

– **Athletic fields,** excluding stadiums.

– **Churches,** temples or other places used exclusively for religious worship, including customary incidental educational and social activities in conjunction therewith.

– **Circus winter quarters.**

– **Child care centers,** except as other wise provided in Section 22.24.140.

– **Colleges and universities,** including appurtenant facilities giving advanced academic instruction approved by the State Board of Education or other recognized accrediting agency, but excluding trade or commercial schools.

– **Communication** equipment buildings.

– **Convents and monasteries** where established on the same lot or parcel of land as a legally established church or school.

– **Correctional institutions,** including jails, farms and camps.

— **Density bonus,** subject to the provisions of Section 22.56.202. *(Ord. No. 86-0170, Eff. 11/7/86)*

— **Density-controlled developments,** subject to the conditions of Section 22.56.205.

— **Disability rehabilitation and training centers,** on a lot or parcel of land having an area of not less than one acre, where sheltered employment or industrial-type training is conducted.

— **Earth stations.**

— **Electric distribution substations,** electric transmission substations and generating plants, including microwave facilities used in conjunction with any one thereof.

— **Farm** equipment repair shops.

— **Farm equipment — Storage,** sales and rental.

— **Farm** labor camps.

— **Fertilizer plants.**

— **Fire stations.**

— **Gas metering and control stations,** public utility.

— **Golf courses,** including the customary clubhouse and appurtenant facilities.

— **Golf driving range.**

— **Grange halls.**

— **Grading projects,** off-site transport, where more than 100,000 cubic yards of material are to be transported, subject to the conditions and limitations of Sections 22.56.210 and 22.56.230.

— **Grading projects,** on-site, but excluding projects where the Commission or the Board of Supervisors has previously considered such grading proposal as indicated by approval of an environmental document incorporating consideration of such grading project.

— **Guest ranches.**

— **Heavy equipment** training schools, on a lot or parcel of land having, as a condition of use, an area of not less than 100 acres.

— **Health retreats,** subject to the condition sof Section 22.24.060.

— **Heliports.**

— **Helistops.**

— **Hospitals.**

— **Juvenile halls.**

— **Land** reclamation projects.

— **Landing strips.**

— **Libraries.**

— **Living quarters** for persons employed or deriving a major portion of their income on the premises, if occupied by such persons and their immediate families.

— **Menageries,** zoos, animal exhibitions or other similar facilities for the keeping or maintaining of wild animals, except as otherwise provided in Section 22.24.160.

— **Microwave stations.**

— **Mobilehome parks,** subject to the conditions of Chapter 22.52.

— **Mobilehomes** for use by a caretaker and his immediate family in accordance with Part 6 of Chapter 22.52.

— **Mobilehomes** used as a residence of the owner and his family during the construction by such owner of a permanent single-family residence, but only while a building permit for the construction of such residence is in full force and effect and in no event longer than one year in addition to that provided for in Section 22.24.140.

— **Model homes,** except as otherwise provided in Section 22.20.090 in those areas where such uses are specifically mentioned in the General Plan.
(Ord. 87-0033, Sec. 1, 1987)

— **Motion picture sets,** including the temporary use of domestic and wild animals in motion picture and television production, provided the said animals are kept or maintained pursuant to all regulations of the Los Angeles County Department of Animal Control, and are not retained on the premises for a period exceeding 60 days. The Director may extend such time period for not to exceed 30 additional days subject to the provisions of Part 12 of Chapter 22.56 on Director review.

— **Museums.**

— **Nudist camps.**

— **Observatories.**

— **Oudoor festivals.**

— **Pest** control operators.

— **Plant nursery,** retail, subject to the conditions of Section 22.40.060.

— **Police stations.**

— **Publicly** owned uses necessary to the maintenance of the public health, convenience or general welfare in addition to those specifically listed in this section.

— **Public** utility service centers.

— **Public utility** service yards.

— **Radio and television stations and towers,** but not including studios.

— **Recreation clubs,** private, including tennis, polo and swimming; where specifically designated a part of an approved conditional use permit, such use may include a pro shop, restaurant and bar as appurtenant uses.

— **Recreational trailer parks,** as provided in Part 6 of Chapter 22.52.

— **Refreshment stands,** operated in conjunction with and intended to serve the patrons of a use permitted in Zone A-2., but not as a separate enterprise.

— **Residence,** caretaker's; a conditional use permit may be granted for a caretaker's residence even though the number of existing residences on the lot or parcel of land is the maximum number permitted by Part 2 of Chapter 22.52.

— **Residence, senior citizen,** subject to the conditions listed in Section 22.56.235.

— **Revival meetings,** tents.

— **Rifle,** pistol, skeet or trap ranges.

— **Road construction** and maintenance yard.

— **Rodeos,** but not including horse racing.

— **Sawmills,** only in conjunction with logging operations.

— **Sewage treatment plants.**

— **Signs,** as provided in Part 10 of Chapter 22.52.

— **Solid fill projects.**

— **Stations:** bus, railroad, taxi.

— **Storage,** temporary, of materials and construction equipment used in construction or maintenance of streets and highways, sewers, storm drains, underground conduits, flood control works, pipelines and similar uses for a period not to exceed one year.

— **Subdivision directional signs** subject to the limitations and conditions of Part 8 of Chapter 22.56.

— **Telephone repeater stations.**

— **Terminals,** bus and railroad.

— **Theaters,** drive-in.

— **Theaters,** amphitheaters having a sitting capacity of not to exceed 500 seats, but excluding drive-in theaters.

— **Townhouses,** subject to the conditions of Section 22.56.255.

— **Water reservoirs,** dams, treatment plants, gaging stations, pumping stations, tanks, wells and any use normal and appurtenant to the storage and distribution of water.

— **Wild animals,** the keeping of, either individually or collectively for private or commercial purposes except as otherwise provided in Section 22.24.160.

B. The following uses, provided the specified permit has first been obtained, and while such permit is in full force and effect in conformity with the conditions of such permit for:

— **Cemeteries** as provided in Part 4 of Chapter 22.56.

— **Explosives** storage as provided in Part 5 of Chapter 22.56.

— **Mobilehomes,** individual placement of a mobilehome containing one dwelling unit in lieu of a single-family residence on a lot or parcel of land having as a condition of use the area requirement of the zone but in no case with an area of less than two and one-half acres, as provided in Part 6 of Chapter 22.56.

— **Surface mining operations** as provided in Part 9 of Chapter 22.56.

— **Temporary** uses as provided in Part 14 of Chapter 22.56.

(Ord. 85-0004 Sec. 33; Ord. 83-0007 Sec. 2 (part), 1983; Ord. 83-0006 Sec. 10, 1983; Ord. 82-0005 Sec. 2 (part), 1982; Ord. 82-0003 Sec. 9 (part), 1982; Ord. 1494 Ch. 2 Art. 2 Sec. 242.3, 1927.)

22.24.160 WILD ANIMALS PROHIBITED — EXCEPTIONS. A person shall not keep or maintain any wild animal in Zone A-2, whether such wild animals are kept or maintained either individually or collectively for either private or commercial purposes except as otherwise provided in Section 22.24.120 or as specifically provided herein:

A. The following animals are permitted, provided such animals are kept and maintained at a place where the keeping of domestic animals is permitted:

— **Alpacas.**

— **Anoas.**

— **Antelopes.**

— **Armadilloes.**

— **Badgers.**

— **Beavers.**

— **Camels.**

— **Chamoises.**

— **Deer.**

— **Foxes.**

— **Giraffes.**

— **Kangaroos.**

— **Koalas.**
— **Llamas.**
— **Minks.**
— **Ostriches.**
— **Otters.**
— **Peacocks.**
— **Porcupines.**
— **Prairie dogs.**
— **Raccoons.**
— **Reindeer.**
— **Seals.**
— **Wallabies.**
— **Zebras.**
— **Other similar animals** which, in the opinion of the Commission, are neither more obnoxious nor detrimental to the public welfare than the animals enumerated in this subsection.

B. If a permit has first been obtained as provided in Part 1 of Chapter 22.56, the following uses, while such permit is in full force and effect and in conformity with the conditions of such permit:

— **Menageries, zoos, animal exhibitions,** or other similar facilities for the keeping or maintaining of wild animals.

— **Wild animals,** the keeping of, either individually or collectively for private or commerical purposes, except as otherwise provided in Subsection A of this section. *(Ord. 1494 Ch. 2 Art. 2 Sec. 242.5, 1927.)*

22.24.170 DEVELOPMENT STANDARDS. A. Front, side and rear yards shall be provided as required in Zone R-1.

B. Single-family residential uses shall be subject to all development standards applying to Zone R-1, except as otherwise specified in this Title 22.

C. Premises in Zone A-2 shall provide the required area as specified in Part 2 of Chapter 22.52 *(Ord. 83-0006 Sec. 11, 1983; Ord. 1494 Ch. 2 Art. 2 Sec. 242.6, 1927.)*

22.24.180 OIL WELLS — ASSIGNMENT OF SAVINGS AND LOAN CERTIFICATES AND SHARES. In lieu of the bond required by Section 22.24.120, the oil well operator may deposit with the Clerk of the Board of Supervisors and assign to the County, savings and loan certificates or shares equal in amount to the required amount of the bond. Such deposit and assignment shall comply with all of the provisions and conditions of Chapter 4.36 of this code. *(Ord. 1494 Ch. 2 Art. 2 Sec. 243, 1927.)*

22.24.190 OIL WELLS — INSURANCE AGREEMENT. If an oil well operator deposits and assigns savings and loan certificates and shares in lieu of filing the bond required by Section 22.24.120, and does not file with the Board of Supervisors the policy of insurance described in said Section 22.24.120, he also shall file a written agreement with the Board of Supervisors that the County may, and the County may, satisfy, either in whole or in part from such certificates or shares, any final judgement, the payment of which would have been guaranteed by such bond or policy of insurance. *(Ord. 1494 Ch. 2 Art. 2 Sec. 244, 1927.)*

PART 4 — CHAPTER 22.32
M-1½ RESTRICTED HEAVY MANUFACTURING ZONE

SECTIONS:

22.32.100 Permitted uses.
22.32.110 Accessory uses.
22.32.120 Uses subject to Director's review and approval.
22.32.130 Uses subject to permits.
22.32.140 Development standards.

22.32.100 PERMITTED USES. Premises in Zone M-1½ may be used for any use, except that a use listed in Sections 22.32.110. 22.32.120 and 22.32.130 is permitted only as provided in such sections, and the following uses are prohibited:

— **Adult day care facilities.**

— **Adult residential facilities.**

— **Dwelling units,** except one dwelling unit within a building on the same lot or parcel of land which is legally being used so as to require the continuous supervision of a caretaker and his immediate family, and except dwelling units within a building on premises used for agricultural purposes, which dwelling units are occupied only by persons employed on the same premises and their immediate families.

— **Family day care homes.**

— **Foster family homes.**

— **Group homes,** children.

— **Hospitals.**

— **Hotels.**

— **Mobilehomes** or recreational vehicles for sleeping or residential purposes, except:

1. In cases in which this section permits the use of a dwelling unit for a caretaker in Zone M-1½, a mobilehome containing one dwelling unit or a recreational vehicle may be used in lieu of such dwelling unit for not to exceed six consecutive months in any 12-month period; or

2. As otherwise provided in Section 22.32.130.

— **Mobilehome** parks.

— **Motels.**

— **Rooming** and boarding houses.

— **Schools.**

— **Signs,** except as permitted in Part 10 of Chapter 22.52.

— **Small family homes,** children.

— **Any use listed in Section 22.32.190 or 22.32.240,** except that access to such use is not prohibited if such use is not in violation of Title 22 of this code, or other ordinance or law. *(Ord. 85-0004, Sec. 46; Ord. 1494 Ch. 2 Art. 4 Sec. 273.1, 1927.)*

22.32.110 ACCESSORY USES. Premises in Zone M-1½ may be used for the following accessory uses:

— **Accessory** buildings and structures customarily used in conjunction therewith.

— **Signs** as provided in Part 10 of Chapter 22.52. *(Ord. 1494 Ch. 2 Art. 4 Sec. 273.3, 1927.)*

22.32.120 USES SUBJECT TO DIRECTOR'S REVIEW AND APPROVAL. If site plans therefor are first submitted to and approved by the Director, premises in Zone M-1½ may be used for:

— **Grading projects,** off-site transport, where not more than 100,000 cubic yards of material are to be transported, subject to the conditions and limitations of Sections 22.56.1700 and 22.56.1710.

— **Signs** as provided in Part 10 of Chapter 22.52. *(Ord. 1494 Ch. 2 Art. 4 Sec. 273.5, 1927.)*

22.32.130 USES SUBJECT TO PERMITS. Premises in Zone M-1 1/2 may be used for:

A. The following uses, provided a conditional use permit has first been obtained as provided in Part 1 of Chapter 22.56, and while such permit is in full force and effect in conformity with the conditions of such permit:

— **Adult** businesses in addition to those specifically classified in this section, including but not limited to, love parlors, nude studios, sexual catharsis centers, sexual encounter shops, sexual novelty stores and other similar uses, provided that, as a condition of use, such uses shall not be located within a 1,000-foot radius of any other adult business, and subject to the provisions of Section 22.56.190.

— **Amphitheaters.**

— **Arcades,** adult, provided that, as a condition of use, such use shall not be located within a 1,000-foot radius of any other adult business, and subject to the provision sof Section 22.56.190.

— **Bookstores,** adult, provided that, as a condition of use, such use shall not be located within a 1,000-foot radius of any other adult business, and subject to the provisions of Section 22.56.190.

— **Cabarets,** provided that, as a condition of use, such use shall not be located within a 1,000-foot radius of any other adult business, and subject to the provisions of Section 22.56.190.

— **Child care centers.**

— **Grading projects,** on-site, but excluding projects where the Hearing Officer or the Commission or the Board of Supervisors has previously considered such grading proposal as indicated by approval of an environmental document incorporating consideration of such grading project.

— **Grading projects,** off-site transport, where more than 100,000 cubic yards of material are to be transported, subject to the conditions and limitations of Section 22.56.210 and 22.56.230.

— **Helistops.**

— **Massage parlors,** provided that, as a condition of use, such use shall not be located within a 1,000-foot radius of any other adult business, and subject to the provisions of Section 22.56.190.

— **Mobilehomes,** for use by a caretaker and his immediate family where continuous supervision is required for a period of longer than six consecutive

months in any 12-month period, in accordance with the provisions of Part 6 of Chapter 22.52.

— **Model studios,** provided that, as a condition of use, such use shall not be located within a 1,000-foot radius of any other adult business, and subject to the provisions of Section 22.56.190.

— **Theaters,** adult, provided that, as a condition of use, such use shall not be located within a 1,000-foot radius of other adult business, and subject to the provisions of Section 22.56.190.

— **Theaters** and other auditoriums having a seating capacity exceeding 3,000 seats.

B. The following uses, provided the specified permit has first been obtained and while such permit is in full force and effect in conformity with the conditions of such permit for:

— **Cemeteries** as provided in Part 4 of Chapter 22.56.

— **Explosives** storage as provided in Part 5 of Chapter 22.56.

— **Surface** mining operations as provided in Part 9 of Chapter 22.56. *(Ord. 85-0195, Sec. 8 (part); Ord. 85-0004, Sec. 47; Ord. 82-0024 Sec. 5, 1982; Ord. Ch. 1494 Ch. 2 Art. 4 Sec. 273.7, 1927.)*

22.32.140 DEVELOPMENT STANDARDS. Premises in Zone M-1 1/2 shall be subject to the following development standards:

A. Any property used for the outside storage or display of raw materials, equipment of finished products shall comply with the requirements of Part 7 of Chapter 22.52.

B. Vehicle storage shall be provided as required by Part 11 of Chapter 22.52.

C. Signs shall comply with the requirements of Part 10 of Chapter 22.52. *(Ord. 1494 Ch. 2 Art. 4 Sec. 273.9, 1927.)*

Newhall Ranch Specific Plan
Alternative
Wastewater Generation

ALTERNATIVE 2

Land Use	Unit Type	Units	Persons/ Unit	Population	Generation (gallons per day)	Generation (GPD)	Generation (MGD)
Res'l - Low	DU	2,070	3.50	7,245	80	579,600	0.5796
Res'l - Med.	DU	0	2.50	0	75	0	0.0000
Res'l - High	DU	0	2.00	0	70	0	0.0000
Commercial Retail	sq.ft.	27,770	-	-	0.20	5,554	0.0056
Commercial Office	sq.ft.	0	-	-	0.05	0	0.0000
Industrial	sq.ft.	19,602	-	-	0.20	3,920	0.0039
School	acre	0	-	-	260.00	0	0.0000
Water Reclam. Plant	acre	0	-	-	200.00	0	0.0000
Golf Course	acre	0.00	-	-	100.00	0	0.0000
Park	acre	21.74	-	-	100.00	2,174	0.0022
Totals						591,248	0.5912
						Acre-Feet/Year	662.28
						Reclaimed (0%)	0.0000

Source of generation factors: CH2MHill, Water Resources and Wastewater Management for the Newhall Ranch Project, (Appendix C).

mgd = million gallons per day.

The persons per unit factors used in this impact analysis are from the methodology used by CH2MHill and only apply to this analysis in order to provide a fair comparison between this alternative and the proposed Specific Plan.

Assumes that alternative would meet Quimby Act requirement of 3 acres per 1,000 population. Population used in this analysis is based upon 3.17 persons per single family units and 2.38 persons per multi-family unit (see alternative analyses for population, employment and housing).

Prepared by Impact Sciences, Inc.
R. Mamaghani
3/13/96

Newhall Ranch Specific Plan
Alternative
Wastewater Generation

ALTERNATIVE 3

Land Use	Unit Type	Units	Persons/ Unit	Population	Generation (gallons per day)	Generation (GPD)	Generation (MGD)
Res'l - Low	DU	5,725	3.50	20,038	80	1,603,000	1.6030
Res'l - Med.	DU	10,542	2.50	26,355	75	1,976,625	1.9766
Res'l - High	DU	8,413	2.00	16,826	70	1,177,820	1.1778
Commercial Retail	sq.ft.	2,568,000	-	-	0.20	513,600	0.5136
Commercial Office	sq.ft.	1,857,000	-	-	0.05	92,850	0.0929
Business Park	sq.ft.	0	-	-	0.20	0	0.0000
School	acre	0	-	-	260.00	0	0.0000
Water Reclam. Plant	acre	11.00	-	-	200.00	2,200	0.0022
Golf Course	acre	150.00	-	-	100.00	15,000	0.0150
Park	acre	189.78	-	-	100.00	18,978	0.0190
Totals						5,400,073	5.4001
						Acre-Feet/Year	6,048.86
						Reclaimed (75.8%)	4,585.04

Source of generation factors: CH2MHill, Water Resources and Wastewater Management for the Newhall Ranch Project, (Appendix C).

mgd = million gallons per day.

Assumes that the residential units in the Mixed Use category would be high density residences.

Assumes that commercial uses in the Mixed Use catagory would be 50 percent commercial retail and 50 percent commercial office.

The persons per unit factors used in this impact analysis are from the methodology used by CH2MHill and only apply to this analysis in order to provide a fair comparison between this alternative and the proposed Specific Plan.

Assumes a 150-acre golf course.

Assumes that alternative would meet Quimby Act requirement of 3 acres per 1,000 population. Population used in this analysis is based upon 3.17 persons per single family units and 2.38 persons per multi-family unit (see alternative analyses for population, employment and housing).

Prepared by Impact Sciences, Inc.
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3/13/96

Newhall Ranch Specific Plan
Alternative
Wastewater Generation

ALTERNATIVE 4

Land Use	Unit Type	Units	Persons/ Unit	Population	Generation (gallons per day)	Generation (GPD)	Generation (MGD)
Res'l - Low	DU	7,528	3.50	26,348	80	2,107,840	2.1078
Res'l - Med.	DU	6,449	2.50	16,123	75	1,209,188	1.2092
Res'l - High	DU	5,773	2.00	11,546	70	808,220	0.8082
Commercial Retail	sq.ft.	2,056,000	-	-	0.20	411,200	0.4112
Commercial Office	sq.ft.	1,344,800	-	-	0.05	67,240	0.0672
Business Park	sq.ft.	1,036,000	-	-	0.20	207,200	0.2072
School PENDING	acre	??	-	-	260.00		
Visitor-Serving	sq.ft.	139,200	-	-	0.01	1,392	0.0014
Water Reclam. Plant	acre	11.00	-	-	200.00	2,200	0.0022
Golf Course	acre	0.00	-	-	100.00	0	0.0000
Park	acre	166.48	-	-	100.00	16,648	0.0166
Totals						4,831,127	4.8311
						Acre-Feet/Year	5,411.56
						Reclaimed (75.8%)	4,101.96

Source of generation factors: CH2MHill, Water Resources and Wastewater Management for the Newhall Ranch Project, (Appendix C).

mgd = million gallons per day.

Assumes that the estate, low, and low-medium density units would fall in the low density residential category, and that the residential uses in the Mixed Use category would be high density residences.

Assumes that commercial uses in the Mixed Use catagory would be 50 percent commercial retail and 50 percent commercial office.

Assumes same acreage requirement for the water reclamation plant as for the proposed project.

The persons per unit factors used in this impact analysis are from the methodology used by CH2MHill and only apply to this analysis in order to provide a fair comparison between this alternative and the proposed Specific Plan.

Assumes that alternative would meet Quimby Act requirement of 3 acres per 1,000 population. Population used in this analysis is based upon 3.17 persons per single family units and 2.38 persons per multi-family unit (see alternative analyses for population, employment and housing).

Prepared by Impact Sciences, Inc.
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3/13/96

Newhall Ranch Specific Plan
Alternative
Wastewater Generation

ALTERNATIVE 5

Land Use	Unit Type	Units	Persons/ Unit	Population	Generation (gallons per day)	Generation (GPD)	Generation (MGD)
Res'l - Low	DU	9,580	3.50	33,530	80	2,682,400	2.6824
Res'l - Med.	DU	1,200	2.50	3,000	75	225,000	0.2250
Res'l - High	DU	4,220	2.00	8,440	70	590,800	0.5908
Commercial Retail	sq.ft.	1,700,000	-	-	0.20	340,000	0.3400
Commercial Office	sq.ft.	1,317,000	-	-	0.05	65,850	0.0659
Business Park	sq.ft.	1,095,000	-	-	0.20	219,000	0.2190
School	acre	0	-	-	260.00	0	0.0000
Water Reclam. Plant	acre	11.00	-	-	200.00	2,200	0.0022
Golf Course	acre	150.00	-	-	100.00	15,000	0.0150
Park	acre	132.65	-	-	100.00	13,265	0.0133
Totals						4,153,515	4.1535
						Acre-Feet/Year	4,652.53
						Reclaimed (75.8%)	3,526.62

Source of generation factors: CH2MHill, Water Resources and Wastewater Management for the Newhall Ranch Project, (Appendix C).

mgd = million gallons per day.

Assumes that the estate, low, and low-medium density units would fall in the low density residential category, and that the residential uses in the Mixed Use category would be high density residences.

Assumes that commercial uses in the Mixed Use catagory would be 50 percent commercial retail and 50 percent commercial office.

The persons per unit factors used in this impact analysis are from the methodology used by CH2MHill and only apply to this analysis in order to provide a fair comparison between this alternative and the proposed Specific Plan.

Assumes a 150-acre golf course.

Assumes that alternative would meet Quimby Act requirement of 3 acres per 1,000 population. Population used in this analysis is based upon 3.17 persons per single family units and 2.38 persons per multi-family unit (see alternative analyses for population, employment and housing).

Prepared by Impact Sciences, Inc.
R. Mamaghani
3/13/96

Newhall Ranch Specific Plan
Alternative
Wastewater Generation

ALTERNATIVE 6

Land Use	Unit Type	Units	Persons/ Unit	Population	Generation (gallons per day)	Generation (GPD)	Generation (MGD)
Res'l - Low	DU	7,400	3.50	25,900	80	2,072,000	2.0720
Res'l - Med.	DU	0	2.50	0	75	0	0.0000
Res'l - High	DU	600	2.00	1,200	70	84,000	0.0840
Commercial Retail	sq.ft.	270,000	-	-	0.20	54,000	0.0540
Commercial Office	sq.ft.	270,000	-	-	0.05	13,500	0.0135
Business Park	sq.ft.	0	-	-	0.20	0	0.0000
School	acre	0	-	-	260.00	0	0.0000
Water Reclam. Plant	acre	0.00	-	-	200.00	0	0.0000
Golf Course	acre	150.00	-	-	100.00	15,000	0.0150
Park	acre	74.66	-	-	100.00	7,466	0.0075
Totals						2,245,966	2.2460
						Acre-Feet/Year	2,515.80
						Reclaimed (0%)	0.00

Source of generation factors: CH2MHill, Water Resources and Wastewater Management for the Newhall Ranch Project, (Appendix C).

mgd = million gallons per day.

Assumes that the estate, low, and low-medium density units would fall in the low density residential category, and that the residential uses in the Mixed Use category would be high density residences.

Assumes that commercial uses in the Mixed Use category would be 50 percent commercial retail and 50 percent commercial office.

The persons per unit factors used in this impact analysis are from the methodology used by CH2MHill and only apply to this analysis in order to provide a fair comparison between this alternative and the proposed Specific Plan.

Assumes a 150-acre golf course

Assumes that alternative would meet Quimby Act requirement of 3 acres per 1,000 population. Population used in this analysis is based upon 3.17 persons per single family units and 2.38 persons per multi-family unit (see alternative analyses for population, employment and housing).

Prepared by Impact Sciences, Inc.
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3/13/96

Newhall Ranch Specific Plan
Alternative
Water Demand

ALTERNATIVE 2				Demand Factors		Total Demand		
				Int./Potable	Exterior	Interior		Total
		Square		Demand	Demand		Exterior	Demand
Land Use	Units	Footage	Acreage	(gpd)	(a-f/ac)	(gpd)	(afy)	(afy)
Res'l - Low	2,070	n/a	n/a	560	n/a	1,159,200		1,298.47
Res'l - Med.	0	n/a	n/a	300	n/a	0		0.00
Res'l - High	0	n/a	n/a	220	n/a	0		0.00
Mixed Use Retail	n/a	0	0.00	0.01	5.3	0	0.00	0.00
Mixed Use Office	n/a	0	0.00	0.05	5.3	0	0.00	0.00
Commercial	n/a	27,770	3.40	0.20	5.3	5,554	18.02	24.24
Industrial	n/a	19,602	0.00	0.20	5.3	3,920	0.00	4.39
Visitor-Serving	n/a	0	0.00	0.01	5.4	0	0.00	0.00
School	n/a	0	0.00	260.00	4.0		0.00	0.00
Water Reclam. Plant	n/a	0	0.00	200.00	4.0		0.00	0.00
Park	n/a	n/a	21.74	100.00	4.0		86.94	86.94
Golf Course	n/a	0	0.00	100.00	5.4		0.00	0.00
Irrig. Comm. Slopes	n/a	0	n/i	0.00	3.7			
Totals						**1,168,674**	**104.96**	**1,414.04**

Source of generation factors: CH2MHill, Water Resources and Wastewater Management for the Newhall Ranch Project, (Appendix B).

n/a = not applicable, n/i = no information, gpd = gallons per day, a-f/ac = acre-feet per acre, afy = acre-feet per year

Assumes that commercial uses in the Mixed Use catagory would be 50 percent commercial retail and 50 percent commercial office.

Assumes that alternative would meet Quimby Act requirement of 3 acres per 1,000 population. Population used in this analysis is based upon 3.17 persons per single family units and 2.38 persons per multi-family unit (see alternative analyses for population, employment and housing).

Prepared by Impact Sciences, Inc.
R. Mamaghani
3/13/96

Newhall Ranch Specific Plan
Alternative
Water Demand

ALTERNATIVE 3

Land Use	Units	Square Footage	Acreage	Demand Factors: Int./Potable Demand (gpd)	Demand Factors: Exterior Demand (a-f/ac)	Total Demand: Interior (gpd)	Total Demand: Exterior (afy)	Total Demand (afy)
Res'l - Low	5,725	n/a	n/a	560	n/a	3,206,000		3,591.18
Res'l - Med.	10,542	n/a	n/a	300	n/a	3,162,600		3,542.57
Res'l - High	8,413	n/a	n/a	220	n/a	1,850,860		2,073.23
Mixed Use Retail	n/a	1,857,000	301.00	0.01	5.3	18,570	1,595.30	1,616.10
Mixed Use Office	n/a	1,857,000	301.00	0.05	5.3	92,850	1,595.30	1,699.31
Commercial	n/a	711,000	68.00	0.20	5.3	142,200	360.40	519.68
Business Park	n/a	0	0.00	0.20	5.3	0	0.00	0.00
Visitor-Serving	n/a	0	0.00	0.01	5.4	0	0.00	0.00
School	n/a	0	0.00	260.00	4.0		0.00	0.00
Water Reclam. Plant	n/a	35,000	11.00	200.00	4.0		44.00	44.00
Park	n/a	n/a	189.78	100.00	4.0		759.12	759.12
Golf Course	n/a	n/i	150.00	100.00	5.4		810.00	810.00
Irrig. Comm. Slopes	n/a	n/a	n/i	0.00	3.7			
Totals						**8,473,080**	**4,354.12**	**13,845.19**

Source of generation factors: CH2MHill, Water Resources and Wastewater Management for the Newhall Ranch Project, (Appendix B).

n/a = not applicable, n/i = no information, gpd = gallons per day, a-f/ac = acre-feet per acre, afy = acre-feet per year

Assumes that the residential units in the Mixed Use category would be high density residences.

Assumes that commercial uses in the Mixed Use catagory would be 50 percent commercial retail and 50 percent commercial office, with half of the acreage allocated between the two.

Assumes that alternative would meet Quimby Act requirement of 3 acres per 1,000 population. Population used in this analysis is based upon 3.17 persons per single family units and 2.38 persons per multi-family unit (see alternative analyses for population, employment and housing).

Assumes a 150-acre golf course.

Prepared by Impact Sciences, Inc.
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3/13/96

Newhall Ranch Specific Plan
Alternative
Water Demand

ALTERNATIVE 4				Demand Factors		Total Demand		
				Int./Potable	Exterior	Interior		Total
		Square		Demand	Demand		Exterior	Demand
Land Use	Units	Footage	Acreage	(gpd)	(a-f/ac)	(gpd)	(afy)	(afy)
Res'l - Low	7,528	n/a	n/a	560	n/a	4,215,680		4,722.17
Res'l - Med.	6,449	n/a	n/a	300	n/a	1,934,700		2,167.14
Res'l - High	5,773	n/a	n/a	220	n/a	1,270,060		1,422.65
Mixed Use Retail	n/a	1,344,800	297.50	0.01	5.3	13,448	1,576.75	1,591.81
Mixed Use Office	n/a	1,344,800	297.50	0.05	5.3	67,240	1,576.75	1,652.07
Commercial	n/a	711,200	90.00	0.20	5.3	142,240	477.00	636.33
Business Park	n/a	1,036,000	245.00	0.20	5.3	207,200	1,298.50	1,530.59
Visitor-Serving	n/a	139,200	37.00	0.01	5.4	1,392	199.80	201.36
School PENDING	n/a	???	???	260.00	4.0			
Water Reclam. Plant	n/a	35,000	11.00	200.00	4.0		44.00	44.00
Park	n/a	n/a	166.48	100.00	4.0		665.92	665.92
Golf Course	n/a	0	0.00	100.00	5.4		0.00	0.00
Irrig. Comm. Slopes	n/a	n/a	n/i	0.00	3.7			
Totals						**7,851,960**	**5,839**	**14,634**

Source of generation factors: CH2MHill, Water Resources and Wastewater Management for the Newhall Ranch Project, (Appendix B).

n/a = not applicable, n/i = no information, gpd = gallons per day, a-f/ac = acre-feet per acre, afy = acre-feet per year

Assumes that the estate, low, and low-medium density units would fall in the low density residential category, and that the residential uses in the Mixed Use category would be high density residences.

Assumes that commercial uses in the Mixed Use catagory would be 50 percent commercial retail and 50 percent commercial office, with half of the acreage allocated between the two.

Assumes that alternative would meet Quimby Act requirement of 3 acres per 1,000 population. Population used in this analysis is based upon 3.17 persons per single family units and 2.38 persons per multi-family unit (see alternative analyses for population, employment and housing).

Eleven acres from the business park category were transferred to thte Water Reclamation Plant.

Prepared by Impact Sciences, Inc.
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3/13/96

Newhall Ranch Specific Plan
Alternative
Water Demand

ALTERNATIVE 5				Demand Factors				
				Int./Potable	Exterior	Total Demand		Total
		Square		Demand	Demand	Interior	Exterior	Demand
Land Use	Units	Footage	Acreage	(gpd)	(a-f/ac)	(gpd)	(afy)	(afy)
Res'l - Low	9,580	n/a	n/a	560	n/a	5,364,800		6,009.35
Res'l - Med.	1,200	n/a	n/a	300	n/a	360,000		403.25
Res'l - High	4,220	n/a	n/a	220	n/a	928,400		1,039.94
Mixed Use Retail	n/a	1,317,000	259.00	0.01	5.3	13,170	1,372.70	1,387.45
Mixed Use Office	n/a	1,317,000	259.00	0.05	5.3	65,850	1,372.70	1,446.46
Commercial	n/a	383,000	45.00	0.20	5.3	76,600	238.50	324.30
Business Park	n/a	1,095,000	197.00	0.20	5.3	219,000	1,044.10	1,289.41
Visitor-Serving	n/a	0	0.00	0.01	5.4	0	0.00	0.00
School	n/a	0	0.00	260.00	4.0		0.00	0.00
Water Reclam. Plant	n/a	35,000	11.00	200.00	4.0		44.00	44.00
Park	n/a	n/a	132.65	100.00	4.0		530.60	530.60
Golf Course	n/a	n/i	150.00	100.00	5.4		810.00	810.00
Irrig. Comm. Slopes	n/a	n/a	n/i	0.00	3.7			
Totals						**7,027,820**	**5,413**	**13,285**

Source of generation factors: CH2MHill, Water Resources and Wastewater Management for the Newhall Ranch Project, (Appendix B).

n/a = not applicable, n/i = no information, gpd = gallons per day, a-f/ac = acre-feet per acre, afy = acre-feet per year

Assumes that the estate, low, and low-medium density units would fall in the low density residential category, and that the residential uses in the Mixed Use category would be high density residences.

Assumes that commercial uses in the Mixed Use catagory would be 50 percent commercial retail and 50 percent commercial office, with half of the acreage allocated between the two.

Assumes that alternative would meet Quimby Act requirement of 3 acres per 1,000 population. Population used in this analysis is based upon 3.17 persons per single family units and 2.38 persons per multi-family unit (see alternative analyses for population, employment and housing).

Assumes a 150-acre golf course.

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3/13/96

Newhall Ranch Specific Plan
Alternative
Water Demand

ALTERNATIVE 6				Demand Factors		Total Demand		
				Int./Potable	Exterior			Total
		Square		Demand	Demand	Interior	Exterior	Demand
Land Use	Units	Footage	Acreage	(gpd)	(a-f/ac)	(gpd)	(afy)	(afy)
Res'l - Low	7,400	n/a	n/a	560	n/a	4,144,000		4,641.88
Res'l - Med.	0	n/a	n/a	300	n/a	0		0.00
Res'l - High	600	n/a	n/a	220	n/a	132,000		147.86
Mixed Use Retail	n/a	270,000	50.00	0.01	5.3	2,700	265.00	268.02
Mixed Use Office	n/a	270,000	50.00	0.05	5.3	13,500	265.00	280.12
Commercial	n/a	0	0.00	0.20	5.3	0	0.00	0.00
Business Park	n/a	0	0.00	0.20	5.3	0	0.00	0.00
Visitor-Serving	n/a	0	0.00	0.01	5.4	0	0.00	0.00
School	n/a	n/a	0.00	260.00	4.0		0.00	0.00
Water Reclam. Plant	n/a	n/a	0.00	200.00	4.0		0.00	0.00
Park	n/a	n/a	74.66	100.00	4.0		298.64	298.64
Golf Course	n/a	n/i	0.00	100.00	5.4		0.00	0.00
Irrig. Comm. Slopes	n/a	n/a	n/i	0.00	3.7			
Totals						**4,292,200**	**828.64**	**5,636.52**

Source of generation factors: CH2MHill, Water Resources and Wastewater Management for the Newhall Ranch Project, (Appendix B).

n/a = not applicable, n/i = no information, gpd = gallons per day, a-f/ac = acre-feet per acre, afy = acre-feet per year

Assumes that the estate, low, and low-medium density units would fall in the low density residential category, and that the residential uses in the Mixed Use category would be high density residences.

Assumes that commercial uses in the Mixed Use catagory would be 50 percent commercial retail and 50 percent commercial office.

Assumes that alternative would meet Quimby Act requirement of 3 acres per 1,000 population. Population used in this analysis is based upon 3.17 persons per single family units and 2.38 persons per multi-family unit (see alternative analyses for population, employment and housing).

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3/13/96

Newhall Ranch Specific Plan
Alternative
Solid Waste Generation
(No Recycling) Impact Analysis

Alternative 2

Land Use	Quantity	Units	Generation Rate (tpy) (1)	Generation Rate (lbs./day)	Total Waste Generated (tpy)	Total Waste Generated (lbs./day)
Residential Units:						
Single Family Detached	2,070	Units	2.0400	11.18	4,223	23,139
Multi-Family or Attached		Units	1.1700	6.41	0	0
Mobile Home		Units	1.1700	6.41	0	0
Second Unit		Units	1.1700	6.41	0	0
Commercial/Industrial (2)						
General Retail	27,770	Sq. Ft.	0.0024	0.01	67	365
Eating & Drinking Establ.	0	Sq. Ft.	0.0108	0.06	0	0
Food & Drug Stores	0	Sq. Ft.	0.0072	0.04	0	0
Auto Dealer & Service Sta.	0	Sq. Ft.	0.0051	0.03	0	0
Hotel & Motel	0	Sq. Ft.	0.0053	0.03	0	0
Warehouse		Sq. Ft.	0.0011	0.01	0	0
Medical Offices		Sq. Ft.	0.0027	0.01	0	0
Hospitals		Sq. Ft.	0.0055	0.03	0	0
Business Park (3)		Sq. Ft.	0.0014	0.01	0	0
Office		Sq. Ft.	0.0014	0.01	0	0
Library (3)		Sq. Ft.	0.0014	0.01	0	0
Education & Schools		Sq. Ft.	0.0013	0.01	0	0
Trans., Comm., Utilities		Sq. Ft.	0.0079	0.04	0	0
Special Generator		Sq. Ft.	0.0079	0.04	0	0
Golf Course		Acres	0.2000	1.10	0	0
Developed Park (4)		Acres	0.2000	1.10	0	0
Manufacturing	19,602	Sq. Ft.	0.0050	0.03	98	537
					4,387	**24,041**

(1) The solid waste daily generation rates in tons per year are derived from the Ventura County Solid Waste Management Department's Guidelines for Preparation of Environmental Assessments for Solid Waste Impacts. These figures do not reflect any recycling activities on the part of the generator.

(2) Retail uses are assumed to be 25% general retail, 10% auto dealer and service stations, 10% hotel/motel, 15% eating and drinking establishments, and 40% food and drug stores. Industrial uses are assumed to be 50% business park and 50% manufacturing.

(3) Assumes same generation rate as for office.

(4) Assumes alternative will meet Quimby Act requirements of 3 acre of parkland per 1,000 population.

Prepared by Impact Sciences, Inc.
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3/13/96

Newhall Ranch Specific Plan
Alternative
Solid Waste Generation
(No Recycling) Impact Analysis

Alternative 3

Land Use	Quantity	Units	Generation Rate (tpy) (1)	Generation Rate (lbs./day)	Total Waste Generated (tpy)	Total Waste Generated (lbs./day)
Residential Units:						
Single Family Detached	5,725	Units	2.0400	11.18	11,679	63,995
Multi-Family or Attached	18,955	Units	1.1700	6.41	22,177	121,520
Mobile Home		Units	1.1700	6.41	0	0
Second Unit		Units	1.1700	6.41	0	0
Commercial/Industrial (2)						
General Retail	642,000	Sq. Ft.	0.0024	0.01	1,541	8,443
Eating & Drinking Establ.	385,200	Sq. Ft.	0.0108	0.06	4,160	22,795
Food & Drug Stores	1,027,200	Sq. Ft.	0.0072	0.04	7,396	40,525
Auto Dealer & Service Sta.	256,800	Sq. Ft.	0.0051	0.03	1,310	7,176
Hotel & Motel	256,800	Sq. Ft.	0.0053	0.03	1,361	7,458
Warehouse		Sq. Ft.	0.0011	0.01	0	0
Medical Offices		Sq. Ft.	0.0027	0.01	0	0
Hospitals		Sq. Ft.	0.0055	0.03	0	0
Business Park (3)		Sq. Ft.	0.0014	0.01	0	0
Office	1,857,000	Sq. Ft.	0.0014	0.01	2,600	14,245
Library (3)		Sq. Ft.	0.0014	0.01	0	0
Education & Schools		Sq. Ft.	0.0013	0.01	0	0
Trans., Comm., Utilities (6)	35,000	Sq. Ft.	0.0079	0.04	277	1,515
Special Generator		Sq. Ft.	0.0079	0.04	0	0
Golf Course (5)	150.00	Acres	0.2000	1.10	30	164
Developed Park	189.78	Acres	0.2000	1.10	38	208
Manufacturing		Sq. Ft.	0.0050	0.03	0	0
					52,568	**288,045**

(1) The solid waste daily generation rates in tons per year are derived from the Ventura County Solid Waste Management Department's Guidelines for Preparation of Environmental Assessments for Solid Waste Impacts. These figures do not reflect any recycling activities on the part of the generator.

(2) Assumes a 50/50 split of Mixed Use between retail and office uses.
Retail uses are assumed to be 25% general retail, 10% auto dealer and service stations, 10% hotel/motel, 15% eating and drinking establishments, and 40% food and drug stores.
Industrial uses are assumed to be 50% business park and 50% manufacturing.

(3) Assumes same generation rate as for office.

(4) Assumes alternative will meet Quimby Act requirements of 3 acre of parkland per 1,000 population.

(5) Assumes a 150-acre golf course.

(6) Assumes 35,000 square feet of transportation, communication, and utilities facilites (same as project)

Prepared by Impact Sciences, Inc.
R. Mamaghani
3/13/96

Newhall Ranch Specific Plan
Alternative
Solid Waste Generation
(No Recycling) Impact Analysis

Alternative 4

Land Use	Quantity	Units	Generation Rate (tpy) (1)	Generation Rate (lbs./day)	Total Waste Generated (tpy)	Total Waste Generated (lbs./day)
Residential Units:						
Single Family Detached	10,752	Units	2.0400	11.18	21,934	120,187
Multi-Family or Attached	8,995	Units	1.1700	6.41	10,524	57,667
Mobile Home		Units	1.1700	6.41	0	0
Second Unit		Units	1.1700	6.41	0	0
Commercial/Industrial (2)						
General Retail	514,000	Sq. Ft.	0.0024	0.01	1,234	6,759
Eating & Drinking Establ.	308,400	Sq. Ft.	0.0108	0.06	3,331	18,251
Food & Drug Stores	822,400	Sq. Ft.	0.0072	0.04	5,921	32,445
Auto Dealer & Service Sta.	205,600	Sq. Ft.	0.0051	0.03	1,049	5,746
Hotel & Motel	205,600	Sq. Ft.	0.0053	0.03	1,090	5,971
Warehouse		Sq. Ft.	0.0011	0.01	0	0
Medical Offices		Sq. Ft.	0.0027	0.01	0	0
Hospitals		Sq. Ft.	0.0055	0.03	0	0
Business Park (3)	1,036,000	Sq. Ft.	0.0014	0.01	1,450	7,947
Office	1,344,800	Sq. Ft.	0.0014	0.01	1,883	10,316
Library (3)		Sq. Ft.	0.0014	0.01	0	0
Education & Schools (5)		Sq. Ft.	0.0013	0.01	0	0
Trans., Comm., Utilities (6)	35,000	Sq. Ft.	0.0079	0.04	277	1,515
Special Generator		Sq. Ft.	0.0079	0.04	0	0
Golf Course		Acres	0.2000	1.10	0	0
Developed Park	166.48	Acres	0.2000	1.10	33	182
Visitor Serving (3)	139,200	Sq. Ft.	0.0014	0.01	195	1,068
Manufacturing		Sq. Ft.	0.0050	0.03	0	0
					48,920	**268,054**

(1) The solid waste daily generation rates in tons per year are derived from the Ventura County Solid Waste Management Department's Guidelines for Preparation of Environmental Assessments for Solid Waste Impacts. These figures do not reflect any recycling activities on the part of the generator.

(2) Assumes a 50/50 split of Mixed Use between retail and office uses.
Retail uses are assumed to be 25% general retail, 10% auto dealer and service stations, 10% hotel/motel, 15% eating and drinking establishments, and 40% food and drug stores.
Industrial uses are assumed to be 50% business park and 50% manufacturing.

(3) Assumes same generation rate as for office.

(4) Assumes alternative will meet Quimby Act requirements of 3 acre of parkland per 1,000 population.

(5) Square footage for educational facilities is based upon the following (see Section 3.13, Education for further discussion):
two elementary schools with 600 students per school and 55 square feet per student;
six elementary schools with 860 students per school and 55 square feet per student;
one middle school with 1200 students and 75 square feet per student;
one middle school with 1000 students and 75 square feet per student;
two high schools with 2000 students per school and 85 square feet per student.

(6) Assumes 35,000 square feet of transportation, communication, and utilities facilites (same as project)

Prepared by Impact Sciences, Inc.
R. Mamaghani
3/13/96

Newhall Ranch Specific Plan
Alternative
Solid Waste Generation
(No Recycling) Impact Analysis

Alternative 5

Land Use	Quantity	Units	Generation Rate (tpy) (1)	Generation Rate (lbs./day)	Total Waste Generated (tpy)	Total Waste Generated (lbs./day)
Residential Units:						
Single Family Detached	10,780	Units	2.0400	11.18	21,991	120,500
Multi-Family or Attached	4,220	Units	1.1700	6.41	4,937	27,054
Mobile Home		Units	1.1700	6.41	0	0
Second Unit		Units	1.1700	6.41	0	0
Commercial/Industrial (2)						
General Retail	425,000	Sq. Ft.	0.0024	0.01	1,020	5,589
Eating & Drinking Establ.	255,000	Sq. Ft.	0.0108	0.06	2,754	15,090
Food & Drug Stores	680,000	Sq. Ft.	0.0072	0.04	4,896	26,827
Auto Dealer & Service Sta.	170,000	Sq. Ft.	0.0051	0.03	867	4,751
Hotel & Motel	170,000	Sq. Ft.	0.0053	0.03	901	4,937
Warehouse		Sq. Ft.	0.0011	0.01	0	0
Medical Offices		Sq. Ft.	0.0027	0.01	0	0
Hospitals		Sq. Ft.	0.0055	0.03	0	0
Business Park (3)	1,095,000	Sq. Ft.	0.0014	0.01	1,533	8,400
Office	1,317,000	Sq. Ft.	0.0014	0.01	1,844	10,103
Library (3)		Sq. Ft.	0.0014	0.01	0	0
Education & Schools		Sq. Ft.	0.0013	0.01	0	0
Trans., Comm., Utilities (6)	35,000	Sq. Ft.	0.0079	0.04	277	1,515
Special Generator		Sq. Ft.	0.0079	0.04	0	0
Golf Course (4)	150.00	Acres	0.2000	1.10	30	164
Developed Park (5)	132.65	Acres	0.2000	1.10	27	145
Manufacturing		Sq. Ft.	0.0050	0.03	0	0
					41,076	**225,076**

(1) The solid waste daily generation rates in tons per year are derived from the Ventura County Solid Waste Management Department's Guidelines for Preparation of Environmental Assessments for Solid Waste Impacts. These figures do not reflect any recycling activities on the part of the generator.

(2) Assumes a 50/50 split of Mixed Use between retail and office uses.
Retail uses are assumed to be 25% general retail, 10% auto dealer and service stations, 10% hotel/motel, 15% eating and drinking establishments, and 40% food and drug stores.
Industrial uses are assumed to be 50% business park and 50% manufacturing.

(3) Assumes same generation rate as for office.

(4) Assumes alternative will meet Quimby Act requirements of 3 acre of parkland per 1,000 population.

(5) Assumes a 150-acre golf course.

(6) Assumes 35,000 square feet of transportation, communication, and utilities facilites (same as project)

Prepared by Impact Sciences, Inc.
R. Mamaghani
3/13/96

Newhall Ranch Specific Plan
Alternative
Solid Waste Generation
(No Recycling) Impact Analysis

Alternative 6

Land Use	Quantity	Units	Generation Rate (tpy) (1)	Generation Rate (lbs./day)	Total Waste Generated (tpy)	Total Waste Generated (lbs./day)
Residential Units:						
Single Family Detached	7,400	Units	2.0400	11.18	15,096	82,718
Multi-Family or Attached	600	Units	1.1700	6.41	702	3,847
Mobile Home		Units	1.1700	6.41	0	0
Second Unit		Units	1.1700	6.41	0	0
Commercial/Industrial (2)						
General Retail	67,500	Sq. Ft.	0.0024	0.01	162	888
Eating & Drinking Establ.	40,500	Sq. Ft.	0.0108	0.06	437	2,397
Food & Drug Stores	108,000	Sq. Ft.	0.0072	0.04	778	4,261
Auto Dealer & Service Sta.	27,000	Sq. Ft.	0.0051	0.03	138	755
Hotel & Motel	27,000	Sq. Ft.	0.0053	0.03	143	784
Warehouse		Sq. Ft.	0.0011	0.01	0	0
Medical Offices		Sq. Ft.	0.0027	0.01	0	0
Hospitals		Sq. Ft.	0.0055	0.03	0	0
Business Park (3)		Sq. Ft.	0.0014	0.01	0	0
Office	270,000	Sq. Ft.	0.0014	0.01	378	2,071
Library (3)		Sq. Ft.	0.0014	0.01	0	0
Education & Schools		Sq. Ft.	0.0013	0.01	0	0
Trans., Comm., Utilities (5)	35,000	Sq. Ft.	0.0079	0.04	277	1,515
Special Generator		Sq. Ft.	0.0079	0.04	0	0
Golf Course	150.00	Acres	0.2000	1.10	30	164
Developed Park	74.66	Acres	0.2000	1.10	15	82
Manufacturing		Sq. Ft.	0.0050	0.03	0	0
					18,155	**99,481**

(1) The solid waste daily generation rates in tons per year are derived from the Ventura County Solid Waste Management Department's Guidelines for Preparation of Environmental Assessments for Solid Waste Impacts. These figures do not reflect any recycling activities on the part of the generator.

(2) Assumes a 50/50 split of Mixed Use between retail and office uses.
Retail uses are assumed to be 25% general retail, 10% auto dealer and service stations, 10% hotel/motel, 15% eating and drinking establishments, and 40% food and drug stores.
Industrial uses are assumed to be 50% business park and 50% manufacturing.

(3) Assumes same generation rate as for office.

(4) Assumes alternative will meet Quimby Act requirements of 3 acre of parkland per 1,000 population.
Assumes a 150-acre golf course.

(5) Assumes 35,000 square feet of transportation, communication, and utilities facilites (same as project)

Prepared by Impact Sciences, Inc.
R. Mamaghani
3/13/96

Newhall Ranch Specific Plan
Alternative
Electricity Impact Analyses

Alternative 2

	Quantity	Units	Useage Rate (kWh/year)	Total kWh/year	Total therms/year
Residential Units:	2,070	Units	6,081	12,587,670	430,498
Non-Residential:					
Office		Sq. Ft.	8.8	0	0
Restaurant		Sq. Ft.	47.3	0	0
Retail	27,770	Sq. Ft.	11.8	327,686	11,207
Food Store		Sq. Ft.	51.4	0	0
Warehouse		Sq. Ft.	3.4	0	0
Elementary School		Sq. Ft.	6.3	0	0
College/Univ.		Sq. Ft.	11.6	0	0
Hospital		Sq. Ft.	17.9	0	0
Hotel/Motel		Sq. Ft.	6.8	0	0
Water Reclam.Plant	--	--	0.0	0	0
Misc.	19,602	Sq. Ft.	8.8	172,498	5,899
Totals				13,087,854	447,605

Electricity consumption rates are from: South Coast Air Quality Management District, Air Quality Handbook for Preparing EIR's, Rev. 1994.

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3/13/96

Newhall Ranch Specific Plan
Alternative
Electricity Impact Analyses

Alternative 3

	Quantity	Units	Useage Rate (kWh/year)	Total kWh/year	Total therms/year
Residential Units:	24,680	Units	6,081	150,079,080	5,132,705
Non-Residential:					
Office	1,327,500	Sq. Ft.	8.8	11,682,000	399,524
Restaurant	885,000	Sq. Ft.	47.3	41,860,500	1,431,629
Retail	885,000	Sq. Ft.	11.8	10,443,000	357,151
Food Store	885,000	Sq. Ft.	51.4	45,489,000	1,555,724
Warehouse	442,500	Sq. Ft.	3.4	1,504,500	51,454
Elementary School		Sq. Ft.	6.3	0	0
College/Univ.		Sq. Ft.	11.6	0	0
Hospital		Sq. Ft.	17.9	0	0
Hotel/Motel		Sq. Ft.	6.8	0	0
Water Reclam.Plant	--	--	--	2,390,000	81,738
Misc.		Sq. Ft.	8.8	0	0
Totals				263,448,080	9,009,924

Electricity consumption rates are from: South Coast Air Quality Management District, Air Quality Handbook for Preparing EIR's, Rev. 1994.

Commercial uses spread over office, restaurant, retail, food store, and warehouse uses.

Electricity demand for the WRP is conservatively estimated to be the same as the proposed Specific Plant WRP.

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R. Mamaghani
3/13/96

Newhall Ranch Specific Plan
Alternative
Electricity Impact Analyses

Alternative 4

	Quantity	Units	Useage Rate (kWh/year)	Total kWh/year	Total therms/year
Residential Units:	19,750	Units	6,081	120,099,750	4,107,411
Non-Residential:					
Office	518,000	Sq. Ft.	8.8	4,558,400	155,897
Restaurant	1,133,600	Sq. Ft.	47.3	53,619,280	1,833,779
Retail	1,133,600	Sq. Ft.	11.8	13,376,480	457,476
Food Store	1,133,600	Sq. Ft.	51.4	58,267,040	1,992,733
Warehouse	518,000	Sq. Ft.	3.4	1,761,200	60,233
Elementary School		Sq. Ft.	6.3	0	0
College/Univ.		Sq. Ft.	11.6	0	0
Hospital		Sq. Ft.	17.9	0	0
Hotel/Motel		Sq. Ft.	6.8	0	0
Water Reclam.Plant	--	--	--	2,390,000	81,738
Misc.	139,200	Sq. Ft.	8.8	1,224,960	41,894
Totals				255,297,110	8,731,161

Electricity consumption rates are from: South Coast Air Quality Management District, Air Quality Handbook for Preparing EIR's, Rev. 1994.

Commercial square footage spread over restaurant, retail, food store.

Business Park square footage spread over office and warehouse uses.

Electricity demand for the WRP is conservatively estimated to be the same as the proposed Specific Plant WRP.

Visitor-Serving uses placed under misc. catagory.

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3/13/96

Newhall Ranch Specific Plan
Alternative
Electricity Impact Analyses

Alternative 5

	Quantity	Units	Useage Rate (kWh/year)	Total kWh/year	Total therms/year
Residential Units:	15,000	Units	6,081	91,215,000	3,119,553
Non-Residential:					
Office	547,500	Sq. Ft.	8.8	4,818,000	164,776
Restaurant	1,005,667	Sq. Ft.	47.3	47,568,033	1,626,827
Retail	1,005,667	Sq. Ft.	11.8	11,866,867	405,847
Food Store	1,005,667	Sq. Ft.	51.4	51,691,267	1,767,841
Warehouse	547,500	Sq. Ft.	3.4	1,861,500	63,663
Elementary School		Sq. Ft.	6.3	0	0
College/Univ.		Sq. Ft.	11.6	0	0
Hospital		Sq. Ft.	17.9	0	0
Hotel/Motel		Sq. Ft.	6.8	0	0
Water Reclam.Plant	--	--	--	2,390,000	81,738
Misc.		Sq. Ft.	8.8	0	0
Totals				211,410,667	7,230,245

Electricity consumption rates are from: South Coast Air Quality Management District, Air Quality Handbook for Preparing EIR's, Rev. 1994.

Commercial square footage spread over restaurant, retail, food store.

Electricity demand for the WRP is conservatively estimated to be the same as the proposed Specific Plant WRP.

Business Park square footage spread over office and warehouse uses.

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3/13/96

Newhall Ranch Specific Plan
Alternative
Electricity Impact Analyses

Alternative 6

	Quantity	Units	Useage Rate (kWh/year)	Total kWh/year	Total therms/year
Residential Units:	8,000	Units	6,081	48,648,000	1,663,762
Non-Residential:					
Office	135,000	Sq. Ft.	8.8	1,188,000	40,630
Restaurant	135,000	Sq. Ft.	47.3	6,385,500	218,384
Retail	135,000	Sq. Ft.	11.8	1,593,000	54,481
Food Store	135,000	Sq. Ft.	51.4	6,939,000	237,314
Warehouse		Sq. Ft.	3.4	0	0
Elementary School		Sq. Ft.	6.3	0	0
College/Univ.		Sq. Ft.	11.6	0	0
Hospital		Sq. Ft.	17.9	0	0
Hotel/Motel		Sq. Ft.	6.8	0	0
Water Reclam.Plant	--	--	0.0	0	0
Misc.		Sq. Ft.	8.8	0	0
Totals				64,753,500	2,214,570

Electricity consumption rates are from: South Coast Air Quality Management District, Air Quality Handbook for Preparing EIR's, Rev. 1994.

Commercial square footage spread over office, restaurant, retail, food store.

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3/13/96

Newhall Ranch Specific Plan
Alternative
Library Impact Analyses

ALTERNATIVE 2

Land Use	Unit Type	Units	Persons per Unit	Population	Volumes Per Unit	Square Feet Per Unit	Total Volumes	Total Square Feet
Single Family Res'l	DU	2,070	3.17	6,562	2.00	0.350	13,124	2,297
Multi-Family Res'l	DU		2.38	0	2.00	0.350	0	0
Totals				6,562			13,124	2,297

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Newhall Ranch Specific Plan
Alternative
Library Impact Analyses

ALTERNATIVE 3

Land Use	Unit Type	Units	Persons per Unit	Population	Volumes Per Unit	Square Feet Per Unit	Total Volumes	Total Square Feet
Single Family Res'l	DU	5,725	3.17	18,148	2.00	0.350	36,297	6,352
Multi-Family Res'l	DU	18,955	2.38	45,113	2.00	0.350	90,226	15,790
Totals				63,261			126,522	22,141

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Newhall Ranch Specific Plan
Alternative
Library Impact Analyses

ALTERNATIVE 4

Land Use	Unit Type	Units	Persons per Unit	Population	Volumes Per Unit	Square Feet Per Unit	Total Volumes	Total Square Feet
Single Family Res'l	DU	10,752	3.17	34,084	2.00	0.350	68,168	11,929
Multi-Family Res'l	DU	8,995	2.38	21,408	2.00	0.350	42,816	7,493
Totals				55,492			110,984	19,422

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Newhall Ranch Specific Plan
Alternative
Library Impact Analyses

ALTERNATIVE 5

Land Use	Unit Type	Units	Persons per Unit	Population	Volumes Per Unit	Square Feet Per Unit	Total Volumes	Total Square Feet
Single Family Res'l	DU	10,780	3.17	34,173	2.00	0.350	68,345	11,960
Multi-Family Res'l	DU	4,220	2.38	10,044	2.00	0.350	20,087	3,515
Totals				44,216			88,432	15,476

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Newhall Ranch Specific Plan
Alternative
Library Impact Analyses

ALTERNATIVE 6

Land Use	Unit Type	Units	Persons per Unit	Population	Volumes Per Capita	Square Feet Per Capita	Total Volumes	Total Square Feet
Single Family Res'l	DU	7,400	3.17	23,458	2.00	0.350	46,916	8,210
Multi-Family Res'l	DU	600	2.38	1,428	2.00	0.350	2,856	500
Totals				24,886			49,772	8,710

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Newhall Ranch Specific Plan
Alternative
Natural Gas Impact Analyses

ALTERNATIVE 2

	Quantity	Units	Useage Rate (cu.ft./year)	Total (cu.ft./year)	Total (cu.ft./month)	Total (therms/year)
Residential Units:						
Single Family	2,070	Units	79,980	165,558,600	13,796,550	1,738,365
Multi Family (</= 4)	0	Units	49,260	0	0	0
Multi Family (>/= 5)	0	Units	47,016	0	0	0
Non-Residential:				0		
Office	0	Sq. Ft.	24	0	0	0
Retail	27,770	Sq. Ft.	34.8	966,396	80,533	10,147
Hotel/Motel	0	Sq. Ft.	57.6	0	0	0
Water Reclam. Plant	0	--	--	0	0	0
Industrial	1	Customers	2,939,600	2,939,600	244,967	30,866
Totals				169,464,596	14,122,050	1,779,378

Source: South Coast Air Quality Management District, Air Quality Handbook for Preparing EIR's, Revised April, 1987.

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3/13/96

Newhall Ranch Specific Plan
Alternative
Natural Gas Impact Analyses

ALTERNATIVE 3

	Quantity	Units	Useage Rate (cu.ft./year)	Total (cu.ft./year)	Total (cu.ft./month)	Total (therms/year)
Residential Units:						
Single Family	16,267	Units	79,980	1,301,034,660	108,419,555	13,660,864
Multi Family (</= 4)	3,484	Units	49,260	171,621,840	14,301,820	1,802,029
Multi Family (>/= 5)	4,929	Units	47,016	231,741,864	19,311,822	2,433,290
Non-Residential:						
Office	2,212,500	Sq. Ft.	24	53,100,000	4,425,000	557,550
Retail	2,212,500	Sq. Ft.	34.8	76,995,000	6,416,250	808,448
Hotel/Motel	0	Sq. Ft.	57.6	0	0	0
Water Reclam. Plant	0	--	--	3,855	321	40
Industrial	0	Customers	2,939,600	0	0	0
Totals				1,834,497,219	152,874,768	19,262,221

Source: South Coast Air Quality Management District, Air Quality Handbook for Preparing EIR's, Revised April, 1987.

Commercial and Mixed Use square footage is spread over office and retail uses.

Annual natural gas consumption is conservatively based upon what the proposed Specific Plan WRP would consume (see Section 5.0, Water Reclamation Plant Impacts and Mitigation Measures for discussion).

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3/13/96

Newhall Ranch Specific Plan
Alternative
Natural Gas Impact Analyses

ALTERNATIVE 4

	Quantity	Units	Useage Rate (cu.ft./year)	Total (cu.ft./year)	Total (cu.ft./month)	Total (therms/year)
Residential Units:						
Single Family	7,528	Units	79,980	602,089,440	50,174,120	6,321,939
Multi Family (</= 4)	10,044	Units	49,260	494,767,440	41,230,620	5,195,058
Multi Family (>/= 5)	2,178	Units	47,016	102,400,848	8,533,404	1,075,209
Non-Residential:						
Office	1,434,640	Sq. Ft.	24	34,431,360	2,869,280	361,529
Retail	1,839,600	Sq. Ft.	34.8	64,018,080	5,334,840	672,190
Hotel/Motel	680,160	Sq. Ft.	57.6	39,177,216	3,264,768	411,361
Water Reclam. Plant	0	--	--	3,855	321	40
Industrial	12	Customers	2,939,600	36,545,107	3,045,426	383,724
Totals				1,373,433,346	114,452,779	14,421,050

Source: South Coast Air Quality Management District, Air Quality Handbook for Preparing EIR's, Revised April, 1987.

Commercial and Mixed Use square footage is spread over retail, office, and hotel/motel uses.

Business park square footage is spread over office (40%) and industrial uses (60%), with an estimated 50,000 per customer industrial customer.

Visitor-Serving square footage is placed in the retail catagory.

Annual natural gas consumption is conservatively based upon what the proposed Specific Plan WRP would consume (see Section 5.0, Water Reclamation Plant Impacts and Mitigation Measures for discussion).

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3/13/96

Newhall Ranch Specific Plan
Alternative
Natural Gas Impact Analyses

ALTERNATIVE 5

	Quantity	Units	Useage Rate (cu.ft./year)	Total (cu.ft./year)	Total (cu.ft./month)	Total (therms/year)
Residential Units:						
Single Family	10,780	Units	79,980	862,184,400	71,848,700	9,052,936
Multi Family (</= 4)	0	Units	49,260	207,877,200	17,323,100	2,182,711
Multi Family (>/= 5)	4,220	Units	47,016	0	0	0
Non-Residential:						
Office	1,644,800	Sq. Ft.	24	39,475,200	3,289,600	414,490
Retail	1,508,500	Sq. Ft.	34.8	52,495,800	4,374,650	551,206
Hotel/Motel	301,700	Sq. Ft.	57.6	17,377,920	1,448,160	182,468
Water Reclam. Plant	0	--	--	3,855	321	40
Industrial	13	Customers	2,939,600	38,626,344	3,218,862	405,577
Totals				1,218,040,719	101,503,393	12,789,428

Source: South Coast Air Quality Management District, Air Quality Handbook for Preparing EIR's, Revised April, 1987.

Commercial and Mixed Use square footage is spread between office, retail, and hotel/motel uses.

Business Park square footage is spread between office (40%) and industrial uses (60%) with approximately 50,000 square feet per industrial customer.

Annual natural gas consumption is conservatively based upon what the proposed Specific Plan WRP would consume (see Section 5.0, Water Reclamation Plant Impacts and Mitigation Measures for discussion).

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Newhall Ranch Specific Plan
Alternative
Natural Gas Impact Analyses

ALTERNATIVE 6

	Quantity	Units	Useage Rate (cu.ft./year)	Total (cu.ft./year)	Total (cu.ft./month)	Total (therms/year)
Residential Units:						
Single Family	7,400	Units	79,980	591,852,000	49,321,000	6,214,446
Multi Family (</= 4)		Units	49,260	0	0	0
Multi Family (>/= 5)	600	Units	47,016	28,209,600	2,350,800	296,201
Non-Residential:						
Office	270,000	Sq. Ft.	24	6,480,000	540,000	68,040
Retail	270,000	Sq. Ft.	34.8	9,396,000	783,000	98,658
Hotel/Motel		Sq. Ft.	57.6	0	0	0
Industrial		Customers	2,939,600	0	0	0
Totals				**635,937,600**	**52,994,800**	**6,677,345**

Source: South Coast Air Quality Management District, Air Quality Handbook for Preparing EIR's, Revised April, 1987.
Mixed Use square footage is spread between office and retail uses.

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Newhall Ranch Specific Plan
Alternative
Parks and Recreation Impact Analyses

ALTERNATIVE 2

Land Use	Number of Units	Persons/ Household	Population	Parkland Req'mt (acres)	In-Lieu Fee
Single Family Res'l	2,070	3.17	6,562	19.69	$2,401,655
Multi-Family Res'l		2.38	0	0.00	$0
Totals			**6,562**	**19.69**	**$2,401,655**

Based on Quimby requiremnt of 3.0 acres/1000 persons
Based on an In-Lieu Fee of $122,000/acre

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3/13/96

Newhall Ranch Specific Plan
Alternative
Parks and Recreation Impact Analyses

ALTERNATIVE 3

Land Use	Number of Units	Persons/ Household	Population	Parkland Req'mt (acres)	In-Lieu Fee
Single Family Res'l	5,725	3.17	18,148	54.44	$6,642,260
Multi-Family Res'l	18,955	2.38	45,113	135.34	$16,511,321
Totals			**63,261**	**189.78**	**$23,153,581**

Based on Quimby requiremnt of 3.0 acres/1000 persons
Based on an In-Lieu Fee of $122,000/acre

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Newhall Ranch Specific Plan
Alternative
Parks and Recreation Impact Analyses

ALTERNATIVE 4

Land Use	Number of Units	Persons/ Household	Population	Parkland Req'mt (acres)	In-Lieu Fee
Single Family Res'l	10,752	3.17	34,084	102.25	$12,474,685
Multi-Family Res'l	8,995	2.38	21,408	64.22	$7,835,365
Totals			**55,492**	**166.48**	**$20,310,050**

Based on Quimby requiremnt of 3.0 acres/1000 persons
Based on an In-Lieu Fee of $122,000/acre

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3/13/96

Newhall Ranch Specific Plan
Alternative
Parks and Recreation Impact Analyses

ALTERNATIVE 5

Land Use	Number of Units	Persons/ Household	Population	Parkland Req'mt (acres)	In-Lieu Fee
Single Family Res'l	10,780	3.17	34,173	102.52	$12,507,172
Multi-Family Res'l	4,220	2.38	10,044	30.13	$3,675,958
Totals			**44,216**	**132.65**	**$16,183,129**

Based on Quimby requiremnt of 3.0 acres/1000 persons
Based on an In-Lieu Fee of $122,000/acre

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Newhall Ranch Specific Plan
Alternative
Parks and Recreation Impact Analyses

ALTERNATIVE 6

Land Use	Number of Units	Persons/ Household	Population	Parkland Req'mt (acres)	In-Lieu Fee
Single Family Res'l	7,400	3.17	23,458	70.37	$8,585,628
Multi-Family Res'l	600	2.38	1,428	4.28	$522,648
Totals			**24,886**	**74.66**	**$9,108,276**

Based on Quimby requiremnt of 3.0 acres/1000 persons
Based on an In-Lieu Fee of $122,000/acre

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3/13/96

Newhall Ranch Specific Plan
Alternative
Population and Employment Impact Analyses

ALTERNATIVE 2

Land Use	Unit Type	Units	Persons/ Household	Population	Employees/ Unit	Employees
Single Family Res'l	DU	2,070.00	3.17	6,562	-	-
Multi-Family Res'l	DU	0.00	2.38	0	-	-
Office	TSF	0.00	-	-	4.000	0
Comm'l Retail (1)	TSF	27.77	-	-	2.500	69
Business Park	TSF	19.60	-	-	3.000	59
School	student	0	-	-	0.500	0
Golf Course	acre	0	-	-	0.400	0
Park	acre	0.00	-	-	0.125	0
Water Reclam. Plant	--	--	-	-	--	0
Totals				6,562		128

TSF = thousand square feet
Source: Southern California Association of Governments, 22 February 1995 and the SCVAM.
Assumes alternative will meet Quimby Act requirements of 3 parkland acres per 1,000 population.
Note that the employment generation figure for schools is based on .5 employees/student, .125 employees per acre of parkland, and the golf course is based on .4 employees/acre.

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Newhall Ranch Specific Plan
Alternative
Population and Employment Impact Analyses

ALTERNATIVE 3

Land Use	Unit Type	Units	Persons/ Household	Population	Employees/ Unit	Employees
Single Family Res'l	DU	5,725.00	3.17	18,148	-	-
Multi-Family Res'l	DU	18,955.00	2.38	45,113	-	-
Office	TSF	2,212.50	-	-	4.000	8,850
Comm'l Retail (1)	TSF	2,212.50	-	-	2.500	5,531
Business Park	TSF	0.00	-	-	3.000	0
School	student	0	-	-	0.500	0
Golf Course	acre	150	-	-	0.400	60
Park	acre	189.78	-	-	0.125	24
Water Reclam. Plant	--	--	-	-	--	18
Totals				63,261		14,483

TSF = thousand square feet
Mixed Use and Commercial square footage spread over office and commercial retail uses.
Source: Southern California Association of Governments, 22 February 1995 and the SCVAM.
Assumes same square footage for the water reclamation plant as the proposed Specific Plan.
Assumes a 150-acre golf course
Assumes alternative will meet Quimby Act requirements of 3 parkland acres per 1,000 population.
Note that the employment generation figure for schools is based on .5 employees/student,
.125 employees per acre of parkland, and the golf course is based on .4 employees/acre.
This alternative conservatively estimates 18 employees for the WRP, same as the Specific Plan.

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Newhall Ranch Specific Plan
Alternative
Population and Employment Impact Analyses

ALTERNATIVE 4

Land Use	Unit Type	Units	Persons/ Household	Population	Employees/ Unit	Employees
Single Family Res'l	DU	10,752.00	3.17	34,084	-	-
Multi-Family Res'l	DU	8,995.00	2.38	21,408	-	-
Office	TSF	1,700.40	-	-	4.000	6,802
Comm'l Retail (1)	TSF	1,839.60	-	-	2.500	4,599
Business Park	TSF	1,036.00	-	-	3.000	3,108
School	student	??	-	-	0.500	
Golf Course	acre	0	-	-	0.400	0
Park	acre	166.48	-	-	0.125	21
Water Reclam. Plant	--	--	-	-	--	18
Totals				55,492		14,547

TSF = thousand square feet
Mixed Use and Commercial square footage are spread between Office and Commercial Retail uses.
Visitor Serving square footage under commercial retail uses.
Source: Southern California Association of Governments, 22 February 1995 and the SCVAM.
Assumes same square footage for the water reclamation plant as the proposed Specific Plan.
Assumes alternative will meet Quimby Act requirements of 3 parkland acres per 1,000 population.
Note that the employment generation figure for schools is based on .5 employees/student,
.125 employees per acre of parkland, and the golf course is based on .4 employees/acre.
This alternative conservatively estimates 18 employees for the WRP, same as the Specific Plan.

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Newhall Ranch Specific Plan
Alternative
Population and Employment Impact Analyses

ALTERNATIVE 5

Land Use	Unit Type	Units	Persons/ Household	Population	Employees/ Unit	Employees
Single Family Res'l	DU	10,780.00	3.17	34,173	-	-
Multi-Family Res'l	DU	4,220.00	2.38	10,044	-	-
Office	TSF	1,508.50	-	-	4.000	6,034
Comm'l Retail (1)	TSF	1,508.50	-	-	2.500	3,771
Business Park	TSF	1,095.00	-	-	3.000	3,285
School	student	0	-	-	0.500	0
Golf Course	acre	150	-	-	0.400	60
Park	acre	132.65	-	-	0.125	17
Water Reclam. Plant	--	--	-	-	--	18
Totals				44,216		13,185

TSF = thousand square feet
Mixed Use and Commercial square footage was spread between Office and Commercial Retail uses.
Source: Southern California Association of Governments, 22 February 1995 and the SCVAM.
Assumes same square footage for the water reclamation plant as the proposed Specific Plan.
Assumes a 150-acre golf course
Assumes alternative will meet Quimby Act requirements of 3 parkland acres per 1,000 population.
Note that the employment generation figure for schools is based on .5 employees/student,
.125 employees per acre of parkland, and the golf course is based on .4 employees/acre.
This alternative conservatively estimates 18 employees for the WRP, same as the Specific Plan.

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Newhall Ranch Specific Plan
Alternative
Population and Employment Impact Analyses

ALTERNATIVE 6

Land Use	Unit Type	Units	Persons/ Household	Population	Employees/ Unit	Employees
Single Family Res'l	DU	7,400.00	3.17	23,458	-	-
Multi-Family Res'l	DU	600.00	2.38	1,428	-	-
Office	TSF	270.00	-	-	4.000	1,080
Comm'l Retail (1)	TSF	270.00	-	-	2.500	675
Business Park	TSF	0.00	-	-	3.000	0
School	student	0	-	-	0.500	0
Golf Course	acre	150	-	-	0.400	60
Park	acre	74.66	-	-	0.125	9
Water Reclam. Plant	--	--	-	-	--	0
Totals				24,886		1,824

TSF = thousand square feet
Mixed Use and Commercial square footage was spread between Office and Commercial Retail uses.
Source: Southern California Association of Governments, 22 February 1995 and the SCVAM.
Assumes a 150-acre golf course
Assumes alternative will meet Quimby Act requirements of 3 parkland acres per 1,000 population.
Note that the employment generation figure for schools is based on .5 employees/student, .125 employees per acre of parkland, and the golf course is based on .4 employees/acre.

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ALTERNATIVE STUDENT GENERATION

ALTERNATIVE 2

	Units	Rate	Students	
SF	2070	0.348	720.36	Elementary
MF		0.078	0	
Apt		0.253	0	
SF	2070	0.098	202.86	Junior HIgh
MF		0.037	0	
Apt		0.038	0	
SF	2070	0.171	353.97	High School
MF		0.064	0	
Apt		0.054	0	
Total	2070		1277.19	

ALTERNATIVE 3

	Units		Students	
SF	5725	0.348	1992.3	Elementary
MF	15471	0.078	1206.738	
Apt	3484	0.253	881.452	
SF	5725	0.098	561.05	Junior HIgh
MF	15471	0.037	572.427	
Apt	3484	0.038	132.392	
SF	5725	0.171	978.975	High School
MF	15471	0.064	990.144	
Apt	3484	0.054	188.136	
Total	24680		7503.614	

ALTERNATIVE 4

	Units		Students	
SF	7528	0.348	2619.744	Elementary
MF	8627	0.078	672.906	
Apt	3595	0.253	909.535	
SF	7528	0.098	737.744	Junior HIgh
MF	8627	0.037	319.199	
Apt	3595	0.038	136.61	
SF	7528	0.171	1287.288	High School
MF	8627	0.064	552.128	
Apt	3595	0.054	194.13	

Total	19750		7429.284	

ALTERNATIVE 5

	Units		Students	
SF	9580	0.348	3333.84	Elementary
MF	1200	0.078	93.6	
Apt	4220	0.253	1067.66	
SF	9580	0.098	938.84	Junior HIgh
MF	1200	0.037	44.4	
Apt	4220	0.038	160.36	
SF	9580	0.171	1638.18	High School
MF	1200	0.064	76.8	
Apt	4220	0.054	227.88	
Total	15000		7581.56	

ALTERNATIVE 6

	Units		Students	
SF	7400	0.348	2575.2	Elementary
MF		0.078	0	
Apt	600	0.253	151.8	
SF	7400	0.098	725.2	Junior HIgh
MF		0.037	0	
Apt	600	0.038	22.8	
SF	7400	0.171	1265.4	High School
MF		0.064	0	
Apt	600	0.054	32.4	
Total	8000		4772.8	