Hydrology Report
For
The Commons at Quartz Hill
City of Lancaster, California

Hunsaker Project No:
0055-004-001
Prepared: September 9,2008

Christopher Joseph & Associates
30851 Agoura Road, #210
Agoura, California 91301

Prepared by:

Hunsaker & Associates, Los Angeles, Inc.
26074 Avenue Hall Suite 22
Valencia CA 91355
Telephone: (661) 294-2211 Fax: (661) 294-9890

Under the direction of:

Jason H. Fukumitsu, P.E. RCE 40695 Exp: 03/13/09

TABLE OF CONTENTS

1. INTRODUCTION

1.1 Project Description

The proposed Quartz Hill Commons project is located in the southwesterly corner (Quartz Hill) of the City of Lancaster. The proposed project consists of a 407,000 square foot commercial development located on approximately 35.5 acres at the northwest corner of 60th Street West and Avenue L.

The site is currently undeveloped and adjacent (north of) to the Quartz Hill High School. Immediately north and west of the site, future residential projects are currently under development. South and west of the site, a mixture of developed and undeveloped parcels currently exist within the limits of the Cities of Lancaster and Palmdale.

1.2 Report Summary

This report summarizes the hydrologic analysis for the proposed development of The Commons at Quartz Hill based on a Preliminary Site Plans by Tait & Associates Inc. dated 03/09/08. The pre and post-development onsite 50-Year, 24-Hour, and 25-Year, 24-Hour Peak Flows, and debris generation were calculated for the project. Offsite runoff rates and drainage systems are based upon The City of Lancaster Master Plan of Drainage dated January 2005, and the approved Hydrology for Tract 53229 (Prepared by CCL Engineering). Additional discussions were held with Mr. Carlyle S. Workman of the City of Lancaster

The methodology and assumptions used for this analysis is described in the following section.. Lastly, a conclusion of the results in included, with recommendations and a brief contrast of the existing condition versus the proposed design.

2. METHODOLOGY

A preliminary engineering analysis was performed to understand the existing hydrology and drainage of the site and its contributing tributary watersheds. Research was done at the City of Lancaster to obtain information on the surrounding site conditions. A field reconnaissance of the project site helped to further understand the existing hydrology of the site.

As previously stated, all offsite hydrology analysis is based upon the City's master Plan of Drainage and the Approved Hydrology for Tract 53229. The onsite hydrology was calculated per the methods outlined in the 2006 Los Angeles County DPW Hydrology Manual. Analysis of the debris production was based on the Debris Production Rate Curves obtained from the LACDPW Sedimentation Manual, dated June 1993.

The Rational Method Time of Concentration methodology was applied to determine the individual sub-area's time of concentrations. Calculations were done with the LACDPW Tc Calculator .

Computations of the 50-Year, 25-Year, 10-year and 2-year 24-Hour peak flows for the project site were next performed by using the LACDPW approved LAR04 program. This is the modified version of the previous F0601 program that includes the most recent soils and rainfall data. The program utilizes the Modified Rational Method of Hydrology to calculate Peak Flows and produce storm hydrographs at specific locations.

Offsite flows from the areas south east of the site are routed in an existing storm drain located in 57th Street West. The existing storm drain extends northerly past Avenue L and then westerly to an existing detention basin. The detention basin is located at the northwest corner of Avenue L and 57th Street West. The existing drain then continues northerly in 57th Street West, then westerly in Avenue K-12 to the northeast corner of The Commons site, then northerly in 60th Street West.

Offsite flows from the areas south of the site are routed in an existing 60" storm drain which conveys flows northerly in 60th Street West to the intersection with West Avenue L. The storm drain then turns west along West Avenue L extending past the site.

Existing runoff from the site drains to the north easterly corner of the site. Proposed runoff has been determined – however the outlet has not been determined at this time. The existing storm drain located in 60th Street West, as well as the proposed storm drain in Avenue L are potential points of connection – with the approval of the City Engineer.

The City of Lancaster design standards require that the site release no more than 85% of the pre-development peak 50-year runoff rate. All flow in excess of that amount must be detained. Since Quartz Hill Commons contributed to the construction of the existing detention basin, they will be allowed to utilize that basin for their detention needs. Any additional detention (if required) must be provided for in the site design or offsite improvements.

The City of Lancaster, while not a co-permittee with Los Angeles County for NPDES purposes, still requires treatment of the "First Flush" runoff. Water Quality (first flush) calculations are based upon the SUSMP calculations in the LACDPW SUSMP Manual for the 0.75 inch storm.

3. CONCLUSIONS & RECCOMENDATIONS

The proposed Quartz Hill Commons expansion would result in an overall increase in runoff from the site, with an overall decrease in debris. A summary of runoff rates follows in Table 3.1. The calculations can be found in the Appendix.

Table 3.1 Onsite Runoff Summary

Storm Event	Pre-development Runoff (cfs)	85 % Pre-development Runoff (cfs)	Post-development Runoff (cfs)	Peak Detention Rate (cfs)
2-year	2.7 cfs	n/a	14.8 cfs	n/c
10-year	5.0 cfs	n/a	30.7 cfs	n/c
25-year	6.3 cfs	n/a	40.4 cfs	n/c
50-year	7.4 cfs	6.3 cfs	46.9 cfs	5.9 cfs

Note Calculations and results are preliminary only, final calculations will be preformed in the design phase of the project

The site will be required to construct the proposed 60 inch storm drain along the site in Avenue L (approximately 1300 feet). At the terminus, the drain will connect into a proposed storm drain, or outlet through an energy dissipater structure. The onsite runoff can be outletted into the proposed storm drain in Avenue L or the existing storm drain in 60th Street West, with the approval of the City Engineer.

Detention will be required onsite to reduce the post development runoff to 85% of the of the pre-development runoff rate. A basin will be required to reduce the post-development runoff of 46.9 cfs by 48.4 cfs to a total peak outflow 6.3 cfs.

Onsite water quality treatment can be performed by a number of methods, with the approval of the City of Lancaster Engineering Department, including water quality basins, bio-swales, bio-retention, continuous deflection systems, catch basin inserts, or other proprietary solutions. The peak design flow rate volume is as follows:

Qpm =5.9 cfs
Vpm = 82,810 ft^3

4. REFERENCES

Los Angeles County Department of Public Works Hydrology Manual, January 2006

Los Angeles County Department of Public Works Sedimentation Manual, June 1993

Hydrology Study Tract No. 53229, Approved October 7, 2005

5. APPENDICES

A: Modified Rational Method of Hydrology LAR04 Output Data - Pre-Development Condition

- 2-year
- 10-year
- 25-year
- 50-year

Project	Subarea	Area (acre	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.	Tc-calculat	Intensity (ir	Cu	Cd	Flow rate (	Tc Equatio	Fire Factor	Burned flo	Volume (acre-ft)
QHC	E	34.7	0.02	2	134	1600	0.01	1.5	30	0.39	0.1	0.12	1.62	Tc=(10)^-0	0.34	2.65	0.51
QHC	E	34.7	0.02	10	134	1600	0.01	2.7	30	0.69	0.1	0.12	2.87	Tc=(10)^-0	0.34	5	0.92
QHC	E	34.7	0.02	25	134	1600	0.01	3.3	30	0.85	0.1	0.12	3.54	Tc=(10)^-0	0.34	6.28	1.13
QHC	E	34.7	0.02	50	134	1600	0.01	3.8	30	0.98	0.1	0.12	4.08	Tc=(10)^-0	0.34	7.35	1.3

B: Modified Rational Method of Hydrology LAR04 Output Data - Pre-Development Condition 10-year, 25-year, 50-year

- 2-year
- 10-year
- 25-year
- 50-year

Project	Subarea	Area (acre	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.	Tc-calculat	Intensity (ir	Cu	Cd	Flow rate (	Tc Equatio	Fire Factor	Burned flo	Volume (acre-ft)
QHC	5A	3.5	0.92	50	134	600	0.008	3.8	12	1.5	0.19	0.84	4.41	Tc=(10)^-0	1	n/a	0.92
QHC	25A	0.5	0.92	50	134	160	0.02	3.8	5	2.27	0.36	0.86	0.98	Tc=(10)^-0	1	n/a	0.13
QHC	23C	2	0.92	50	134	200	0.015	3.8	5	2.27	0.36	0.86	3.9	Tc=(10)^-0	1	n/a	0.53
QHC	22C	1.3	0.92	50	134	150	0.02	3.8	5	2.27	0.36	0.86	2.54	Tc=(10)^-0	1	n/a	0.34
QHC	21C	1	0.92	50	134	190	0.02	3.8	5	2.27	0.36	0.86	1.95	Tc=(10)^-0	1	n/a	0.26
QHC	20C	3.1	0.92	50	134	400	0.0196	3.8	8	1.82	0.28	0.85	4.8	Tc=(10)^-0	1	n/a	0.82
QHC	4A	1.2	0.92	50	134	280	0.02	3.8	6	2.08	0.32	0.85	2.12	Tc=(10)^-0	1	n/a	0.32
QHC	18C	3.3	0.92	50	134	400	0.02	3.8	8	1.82	0.28	0.85	5.11	Tc=(10)^-0	1	n/a	0.87
QHC	19C	0.7	0.92	50	134	160	0.02	3.8	5	2.27	0.36	0.86	1.37	Tc=(10)^-0	1	n/a	0.18
QHC	16C	2	0.92	50	134	200	0.02	3.8	5	2.27	0.36	0.86	3.9	Tc=(10)^-0	1	n/a	0.53
QHC	15C	2.9	0.92	50	134	400	0.02	3.8	8	1.82	0.28	0.85	4.49	Tc=(10)^-0	1	n/a	0.77
QHC	2B	0.7	0.92	50	134	200	0.01	3.8	6	2.08	0.32	0.85	1.24	Tc=(10)^-0	1	n/a	0.18
QHC	1A	4	0.92	50	134	520	0.01	3.8	10	1.64	0.23	0.85	5.58	Tc=(10)^-0	1	n/a	1.05
QHC	6C	2.4	0.92	50	134	320	0.02	3.8	7	1.94	0.3	0.85	3.96	Tc=(10)^-0	1	n/a	0.64
QHC	8C	1.6	0.92	50	134	330	0.02	3.8	7	1.94	0.3	0.85	2.64	Tc=(10)^-0	1	n/a	0.42
QHC	7C	1.6	0.92	50	134	200	0.02	3.8	5	2.27	0.36	0.86	3.12	Tc=(10)^-0	1	n/a	0.42
QHC	14C	0.5	0.92	50	134	150	0.02	3.8	5	2.27	0.36	0.86	0.98	Tc=(10)^-0	1	n/a	0.13
QHC	12D	0.3	0.92	50	134	200	0.02	3.8	5	2.27	0.36	0.86	0.59	Tc=(10)^-0	1	n/a	0.08
QHC	17C	0.9	0.92	50	134	320	0.01	3.8	7	1.94	0.3	0.85	1.48	Tc=(10)^-0	1	n/a	0.24
QHC	9D	0.7	0.92	50	134	120	0.02	3.8	5	2.27	0.36	0.86	1.37	Tc=(10)^-0	1	n/a	0.18
QHC	10D	0.5	0.92	50	134	180	0.02	3.8	5	2.27	0.36	0.86	0.98	Tc=(10)^-0	1	n/a	0.13
QHC	K1	0.51	0.92	50	134	610	0.004	3.8	13	1.45	0.17	0.84	0.62	Tc=(10)^-0	1	n/a	0.13
QHC	K2	0.33	0.92	50	134	610	0.004	3.8	13	1.45	0.17	0.84	0.4	Tc=(10)^-0	1	n/a	0.09
QHC	K3	0.95	0.92	50	134	610	0.004	3.8	13	1.45	0.17	0.84	1.16	Tc=(10)^-0	1	n/a	0.25

Project	Subarea	Area (acre	%imp		Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.	Tc-calculat	Intensity (ir	Cu		Cd		Flow rate (	Tc Equatio	Fire Factor	Burned flo	Volume (acre-ft)
QHC	5A	3.5	0.92		25	134	600	0.008	3.3	13	1.26	0.13		0.84		3.7	Tc=(10)^-0	1	n/a	0.8
QHC	25A	0.5	0.92		25	134	160	0.02	3.3	5	1.97	0.3		0.85		0.84	Tc=(10)^-0	1	n/a	0.11
QHC	23C	2	0.92		25	134	200	0.015	3.3	6	1.81	0.28		0.85		3.08	Tc=(10)^-0	1	n/a	0.46
QHC	22C	1.3	0.92		25	134	150	0.02	3.3	5	1.97	0.3		0.85		2.18	Tc=(10)^-0	1	n/a	0.3
QHC	21C	1	0.92		25	134	190	0.02	3.3	5	1.97	0.3		0.85		1.67	Tc=(10)^-0	1	n/a	0.23
QHC	20C	3.1	0.92		25	134	400	0.0196	3.3	8	1.58	0.21		0.84		4.11	Tc=(10)^-0	1	n/a	0.71
QHC	4A	1.2	0.92		25	134	280	0.02	3.3	7	1.68	0.24		0.85		1.71	Tc=(10)^-0	1	n/a	0.28
QHC	18C	3.3	0.92		25	134	400	0.02	3.3	8	1.58	0.21		0.84		4.38	Tc=(10)^-0	1	n/a	0.76
QHC	19C	0.7	0.92		25	134	160	0.02	3.3	5	1.97	0.3		0.85		1.17	Tc=(10)^-0	1	n/a	0.16
QHC	16C	2	0.92		25	134	200	0.02	3.3	5	1.97	0.3		0.85		3.35	Tc=(10)^-0	1	n/a	0.46
QHC	15C	2.9	0.92		25	134	400	0.02	3.3	8	1.58	0.21		0.84		3.85	Tc=(10)^-0	1	n/a	0.67
QHC	2B	0.7	0.92		25	134	200	0.01	3.3	6	1.81	0.28		0.85		1.08	Tc=(10)^-0	1	n/a	0.16
QHC	1A	4	0.92		25	134	520	0.01	3.3	11	1.36	0.15		0.84		4.57	Tc=(10)^-0	1	n/a	0.91
QHC	6C	2.4	0.92		25	134	320	0.02	3.3	7	1.68	0.24		0.85		3.43	Tc=(10)^-0	1	n/a	0.55
QHC	8C	1.6	0.92		25	134	330	0.02	3.3	7	1.68	0.24		0.85		2.28	Tc=(10)^-0	1	n/a	0.37
QHC	7C	1.6	0.92		25	134	200	0.02	3.3	5	1.97	0.3		0.85		2.68	Tc=(10)^-0	1	n/a	0.37
QHC	14C	0.5	0.92		25	134	150	0.02	3.3	5	1.97	0.3		0.85		0.84	Tc=(10)^-0	1	n/a	0.11
QHC	12D	0.3	0.92		25	134	200	0.02	3.3	5	1.97	0.3		0.85		0.5	Tc=(10)^-0	1	n/a	0.07
QHC	17C	0.9	0.92		25	134	320	0.01	3.3	8	1.58	0.21		0.84		1.19	Tc=(10)^-0	1	n/a	0.21
QHC	9D	0.7	0.92		25	134	120	0.02	3.3	5	1.97	0.3		0.85		1.17	Tc=(10)^-0	1	n/a	0.16
QHC	10D	0.5	0.92		25	134	180	0.02	3.3	5	1.97	0.3		0.85		0.84	Tc=(10)^-0	1	n/a	0.11
QHC	K1	0.51	0.92		25	134	610	0.004	3.3	14	1.21	0.1		0.84		0.52	Tc=(10)^-0	1	n/a	0.12
QHC	K2	0.33	0.92		25	134	610	0.004	3.3	14	1.21	0.1		0.84		0.34	Tc=(10)^-0	1	n/a	0.08
QHC	K3	0.95	0.92		25	134	610	0.004	3.3	14	1.21	0.1		0.84		0.97	Tc=(10)^-0	1	n/a	0.22

Project	Subarea	Area (acre	%imp		Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.	Tc-calculat	Intensity (ir	Cu		Cd		Flow rate (	Tc Equatio	Fire Factor	Burned flo	Volume (acre-ft)
QHC	5A	3.5	0.92		10	134	600	0.008	2.7	15	0.96	0.1		0.84		2.82	Tc=(10)^-0	1	n/a	0.65
QHC	25A	0.5	0.92		10	134	160	0.02	2.7	5	1.61	0.22		0.85		0.68	Tc=(10)^-0	1	n/a	0.09
QHC	23C	2	0.92		10	134	200	0.015	2.7	7	1.38	0.15		0.84		2.32	Tc=(10)^-0	1	n/a	0.38
QHC	22C	1.3	0.92		10	134	150	0.02	2.7	5	1.61	0.22		0.85		1.78	Tc=(10)^-0	1	n/a	0.24
QHC	21C	1	0.92		10	134	190	0.02	2.7	6	1.48	0.18		0.84		1.24	Tc=(10)^-0	1	n/a	0.19
QHC	20C	3.1	0.92		10	134	400	0.0196	2.7	10	1.16	0.1		0.84		3.02	Tc=(10)^-0	1	n/a	0.58
QHC	4A	1.2	0.92		10	134	280	0.02	2.7	8	1.29	0.13		0.84		1.3	Tc=(10)^-0	1	n/a	0.23
QHC	18C	3.3	0.92		10	134	400	0.02	2.7	10	1.16	0.1		0.84		3.22	Tc=(10)^-0	1	n/a	0.62
QHC	19C	0.7	0.92		10	134	160	0.02	2.7	5	1.61	0.22		0.85		0.96	Tc=(10)^-0	1	n/a	0.13
QHC	16C	2	0.92		10	134	200	0.02	2.7	6	1.48	0.18		0.84		2.49	Tc=(10)^-0	1	n/a	0.37
QHC	15C	2.9	0.92		10	134	400	0.02	2.7	10	1.16	0.1		0.84		2.83	Tc=(10)^-0	1	n/a	0.54
QHC	2B	0.7	0.92		10	134	200	0.01	2.7	7	1.38	0.15		0.84		0.81	Tc=(10)^-0	1	n/a	0.13
QHC	1A	4	0.92		10	134	520	0.01	2.7	13	1.03	0.1		0.84		3.46	Tc=(10)^-0	1	n/a	0.75
QHC	6C	2.4	0.92		10	134	320	0.02	2.7	8	1.29	0.13		0.84		2.6	Tc=(10)^-0	1	n/a	0.45
QHC	8C	1.6	0.92		10	134	330	0.02	2.7	8	1.29	0.13		0.84		1.73	Tc=(10)^-0	1	n/a	0.3
QHC	7C	1.6	0.92		10	134	200	0.02	2.7	6	1.48	0.18		0.84		1.99	Tc=(10)^-0	1	n/a	0.3
QHC	14C	0.5	0.92		10	134	150	0.02	2.7	5	1.61	0.22		0.85		0.68	Tc=(10)^-0	1	n/a	0.09
QHC	12D	0.3	0.92		10	134	200	0.02	2.7	6	1.48	0.18		0.84		0.37	Tc=(10)^-0	1	n/a	0.06
QHC	17C	0.9	0.92		10	134	320	0.01	2.7	9	1.22	0.11		0.84		0.92	Tc=(10)^-0	1	n/a	0.17
QHC	9D	0.7	0.92		10	134	120	0.02	2.7	5	1.61	0.22		0.85		0.96	Tc=(10)^-0	1	n/a	0.13
QHC	10D	0.5	0.92		10	134	180	0.02	2.7	6	1.48	0.18		0.84		0.62	Tc=(10)^-0	1	n/a	0.09
QHC	K1	0.51	0.92		10	134	610	0.004	2.7	17	0.91	0.1		0.84		0.39	Tc=(10)^-0	1	n/a	0.1
QHC	K2	0.33	0.92		10	134	610	0.004	2.7	17	0.91	0.1		0.84		0.25	Tc=(10)^-0	1	n/a	0.06
QHC	K3	0.95	0.92		10	134	610	0.004	2.7	17	0.91	0.1		0.84		0.73	Tc=(10)^-0	1	n/a	0.18

Project	Subarea	Area (acre	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.	Tc-calcula	Intensity (ir	Cu	Cd	Flow rate (	Tc Equatio	Fire Factor	Burned flo	Volume (acre-ft)
QHC	E	34.7	0.02	2	134	1600	0.01	1.5	30	0.39	0.1	0.12	1.62	Tc=(10)^-0	0.34	2.65	0.51
QHC	5A	3.5	0.92	2	134	600	0.008	1.5	22	0.45	0.1	0.84	1.32	Tc=(10)^-0	1	n/a	0.36
QHC	25A	0.5	0.92	2	134	160	0.02	1.5	8	0.72	0.1	0.84	0.3	Tc=(10)^-0	1	n/a	0.05
QHC	23C	2	0.92	2	134	200	0.015	1.5	10	0.65	0.1	0.84	1.09	Tc=(10)^-0	1	n/a	0.21
QHC	22C	1.3	0.92	2	134	150	0.02	1.5	8	0.72	0.1	0.84	0.79	Tc=(10)^-0	1	n/a	0.14
QHC	21C	1	0.92	2	134	190	0.02	1.5	9	0.68	0.1	0.84	0.57	Tc=(10)^-0	1	n/a	0.1
QHC	20C	3.1	0.92	2	134	400	0.0196	1.5	14	0.55	0.1	0.84	1.43	Tc=(10)^-0	1	n/a	0.32
QHC	4A	1.2	0.92	2	134	280	0.02	1.5	11	0.62	0.1	0.84	0.62	Tc=(10)^-0	1	n/a	0.12
QHC	18C	3.3	0.92	2	134	400	0.02	1.5	14	0.55	0.1	0.84	1.52	Tc=(10)^-0	1	n/a	0.34
QHC	19C	0.7	0.92	2	134	160	0.02	1.5	8	0.72	0.1	0.84	0.42	Tc=(10)^-0	1	n/a	0.07
QHC	16C	2	0.92	2	134	200	0.02	1.5	9	0.68	0.1	0.84	1.14	Tc=(10)^-0	1	n/a	0.21
QHC	15C	2.9	0.92	2	134	400	0.02	1.5	14	0.55	0.1	0.84	1.34	Tc=(10)^-0	1	n/a	0.3
QHC	2B	0.7	0.92	2	134	200	0.01	1.5	10	0.65	0.1	0.84	0.38	Tc=(10)^-0	1	n/a	0.07
QHC	1A	4	0.92	2	134	520	0.01	1.5	19	0.48	0.1	0.84	1.61	Tc=(10)^-0	1	n/a	0.42
QHC	6C	2.4	0.92	2	134	320	0.02	1.5	12	0.59	0.1	0.84	1.19	Tc=(10)^-0	1	n/a	0.25
QHC	8C	1.6	0.92	2	134	330	0.02	1.5	12	0.59	0.1	0.84	0.79	Tc=(10)^-0	1	n/a	0.17
QHC	7C	1.6	0.92	2	134	200	0.02	1.5	9	0.68	0.1	0.84	0.91	Tc=(10)^-0	1	n/a	0.17
QHC	14C	0.5	0.92	2	134	150	0.02	1.5	8	0.72	0.1	0.84	0.3	Tc=(10)^-0	1	n/a	0.05
QHC	12D	0.3	0.92	2	134	200	0.02	1.5	9	0.68	0.1	0.84	0.17	Tc=(10)^-0	1	n/a	0.03
QHC	17C	0.9	0.92	2	134	320	0.01	1.5	14	0.55	0.1	0.84	0.42	Tc=(10)^-0	1	n/a	0.09
QHC	9D	0.7	0.92	2	134	120	0.02	1.5	7	0.76	0.1	0.84	0.45	Tc=(10)^-0	1	n/a	0.07
QHC	10D	0.5	0.92	2	134	180	0.02	1.5	9	0.68	0.1	0.84	0.29	Tc=(10)^-0	1	n/a	0.05
QHC	K1	0.51	0.92	2	134	610	0.004	1.5	25	0.42	0.1	0.84	0.18	Tc=(10)^-0	1	n/a	0.05
QHC	K2	0.33	0.92	2	134	610	0.004	1.5	25	0.42	0.1	0.84	0.12	Tc=(10)^-0	1	n/a	0.03
QHC	K3	0.95	0.92	2	134	610	0.004	1.5	25	0.42	0.1	0.84	0.34	Tc=(10)^-0	1	n/a	0.1

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\CIVILD\lasoilx.dat

Proposed Q50 Condtions

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
55	1A	4.0	5.55	4.0	5.55	4	85.	.00500	2.00	.00	0.	134	10	A19	.92
55	2B	.7	1.23	.7	1.23	4	280.	.00500	2.00	.00	0.	134	6	A19	.92

* CONFLUENCE Q'S *

* 55 3A TA 1154 QA 5.52 QAB 6.58 QB 1.06 55 3B TB 1155 QB 1.17 QBA 6.67 QA 5.50 *

* 55 3AB TAB 1155 QAB 6.67 QA 5.50 QB 1.17 *

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
55	3AB	.7	1.17	4.7	6.67	4	330.	.00500	2.00	.00	0.	134	0	A19	.00
55	4A	1.2	2.11	5.9	8.08	4	400.	.00500	2.00	.00	0.	134	6	A19	.92
55	5A	3.5	4.42	9.4	12.18	0	0.	.00000	.00	.00	0.	134	12	A19	.92
55	6C	2.4	3.91	2.4	3.91	4	310.	.00500	2.00	.00	0.	134	7	A19	.92
55	7C	1.6	3.11	4.0	6.31	4	200.	.00500	2.00	.00	0.	134	5	A19	.92
55	8C	1.6	2.61	5.6	8.81	4	230.	.00500	2.00	.00	0.	134	7	A19	.92
55	9D	.7	1.36	.7	1.36	4	230.	.00500	2.00	.00	0.	134	5	A19	.92
55	10D	.5	.97	1.2	2.08	4	120.	.00500	2.00	.00	0.	134	5	A19	.92
55	11D	.0	.00	1.2	2.05	4	170.	.00500	2.00	.00	0.	134	99	A19	.92
55	12D	.3	.60	1.5	2.37	0	0.	.00000	.00	.00	0.	134	5	A19	.92

* CONFLUENCE Q'S *

* 55 13C TC 1156 QC 8.65 QCD 11.01 QD 2.36 55 13D TD 1155 QD 2.37 QDC 10.83 QC 8.46 *

* 55 13CD TCD 1156 QCD 11.01 QC 8.65 QD 2.36 *

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
55	13CD	1.5	2.37	7.1	11.01	0	0.	.00000	.00	.00	0.	134	0	A19	.00
55	14C	.5	.97	7.6	11.60	4	170.	.00500	2.00	.00	0.	134	5	A19	.92
55	15C	2.9	4.44	10.5	15.72	0	0.	.00000	.00	.00	0.	134	8	A19	.92
55	16C	2.0	3.89	12.5	18.24	4	120.	.00500	2.25	.00	0.	134	5	A19	.92
55	17C	.9	1.47	13.4	19.46	4	120.	.00500	2.25	.00	0.	134	7	A19	.92
55	18C	3.3	5.05	16.7	24.24	0	0.	.00000	.00	.00	0.	134	8	A19	.92
55	19C	.7	1.36	17.4	25.09	4	160.	.00500	2.50	.00	0.	134	5	A19	.92
55	20C	3.1	4.74	20.5	29.57	0	0.	.00000	.00	.00	0.	134	8	A19	.92
55	21C	1.0	1.94	21.5	30.75	4	160.	.00500	2.50	.00	0.	134	5	A19	.92
55	22C	1.3	2.53	22.8	32.01	0	0.	.00000	.00	.00	0.	134	5	A19	.92
55	23C	2.0	3.89	24.8	34.48	0	0.	.00000	.00	.00	0.	134	5	A19	.92

* CONFLUENCE Q'S *

* 55 24A TA 1157 QA 12.18 QAC 45.47 QC 33.29 55 24C TC 1155 QC 34.48 QCA 45.88 QA 11.40 *

* 55 24AC TAC 1156 QAC 46.35 QA 11.97 QC 34.37 *

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
55	24AC	24.8	34.48	34.2	46.35	0	0.	.00000	.00	.00	0.	134	0	A19	.00
55	25A	.5	.97	34.7	46.94	0	0.	.00000	.00	.00	0.	134	5	A19	.92

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\CIVILD\lasoilx.dat

Proposed Q50 Condtions

LOCATION	SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
55 26A	.0	.00	34.7	46.94	0	0.	.00000	.00	.00	0.	134	99	A19	.92

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 25 SOIL DATA FILE: C:\CIVILD\lasoilx.dat

Proposed Q25 Condtions

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
55	1A	4.0	4.61	4.0	4.61	4	85.	.00500	2.00	.00	0.	134	11	A19	.92
55	2B	.7	1.08	.7	1.08	4	280.	.00500	2.00	.00	0.	134	6	A19	.92

* CONFLUENCE Q'S *

* 55 3A TA 1155 QA 4.61 QAB 5.61 QB 1.00 55 3B TB 1156 QB 1.01 QBA 5.57 QA 4.56 *

* 55 3AB TAB 1155 QAB 5.61 QA 4.61 QB 1.00 *

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
55	3AB	.7	1.01	4.7	5.61	4	330.	.00500	2.00	.00	0.	134	0	A19	.00
55	4A	1.2	1.71	5.9	6.91	4	400.	.00500	2.00	.00	0.	134	7	A19	.92
55	5A	3.5	3.71	9.4	10.33	0	0.	.00000	.00	.00	0.	134	13	A19	.92
55	6C	2.4	3.42	2.4	3.42	4	310.	.00500	2.00	.00	0.	134	7	A19	.92
55	7C	1.6	2.72	4.0	5.49	4	200.	.00500	2.00	.00	0.	134	5	A19	.92
55	8C	1.6	2.28	5.6	7.68	4	230.	.00500	2.00	.00	0.	134	7	A19	.92
55	9D	.7	1.19	.7	1.19	4	230.	.00500	2.00	.00	0.	134	5	A19	.92
55	10D	.5	.85	1.2	1.81	4	120.	.00500	2.00	.00	0.	134	5	A19	.92
55	11D	.0	.00	1.2	1.78	4	170.	.00500	2.00	.00	0.	134	99	A19	.92
55	12D	.3	.60	1.5	2.05	0	0.	.00000	.00	.00	0.	134	5	A19	.92

* CONFLUENCE Q'S *

* 55 13C TC 1156 QC 7.53 QCD 9.57 QD 2.05 55 13D TD 1156 QD 2.05 QDC 9.57 QC 7.53 *

* 55 13CD TCD 1156 QCD 9.57 QC 7.53 QD 2.05 *

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
55	13CD	1.5	2.05	7.1	9.57	0	0.	.00000	.00	.00	0.	134	0	A19	.00
55	14C	.5	.85	7.6	10.09	4	170.	.00500	2.00	.00	0.	134	5	A19	.92
55	15C	2.9	3.88	10.5	13.67	0	0.	.00000	.00	.00	0.	134	8	A19	.92
55	16C	2.0	3.40	12.5	15.84	4	120.	.00500	2.00	.00	0.	134	5	A19	.92
55	17C	.9	1.20	13.4	16.92	4	120.	.00500	2.00	.00	0.	134	8	A19	.92
55	18C	3.3	4.41	16.7	20.98	0	0.	.00000	.00	.00	0.	134	8	A19	.92
55	19C	.7	1.19	17.4	21.71	4	160.	.00500	2.25	.00	0.	134	5	A19	.92
55	20C	3.1	4.15	20.5	25.46	0	0.	.00000	.00	.00	0.	134	8	A19	.92
55	21C	1.0	1.70	21.5	26.49	4	160.	.00500	2.50	.00	0.	134	5	A19	.92
55	22C	1.3	2.21	22.8	27.60	0	0.	.00000	.00	.00	0.	134	5	A19	.92
55	23C	2.0	3.08	24.8	29.91	0	0.	.00000	.00	.00	0.	134	6	A19	.92

```
**********************************************************************************************************************
*                                                CONFLUENCE Q'S                                                      *
*     55   24A  TA 1158 QA    10.33 QAC    37.58 QC    27.25      55   24C  TC 1155 QC    29.91 QCA    39.36 QA     9.45   *
*                                55   24AC TAC 1156 QAC    39.87 QA     9.98 QC    29.89                             *
**********************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV    CONV      CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)     AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
       55   24AC   24.8      29.91       34.2     39.87   0       0.   .00000      .00    .00       0.  134   0   A19   .00
       55   25A      .5        .85       34.7     40.38   0       0.   .00000      .00    .00       0.  134   5   A19   .92

 Program Package Serial Number:  2061
09/09/08   FILE: qnc      INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     3
                                      LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                                      PROG F0601M

          MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 25  SOIL DATA FILE: C:\CIVILD\lasoilx.dat
     Proposed Q25 Condtions                                                                                  STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV    CONV      CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)     AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
       55   26A      .0        .00       34.7     40.38   0       0.   .00000      .00    .00       0.  134  99   A19   .92
```

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 10 SOIL DATA FILE: C:\CIVILD\lasoilx.dat

Proposed Q10 Condtions

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
55	1A	4.0	3.44	4.0	3.44	4	85.	.00500	2.00	.00	0.	134	13	A19	.92
55	2B	.7	.80	.7	.80	4	280.	.00500	2.00	.00	0.	134	7	A19	.92

CONFLUENCE Q'S

55 3A TA 1155 QA 3.44 QAB 4.17 QB .74 55 3B TB 1156 QB .77 QBA 4.20 QA 3.43

55 3AB TAB 1156 QAB 4.20 QA 3.43 QB .77

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
55	3AB	.7	.77	4.7	4.20	4	330.	.00500	2.00	.00	0.	134	0	A19	.00
55	4A	1.2	1.29	5.9	5.27	4	400.	.00500	2.00	.00	0.	134	8	A19	.92
55	5A	3.5	2.83	9.4	7.89	0	0.	.00000	.00	.00	0.	134	15	A19	.92
55	6C	2.4	2.59	2.4	2.59	4	310.	.00500	2.00	.00	0.	134	8	A19	.92
55	7C	1.6	1.99	4.0	4.30	4	200.	.00500	2.00	.00	0.	134	6	A19	.92
55	8C	1.6	1.72	5.6	5.88	4	230.	.00500	2.00	.00	0.	134	8	A19	.92
55	9D	.7	.96	.7	.96	4	230.	.00500	2.00	.00	0.	134	5	A19	.92
55	10D	.5	.62	1.2	1.46	4	120.	.00500	2.00	.00	0.	134	6	A19	.92
55	11D	.0	.00	1.2	1.43	4	170.	.00500	2.00	.00	0.	134	99	A19	.92
55	12D	.3	.60	1.5	1.66	0	0.	.00000	.00	.00	0.	134	6	A19	.92

CONFLUENCE Q'S

55 13C TC 1157 QC 5.78 QCD 7.39 QD 1.61 55 13D TD 1156 QD 1.66 QDC 7.43 QC 5.77

55 13CD TCD 1156 QCD 7.43 QC 5.77 QD 1.66

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
55	13CD	1.5	1.66	7.1	7.43	0	0.	.00000	.00	.00	0.	134	0	A19	.00
55	14C	.5	.69	7.6	7.84	4	170.	.00500	2.00	.00	0.	134	5	A19	.92
55	15C	2.9	2.84	10.5	10.44	0	0.	.00000	.00	.00	0.	134	10	A19	.92
55	16C	2.0	2.48	12.5	12.19	4	120.	.00500	2.00	.00	0.	134	6	A19	.92
55	17C	.9	.92	13.4	13.01	4	120.	.00500	2.00	.00	0.	134	9	A19	.92
55	18C	3.3	3.23	16.7	16.00	0	0.	.00000	.00	.00	0.	134	10	A19	.92
55	19C	.7	.96	17.4	16.58	4	160.	.00500	2.00	.00	0.	134	5	A19	.92
55	20C	3.1	3.03	20.5	19.34	0	0.	.00000	.00	.00	0.	134	10	A19	.92
55	21C	1.0	1.24	21.5	20.12	4	160.	.00500	2.25	.00	0.	134	6	A19	.92
55	22C	1.3	1.78	22.8	20.90	0	0.	.00000	.00	.00	0.	134	5	A19	.92
55	23C	2.0	2.30	24.8	22.85	0	0.	.00000	.00	.00	0.	134	7	A19	.92

```
*****************************************************************************************************************************
*                                                                                                                           *
*                                                CONFLUENCE Q'S                                                             *
*     55   24A  TA 1158 QA     7.89 QAC    29.81 QC    21.91      55   24C  TC 1156 QC    22.85 QCA    30.29 QA     7.45   *
*                                  55   24AC TAC 1157 QAC    30.34 QA     7.75 QC    22.59                                 *
*****************************************************************************************************************************
```

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
55	24AC	24.8	22.85	34.2	30.34	0	0.	.00000	.00	.00	0.	134	0	A19	.00
55	25A	.5	.69	34.7	30.71	0	0.	.00000	.00	.00	0.	134	5	A19	.92

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 10 SOIL DATA FILE: C:\CIVILD\lasoilx.dat

Proposed Q10 Condtions

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
55	26A	.0	.00	34.7	30.71	0	0.	.00000	.00	.00	0.	134	99	A19	.92

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 2 SOIL DATA FILE: C:\CIVILD\lasoilx.dat

Proposed Condtions

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
55	1A	4.0	1.57	4.0	1.57	4	85.	.00500	2.00	.00	0.	134	19	A19	.92
55	2B	.7	.60	.7	.60	4	280.	.00500	2.00	.00	0.	134	10	A19	.92

* CONFLUENCE Q'S *

* 55 3A TA 1156 QA 1.56 QAB 1.90 QB .34 55 3B TB 1158 QB .35 QBA 1.91 QA 1.56 *

* 55 3AB TAB 1157 QAB 1.91 QA 1.56 QB .35 *

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
55	3AB	.7	.35	4.7	1.91	4	330.	.00500	2.00	.00	0.	134	0	A19	.00
55	4A	1.2	.61	5.9	2.44	4	400.	.00500	2.00	.00	0.	134	11	A19	.92
55	5A	3.5	1.28	9.4	3.65	0	0.	.00000	.00	.00	0.	134	22	A19	.92
55	6C	2.4	1.16	2.4	1.16	4	310.	.00500	2.00	.00	0.	134	12	A19	.92
55	7C	1.6	.88	4.0	1.98	4	200.	.00500	2.00	.00	0.	134	9	A19	.92
55	8C	1.6	.77	5.6	2.71	4	230.	.00500	2.00	.00	0.	134	12	A19	.92
55	9D	.7	.60	.7	.60	4	230.	.00500	2.00	.00	0.	134	7	A19	.92
55	10D	.5	.60	1.2	.68	4	120.	.00500	2.00	.00	0.	134	9	A19	.92
55	11D	.0	.00	1.2	.68	4	170.	.00500	2.00	.00	0.	134	99	A19	.92
55	12D	.3	.60	1.5	.79	0	0.	.00000	.00	.00	0.	134	9	A19	.92

* CONFLUENCE Q'S *

* 55 13C TC 1159 QC 2.68 QCD 3.46 QD .78 55 13D TD 1158 QD .79 QDC 3.47 QC 2.68 *

* 55 13CD TCD 1158 QCD 3.47 QC 2.68 QD .79 *

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
55	13CD	1.5	.79	7.1	3.47	0	0.	.00000	.00	.00	0.	134	0	A19	.00
55	14C	.5	.60	7.6	3.68	4	170.	.00500	2.00	.00	0.	134	8	A19	.92
55	15C	2.9	1.31	10.5	4.90	0	0.	.00000	.00	.00	0.	134	14	A19	.92
55	16C	2.0	1.10	12.5	5.82	4	120.	.00500	2.00	.00	0.	134	9	A19	.92
55	17C	.9	.60	13.4	6.20	4	120.	.00500	2.00	.00	0.	134	14	A19	.92
55	18C	3.3	1.49	16.7	7.59	0	0.	.00000	.00	.00	0.	134	14	A19	.92
55	19C	.7	.60	17.4	7.88	4	160.	.00500	2.00	.00	0.	134	8	A19	.92
55	20C	3.1	1.40	20.5	9.17	0	0.	.00000	.00	.00	0.	134	14	A19	.92
55	21C	1.0	.60	21.5	9.62	4	160.	.00500	2.00	.00	0.	134	9	A19	.92
55	22C	1.3	.76	22.8	10.09	0	0.	.00000	.00	.00	0.	134	8	A19	.92
55	23C	2.0	1.06	24.8	11.05	0	0.	.00000	.00	.00	0.	134	10	A19	.92

```
**********************************************************************************************************************
*                                                CONFLUENCE Q'S                                                      *
*     55   24A  TA 1161 QA     3.65 QAC    13.83 QC    10.17      55   24C  TC 1158 QC    11.05 QCA    14.58 QA     3.52   *
*                                  55   24AC TAC 1158 QAC    14.58 QA     3.52 QC    11.05                          *
**********************************************************************************************************************
```

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
55	24AC	24.8	11.05	34.2	14.58	0	0.	.00000	.00	.00	0.	134	0	A19	.00
55	25A	.5	.60	34.7	14.79	0	0.	.00000	.00	.00	0.	134	8	A19	.92

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 2 SOIL DATA FILE: C:\CIVILD\lasoilx.dat

Proposed Condtions

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM RAIN ZONE	DAY 4 PCT IMPV
55	26A	.0	.00	34.7	14.79	0	0.	.00000	.00	.00	0.	134	99	A19	.92

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1997-2004 Version 6.4

Study Date : 09/09/08 Input hydrograph file name : qhc.hyd
Output hydrograph file name: qhc.hin

User entry of depth-outflow-storage data

Hydrograph time unit varies
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 1.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data @ 1 Min. Intervals:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	1.000	0.001	0.001
3.000	2.200	4.800	2.197	2.203
6.000	5.200	8.000	5.194	5.206

Hydrograph Detention Basin Routing
Hydrograph at 55 26 A Storm Day: 4 Drainage Area = 34.70
Total flood hydrograph volume this storm day = 8.53 Ac. Ft.

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Min)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 11.8 23.5 35.3 47.0	Depth (Ft.)
0	1.0	1.0	0.000	O	0.0
100	2.0	1.0	0.007	OI	0.0
200	2.0	1.2	0.128	OI	0.2
300	3.0	1.5	0.288	|OI	0.4
400	3.0	1.8	0.472	|OI	0.6
500	3.0	2.1	0.617	|OI	0.8
600	3.0	2.3	0.732	|OI	1.0
700	3.0	2.4	0.822	|OI	1.1
800	4.0	2.7	0.957	|OI	1.3
900	4.0	2.9	1.122	| O	1.5
1000	5.0	3.3	1.317	| OI	1.8
1050	7.0	3.6	1.496	| O I	2.0
1100	9.0	4.1	1.786	| O I	2.4
1110	10.0	4.2	1.860	| O I	2.5
1120	12.0	4.4	1.954	| O I	2.7
1130	14.0	4.6	2.073	| O |I	2.8
1131	14.0	4.6	2.086	| O |I	2.8
1132	14.0	4.6	2.099	| O |I	2.9
1133	14.0	4.6	2.112	| O |I	2.9
1134	15.0	4.7	2.126	| O | I	2.9
1135	15.0	4.7	2.140	| O | I	2.9

1136	15.0	4.7	2.154	O	I				2.9
1137	16.0	4.7	2.170	O	I				3.0
1138	16.0	4.8	2.185	O	I				3.0
1139	17.0	4.8	2.202	O	I				3.0
1140	17.0	4.8	2.219	O	I				3.0
1141	18.0	4.8	2.237	O	I				3.0
1142	18.0	4.9	2.255	O	I				3.1
1143	19.0	4.9	2.274	O	I				3.1
1144	19.0	4.9	2.294	O	I				3.1
1145	20.0	4.9	2.315	O	I				3.1
1146	21.0	4.9	2.337	O	I				3.1
1147	22.0	5.0	2.360	O	I				3.2
1148	23.0	5.0	2.385	O	I				3.2
1149	26.0	5.0	2.414	O	I				3.2
1150	29.0	5.1	2.447	O	I				3.2
1151	33.0	5.1	2.485	O	I				3.3
1152	38.0	5.2	2.531	O	I				3.3
1153	42.0	5.2	2.581	O	I				3.4
1154	45.0	5.3	2.636	O	I				3.4
1155	47.0	5.3	2.694	O	I				3.5
1156	47.0	5.4	2.751	O	I				3.6
1157	46.0	5.4	2.807	O	I				3.6
1158	43.0	5.5	2.859	O	I				3.7
1159	40.0	5.6	2.906	O	I				3.7
1160	36.0	5.6	2.948	O	I				3.7
1161	32.0	5.6	2.984	O	I				3.8
1162	28.0	5.7	3.015	O	I				3.8
1163	24.0	5.7	3.040	O	I				3.8
1164	21.0	5.7	3.061	O	I				3.9
1165	19.0	5.7	3.080	O	I				3.9
1166	17.0	5.8	3.095	O	I				3.9
1167	15.0	5.8	3.108	O	I				3.9
1168	14.0	5.8	3.119	O	I				3.9
1169	13.0	5.8	3.129	O	I				3.9
1170	12.0	5.8	3.138	O	I				3.9
1171	12.0	5.8	3.146	O	I				3.9
1172	11.0	5.8	3.153	O	I				4.0
1173	11.0	5.8	3.161	O	I				4.0
1174	10.0	5.8	3.166	O	I				4.0
1175	10.0	5.8	3.172	O	I				4.0
1176	10.0	5.8	3.178	O	I				4.0
1177	9.0	5.8	3.182	O	I				4.0
1178	9.0	5.9	3.186	O	I				4.0
1179	9.0	5.9	3.191	O	I				4.0
1180	9.0	5.9	3.195	O	I				4.0
1181	8.0	5.9	3.198	O	I				4.0
1182	8.0	5.9	3.201	O	I				4.0
1183	8.0	5.9	3.204	O	I				4.0
1184	8.0	5.9	3.207	O	I				4.0
1185	8.0	5.9	3.210	O	I				4.0
1186	8.0	5.9	3.213	O	I				4.0
1187	7.0	5.9	3.214	O					4.0
1188	7.0	5.9	3.216	O					4.0
1189	7.0	5.9	3.217	O					4.0
1190	7.0	5.9	3.219	O					4.0
1191	7.0	5.9	3.220	O					4.0
1192	7.0	5.9	3.222	O					4.0

1193	7.0	5.9	3.223	O				4.0
1194	7.0	5.9	3.225	O				4.0
1195	7.0	5.9	3.227	O				4.0
1196	6.0	5.9	3.227	O				4.0
1197	6.0	5.9	3.227	O				4.0
1198	6.0	5.9	3.227	O				4.0
1199	6.0	5.9	3.227	O				4.0
1200	6.0	5.9	3.227	O				4.0
1201	6.0	5.9	3.227	O				4.0
1202	6.0	5.9	3.228	O				4.0
1203	6.0	5.9	3.228	O				4.0
1204	6.0	5.9	3.228	O				4.0
1205	6.0	5.9	3.228	O				4.0
1206	6.0	5.9	3.228	O				4.0
1207	6.0	5.9	3.228	O				4.0
1208	6.0	5.9	3.228	O				4.0
1209	6.0	5.9	3.229	O				4.0
1210	6.0	5.9	3.229	O				4.0
1211	6.0	5.9	3.229	O				4.0
1212	5.0	5.9	3.228	IO				4.0
1213	5.0	5.9	3.226	IO				4.0
1214	5.0	5.9	3.225	IO				4.0
1215	5.0	5.9	3.224	IO				4.0
1216	5.0	5.9	3.223	IO				4.0
1217	5.0	5.9	3.221	IO				4.0
1218	5.0	5.9	3.220	IO				4.0
1219	5.0	5.9	3.219	IO				4.0
1220	5.0	5.9	3.218	IO				4.0
1221	5.0	5.9	3.217	IO				4.0
1222	5.0	5.9	3.215	IO				4.0
1223	5.0	5.9	3.214	IO				4.0
1224	5.0	5.9	3.213	IO				4.0
1225	5.0	5.9	3.212	IO				4.0
1226	5.0	5.9	3.210	IO				4.0
1227	5.0	5.9	3.209	IO				4.0
1228	5.0	5.9	3.208	IO				4.0
1229	5.0	5.9	3.207	O				4.0
1230	5.0	5.9	3.206	O				4.0
1231	5.0	5.9	3.204	O				4.0
1232	5.0	5.9	3.203	O				4.0
1233	5.0	5.9	3.202	O				4.0
1234	5.0	5.9	3.201	O				4.0
1235	5.0	5.9	3.200	O				4.0
1236	5.0	5.9	3.198	O				4.0
1237	5.0	5.9	3.197	O				4.0
1238	4.0	5.9	3.195	IO				4.0
1239	4.0	5.9	3.192	IO				4.0
1240	4.0	5.9	3.190	IO				4.0
1241	4.0	5.9	3.187	IO				4.0
1242	4.0	5.9	3.184	IO				4.0
1243	4.0	5.8	3.182	IO				4.0
1244	4.0	5.8	3.179	IO				4.0
1245	4.0	5.8	3.177	IO				4.0
1246	4.0	5.8	3.174	IO				4.0
1247	4.0	5.8	3.172	IO				4.0
1248	4.0	5.8	3.169	IO				4.0
1249	4.0	5.8	3.167	IO				4.0

1250	4.0	5.8	3.164	IO				4.0
1251	4.0	5.8	3.162	IO				4.0
1252	4.0	5.8	3.159	IO				4.0
1253	4.0	5.8	3.157	IO				4.0
1254	4.0	5.8	3.154	IO				4.0
1255	4.0	5.8	3.152	IO				4.0
1256	4.0	5.8	3.149	IO				3.9
1257	4.0	5.8	3.147	IO				3.9
1258	4.0	5.8	3.144	IO				3.9
1259	4.0	5.8	3.142	IO				3.9
1260	4.0	5.8	3.139	IO				3.9
1261	4.0	5.8	3.137	IO				3.9
1262	4.0	5.8	3.134	IO				3.9
1263	4.0	5.8	3.132	IO				3.9
1264	4.0	5.8	3.129	IO				3.9
1265	4.0	5.8	3.127	IO				3.9
1266	4.0	5.8	3.124	IO				3.9
1267	4.0	5.8	3.122	IO				3.9
1268	4.0	5.8	3.119	IO				3.9
1269	4.0	5.8	3.117	IO				3.9
1270	4.0	5.8	3.115	IO				3.9
1271	4.0	5.8	3.112	IO				3.9
1272	4.0	5.8	3.110	IO				3.9
1273	4.0	5.8	3.107	IO				3.9
1274	4.0	5.8	3.105	IO				3.9
1275	4.0	5.8	3.102	IO				3.9
1276	4.0	5.8	3.100	IO				3.9
1277	3.0	5.8	3.096	IO				3.9
1278	3.0	5.8	3.092	IO				3.9
1279	3.0	5.7	3.089	IO				3.9
1280	3.0	5.7	3.085	IO				3.9
1281	3.0	5.7	3.081	IO				3.9
1282	3.0	5.7	3.077	IO				3.9
1283	3.0	5.7	3.073	IO				3.9
1284	3.0	5.7	3.070	IO				3.9
1285	3.0	5.7	3.066	IO				3.9
1286	3.0	5.7	3.062	IO				3.9
1287	3.0	5.7	3.058	IO				3.9
1288	3.0	5.7	3.055	IO				3.9
1289	3.0	5.7	3.051	IO				3.9
1290	3.0	5.7	3.047	IO				3.8
1291	3.0	5.7	3.044	IO				3.8
1292	3.0	5.7	3.040	IO				3.8
1293	3.0	5.7	3.036	IO				3.8
1294	3.0	5.7	3.032	IO				3.8
1295	3.0	5.7	3.029	IO				3.8
1296	3.0	5.7	3.025	IO				3.8
1297	3.0	5.7	3.021	IO				3.8
1298	3.0	5.7	3.018	IO				3.8
1299	3.0	5.7	3.014	IO				3.8
1300	3.0	5.7	3.010	IO				3.8
1310	3.0	5.6	2.974	IO				3.8
1320	3.0	5.6	2.938	IO				3.7
1330	3.0	5.5	2.903	IO				3.7
1340	3.0	5.5	2.868	IO				3.7
1350	3.0	5.5	2.833	IO				3.6
1360	3.0	5.4	2.800	IO				3.6

1370	3.0	5.4	2.766	| IO	|	|	|	3.6
1380	3.0	5.4	2.733	| IO	|	|	|	3.5
1390	3.0	5.3	2.701	| IO	|	|	|	3.5
1400	3.0	5.3	2.669	| IO	|	|	|	3.5
1420	2.0	5.2	2.592	|I O	|	|	|	3.4
1440	2.0	5.1	2.505	|I O	|	|	|	3.3
1460	2.0	5.0	2.420	|I O	|	|	|	3.2
1500	2.0	4.9	2.255	|I O	|	|	|	3.1

Remaining water in basin = 2.25 (Ac.Ft)
Peak flow out of basin = 5.90(CFS)
Peak flow time = 1211 Min., time interval # = 97
Maximum depth in basin = 4.03(Ft.)

Table
Rating Table for Circular Orifice

Project Description	
Worksheet	Orifice - 1
Type	Circular Orifice
Solve For	Discharge

Input Data		
Centroid Elevation	2,410.50	ft
Tailwater Elevation	2,410.00	ft
Discharge Coeffic	0.60	
Diameter	12.0	in

Attribute	Minimum	Maximum	Increment
Headwater Elevation	2,411.00	2,415.00	0.20

Headwater Elevation (ft)	Discharge (cfs)	Velocity (ft/s)
2,411.00	2.67	3.40
2,411.20	3.16	4.03
2,411.40	3.59	4.57
2,411.60	3.96	5.05
2,411.80	4.31	5.49
2,412.00	4.63	5.89
2,412.20	4.93	6.28
2,412.40	5.21	6.63
2,412.60	5.48	6.97
2,412.80	5.73	7.30
2,413.00	5.98	7.61
2,413.20	6.21	7.91
2,413.40	6.44	8.20
2,413.60	6.66	8.47
2,413.80	6.87	8.74
2,414.00	7.07	9.00
2,414.20	7.27	9.26
2,414.40	7.47	9.50
2,414.60	7.65	9.75
2,414.80	7.84	9.98
2,415.00	8.02	10.21

C. Water Quality Calculations

- SUSMP Calculation for onsite subarea 141E

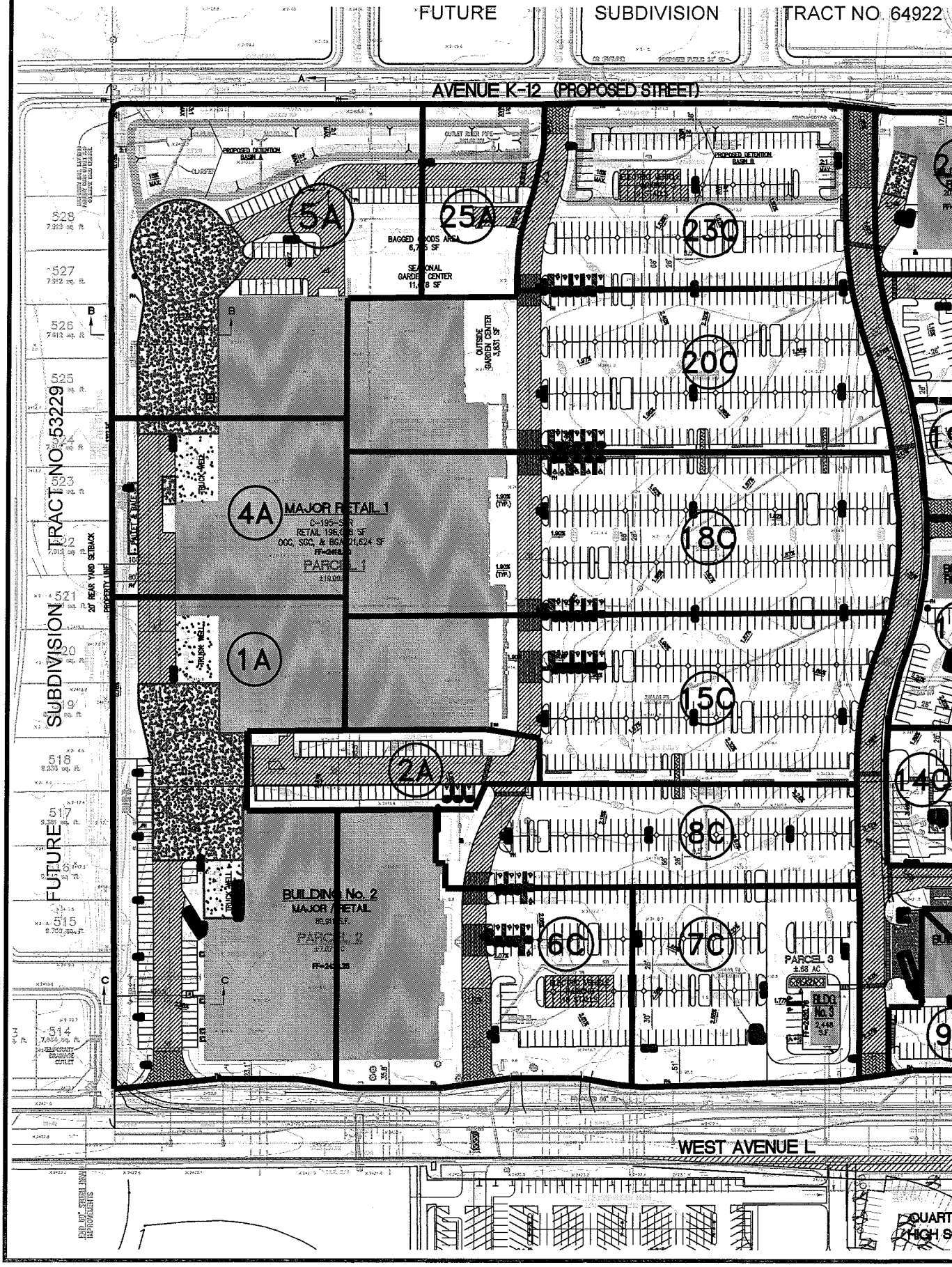
Lane Ranch / The Commons at Quartz Hill

Standard Urban Stormwater Mitigration Peak Flowrate and Volume Calculations

Project	Subarea	Area (acres)	% Imp	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Ix - Intensity (in./hr)	Cu	Cd	Cd * Ix*1.008333	Qpm (cfs)	A_I (ac)	A_P (ac)	V_M (ft3)
QHC	100A	40.2	0.946	134	1770	0.008	0.75	30	0.193	0.100	0.857	0.167	6.7	38.0	2.2	93,772
LR	101A	35.5	0.946	134	1770	0.008	0.75	30	0.193	0.100	0.857	0.167	5.9	33.6	1.9	82,809

D. Quartz Hill Commons Hydrology Map

DRAINAGE CONCEPT HYDROLO
Proposed Condtions
THE COMMONS AT QUARTZ H
IN THE CITY OF LANCASTER
COUNTY OF LOS ANGELES, STATE OF CA



E. Approved Offsite Hydrology Map Tract 53229