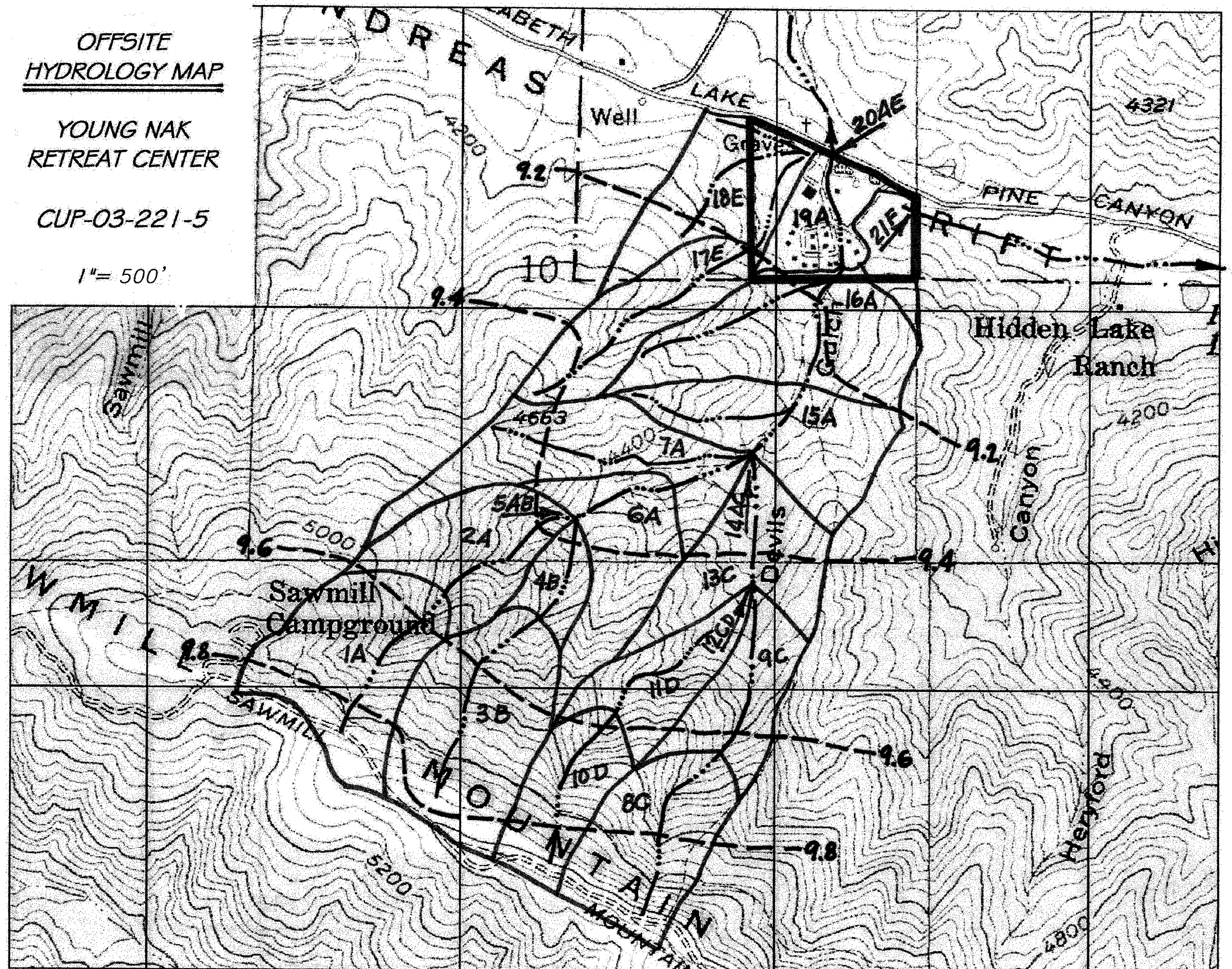
OFFSITE HYDROLOGY MAP

YOUNG NAK RETREAT CENTER

CUP-03-221-5

1"= 500'

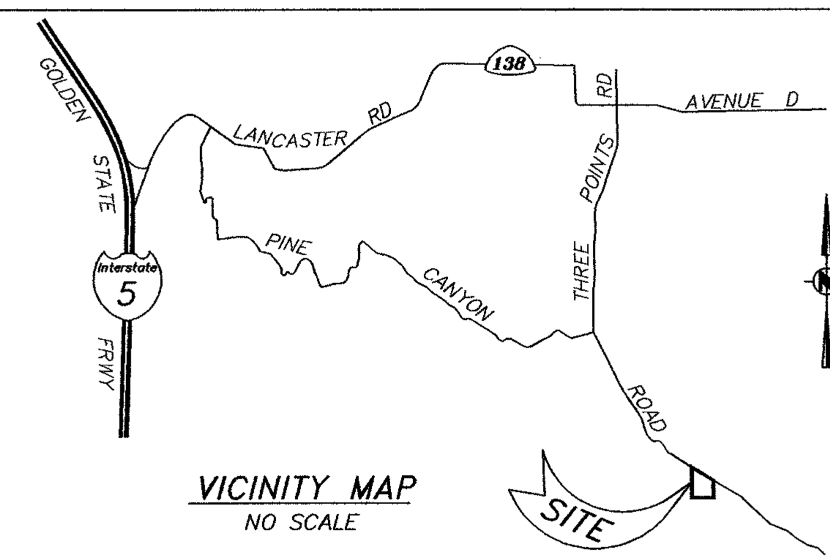


3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS 450 ft Scale Detail: 13-2 Datum: WGS84

GRAPHIC SCALE

500 0 500 1000

(IN FEET)
1 inch = 500 ft.



VICINITY MAP
NO SCALE

EXISTING Tc CALCULATION

Proj	Subarea	Area (acs)	%Imp	Freq	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc Calc	Intensity (in./hr)	Cu	Cd	Flowrate (cfs)
1892	1a	38	0.01	50	123	1800	0.372	9.8	6	5.37	0.88	0.88	179.57
1892	2a	25	0.01	50	123	1200	0.246	9.4	5	5.61	0.88	0.88	123.42
1892	3b	43	0.01	50	123	1950	0.431	9.6	6	5.26	0.88	0.88	199.04
1892	4b	8	0.01	50	123	850	0.218	9.4	5	5.61	0.88	0.88	39.49
1892	6a	27	0.01	50	123	2000	0.34	9.4	7	4.79	0.87	0.87	112.52
1892	7a	32	0.01	50	123	2200	0.1818	9.4	8	4.5	0.86	0.86	123.84
1892	8c	30	0.01	50	123	1700	0.479	9.8	6	5.37	0.88	0.88	141.77
1892	9c	19	0.01	50	123	1400	0.189	9.6	6	5.2	0.88	0.88	87.95
1892	10d	21	0.01	50	123	1600	0.45	9.8	5	5.85	0.89	0.89	109.34
1892	11d	18	0.01	50	123	1500	0.227	9.6	6	5.26	0.88	0.88	83.32
1892	13c	26	0.01	50	123	2300	0.243	9.4	8	4.5	0.86	0.86	100.62
1892	15a	30	0.01	50	123	1900	0.1895	9.2	7	4.69	0.87	0.87	122.41
1892	16a	40	0.01	50	123	2050	0.208	9.2	8	4.4	0.86	0.86	151.36
1892	17e	21	0.01	50	123	2600	0.223	9.2	9	4.16	0.86	0.86	75.13
1892	18e	23	0.01	50	123	2300	0.202	9.2	8	4.4	0.86	0.86	87.03
1892	19a	17	0.42	50	120	1000	0.04	9.2	7	4.69	0.74	0.81	64.58
1892	21f	8	0.01	50	120	1100	0.205	9.2	6	5.04	0.75	0.75	30.24

Proj	Subarea	Area (acs)	%Imp	Freq	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc calc	Intensity (in./hr)	Cu	Cd	Flowrate (cfs)
1892	1a	38	0.01	25	123	1800	0.372	8.6	7	4.38	0.86	0.86	143.14
1892	2a	25	0.01	25	123	1200	0.246	8.3	6	4.55	0.86	0.86	97.83
1892	3b	43	0.01	25	123	1950	0.431	8.4	7	4.28	0.86	0.86	158.27
1892	4b	8	0.01	25	123	850	0.218	8.3	5	4.95	0.87	0.87	34.45
1892	6a	27	0.01	25	123	2000	0.34	8.3	7	4.23	0.86	0.86	98.22
1892	7a	32	0.01	25	123	2200	0.1818	8.3	9	3.76	0.85	0.85	102.27
1892	8c	30	0.01	25	123	1700	0.479	8.6	6	4.71	0.87	0.87	122.93
1892	9c	19	0.01	25	123	1400	0.189	8.4	6	4.6	0.87	0.87	76.04
1892	10d	21	0.01	25	123	1600	0.45	8.6	6	4.71	0.87	0.87	86.05
1892	11d	18	0.01	25	123	1500	0.227	8.4	7	4.28	0.86	0.86	66.25
1892	13c	26	0.01	25	123	2300	0.243	8.3	9	3.76	0.85	0.85	83.1
1892	15a	30	0.01	25	123	1900	0.1895	8.1	8	3.87	0.85	0.85	98.69
1892	16a	40	0.01	25	123	2050	0.208	8.1	8	3.87	0.85	0.85	131.58
1892	17e	21	0.01	25	123	2600	0.223	8.1	10	3.49	0.83	0.83	60.83
1892	18e	23	0.01	25	123	2300	0.202	8.1	9	3.67	0.84	0.84	70.9
1892	19a	17	0.42	25	120	1000	0.04	8.1	7	4.13	0.72	0.8	56.17
1892	21f	8	0.01	25	120	1100	0.205	8.1	6	4.44	0.73	0.73	25.93

Proj	Subarea	Area (acs)	%Imp	Freq	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc calc	Intensity (in./hr)	Cu	Cd	Flowrate (cfs)
1892	1a	38	0.01	2	123	1800	0.372	3.8	13	1.45	0.7	0.7	38.57
1892	2a	25	0.01	2	123	1200	0.246	3.6	12	1.42	0.7	0.7	24.85
1892	3b	43	0.01	2	123	1950	0.431	3.7	14	1.36	0.69	0.69	40.35
1892	4b	8	0.01	2	123	850	0.218	3.6	9	1.63	0.72	0.72	9.39
1892	6a	27	0.01	2	123	2000	0.34	3.6	15	1.28	0.68	0.68	23.5
1892	7a	32	0.01	2	123	2200	0.1818	3.6	18	1.18	0.66	0.66	24.92
1892	8c	30	0.01	2	123	1700	0.479	3.8	12	1.5	0.71	0.71	31.95
1892	9c	19	0.01	2	123	1400	0.189	3.7	13	1.41	0.7	0.7	18.75
1892	10d	21	0.01	2	123	1600	0.45	3.8	12	1.5	0.71	0.71	22.37
1892	11d	18	0.01	2	123	1500	0.227	3.7	13	1.41	0.7	0.7	17.77
1892	13c	26	0.01	2	123	2300	0.243	3.6	18	1.18	0.66	0.66	20.25
1892	15a	30	0.01	2	123	1900	0.1895	3.5	17	1.17	0.66	0.66	23.17
1892	16a	40	0.01	2	123	2050	0.208	3.5	18	1.14	0.66	0.66	30.1
1892	17e	21	0.01	2	123	2600	0.223	3.5	21	1.06	0.64	0.64	14.25
1892	18e	23	0.01	2	123	2300	0.202	3.5	19	1.11	0.65	0.65	16.59
1892	19a	17	0.42	2	120	1000	0.04	3.5	16	1.21	0.38	0.6	12.34
1892	21f	8	0.01	2	120	1100	0.205	3.5	17	1.17	0.37	0.38	3.56

EXISTING HYDROLOGY

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\Program Files\CIVILDESLA\scr_soilx_34.dat
YOUNG NAK RETREAT CENTER 50YR. STORM DAY 4

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
5	1A	38.0	181.11	38.0	181.11	1	1200.	.24600	.00	.00	0.	323	6	A49	.01
5	2A	25.0	126.29	63.0	274.92	0	0.	.00000	.00	.00	0.	323	5	A47	.01
5	3B	43.0	200.35	43.0	200.35	1	850.	.21800	.00	.00	0.	323	6	A48	.01
5	4B	8.0	40.41	51.0	225.89	0	0.	.00000	.00	.00	0.	323	5	A47	.01
5	5AB	51.0	225.89	114.0	500.80	1	850.	.13500	.00	.00	0.	323	0	A47	.00
5	6A	27.0	113.08	141.0	601.14	2	650.	.09200	.00	.00	0.	323	7	A47	.01
5	7A	32.0	125.50	173.0	712.17	0	0.	.00000	.00	.00	0.	323	8	A47	.01
5	8C	30.0	142.98	30.0	142.98	1	1400.	.18900	.00	.00	0.	323	6	A49	.01
5	9C	19.0	88.53	49.0	206.73	0	0.	.00000	.00	.00	0.	323	6	A48	.01
5	10D	21.0	110.97	21.0	110.97	1	1500.	.22700	.00	.00	0.	323	5	A49	.01
5	11D	18.0	83.87	39.0	169.61	0	0.	.00000	.00	.00	0.	323	6	A48	.01
5	12CD	39.0	169.61	88.0	375.20	1	1050.	.13330	.00	.00	0.	323	0	A48	.00
5	13C	26.0	101.97	114.0	464.22	0	0.	.00000	.00	.00	0.	323	8	A47	.01
5	14AC	114.0	464.22	287.0	1176.39	2	700.	.08600	.00	.00	0.	323	0	A47	.00
5	15A	30.0	122.90	317.0	1268.37	2	1000.	.08000	.00	.00	0.	323	7	A46	.01
5	16A	40.0	153.10	357.0	1378.72	2	1000.	.04000	.00	.00	0.	323	8	A46	.01
5	17E	21.0	76.11	21.0	76.11	2	700.	.08570	.00	.00	0.	323	9	A46	.01
5	18E	23.0	88.03	44.0	162.07	2	500.	.04000	.00	.00	0.	323	8	A46	.01
5	19A	17.0	69.22	374.0	1404.24	0	0.	.00000	.00	.00	0.	123	7	A46	.42
5	20AE	44.0	160.92	418.0	1561.22	0	0.	.00000	.00	.00	0.	123	0	A46	.00
5	21F	8.0	35.57	8.0	35.57	0	0.	.00000	.00	.00	0.	323	6	A46	.01

LEGEND:

BF = BULKING FACTOR
BF @ 16A = 1.49
BF @ 20AE = 1.48
BF @ 17E, 18E & 21F = 1.62
$Q_{bb} = (Q_b)(BF)$

$Q_b = Q_{50burned}$
$Q_{bb} = Q_{50burned\ \&\ bulked}$

CALCULATIONS: Q_{bb}

ΣQ_{bb} (16A) $= (1378.7)(1.49) = 2054.3$ cfs

ΣQ_{bb} (21F) $= (35.6)(1.62) = 57.7$ cfs

ΣQ_{bb} (17E) $= (76.1)(1.62) = 123.3$ cfs

ΣQ_{bb} (20AE) $= \left(\frac{418-17}{418}\right)(1561.2)(1.48)+\left(\frac{17}{418}\right)(1561.2) = 2280.1$ cfs

ΣQ_{bb} (18E) $= (162.1)(1.62) = 262.6$ cfs

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 25 SOIL DATA FILE: C:\Program Files\CIVILDESLA\scr_soilx_34.dat
YOUNG NAK RETREAT CENTER 25YR. STORM DAY 4

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
5	1A	38.0	144.61	38.0	144.61	1	1200.	.24600	.00	.00	0.	323	7	A43	.01
5	2A	25.0	100.72	63.0	230.29	0	0.	.00000	.00	.00	0.	323	6	A42	.01
5	3B	43.0	159.35	43.0	159.35	1	850.	.21800	.00	.00	0.	323	7	A42	.01
5	4B	8.0	35.85	51.0	184.04	0	0.	.00000	.00	.00	0.	323	5	A42	.01
5	5AB	51.0	184.04	114.0	412.39	1	850.	.13500	.00	.00	0.	323	0	A42	.00
5	6A	27.0	100.06	141.0	496.86	2	650.	.09200	.00	.00	0.	323	7	A42	.01
5	7A	32.0	104.80	173.0	593.84	0	0.	.00000	.00	.00	0.	323	9	A42	.01
5	8C	30.0	124.06	30.0	124.06	1	1400.	.18900	.00	.00	0.	323	6	A43	.01
5	9C	19.0	76.55	49.0	177.46	0	0.	.00000	.00	.00	0.	323	6	A42	.01
5	10D	21.0	86.84	21.0	86.84	1	1500.	.22700	.00	.00	0.	323	6	A43	.01
5	11D	18.0	66.70	39.0	140.54	0	0.	.00000	.00	.00	0.	323	7	A42	.01
5	12CD	39.0	140.54	88.0	318.00	1	1050.	.13330	.00	.00	0.	323	0	A42	.00
5	13C	26.0	85.15	114.0	387.25	0	0.	.00000	.00	.00	0.	323	9	A42	.01
5	14AC	114.0	387.25	287.0	980.04	2	700.	.08600	.00	.00	0.	323	0	A42	.00
5	15A	30.0	101.29	317.0	1056.89	2	1000.	.08000	.00	.00	0.	323	8	A41	.01
5	16A	40.0	135.05	357.0	1160.82	2	1000.	.04000	.00	.00	0.	323	8	A41	.01
5	17E	21.0	63.95	21.0	63.95	2	700.	.08570	.00	.00	0.	323	10	A41	.01
5	18E	23.0	73.41	44.0	135.13	2	500.	.04000	.00	.00	0.	323	9	A41	.01
5	19A	17.0	61.31	374.0	1181.69	0	0.	.00000	.00	.00	0.	123	7	A41	.42
5	20AE	44.0	134.05	418.0	1310.44	0	0.	.00000	.00	.00	0.	123	0	A41	.00
5	21F	8.0	31.38	8.0	31.38	0	0.	.00000	.00	.00	0.	323	6	A41	.01

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 2 SOIL DATA FILE: C:\Program Files\CIVILDESLA\scr_soilx_34.dat
YOUNG NAK RETREAT CENTER 2YR. STORM DAY 4

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
5	1A	38.0	40.52	38.0	40.52	1	1200.	.24600	.00	.00	0.	323	13	A19	.01
5	2A	25.0	26.21	63.0	64.44	0	0.	.00000	.00	.00	0.	323	12	A18	.01
5	3B	43.0	44.21	43.0	44.21	1	850.	.21800	.00	.00	0.	323	14	A19	.01
5	4B	8.0	9.85	51.0	52.72	0	0.	.00000	.00	.00	0.	323	9	A18	.01
5	5AB	51.0	52.72	114.0	117.16	1	850.	.13500	.00	.00	0.	323	0	A18	.00
5	6A	27.0	24.94	141.0	139.54	2	650.	.09200	.00	.00	0.	323	15	A18	.01
5	7A	32.0	26.52	173.0	164.47	0	0.	.00000	.00	.00	0.	323	18	A18	.01
5	8C	30.0	33.46	30.0	33.46	1	1400.	.18900	.00	.00	0.	323	12	A19	.01
5	9C	19.0	20.26	49.0	50.68	0	0.	.00000	.00	.00	0.	323	13	A19	.01
5	10D	21.0	23.42	21.0	23.42	1	1500.	.22700	.00	.00	0.	323	12	A19	.01
5	11D	18.0	19.19	39.0	39.70	0	0.	.00000	.00	.00	0.	323	13	A19	.01
5	12CD	39.0	39.70	88.0	90.38	1	1050.	.13330	.00	.00	0.	323	0	A19	.00
5	13C	26.0	21.55	114.0	109.29	0	0.	.00000	.00	.00	0.	323	18	A18	.01
5	14AC	114.0	109.29	287.0	273.21	2	700.	.08600	.00	.00	0.	323	0	A18	.00
5	15A	30.0	25.76	317.0	296.13	2	1000.	.08000	.00	.00	0.	323	17	A18	.01
5	16A	40.0	33.15	357.0	325.29	2	1000.	.04000	.00	.00	0.	323	18	A18	.01
5	17E	21.0	15.92	21.0	15.92	2	700.	.08570	.00	.00	0.	323	21	A18	.01
5	18E	23.0	18.51	44.0	34.17	2	500.	.04000	.00	.00	0.	323	19	A18	.01
5	19A	17.0	16.27	374.0	336.84	0	0.	.00000	.00	.00	0.	123	16	A18	.42
5	20AE	44.0	34.05	418.0	369.70	0	0.	.00000	.00	.00	0.	123	0	A18	.00
5	21F	8.0	6.87	8.0	6.87	0	0.	.00000	.00	.00	0.	323	17	A18	.01

REGISTERED PROFESSIONAL ENGINEER
GERALD HOVELL
No. 33118
Exp. 6-30-2008
CIVIL
STATE OF CALIFORNIA

NO.	DATE	REVISIONS	BY	APPR

LEGAL DESCRIPTION:

THAT PORTION OF SECTION 10, TOWNSHIP 7 NORTH, RANGE 16 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT OF SAID LAND, FILED IN THE DISTRICT LAND OFFICE ON AUGUST 25, 1903, BOUNDED NORTHERLY BY THE SOUTHERLY LINE OF PINE CANYON ROAD, AS GRANTED TO THE COUNTY OF LOS ANGELES BY DEEDS RECORDED ON JULY 11, 1933, AS INSTRUMENT NO. 671, IN BOOK 12220, PAGE 289, OFFICIAL RECORDS, AND ON MAY 22, 1934 AS INSTRUMENT NO. 607, IN BOOK 12816, PAGE 75, OFFICIAL RECORDS OF SAID COUNTY, EASTERLY BY THE EAST LINE OF SAID SECTION 10, SOUTHERLY BY THE NORTHERLY LINE OF GOVERNMENT LOT 7 OF SAID SECTION AND WESTERLY BY THE EASTERLY LINE OF GOVERNMENT LOT 6 OF SAID SECTION.

BENCHMARK: BM 111-50 1960 RCE 5869
DESCRIPTION: LOS ANGELES COUNTY ENGINEER BRASS CAP
LOCATION: 12 FEET EAST OF THE WEST ENTRANCE TO 24100 PINE CANYON RD, 12 FEET SOUTH OF PINE CANYON RD IN CONCRETE SLAB
RECORDED FROM: LANCASTER QUAD 1929
ELEVATION: 4030.726 DATUM: 1929

PREPARED FOR:

Young Nak Presbyterian Church of Los Angeles
Mr. Jay Kim
1721 N. Broadway Avenue
Los Angeles, CA 90031
Phone (310) 475-6171

PREPARED BY:

H&P
HOVELL & PILARSKI ENGINEERING, INC.
Simi Valley, California (805) 522-1900
GERALD F. HOVELL, RCE 33118

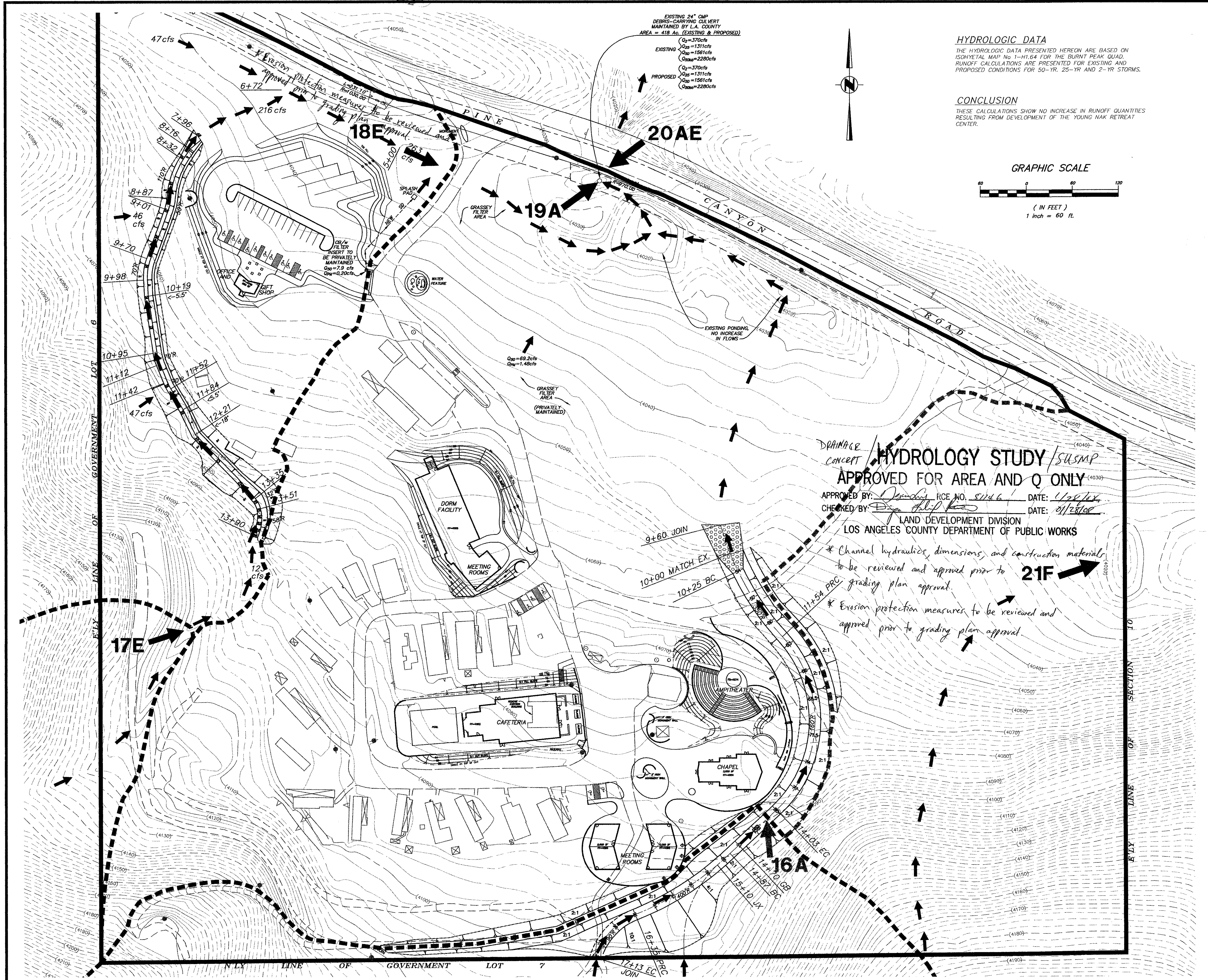
SHEET 1 — YOUNG NAK RETREAT CENTER — 2 SHEETS

PROJECT:

OFFSITE HYDROLOGY STUDY / MAP for CUP 03-221-5
24100 PINE CANYON ROAD
Lake Hughes, California

GERALD F. HOVELL R.C.E. 33118 EXP. 6-30-08 1/21/08 DATE

1892DrainConcept-sht1.dwg 12-12-06 9:44:24 am PST



HYDROLOGIC DATA

THE HYDROLOGIC DATA PRESENTED HEREON ARE BASED ON ISOHYETAL MAP No 1-H1.64 FOR THE BURNT PEAK QUAD. RUNOFF CALCULATIONS ARE PRESENTED FOR EXISTING AND PROPOSED CONDITIONS FOR 50-YR. 25-YR AND 2-YR STORMS.

CONCLUSION

THESE CALCULATIONS SHOW NO INCREASE IN RUNOFF QUANTITIES RESULTING FROM DEVELOPMENT OF THE YOUNG NAK RETREAT CENTER.

GRAPHIC SCALE

60 0 60 120

(IN FEET)
1 inch = 60 ft.

DRAINAGE CONCEPT / HYDROLOGY STUDY / SUSMP
APPROVED FOR AREA AND Q ONLY
APPROVED BY: [signature] RCE NO. 51146 DATE: 1/28/08
CHECKED BY: [signature] DATE: 01/28/08
LAND DEVELOPMENT DIVISION
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

PROPOSED Tc CALCULATION

Proj	Subarea	Area (acs)	%Imp	Freq	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc Calc	Intensity (in./hr)	Cu	Cd	Flowrate (cfs)
1892	1a	38	0.01	50	123	1800	0.372	9.8	6	5.37	0.88	0.88	179.57
1892	2a	25	0.01	50	123	1200	0.246	9.4	5	5.61	0.88	0.88	123.42
1892	3b	43	0.01	50	123	1950	0.431	9.6	6	5.26	0.88	0.88	199.04
1892	4b	8	0.01	50	123	850	0.218	9.4	5	5.61	0.88	0.88	39.49
1892	6a	27	0.01	50	123	2000	0.34	9.4	7	4.79	0.87	0.87	112.52
1892	7a	32	0.01	50	123	2200	0.1818	9.4	8	4.5	0.86	0.86	123.84
1892	8c	30	0.01	50	123	1700	0.479	9.8	6	5.37	0.88	0.88	141.77
1892	9c	19	0.01	50	123	1400	0.189	9.6	6	5.2	0.88	0.88	87.95
1892	10d	21	0.01	50	123	1600	0.45	9.8	5	5.85	0.89	0.89	109.34
1892	11d	18	0.01	50	123	1500	0.227	9.6	6	5.26	0.88	0.88	83.32
1892	13c	26	0.01	50	123	2300	0.243	9.4	8	4.5	0.86	0.86	100.62
1892	15a	30	0.01	50	123	1900	0.1895	9.2	7	4.69	0.87	0.87	122.41
1892	16a	40	0.01	50	123	2050	0.208	9.2	8	4.4	0.86	0.86	151.36
1892	17e	21	0.01	50	123	2600	0.223	9.2	9	4.16	0.86	0.86	75.13
1892	18e	23	0.04	50	123	2300	0.202	9.2	8	4.4	0.86	0.86	87.03
1892	19a	17	0.42	50	120	1000	0.04	9.2	7	4.69	0.74	0.81	64.58
1892	21f	8	0.01	50	120	1100	0.205	9.2	6	5.04	0.75	0.75	30.24

Proj	Subarea	Area (acs)	%Imp	Freq	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc calc	Intensity (in./hr)	Cu	Cd	Flowrate (cfs)
1892	1a	38	0.01	25	123	1800	0.372	8.6	7	4.38	0.86	0.86	143.14
1892	2a	25	0.01	25	123	1200	0.246	8.3	6	4.55	0.86	0.86	97.83
1892	3b	43	0.01	25	123	1950	0.431	8.4	7	4.28	0.86	0.86	158.27
1892	4b	8	0.01	25	123	850	0.218	8.3	5	4.95	0.87	0.87	34.45
1892	6a	27	0.01	25	123	2000	0.34	8.3	7	4.23	0.86	0.86	98.22
1892	7a	32	0.01	25	123	2200	0.1818	8.3	9	3.76	0.85	0.85	102.27
1892	8c	30	0.01	25	123	1700	0.479	8.6	6	4.71	0.87	0.87	122.93
1892	9c	19	0.01	25	123	1400	0.189	8.4	6	4.6	0.87	0.87	76.04
1892	10d	21	0.01	25	123	1600	0.45	8.6	6	4.71	0.87	0.87	86.05
1892	11d	18	0.01	25	123	1500	0.227	8.4	7	4.28	0.86	0.86	66.25
1892	13c	26	0.01	25	123	2300	0.243	8.3	9	3.76	0.85	0.85	83.1
1892	15a	30	0.01	25	123	1900	0.1895	8.1	8	3.87	0.85	0.85	98.69
1892	16a	40	0.01	25	123	2050	0.208	8.1	8	3.87	0.85	0.85	131.58
1892	17e	21	0.01	25	123	2600	0.223	8.1	10	3.49	0.83	0.83	60.83
1892	18e	23	0.04	25	123	2300	0.202	8.1	9	3.67	0.84	0.84	70.9
1892	19a	17	0.42	25	120	1000	0.04	8.1	7	4.13	0.72	0.8	56.17
1892	21f	8	0.01	25	120	1100	0.205	8.1	6	4.44	0.73	0.73	25.93

Proj	Subarea	Area (acs)	%Imp	Freq	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc calc	Intensity (in./hr)	Cu	Cd	Flowrate (cfs)
1892	1a	38	0.01	2	123	1800	0.372	3.8	13	1.45	0.7	0.7	38.57
1892	2a	25	0.01	2	123	1200	0.246	3.6	12	1.42	0.7	0.7	24.85
1892	3b	43	0.01	2	123	1950	0.431	3.7	14	1.36	0.69	0.69	40.35
1892	4b	8	0.01	2	123	850	0.218	3.6	9	1.63	0.72	0.72	9.39
1892	6a	27	0.01	2	123	2000	0.34	3.6	15	1.28	0.68	0.68	23.5
1892	7a	32	0.01	2	123	2200	0.1818	3.6	18	1.18	0.66	0.66	24.92
1892	8c	30	0.01	2	123	1700	0.479	3.8	12	1.5	0.71	0.71	31.95
1892	9c	19	0.01	2	123	1400	0.189	3.7	13	1.41	0.7	0.7	18.75
1892	10d	21	0.01	2	123	1600	0.45	3.8	12	1.5	0.71	0.71	22.37
1892	11d	18	0.01	2	123	1500	0.227	3.7	13	1.41	0.7	0.7	17.77
1892	13c	26	0.01	2	123	2300	0.243	3.6	18	1.18	0.66	0.66	20.25
1892	15a	30	0.01	2	123	1900	0.1895	3.5	17	1.17	0.66	0.66	23.17
1892	16a	40	0.01	2	123	2050	0.208	3.5	18	1.14	0.66	0.66	30.1
1892	17e	21	0.01	2	123	2600	0.223	3.5	21	1.06	0.64	0.64	14.25
1892	18e	23	0.04	2	123	2300	0.202	3.5	19	1.11	0.65	0.65	16.85
1892	19a	17	0.42	2	120	1000	0.04	3.5	16	1.21	0.38	0.6	12.34
1892	21f	8	0.01	2	120	1100	0.205	3.5	17	1.17	0.37	0.38	3.56

PROPOSED HYDROLOGY

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\Program Files\CIVILDESLA\scr_soilx_34.dat
YOUNG NAK RETREAT CENTER 50YR. STORM DAY 4

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
5	1A	38.0	181.11	38.0	181.11	1	1200.	.24600	.00	.00	0.	323	6	A49	.01
5	2A	25.0	126.29	63.0	274.92	0	0.	.00000	.00	.00	0.	323	5	A47	.01
5	3B	43.0	200.35	43.0	200.35	1	850.	.21800	.00	.00	0.	323	6	A48	.01
5	4B	8.0	40.41	51.0	225.89	0	0.	.00000	.00	.00	0.	323	5	A47	.01
5	5AB	51.0	225.89	114.0	500.80	1	850.	.13500	.00	.00	0.	323	0	A47	.00
5	6A	27.0	113.08	141.0	601.14	2	650.	.09200	.00	.00	0.	323	7	A47	.01
5	7A	32.0	125.50	173.0	712.17	0	0.	.00000	.00	.00	0.	323	8	A47	.01
5	8C	30.0	142.98	30.0	142.98	1	1400.	.18900	.00	.00	0.	323	6	A49	.01
5	9C	19.0	88.53	49.0	206.73	0	0.	.00000	.00	.00	0.	323	6	A48	.01
5	10D	21.0	110.97	21.0	110.97	1	1500.	.22700	.00	.00	0.	323	5	A49	.01
5	11D	18.0	83.87	39.0	169.61	0	0.	.00000	.00	.00	0.	323	6	A48	.01
5	12CD	39.0	169.61	88.0	375.20	1	1050.	.13330	.00	.00	0.	323	0	A48	.00
5	13C	26.0	101.97	114.0	464.22	0	0.	.00000	.00	.00	0.	323	8	A47	.01
5	14AC	114.0	464.22	287.0	1176.39	2	700.	.08600	.00	.00	0.	323	0	A47	.00
5	15A	30.0	122.90	317.0	1268.37	2	1000.	.08000	.00	.00	0.	323	7	A46	.01
5	16A	40.0	153.10	357.0	1378.72	2	1000.	.04000	.00	.00	0.	323	8	A46	.01
5	17E	21.0	76.11	21.0	76.11	2	700.	.08570	.00	.00	0.	323	9	A46	.01
5	18E	23.0	88.09	44.0	162.07	2	500.	.04000	.00	.00	0.	323	8	A46	.04
5	19A	17.0	69.22	374.0	1404.24	0	0.	.00000	.00	.00	0.	123	7	A46	.42
5	20AE	44.0	160.98	418.0	1561.29	0	0.	.00000	.00	.00	0.	123	0	A46	.00
5	21F	8.0	35.57	8.0	35.57	0	0.	.00000	.00	.00	0.	323	6	A46	.01

LEGEND:

BF = BULKING FACTOR
BF @ 16A = 1.49
BF @ 20AE = 1.48
BF @ 17E, 18E & 21F = 1.62
$Q_{bb} = (Q_b)(BF)$

$Q_b = Q_{50burned}$
$Q_{bb} = Q_{50burned\ \&\ bulked}$

CALCULATIONS: Q_{bb}

ΣQ_{bb} (16A) = (1378.7)(1.49) = 2054.3 cfs

ΣQ_{bb} (17E) = (76.1)(1.62) = 123.3 cfs

ΣQ_{bb} (18E) = (162.1)(1.62) = 262.6 cfs

ΣQ_{bb} (21F) = (35.6)(1.62) = 57.7 cfs

ΣQ_{bb} (20AE) $= \frac{418-17}{418}(1561.3)(1.48)+\frac{17}{418}(1561.3) = 2280.2$ cfs

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 25 SOIL DATA FILE: C:\Program Files\CIVILDESLA\scr_soilx_34.dat
YOUNG NAK RETREAT CENTER 25YR. STORM DAY 4

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
5	1A	38.0	144.61	38.0	144.61	1	1200.	.24600	.00	.00	0.	323	7	A43	.01
5	2A	25.0	100.72	63.0	230.29	0	0.	.00000	.00	.00	0.	323	6	A42	.01
5	3B	43.0	159.35	43.0	159.35	1	850.	.21800	.00	.00	0.	323	7	A42	.01
5	4B	8.0	35.85	51.0	184.04	0	0.	.00000	.00	.00	0.	323	5	A42	.01
5	5AB	51.0	184.04	114.0	412.39	1	850.	.13500	.00	.00	0.	323	0	A42	.00
5	6A	27.0	100.06	141.0	496.86	2	650.	.09200	.00	.00	0.	323	7	A42	.01
5	7A	32.0	104.80	173.0	593.84	0	0.	.00000	.00	.00	0.	323	9	A42	.01
5	8C	30.0	124.06	30.0	124.06	1	1400.	.18900	.00	.00	0.	323	6	A43	.01
5	9C	19.0	76.55	49.0	177.46	0	0.	.00000	.00	.00	0.	323	6	A42	.01
5	10D	21.0	86.84	21.0	86.84	1	1500.	.22700	.00	.00	0.	323	6	A43	.01
5	11D	18.0	66.70	39.0	140.54	0	0.	.00000	.00	.00	0.	323	7	A42	.01
5	12CD	39.0	140.54	88.0	318.00	1	1050.	.13330	.00	.00	0.	323	0	A42	.00
5	13C	26.0	85.15	114.0	387.25	0	0.	.00000	.00	.00	0.	323	9	A42	.01
5	14AC	114.0	387.25	287.0	980.04	2	700.	.08600	.00	.00	0.	323	0	A42	.00
5	15A	30.0	101.29	317.0	1056.89	2	1000.	.08000	.00	.00	0.	323	8	A41	.01
5	16A	40.0	135.05	357.0	1160.82	2	1000.	.04000	.00	.00	0.	323	8	A41	.01
5	17E	21.0	63.95	21.0	63.95	2	700.	.08570	.00	.00	0.	323	10	A41	.01
5	18E	23.0	73.41	44.0	135.13	2	500.	.04000	.00	.00	0.	323	9	A41	.04
5	19A	17.0	61.31	374.0	1181.69	0	0.	.00000	.00	.00	0.	123	7	A41	.42
5	20AE	44.0	134.14	418.0	1310.54	0	0.	.00000	.00	.00	0.	123	0	A41	.00
5	21F	8.0	31.38	8.0	31.38	0	0.	.00000	.00	.00	0.	323	6	A41	.01

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 2 SOIL DATA FILE: C:\Program Files\CIVILDESLA\scr_soilx_34.dat
YOUNG NAK RETREAT CENTER 2YR. STORM DAY 4

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
5	1A	38.0	40.52	38.0	40.52	1	1200.	.24600	.00	.00	0.	323	13	A19	.01
5	2A	25.0	26.21	63.0	64.44	0	0.	.00000	.00	.00	0.	323	12	A18	.01
5	3B	43.0	44.21	43.0	44.21	1	850.	.21800	.00	.00	0.	323	14	A19	.01
5	4B	8.0	9.85	51.0	52.72	0	0.	.00000	.00	.00	0.	323	9	A18	.01
5	5AB	51.0	52.72	114.0	117.16	1	850.	.13500	.00	.00	0.	323	0	A18	.00
5	6A	27.0	24.94	141.0	139.54	2	650.	.09200	.00	.00	0.	323	15	A18	.01
5	7A	32.0	26.52	173.0	164.47	0	0.	.00000	.00	.00	0.	323	18	A18	.01
5	8C	30.0	33.46	30.0	33.46	1	1400.	.18900	.00	.00	0.	323	12	A19	.01
5	9C	19.0	20.26	49.0	50.68	0	0.	.00000	.00	.00	0.	323	13	A19	.01
5	10D	21.0	23.42	21.0	23.42	1	1500.	.22700	.00	.00	0.	323	12	A19	.01
5	11D	18.0	19.19	39.0	39.70	0	0.	.00000	.00	.00	0.	323	13	A19	.01
5	12CD	39.0	39.70	88.0	90.38	1	1050.	.13330	.00	.00	0.	323	0	A19	.00
5	13C	26.0	21.55	114.0	109.29	0	0.	.00000	.00	.00	0.	323	18	A18	.01
5	14AC	114.0	109.29	287.0	273.21	2	700.	.08600	.00	.00	0.	323	0	A18	.00
5	15A	30.0	25.76	317.0	296.13	2	1000.	.08000	.00	.00	0.	323	17	A18	.01
5	16A	40.0	33.15	357.0	325.29	2	1000.	.04000	.00	.00	0.	323	18	A18	.01
5	17E	21.0	15.92	21.0	15.92	2	700.	.08570	.00	.00	0.	323	21	A18	.01
5	18E	23.0	18.51	44.0	34.17	2	500.	.04000	.00	.00	0.	323	19	A18	.04
5	19A	17.0	16.27	374.0	336.84	0	0.	.00000	.00	.00	0.	123	16	A18	.42
5	20AE	44.0	34.21	418.0	369.85	0	0.	.00000	.00	.00	0.	123	0	A18	.00
5	21F	8.0	6.87	8.0	6.87	0	0.	.00000	.00	.00	0.	323	17	A18	.01

REGISTERED PROFESSIONAL ENGINEER GERALD HOVELL No. 33118 Exp. 6-30-2008 CIVIL STATE OF CALIFORNIA

NOT FOR CONSTRUCTION

ASSESSOR'S PARCEL NO.

3243-017-021

NO.	DATE	REVISIONS	BY	APPR

LEGAL DESCRIPTION:

THAT PORTION OF SECTION 10, TOWNSHIP 7 NORTH, RANGE 16 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT OF SAID LAND, FILED IN THE DISTRICT LAND OFFICE ON AUGUST 25, 1903, BOUNDED NORTHERLY BY THE SOUTHERLY LINE OF PINE CANYON ROAD, AS GRANTED TO THE COUNTY OF LOS ANGELES BY DEEDS RECORDED ON JULY 11, 1933, AS INSTRUMENT NO. 671, IN BOOK 12220, PAGE 289, OFFICIAL RECORDS, AND ON MAY 22, 1934 AS INSTRUMENT NO. 607, IN BOOK 12816, PAGE 75, OFFICIAL RECORDS OF SAID COUNTY, EASTERLY BY THE EAST LINE OF SAID SECTION 10, SOUTHERLY BY THE NORTHERLY LINE OF GOVERNMENT LOT 7 OF SAID SECTION AND WESTERLY BY THE EASTERLY LINE OF GOVERNMENT LOT 6 OF SAID SECTION.

BENCHMARK: BM 111-50 1960 RCE 5869
DESCRIPTION: LOS ANGELES COUNTY ENGINEER BRASS CAP
LOCATION: 12 FEET EAST OF THE WEST ENTRANCE TO 24100 PINE CANYON RD, 12 FEET SOUTH OF PINE CANYON RD IN CONCRETE SLAB
RECORDED FROM: LANCASTER QUAD 1929
ELEVATION: 4030.726 DATUM: 1929

PREPARED FOR:

Young Nak Presbyterian Church of Los Angeles
Mr. Jay Kim
1721 N. Broadway Avenue
Los Angeles, CA 90031
Phone (310) 475-6171

PREPARED BY:

H&P
HOVELL & PILARSKI ENGINEERING, INC.
Simi Valley, California (805) 522-1900
GERALD F. HOVELL, RCE 33118

SHEET 2 | YOUNG NAK RETREAT CENTER | 2 SHEETS

PROJECT:

DRAINAGE CONCEPT / HYDROLOGY STUDY / SUSMP for CUP 03-221-5
24100 PINE CANYON ROAD
Lake Hughes, California

[signature] 4/21/08
GERALD F. HOVELL R.C.E. 33118 EXP. 6-30-08 DATE

1892DrainConcept.dwg 12-13-06 5:07:56 pm PST