

PRELIMINARY HYDROLOGY REPORT

For

Prologis - Kaiser PROJ-2019-00005

PROJECT LOCATION

13557 San Bernardino Avenue
in the County of San Bernardino
APN: 0238-031-32, -33, -34, -35, -36

DEVELOPER

Prologis, L.P.
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Ontario, CA 91764
949-215-3796

PREPARED BY

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David White, P.E.
C52921, Exp 12/31/2020

PREPARATION DATE

June 25th, 2019
Revised: December 18, 2019

HZ PROJECT NUMBER

R307465.01

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Introduction

This preliminary hydrology analysis has been prepared for Prologis, L.P. The project is a new development of an industrial warehouse facility located at the 13557 San Bernardino Avenue in County of San Bernardino, California. The proposed building is approximately 164,960 square feet on approximately 10.13 acres of partially developed land.

Purpose

The purpose of this report is to present the drainage concept and determine the design flow rates for the project site. The hydrology maps and calculations reflect the tributary areas and 100-year storm event runoff flows.

Existing Condition

The project site is a uniquely shaped and graded parcel and is currently occupied by an abandoned water treatment plant on the east half of the property. The project site generally consists of three drainage areas as indicated on the Existing Hydrology Map. Area E1 comprises roughly the west half of the site and sheet flows from east to west. Runoff from area E1 enters an existing drainage inlet at the southwest corner of the site and continues flowing in an existing private storm drain line. Area E-2 is located in the east central portion of the site and appears to sheet flow to a large open pit with some runoff making it to the open channel along the south property line. The open channel flows west and enters a private 24" storm drain. Area E-3, the east portion of the existing site, flows from north to south in a non-uniform swale and drains into an existing channel along the east property line and continues flowing east through the CSI property to the Mulberry channel.

Discussion

For the proposed condition, the runoff will be directed to the on-site underground infiltration system located in the west parking lot, see Appendix A for proposed on-site hydrology map. The overflow from the underground infiltration system will be discharged to a proposed 36" storm drain located in the southwest corner of the site, which replaces an existing 24" storm drain pipe (Line F). The existing storm drain is part of the Kaiser Commerce Center private storm drain system (see Appendix E) and was installed to collect runoff from the subject property. Unfortunately when the slag pile south of the subject site was capped, 13 acres of runoff was diverted to Line F, which leaves no capacity for the subject site. The Kaiser Commerce Center private storm drain system provided multiple laterals at various locations for the future runoff from the slag pile, so although the proposed discharge to Lines E and F has increased, the overall Q of the downstream system will not change. Since the existing storm drain was designed to accept runoff from the subject site, the existing runoff is irrelevant and the data has been omitted from the existing hydrology map.

Site runoff from the east side of the building roof and east parking area will be collected by catch basin #1. The collected runoff will then be conveyed through the proposed on-site storm drain Line A to the underground infiltration system.

Site runoff from the center portion of the building roof and truck dock area will be collected by catch basins #2 and #3. The collected runoff will then be conveyed through the proposed on-site storm drain Line A to the underground infiltration system.

Site runoff from the west side of the building roof and the west parking lot will drain to catch basin #4. The water will drain into storm drain Line B into the underground infiltration system.

The overflow from the underground infiltration system, in excess of the water quality storage volume will back up through storm drain Line B and discharge to the proposed 36" storm drain line (Line F) located in the southwest corner of the site.

Hydrologic Analysis

A hydrologic analysis was prepared using the methodology outlined in the San Bernardino County Flood Control District (SBCFCD) Hydrology Manual. A rational method analysis was completed for the proposed 100-year return event using Civild software.

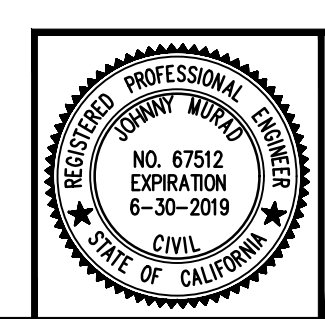
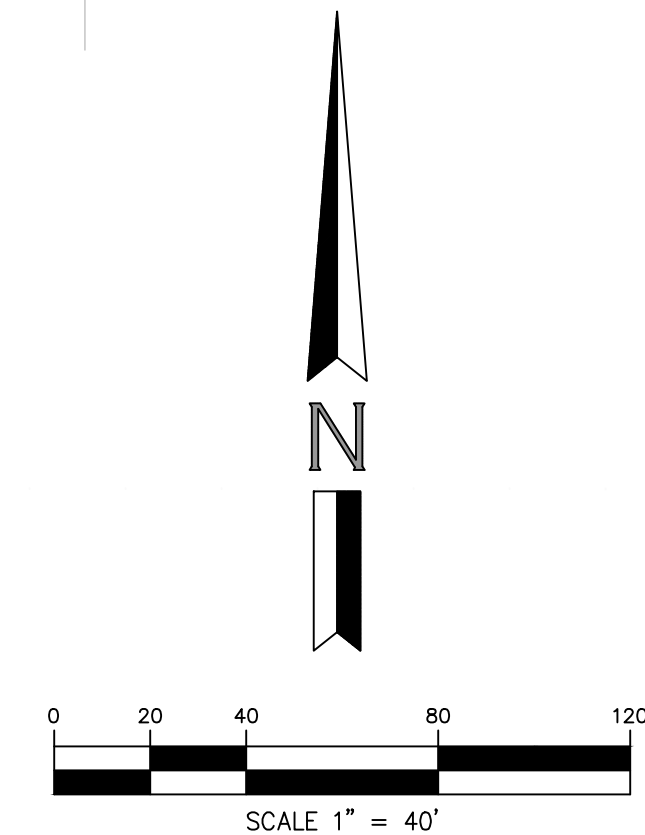
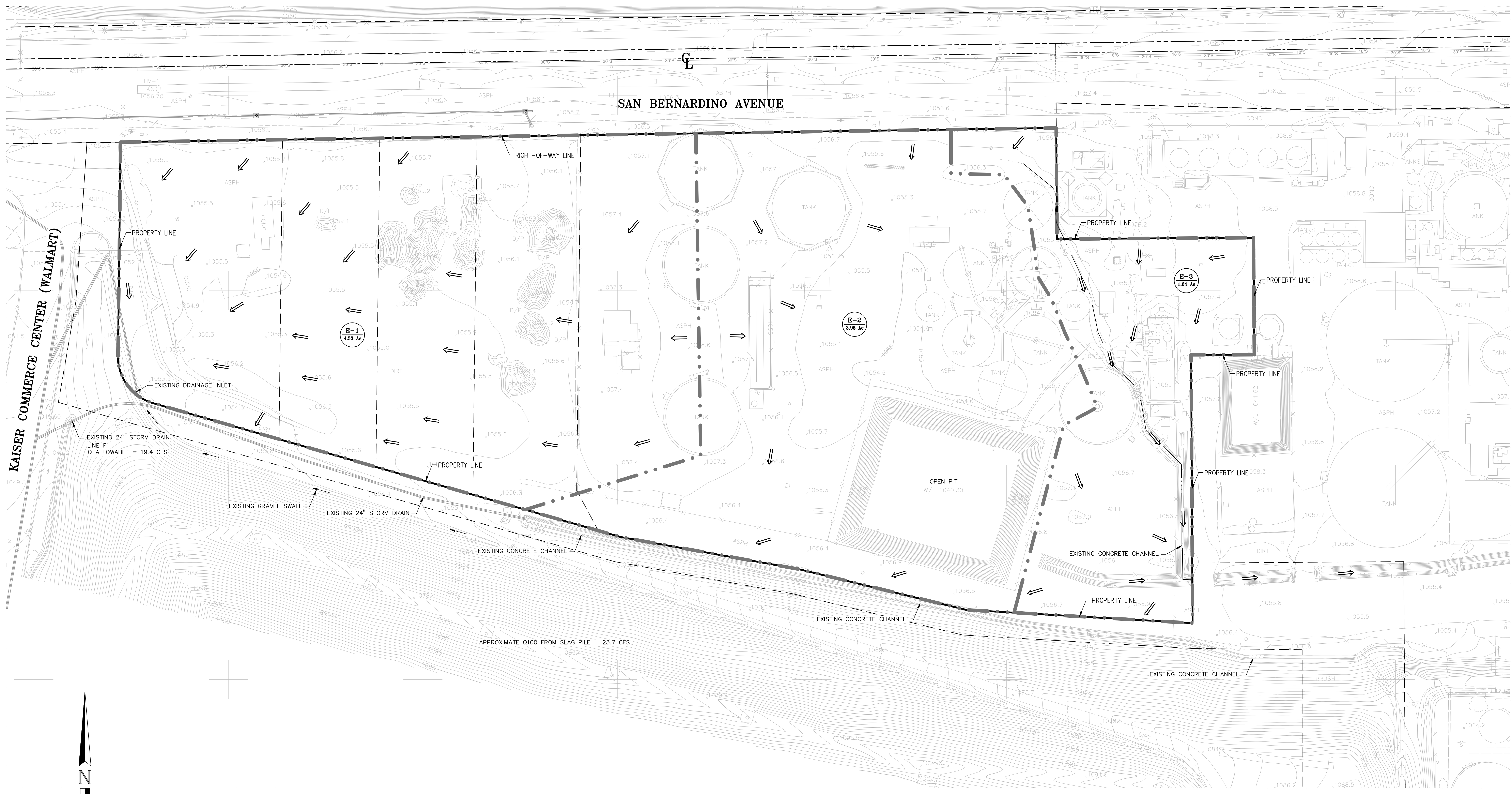
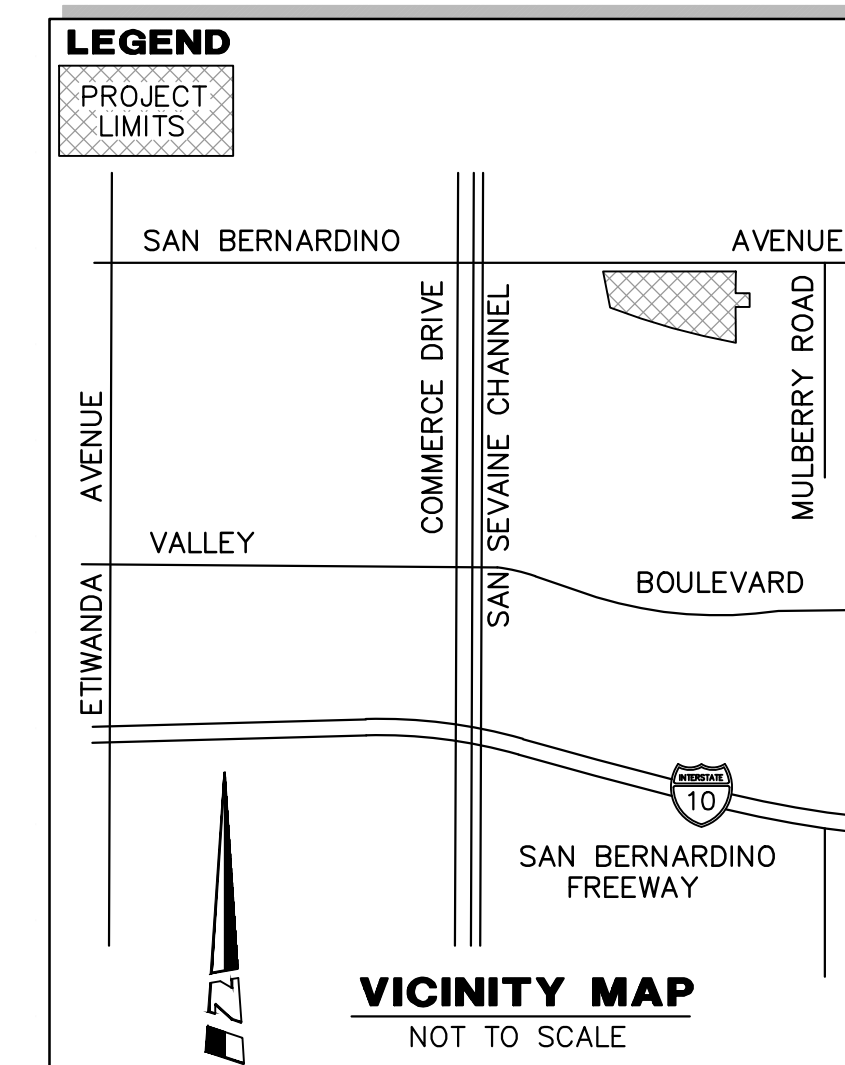
The 100-year, 1-hour rainfall rate was taken from the isohyetal maps in the County of San Bernardino Hydrology Manual. The hydrologic soils type for the site is "A" and was taken from the soil map in the Hydrology Manual. A "commercial" land use was used with an AMC of III.

Results

The underground infiltration system provides dead storage for water quality purposes. The combined runoff from the subject site and slag pile requires upsizing a portion of the existing Kaiser Commerce Center private storm drain system. See Appendix B for Rational Method calculations and Appendix C for hydraulic calculations. The hydraulic calculations demonstrate that the upsized storm drain results in a lower HGL when compared to the existing storm drain using the original design flows.

All proposed drainage and storm drain facilities will be sized adequately for Q_{100} . Additional calculations will be provided in final drainage report including on-site storm drain hydraulics and catch basin sizing.

Appendix A
Preliminary Hydrology Maps

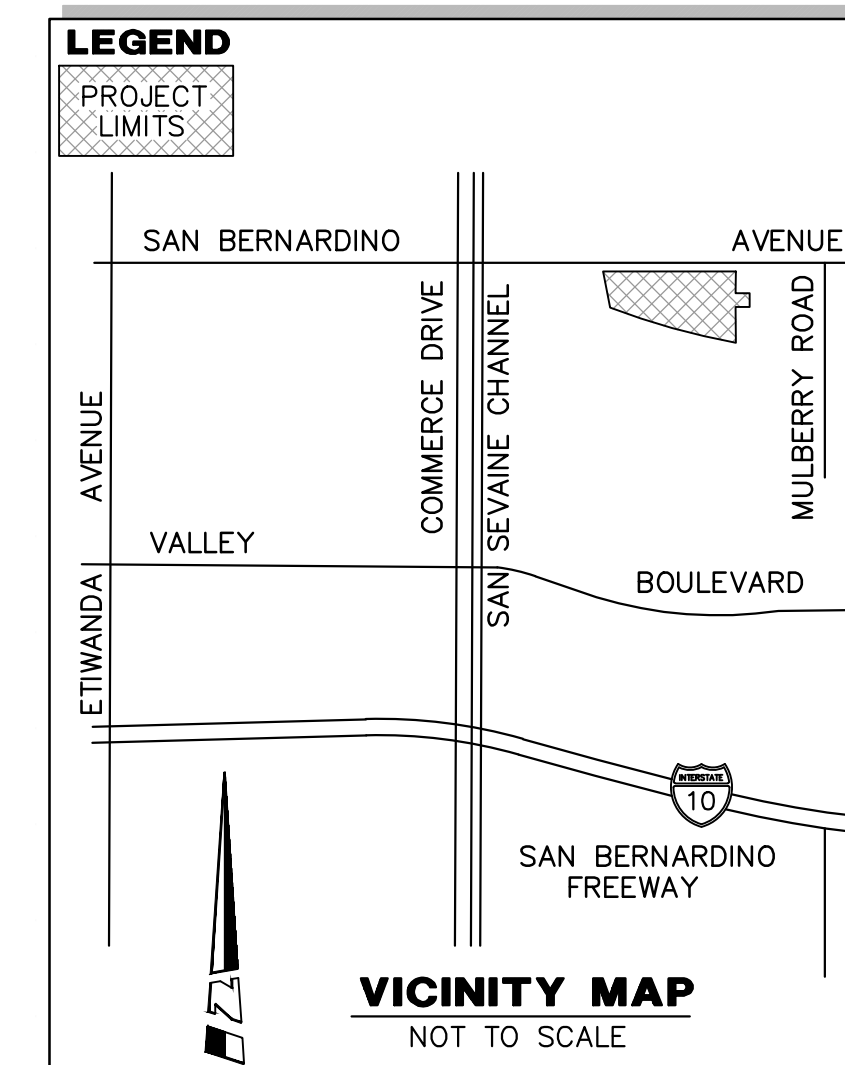


EXISTING CONDITIONS HYDROLOGY MAP
FOR
PROLOGIS - KAISER
13557 SAN BERNARDINO AVE, FONTANA, CA 92335
COUNTY OF SAN BERNARDINO

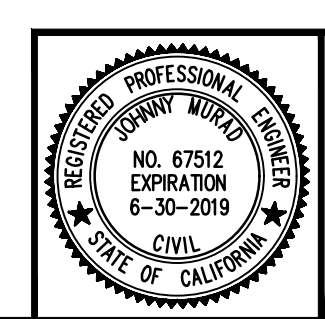
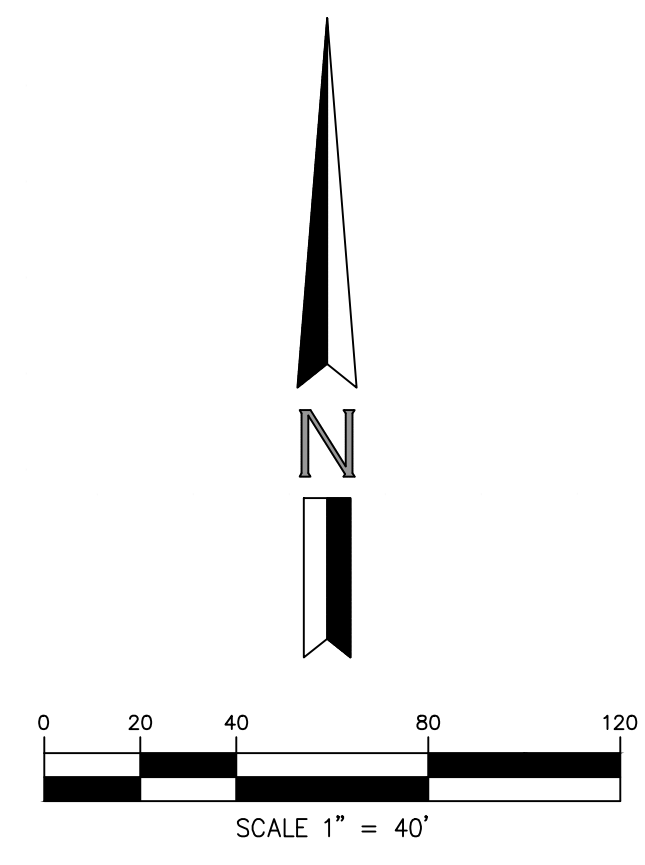
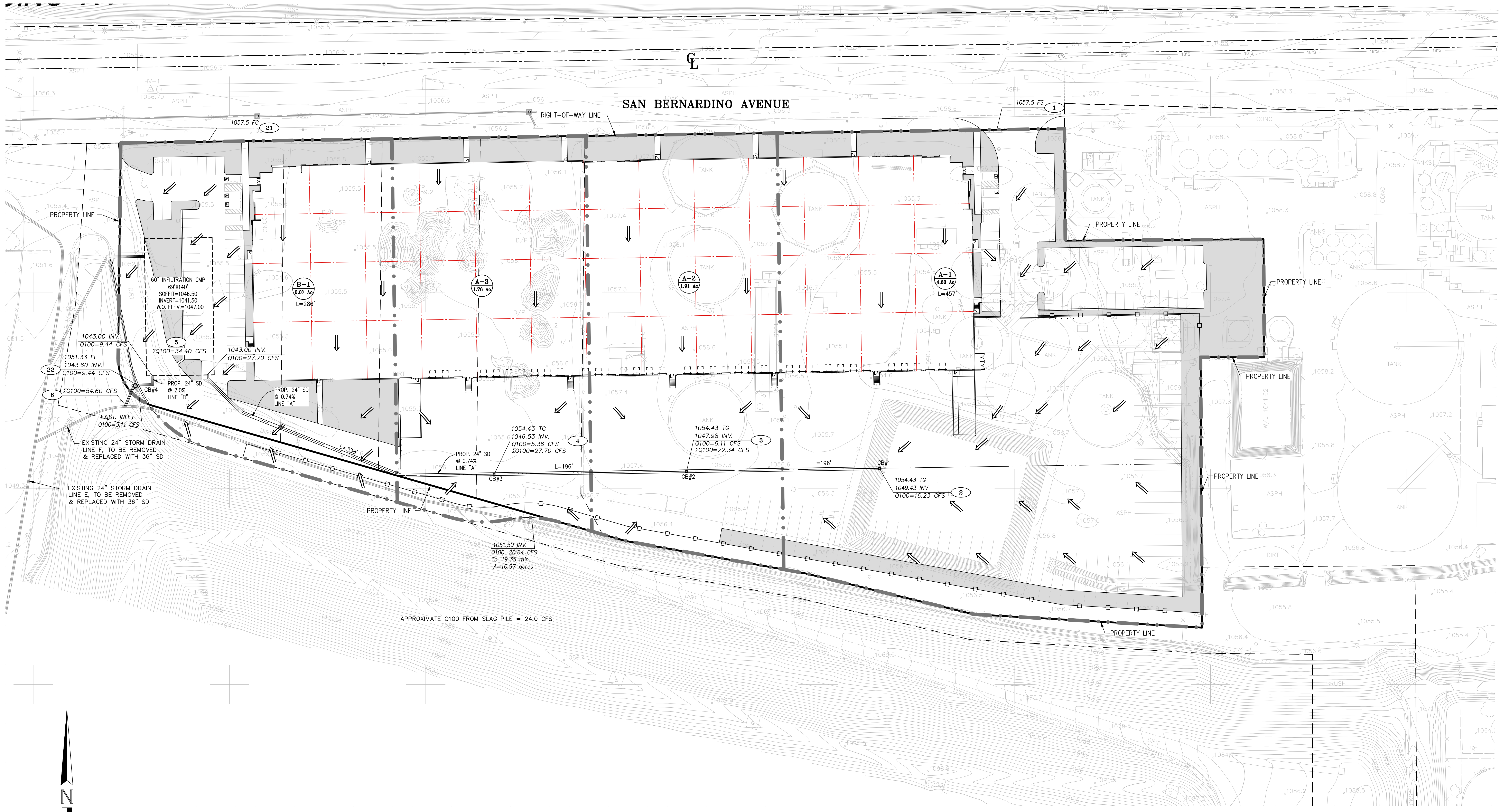
HUITT-ZOLLARS
HUITT-ZOLLARS, INC.
3990 CONCOURSE, SUITE 330 • ONTARIO, CALIFORNIA 91764 • (909) 941-7799

DESIGNED BY D.L.W.	SHEET 1
DRAWN BY HZ STAFF	OF 1
CHECKED BY D.L.W.	SHEETS
FIELD BOOK	JOB NO. R307465.01

Project: R307465.01 - Prologis - Kaiser - US Design - 05.2 - MAIN - LAYOUT - 1000 - E - Scale: 1/4" = 100' - Layout: E-1, E-2, E-3 - Date: 10/18/2018 - 10:34 AM



- LEGEND**
- NO. HYDROLOGY MODEL NODE NUMBER
 - A-11
7.40 Ac
673' TRIBUTARY AREA IN ACRES
LENGTH OF FLOW
 - DRAINAGE BOUNDARY
 - DRAINAGE INLET/CATCH BASIN (CB)
 - SD PROPOSED STORM DRAIN
 - ← FLOW DIRECTION



PRELIMINARY HYDROLOGY MAP
FOR
PROLOGIS - KAISER
13557 SAN BERNARDINO AVE, FONTANA, CA 92335
CITY OF RIALTO

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Project: R307465.01 - Prologis - Kaiser - US Design - 05.2 - RIALTO - 11/10/20 - Map - Layout - 24x36 - DWF - Rev. 1B - 2019 - 03-28pm

Appendix B
100-year Rational Method Hydrologic Analysis

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2005 Version 7.1
Rational Hydrology Study Date: 12/11/19

PROLOGIS - KAISER
100 YEAR STORM EVENT PROPOSED
7465Q100P

Program License Serial Number 6145

***** Hydrology Study Control Information *****

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.330 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

+++++
Process from Point/Station 1.000 to Point/Station 2.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.079(In/Hr)
Initial subarea data:
Initial area flow distance = 457.000(Ft.)
Top (of initial area) elevation = 1057.500(Ft.)
Bottom (of initial area) elevation = 1054.430(Ft.)
Difference in elevation = 3.070(Ft.)
Slope = 0.00672 s(%)= 0.67
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.581 min.
Rainfall intensity = 3.999(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.882
Subarea runoff = 16.229(CFS)
Total initial stream area = 4.600(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.079(In/Hr)

+++++
Process from Point/Station 2.000 to Point/Station 3.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1049.430(Ft.)
Downstream point/station elevation = 1047.980(Ft.)
Pipe length = 196.00(Ft.) Manning's N = 0.012
No. of pipes = 1 Required pipe flow = 16.229(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 16.229(CFS)
Normal flow depth in pipe = 15.80(In.)
Flow top width inside pipe = 22.77(In.)
Critical Depth = 17.42(In.)
Pipe flow velocity = 7.40(Ft/s)
Travel time through pipe = 0.44 min.
Time of concentration (TC) = 10.02 min.

+++++
Process from Point/Station 3.000 to Point/Station 3.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.079(In/Hr)
Time of concentration = 10.02 min.
Rainfall intensity = 3.892(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.882
Subarea runoff = 6.114(CFS) for 1.910(Ac.)
Total runoff = 22.343(CFS)
Effective area this stream = 6.51(Ac.)
Total Study Area (Main Stream No. 1) = 6.51(Ac.)
Area averaged Fm value = 0.079(In/Hr)

+++++
Process from Point/Station 3.000 to Point/Station 4.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1047.980(Ft.)
Downstream point/station elevation = 1046.530(Ft.)
Pipe length = 196.00(Ft.) Manning's N = 0.012
No. of pipes = 1 Required pipe flow = 22.343(CFS)
Nearest computed pipe diameter = 27.00(In.)
Calculated individual pipe flow = 22.343(CFS)
Normal flow depth in pipe = 17.84(In.)

Flow top width inside pipe = 25.57(In.)
Critical Depth = 19.85(In.)
Pipe flow velocity = 8.01(Ft/s)
Travel time through pipe = 0.41 min.
Time of concentration (TC) = 10.43 min.

++++
Process from Point/Station 4.000 to Point/Station 4.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.079(In/Hr)
Time of concentration = 10.43 min.
Rainfall intensity = 3.800(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.881
Subarea runoff = 5.356(CFS) for 1.760(Ac.)
Total runoff = 27.699(CFS)
Effective area this stream = 8.27(Ac.)
Total Study Area (Main Stream No. 1) = 8.27(Ac.)
Area averaged Fm value = 0.079(In/Hr)

++++
Process from Point/Station 4.000 to Point/Station 5.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1046.530(Ft.)
Downstream point/station elevation = 1044.000(Ft.)
Pipe length = 338.00(Ft.) Manning's N = 0.012
No. of pipes = 1 Required pipe flow = 27.699(CFS)
Nearest computed pipe diameter = 27.00(In.)
Calculated individual pipe flow = 27.699(CFS)
Normal flow depth in pipe = 21.09(In.)
Flow top width inside pipe = 22.32(In.)
Critical Depth = 22.00(In.)
Pipe flow velocity = 8.31(Ft/s)
Travel time through pipe = 0.68 min.
Time of concentration (TC) = 11.11 min.

++++
Process from Point/Station 5.000 to Point/Station 5.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
Stream flow area = 8.270(Ac.)

Runoff from this stream = 27.699(CFS)
Time of concentration = 11.11 min.
Rainfall intensity = 3.659(In/Hr)
Area averaged loss rate (Fm) = 0.0785(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000

Process from Point/Station 21.000 to Point/Station 22.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.079(In/Hr)
Initial subarea data:
Initial area flow distance = 286.000(Ft.)
Top (of initial area) elevation = 1057.500(Ft.)
Bottom (of initial area) elevation = 1051.330(Ft.)
Difference in elevation = 6.170(Ft.)
Slope = 0.02157 s(%)= 2.16
TC = $k(0.304)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$
Initial area time of concentration = 6.290 min.
Rainfall intensity = 5.147(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.886
Subarea runoff = 9.443(CFS)
Total initial stream area = 2.070(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.079(In/Hr)

Process from Point/Station 22.000 to Point/Station 5.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1044.600(Ft.)
Downstream point/station elevation = 1044.000(Ft.)
Pipe length = 30.00(Ft.) Manning's N = 0.012
No. of pipes = 1 Required pipe flow = 9.443(CFS)
Nearest computed pipe diameter = 15.00(In.)
Calculated individual pipe flow = 9.443(CFS)
Normal flow depth in pipe = 11.72(In.)
Flow top width inside pipe = 12.40(In.)
Critical Depth = 14.03(In.)
Pipe flow velocity = 9.18(Ft/s)
Travel time through pipe = 0.05 min.
Time of concentration (TC) = 6.34 min.

Process from Point/Station 5.000 to Point/Station 5.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 2
 Stream flow area = 2.070(Ac.)
 Runoff from this stream = 9.443(CFS)
 Time of concentration = 6.34 min.
 Rainfall intensity = 5.121(In/Hr)
 Area averaged loss rate (Fm) = 0.0785(In/Hr)
 Area averaged Pervious ratio (Ap) = 0.1000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
------------	-----------------	------------	----------	------------	----------------------------

1	27.70	8.270	11.11	0.079	3.659
2	9.44	2.070	6.34	0.079	5.121

Qmax(1) =
 1.000 * 1.000 * 27.699) +
 0.710 * 1.000 * 9.443) + = 34.405

Qmax(2) =
 1.408 * 0.571 * 27.699) +
 1.000 * 1.000 * 9.443) + = 31.721

Total of 2 streams to confluence:
 Flow rates before confluence point:
 27.699 9.443
 Maximum flow rates at confluence using above data:
 34.405 31.721
 Area of streams before confluence:
 8.270 2.070
 Effective area values after confluence:
 10.340 6.794

Results of confluence:
 Total flow rate = 34.405(CFS)
 Time of concentration = 11.108 min.
 Effective stream area after confluence = 10.340(Ac.)
 Study area average Pervious fraction(Ap) = 0.100
 Study area average soil loss rate(Fm) = 0.079(In/Hr)
 Study area total (this main stream) = 10.34(Ac.)

+++++
 Process from Point/Station 5.000 to Point/Station 6.000
 **** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
 In Main Stream number: 1
 Stream flow area = 10.340(Ac.)
 Runoff from this stream = 34.405(CFS)
 Time of concentration = 11.11 min.
 Rainfall intensity = 3.659(In/Hr)
 Area averaged loss rate (Fm) = 0.0785(In/Hr)

Area averaged Pervious ratio (Ap) = 0.1000
 Program is now starting with Main Stream No. 2

++++
 Process from Point/Station 5.000 to Point/Station 6.000
 **** USER DEFINED FLOW INFORMATION AT A POINT ****

UNDEVELOPED (average cover) subarea
 Decimal fraction soil group A = 1.000
 Decimal fraction soil group B = 0.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 50.00
 Adjusted SCS curve number for AMC 3 = 70.00
 Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.532(In/Hr)
 Rainfall intensity = 2.559(In/Hr) for a 100.0 year storm
 User specified values are as follows:
 TC = 20.16 min. Rain intensity = 2.56(In/Hr)
 Total area this stream = 13.02(Ac.)
 Total Study Area (Main Stream No. 2) = 23.36(Ac.)
 Total runoff = 23.75(CFS)

++++
 Process from Point/Station 6.000 to Point/Station 6.000
 **** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 2
 Stream flow area = 13.020(Ac.)
 Runoff from this stream = 23.750(CFS)
 Time of concentration = 20.16 min.
 Rainfall intensity = 2.559(In/Hr)
 Area averaged loss rate (Fm) = 0.5325(In/Hr)
 Area averaged Pervious ratio (Ap) = 1.0000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	34.40	10.340	11.11	0.079	3.659
2	23.75	13.020	20.16	0.532	2.559
Qmax(1) =					
	1.000 *	1.000 *	34.405)	+	
	1.543 *	0.551 *	23.750)	+ =	54.595
Qmax(2) =					
	0.693 *	1.000 *	34.405)	+	
	1.000 *	1.000 *	23.750)	+ =	47.583

Total of 2 main streams to confluence:
 Flow rates before confluence point:
 35.405 24.750

Maximum flow rates at confluence using above data:

54.595 47.583

Area of streams before confluence:

10.340 13.020

Effective area values after confluence:

17.514 23.360

Results of confluence:

Total flow rate = 54.595(CFS)

Time of concentration = 11.108 min.

Effective stream area after confluence = 17.514(Ac.)

Study area average Pervious fraction(A_p) = 0.602

Study area average soil loss rate(F_m) = 0.332(In/Hr)

Study area total = 23.36(Ac.)

End of computations, Total Study Area = 23.36 (Ac.)

The following figures may

be used for a unit hydrograph study of the same area.

Note: These figures do not consider reduced effective area effects caused by confluences in the rational equation.

Area averaged pervious area fraction(A_p) = 0.602

Area averaged SCS curve number = 42.0

Appendix C
Hydraulic Calculations

**EXISTING LINE E
AND LINE F**

7465-LineE. WSW

Item	Description	Quantity	Unit	Rate	Amount	Other	Total	Other	Total
T1	KAI SER								0
T2	OFF-SITE STORM DRAIN HYDRAULICS								
T3	7465-LineE								
S0	100.0001033.000	1			1038.500				
R	113.9701033.040	1		.013		.000		.000	0
R	125.7501033.320	1		.013		-29.998		.000	0
R	534.8301037.990	1		.013		.000		.000	0
JX	536.8301038.010	1	2	.013	11.600	85.0			.000
R	544.5201038.090	2		.013		.000		.000	0
R	548.3901038.130	2		.013		9.855		.000	0
R	719.6701039.000	2		.013		.000	45.000		0
R	865.0001040.260	2		.013		.000		.000	0
SH	865.0001040.260	2			1040.260				
CD	1 4 1 .000	2.500		.000	.000	.000		.000	.00
CD	2 4 1 .000	2.000		.000	.000	.000		.000	.00
Q		20.500		.0					

KAISER
OFF-SITE STORM DRAIN HYDRAULICS
7465-lineE

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
100.000	1033.000	5.500	1038.500	32.10	6.54	.66	1039.16	.00	1.93	.00	2.500	.000	.00	1 .0
13.970	.0029					.0061	.09	5.50	.00	2.50	.013	.00	.00	PIPE
113.970	1033.040	5.546	1038.586	32.10	6.54	.66	1039.25	.00	1.93	.00	2.500	.000	.00	1 .0
11.780	.0238					.0061	.07	.00	.00	1.26	.013	.00	.00	PIPE
125.750	1033.320	5.414	1038.734	32.10	6.54	.66	1039.40	.00	1.93	.00	2.500	.000	.00	1 .0
409.080	.0114					.0061	2.51	5.41	.00	1.59	.013	.00	.00	PIPE
534.830	1037.990	3.250	1041.240	32.10	6.54	.66	1041.90	.00	1.93	.00	2.500	.000	.00	1 .0
JUNCT STR	.0100					.0043	.01	3.25	.00		.013	.00	.00	PIPE
536.830	1038.010	4.001	1042.011	20.50	6.53	.66	1042.67	.00	1.62	.00	2.000	.000	.00	1 .0
7.690	.0104					.0082	.06	4.00	.00	1.47	.013	.00	.00	PIPE
544.520	1038.090	3.984	1042.074	20.50	6.53	.66	1042.74	.00	1.62	.00	2.000	.000	.00	1 .0
3.870	.0103					.0082	.03	.00	.00	1.47	.013	.00	.00	PIPE
548.390	1038.130	4.020	1042.150	20.50	6.53	.66	1042.81	.00	1.62	.00	2.000	.000	.00	1 .0
171.280	.0051					.0082	1.41	4.02	.00	2.00	.013	.00	.00	PIPE
719.670	1039.000	4.655	1043.655	20.50	6.53	.66	1044.32	.00	1.62	.00	2.000	.000	.00	1 .0
145.330	.0087					.0082	1.19	4.65	.00	1.59	.013	.00	.00	PIPE
865.000	1040.260	4.588	1044.848	20.50	6.53	.66	1045.51	.00	1.62	.00	2.000	.000	.00	1 .0

**PROPOSED LINE E
AND LINE F**

T1	KAISER										7465-propE. WSW	0
T2	OFF-SITE STORM DRAIN HYDRAULICS											
T3	7465-propE. wsw											
S0	100.000	1031.500	1								1038.500	
R	113.970	1031.540	1			.013						.000 .000 0
R	125.750	1031.820	1			.013						-29.998 .000 0
R	534.830	1036.490	1			.013						.000 .000 0
JX	536.830	1036.510	1	2		.013	11.600				1038.000	85.0 .000 .000
R	544.520	1036.590	2			.013						.000 .000 0
R	548.390	1036.630	2			.013						9.855 .000 0
R	719.670	1037.500	2			.013						.000 45.000 0
R	865.000	1038.760	2			.013						.000 .000 0
SH	865.000	1038.760	2									
CD	1 4	1 .000			4.000		.000 .000 .000 .00					
CD	2 4	1 .000			3.000		.000 .000 .000 .00					
Q		54.600	.0									

KAISER
 OFF-SITE STORM DRAIN HYDRAULICS
 7465-prop.e.wsw

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
100.000	1031.500	7.000	1038.500	66.20	5.27	.43	1038.93	.00	2.46	.00	4.000	.000	.00	1 .0
13.970	.0029					.0021	.03	7.00	.00	2.86	.013	.00	.00	PIPE
113.970	1031.540	6.990	1038.530	66.20	5.27	.43	1038.96	.00	2.46	.00	4.000	.000	.00	1 .0
11.780	.0238					.0021	.03	.00	.00	1.50	.013	.00	.00	PIPE
125.750	1031.820	6.784	1038.604	66.20	5.27	.43	1039.04	.00	2.46	.00	4.000	.000	.00	1 .0
299.665	.0114					.0021	.63	6.78	.00	1.84	.013	.00	.00	PIPE
425.415	1035.241	4.000	1039.241	66.20	5.27	.43	1039.67	.00	2.46	.00	4.000	.000	.00	1 .0
34.611	.0114					.0020	.07	4.00	.00	1.84	.013	.00	.00	PIPE
460.027	1035.636	3.629	1039.265	66.20	5.53	.47	1039.74	.00	2.46	2.32	4.000	.000	.00	1 .0
17.687	.0114					.0019	.03	3.63	.43	1.84	.013	.00	.00	PIPE
477.714	1035.838	3.414	1039.252	66.20	5.79	.52	1039.77	.00	2.46	2.83	4.000	.000	.00	1 .0
13.451	.0114					.0021	.03	3.41	.51	1.84	.013	.00	.00	PIPE
491.165	1035.992	3.236	1039.228	66.20	6.08	.57	1039.80	.00	2.46	3.14	4.000	.000	.00	1 .0
10.755	.0114					.0023	.02	3.24	.58	1.84	.013	.00	.00	PIPE
501.920	1036.114	3.081	1039.195	66.20	6.37	.63	1039.83	.00	2.46	3.37	4.000	.000	.00	1 .0
8.678	.0114					.0025	.02	3.08	.64	1.84	.013	.00	.00	PIPE
510.598	1036.214	2.941	1039.154	66.20	6.69	.69	1039.85	.00	2.46	3.53	4.000	.000	.00	1 .0
6.853	.0114					.0028	.02	2.94	.70	1.84	.013	.00	.00	PIPE

KAISER
 OFF-SITE STORM DRAIN HYDRAULICS
 7465-prop.e.wsw

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
517.451	1036.292	2.812	1039.104	66.20	7.01	.76	1039.87	.00	2.46	3.66	4.000	.000	.00	1 .0
	.848	.0114				.0030	.00	2.81	.77	1.84	.013	.00	.00	PIPE
518.299	1036.301	2.795	1039.096	66.20	7.06	.77	1039.87	.00	2.46	3.67	4.000	.000	.00	1 .0
HYDRAULIC JUMP														
518.299	1036.301	2.151	1038.452	66.20	9.62	1.44	1039.89	.00	2.46	3.99	4.000	.000	.00	1 .0
	4.240	.0114				.0065	.03	2.15	1.29	1.84	.013	.00	.00	PIPE
522.539	1036.350	2.182	1038.532	66.20	9.44	1.38	1039.92	.00	2.46	3.98	4.000	.000	.00	1 .0
	7.309	.0114				.0060	.04	2.18	1.25	1.84	.013	.00	.00	PIPE
529.848	1036.433	2.269	1038.702	66.20	9.00	1.26	1039.96	.00	2.46	3.96	4.000	.000	.00	1 .0
	3.829	.0114				.0053	.02	2.27	1.16	1.84	.013	.00	.00	PIPE
533.677	1036.477	2.359	1038.836	66.20	8.58	1.14	1039.98	.00	2.46	3.93	4.000	.000	.00	1 .0
	1.153	.0114				.0047	.01	2.36	1.08	1.84	.013	.00	.00	PIPE
534.830	1036.490	2.457	1038.947	66.20	8.18	1.04	1039.99	.00	2.46	3.89	4.000	.000	.00	1 .0
JUNCT STR														
	.0100					.0029	.01	2.46	1.00		.013	.00	.00	PIPE
536.830	1036.510	3.315	1039.825	54.60	7.72	.93	1040.75	.00	2.40	.00	3.000	.000	.00	1 .0
	7.690	.0104				.0067	.05	3.31	.00	2.03	.013	.00	.00	PIPE
544.520	1036.590	3.286	1039.876	54.60	7.72	.93	1040.80	.00	2.40	.00	3.000	.000	.00	1 .0
	3.870	.0103				.0067	.03	.00	.00	2.04	.013	.00	.00	PIPE

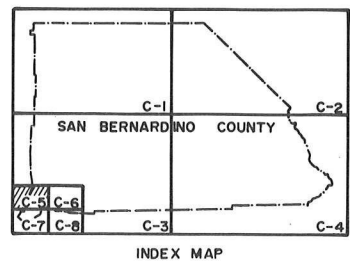
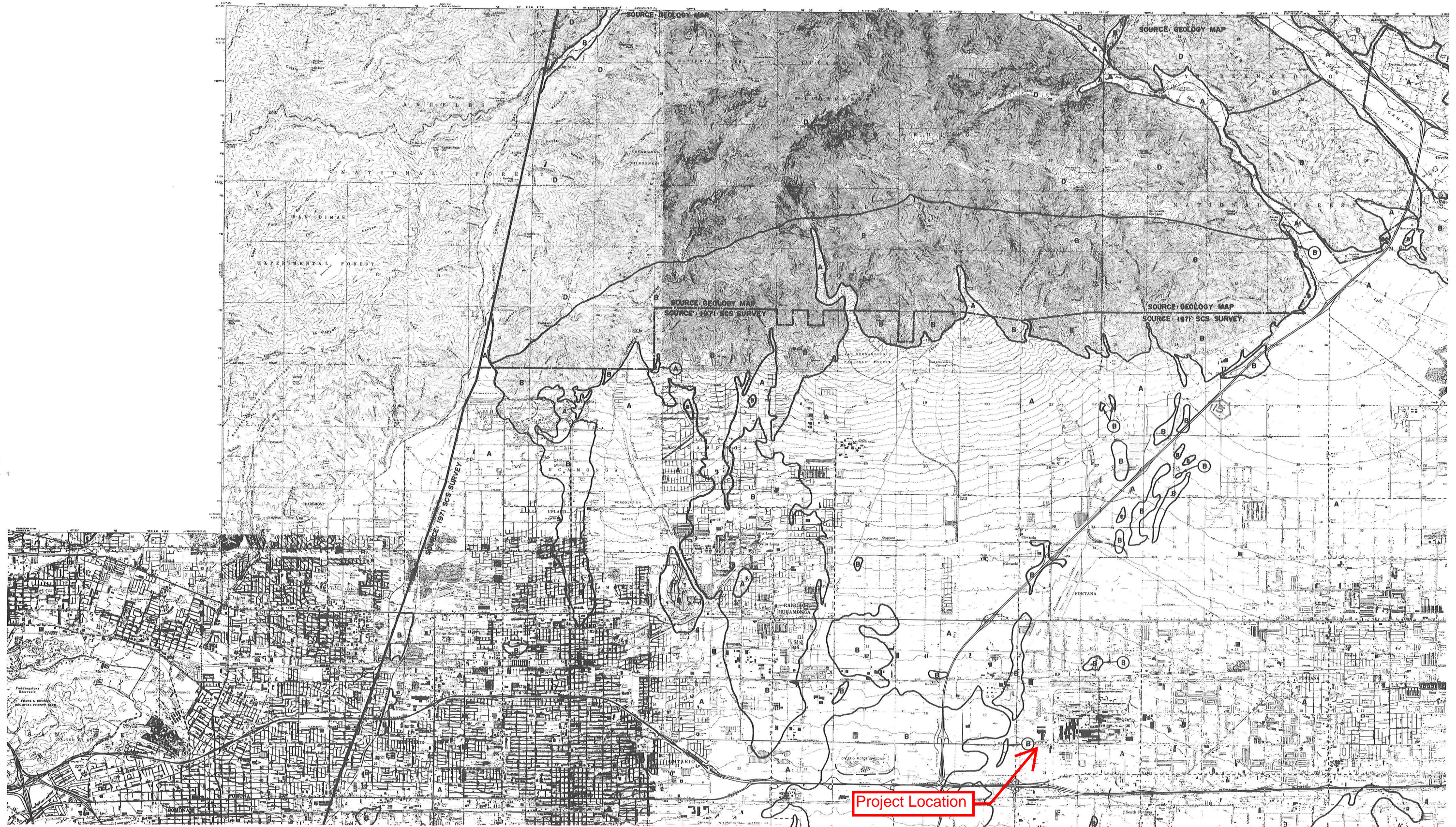
KAISER
 OFF-SITE STORM DRAIN HYDRAULICS
 7465-propE.wsw

```

*****
Station   Invert   Depth   Water   Q       Vel    Vel    Energy   Super   Critical   Flow Top   Height/   Base Wt   No Wth
          Elev    (FT)    Elev    (CFS)   (FPS)  Head   Grd.El.  Elev    Depth     Width     Dia.-FT   or I.D.   ZL        Prs/Pip
          - -    - -    - -    - -    - -    - -    - -    - -    - -    - -    - -    - -    - -
L/Elem    Ch Slope
*****    *****
548.390   1036.630   3.333   1039.963   54.60   7.72   .93   1040.89   .00   2.40   .00   3.000   .000   .00   1 .0
          - -    - -    - -    - -    - -    - -    - -    - -    - -    - -    - -    - -    - -
171.280   .0051
          - -    - -    - -    - -    - -    - -    - -    - -    - -    - -    - -    - -    - -
719.670   1037.500   3.749   1041.249   54.60   7.72   .93   1042.18   .00   2.40   .00   3.000   .000   .00   1 .0
          - -    - -    - -    - -    - -    - -    - -    - -    - -    - -    - -    - -    - -
145.330   .0087
          - -    - -    - -    - -    - -    - -    - -    - -    - -    - -    - -    - -    - -
865.000   1038.760   3.463   1042.223   54.60   7.72   .93   1043.15   .00   2.40   .00   3.000   .000   .00   1 .0
          - -    - -    - -    - -    - -    - -    - -    - -    - -    - -    - -    - -    - -
    
```

**PROPOSED HGL IS LOWER THAN
 EXISTING HGL AFTER UPSIZING
 PIPES**

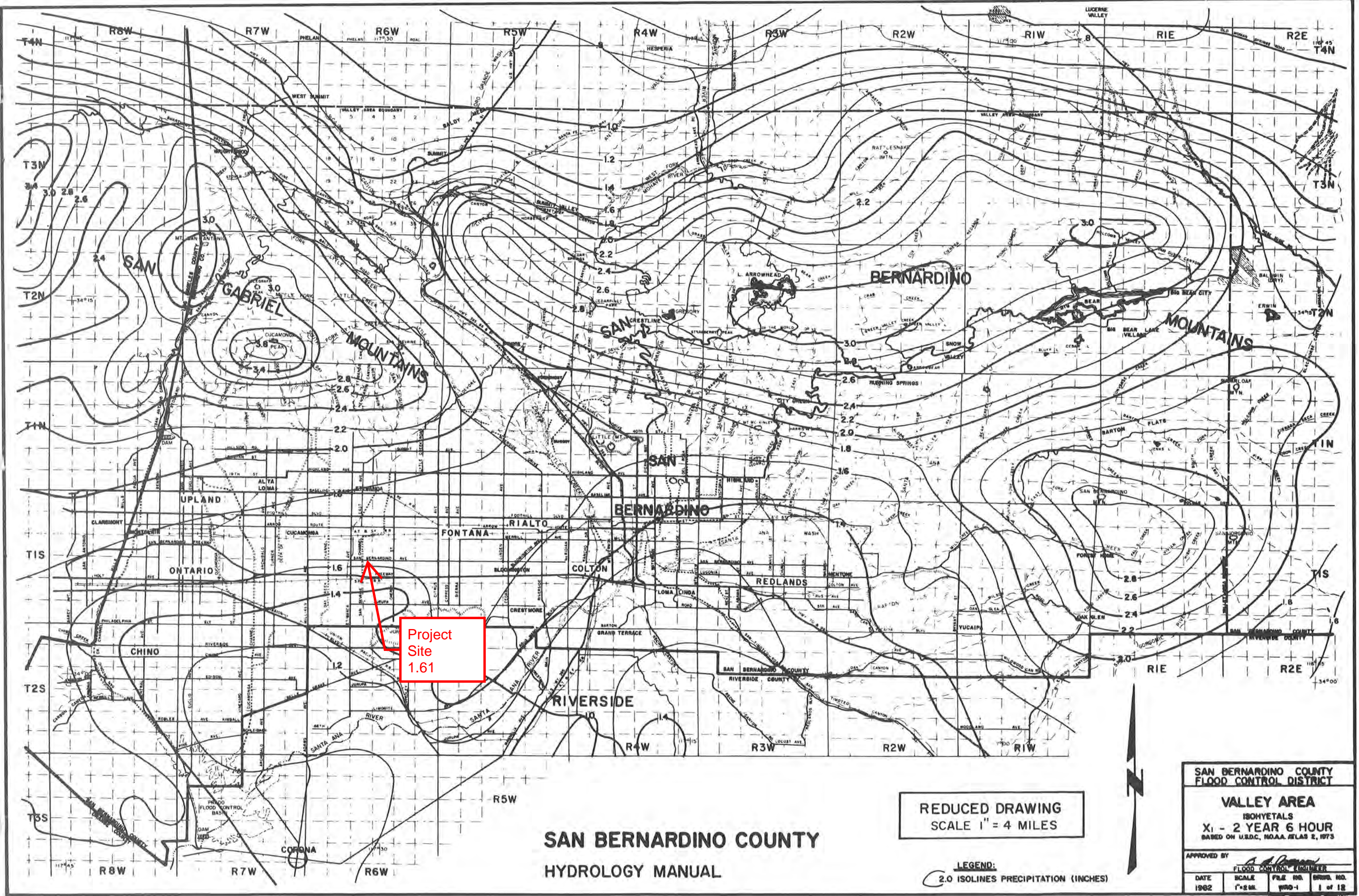
Appendix D
Soil Group Map and Isohyetal Map



- LEGEND
- SOIL GROUP BOUNDARY
 - A SOIL GROUP DESIGNATION
 - - - BOUNDARY OF INDICATED SOURCE

SCALE 1:48,000
SCALE REDUCED BY 1/2

HYDROLOGIC SOILS GROUP MAP
 FOR
 SOUTHWEST-A AREA



Project Site
1.61

**SAN BERNARDINO COUNTY
HYDROLOGY MANUAL**

**REDUCED DRAWING
SCALE 1" = 4 MILES**

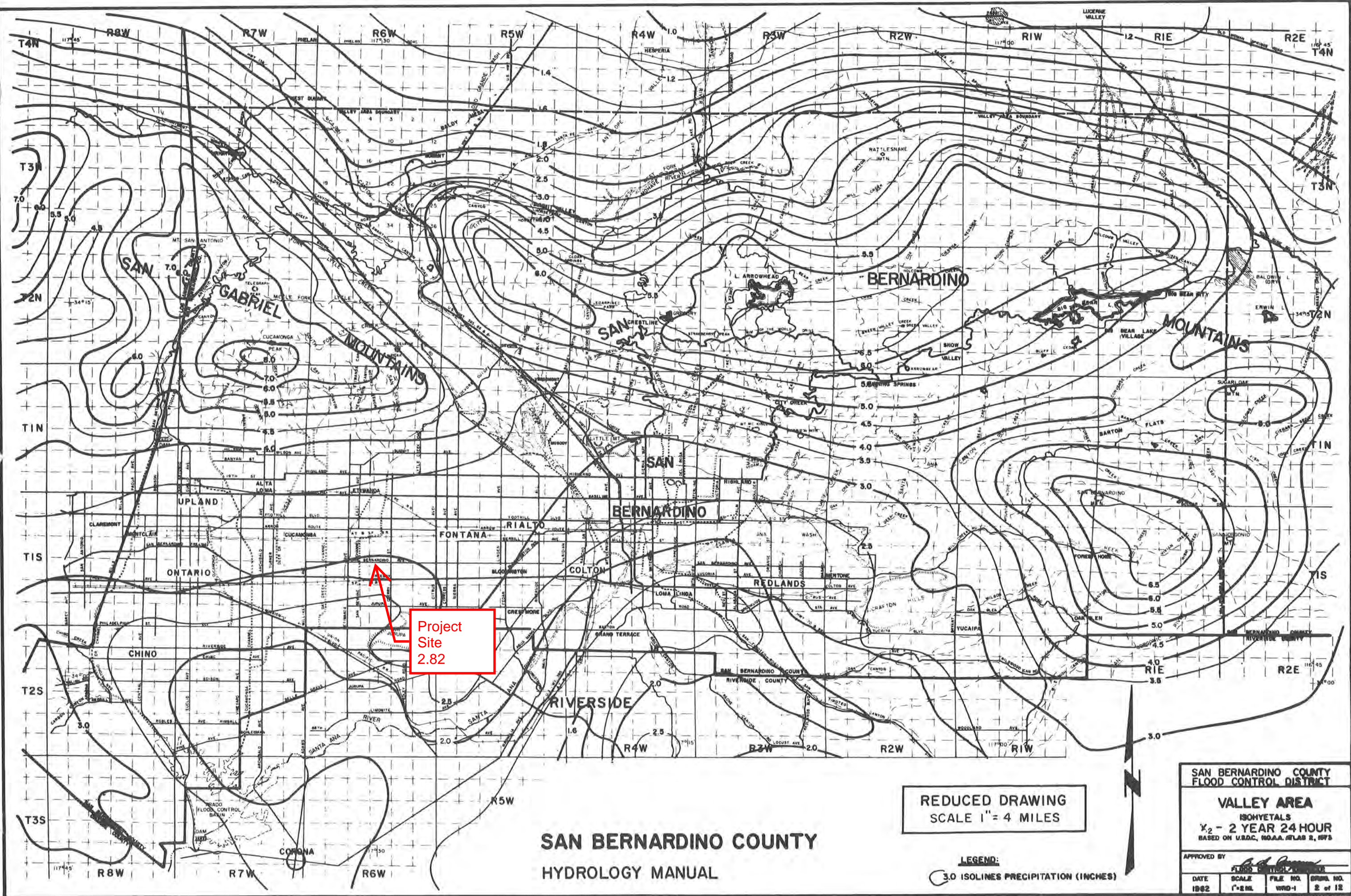
LEGEND:
2.0 ISOLINES PRECIPITATION (INCHES)

**SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT**

**VALLEY AREA
ISOHYETALS
X₁ - 2 YEAR 6 HOUR
BASED ON U.S.D.C. NOAA ATLAS 2, 1973**

APPROVED BY: *[Signature]*

DATE	SCALE	P.L.E. NO.	DRWG. NO.
1982	1"=2 MI.	WFD-1	1 of 12



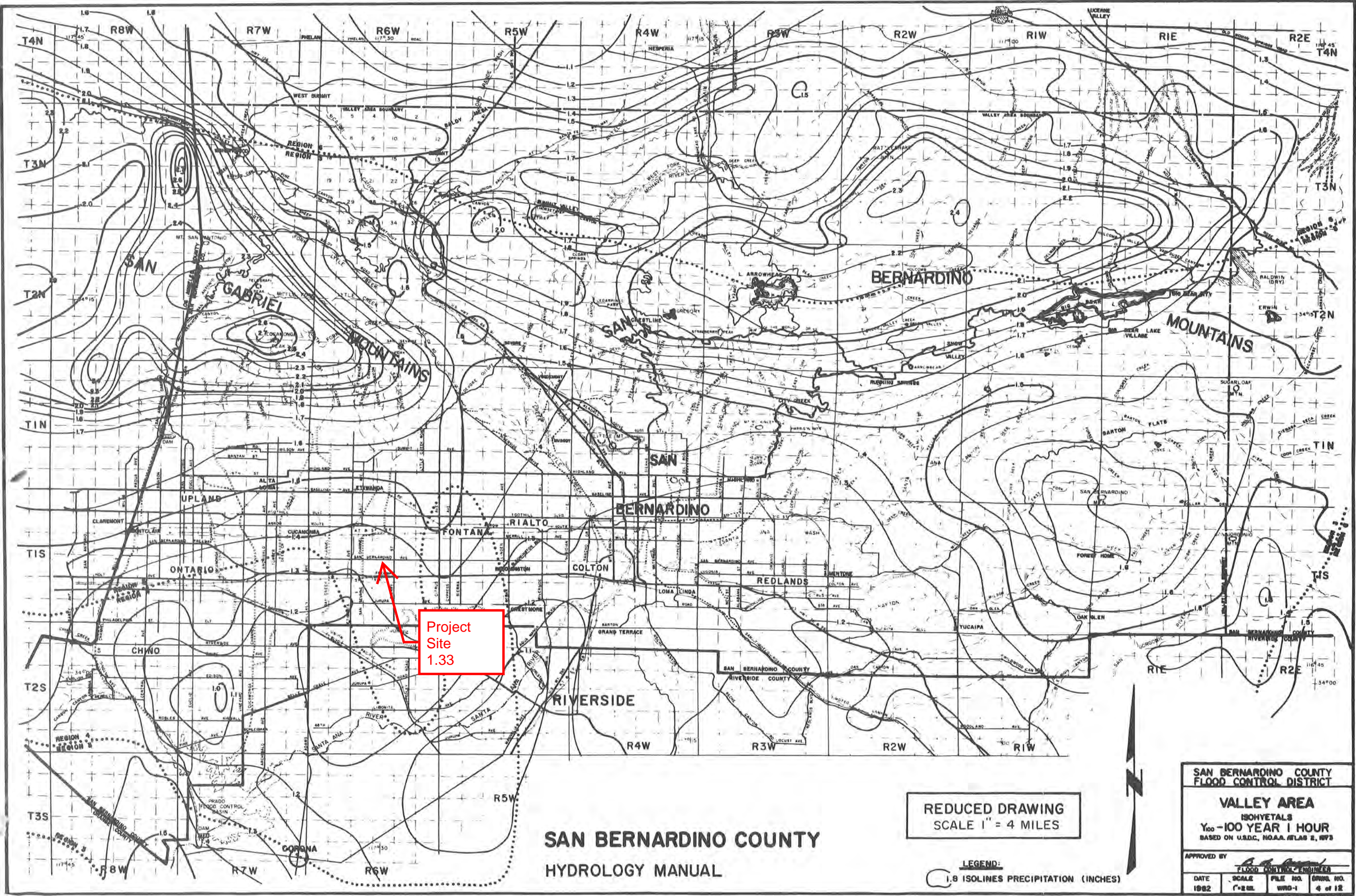
Project Site
2.82

REDUCED DRAWING
SCALE 1" = 4 MILES

**SAN BERNARDINO COUNTY
HYDROLOGY MANUAL**

LEGEND:
3.0 ISOLINES PRECIPITATION (INCHES)

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT			
VALLEY AREA			
ISOHYETALS			
X ₂ - 2 YEAR 24 HOUR			
BASED ON U.R.C. NOAA ATLAS 2, 1975			
APPROVED BY <i>[Signature]</i>			
DATE	SCALE	FILE NO.	SHEET NO.
1982	1"=5MI.	WRD-1	2 of 12



**SAN BERNARDINO COUNTY
HYDROLOGY MANUAL**

**REDUCED DRAWING
SCALE 1" = 4 MILES**

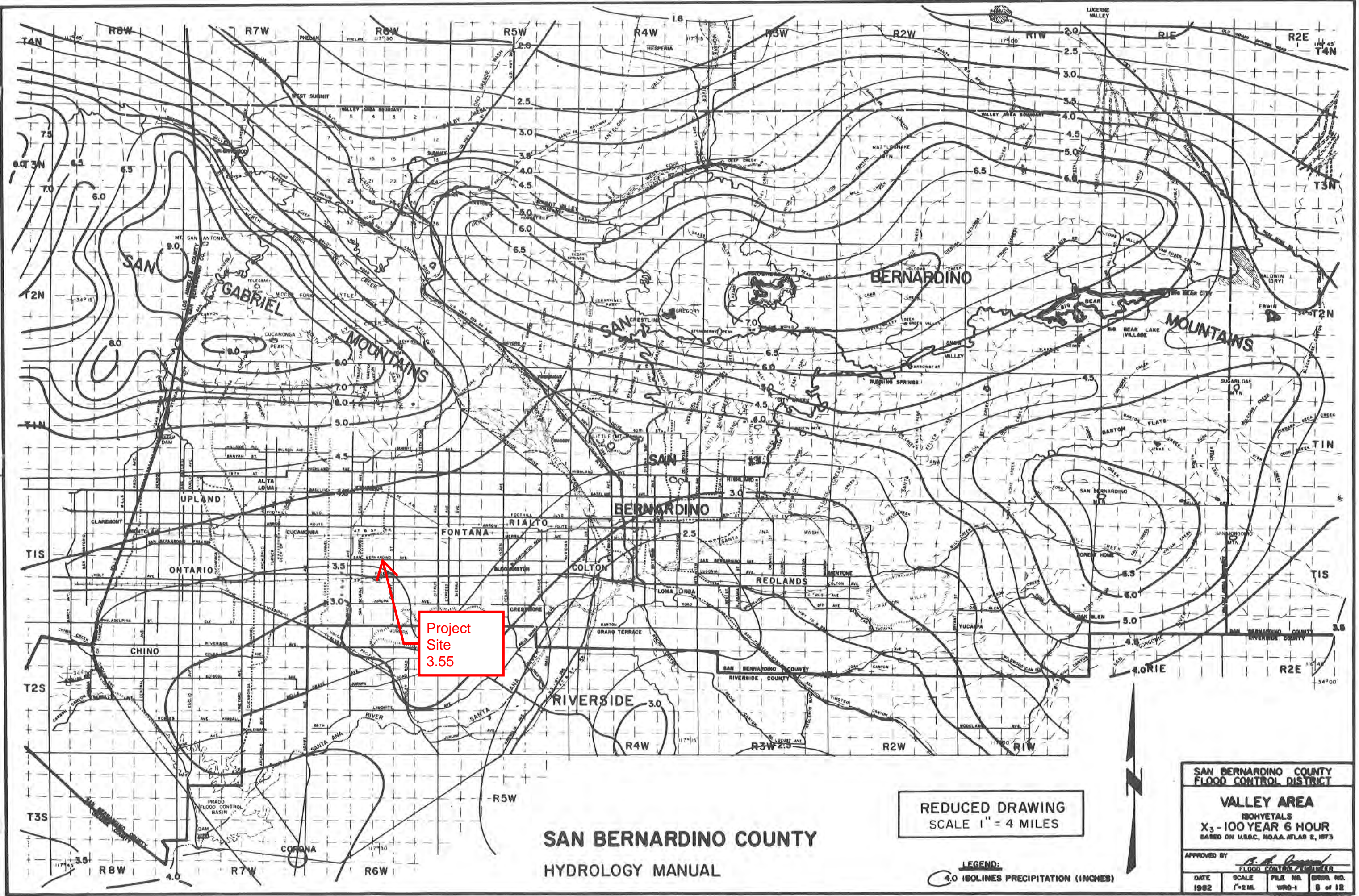
LEGEND:
1.6 ISOLINES PRECIPITATION (INCHES)

**SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT**

**VALLEY AREA
ISOHYETALS
Y₁₀₀-100 YEAR 1 HOUR
BASED ON U.S.D.C. NOAA ATLAS 2, 1973**

APPROVED BY: *[Signature]*
FLOOD CONTROL ENGINEER

DATE	SCALE	FILE NO.	DRAW. NO.
1982	1"=2 MI.	WRD-1	4 of 12



Project Site
3.55

**SAN BERNARDINO COUNTY
HYDROLOGY MANUAL**

**REDUCED DRAWING
SCALE 1" = 4 MILES**

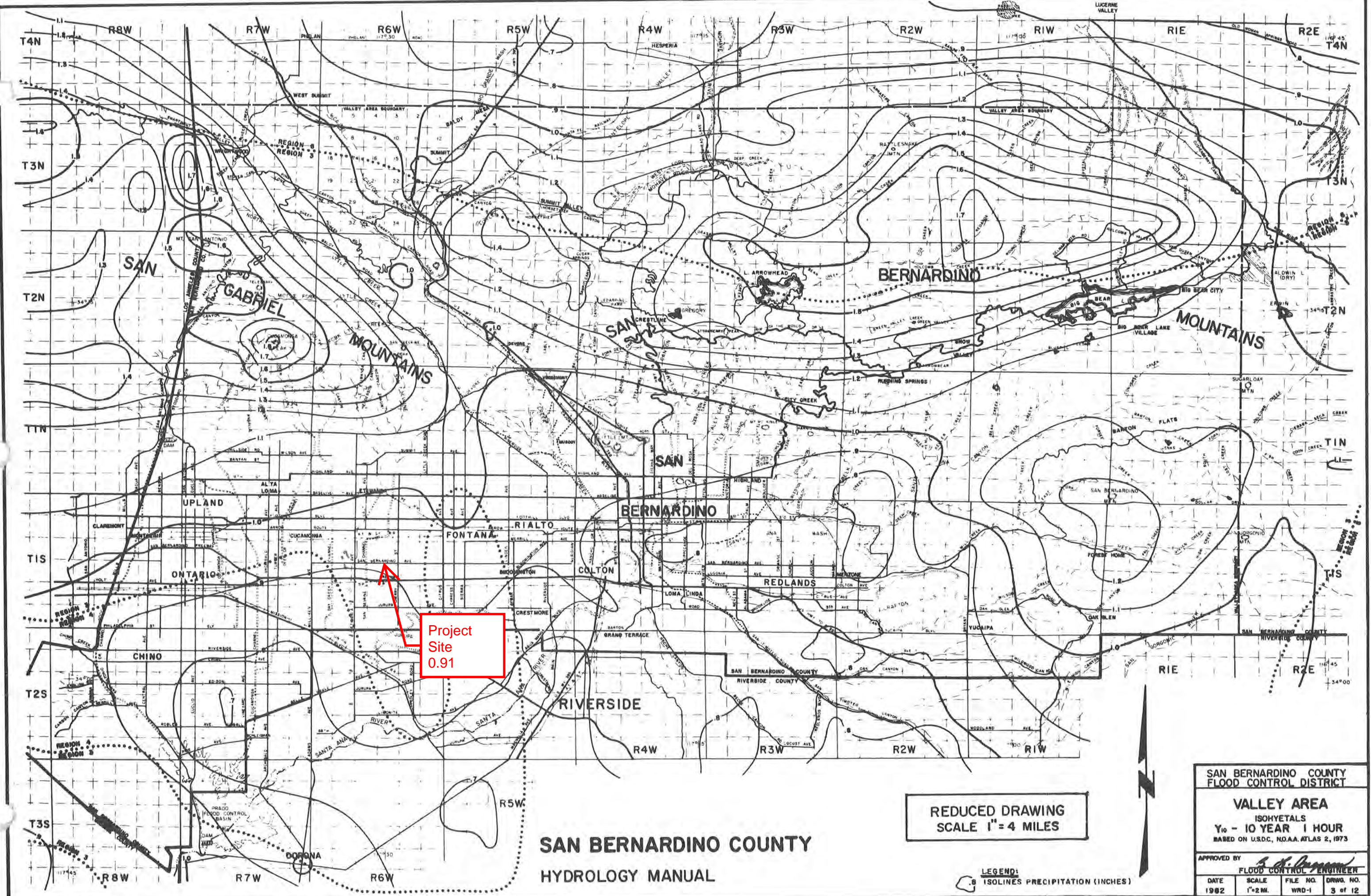
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4.0 ISOLINES PRECIPITATION (INCHES)

**SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT**

VALLEY AREA
ISOHYETALS
X₃-100 YEAR 6 HOUR
BASED ON U.S.G.C. NOAA ATLAS 2, 1973

APPROVED BY *[Signature]*
FLOOD CONTROL ENGINEER

DATE	SCALE	FILE NO.	DRWG. NO.
1982	1"=2M.	WB-1	8 of 12



**SAN BERNARDINO COUNTY
HYDROLOGY MANUAL**

REDUCED DRAWING
SCALE 1" = 4 MILES

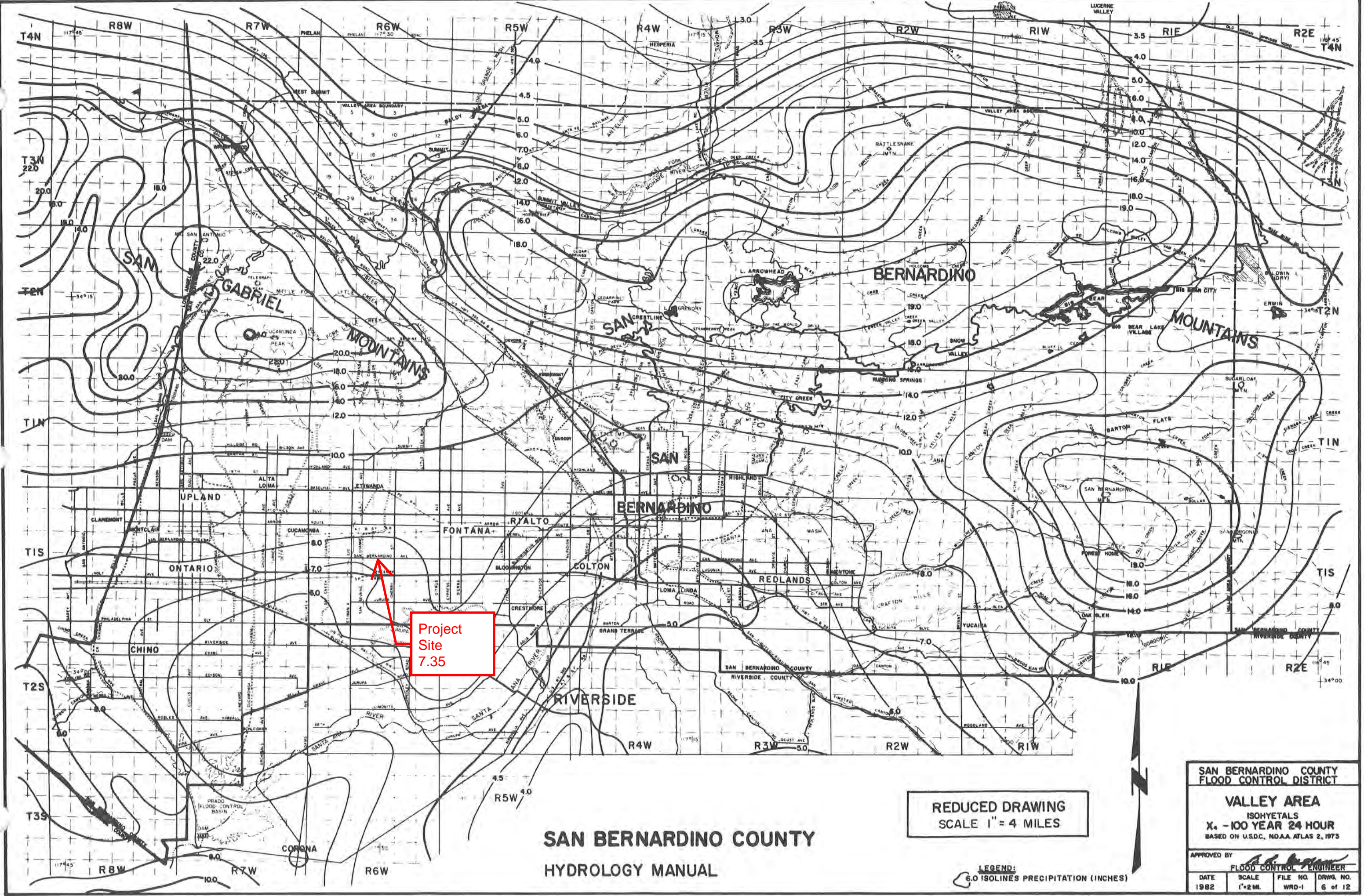
LEGEND:
ISOLINES PRECIPITATION (INCHES)

SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT

VALLEY AREA
ISOHYETALS
Y₁₀ - 10 YEAR 1 HOUR
BASED ON U.S.D.C. NO. AA. ATLAS 2, 1973

APPROVED BY *S. H. [Signature]*
FLOOD CONTROL ENGINEER

DATE	SCALE	FILE NO.	DRWG. NO.
1982	1"=2M.	WRD-1	3 of 12



Project Site
7.35

**SAN BERNARDINO COUNTY
HYDROLOGY MANUAL**

REDUCED DRAWING
SCALE 1" = 4 MILES

LEGEND:
6.0 ISOLINES PRECIPITATION (INCHES)

SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT

VALLEY AREA
ISOHYETALS
X₄ - 100 YEAR 24 HOUR
BASED ON U.S.D.C., NO.AA. ATLAS 2, 1973

APPROVED BY *[Signature]*
FLOOD CONTROL ENGINEER

DATE	SCALE	FILE NO.	DRWG. NO.
1982	1"=2MI.	WRD-1	6 of 12

Appendix E

References

GENERAL NOTES:

1. ALL GRADING SHALL CONFORM TO THE UNIFORM BUILDING CODE, CHAPTER 33, 1997 EDITION.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE EXACT DETERMINATIONS AS TO THE LOCATION OF ALL EXISTING UTILITIES. FORTY EIGHT (48) HOURS PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT @ 800-277-2600 AND SHALL PROVIDE THE CONSTRUCTION MANAGER WITH VERIFICATION NUMBERS ISSUED.
3. ALL GRADING SHALL BE DONE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL INVESTIGATION THAT HAS BEEN PREPARED FOR THIS PROJECT BY KLEINFELDER INC., DATED 5-15-01. THE SOILS REPORT IS MADE A PART OF THESE DOCUMENTS. TWO SETS OF THE FINAL COMPACTION REPORT AND CERTIFICATION THAT GRADING HAS BEEN DONE IN CONFORMANCE WITH THE RECOMMENDATIONS OF THE PRELIMINARY SOILS REPORT SHALL BE SUBMITTED TO THE OWNER.
4. FINAL COMPACTION REPORTS WILL BE REQUIRED FOR ALL FILLS GREATER THAN ONE FOOT.
5. DURING CONSTRUCTION ACTIVITIES, TEMPORARY DRAINAGE CONTROL SHALL BE PROVIDED IN CONFORMANCE WITH THE EROSION CONTROL PLAN BY DANJON ENGINEERING AND APPROVED BY THE COUNTY OF SAN BERNARDINO.
6. SANITARY FACILITIES SHALL BE MAINTAINED ON SITE.
7. SEE THE PROJECT SPECIAL PROVISIONS FOR ADDITIONAL CONSTRUCTION INFORMATION AND STANDARD DETAILS.
8. ALL CONSTRUCTION TO BE IN CONFORMANCE WITH THE REGULATIONS OF CAL-OSHA.
9. CONSTRUCTION INSPECTION WILL BE PERFORMED BY THE OWNERS REPRESENTATIVE, THE COUNTY OF SAN BERNARDINO TRANSPORTATION, FLOOD CONTROL DEPARTMENT & THE BUILDING & SAFETY DEPARTMENT. NOTICE SHALL BE GIVEN TO THE CONSTRUCTION MANAGER A MINIMUM OF 48 HOURS IN ADVANCE. THE COUNTY SHALL BE NOTIFIED A MINIMUM OF 2 WEEKS PRIOR TO CONSTRUCTION.
10. ALL ELEVATIONS ARE SHOWN IN FEET AND DECIMALS THEREOF BASED ON U.S.C. AND G.S. DATUM.
11. PROTECT ALL UTILITIES, POLES, SIGNS AND EXISTING IMPROVEMENTS IN PLACE UNLESS OTHERWISE DIRECTED BY THE ENGINEER OR NOTED ON THESE PLANS. WHERE RELOCATION OF THESE UTILITIES ARE REQUIRED, THE CONTRACTOR SHALL COORDINATE CONSTRUCTION AS NECESSARY AND AS APPROVED BY THE ENGINEER.
12. ALL CONSTRUCTION EQUIPMENT SHALL BE MAINTAINED IN GOOD OPERATING CONDITION SO AS TO REDUCE OPERATIONAL EMISSIONS. THE APPLICANT SHALL ENSURE THAT ALL CONSTRUCTION EQUIPMENT IS BEING PROPERLY SERVICED AND MAINTAINED.
13. TRUCK IDLING IN EXCESS OF 10 MINUTES SHALL BE PROHIBITED.
14. THE APPLICANT SHALL ENSURE DURING ALL PROJECT SITE EXCAVATION AND GRADING ON SITE, THAT ALL CONSTRUCTION EQUIPMENT, FIXED OR MOBILE, IS EQUIPPED WITH PROPERLY OPERATING AND MAINTAINED MUFFLERS CONSISTENT WITH MANUFACTURERS STANDARDS.
15. THE APPLICANT SHALL ENSURE DURING THE PROJECT SITE CONSTRUCTION, THAT ALL CONSTRUCTION RELATED ACTIVITIES THAT WOULD RESULT IN HIGH NOISE LEVELS IS LIMITED TO THE HOURS BETWEEN 7AM AND 7PM MONDAY THROUGH SATURDAY. NO CONSTRUCTION SHALL BE ALLOWED ON SUNDAYS AND PUBLIC HOLIDAYS.
16. THE NPDES PERMIT NUMBER FOR THIS PROJECT IS 836C323502.

CIVIL ENGINEER'S NOTICES TO CONTRACTOR

1. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPE OR SUBSTRUCTURE SHOWN ON THESE PLANS ARE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. TO THE BEST OF THE ENGINEER'S KNOWLEDGE THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THESE PLANS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES AND STRUCTURES SHOWN, AND ANY OTHER UTILITIES OR STRUCTURES NOT SHOWN ON THESE PLANS, AND IS RESPONSIBLE FOR THE PROTECTION OF AND DAMAGE TO THESE UTILITIES OR STRUCTURES.
2. THE CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS DURING CONSTRUCTION, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD HARMLESS THE DESIGN CIVIL ENGINEER FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR THE LIABILITY ARISING FROM THE DESIGN CIVIL ENGINEER'S SOLE NEGLIGENCE.
3. CONTRACTOR SHALL VERIFY TOPOGRAPHY AND JOIN ELEVATIONS PRIOR TO BEGIN OF CONSTRUCTION. IF GRADES VARY FROM WHAT IS SHOWN, CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY.
4. THE CONTRACTOR SHALL REVIEW ARCHITECT'S PLANS AND SOILS ENGINEER'S REPORT AND GET APPROVAL FROM THE OWNER, IN WRITING, FOR COMPACTION REQUIREMENTS, ASPHALT CONCRETE THICKNESS, PORTLAND CEMENT CONCRETE THICKNESS, AGGREGATE BASE COURSE THICKNESS, AND SUBGRADE COMPACTION REQUIREMENTS PRIOR TO COMMENCING WORK.
5. THE CONTRACTOR SHALL CLEAR AND GRUB ENTIRE SITE PER SOILS REPORT AND CITY CRITERIA. THE CLEARING AND GRUBBING OPERATION MAY INVOLVE THE REMOVAL AND DISPOSAL OF TRASH AND DEBRIS FROM THE SITE.
6. ALL HANDICAP ACCESS, PARKING AND IMPROVEMENTS SHALL MEET ADA AND TITLE 24 REQUIREMENTS.
7. ALL MANHOLES, APPARENT STRUCTURES AND VALVES SHALL BE ADJUSTED TO GRADE AS NEEDED BY CONTRACTOR.
8. QUANTITIES SHOWN HEREON ARE FOR PERMIT PURPOSES ONLY. CONTRACTOR SHALL CREATE A SEPARATE SET OF EARTHWORK QUANTITIES FOR HIS BIDDING PURPOSES.



DIAL TOLL FREE
1-800-422-4133
AT LEAST TWO DAYS
BEFORE YOU DIG

UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

LEGAL DESCRIPTION

PARCEL 3 OF PARCEL MAP NO. 8682, IN THE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, PER MAP RECORDED IN BOOK 89 OF PARCEL MAPS, PAGES 37 THROUGH 43, INCLUSIVE, RECORDS OF SAID COUNTY.

OWNER:

CATELLUS DEVELOPMENT COMPANY
4000 WESTERLY PLACE
NEWPORT BEACH, CA. 92660
CONTACT: LARRY COCHRAN
PHONE: (949) 442-1400
FAX: (949) 442-1439

BENCH MARK:

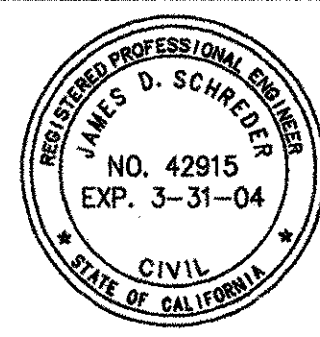
COUNTY OF SAN BERNARDINO BENCHMARK # 10-35-92 SBD
BRASS DISK, TOP OF CONCRETE SUPPORT POST FOR SW LEG OF HIGH VOLTAGE TOWER #1/3 MIRA LOMA-PADUA, N/O 1-10 & E/O ETIWANDA AVENUE, 10'-0" FT NE/O R/W FENCE AND WB OFF-RAMP, 3'-FT ABOVE GROUND
ELEVATION 1012.039

BASIS OF BEARINGS:

BEARINGS SHOWN HEREON ARE BASED ON THE CENTERLINE OF VALLEY BOULEVARD SHOWN ON PARCEL MAP NO. 15118, SHOWN AS HAVING A BEARING OF NORTH 89°33'19" WEST PER MAP FILED IN BOOK 195 PAGES 41 THROUGH 46, INCLUSIVE, OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

SOILS ENGINEER:

KLEINFELDER INC
1370 VALLEY VISTA DRIVE, SUITE 150
DIAMOND BAR, CA 91765-3910
TEL 909-396-0335
FAX 909-396-1324
PROJECT # 58-9401-01



DANJON ENGINEERING INC.
895 E. Yorba Linda Blvd., Ste 202
Placentia, CA 92870
(714)572-6800 FAX(714)572-6850

FIELD BOOK REF.

1	REVISED GRADING	2/12/04
MARK	REVISIONS	APPR. DATE

COUNTY OF SAN BERNARDINO

DESIGN BY	DRAWN BY	APPROVED BY
SUBMITTED BY:	RECOMMENDED/APPROVED BY	ASST. COUNTY ENGR.-ROADS
DATE	DATE	DATE

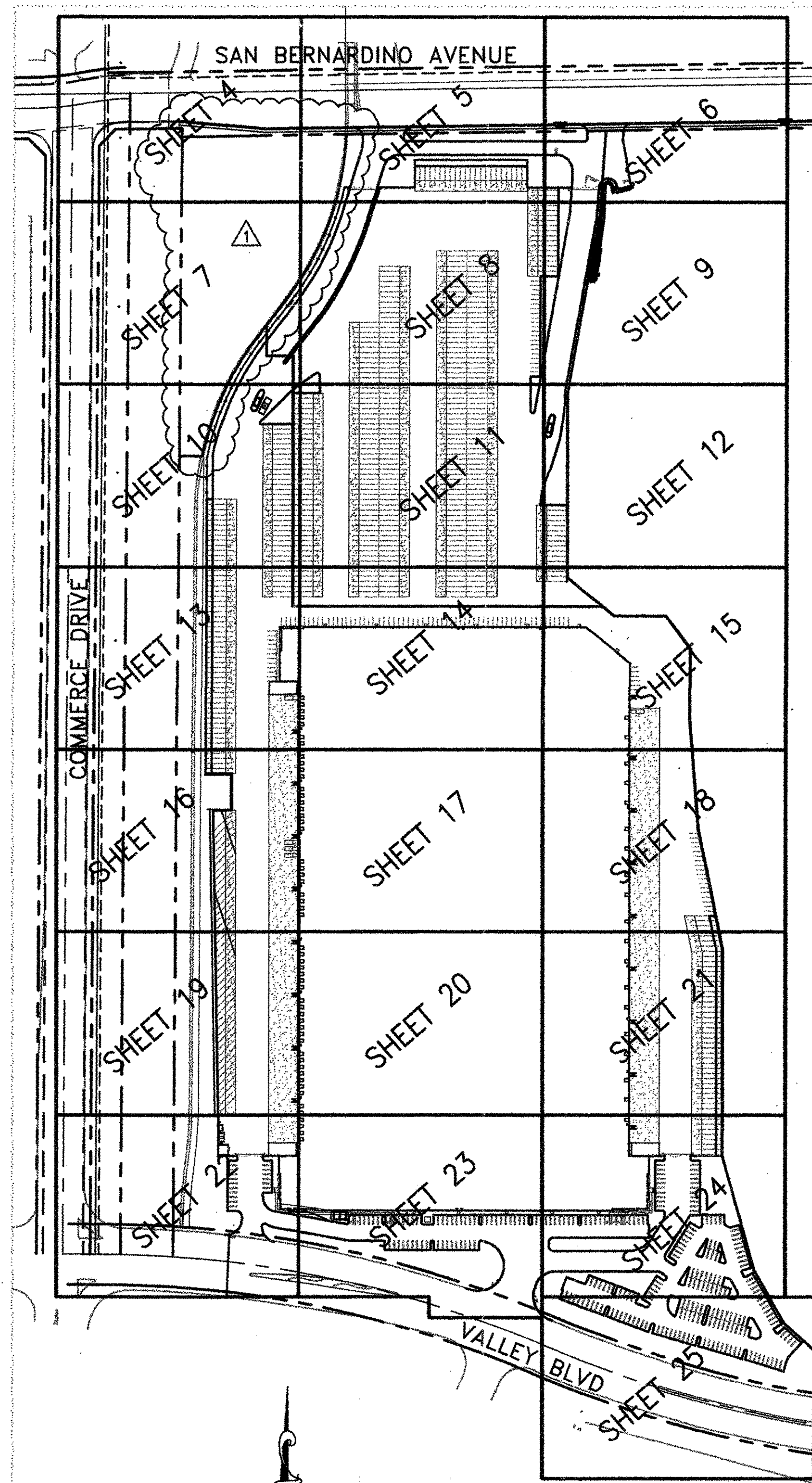
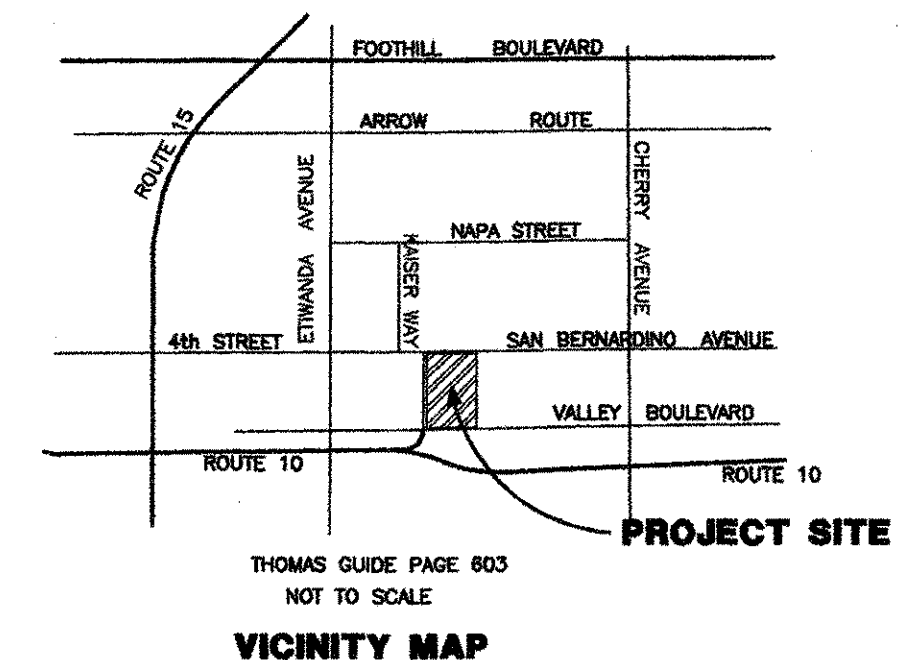
PRECISE GRADING PLAN

**CATELLUS DEVELOPMENT
EAST SLAG PILE
PRECISE GRADING SHEET**

W.O. NO.

ROAD NO.
FILE NO.
SHEET 1 OF 30

CATELLUS DEVELOPMENT EAST SLAG PILE SAN BERNARDINO & COMMERCE



INDEX MAP

SCALE: 1"=200'

INDEX OF SHEETS

SHEET	NUMBER
TITLE SHEET	1 of 30
DETAIL SHEET	2 & 3 of 30
PRECISE GRADING	4 to 25 of 30
EROSION CONTROL	26 of 30
STORM DRAIN	27 to 30 of 30

SOILS ENGINEER

PROJECT NUMBER 58-9401-01
KLEINFELDER INC
1370 VALLEY VISTA DRIVE, SUITE 150
DIAMOND BAR, CA 91765-3910
TEL 909-369-0335 FAX 909-396-1324

THIS PLAN HAS BEEN THOROUGHLY REVIEWED AND I HAVE VERIFIED THAT ALL RECOMMENDATIONS INDICATED IN THE SOILS REPORTS, ADDENDUMS AND LETTERS HAVE BEEN FULLY IMPLEMENTED.

SOILS ENGINEER SIGNATURE _____ DATE _____

LEGEND

---	EXISTING TOP/TOE SLOPE	EX	EXISTING
---	PROPOSED TOP/TOE SLOPE	GR BRK	GRADE BREAK
---	CENTERLINE	HP	HIGH POINT
---	BOUNDARY	INV	INVERT
---	1000	LP	LOW POINT
---	(1000)	PA	PLANTER AREA
---	FLOW LINE	SWLK	SIDEWALK
---	TOP SLOPE	TC	TOP OF CURB
---	TOE SLOPE	TG	TOP OF GRATE
---	BW	TF	TOP OF FOOTING
---	FG	TW	TOP OF WALL
---	FS	()	DENOTES EXISTING
---	FL	∠ PT	ANGLE POINT
---	FF		FINISHED FLOOR

ESTIMATED EARTHWORK QUANTITIES

	EXPORT	IMPORT
CUT (RAW)	138943 Y	
FILL (RAW)		170369 Y
SHRINKAGE		N/A
SUBSIDENCE		N/A
OVER-EXCAVATION	N/A	N/A
SUBTOTAL		31426 Y
TOTAL		31426 Y

AS-BUILTS
REVIEWED BY: *ROML*
DATE: *8/2/04*

PLOTTED
FEB 27 2004
DANJON ENGINEERING, INC.

STORM DRAIN "AS-BUILTS" 7-27-04

3-10-04 YELLOWEDGE

SAN BERNARDINO AVENUE

MATCHLINE SHT 30

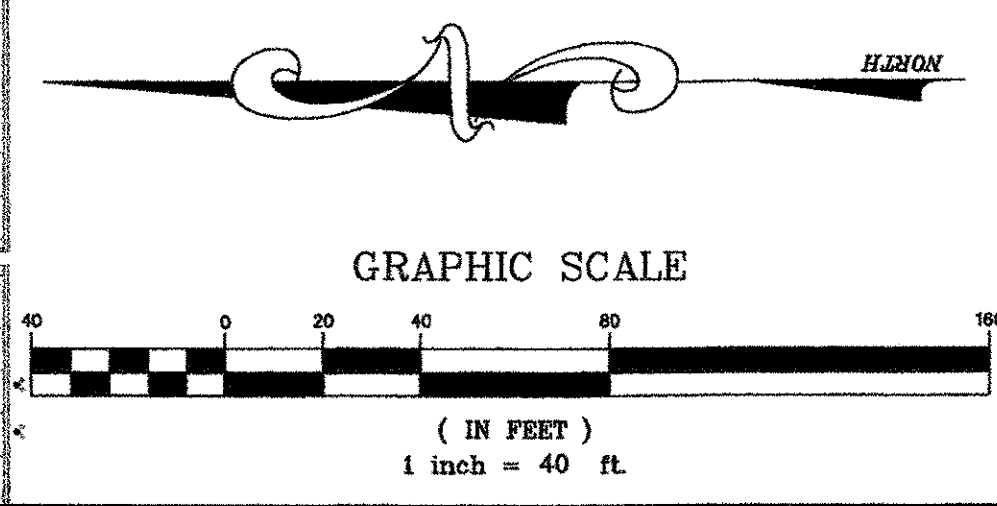
3-10-04 YELLOW EDGE

KAISER SITE

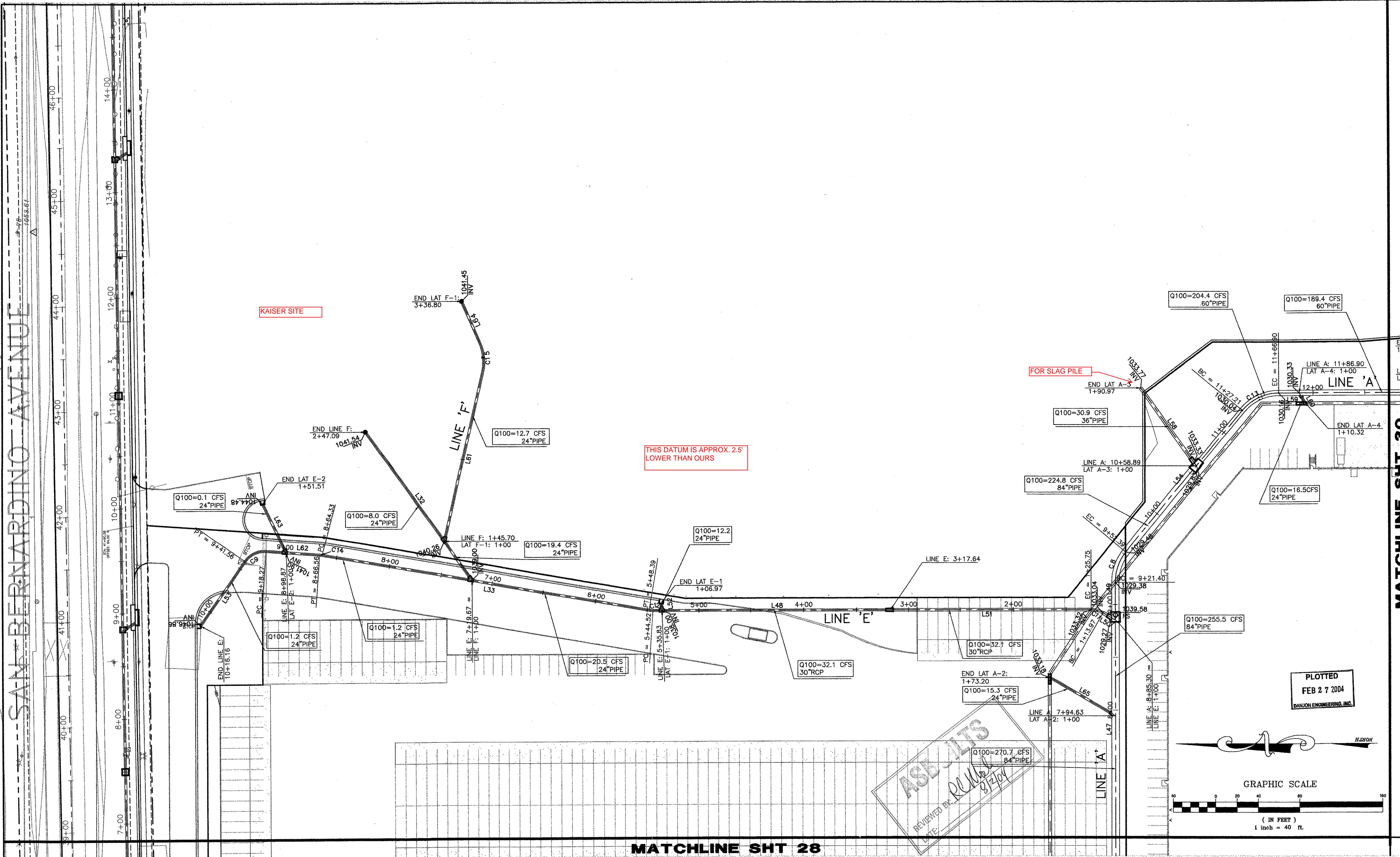
FOR SLAG PILE

THIS DATUM IS APPROX. 2.5' LOWER THAN OURS

PLOTTED
FEB 27 2004
DANJON ENGINEERING, INC.



ASE JLT
REVIEWED BY: RLK/ML
DATE: 8/2/04

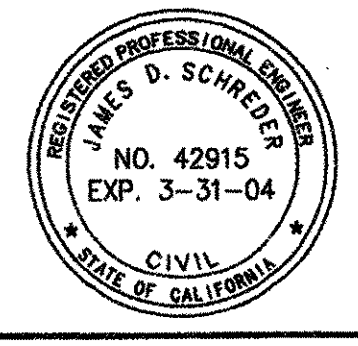


MATCHLINE SHT 28

BENCH MARK:
COUNTY OF SAN BERNARDINO BENCHMARK # 10-35-92 SBD
BRASS DISK, TOP OF CONCRETE SUPPORT POST FOR SW LEG
OF HIGH VOLTAGE TOWER #1/3 MIRA LOMA-PADUA, N/O I-10
& E/O ETIWANDA AVENUE, 10-FT NE/O R/W FENCE AND WB
OFF-RAMP, 3-FT ABOVE GROUND
ELEVATION 1012.039

BASIS OF BEARINGS:
BEARINGS SHOWN HEREON ARE BASED ON THE
CENTERLINE OF VALLEY BOULEVARD SHOWN ON
PARCEL MAP NO. 15118, SHOWN AS HAVING A
BEARING OF NORTH 89°33'19" WEST PER MAP
FILED IN BOOK 195 PAGES 41 THROUGH 46,
INCLUSIVE, OF PARCEL MAPS, IN THE OFFICE OF
THE COUNTY RECORDER OF SAID COUNTY.

SOILS ENGINEER:
KLEINFELDER INC
1370 VALLEY VISTA DRIVE, SUITE 150
DIAMOND BAR, CA 91785-3910
TEL 909-396-0335
FAX 909-396-1324
PROJECT # 58-9401-01



DANJON ENGINEERING, INC.
895 E. Yorba Linda Blvd., Ste 202
Placentia, CA 92870
(714)572-6800 FAX(714)572-6850

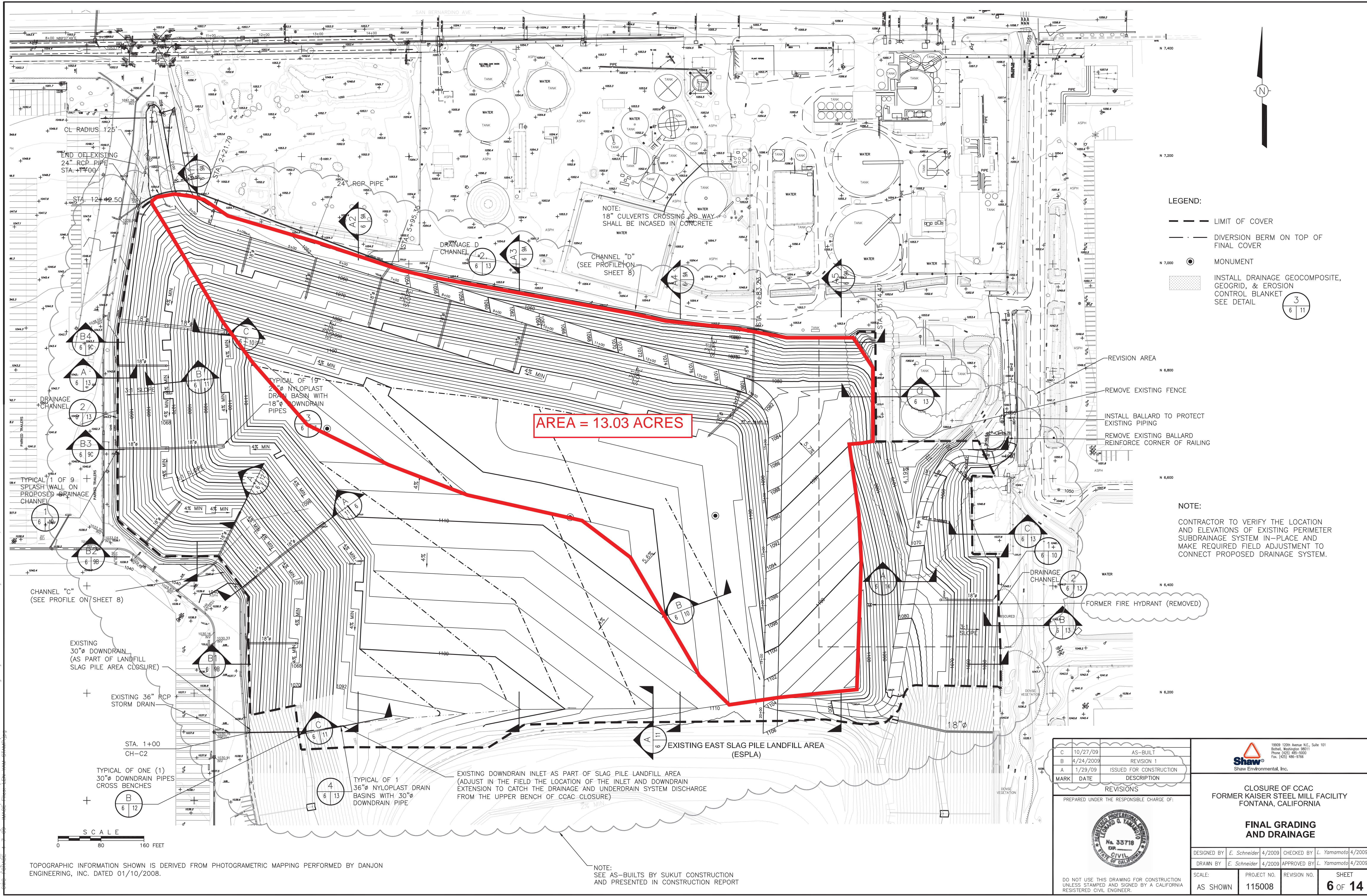
FIELD BOOK REF.

COUNTY OF SAN BERNARDINO

DESIGN BY	DRAWN BY	APPROVED BY
SUBMITTED BY:	ASST. COUNTY ENGR.-ROADS	DATE
RECOMMENDED/APPROVED BY		DATE
	COUNTY ENGINEER	DATE

PRECISE GRADING PLAN
CATELLUS DEVELOPMENT
EAST SLAG PILE
PRECISE GRADING SHEET

W.O. NO.
ROAD NO.
FILE NO.
SHEET 27 OF 30



AREA = 13.03 ACRES

- LEGEND:**
- LIMIT OF COVER
 - - - DIVERSION BERM ON TOP OF FINAL COVER
 - MONUMENT
 - ▨ INSTALL DRAINAGE GEOCOMPOSITE, GEOGRID, & EROSION CONTROL BLANKET SEE DETAIL

- REVISION AREA**
- REMOVE EXISTING FENCE
 - INSTALL BALLARD TO PROTECT EXISTING PIPING
 - REMOVE EXISTING BALLARD REINFORCE CORNER OF RAILING

NOTE:
CONTRACTOR TO VERIFY THE LOCATION AND ELEVATIONS OF EXISTING PERIMETER SUBDRAINAGE SYSTEM IN-PLACE AND MAKE REQUIRED FIELD ADJUSTMENT TO CONNECT PROPOSED DRAINAGE SYSTEM.

MARK	DATE	DESCRIPTION
C	10/27/09	AS-BUILT
B	4/24/2009	REVISION 1
A	1/29/09	ISSUED FOR CONSTRUCTION



CLOSURE OF CCAC FORMER KAISER STEEL MILL FACILITY FONTANA, CALIFORNIA

FINAL GRADING AND DRAINAGE

DESIGNED BY *E. Schneider* 4/2009 CHECKED BY *L. Yamamoto* 4/2009
 DRAWN BY *E. Schneider* 4/2009 APPROVED BY *L. Yamamoto* 4/2009

SCALE: AS SHOWN PROJECT NO. 115008 REVISION NO. SHEET 6 OF 14

PREPARED UNDER THE RESPONSIBLE CHARGE OF:

DO NOT USE THIS DRAWING FOR CONSTRUCTION UNLESS STAMPED AND SIGNED BY A CALIFORNIA REGISTERED CIVIL ENGINEER.

TOPOGRAPHIC INFORMATION SHOWN IS DERIVED FROM PHOTOGRAMETRIC MAPPING PERFORMED BY DANJON ENGINEERING, INC. DATED 01/10/2008.

NOTE:
SEE AS-BUILTS BY SUKUT CONSTRUCTION AND PRESENTED IN CONSTRUCTION REPORT

XREF: Files: STORM01
 mxd: 01
 HORI: ZC2
 CMC-FOR: 9-4-08
 File: s:\d\11\115008\Drawings\office\kaiser\ccac\as-built\B1-PCRA-D6-ob.dwg Layout: 01.DCONCEPT User: terry.schneider Oct 27, 2009 10:16am