

Approved.

LETTER OF MAP REVISION
FOR
IDLE HOUR WASH

see
revised
HEC 2
at end of
report

**LETTER OF MAP REVISION
FOR
IDLE HOUR WASH**

Prepared for:

Pima County Department of Transportation
& Flood Control District

Prepared by:

SIMONS, LI & ASSOCIATES, INC.
P.O. Box 2712
Tucson, Arizona 85702

March 24, 1995



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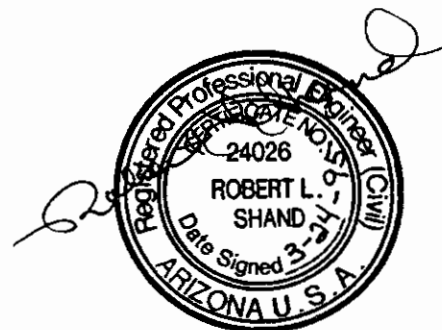
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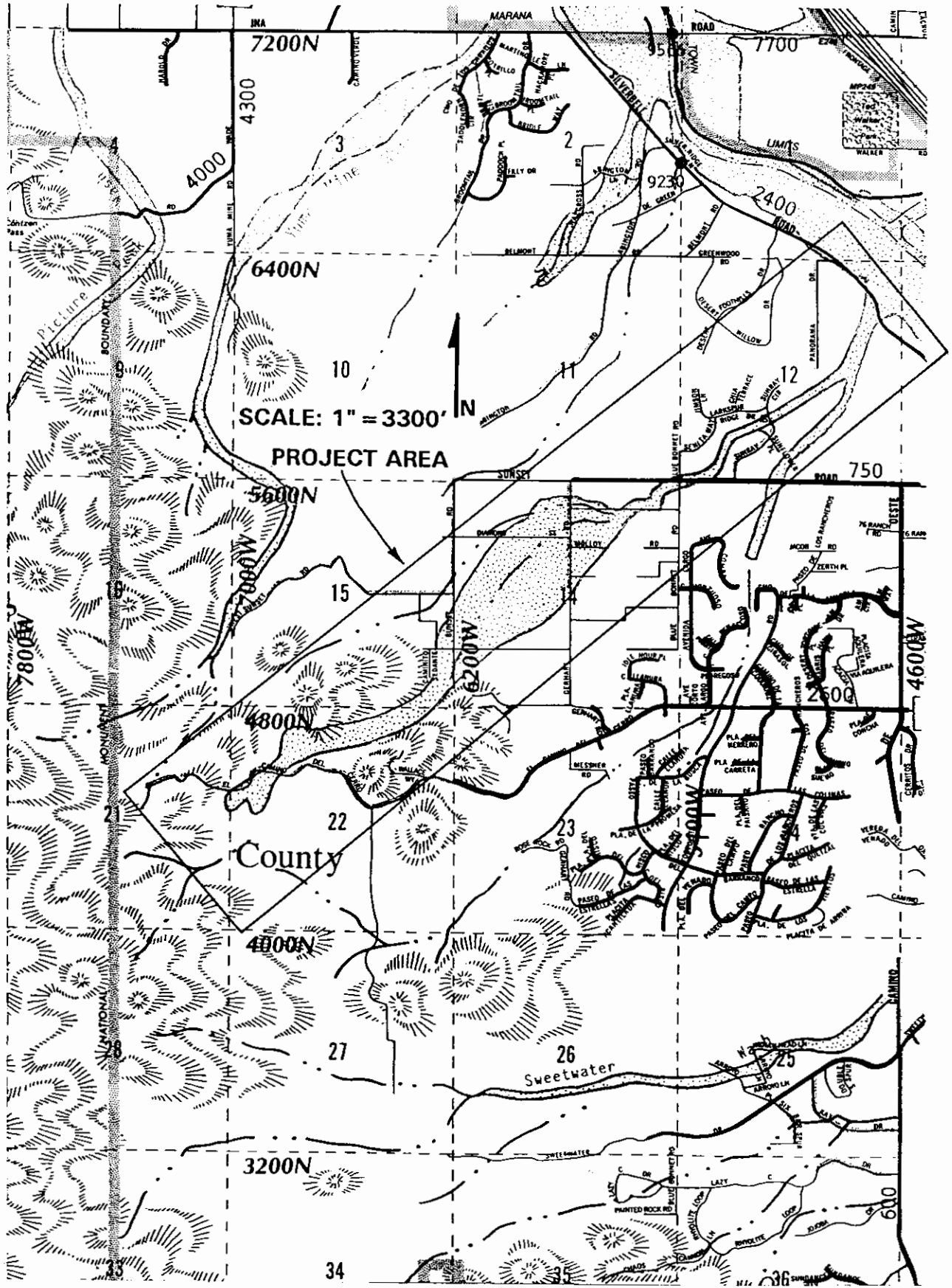


I. INTRODUCTION

Simons, Li & Associates, Inc. (SLA), under contract with the Pima County Department of Transportation and Flood Control District (District), has performed a detailed hydraulic analysis of Idle Hour Wash for the purpose of preparing a Letter of Map Revision (LOMR). The project area includes: (1) the West Idle Hour Wash, from its confluence with the Santa Cruz River to a point located approximately 22,810 feet upstream from the confluence; (2) the East Idle Hour Wash, from its confluence with the West Idle Hour Wash to a point located approximately 3,580 feet upstream from the confluence; and (3) an unnamed tributary, from its confluence with West Idle Hour Wash to a point located approximately 3060 feet upstream from the confluence (see Figure 1).

The Idle Hour Wash watershed drains a portion of the eastern slopes of the Tucson Mountains, receiving an average of approximately 12 inches of precipitation annually. The watershed is comprised mostly of rural/ranch land-uses, divided into parcels which are typically three to ten acres in area. Lately, however, many lots have been subdivided, which will ultimately result in a greater density of development. For the most part, The Idle Hour Wash remains in its natural state, with the only man-made impacts being homes and associated structures located within the overbank areas; as well as several paved and un-paved, at-grade road crossings. The purpose for this LOMR is to provide more detailed flood data for this rapidly developing area. This, in turn, will allow the District to better manage future development within the area.

The results from the hydraulic analysis were used to develop a revised 100-year floodplain within the project area (see Figures 2A, 2B, 2C, and 2D). Included with this report is the documentation that will be used by the District to apply for a LOMR from the Federal Emergency Management Agency [FEMA] (see Appendix D). To this end, the analysis and results presented herein have been prepared to meet FEMA standards for a LOMR submittal. Also included with this report is documentation that meets the Arizona Department of Water Resources standard form for a Technical Data Notebook [TDM] (see Appendix E).



PIMA COUNTY ARIZONA,
T13S, R12E

FIGURE 1: LOCATION MAP
IDLE HOUR WASH LOMR

II. METHODOLOGY

The District provided SLA with detailed topographic and hydrologic data. The topography was flown on November 7, 1994; and was provided at a scale of 1" = 200', with two-foot contour intervals. The mapping company was McLain-Harbers Co., Inc., of Tucson. The vertical datum for this mapping is based on NAVD of 1988, and the horizontal datum is based on NAD of 1983. The hydrologic data (i.e., peak discharges) were developed for the District by Camp, Dresser and McKee, Inc. (CDM), as part of the Tucson Mountain Basin Management Study [CDM, 1985] (see Appendix A). The data were developed by CDM using the method prescribed in the "Hydrology Manual For Engineering Design And Flood Plain Management Within Pima County, Arizona".

Flood elevations were determined using the Computer Model HEC-2, Water Surface Profiles, Version 4.6.2, May 1991, developed by the U.S. Army Corps of Engineers Hydrologic Engineering Center. Cross-sections were taken from the project topographic mapping, at intervals ranging from 300 to 700 feet. Critical depth was assumed for the starting water-surface elevation at the downstream end of the project. Starting water-surface elevations for tributaries to Idle Hour Wash were assumed to equal the computed water-surface elevations on the main branch at their confluences with the Idle Hour Wash. The Manning's roughness coefficient (n-value) was estimated to be 0.050 for all channel and overbank areas for the entire reach included in all cross-sections used in this study. This value was determined using aerial photographs, ground photographs, and field investigations as a guide. Photos of typical channel reaches are included in Appendix B.

An expansion coefficient of 0.3 and a contraction coefficient of 0.1 were used uniformly for the entire reach in this study. These are generally accepted for natural riverine environments with small variations in cross-section geometry. Lateral expansions in the flow were limited to 4 to 1 (i.e., four feet linearly, in the downstream direction, to one foot laterally) in order to accurately characterize effective flow areas. HEC-2 Input data are included in Appendix C.

The 100-year floodplain limits resulting from this hydraulic analysis were electronically overlaid, via the use of AutoCad, with Pima County Assessor's maps provided by the Pima County Engineering & Technical Services Department. A spreadsheet was compiled which provides the tax ID number of all parcels and structures located in the existing FEMA Zone A, as well as those parcels and structures located within the 100-year floodplain (Zone AE) determined as part of this study. The electronic listing was then sent to the Engineering & Technical Services Department, which in turn provided SLA with an electronic list of property-owner names and mailing addresses. The list is being provided to the District under separate cover from this documentation.

III. RESULTS

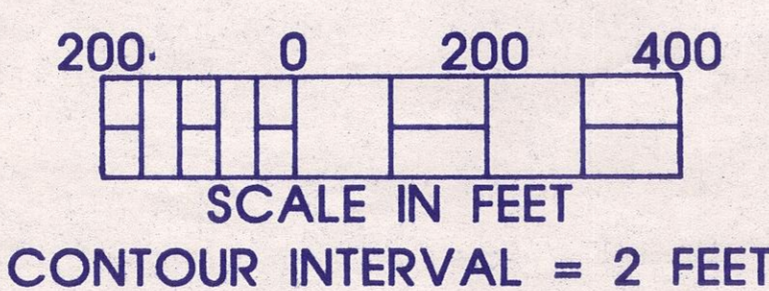
The resulting 100-year floodplain (FEMA Zone AE) for Idle Hour Wash is presented in Figures 2A, 2B, 2C and 2D. Figure 3 shows the 100-year floodplain at 1 inch = 1000 feet scale. Average velocities for those reaches of Idle Hour Wash included in this study vary from 4.3 to 10.6 feet per second, and channel slopes vary from 0.069 ft/ft, in the upstream reaches, to 0.007 ft/ft, in the downstream reaches (see Appendix C). There are currently 138 parcels located in the effective FEMA Zone A (100-year floodplain). Of this number, 54 of these parcels have structures located in the effective floodplain (ZONE A). Based upon the results of this study, there are 112 parcels located in the Zone AE (100-year floodplain). Of this number, 17 of these parcels have structures which are located in the floodplain (LOMR Zone AE). As a result of this study, eight parcels, including four structures, were added to the 100-year floodplain.

Along the West Idle Hour Wash, the flow is divided from cross-section 22 to 36 (a reach length of approximately 5,600 feet) between two primary channel sections or flow paths. The flow distribution at cross-sections 37 and 38, located just upstream of the bifurcation, were used to estimate the quantity of flow conveyed along each path. Based on the upstream distribution, flow was split such that approximately 55% of the flow (1839 cfs) was modeled down the right channel (i.e., the reach lying between cross-sections 22 and 36), and approximately 45% of the flow (1505 cfs) was modeled down the left channel (i.e., the reach lying between cross-sections 22 and 136). The split-flow option was not used in this case, since the split is not a result of a side-weir, but rather, it is the result of flow being diverted around both sides of an elevated land mass in a more or less gradual manner.

True split-flow situations, where flow exits the channel and overbank areas via a side-weir, occur at five locations along the West Idle Hour Wash: between cross-sections 27 and 29; between cross-sections 31 and 33; between cross-sections 50 and 52; between cross-sections 52 and 54; and between cross-sections 129 and 132. The side-weir discharge was determined for each of these locations using the split-flow option of HEC-2. Flow exiting the main channel at these locations varied from 3% to 13% of the main-channel flow. These losses were found to have a negligible effect on the computed water-surface elevations. For this reason, the split-flow option was ultimately not included in the final HEC-2 model.

PIMA COUNTY FLOOD CONTROL DISTRICT

IDLE HOUR WASH
 1" = 200', 2 FOOT CONTOUR INTERVAL
 PORTION OF SECTIONS 15, 21 & 22 T13S R12E



100-YEAR FLOOD LIMITS
 CROSS SECTION 49
 BASIS OF ELEV
 NAVD 1988
 NAD 1983

LETTER OF MAP REVISION
 PIMA COUNTY, AZ

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PIMA COUNTY FLOOD CONTROL DISTRICT

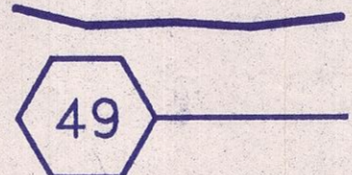
IDLE HOUR WASH

1" = 200', 2 FOOT CONTOUR INTERVAL
PORTION OF SECTIONS 14, 15, 22 & 23 T13S R12E



PIMA COUNTY FLOOD CONTROL DISTRICT

1" = 200'
 2 FOOT CONTOUR INTERVAL
 PORTION OF SECTIONS 11, 12, 13 & 14 T19S R12E

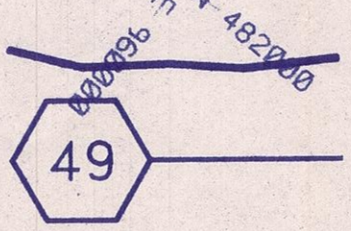
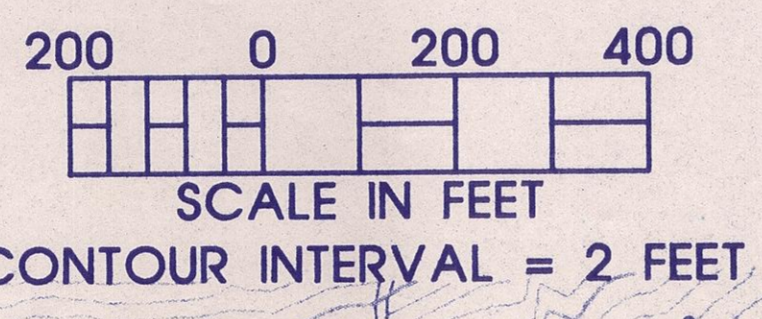


100-YEAR FLOOD LIMITS
 CROSS SECTION
 BASIS OF ELEV
 NAVD 1988
 NAD 1983

LETTER OF MAP REVISION
 PIMA COUNTY, AZ

1	2	3	4
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100-YEAR FLOOD LIMITS

CROSS SECTION

BASIS OF ELEV
NAVD 1988
NAD 1983

LETTER OF MAP REVISION

PIMA COUNTY, AZ

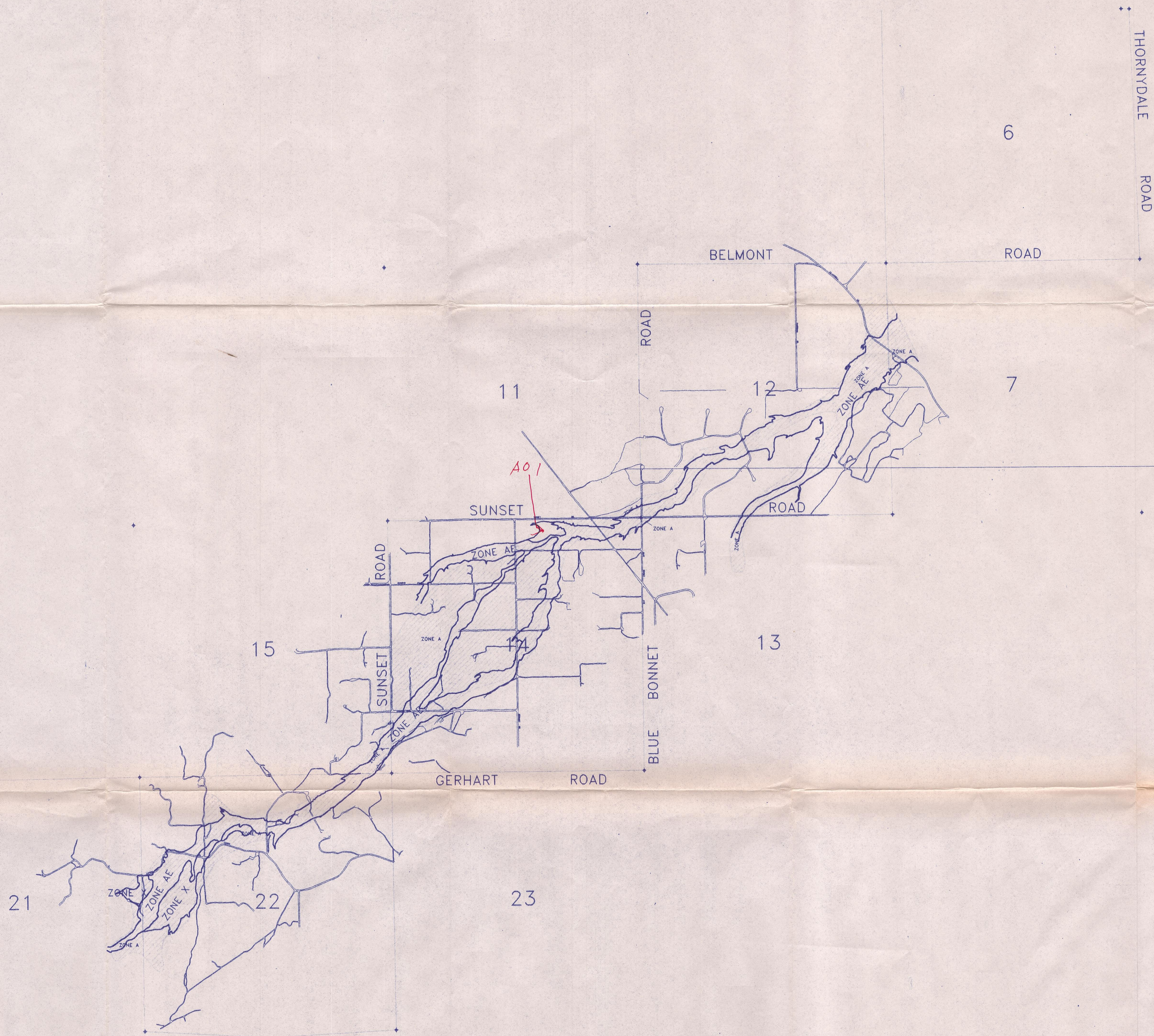
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IDLE HOUR WASH

1" = 200', 2 FOOT CONTOUR INTERVAL





— EFFECTIVE FLOODPLAIN (ZONE A)
 ~ 1995 LOMR FLOODPLAIN LIMITS (ZONE AE)

MARCH 24, 1995
 SIMONS, LI & ASSOCIATES, INC.

FIGURE 3

1995 LOMR FLOODPLAIN LIMITS

SCALE: 1"=1000'

PIMA COUNTY FLOOD CONTROL DISTRICT

IDLE HOUR WASH
 T13S, R12E & T13S, R13E
 PIMA COUNTY, AZ

**LETTER OF MAP REVISION FOR
IDLE HOUR WASH**

**APPENDIX A
HYDROLOGIC ANALYSIS (CDM, 1985)**



PIMA COUNTY PUBLIC WORKS
DEPARTMENT OF TRANSPORTATION AND FLOOD CONTROL DISTRICT
201 NORTH STONE AVENUE, THIRD FLOOR
TUCSON, ARIZONA 85701-1207

ANTONIO (TONY) C. PAEZ
DIRECTOR

(602) 740-6410
FAX (602) 620-1933

November 8, 1994

Rob Shand, P.E.
Simons, Li and Associates, Inc.
P.O. Box 2712
Tucson, Az 85702-2712

Re: Hydrology for the Idle Hour Wash LOMR Submittal

Dear Mr. Shand:

The enclosed information from the *Tucson Mountain Basin Study* will be utilized for the hydrologic component of the Idle Hour Wash LOMR submittal. The reaches are defined within the drainage area exhibit (also enclosed) and have the following 100-year flow values:

<u>Reach</u>	<u>Flow Value</u>
Santa Cruz confluence to J21	7674.6 cfs
J21 to J20	3959.1 cfs
J20 to 8b upper watershed	1113.2 cfs
J20 to 8a upper watershed	3344.2 cfs
J21 to J19	4119.2 cfs

The existing information contained in the above referenced study is acceptable for mapping purposes.

Sincerely,

Tom Helfrich
Chief Hydrologist

CC: B.J. Voelkel

FOR : PIMA COUNTY DEPARTMENT OF TRANSPORTATION
AND FLOOD CONTROL DISTRICT

*Tucson
Mountain
Basin
Study*

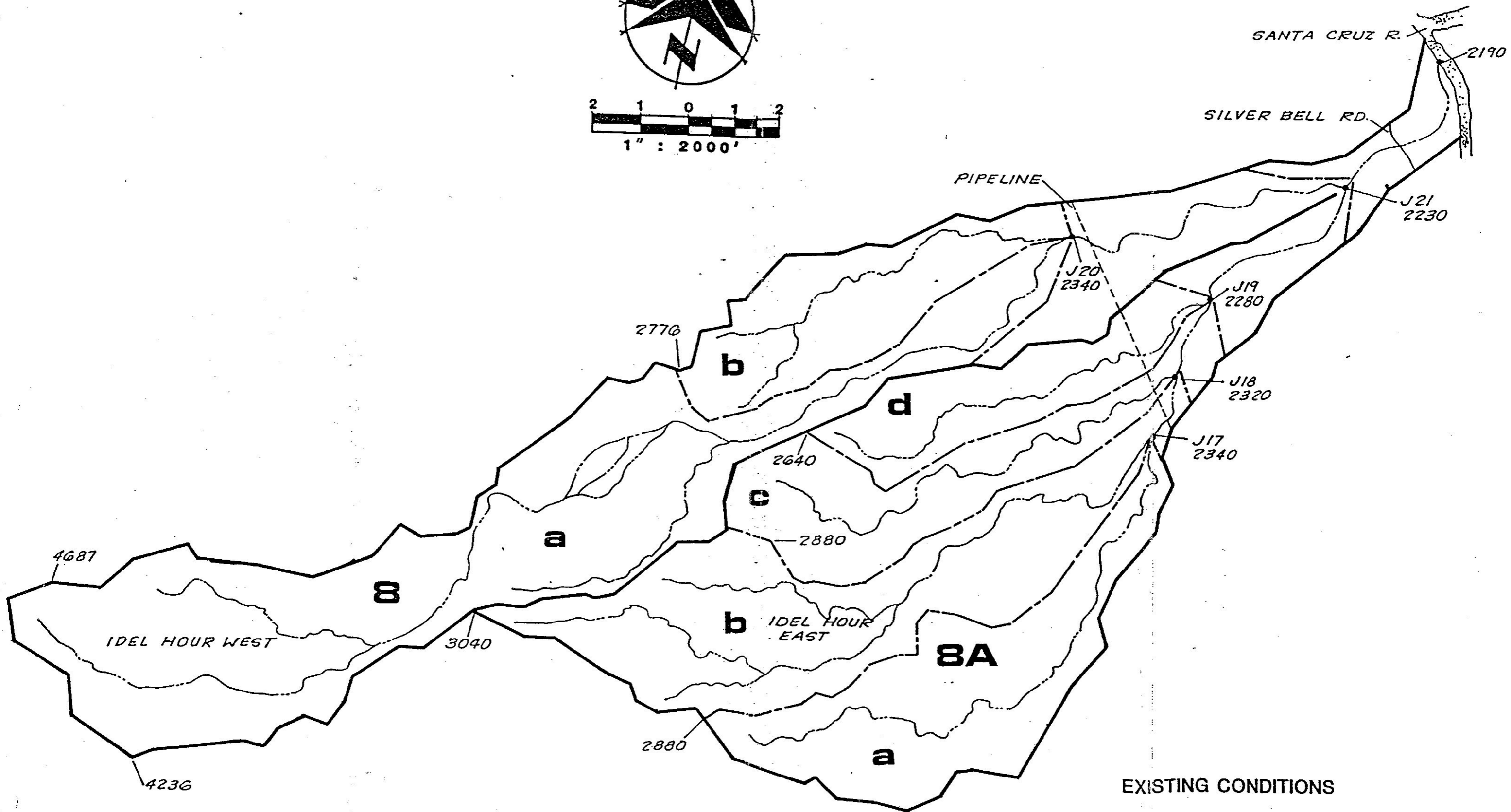
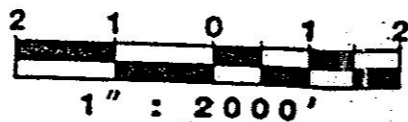
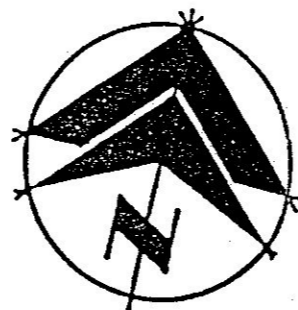
CAMP DRESSER & McKEE, INC.

MARCH, 198

RETURN TO PLANNING

DIVISION LIBRARY

CDM



EXISTING CONDITIONS
DRAINAGE AREA 8+8A

P.C.D.O.T.
HYDROLOGIC COMPUTATIONS
ACCORDING TO THE
HYDROLOGY MANUAL FOR
ENGINEERING DESIGN
AND
FLOOD PLAIN MANAGEMENT
WITHIN PIMA COUNTY, ARIZONA
SEPTEMBER, 1979

by

CAMP DRESSER & McKEE, INC.
120 W. BROADWAY, SUITE 190
TUCSON, ARIZONA 85701
(602) 792-3573

PROJECT No. :
PROJECT NAME : TUCSON MOUNTAIN BASIN STUDY
LOCATION : TUCSON AZ

DATE OF RUN : 7/17/85
USER COMMENT : EXISTING RUNOFF-BASIN 8 & 8A

DESIGNER : W. BOWERS

DRAINAGE AREA DESIGNATION :8Aabc

CONCENTRATION POINT :J19

WATERSHED AREA = 2.7 SM

LENGTH OF WATER COURSE = 18500.00 ft.
LENGTH TO CENTER OF GRAVITY = 9250.00 ft.

LENGTH INCREMENT	ELEVATION INCREMENT
4000.00 ft.	340.00 ft.
2000.00 ft.	100.00 ft.
2800.00 ft.	100.00 ft.
3900.00 ft.	100.00 ft.
5800.00 ft.	120.00 ft.

MEAN SLOPE = .0328 ft./ft.

WATERSHED TYPES	BASIN FACTOR	% TOTAL AREA
UNDEVELOPED MOUNTAINS	.050	31 %
UNDEVELOPED VALLEY	.035	41 %
DEVELOPED VALLEY <1R	.034	28 %
WEIGHTED BASIN FACTOR =		.039

CORRECTED RAINFALL DEPTHS:

6 hr. RAINFALL - 2 yr. STORM = 1.74
 24 hr. RAINFALL - 2 yr. STORM = 2.10
 6 hr. RAINFALL - 100 yr. STORM = 4.00
 24 hr. RAINFALL - 100 yr. STORM = 5.04

RETURN PERIOD	1 hr	2 hr	3 hr	6 hr	24hr
100 YEAR	2.89	3.27	3.52	4.00	5.04
50 YEAR	2.60	2.93	3.15	3.57	4.48
25 YEAR	2.30	2.59	2.78	3.14	3.92
10 YEAR	1.98	2.21	2.37	2.66	3.30
5 YEAR	1.73	1.93	2.05	2.30	2.83
2 YEAR	1.35	1.48	1.57	1.74	2.10

SOIL GROUP PERCENTAGES:

40% B 0% C 60% D

GROUND COVER TYPES	COVER DENSITY	% TOTAL AREA
DESERT BRUSH	40 %	70 %
MOUNTAIN BRUSH	40 %	30 %
IMPERVIOUS COVER (EXISTING) =		2 %

DRAINAGE AREA :8Aabc 10 YEAR STORM

CONCENTRATION POINT :J19

COVER/SOIL CODE*	CURVE #	ADJ. CURVE #	RR RATIO
D40B	81	83.33	.35
D40D	89	89.99	.54
M40B	65	69.99	.12
M40D	86	87.60	.47
IMPERVIOUS (EXISTING)	99	99.00	.94

* First letter is the ground cover. The number is the cover density. Last letter is the soil group.

RUNOFF TO RAINFALL RATIOS BY SOIL GROUP

B .28
 C .00
 D .52
 IMP .94

WEIGHTED RUNOFF TO RAINFALL RATIO FOR PERVIOUS AREAS = .42
 RUNOFF SUPPLY RATE FOR ENTIRE WATERSHED = .44

TIME OF CONCENTRATION = 1.27 hours
 = 76.30 minutes

VALUE OF ITC = 57.18 minutes
 FINAL I USED = 2.06

RUNOFF SUPPLY RATE @ ITC = 0.90

PEAK DISCHARGE:

 645.33 * .9 * 2.7 = 1560 cfs (Q 10)

DRAINAGE AREA :8Aabc

100 YEAR STORM

CONCENTRATION POINT :J19

COVER/SOIL CODE*	CURVE #	ADJ. CURVE #	RR RATIO
D40B	81	86.06	.54
D40D	89	91.89	.71
M40B	65	73.78	.29
M40D	86	89.78	.65
IMPERVIOUS (EXISTING)	99	99.00	.96

* First letter is the ground cover. The number is the cover density.
Last letter is the soil group.

RUNOFF TO RAINFALL RATIOS BY SOIL GROUP

B .47
C .00
D .69

IMP .96

WEIGHTED RUNOFF TO RAINFALL RATIO FOR PERVIOUS AREAS = .60
RUNOFF SUPPLY RATE FOR ENTIRE WATERSHED = .61

TIME OF CONCENTRATION = 1.11 hours
= 66.76 minutes

VALUE OF ITC = 38.84 minutes
FINAL I USED = 3.87

RUNOFF SUPPLY RATE @ ITC = 2.35

PEAK DISCHARGE:

645.33 * 2.35 * 2.7 = 4102.5 cfs (Q 100)

CDM

DRAINAGE AREA DESIGNATION :BAAd

CONCENTRATION POINT :J19

WATERSHED AREA = 288 AC

LENGTH OF WATER COURSE = 9200.00 ft.

LENGTH TO CENTER OF GRAVITY = 4600.00 ft.

LENGTH INCREMENT ELEVATION INCREMENT
2800.00 ft. 240.00 ft.
6400.00 ft. 120.00 ft.

MEAN SLOPE = .0267 ft./ft.

WATERSHED TYPES	BASIN FACTOR	% TOTAL AREA
UNDEVELOPED MOUNTAINS	.050	11 %
UNDEVELOPED VALLEY	.035	65 %
DEVELOPED VALLEY <1R	.034	24 %

WEIGHTED BASIN FACTOR = .036

CORRECTED RAINFALL DEPTHS:

6 hr. RAINFALL - 2 yr. STORM = 1.74
24 hr. RAINFALL - 2 yr. STORM = 2.10
6 hr. RAINFALL - 100 yr. STORM = 4.00
24 hr. RAINFALL - 100 yr. STORM = 5.04

RETURN PERIOD	1 hr	2 hr	3 hr	6 hr	24hr
100 YEAR	2.89	3.27	3.52	4.00	5.04
50 YEAR	2.60	2.93	3.15	3.57	4.48
25 YEAR	2.30	2.59	2.78	3.14	3.92
10 YEAR	1.98	2.21	2.37	2.66	3.30
5 YEAR	1.73	1.93	2.05	2.30	2.83
2 YEAR	1.35	1.48	1.57	1.74	2.10

SOIL GROUP PERCENTAGES:

100% B 0% C 0% D

GROUND COVER TYPES	COVER DENSITY	% TOTAL AREA
DESERT BRUSH	40 %	90 %
MOUNTAIN BRUSH	40 %	10 %

IMPERVIOUS COVER (EXISTING) = 1 %

DRAINAGE AREA :8Ad

10 YEAR STORM

CONCENTRATION POINT :J19

COVER/SOIL CODE*	CURVE #	ADJ. CURVE #	RR RATIO
D40B	81	83.33	.35
M40B	65	69.99	.12
IMPERVIOUS (EXISTING)	99	99.00	.94

* First letter is the ground cover. The number is the cover density. Last letter is the soil group.

RUNOFF TO RAINFALL RATIOS BY SOIL GROUP

- B .33
- C .00
- D .00

- IMP .94

WEIGHTED RUNOFF TO RAINFALL RATIO FOR PERVIOUS AREAS = .33
 RUNOFF SUPPLY RATE FOR ENTIRE WATERSHED = .33

TIME OF CONCENTRATION = 0.93 hours
 = 55.98 minutes

VALUE OF ITC = 37.68 minutes
 FINAL I USED = 2.69

RUNOFF SUPPLY RATE @ ITC = 0.90

PEAK DISCHARGE:

 1.008 * .9 * 288 = 261.1 cfs (Q 10)

CDM

DRAINAGE AREA : 8Ad 100 YEAR STORM

CONCENTRATION POINT : J19

COVER/SOIL CODE*	CURVE #	ADJ. CURVE #	RR RATIO
D40B	81	86.06	.54
M40B	65	73.78	.29
IMPERVIOUS (EXISTING)	99	99.00	.96

* First letter is the ground cover. The number is the cover density.
Last letter is the soil group.

RUNOFF TO RAINFALL RATIOS BY SOIL GROUP

B .52
C .00
D .00

IMP .96

WEIGHTED RUNOFF TO RAINFALL RATIO FOR PERVIOUS AREAS = .52
RUNOFF SUPPLY RATE FOR ENTIRE WATERSHED = .52

TIME OF CONCENTRATION = 0.78 hours
= 46.81 minutes

VALUE OF ITC = 24.20 minutes
FINAL I USED = 5.20

RUNOFF SUPPLY RATE @ ITC = 2.72

PEAK DISCHARGE:

1.008 * 2.72 * 288 = 790.2 cfs (Q 100)

DRAINAGE AREA DESIGNATION :8A

CONCENTRATION POINT :J21

WATERSHED AREA = 3.38 SM

LENGTH OF WATER COURSE = 22500.00 ft.

LENGTH TO CENTER OF GRAVITY = 12600.00 ft.

LENGTH INCREMENT	ELEVATION INCREMENT
4000.00 ft.	340.00 ft.
2000.00 ft.	100.00 ft.
2800.00 ft.	100.00 ft.
3900.00 ft.	100.00 ft.
9800.00 ft.	170.00 ft.

MEAN SLOPE = .0273 ft./ft.

WATERSHED TYPES	BASIN FACTOR	% TOTAL AREA
UNDEVELOPED MOUNTAINS	.050	26 %
UNDEVELOPED VALLEY	.035	49 %
DEVELOPED VALLEY <1R	.034	25 %
WEIGHTED BASIN FACTOR =	.039	

CORRECTED RAINFALL DEPTHS:

6 hr. RAINFALL - 2 yr. STORM = 1.74
24 hr. RAINFALL - 2 yr. STORM = 2.10
6 hr. RAINFALL - 100 yr. STORM = 4.00
24 hr. RAINFALL - 100 yr. STORM = 5.04

RETURN PERIOD	1 hr	2 hr	3 hr	6 hr	24hr
100 YEAR	2.89	3.27	3.52	4.00	5.04
50 YEAR	2.60	2.93	3.15	3.57	4.48
25 YEAR	2.30	2.59	2.78	3.14	3.92
10 YEAR	1.98	2.21	2.37	2.66	3.30
5 YEAR	1.73	1.93	2.05	2.30	2.83
2 YEAR	1.35	1.48	1.57	1.74	2.10

SOIL GROUP PERCENTAGES:

50% B 0% C 50% D

GROUND COVER TYPES	COVER DENSITY	% TOTAL AREA
DESERT BRUSH	40 %	75 %
MOUNTAIN BRUSH	40 %	25 %

IMPERVIOUS COVER (EXISTING) = 2 %

DRAINAGE AREA :BA

10 YEAR STORM

CONCENTRATION POINT :J21

COVER/SOIL CODE*	CURVE #	ADJ. CURVE #	RR RATIO
D40B	81	83.33	.35
D40D	89	89.99	.54
M40B	65	69.99	.12
M40D	86	87.60	.47
IMPERVIOUS (EXISTING)	99	99.00	.94

* First letter is the ground cover. The number is the cover density.
Last letter is the soil group.

RUNOFF TO RAINFALL RATIOS BY SOIL GROUP

B .29
C .00
D .52

IMP .94

WEIGHTED RUNOFF TO RAINFALL RATIO FOR PERVIOUS AREAS = .41
RUNOFF SUPPLY RATE FOR ENTIRE WATERSHED = .42

TIME OF CONCENTRATION = 1.59 hours
= 95.23 minutes

VALUE OF ITC = 1.32 hours
FINAL I USED = 1.59

RUNOFF SUPPLY RATE @ ITC = 0.67

PEAK DISCHARGE:

645.33 * .67 * 3.38 = 1455.9 cfs (Q 10)

DRAINAGE AREA :BA 100 YEAR STORM

CONCENTRATION POINT :J21

COVER/SOIL CODE*	CURVE #	ADJ. CURVE #	RR RATIO
D40B	81	86.06	.54
D40D	89	91.89	.71
M40B	65	73.78	.29
M40D	86	89.78	.65
IMPERVIOUS (EXISTING)	99	99.00	.96

* First letter is the ground cover. The number is the cover density.
Last letter is the soil group.

RUNOFF TO RAINFALL RATIOS BY SOIL GROUP

B .48
C .00
D .69

IMP .96

WEIGHTED RUNOFF TO RAINFALL RATIO FOR PERVIOUS AREAS = .59
RUNOFF SUPPLY RATE FOR ENTIRE WATERSHED = .59

TIME OF CONCENTRATION = 1.38 hours
= 82.86 minutes

VALUE OF ITC = 52.16 minutes
FINAL I USED = 3.18

RUNOFF SUPPLY RATE @ ITC = 1.89

PEAK DISCHARGE:

645.33 * 1.89 * 3.38 = 4119.2 cfs (Q 100)

DRAINAGE AREA DESIGNATION : 8a

CONCENTRATION POINT : J20

WATERSHED AREA = 2.05 SM

LENGTH OF WATER COURSE = 24100.00 ft.

LENGTH TO CENTER OF GRAVITY = 12050.00 ft.

LENGTH INCREMENT	ELEVATION INCREMENT
3400.00 ft.	1187.00 ft.
5700.00 ft.	500.00 ft.
5000.00 ft.	300.00 ft.
5400.00 ft.	200.00 ft.
4600.00 ft.	160.00 ft.

MEAN SLOPE = .0603 ft./ft.

WATERSHED TYPES	BASIN FACTOR	% TOTAL AREA
UNDEVELOPED MOUNTAINS	.050	66 %
UNDEVELOPED VALLEY	.035	31 %
DEVELOPED VALLEY <1R	.034	3 %
WEIGHTED BASIN FACTOR =		.045

CORRECTED RAINFALL DEPTHS:

- 6 hr. RAINFALL - 2 yr. STORM = 1.74
- 24 hr. RAINFALL - 2 yr. STORM = 2.10
- 6 hr. RAINFALL - 100 yr. STORM = 4.00
- 24 hr. RAINFALL - 100 yr. STORM = 5.04

RETURN PERIOD	1 hr	2 hr	3 hr	6 hr	24hr
100 YEAR	2.89	3.27	3.52	4.00	5.04
50 YEAR	2.60	2.93	3.15	3.57	4.48
25 YEAR	2.30	2.59	2.78	3.14	3.92
10 YEAR	1.98	2.21	2.37	2.66	3.30
5 YEAR	1.73	1.93	2.05	2.30	2.83
2 YEAR	1.35	1.48	1.57	1.74	2.10

SOIL GROUP PERCENTAGES:

0% B 0% C 100% D

GROUND COVER TYPES	COVER DENSITY	% TOTAL AREA
DESERT BRUSH	40 %	35 %
MOUNTAIN BRUSH	40 %	65 %
IMPERVIOUS COVER (EXISTING) =		0 %

DRAINAGE AREA : 8a 10 YEAR STORM

CONCENTRATION POINT : J20

COVER/SOIL CODE*	CURVE #	ADJ. CURVE #	RR RATIO
D40D	89	89.99	.54
M40D	86	87.60	.47

* First letter is the ground cover. The number is the cover density. Last letter is the soil group.

RUNOFF TO RAINFALL RATIOS BY SOIL GROUP

B .00
 C .00
 D .49

WEIGHTED RUNOFF TO RAINFALL RATIO FOR PERVIOUS AREAS = .49
 RUNOFF SUPPLY RATE FOR ENTIRE WATERSHED = .49

TIME OF CONCENTRATION = 1.27 hours
 = 75.94 minutes

VALUE OF ITC = 56.91 minutes
 FINAL I USED = 2.06

RUNOFF SUPPLY RATE @ ITC = 1.02

PEAK DISCHARGE:

 645.33 * 1.02 * 2.05 = 1343.9 cfs (Q 10)

CDM

DRAINAGE AREA : 8a 100 YEAR STORM

CONCENTRATION POINT : J20

COVER/SOIL CODE*	CURVE #	ADJ. CURVE #	RR RATIO
D40D	89	91.89	.71
M40D	86	89.78	.65

* First letter is the ground cover. The number is the cover density. Last letter is the soil group.

RUNOFF TO RAINFALL RATIOS BY SOIL GROUP

B .00
 C .00
 D .67

WEIGHTED RUNOFF TO RAINFALL RATIO FOR PERVIOUS AREAS = .67
 RUNOFF SUPPLY RATE FOR ENTIRE WATERSHED = .67

TIME OF CONCENTRATION = 1.12 hours
 = 67.31 minutes

VALUE OF ITC = 39.52 minutes
 FINAL I USED = 3.79

RUNOFF SUPPLY RATE @ ITC = 2.53

PEAK DISCHARGE:

 645.33 * 2.53 * 2.05 = 3344.2 cfs (@ 100)

CDM

DRAINAGE AREA DESIGNATION : 8b

CONCENTRATION POINT : J20

WATERSHED AREA = 394 AC

LENGTH OF WATER COURSE = 8900.00 ft.
LENGTH TO CENTER OF GRAVITY = 4450.00 ft.

LENGTH INCREMENT ELEVATION INCREMENT
2500.00 ft. 276.00 ft.
6400.00 ft. 160.00 ft.

MEAN SLOPE = .0344 ft./ft.

WATERSHED TYPES	BASIN FACTOR	% TOTAL AREA
UNDEVELOPED MOUNTAINS	.050	27 %
UNDEVELOPED VALLEY	.035	63 %
DEVELOPED VALLEY <1R	.034	10 %
WEIGHTED BASIN FACTOR =		.039

CORRECTED RAINFALL DEPTHS:

6 hr. RAINFALL - 2 yr. STORM = 1.74
24 hr. RAINFALL - 2 yr. STORM = 2.10
6 hr. RAINFALL - 100 yr. STORM = 4.00
24 hr. RAINFALL - 100 yr. STORM = 5.04

RETURN PERIOD	1 hr	2 hr	3 hr	6 hr	24hr
100 YEAR	2.89	3.27	3.52	4.00	5.04
50 YEAR	2.60	2.93	3.15	3.57	4.48
25 YEAR	2.30	2.59	2.78	3.14	3.92
10 YEAR	1.98	2.21	2.37	2.66	3.30
5 YEAR	1.73	1.93	2.05	2.30	2.83
2 YEAR	1.35	1.48	1.57	1.74	2.10

SOIL GROUP PERCENTAGES:

80% B 0% C 20% D

GROUND COVER TYPES	COVER DENSITY	% TOTAL AREA
DESERT BRUSH	40 %	75 %
MOUNTAIN BRUSH	40 %	25 %

IMPERVIOUS COVER (EXISTING) = 1 %

DRAINAGE AREA : 86 10 YEAR STORM

CONCENTRATION POINT : J20

COVER/SOIL CODE*	CURVE #	ADJ. CURVE #	RR RATIO
D40B	81	83.33	.35
D40D	89	89.99	.54
M40B	65	69.99	.12
M40D	86	87.60	.47
IMPERVIOUS (EXISTING)	99	99.00	.94

* First letter is the ground cover. The number is the cover density. Last letter is the soil group.

RUNOFF TO RAINFALL RATIOS BY SOIL GROUP

B	.29
C	.00
D	.52
IMP	.94

WEIGHTED RUNOFF TO RAINFALL RATIO FOR PERVIOUS AREAS = .34
RUNOFF SUPPLY RATE FOR ENTIRE WATERSHED = .35

TIME OF CONCENTRATION = 0.87 hours
= 52.38 minutes

VALUE OF ITC = 34.56 minutes
FINAL I USED = 2.83

RUNOFF SUPPLY RATE @ ITC = 0.98

PEAK DISCHARGE:

1.00B * .98 * 394 = 388 cfs (Q 10)

DRAINAGE AREA : 86 100 YEAR STORM

CONCENTRATION POINT : J20

COVER/SOIL CODE*	CURVE #	ADJ. CURVE #	RR RATIO
D40B	81	86.06	.54
D40D	89	91.89	.71
M40B	65	73.78	.29
M40D	86	89.78	.65
IMPERVIOUS (EXISTING)	99	99.00	.96

* First letter is the ground cover. The number is the cover density. Last letter is the soil group.

RUNOFF TO RAINFALL RATIOS BY SOIL GROUP

B	.48
C	.00
D	.69
IMP	.96

WEIGHTED RUNOFF TO RAINFALL RATIO FOR PERVIOUS AREAS = .52
RUNOFF SUPPLY RATE FOR ENTIRE WATERSHED = .53

TIME OF CONCENTRATION = 0.74 hours
= 44.24 minutes

VALUE OF ITC = 22.67 minutes
FINAL I USED = 5.32

RUNOFF SUPPLY RATE @ ITC = 2.80

PEAK DISCHARGE:

1.008 * 2.8 * 394 = 1113.2 cfs (Q 100)

DRAINAGE AREA DESIGNATION :8

CONCENTRATION POINT :J21

WATERSHED AREA = 3.1 SM

LENGTH OF WATER COURSE = 30400.00 ft.

LENGTH TO CENTER OF GRAVITY = 15200.00 ft.

LENGTH INCREMENT	ELEVATION INCREMENT
3400.00 ft.	1187.00 ft.
5700.00 ft.	500.00 ft.
5000.00 ft.	300.00 ft.
5400.00 ft.	200.00 ft.
10500.00 ft.	270.00 ft.

MEAN SLOPE = .0454 ft./ft.

WATERSHED TYPES	BASIN FACTOR	% TOTAL AREA
UNDEVELOPED MOUNTAINS	.050	49 %
UNDEVELOPED VALLEY	.035	38 %
DEVELOPED VALLEY <1R	.034	13 %
WEIGHTED BASIN FACTOR =		.042

CORRECTED RAINFALL DEPTHS:

- 6 hr. RAINFALL - 2 yr. STORM = 1.74
- 24 hr. RAINFALL - 2 yr. STORM = 2.10
- 6 hr. RAINFALL - 100 yr. STORM = 4.00
- 24 hr. RAINFALL - 100 yr. STORM = 5.04

RETURN PERIOD	1 hr	2 hr	3 hr	6 hr	24hr
100 YEAR	2.89	3.27	3.52	4.00	5.04
50 YEAR	2.60	2.93	3.15	3.57	4.48
25 YEAR	2.30	2.59	2.78	3.14	3.92
10 YEAR	1.98	2.21	2.37	2.66	3.30
5 YEAR	1.73	1.93	2.05	2.30	2.83
2 YEAR	1.35	1.48	1.57	1.74	2.10

SOIL GROUP PERCENTAGES:

20% B 0% C 80% D

GROUND COVER TYPES	COVER DENSITY	% TOTAL AREA
DESERT BRUSH	40 %	50 %
MOUNTAIN BRUSH	40 %	50 %

IMPERVIOUS COVER (EXISTING) = 1 %

DRAINAGE AREA :8 10 YEAR STORM

CONCENTRATION POINT :J21

COVER/SOIL CODE*	CURVE #	ADJ. CURVE #	RR RATIO
D40B	81	83.33	.35
D40D	89	89.99	.54
M40B	65	69.99	.12
M40D	86	87.60	.47
IMPERVIOUS (EXISTING)	99	99.00	.94

* First letter is the ground cover. The number is the cover density. Last letter is the soil group.

RUNOFF TO RAINFALL RATIOS BY SOIL GROUP

B .23
 C .00
 D .51
 IMP .94

WEIGHTED RUNOFF TO RAINFALL RATIO FOR PERVIOUS AREAS = .45
 RUNOFF SUPPLY RATE FOR ENTIRE WATERSHED = .46

TIME OF CONCENTRATION = 1.58 hours
 = 95.02 minutes

VALUE OF ITC = 1.31 hours
 FINAL I USED = 1.61

RUNOFF SUPPLY RATE @ ITC = 0.73

PEAK DISCHARGE:

 645.33 * .73 * 3.1 = 1466.8 cfs (Q 10)

DRAINAGE AREA :8 100 YEAR STORM

CONCENTRATION POINT :J21

COVER/SOIL CODE*	CURVE #	ADJ. CURVE #	RR RATIO
D40B	81	86.06	.54
D40D	89	91.89	.71
M40B	65	73.78	.29
M40D	86	89.78	.65
IMPERVIOUS (EXISTING)	99	99.00	.96

* First letter is the ground cover. The number is the cover density. Last letter is the soil group.

RUNOFF TO RAINFALL RATIOS BY SOIL GROUP

B	.42
C	.00
D	.68
IMP	.96

WEIGHTED RUNOFF TO RAINFALL RATIO FOR PERVIOUS AREAS = .62
RUNOFF SUPPLY RATE FOR ENTIRE WATERSHED = .63

TIME OF CONCENTRATION = 1.39 hours
= 83.60 minutes

VALUE OF ITC = 52.82 minutes
FINAL I USED = 3.15

RUNOFF SUPPLY RATE @ ITC = 1.98

PEAK DISCHARGE:

645.33 * 1.98 * 3.1 = 3959.1 cfs (Q 100)

DRAINAGE AREA DESIGNATION :B+8A

CONCENTRATION POINT :SANTA CRUZ RIVER

WATERSHED AREA = 6.56 SM

LENGTH OF WATER COURSE = 33700.00 ft.

LENGTH TO CENTER OF GRAVITY = 14700.00 ft.

LENGTH INCREMENT	ELEVATION INCREMENT
3400.00 ft.	1187.00 ft.
5700.00 ft.	500.00 ft.
5000.00 ft.	300.00 ft.
5400.00 ft.	200.00 ft.
14200.00 ft.	310.00 ft.

MEAN SLOPE = .0395 ft./ft.

WATERSHED TYPES	BASIN FACTOR	% TOTAL AREA
UNDEVELOPED MOUNTAINS	.050	37 %
UNDEVELOPED VALLEY	.035	43 %
DEVELOPED VALLEY <1R	.034	20 %
WEIGHTED BASIN FACTOR =	.040	

CORRECTED RAINFALL DEPTHS:

- 6 hr. RAINFALL - 2 yr. STORM = 1.74
- 24 hr. RAINFALL - 2 yr. STORM = 2.10
- 6 hr. RAINFALL - 100 yr. STORM = 4.00
- 24 hr. RAINFALL - 100 yr. STORM = 5.04

RETURN PERIOD	1 hr	2 hr	3 hr	6 hr	24hr
100 YEAR	2.89	3.27	3.52	4.00	5.04
50 YEAR	2.60	2.93	3.15	3.57	4.48
25 YEAR	2.30	2.59	2.78	3.14	3.92
10 YEAR	1.98	2.21	2.37	2.66	3.30
5 YEAR	1.73	1.93	2.05	2.30	2.83
2 YEAR	1.35	1.48	1.57	1.74	2.10

SOIL GROUP PERCENTAGES:

40% B 0% C 60% D

GROUND COVER TYPES	COVER DENSITY	% TOTAL AREA
DESERT BRUSH	40 %	65 %
MOUNTAIN BRUSH	40 %	35 %

IMPERVIOUS COVER (EXISTING) = 1 %

DRAINAGE AREA : 8+8A 10 YEAR STORM

CONCENTRATION POINT : SANTA CRUZ RIVER

COVER/SOIL CODE*	CURVE #	ADJ. CURVE #	RR RATIO
D40B	81	83.33	.35
D40D	89	89.99	.54
M40B	65	69.99	.12
M40D	86	87.60	.47
IMPERVIOUS (EXISTING)	99	99.00	.94

* First letter is the ground cover. The number is the cover density.
Last letter is the soil group.

RUNOFF TO RAINFALL RATIOS BY SOIL GROUP

B .27
 C .00
 D .52

IMP .94

WEIGHTED RUNOFF TO RAINFALL RATIO FOR PERVIOUS AREAS = .42
 RUNOFF SUPPLY RATE FOR ENTIRE WATERSHED = .42

TIME OF CONCENTRATION = 1.68 hours
 = 101.00 minutes

VALUE OF ITC = 1.45 hours
 FINAL I USED = 1.45

RUNOFF SUPPLY RATE @ ITC = 0.61

PEAK DISCHARGE:

 645.33 * .61 * 6.56 = 2588.8 cfs (Q 10)

DRAINAGE AREA : 8+8A 100 YEAR STORM

CONCENTRATION POINT : SANTA CRUZ RIVER

COVER/SOIL CODE*	CURVE #	ADJ. CURVE #	RR RATIO
D40B	81	86.06	.54
D40D	89	91.89	.71
M40B	65	73.78	.29
M40D	86	89.78	.65
IMPERVIOUS (EXISTING)	99	99.00	.96

* First letter is the ground cover. The number is the cover density. Last letter is the soil group.

RUNOFF TO RAINFALL RATIOS BY SOIL GROUP

B	.45
C	.00
D	.69
IMP	.96

WEIGHTED RUNOFF TO RAINFALL RATIO FOR PERVIOUS AREAS = .59
RUNOFF SUPPLY RATE FOR ENTIRE WATERSHED = .60

TIME OF CONCENTRATION = 1.47 hours
= 87.99 minutes

VALUE OF ITC = 56.44 minutes
FINAL I USED = 3.04

RUNOFF SUPPLY RATE @ ITC = 1.81

PEAK DISCHARGE:

645.33 * 1.81 * 6.56 = 7674.6 cfs (Q 100)

**LETTER OF MAP REVISION FOR
IDLE HOUR WASH**

**APPENDIX B
PHOTOS**

Photo Roll 1

Note: All photos are of the Idle Hour Wash West Branch, unless otherwise noted.



Looking west (upstream) from Silverbell Road along the main channel.



Looking west (upstream) from Silverbell Road along the first breakout channel north of the main channel.



Looking west (upstream) from approximately 100-feet upstream from Silverbell Road along the first breakout channel north of the main channel. The breakout occurs just beyond the white square.



Looking west (upstream) from Silverbell Road along the second breakout channel north of the main channel.



Looking west (upstream) from Silverbell Road along the third breakout channel north of the main channel.



Looking east from just upstream (west) of Silverbell Road along the third breakout channel. The channel crosses the road just beyond the white square.



Looking south along Silverbell Road from about where the third breakout channel crosses the road. The main channel is just beyond the van approximately 100 feet.



Looking east-southeast (downstream) from where the third breakout channel north of the main channel crosses Silverbell Road (foreground). Area in background catches runoff from all three breakouts.



Looking east (downstream) from where the first and second breakout channels cross Silverbell Road (foreground). This channel collects the flow from the three breakouts.



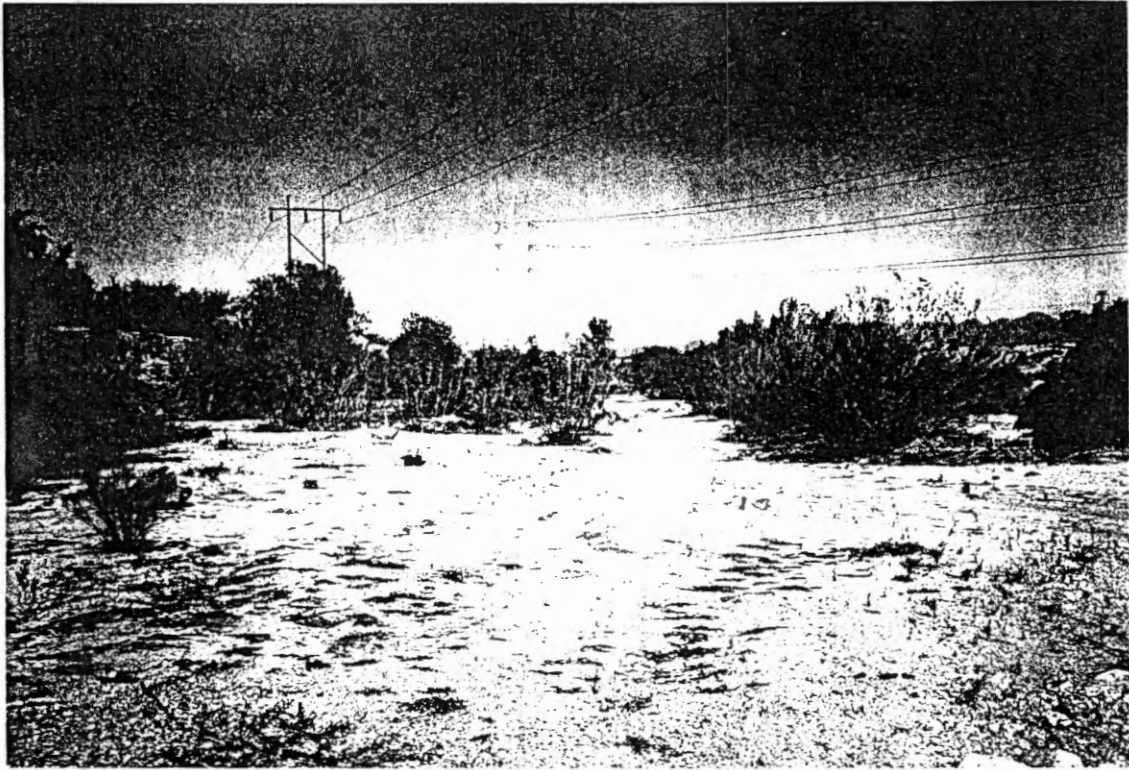
Looking upstream (west) along the breakout collector channel from approximately 300 feet downstream (east) of Silverbell road. Note car on roadway, and headcut.



Looking upstream (west) along the breakout collector channel from approximately 450 feet downstream (west) of Silverbell Road. Headcut is well formed at this point.



Looking upstream (west) along the breakout collector channel from approximately 650 feet downstream (west) of Silverbell Road. Photo taken standing at the west low-flow bank of the Santa Cruz river.



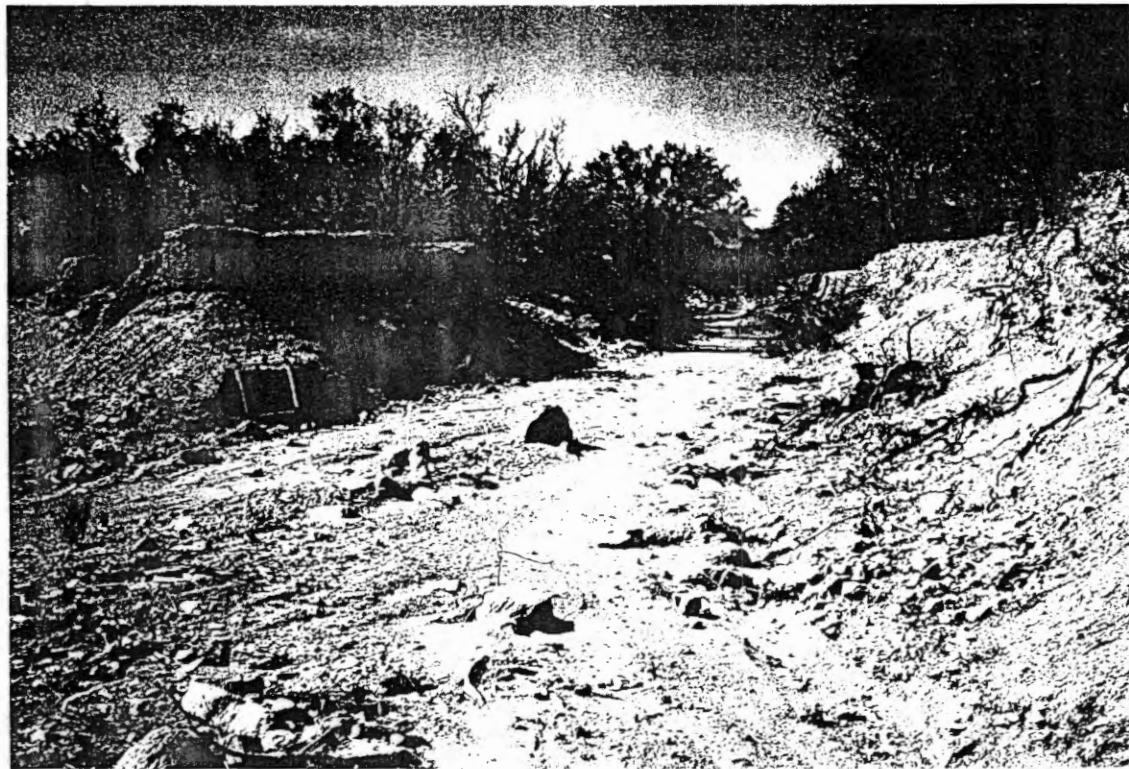
Looking north from the confluence of the breakout collector channel with the Santa Cruz River (downstream along the west bank of the Santa Cruz River).



Looking upstream (west) from the confluence of the main channel with the Santa Cruz River located approximately 550 feet downstream (east) of where the main channel crosses Silverbell Rd.



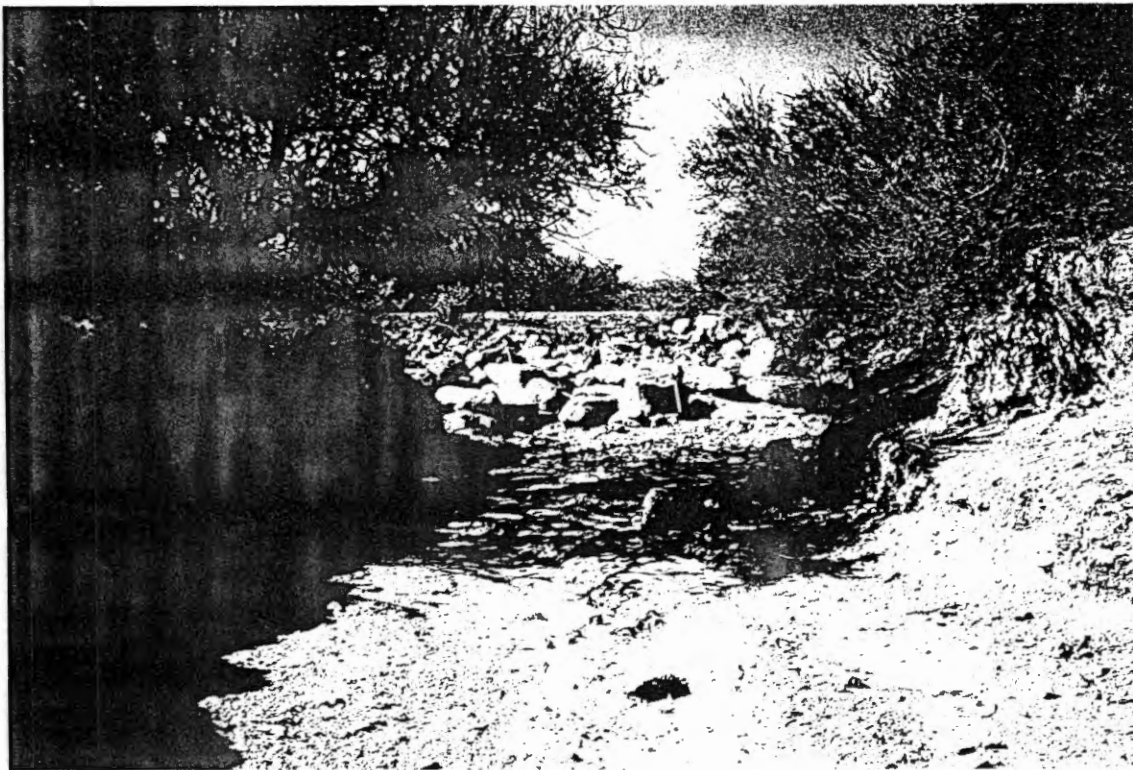
Looking southwest (upstream roughly) at the confluence of the main channel with the Santa Cruz River (right of telephone pole) and overbank flow area of the Santa Cruz River.



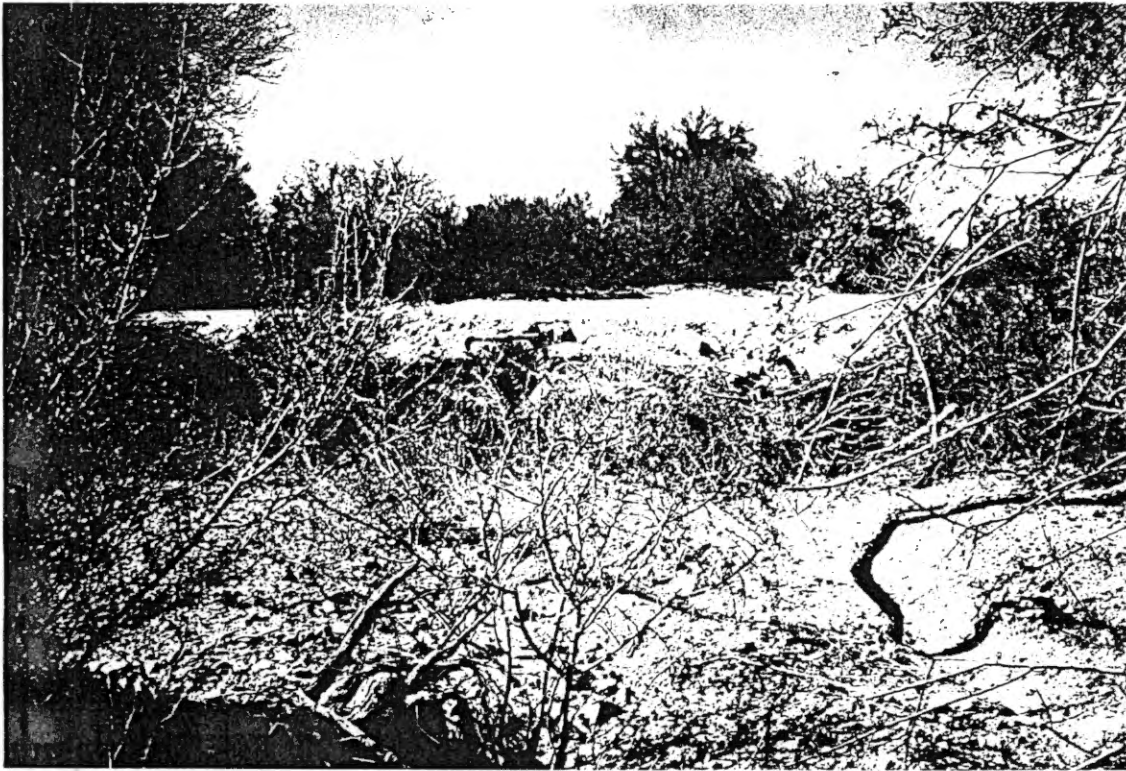
Looking upstream (west) along the main channel from approximately 400 feet downstream (west) of where it crosses Silverbell Road. Flow left of the square rejoins the main channel here.



Looking southwest (upstream) from a point along the main channel located approximately 400 feet downstream of Silverbell Rd. This channel (background) rejoins the main channel (foreground).



Looking upstream (west) along main channel from just downstream of Silverbell Road. Road is visible just beyond the square. Note, headcut has worked its way up to the road.



Looking west (upstream) along the main channel. The main channel splits here at the road; this is looking upstream (west) at Silverbell road along the right (or southern) split in the channel.



Looking upstream west from where the south or "right split" occurs. The main channel is to the right of the photo (north).



Looking northwest (upstream) from where the right (south) main channel flow split crosses Silverbell Road. The main channel is located at the approximate center of the photo.



Looking northwest from the main channel right-flow split occurs at Silver bell Road. The main channel crosses the road near the center of the photo.



Looking downstream (east) along main channel from approximately 100 feet upstream of Silverbell Road. The main channel drops over the road behind the square. The right split is to the right of the square.



Looking downstream (east) along the main channel where it crosses Silverbell Road. The main channel crosses to the left of the square, and the right split is to the right (south).

Photo Roll 2



Looking southwest (upstream) along the east branch just downstream of Sunset Road. This crossing is approximately 800 feet east of the intersection of Sunset Road and Sunray Drive.



Looking downstream (northeast) along the east branch just downstream of Sunset Road.



Looking downstream (northeast) along the east branch from approximately 500 feet downstream of Sunset Road. Trees along the left (northwest) bank are actually an island between a channel split.



Looking upstream (southwest) along the east branch from approximately 650 feet downstream of Sunset Road. This is the left part (northwest) split of the channel. The main channel is left of the square.



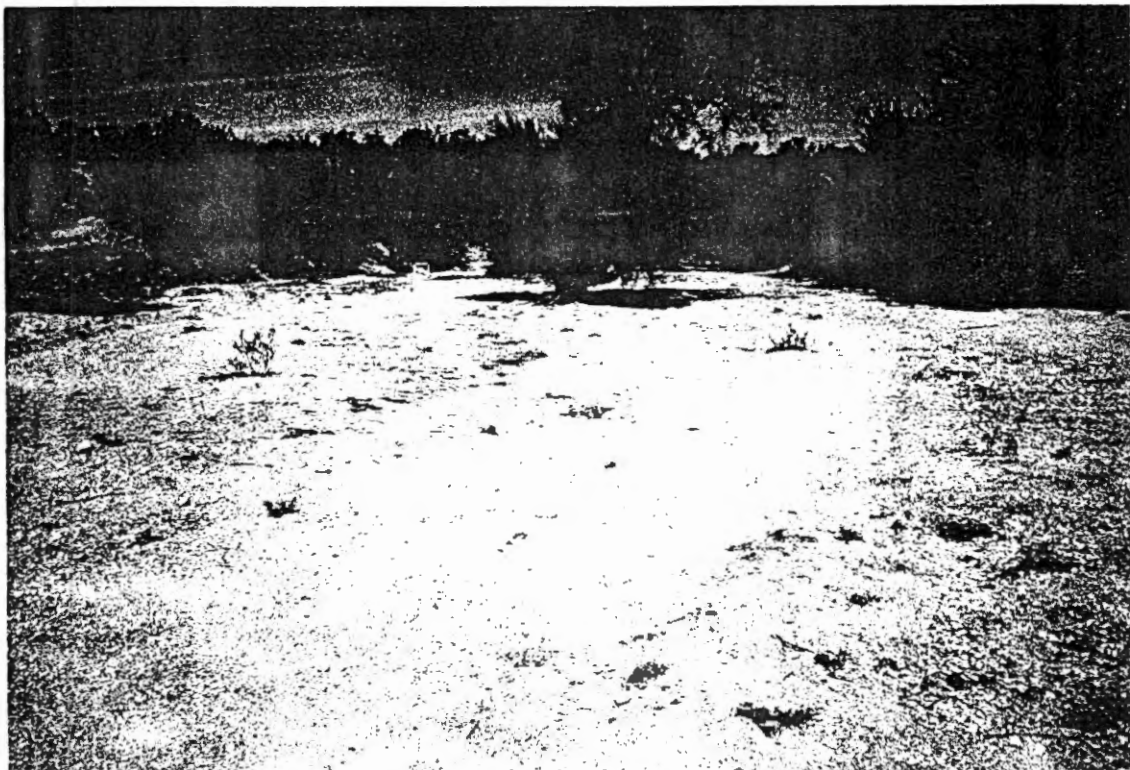
Looking downstream (northeast) along the east branch from approximately 100 feet downstream of Sunset Road. This is the left overbank area or left split. The main channel is right of the photo.



Looking downstream (northeast) along the east branch at Sunset Road. The left split of the channel occurs behind the square; the main channel (right split) is right of center.



Looking upstream (southwest) along the east branch from approximately 100 feet upstream of Sunset Road.



Looking downstream (northeast) along the east branch from approximately 1100 feet upstream of Sunset road. This is at the approximate location of Concentration Point L (J19).



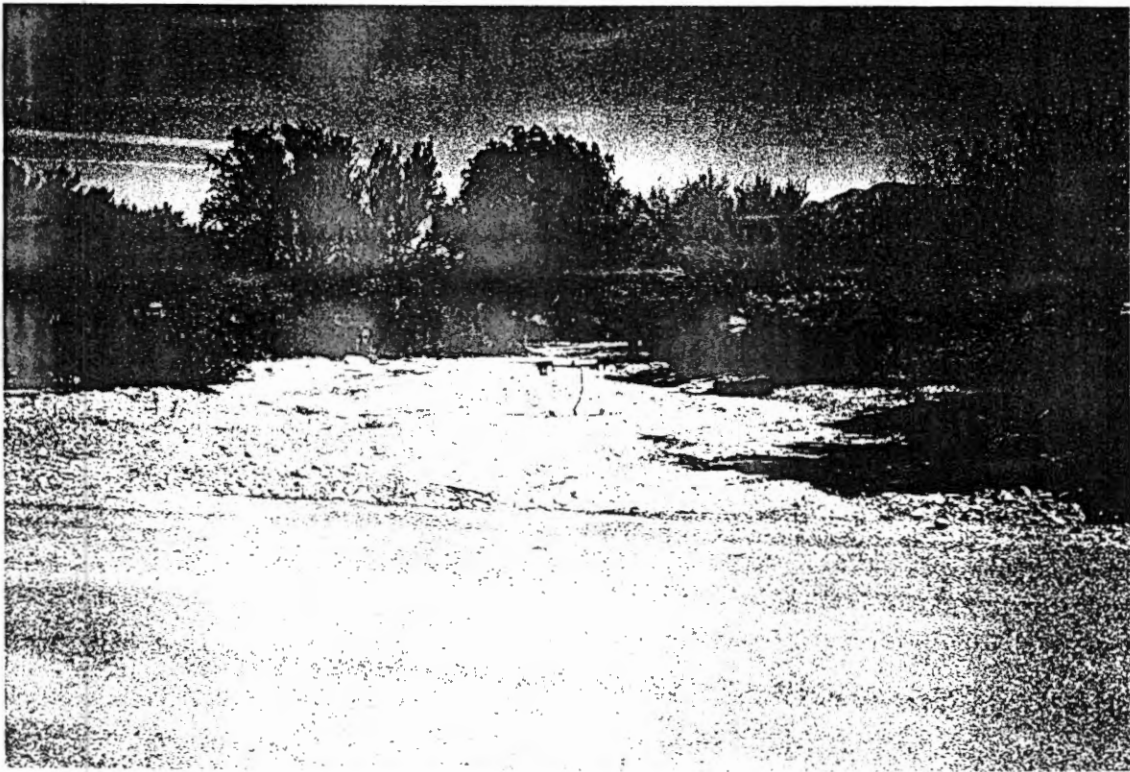
Looking upstream (west, along Idle Hour West) along main channel at the Sunray Drive Crossing. Some small overbank channels are located right (north) of photo.



Looking downstream (east) along main channel at the Sunray Drive Crossing. Other channel is located left (north) of photo.



Looking upstream (west) along the main channel from the Sunray Drive Crossing.



Looking downstream (east) along the left channel split (north of main channel) at Sunray Drive.



Looking upstream (west) along the left channel split (north of main channel) at Sunray Drive.



Looking downstream (east) along main channel at Blue Bonnet Road.



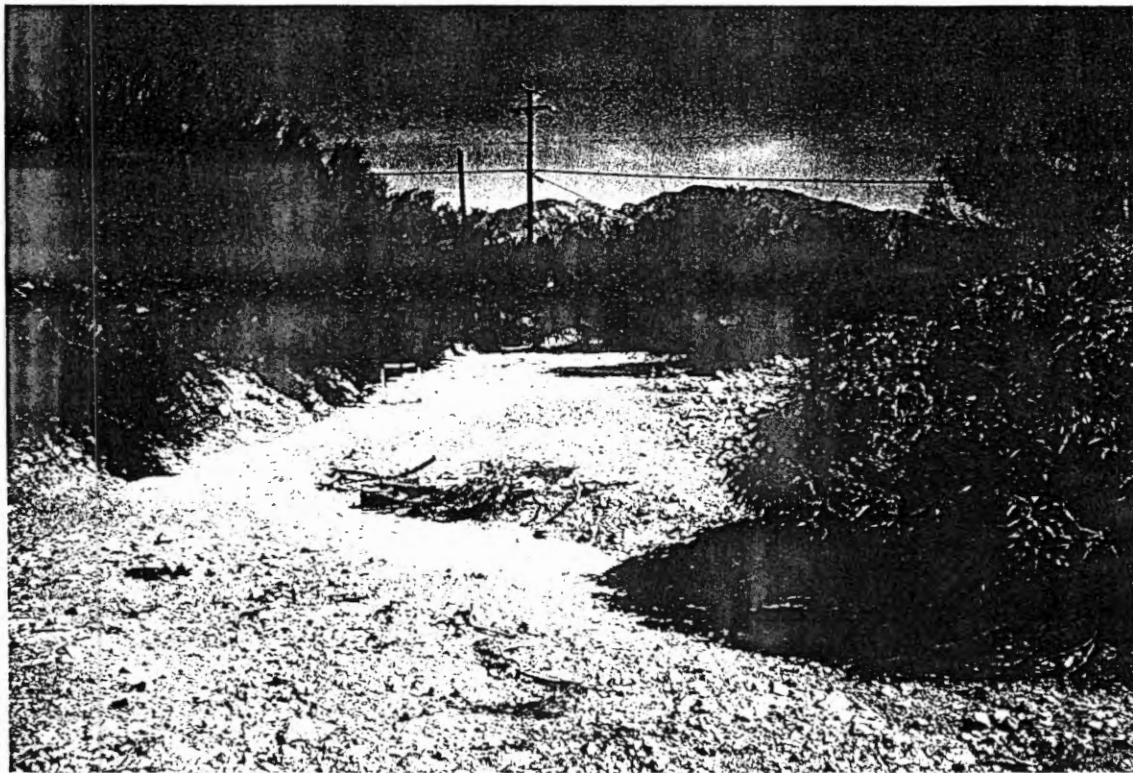
Looking upstream (west) along main channel at Blue Bonnet Road.



Looking upstream (west) along main channel at Blue Bonnet Road. Main channel is right portion of photo.



Looking upstream (west) along main channel approximately 50 feet upstream of Blue Bonnet Road.



Looking downstream (east) along main from approximately 200 feet upstream of Blue Bonnet Road; which is approximately 80 feet downstream of Sunset Road.



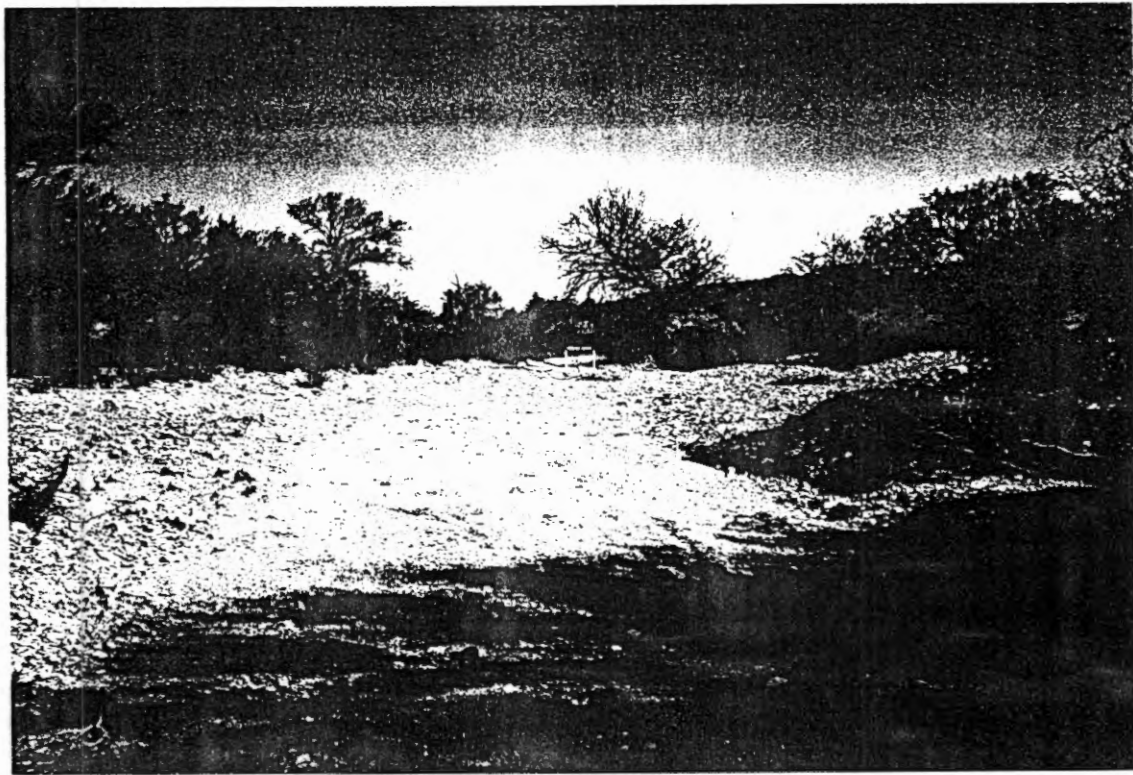
Looking upstream (west-southwest) along the main channel at Sunset Road.



Looking downstream (northeast) along main channel at Sunset Road. The main channel is right of the square.



Looking upstream (west-southwest) along the main channel at Sunset Road. Main flow path is from behind square.



Looking down stream (east) along the main channel at the underground pipeline crossing (located in the middle of the photo). The channel crosses the pipeline approximately 700 feet upstream of Sunset Road.



Looking upstream (west) along the main channel from approximately 150 feet upstream of the underground pipeline crossing.



Looking upstream (west) along the main channel at private road located midway between Gerhart and Blue Bonnet Road. This is the approximate location of Concentration Point 7 (J20).

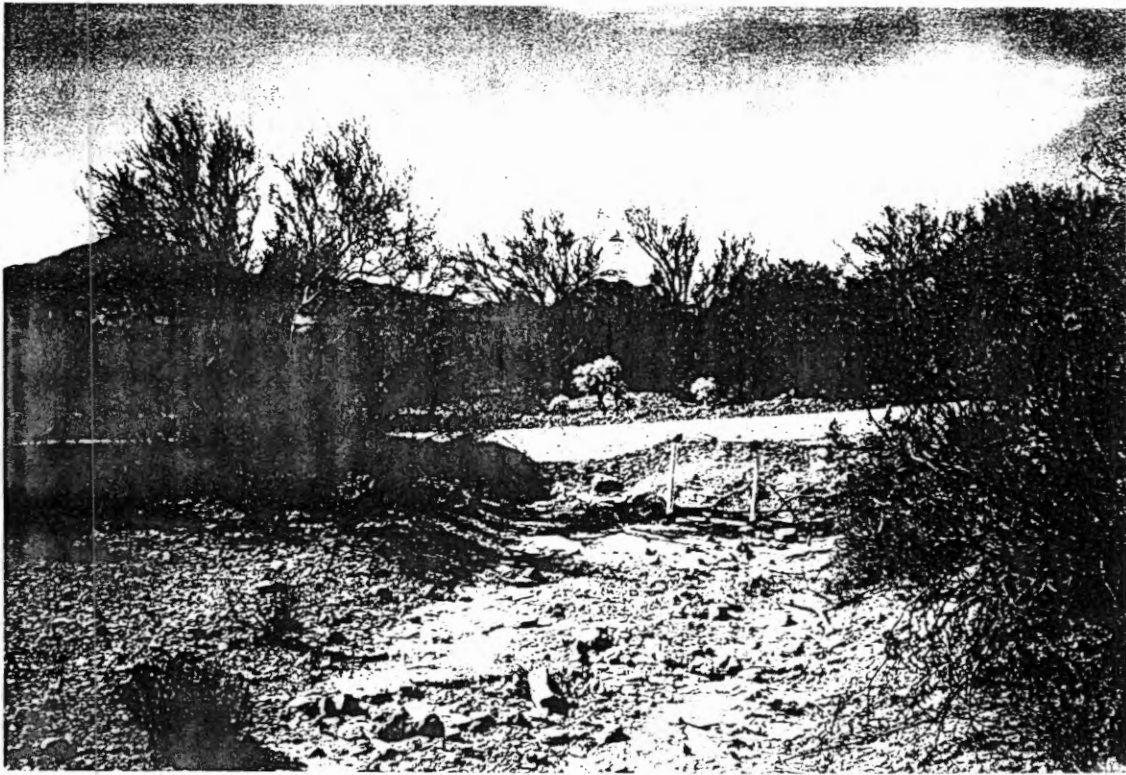


Looking downstream (east) along a tributary at Gerhart Road. This tributary drains Drainage Area E below Concentration Point 6.

Photo Roll 3



Looking downstream (east) along a left (north) breakout channel coming from a tributary at Gerhart Road. The tributary drains Drainage Area E below Concentration Point 6.



Looking upstream (west) along a left (north) breakout channel coming from a tributary at Gerhart Road. The tributary drains Drainage Area E below Concentration Point 6.



Looking upstream (west) along a tributary at Gerhart Road. The tributary drains Drainage Area E below Concentration Point 6.



Looking downstream (east) along a tributary at Gerhart Road. The tributary drains Drainage Area E below Concentration Point 6.



Looking downstream (east) along the west breakout channel (from Idle Hour West) located in Section 14, at Gerhart Road. This crossing is approximately 900 feet south of Sunset on Gerhart Road.



Looking upstream (west) along the west breakout channel (from Idle Hour West) located in Section 14, at Gerhart Road. This crossing is approximately 900 feet south of Sunset on Gerhart Road.



Looking downstream (west) along the west breakout channel (from Idle Hour West) located in Section 14, at Diamond Street.



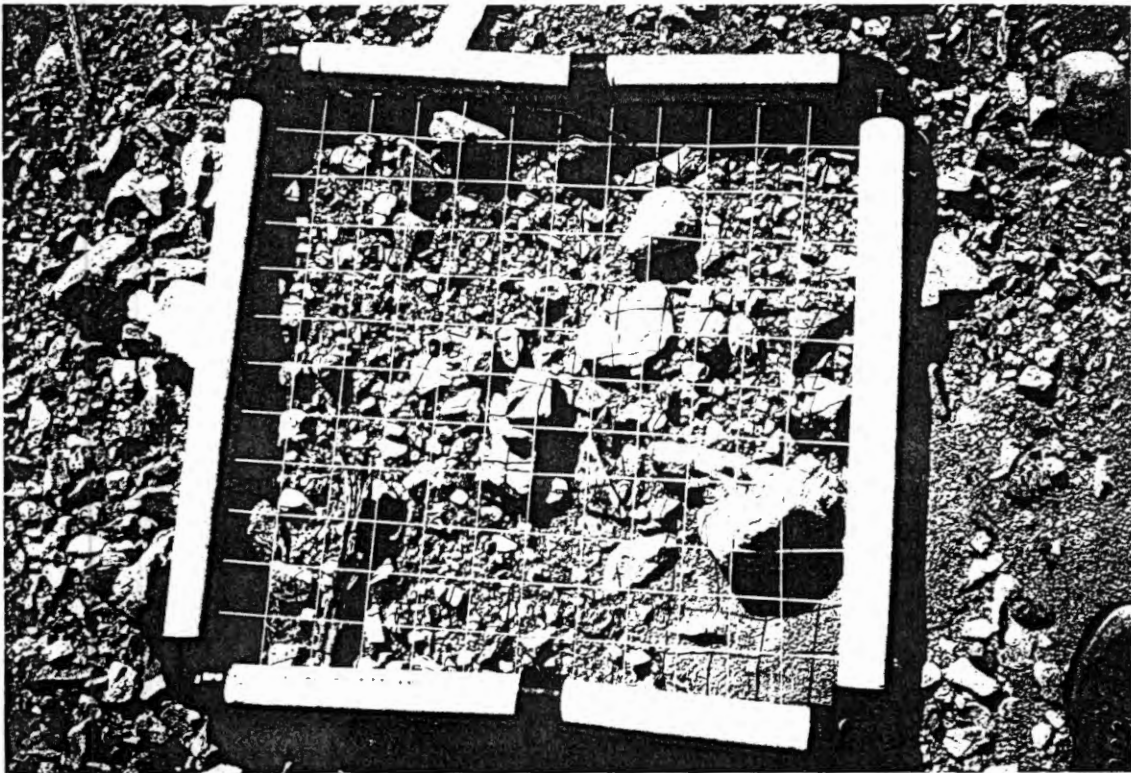
Looking upstream (west) along the west breakout channel (from Idle Hour West) located in Section 14, at Diamond Street.



Looking upstream (west) along the west breakout channel (from Idle Hour West) located in Section 14, from approximately 200 feet upstream of Diamond Street.



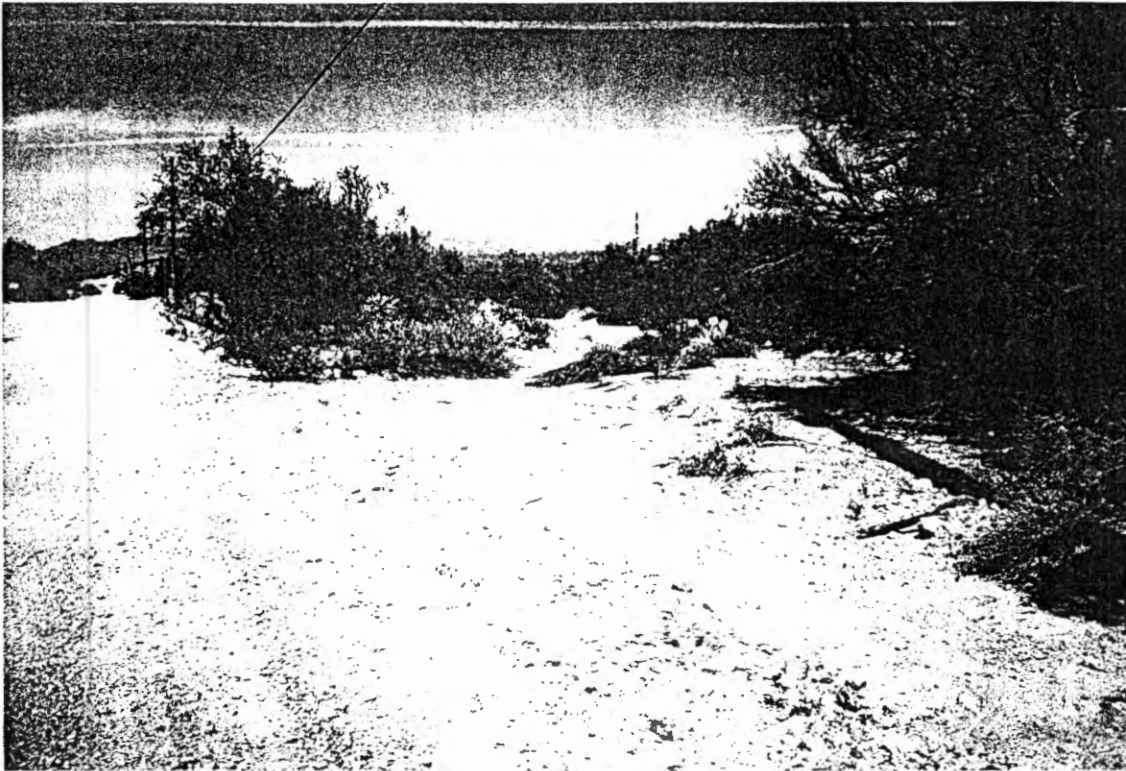
Looking downstream (east) along the west breakout channel (from Idle Hour West) located in Section 14, from approximately 200 feet upstream of Diamond Street.



Looking at channel bed material at a point along the west breakout channel (from Idle Hour West) located in Section 14, located approximately 200 feet upstream of Diamond Street.



Looking upstream (southwest) along the east breakout channel (from Idle Hour West) located in Section 14, at Gerhart Road.



Looking downstream (northeast) along the east breakout channel (from Idle Hour West) located in Section 14, at Gerhart Road.



Looking downstream (northeast) along the west breakout channel (from Idle Hour West) located in Section 14, from approximately 40 feet downstream of the largest unnamed, east-west dirt road which lies along the north-south midpoint of the southwest quarter of Section 14.



Looking east at home which is located between the west and east breakout channels (Idle Hour West) located in Section 14, from approximately 40 feet downstream of the largest unnamed, east-west dirt road which lies along the north-south midpoint of the southwest quarter of Section 14.



Looking upstream (southwest) along the west breakout channel (from Idle Hour West) located in Section 14, at the largest unnamed, east-west dirt road which lies along the north-south midpoint of the southwest quarter of Section 14.



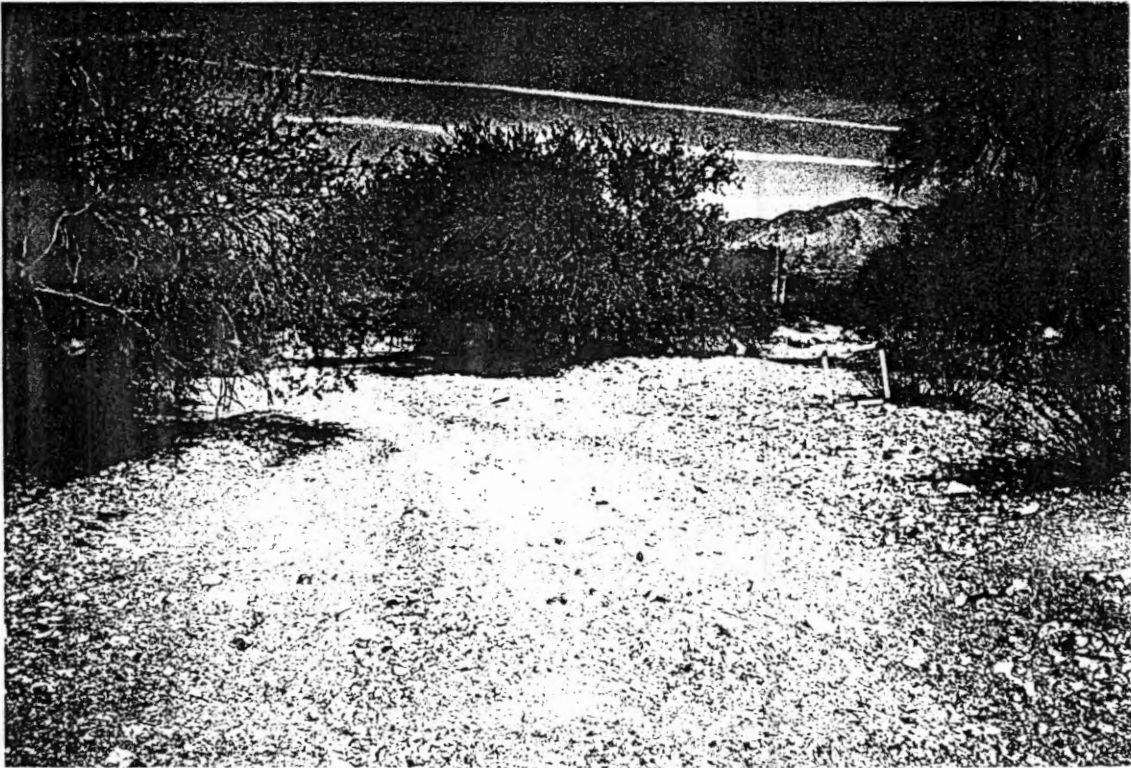
Looking upstream (southwest) along the west breakout channel (from Idle Hour West) located in Section 14, at the largest unnamed, east-west dirt road which lies along the north-south midpoint of the southwest quarter of Section 14.



Looking downstream (northeast) along the east breakout channel (from Idle Hour West) located in Section 14, at the largest unnamed, east-west dirt road which lies along the north-south midpoint of the southwest quarter of Section 14.



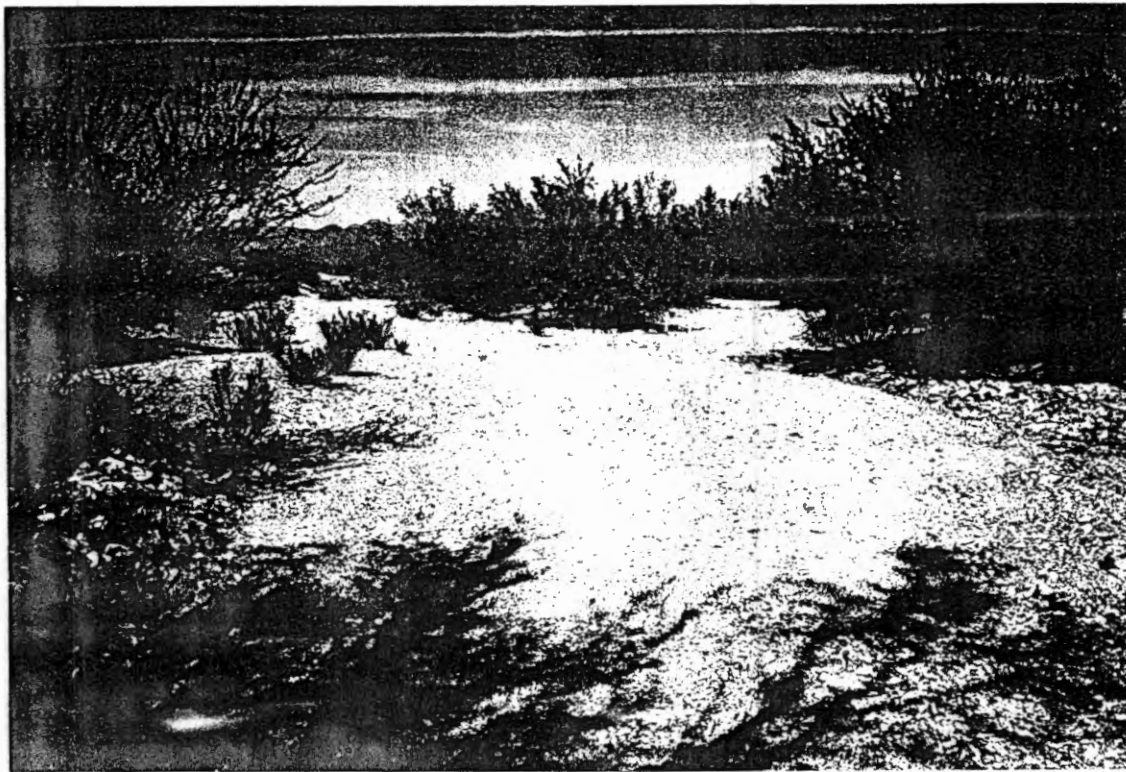
Looking northwest at home which is located between the west and east breakout channels (Idle Hour West) located in Section 14, from the largest unnamed, east-west dirt road which lies along the north-south midpoint of the southwest quarter of Section 14.



Looking downstream (northeast) along the main channel from where it splits approximately 500 feet upstream of the largest unnamed, east-west dirt road which lies along the north-south midpoint of the southwest quarter of Section 14. The right (east) channel breaks over where the square is located.



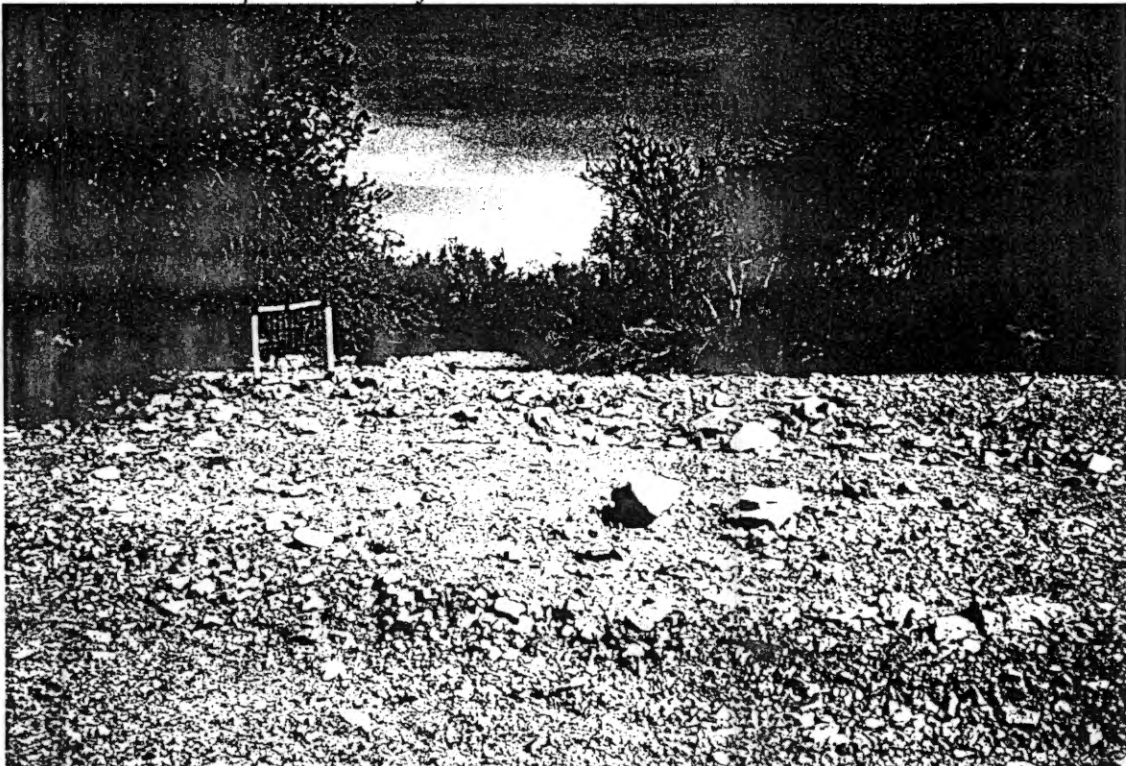
Looking downstream (northeast) along the main channel where it crosses from section 14 to section 15. The square is located in the main channel, and just inside Section 14.



Looking downstream (northeast) along the main channel where it crosses from section 14 to section 15. The square is located in the main channel, and just inside Section 14.



Looking downstream (northeast) along the main channel where it crosses from section 14 to section 15. The tree behind the square is located just inside Section 15.



Looking east (sorta downstream) at the point where the split occurs approximately 500 feet upstream of the largest unnamed, east-west dirt road which lies along the north-south midpoint of the southwest quarter of Section 14. The east channel breaks out at the square.



Looking downstream (northeast) along the main channel (left of large ironwood tree) from 500 feet upstream of the largest unnamed, east-west dirt road which lies along the north-south midpoint of the southwest quarter of Section 14. The east channel breaks out to the right of the ironwood tree.

Photo Roll 4



Looking downstream (northeast) along the main channel (left of large ironwood tree) from 500 feet upstream of the largest unnamed, east-west dirt road which lies along the north-south midpoint of the southwest quarter of Section 14. The east channel breaks out to the right of the ironwood tree.



Looking downstream (northeast) along the main channel from approximately 500 feet upstream of the largest unnamed, east-west dirt road which lies along the north-south midpoint of the southwest quarter of Section 14. The east channel breaks out to the right of the ironwood tree (right of photo).



Looking east (sorta downstream) at the point where the split occurs approximately 500 feet upstream of the largest unnamed, east-west dirt road which lies along the north-south midpoint of the southwest quarter of Section 14. The east channel breaks out at this point from right to left.



Looking downstream (northeast) along the main channel (left of large ironwood tree) from 500 feet upstream of the largest unnamed, east-west dirt road which lies along the north-south midpoint of the southwest quarter of Section 14. The east channel breaks out to the right of the ironwood tree.



Looking downstream (northeast) along the main channel from approximately 500 feet upstream of the largest unnamed, east-west dirt road which lies along the north-south midpoint of the southwest quarter of Section 14. The east channel breaks out to the right of the ironwood tree (right of photo).



Looking downstream (northeast) along the main channel (left of large ironwood tree) from 500 feet upstream of the largest unnamed, east-west dirt road which lies along the north-south midpoint of the southwest quarter of Section 14. The east channel breaks out to the right of the ironwood tree.



Looking east (sorta downstream) at the point where the split occurs approximately 500 feet upstream of the largest unnamed, east-west dirt road which lies along the north-south midpoint of the southwest quarter of Section 14. The east channel breaks out at this point from right to left.



Looking downstream (northeast) along the east breakout (Idle Hour West) from the point where it breaks from the west (main) channel at a point approximately 500 feet upstream of the largest unnamed, east-west dirt road which lies along the north-south midpoint of the southwest quarter of Section 14.



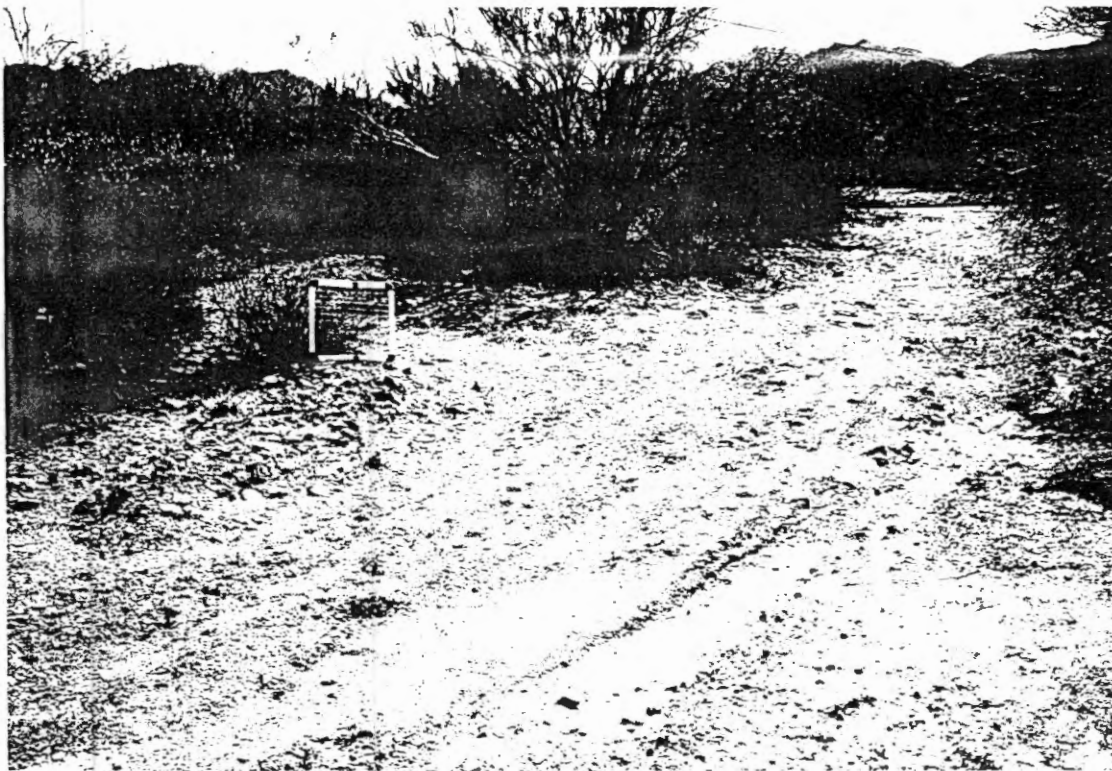
Looking downstream (northeast) along the east breakout (Idle Hour West) from a point approximately 400 feet upstream of the largest unnamed, east-west dirt road which lies along the north-south midpoint of the southwest quarter of Section 14.



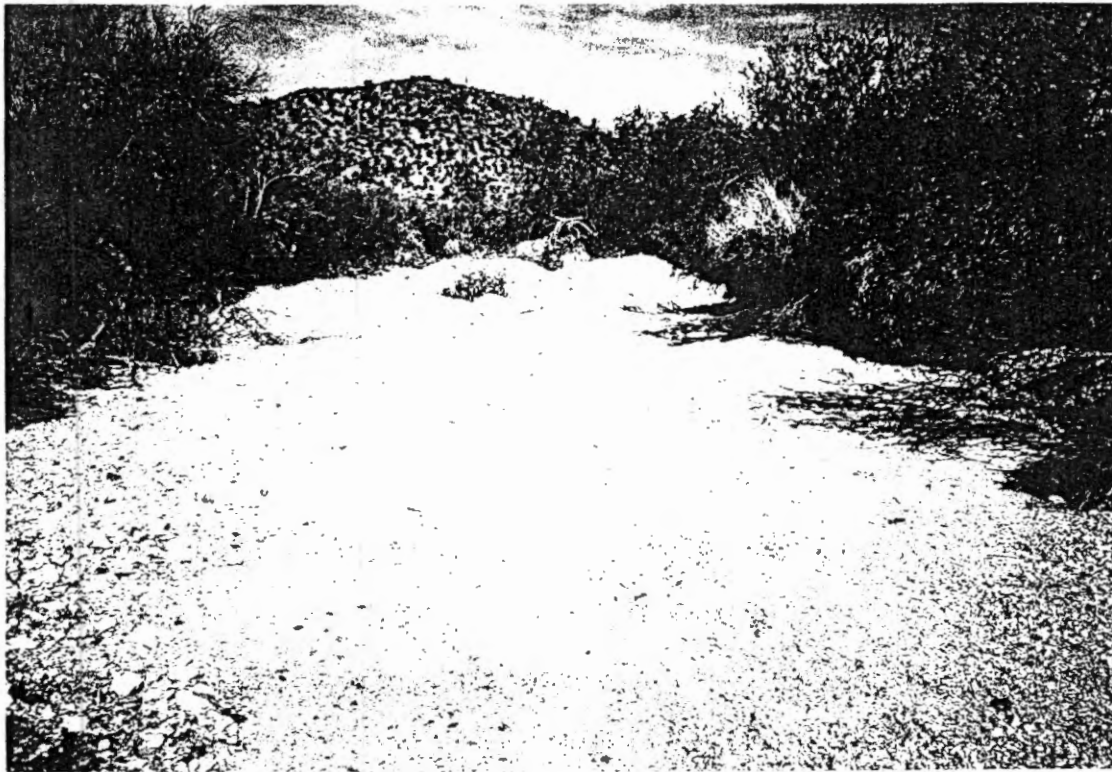
Looking downstream (northeast) along the east breakout (Idle Hour West) from a point approximately 200 feet upstream of the largest unnamed, east-west dirt road which lies along the north-south midpoint of the southwest quarter of Section 14.



Looking downstream (northeast) along the main channel (western-most braid) at El Camino Del Cerro.



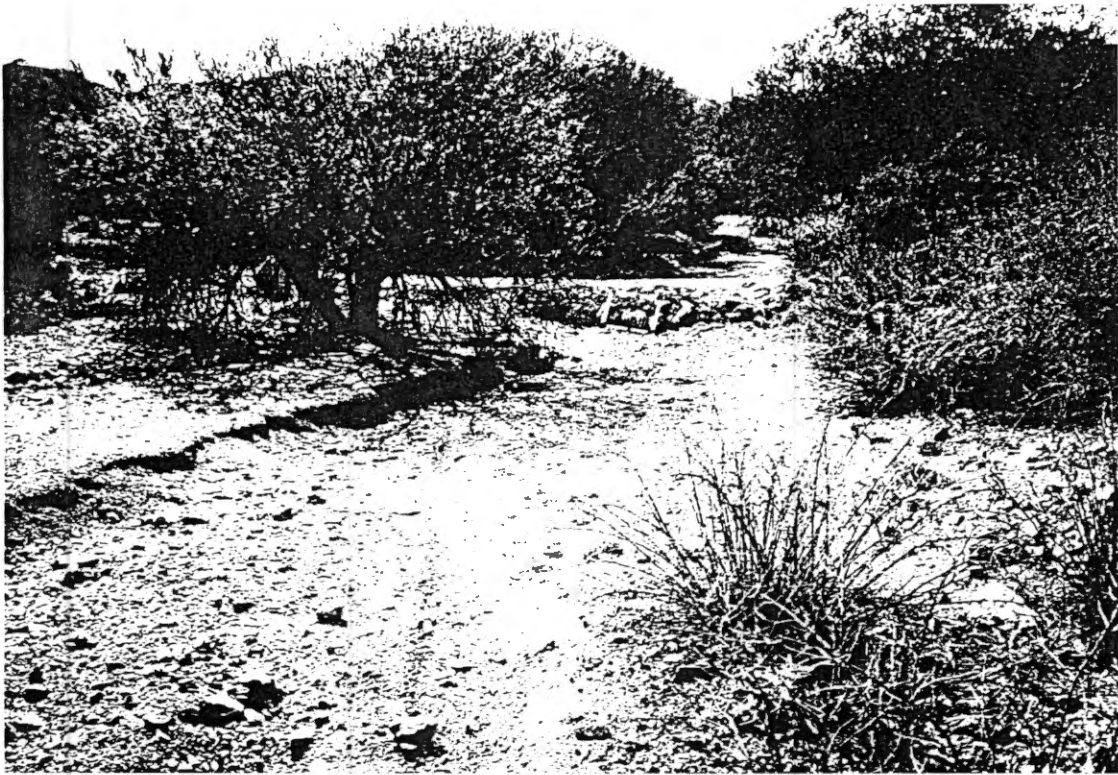
Looking upstream (southwest) along the main channel (western-most braid) from approximately 100 feet downstream (northeast) of where the main channel crosses El Camino Del Cerro.



Looking downstream (northeast) along the main channel (western-most braid) from approximately 250 feet downstream of El Camino Del Cerro.



Looking upstream (southwest) along the main channel (western-most braid) from approximately 300 feet downstream of El Camino Del Cerro.



Looking upstream (southwest) along the main channel (western-most braid) from approximately 650 feet downstream of El Camino Del Cerro. The road in the picture is unnamed.



Looking downstream (northeast) along the main channel (the center braid) from approximately 750 feet downstream of El Camino Del Cerro.



Looking upstream (southwest) along the main channel (western-most braid) from approximately 300 feet downstream of El Camino Del Cerro; standing in overbank area isolated by artificial berm.



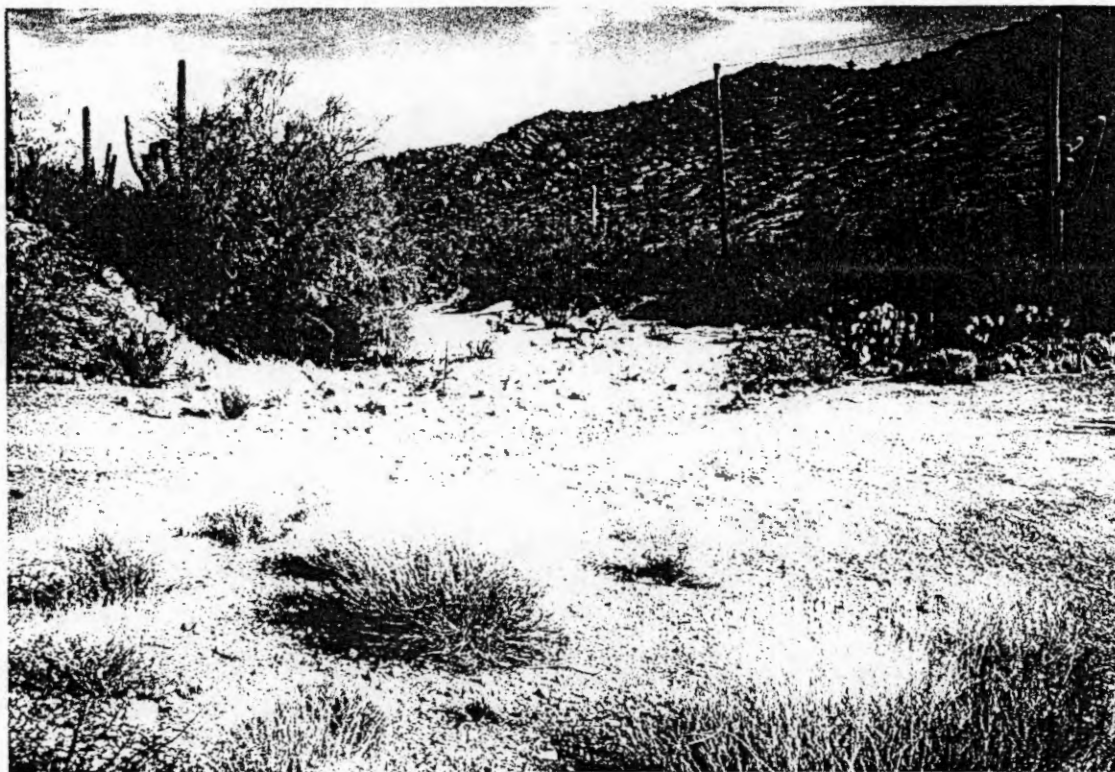
Looking upstream (southwest) along first braid east from the main channel where the braid joins the main braid or channel approximately 150 feet downstream of El Camino Del Cerro.



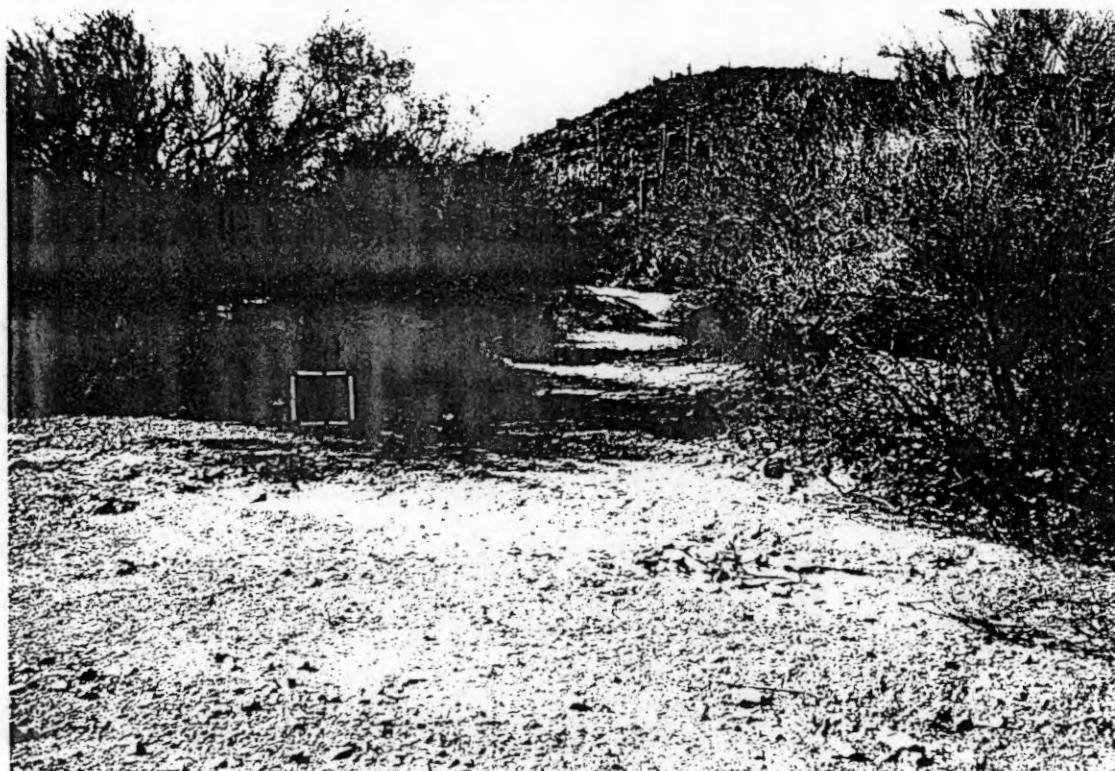
Looking upstream (southwest) along first braid east from the main channel where the braid crosses El Camino Del Cerro just east of the main braid or channel.



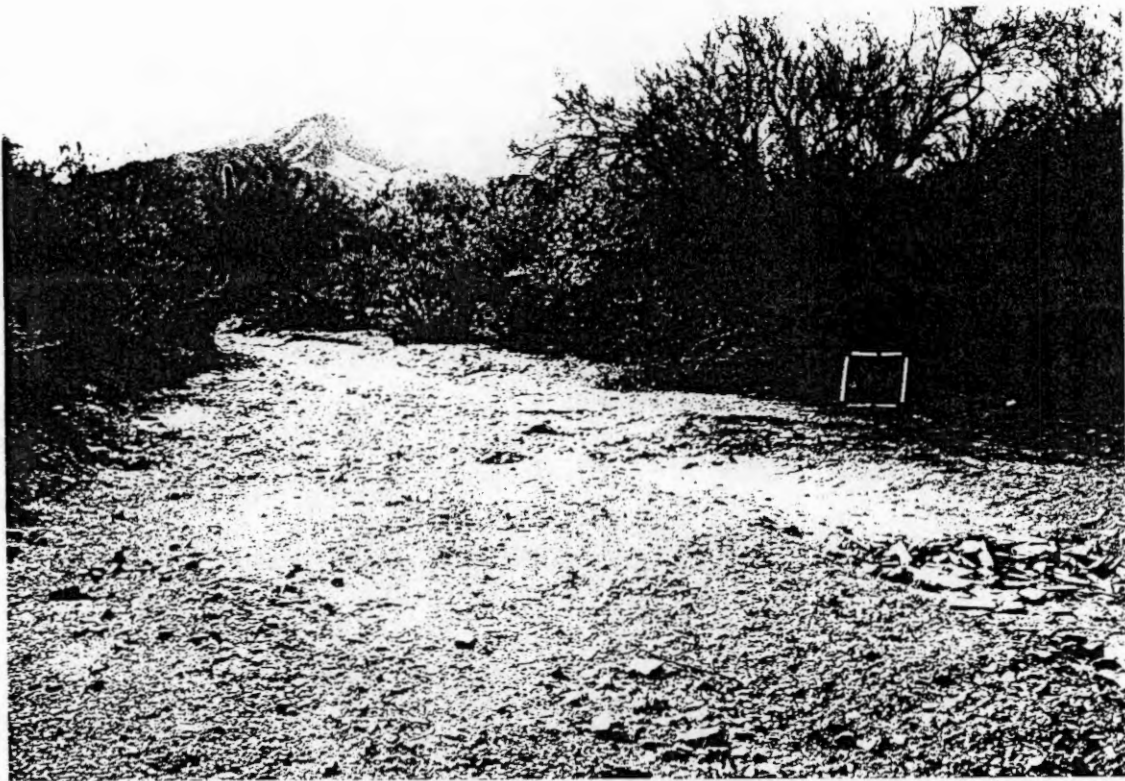
Looking downstream (northeast) along first braid east from the main channel where the braid crosses El Camino Del Cerro just east of the main braid or channel.



Looking downstream (northeast) along the main channel from approximately 2,000 feet downstream of El Camino Del Cerro. The road is an unnamed private road. (Approximate location of CP 2-AB)



Looking upstream (west) along the main channel from approximately 2,400 feet downstream of El Camino Del Cerro. (Location of CP 3-ABC). DA-C comes in from the left of photo.



Looking upstream (southwest) along the channel which drains DA-C from a point approximately 2,400 feet downstream of El Camino Del Cerro. (Location of CP 3-ABC).



Looking downstream (northeast) along the main channel from approximately 2,600 feet downstream of El Camino Del Cerro.



Looking upstream (northwest) along the main channel from approximately 2,800 feet downstream of El Camino Del Cerro. The location of CP 3-ABC is just visible at the visible upstream extent of the channel.

**LETTER OF MAP REVISION FOR
IDLE HOUR WASH**

**APPENDIX C
HYDRAULIC INPUT/OUTPUT DATA**

* HEC-2 WATER SURFACE PROFILES *
* *
* Version 4.6.2; May 1991 *
* *
* RUN DATE 22FEB95 TIME 09:08:33 *

* U.S. ARMY CORPS OF ENGINEERS *
* HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET, SUITE D *
* DAVIS, CALIFORNIA 95616-4687 *
* (916) 756-1104 *

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X X XXXXXXX XXXXX XXXXX
X X X X X X X X
X X X X X X
XXXXXXXX XXXX X XXXXX XXXXX
X X X X X X
X X X X X X
X X XXXXXXX XXXXX XXXXXXX
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*See revised
HFC
at end of
report*

THIS RUN EXECUTED 22FEB95 09:08:33

HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991

T1 LOMR for the West Branch of the Idle Hour Wash, & a portion of the East
T2 Branch Based off of 1"=200', 2 ft. C.I. topography, dated 11/94
T3 Idle Hour Wash

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	2	0	0	-1	0	0	0	2209.21	0
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	-1	0	-1	0	0	0	-1	0	0	0

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

38	1	55	26	56	13	14	15	8	4
53	54	0	38	1	2	3	11	12	42
5	33	39	67	68					

J5 LPRNT NUMSEC *****REQUESTED SECTION NUMBERS*****
-10

J6 IHLEQ ICOPY SUBDIV STRTDS RMILE
1

QT	1	7675								
NC	0.05	0.05	0.05	0.3	0.1					
X1	1.0	37	930	1230	0	0	0	0	0	0
X3				677						
X4	10	2215	430	2210	555	2210	700	2210	760	2210
X4	976	2210	1025	2208.5	1095	2208	1150	2208	1180	2210
X4	1400									
GR	2208.0	100.0	2212.0	157.0	2214.0	176.0	2214.0	209.0	2212.0	234.0
GR	2212.0	262.0	2214.0	272.0	2214.0	318.0	2214.0	421.0	2214.0	437.0
GR	2212.0	452.0	2212.0	455.0	2214.0	462.0	2214.0	478.0	2212.0	490.0
GR	2212.0	650.0	2214.0	663.0	2214.0	677.0	2212.0	684.0	2212.0	764.0
GR	2212.0	800.0	2210	930	2208.0	933.0	2206.0	937.0	2204.0	946.0
GR	2204.0	949.0	2206.0	968.0	2208.0	973.0	2208.0	1029.0	2208.0	1053.0
GR	2208.8	1230	2212.0	1403.0	2214.0	1410.0	2216.0	1417.0	2216.0	1449.0
GR	2214.0	1465.0	2212.0	1489.0						

X1	2.0	34	450	1009	410	404	407	0	0	0
X3		2216		428		1100.0				
X4	7	2220	310	2218	330	2220	345	2220	380	2220.5
X4	410	2220	428	2216.6	732					
GR	2236.0	100.0	2234.0	153.0	2232.0	174.0	2228.0	213.0	2226.0	229.0
GR	2224.0	247.0	2222.0	266.0	2218.0	370.0	2218.0	371.0	2218.0	450.0
GR	2216.0	482.0	2216.0	509.0	2216.0	533.0	2216.0	573.0	2216.0	613.0
GR	2216.0	656.0	2216.7	727	2216.0	815.0	2216.0	890.0	2216.0	906.0
GR	2214.0	909.0	2214.0	949.0	2214.0	949.0	2212.0	974.0	2212.0	988.0
GR	2214.0	999.0	2216.0	1009.0	2217.5	1100.0	2218.0	1125.0	2222.0	1140.0
GR	2224.0	1148.0	2226.0	1155.0	2228.0	1163.0	2232.0	1180.0		
X1	3.0	24	264	935	388	392	382	0	0	0
X3				230		998				
X4	5	2222.4	230	2221	300	2223	475	2220	920	2220
X4	935									
GR	2242.0	100.0	2238.0	148.0	2236.0	166.0	2234.0	179.0	2232.0	185.0
GR	2228.0	197.0	2226.0	202.0	2224.0	208.0	2222.0	264.0	2222.0	423.0
GR	2222.0	523.0	2222.0	561.0	2222.0	598.0	2222.0	754.0	2222.0	819.0
GR	2222.0	998.0	2224.0	1004.0	2226.0	1037.0	2228.0	1057.0	2232.0	1093.0
GR	2234.0	1106.0	2236.0	1117.0	2238.0	1127.0	2242.0	1157.0		
X1	4.0	31	401	916	310	325	320	0	0	0
X4	15	2230	248	2229	310	2230	390	2230	391	2225.3
X4	406	2227	545	2225.8	634	2227	775	2225	905	2230
X4	940	2231	985	2231	1055	2230	1085	2229	1135	2230
X4	1155									
GR	2246.0	100.0	2244.0	145.0	2242.0	170.0	2238.0	205.0	2236.0	218.0
GR	2234.0	228.0	2232.0	237.0	2228.0	253.0	2226.0	267.0	2226.0	275.0
GR	2228.0	295.0	2228.0	325.0	2226.0	352.0	2226.0	362.0	2230.0	372.0
GR	2230.0	397.0	2226.0	401.0	2226.0	453.0	2226.0	628.0	2226.0	645.0
GR	2227	835	2226.0	890.0	2226.0	916.0	2228.0	930.0	2232.0	1161.0
GR	2234.0	1176.0	2236.0	1191.0	2238.0	1204.0	2242.0	1229.0	2244.0	1243.0
GR	2246.0	1258.0								
X1	5.0	24	650	1001	330	310	350	0	0	0
X3				607						
X4	10	2237	315	2230	410	2230	420	2234.5	505	2230
X4	660	2230	672	2230.2	717	2231.5	728	2230	985	2230
X4	992									
GR	2248.0	100.0	2246.0	125.0	2244.0	149.0	2242.0	168.0	2238.0	216.0
GR	2236.0	344.0	2234.0	371.0	2232.0	383.0	2232.0	464.0	2234.0	479.0
GR	2236.0	572.0	2236.0	607.0	2234.0	639.0	2232.0	650.0	2232.0	798.0
GR	2232.5	855	2232.0	938.0	2232.0	1001.0	2234.0	1010.0	2236.0	1017.0
GR	2238.0	1025.0	2242.0	1037.0	2244.0	1042.0	2246.0	1047.0		
X1	6.0	32	713	1120	260	245	310	0	0	0
X3				480		1180				
X4	11	2235	325	2239	400	2239	480	2237	637	2234.5
X4	800	2235	885	2233.5	950	2235	1050	2232	1100	2235
X4	1160	2234.5	1180							
GR	2252.0	100.0	2248.0	155.0	2248.0	155.0	2246.0	170.0	2244.0	186.0
GR	2242.0	201.0	2238.0	241.0	2236.0	313.0	2236.0	339.0	2238.0	359.0

GR	2238.0	586.0	2236.0	604.0	2236.0	609.0	2236.0	663.0	2234.0	713.0
GR	2234.0	718.0	2234.0	754.0	2234.0	761.0	2234.0	812.0	2234.0	822.0
GR	2234.0	916.0	2234.0	970.0	2234.0	1086.0	2234.0	1120.0	2236.0	1192.0
GR	2238.0	1205.0	2242.0	1287.0	2244.0	1310.0	2246.0	1327.0	2248.0	1355.0
GR	2252.0	1402.0	2254.0	1421.0						
QT	1	3959								
X1	7.0	21	782	843	330	320	330	0	0	0
X3				613		880				
X4	8	2250	171	2250	230	2250	240	2245	546	2241
X4	670	2241	730	2240.5	761	2243	880			
GR	2256.0	100.0	2254.0	132.0	2252.0	152.0	2248.0	276.0	2246.0	291.0
GR	2244.0	306.0	2242.0	331.0	2242.0	342.0	2244.0	420.0	2246.0	450.0
GR	2246.0	498.0	2246.0	592.0	2246.0	613.0	2244.0	646.0	2242.0	657.0
GR	2241.5	782	2238.0	802.0	2238.0	812.0	2239.2	843	2242.0	871.0
GR	2242.0	928.0								
X1	8.0	32	694	855	690	695	700	0	0	0
X3		2250				1085				
X4	11	2260	418	2260	468	2260	637	2251.3	758	2250.3
X4	815	2251.5	920	2250	1010	2251	1055	2250	1085	2250
X4	1095	2260	1150							
GR	2280.0	100.0	2278.0	181.0	2276.0	225.0	2274.0	260.0	2272.0	294.0
GR	2268.0	340.0	2266.0	357.0	2264.0	374.0	2262.0	396.0	2258.0	441.0
GR	2258.0	454.0	2262.0	487.0	2264.0	507.0	2266.0	543.0	2266.0	546.0
GR	2264.0	591.0	2262.0	625.0	2258.0	653.0	2256.0	665.0	2254.0	680.0
GR	2252.0	694.0	2252.0	855.0	2253	883	2252.0	906.0	2252.0	926.0
GR	2252.0	982.0	2252.0	1107.0	2258.0	1132.0	2262.0	1159.0	2264.0	1182.0
GR	2266.0	1201.0	2268.0	1224.0						
X1	9.0	34	505	697	345	340	340	0	0	0
X3		2256								
X4	6	2260	370	2264.5	440	2257.5	637	2256.2	660	2256.2
X4	678	2255	750							
GR	2284.0	0.0	2282.0	35.0	2278.0	99.0	2276.0	121.0	2274.0	142.0
GR	2272.0	170.0	2268.0	257.0	2266.0	283.0	2264.0	304.0	2262.0	332.0
GR	2262.0	386.0	2264.0	409.0	2264.0	453.0	2262.0	473.0	2258.0	505.0
GR	2256.0	525.0	2256.0	535.0	2258.0	697.0	2258.0	704.0	2256.0	726.0
GR	2256.0	779.0	2258.0	807.0	2262.0	837.0	2264.0	850.0	2266.0	863.0
GR	2268.0	880.0	2268.0	936.0	2266.0	975.0	2264.0	1002.0	2264.0	1059.0
GR	2266.0	1075.0	2268.0	1108.0	2272.0	1215.0	2274.0	1275.0		
X1	10.0	30	505	652	474	433	401	0	0	0
X3						995				
X4	9	2263.7	538	2265	578	2264	625	2264.5	636	2264.1
X4	645	2266.6	705	2267	871	2270	995	2270	1110	
GR	2288.0	0.0	2286.0	52.0	2284.0	99.0	2282.0	177.0	2282.0	323.0
GR	2282.0	328.0	2278.0	471.0	2276.0	476.0	2274.0	482.0	2272.0	487.0
GR	2268.0	499.0	2266.0	505.0	2264.0	515.0	2264.0	545.0	2266.0	652.0
GR	2266.0	747.0	2266.0	759.0	2268.0	775.0	2268.0	813.0	2268.0	910.0
GR	2268.0	1119.0	2266.0	1136.0	2266.0	1176.0	2268.0	1187.0	2272.0	1212.0
GR	2274.0	1225.0	2276.0	1237.0	2278.0	1266.0	2278.0	1283.0	2278.0	1314.0

X1	11.0	32	471	593	408	340	399	0	0	0
X3						734				
X4	12	2280	245	2279	322	2279.6	365	2278	405	2270.8
X4	495	2272	532	2271	548	2270	561	2270	570	2273
X4	615	2272	641	2280	806					
GR	2296.0	0.0	2294.0	39.0	2292.0	82.0	2288.0	152.0	2286.0	173.0
GR	2284.0	194.0	2282.0	225.0	2278.0	401.0	2276.0	418.0	2274.0	435.0
GR	2272.0	471.0	2272.0	593.0	2272.0	635.0	2272.0	644.0	2274.0	689.0
GR	2276.0	709.0	2278.0	717.0	2282.0	734.0	2282.0	752.0	2278.0	823.0
GR	2276.0	857.0	2274.0	900.0	2274.0	959.0	2276.0	975.0	2278.0	986.0
GR	2282.0	1020.0	2282.0	1136.0	2278.0	1179.0	2278.0	1182.0	2282.0	1207.0
GR	2284.0	1243.0	2286.0	1279.0						
X1	12.0	24	578	630	350	365	360	0	0	0
X3				532						
X4	6	2280.2	428	2281	465	2282.2	525	2280	550	2280
X4	680	2290	782							
GR	2302.0	0.0	2298.0	130.0	2296.0	163.0	2294.0	196.0	2294.0	224.0
GR	2294.0	301.0	2292.0	315.0	2288.0	343.0	2286.0	358.0	2284.0	373.0
GR	2282.0	396.0	2282.0	509.0	2282.0	532.0	2278.0	562.0	2276.0	578.0
GR	2274.0	602.0	2274.0	608.0	2276.0	630.0	2278.0	639.0	2282.0	743.0
GR	2284.0	751.0	2286.0	759.0	2288.0	767.0	2288.0	942.0		
X1	13.0	30	292	315	313	318	312	0	0	0
X3						442				
X4	5	2290	232	2281.8	322	2285	442	2281.4	461	2285.2
X4	494									
GR	2308.0	0.0	2306.0	112.0	2304.0	147.0	2302.0	160.0	2298.0	179.0
GR	2296.0	190.0	2294.0	198.0	2292.0	207.0	2288.0	258.0	2286.0	277.0
GR	2284.0	282.0	2282.0	287.0	2280	292	2278.0	296.0	2278.0	297.0
GR	2280	315	2282.0	334.0	2282.0	347.0	2282.0	358.0	2284.0	408.0
GR	2284.0	447.0	2282.0	457.0	2282.0	467.0	2284.0	473.0	2286.0	521.0
GR	2288.0	540.0	2292.0	567.0	2294.0	580.0	2296.0	700.0	2296.0	751.0
X1	14.0	24	299	331	370	345	360	0	0	0
X3						515				
X4	3	2284.4	310	2284.4	316	2300	680			
GR	2316.0	0.0	2314.0	87.0	2312.0	123.0	2308.0	183.0	2306.0	207.0
GR	2304.0	226.0	2302.0	241.0	2302.0	241.0	2298.0	270.0	2296.0	280.0
GR	2294.0	284.0	2292.0	287.0	2288.0	295.0	2286.0	299.0	2286.0	331.0
GR	2288.0	363.0	2290.0	429.0	2290.0	515	2290.0	544.0	2292.0	570.0
GR	2294.0	581.0	2296.0	593.0	2298.0	616.0	2300.0	755.0		
X1	15.0	30	556	626	345	300	330	0	0	0
X4	5	2296.3	378	2296	388	2298	417	2299	446	2292.3
X4	508									
GR	2322.0	0.0	2318.0	84.0	2316.0	135.0	2314.0	153.0	2312.0	207.0
GR	2308.0	241.0	2306.0	271.0	2304.0	288.0	2302.0	303.0	2298.0	356.0
GR	2296.0	374.0	2296.0	383.0	2298.0	422.0	2296.0	456.0	2294.0	471.0
GR	2294.0	526.0	2294.0	547.0	2292.0	556.0	2290.0	578.0	2290.0	597.0
GR	2292.0	626.0	2294.0	669.0	2296.0	682.0	2298.0	695.0	2300.0	706.0
GR	2302.0	721.0	2302.0	794.0	2300.0	862.0	2298.0	911.0	2298.0	919.0

X1	16.0	24	777	807	465	525	510	0	0	0
X4	7	2305.8	569	2300	734	2299.1	747	2297.8	800	2306.7
X4	915	2306.4	956	2307	1012					
GR	2322.0	0.0	2318.0	42.0	2316.0	74.0	2314.0	105.0	2312.0	137.0
GR	2308.0	182.0	2306.0	228.0	2306.0	285.0	2308.0	323.0	2308.0	400.0
GR	2306.0	420.0	2304.0	442.0	2304.0	535.0	2304.0	576.0	2302.0	591.0
GR	2299.8	777	2298.0	787.0	2298.0	807.0	2300	817	2302.0	826.0
GR	2304.0	841.0	2306.0	874.0	2306.0	1025.0	2304.0	1036.0		
X1	17.0	18	524	567	430	455	445	0	0	0
X3				424						
X4	8	2310.5	108	2308.4	340	2311.6	424	2304.6	535	2304.5
X4	562	2310	585	2310	620	2308.3	650			
GR	2318.0	0.0	2316.0	35.0	2314.0	58.0	2312.0	86.0	2312.0	177.0
GR	2314.0	249.0	2314.0	267.0	2312.0	287.0	2310.0	297.0	2310.0	366.0
GR	2310.0	453.0	2308.0	505.0	2306.0	524.0	2306.0	567.0	2308.0	575.0
GR	2312.0	709.0	2314.0	746.0	2316.0	782.0				
X1	18.0	27	406	475	540	500	522	0	0	0
X3						689				
X4	8	2327	265	2313	417	2312.8	455	2317.6	633	2316.6
X4	755	2322.8	828	2322.4	868	2324	950			
GR	2334.0	0.0	2332.0	37.0	2330.0	59.0	2328.0	93.0	2326.0	129.0
GR	2324.0	155.0	2322.0	185.0	2322.0	196.0	2324.0	213.0	2326.0	244.0
GR	2326.0	293.0	2324.0	378.0	2322.0	387.0	2320.0	393.0	2318.0	399.0
GR	2316.0	406.0	2314.0	412.0	2314.0	475.0	2316.0	506.0	2318.0	553.0
GR	2318.0	589.0	2318.0	665.0	2318.0	689.0	2318.0	763.0	2320.0	775.0
GR	2322.0	812.0	2322.0	997.0						
X1	19.0	27	357	448	490	480	488	0	0	0
X3				267		548				
X4	8	2326.7	267	2322.2	320	2322.3	343	2321.3	362	2321.6
X4	382	2323.4	472	2321.6	504	2321	577			
GR	2332.0	0.0	2332.0	14.0	2334.0	45.0	2334.0	74.0	2332.0	131.0
GR	2330.0	143.0	2330.0	143.0	2328.0	159.0	2326.0	176.0	2324.0	207.0
GR	2322.0	217.0	2322.0	222.0	2324.0	231.0	2326.0	241.0	2326.0	303.0
GR	2324.0	317.0	2322.0	357.0	2320.0	432.0	2320.0	439.0	2322.0	448.0
GR	2322.0	487.0	2322.0	522.0	2322.0	548.0	2322.0	580.0	2324.0	589.0
GR	2326.0	633.0	2326.0	643.0						
X1	20.0	22	214	314	430	470	458	0	0	0
X3		2328.5								
X4	2	2332.6	150	2328.5	246					
GR	2340.0	0.0	2338.0	38.0	2336.0	50.0	2334.0	62.0	2332.0	84.0
GR	2332.0	90.0	2332.0	180.0	2330.0	214.0	2330.0	314.0	2330.0	354.0
GR	2328.0	429.0	2328.0	446.0	2330.0	478.0	2332.0	493.0	2334.0	501.0
GR	2336.0	509.0	2338.0	518.0	2340.0	533.0	2342.0	647.0	2344.0	737.0
GR	2346.0	776.0	2348.0	812.0						

X1	21.0	27	156	258	450	450	450	0	0	0
X3						381				
X4	7	2335	175	2335	193	2336.5	227	2336.2	241	2335.7
X4	310	2339.1	420	2342.2	496					
GR	2350.0	0.0	2350.0	4.0	2348.0	20.0	2346.0	32.0	2344.0	52.0
GR	2342.0	82.0	2340.0	122.0	2338.0	156.0	2336.0	166.0	2336.0	213.0
GR	2338.0	258.0	2338.0	295.0	2338.0	314.0	2340.0	381.0	2340.0	404.0
GR	2340.0	425.0	2342.0	435.0	2344.0	448.0	2344.0	464.0	2344.0	514.0
GR	2346.0	547.0	2346.0	605.0	2346.0	621.0	2348.0	663.0	2348.0	701.0
GR	2348.0	708.0	2350.0	751.0						
X1	22.0	19	327	385	330	330	330	0	0	0
X3				263						
X4	4	2341	116	2341	165	2343.4	207	2345	263	
GR	2350.0	0.0	2348.0	15.0	2346.0	50.0	2344.0	72.0	2342.0	95.0
GR	2342.0	178.0	2344.0	227.0	2344.0	301.0	2342.0	308.0	2341.5	327
GR	2340.0	345.0	2340.0	359.0	2342.0	385.0	2344.0	445.0	2346.0	451.0
GR	2346.0	474.0	2346.0	479.0	2348.0	500.0	2350.0	567.0		
QT	1	1839								
X1	23.0	14	611	638	280	24	0	260	0	0
X4	2	2345.4	625	2346.7	663					
GR	2353	578	2352.0	585.0	2350.0	592.0	2348.0	599.0	2346.0	611.0
GR	2346.0	638.0	2346.0	668.0	2346.0	679.0	2348.0	718.0	2350.0	740.0
GR	2352.0	815.0	2354.0	876.0	2356.0	912.0	2356.0	918.0		
X1	24.0	14	1000	1006	310	270	290	0	0	0
X4	5	2356.5	930	2358.7	960	2350	1003	2352.9	1056	2351.6
X4	1086									
GR	2360.0	869.0	2358.0	913.0	2358.0	937.0	2358.0	975.0	2356.0	984.0
GR	2354.0	992.0	2352.0	1000.0	2352.0	1006.0	2352.0	1006.0	2352.0	1028.0
GR	2352.0	1080.0	2352.0	1095.0	2354.0	1110.0	2356.0	1127.0		
X1	25.0	14	1463	1509	310	300	315	0	0	0
X3				1409						
X4	3	2359	1350	2359.3	1385	2358.7	1403			
GR	2366.0	1291.0	2364.0	1318.0	2362.0	1325.0	2360.0	1336.0	2360.0	1409.0
GR	2362.0	1442.0	2362.0	1457.0	2360.0	1463.0	2358.0	1469.0	2358.0	1480.0
GR	2360.0	1509.0	2360.0	1514.0	2360.0	1612.0	2362.0	1626.0		
X1	26.0	10	1832	1858	490	540	540	0	0	0
X3				1645						
X4	6	2369.4	1645	2371.2	1757	2370.2	1800	2371	1823	2368
X4	1850	2375	1895							
GR	2372.0	1605.0	2370.0	1626.0	2370.0	1655.0	2370.0	1832.0	2368.0	1845.0
GR	2368.0	1847.0	2370.0	1858.0	2372.0	1868.0	2374.0	1888.0	2374.0	1960.0
X1	27.0	13	2175	2203	340	400	410	0	0	0
X4	2	2376.1	2185	2379.6	2252					
GR	2383.7	2122	2382.0	2147.0	2380.0	2159.0	2378.0	2175.0	2378.0	2203.0
GR	2378.0	2258.0	2378.0	2265.0	2380.0	2319.0	2380.0	2331.0	2380.0	2350.0
GR	2380.0	2423.0	2380.0	2429.0	2382.0	2439.0				

X1	28.0	14	2551	2630	370	310	350	0	0	0
X3				2488		2816				
GR	2392	2370	2390	2410	2384	2442	2386	2488	2388	2551
GR	2386.1	2572	2388	2600	2386	2616	2388.5	2630	2388	2645
GR	2387.6	2700	2386	2747	2386	2768	2387.2	2816		
X1	29	24	2669	2722	510	580	535	0	0	0
X3				2619		2738				
GR	2400.8	2426	2400.0	2465.0	2398.0	2487.0	2396	2498	2395	2505
GR	2395	2518	2396	2524	2398	2535	2399	2555	2398.7	2575
GR	2399.8	2619	2398	2669	2397.3	2675	2397.3	2706	2398	2722
GR	2400	2738	2400.6	2772	2400	2811	2398	2832	2398.3	2846
GR	2398	2870	2398	2900	2400	2910	2402	2923		
X1	30.0	20	2509	2627	370	380	390	0	0	0
X3				2450						
X4	4	2410.5	2450	2405.5	2550	2405	2576	2410	2646	
GR	2410.0	2100.0	2408.0	2137.0	2406.0	2146.0	2406.0	2150.0	2408.0	2161.0
GR	2408.0	2198.0	2408.0	2254.0	2410.0	2293.0	2410.0	2313.0	2408.0	2354.0
GR	2406.0	2368.0	2406.0	2368.0	2408.0	2383.0	2410.0	2428.0	2410.0	2486.0
GR	2408.0	2509.0	2406.0	2521.0	2406.0	2596.0	2408.0	2627.0	2410.0	2696.0
X1	31.0	16	2250	2322	465	495	520	0	0	0
X3		2419.6		2230		2524				
X4	8	2421.3	1796	2423.5	1863	2420.5	1928	2422.5	1993	2422.5
X4	2097	2419.6	2260	2419.6	2275	2419.7	2453			
GR	2424.7	1626	2424.0	1650.0	2422.0	1779.0	2422.0	1809.0	2422.0	1907.0
GR	2422.0	1975.0	2422.0	2148.0	2421.6	2230	2420.0	2250.0	2419.8	2322
GR	2418.0	2419.0	2418.0	2440.0	2418.0	2510.0	2418.0	2524.0	2420.0	2548.0
GR	2421.7	2563								
X1	32.0	28	1803	1844	390	390	390	0	0	0
X3		2429		1739		2038				
X4	11	2431.5	1439	2432.8	1553	2431.6	1588	2429	1713	2429.2
X4	1827	2431.2	1882	2429	1902	2431	1956	2428.6	1995	2428
X4	2038	2429.2	2071							
GR	2435	1335	2434.0	1352.0	2432.0	1421.0	2432.0	1460.0	2432.0	1576.0
GR	2432.0	1591.0	2434.0	1629.0	2434.0	1645.0	2432.0	1691.0	2430.0	1700.0
GR	2430.0	1711.0	2432.0	1718.0	2432.0	1739.0	2430.0	1803.0	2430.0	1832.0
GR	2430.0	1844.0	2430.0	1865.0	2430.0	1888.0	2430.0	1903.0	2430.0	1926.0
GR	2430.0	1929.0	2430.0	1966.0	2428.0	2008.0	2428.0	2051.0	2428.0	2096.0
GR	2428.0	2101.0	2430.0	2142.0	2430.5	2157				
X1	33.0	15	1590	1618	410	430	415	0	0	0
X3		2440.4		1530						
X4	7	2440.5	1427	2442	1444	2442.9	1530	2440.4	1600	2440.4
X4	1613	2442.5	1647	2443.5	1825					
GR	2446.0	1327.0	2444.0	1371.0	2442.0	1407.0	2442.0	1471.0	2442.0	1496.0
GR	2442.0	1514.0	2442.0	1590.0	2442.0	1618.0	2442.0	1668.0	2440.0	1708.0
GR	2438.0	1724.0	2438.0	1736.0	2440.0	1757.0	2442.0	1773.0	2444.0	1911.0

X1	34.0	10	985	1039	370	370	380	0	0	0
X3		2450.1				1250				
X4	9	2452.6	868	2453.3	895	2453.2	941	2450.1	996	2450.4
X4	1091	2450.7	1124	2449	1197	2450	1225	2449.6	1250	
GR	2454.0	855.0	2452.0	985.0	2452.0	1039.0	2452.0	1074.0	2450.0	1194.0
GR	2450.0	1233.0	2450.0	1235.0	2450.0	1282.0	2452.0	1307.0	2454.0	1463.0
X1	35	8	641	686	400	370	390	0	0	0
X3						890				
X4	4	2459.2	668	2460.8	722	2459.8	810	2460.5	890	
GR	2461.5	547	2461.8	596	2460.0	641.0	2460.0	686.0	2460.0	777.0
GR	2460.0	829.0	2462.0	986.0	2462.0	1059.0				
X1	36.0	13	549	606	390	390	390	0	0	0
GR	2471.7	380	2471.1	405	2471.8	440	2471.8	466	2470.2	478
GR	2471.3	549	2470	580	2468.8	602	2470	604	2472	606
GR	2474	630	2474.2	653	2475	687				
QT	1	3344								
X1	37.0	15	165	198	510	470	489	0	0	0
X4	5	2484	84	2482.2	95	2480.8	177	2483.7	275	2483.2
X4	330									
GR	2500.0	0.0	2490.0	60.0	2488.0	70.0	2486.0	71.0	2484.0	134.0
GR	2484.0	150.0	2482.0	165.0	2482.0	196.0	2482.0	198.0	2482.0	218.0
GR	2484.0	349.0	2486.0	387.0	2488.0	406.0	2490.0	421.0	2500.0	495.0
X1	38.0	24	310	347	515	515	515	0	0	0
X4	6	2494.5	104	2495.5	134	2494.5	164	2496	209	2495
X4	235	2496	298							
GR	2518.0	0.0	2516.0	9.0	2514.0	20.0	2512.0	33.0	2508.0	56.0
GR	2506.0	63.0	2504.0	69.0	2502.0	75.0	2498.0	86.0	2496.0	92.0
GR	2494.0	310.0	2492.0	333.0	2492.0	338.0	2494.0	347.0	2496.0	358.0
GR	2498.0	365.0	2502.0	383.0	2504.0	386.0	2506.0	389.0	2508.0	393.0
GR	2512.0	402.0	2514.0	411.0	2516.0	420.0	2518.0	427.0		
X1	39.0	17	64	88	455	502	497	0	0	0
X4	7	2505	51	2505.8	60	2503.2	70	2503.2	85	2506
X4	110	2505	140	2507.2	240					
GR	2518.0	0.0	2516.0	7.0	2514.0	13.0	2512.0	21.0	2508.0	35.0
GR	2506.0	43.0	2504.0	64.0	2504.0	88.0	2506.0	167.0	2506.0	271.0
GR	2506.0	283.0	2508.0	319.0	2512.0	337.0	2514.0	345.0	2516.0	353.0
GR	2518.0	361.0	2522.0	376.0						
X1	40.0	24	317	381	534	530	534	0	0	0
X3				135						
X4	15	2520	126	2519	135	2520	160	2521	183	2520
X4	195	2519.8	213	2519	257	2520	303	2520	309	2517.8
X4	320	2518.7	343	2520	410	2520	422	2519.2	441	2520
X4	460									
GR	2538.0	0.0	2536.0	11.0	2534.0	24.0	2532.0	36.0	2528.0	63.0
GR	2526.0	79.0	2524.0	98.0	2522.0	115.0	2518.0	200.0	2518.0	202.0
GR	2518.0	317.0	2518.0	323.0	2518.0	371.0	2518.0	381.0	2522.0	476.0
GR	2524.0	480.0	2526.0	485.0	2528.0	489.0	2532.0	497.0	2534.0	500.0

GR	2536.0	503.0	2538.0	506.0	2542.0	514.0	2544.0	518.0		
X1	41.0	25	338	438	425	471	457	0	0	0
X4	8	2526.5	106	2530.2	134	2527.8	170	2531.6	233	2530.8
X4	296	2529.8	357	2530.2	373	2529.9	417			
GR	2548.0	0.0	2546.0	10.0	2544.0	21.0	2542.0	33.0	2538.0	58.0
GR	2536.0	69.0	2534.0	80.0	2532.0	89.0	2528.0	101.0	2528.0	112.0
GR	2528.0	169.0	2528.0	172.0	2531.2	338	2530.0	366.0	2530.0	368.0
GR	2530.0	393.0	2530.0	403.0	2530.0	419.0	2530.0	423.0	2532.0	438.0
GR	2534.0	443.0	2536.0	448.0	2538.0	453.0	2542.0	462.0	2544.0	467.0
X1	42.0	23	383	438	474	514	503	0	0	0
X4	7	2541.5	140	2540	178	2540	185	2544.6	281	2544.4
X4	312	2544.3	371	2540.2	407					
GR	2558.0	0.0	2556.0	9.0	2554.0	21.0	2552.0	44.0	2548.0	72.0
GR	2546.0	82.0	2544.0	95.0	2542.0	108.0	2542.0	193.0	2544.0	280.0
GR	2544.0	383.0	2542.0	390.0	2542.0	415.0	2544.0	438.0	2544.0	441.0
GR	2544.0	458.0	2546.0	462.0	2548.0	466.0	2552.0	475.0	2554.0	480.0
GR	2556.0	484.0	2558.0	489.0	2562.0	500.0				
X1	43.0	17	329	360	380	426	415	0	0	0
X4	4	2552.4	180	2553.4	210	2553.7	256	2551	337	
GR	2568.0	0.0	2566.0	6.0	2564.0	11.0	2562.0	20.0	2558.0	44.0
GR	2556.0	68.0	2554.0	115.0	2552.0	329.0	2552.0	360.0	2554.0	364.0
GR	2556.0	367.0	2558.0	370.0	2562.0	376.0	2564.0	380.0	2566.0	383.0
GR	2568.0	387.0	2572.0	398.0						
X1	44.0	15	111	161	495	550	540	0	0	0
GR	2572	100	2570	107	2568	111	2566	137	2565.9	145
GR	2566	150	2568	161	2569	185	2569	211	2568	236
GR	2567	293	2566	302	2566	314	2568	324	2570	385
X1	45.0	17	48	86	400	450	430	0	0	0
X3						245				
X4	4	2580	57	2581.2	144	2581.5	158	2581.3	175	
GR	2602.0	0.0	2598.0	13.0	2596.0	19.0	2594.0	23.0	2592.0	27.0
GR	2588.0	35.0	2586.0	39.0	2584.0	44.0	2582.0	48.0	2582.0	67.0
GR	2582.0	86.0	2582.0	114.0	2582.0	133.0	2582.0	191.0	2584.0	255
GR	2586.0	308	2588.0	388						
X1	46.0	11	66	156	380	425	400	0	0	0
GR	2600.0	55.0	2594.0	66.0	2592.0	70.0	2592.0	95.0	2593.0	110.0
GR	2592.0	128.0	2592.0	148.0	2594.0	156.0	2594.0	348.0	2596.0	373.0
GR	2600.0	530.0								
X1	47.0	19	310	420	520	545	530	0	0	0
GR	2620.0	0.0	2612.0	30.0	2610.0	55.0	2610.0	160.0	2612.0	185.0
GR	2610.0	200.0	2612.0	215.0	2612.0	240.0	2611.0	270.0	2611.0	310.0
GR	2610.0	330.0	2611.0	355.0	2610.0	375.0	2612.0	420.0	2613.0	430.0
GR	2612.0	440.0	2611.0	445.0	2612.0	455.0	2614.0	470.0		

X1	48.0	11	40	110	575	510	550	0	0	0
GR	2642.0	0.0	2630.0	40.0	2628.0	45.0	2628.0	75.0	2630.0	110.0
GR	2629.0	140.0	2630.0	160.0	2630.0	180.0	2630.5	200.0	2630.0	220.0
GR	2632.0	235.0								
X1	49.0	16	190	550	521	515	508	0	0	0
GR	2652.0	25.0	2652.0	190.0	2646.0	210.0	2645.0	223.0	2646.0	250.0
GR	2647.0	260.0	2647.0	310.0	2646.0	320.0	2645.2	332.0	2646.0	360.0
GR	2646.0	390.0	2648.0	435.0	2650.0	460.0	2650.0	510.0	2652.0	550.0
GR	2654.0	584.0								
X1	50.0	19	160	625	460	460	460	0	0	0
GR	2674.0	150.0	2672.0	160.0	2670.0	175.0	2670.0	260.0	2671.0	290.0
GR	2672.0	335.0	2670.8	405.0	2672.0	435.0	2672.0	460.0	2670.0	470.0
GR	2669.0	485.0	2670.0	510.0	2672.0	600.0	2670.0	620.0	2672.0	625.0
GR	2672.5	665.0	2672.0	685.0	2672.0	700.0	2673.0	725.0		
X1	51.0	30	280	541	350	350	350	0	0	0
GR	2694.5	215.0	2694.0	230.0	2693.0	245.0	2694.0	260.0	2694.0	270.0
GR	2694.0	280.0	2692.5	325.0	2694.0	355.0	2693.0	371.0	2693.2	386.0
GR	2693.0	403.0	2694.0	420.0	2694.0	440.0	2692.0	494.0	2692.0	500.0
GR	2693.0	507.0	2694.0	541.0	2696.0	575.0	2695.3	600.0	2696.0	623.0
GR	2696.5	646.0	2696.0	648.0	2695.0	665.0	2696.0	681.0	2696.5	686.0
GR	2696.0	691.0	2695.5	704.0	2696.0	735.0	2696.0	762.0	2696.0	803.0
X1	52.0	19	115	470	355	350	355	0	0	0
X3			115			470				
X4	12	2713	133	2712.5	170	2714	195	2711.2	238	2714.0
X4	281	2713	303	2714.6	322	2714	334	2715	346	2715.2
X4	377	2715	409	2714	435					
GR	2716.0	91.0	2716.0	115.0	2714.0	148.0	2714.0	165.0	2714.0	167.0
GR	2714.0	215.0	2714.0	217.0	2712.0	226.0	2712.0	250.0	2714.8	276.0
GR	2714.0	317.0	2714.0	335.0	2714.0	353.0	2714.0	360.0	2714.0	376.0
GR	2714.0	385.0	2714.0	458.0	2716.0	470.0	2716.0	494.0		
X1	53.0	26	75	164	285	280	285	0	0	0
X3						312				
X4	7	2726.5	79	2727	100	2730.4	189	2729.2	205	2730.6
X4	271	2730	283	2730.4	312					
GR	2738.0	0.0	2736.0	25.0	2734.0	45.0	2732.0	63.0	2728.0	75.0
GR	2728.0	164.0	2730.0	185.0	2730.0	193.0	2730.0	197.0	2730.0	215.0
GR	2730.0	229.0	2730.0	264.0	2730.0	319.0	2730.0	334.0	2730.0	373.0
GR	2730.0	427.0	2730.0	427.0	2730.0	470.0	2730.0	473.0	2728.0	510.0
GR	2728.0	536.0	2728.0	583.0	2728.0	597.0	2730.0	647.0	2728.0	651.0
GR	2728.0	655.0								
X1	54.0	21	55	154	402	450	421	0	0	0
X3						197				
X4	6	2750	40	2745.6	152	2750	158	2753.6	197	2753
X4	256	2754	330							
GR	2762.0	0.0	2758.0	13.0	2756.0	19.0	2754.0	25.0	2752.0	31.0
GR	2748.0	55.0	2746.0	113.0	2746.0	123.0	2746.0	133.0	2746.0	148.0
GR	2748.0	154.0	2752.0	165.0	2752.0	241.0	2752.0	278.0	2752.0	472.0

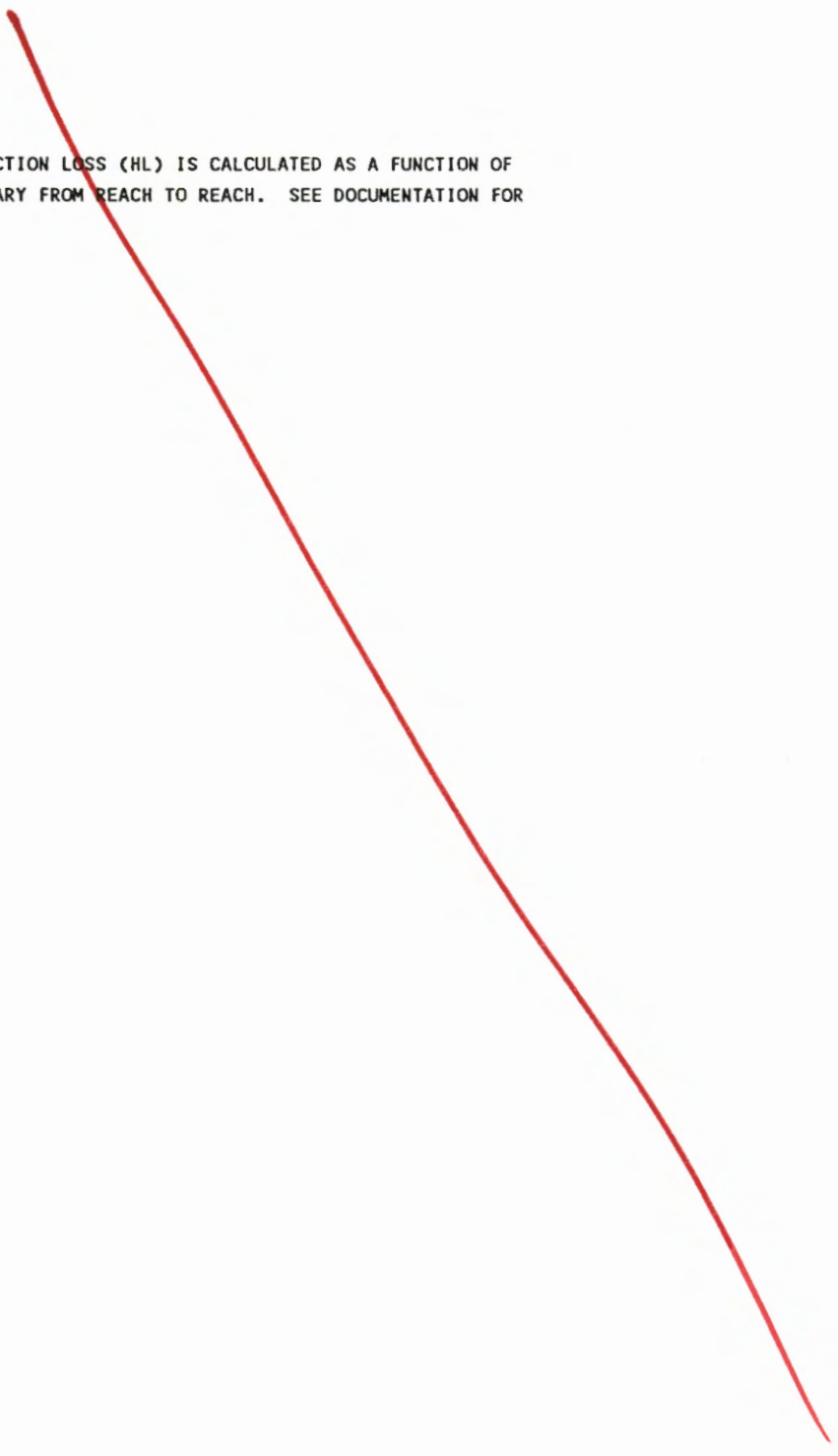
GR	2748.0	577.0	2748.0	578.0	2752.0	608.0	2754.0	613.0	2756.0	616.0
GR	2758.0	620.0								
X1	55.0	28	88	128	478	504	489	0	0	0
X4	5	2772.8	163	2772.6	185	2773	253	2770.2	407	2770.4
X4	407									
GR	2782.0	0.0	2778.0	15.0	2776.0	23.0	2774.0	28.0	2772.0	34.0
GR	2768.0	46.0	2766.0	62.0	2766.0	70.0	2766.0	88.0	2764.0	106.0
GR	2764.0	125.0	2766.0	128.0	2768.0	131.0	2772.0	134.0	2774.0	199.0
GR	2774.0	206.0	2772.0	275.0	2772.0	311.0	2772.0	378.0	2772.0	427.0
GR	2774.0	433.0	2776.0	439.0	2778.0	446.0	2782.0	458.0	2784.0	463.0
GR	2786.0	469.0	2788.0	475.0	2792.0	487.0				
QT	1	7675								
X1	-6.0	32	713	800	305	265	295	0	0	0
X3		2234.5		480		1180				
X4	11	2235	325	2239	400	2239	480	2237	637	2234.5
X4	800	2235	885	2233.5	950	2235	1050	2232	1100	2235
X4	1160	2234.5	1180							
GR	2252.0	100.0	2248.0	155.0	2248.0	155.0	2246.0	170.0	2244.0	186.0
GR	2242.0	201.0	2238.0	241.0	2236.0	313.0	2236.0	339.0	2238.0	359.0
GR	2238.0	586.0	2236.0	604.0	2236.0	609.0	2236.0	663.0	2234.0	713.0
GR	2234.0	718.0	2234.0	754.0	2234.0	761.0	2234.0	812.0	2234.0	822.0
GR	2234.0	916.0	2234.0	970.0	2234.0	1086.0	2234.0	1120.0	2236.0	1192.0
GR	2238.0	1205.0	2242.0	1287.0	2244.0	1310.0	2246.0	1327.0	2248.0	1355.0
GR	2252.0	1402.0	2254.0	1421.0						
QT	1	4119								
X1	56.0	16	566	613	310	320	312	0	0	0
X3				350						
X4	9	2239.6	293	2239	305	2239.3	350	2238.8	392	2240.7
X4	510	2237	582	2237	605	2239.6	650	2238.8	728	
GR	2242.0	200.0	2240.0	223.0	2240.0	245.0	2240.0	265.0	2240.0	491.0
GR	2240.0	522.0	2238.0	566.0	2238.0	613.0	2240.0	735.0	2242.0	763.0
GR	2244.0	770.0	2246.0	776.0	2248.0	783.0	2252.0	796.0	2254.0	803.0
GR	2256.0	832.0								
X1	57.0	17	603	650	316	331	319	0	0	0
X3				431						
X4	7	2243.3	360	2243	431	2243.5	467	2243.3	487	2246
X4	576	2240.3	610	2240.5	642					
GR	2254.0	200.0	2252.0	280.0	2248.0	298.0	2246.0	307.0	2244.0	316.0
GR	2244.0	520.0	2244.0	595.0	2242.0	603.0	2242.0	650.0	2244.0	658.0
GR	2246.0	717.0	2248.0	727.0	2252.0	743.0	2254.0	750.0	2256.0	758.0
GR	2258.0	766.0	2262.0	807.0						
X1	58.0	16	676	722	470	510	500	0	0	0
X3				460						
X4	10	2255.4	310	2250.3	353	2251.3	410	2251.6	460	2250
X4	517	2249.5	540	2250	578	2251.3	621	2250	664	2245.6
X4	703									
GR	2262.0	200.0	2258.0	216.0	2256.0	224.0	2254.0	235.0	2254.0	277.0
GR	2254.0	322.0	2252.0	333.0	2248.0	676.0	2246.0	692.0	2246.0	707.0
GR	2248.0	722.0	2252.0	729.0	2254.0	732.0	2256.0	736.0	2258.0	739.0

GR	2262.0	745.0								
X1	59.0	15	618	705	428	445	440	0	0	0
X3				571						
X4	6	2257.1	337	2259.7	451	2257.3	571	2257.5	595	2253
X4	655	2253	690							
GR	2262.0	200.0	2262.0	271.0	2262.0	281.0	2258.0	326.0	2258.0	346.0
GR	2258.0	527.0	2256.0	618.0	2254.0	637.0	2254.0	700.0	2256.0	705.0
GR	2258.0	710.0	2262.0	721.0	2264.0	726.0	2266.0	731.0	2268.0	738.0
X1	60.0	30	677	766	420	420	420	0	0	0
X3						800				
X4	1	2267.7	605							
GR	2276.0	200.0	2276.0	283.0	2274.0	302.0	2272.0	320.0	2268.0	405.0
GR	2268.0	419.0	2268.0	468.0	2266.0	659.0	2264.0	668.0	2262.0	677.0
GR	2258.0	690.0	2258.0	719.0	2262.0	766.0	2264.0	777.0	2266.0	788.0
GR	2268.0	800.0	2268.0	911.0	2266.0	991.0	2264.0	1013.0	2262.0	1030.0
GR	2262.0	1036.0	2264.0	1044.0	2266.0	1050.0	2268.0	1056.0	2272.0	1066.0
GR	2274.0	1072.0	2276.0	1078.0	2278.0	1085.0	2278.0	1191.0	2278.0	1193.0
X1	61.0	31	576	660	398	396	398	0	0	0
X4	2	2264.8	613	2263.3	647					
GR	2284.0	200.0	2284.0	239.0	2282.0	275.0	2278.0	347.0	2276.0	410.0
GR	2276.0	455.0	2276.0	473.0	2274.0	516.0	2272.0	529.0	2268.0	553.0
GR	2266.0	565.0	2264.0	576.0	2264.0	588.0	2264.0	627.0	2264.0	660.0
GR	2266.0	661.0	2268.0	672.0	2272.0	693.0	2274.0	731.0	2274.0	882.0
GR	2272.0	919.0	2270.0	941.0	2270.0	950.0	2272.0	971.0	2274.0	991.0
GR	2276.0	1005.0	2278.0	1015.0	2282.0	1034.0	2284.0	1041.0	2286.0	1049.0
GR	2288.0	1109.0								
X1	62.0	19	249	382	403	361	387	0	0	0
X4	5	2269.3	258	2271.7	285	2271.7	310	2268.8	335	2268.6
X4	373									
GR	2292.0	200.0	2288.0	209.0	2286.0	213.0	2284.0	217.0	2282.0	221.0
GR	2278.0	229.0	2276.0	233.0	2274.0	237.0	2272.0	241.0	2270.0	249.0
GR	2270.0	269.0	2270.0	325.0	2270.0	382.0	2272.0	395.0	2274.0	408.0
GR	2276.0	417.0	2278.0	426.0	2280.0	451.0	2280.0	534.0		
X1	63.0	17	322	374	443	395	418	0	0	0
X4	1	2274.6	345							
GR	2298.0	200.0	2298.0	229.0	2296.0	233.0	2294.0	238.0	2292.0	242.0
GR	2288.0	250.0	2286.0	254.0	2284.0	257.0	2282.0	265.0	2278.0	306.0
GR	2276.0	322.0	2276.0	374.0	2278.0	384.0	2282.0	402.0	2284.0	412.0
GR	2286.0	453.0	2288.0	581.0						
X1	64.0	20	342	466	437	334	386	0	0	0
X4	5	2280	353	2280	360	2281.4	416	2281.1	452	2289.2
X4	511									
GR	2312.0	200.0	2308.0	264.0	2306.0	270.0	2304.0	276.0	2302.0	282.0
GR	2298.0	295.0	2296.0	302.0	2294.0	308.0	2292.0	315.0	2288.0	329.0
GR	2286.0	333.0	2284.0	337.0	2282.0	342.0	2282.0	466.0	2284.0	477.0
GR	2286.0	487.0	2288.0	498.0	2290.0	596.0	2292.0	625.0	2292.0	667.0

X1	130.0	15	1215	1233	430	430	430	0	0	0
X3				1160						
X4	6	2411	1118	2412.6	1160	2408.5	1223	2410.1	1261	2412.7
X4	1285	2412	1300							
GR	2412.0	1048.0	2412.0	1131.0	2412.0	1187.0	2410.0	1215.0	2410.0	1233.0
GR	2412.0	1237.0	2412.0	1246.0	2410.0	1253.0	2410.0	1254.0	2412.0	1266.0
GR	2412.0	1287.0	2412.0	1298.0	2414.0	1343.0	2416.0	1372.0	2418.0	1399.0
X1	131.0	11	941	978	337	337	337	0	0	0
X3						1072				
GR	2421	919	2420.0	941.0	2418.0	948.0	2417.5	961	2418.0	970.0
GR	2420.0	978.0	2420.8	987	2420.2	1034	2420.8	1072	2422.0	1128.0
GR	2423	1169								
X1	132.0	7	830	855	470	470	470	0	0	0
GR	2433.6	750	2432.0	794.0	2430.0	830.0	2429.3	850	2430.0	855.0
GR	2432.0	868.0	2434.0	899.0						
X1	133.0	8	816	855	410	410	410	0	0	0
GR	2443.4	783	2442.0	808.0	2440.0	816.0	2438.0	825.0	2438.0	835.0
GR	2440.0	855.0	2442.0	885.0	2443.8	917				
QT	1	1505								
X1	134.0	5	536	578	470	490	490	0	0	0
X4	2	2450.4	546	2451	610					
GR	2453.4	500	2452.0	536.0	2451.4	578	2452.0	656.0	2454	717
X1	135	16	288	333	400	380	390	0	0	0
X3						479				
X4	1	2459.3	308							
GR	2462.0	195.0	2462.0	240.0	2462.0	254.0	2460.0	288.0	2460.0	310.0
GR	2460.0	320.0	2460.0	333.0	2460.0	346.0	2460.0	358.0	2460.0	377.0
GR	2460.0	377.0	2462.0	396.0	2462.0	455.0	2460.0	465.0	2460.0	469.0
GR	2462.0	479.0								
X1	136.0	14	327	362	390	390	390	0	0	0
X3						380				
GR	2472.5	100	2472.3	162	2472	181	2470	205	2470	215
GR	2472	232	2472.2	244	2472	257	2471.4	280	2471.6	317
GR	2470	327	2469.5	334	2470	362	2471.7	380		
QT	1	1505								
X1	-124.0	20	512	597	292	294	300	0	0	0
X3				476						
X4	7	2352.5	255	2357	312	2357.5	336	2357	365	2356.2
X4	476	2352.3	521	2352.2	581					
GR	2366.0	81.0	2364.0	101.0	2362.0	130.0	2360.0	162.0	2358.0	184.0
GR	2356.0	204.0	2354.0	237.0	2354.0	267.0	2356.0	292.0	2356.0	400.0
GR	2354.0	420.0	2354.0	430.0	2356.0	455.0	2356.0	497.0	2354.0	512.0
GR	2354.0	597.0	2356.0	614.0	2358.0	627.0	2360.0	644.0	2362.0	786.0

QT	1	1113								
X1	225.0	28	477	568	340	370	390	0	0	0
X3				454						
GR	2378.0	83.0	2376.0	102.0	2374.0	120.0	2372.0	144.0	2370.0	170.0
GR	2368.0	196.0	2366.0	233.0	2364.0	310.0	2362.0	329.0	2362.0	332.0
GR	2364.0	378.0	2364.0	454.0	2362.0	477.0	2360.0	491.0	2360.0	492.0
GR	2360.0	499.0	2359.6	518	2360.0	522.0	2362.0	568.0	2362.4	584
GR	2362.0	595.0	2360.0	607.0	2360.0	612.0	2362.0	660.0	2364.0	677.0
GR	2366.0	682.0	2368.0	690.0	2368.6	698				
X1	226.0	20	286	380	380	360	370	0	0	0
X3						469				
GR	2376.0	0.0	2374.0	31.0	2372.0	110.0	2370.0	238.0	2368.0	254.0
GR	2368.0	271.0	2368.0	286.0	2366.0	297.0	2366.0	322.0	2366.0	353.0
GR	2366.0	369.0	2368.0	380.0	2368.8	425	2368.0	469.0	2366.0	493.0
GR	2366.0	501.0	2368.0	522.0	2370.0	546.0	2372.0	565.0	2374.0	588.0
X1	227.0	15	510	535	550	585	565	0	0	0
X3						535				
X4	3	2377	400	2376.8	416	2376.2	524			
GR	2390.0	281.0	2388.0	293.0	2386.0	302.0	2384.0	309.0	2382.0	316.0
GR	2380.0	321.0	2378.0	331.0	2378.0	404.0	2378.0	409.0	2378.0	510.0
GR	2378.0	535.0	2378.0	587.0	2380.0	608.0	2382.0	646.0	2384.0	690.0
X1	228.0	13	138	171	775	735	750	0	0	0
X3						287				
GR	2396	100	2392	127	2390	138	2386	147	2386	165
GR	2388	171	2389.5	182	2389	214	2390	261	2390	287
GR	2388	300	2390	310	2391.8	396				
X1	229	10	158	238	510	510	510	0	0	0
X4	2	2400.8	123	2399.8	290					
GR	2402.0	0.0	2400.0	49.0	2400.0	101.0	2400.0	140.0	2398.0	158.0
GR	2396.0	167.0	2396.0	188.0	2398.0	238.0	2400.0	388.0	2401	410
X1	230.0	8	142	167	475	475	475	0	0	0
GR	2408.0	0.0	2406.0	40.0	2404.0	142.0	2402.5	162	2404.0	167.0
GR	2406.0	173.0	2408.0	228.0	2410	245				

IHLEQ = 1. THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH. SEE DOCUMENTATION FOR DETAILS.



HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991


NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Idle Hour Wash

SUMMARY PRINTOUT

SECNO	CWSEL	VLOB	VCH	VROB	QLOB	QCH	QROB	DEPTH	TOPWID	SSTA	ENDST
* 1.000	2210.75	3.12	8.04	5.23	207.66	6260.89	1206.44	6.75	587.62	693.97	1401.13
2.000	2218.27	.93	5.96	4.74	.35	7022.62	652.04	2.27	652.86	447.14	1100.00
3.000	2223.64	4.16	5.09	6.28	204.13	6426.46	1044.41	3.64	768.00	230.00	998.00
4.000	2228.41	5.69	6.53	5.05	810.48	6762.52	101.99	3.41	631.89	251.97	932.06
5.000	2234.31	4.32	7.59	4.42	65.60	7556.51	52.89	4.31	377.06	634.03	1011.09
* 6.000	2237.45	3.26	4.74	4.23	621.41	6326.32	727.27	5.45	589.05	590.95	1180.00
* 7.000	2242.73	5.79	9.77	6.41	1266.67	2295.07	397.26	4.73	224.56	652.99	877.55
8.000	2253.32	2.39	5.19	5.18	14.57	1750.25	2194.18	3.32	400.25	684.75	1085.00
9.000	2258.59	1.92	6.56	7.24	2.70	2344.63	1611.67	2.59	311.20	500.25	811.45
* 10.000	2267.27	2.92	8.26	3.97	7.05	3486.53	465.41	3.57	294.06	501.19	881.49
11.000	2274.22	4.30	7.99	5.14	190.38	3008.98	759.63	4.22	258.15	433.09	691.24
* 12.000	2280.23	6.99	11.00	5.41	465.89	3058.47	434.64	6.23	139.28	547.94	687.22
* 13.000	2285.24	7.55	11.99	6.91	258.89	1731.50	1968.60	7.24	163.09	278.91	442.00
* 14.000	2290.94	6.09	10.30	5.59	148.53	1940.38	1870.09	6.54	225.88	289.12	515.00
15.000	2295.01	4.94	9.15	5.41	723.51	2747.09	488.39	5.01	212.28	463.35	675.63
16.000	2302.58	6.26	10.16	7.64	2246.57	1322.55	389.88	4.78	243.55	586.72	830.28
* 17.000	2310.54	5.61	10.16	4.26	843.45	2499.42	616.13	6.04	242.64	443.14	685.78

SECNO	CWSEL	VLOB	VCH	VROB	QLOB	QCH	QROB	DEPTH	TOPWID	SSTA	ENDST
18.000	2317.70	3.40	10.44	6.31	17.24	3191.74	750.02	4.90	165.35	400.04	641.17
19.000	2324.63	4.95	6.72	5.08	472.80	2252.07	1234.13	4.63	235.42	312.58	548.00
* 20.000	2331.30	3.22	6.92	7.14	47.27	1428.12	2483.61	2.80	296.18	191.67	487.85
21.000	2339.50	3.21	8.89	5.37	61.14	3128.77	769.08	4.50	233.58	130.56	364.13
* 22.000	2345.03	6.82	10.14	6.06	657.70	2555.30	746.00	5.03	185.08	263.00	448.08
* 23.000	2348.63	5.45	8.32	6.54	110.74	658.99	1069.26	3.23	128.19	596.78	724.97
24.000	2354.37	5.46	9.13	7.48	61.90	185.21	1591.89	4.37	122.75	990.48	1113.23
* 25.000	2361.41	3.22	8.06	5.23	62.31	981.64	795.05	3.41	186.32	1409.00	1621.86
* 26.000	2371.85	4.76	8.40	3.79	1141.01	665.45	32.54	3.85	222.27	1645.00	1867.27
* 27.000	2380.38	4.50	8.20	4.40	101.66	765.20	972.14	4.28	274.22	2156.70	2430.92
* 28.000	2388.04	4.97	4.95	6.15	326.51	380.73	1131.76	4.04	311.71	2488.00	2816.00
29.000	2400.37	5.40	8.62	5.09	395.02	1333.00	110.98	5.37	119.00	2619.00	2738.00
30.000	2408.27	1.09	7.01	1.09	.47	1838.14	.39	3.27	123.75	2505.85	2629.60
31.000	2420.82	2.76	5.42	5.68	11.50	438.86	1388.63	1.22	284.21	2239.79	2524.00
32.000	2431.07	3.06	5.68	6.04	55.44	313.53	1470.02	2.07	266.46	1768.94	2038.00
* 33.000	2442.66	2.11	6.55	6.41	30.76	336.08	1472.16	2.26	250.02	1545.90	1795.93
34.000	2451.85	.00	4.47	6.43	.00	193.82	1645.17	1.75	224.01	985.89	1250.00
35.000	2461.40	3.56	6.68	5.09	86.69	540.01	1212.30	2.20	283.90	606.09	890.00
* 36.000	2472.25	5.17	7.41	1.14	944.80	893.76	.44	3.45	229.02	380.00	609.02
* 37.000	2484.72	5.70	9.52	6.30	686.39	1032.94	1624.67	3.92	283.47	79.29	362.76
* 38.000	2496.85	5.23	9.57	5.50	1812.87	1412.04	119.09	4.85	271.55	89.44	360.99
* 39.000	2507.78	6.11	9.71	5.38	352.08	1033.48	1958.44	4.58	279.21	35.87	315.08
* 40.000	2520.87	5.58	8.34	5.68	1292.01	1395.14	656.84	3.07	327.24	135.00	466.93
* 41.000	2531.50	7.43	5.45	.00	2646.20	697.79	.00	5.00	333.83	90.51	434.23
* 42.000	2543.93	7.99	6.79	.00	2674.38	669.62	.00	3.93	235.43	95.46	437.19
* 43.000	2554.88	6.03	9.29	5.58	2326.44	972.53	45.03	3.88	270.88	94.43	365.31



SECNO	CWSEL	VLOB	VCH	VROB	QLOB	QCH	QROB	DEPTH	TOPWID	SSTA	ENDST
* 44.000	2569.52	3.45	8.82	6.84	7.93	1229.93	2106.13	3.62	262.31	107.97	370.28
* 45.000	2584.06	4.64	8.93	7.88	19.72	869.25	2455.03	4.06	201.15	43.84	245.00
* 46.000	2595.25	2.72	8.25	4.63	3.90	2180.34	1159.75	3.25	299.95	63.70	363.65
* 47.000	2612.06	6.67	5.99	3.29	2420.73	895.25	28.02	2.06	407.01	29.76	455.48
* 48.000	2631.64	3.76	9.28	6.47	16.91	1995.04	1332.05	3.64	197.80	34.52	232.32
* 49.000	2648.18	.00	7.80	.00	.00	3344.00	.00	3.18	234.47	202.74	437.21
* 50.000	2672.00	.00	6.23	.00	.00	3344.00	.00	3.00	439.61	160.01	625.00
* 51.000	2694.85	5.55	7.11	2.94	367.99	2958.13	17.87	2.85	340.39	215.00	555.39
* 52.000	2715.17	.00	6.94	.00	.00	3344.00	.00	3.97	344.87	119.96	465.04
* 53.000	2730.87	4.53	8.58	3.96	56.02	2717.53	570.45	4.37	245.61	66.39	312.00
* 54.000	2749.90	4.36	10.00	4.07	58.89	3270.45	14.66	4.30	117.03	40.77	157.79
* 55.000	2769.30	8.52	11.68	6.07	1066.77	2231.45	45.77	5.30	89.88	42.10	131.98
-6.000	2237.45	3.87	5.29	5.16	723.69	1357.33	5593.97	2.95	589.02	590.98	1180.00
* 56.000	2240.76	5.08	9.02	5.47	1501.83	1483.33	1133.83	3.76	395.58	350.00	745.58
* 57.000	2245.65	5.41	10.24	4.31	1454.60	2401.11	263.29	5.35	262.23	431.00	706.54
58.000	2251.99	4.67	9.71	4.58	1653.93	2401.48	63.59	6.39	268.97	460.00	728.97
* 59.000	2258.03	4.04	10.43	3.84	180.08	3919.16	19.76	5.03	139.08	571.00	710.08
60.000	2264.29	3.65	9.14	3.67	43.23	4022.66	53.11	6.29	111.93	666.68	778.61
61.000	2268.88	6.36	8.79	4.39	430.41	3571.58	117.01	5.58	128.93	547.70	676.63
62.000	2273.63	5.77	7.77	5.55	136.31	3745.54	237.15	5.03	167.81	237.75	405.56
* 63.000	2280.46	7.29	11.64	7.56	630.48	3123.46	365.06	5.86	114.31	280.77	395.08
* 64.000	2285.61	3.97	6.75	4.09	62.22	3912.63	144.15	5.61	151.30	333.77	485.07
-22.000	2345.03	3.79	9.59	5.85	129.59	3108.62	720.79	5.03	185.08	263.00	448.08
* 123.000	2350.85	5.05	10.13	5.82	62.16	1349.33	93.51	4.85	57.20	411.78	468.97
* 124.000	2355.57	2.25	5.61	2.26	20.74	1460.73	23.53	3.37	110.06	500.25	610.31
* 125.000	2365.08	6.76	9.44	6.69	209.11	824.45	471.44	3.38	86.09	714.75	800.84

SECNO	CWSEL	VLOB	VCH	VROB	QLOB	QCH	QROB	DEPTH	TOPWID	SSTA	ENDST
* 126.000	2374.03	4.37	9.39	4.30	49.74	1424.08	31.17	4.03	66.20	740.24	806.44
* 127.000	2382.10	4.67	8.58	4.60	98.17	1366.21	40.62	3.30	89.85	1130.94	1220.79
* 128.000	2391.13	6.07	9.08	5.30	684.42	665.10	155.48	3.53	126.92	1316.14	1443.06
* 129.000	2401.39	4.60	8.06	6.36	407.99	569.78	527.22	3.39	181.68	1224.57	1406.25
* 130.000	2413.09	4.97	8.50	4.76	396.29	586.96	521.75	4.59	163.39	1160.00	1323.39
* 131.000	2421.67	3.77	7.78	3.84	96.93	982.06	426.01	4.17	153.00	919.00	1072.00
* 132.000	2433.08	5.82	9.07	5.51	528.92	777.72	198.36	3.78	120.37	764.35	884.71
* 133.000	2442.34	4.30	9.03	4.60	50.45	1265.16	189.38	4.34	89.04	801.97	891.01
134.000	2452.99	2.89	7.36	6.01	36.23	623.69	845.07	2.59	175.53	510.60	686.13
135.000	2461.87	4.18	7.03	5.96	123.88	644.71	736.41	2.57	161.16	256.25	478.34
* 136.000	2472.35	4.54	7.51	5.07	685.35	682.92	136.73	2.85	233.14	146.86	380.00
-124.000	2355.57	2.25	5.61	2.26	20.75	1460.69	23.55	3.37	110.07	500.25	610.32
* 225.000	2361.88	.00	6.56	5.67	.00	759.34	353.66	2.28	148.72	477.85	657.09
* 226.000	2368.40	1.70	5.30	1.08	22.88	1080.42	9.69	2.40	173.86	250.79	469.00
* 227.000	2378.46	5.04	6.04	.00	907.63	205.37	.00	2.26	206.30	328.70	535.00
* 228.000	2390.28	.84	7.08	2.99	.19	831.05	281.76	4.28	150.56	136.44	287.00
* 229.000	2398.70	2.20	6.97	2.21	4.81	1092.69	15.50	2.70	106.41	151.73	258.14
230.000	2406.36	3.92	6.79	3.30	551.00	528.88	33.11	3.86	150.36	32.69	183.05

Idle Hour Wash

SUMMARY PRINTOUT

	SECNO	CWSEL	CRIWS	EG	HL	OLOSS	ELMIN	10*KS	K*CHSL	XLCH	SHEAR	FRCH
*	1.000	2210.75	2210.75	2211.64	.00	.00	2204.00	207.78	.00	.00	3.37	.88
	2.000	2218.27	2217.88	2218.80	7.05	.11	2216.00	148.74	29.48	407.00	1.96	.72
	3.000	2223.64	2223.19	2224.07	5.24	.03	2220.00	126.41	10.47	382.00	1.48	.65
	4.000	2228.41	2228.15	2229.05	4.96	.02	2225.00	190.64	15.63	320.00	2.39	.81
	5.000	2234.31	2233.93	2235.20	6.12	.02	2230.00	162.68	14.29	350.00	2.88	.79
*	6.000	2237.45	2236.23	2237.77	2.41	.17	2232.00	52.36	6.45	310.00	1.07	.46
*	7.000	2242.73	2242.73	2243.82	5.94	-2.03	2238.00	180.51	18.18	330.00	4.34	.88
	8.000	2253.32	2252.82	2253.73	9.71	.20	2250.00	113.55	17.14	700.00	1.49	.63
	9.000	2258.59	2258.43	2259.32	5.55	.03	2256.00	213.20	17.65	340.00	2.48	.85
*	10.000	2267.27	2267.27	2268.23	7.78	.47	2263.70	189.89	19.20	401.00	3.40	.86
	11.000	2274.22	2274.08	2275.07	6.81	.03	2270.00	161.38	15.79	399.00	3.11	.80
*	12.000	2280.23	2280.23	2281.82	5.30	.32	2274.00	147.37	11.11	360.00	4.91	.84
*	13.000	2285.24	2285.24	2286.64	4.56	.09	2278.00	145.20	12.82	312.00	5.69	.84
*	14.000	2290.94	2290.94	2292.00	4.02	.59	2284.40	113.78	17.78	360.00	4.18	.75
	15.000	2295.01	2294.88	2296.04	4.03	.01	2290.00	136.19	16.97	330.00	3.65	.78
	16.000	2302.58	2302.55	2303.55	7.49	.02	2297.80	166.60	15.29	510.00	4.51	.86
*	17.000	2310.54	2310.54	2311.70	5.08	.94	2304.50	115.32	15.06	445.00	4.12	.75
	18.000	2317.70	2317.63	2319.18	7.45	.03	2312.80	171.01	15.90	522.00	4.73	.87
	19.000	2324.63	2323.88	2325.20	5.74	.27	2320.00	90.22	14.75	488.00	2.07	.62
*	20.000	2331.30	2331.16	2332.07	6.85	.02	2328.50	206.56	18.56	458.00	2.66	.85
	21.000	2339.50	2339.43	2340.55	8.45	.03	2335.00	172.28	14.44	450.00	3.71	.84
*	22.000	2345.03	2345.03	2346.28	5.43	.14	2340.00	164.61	15.15	330.00	4.46	.86
*	23.000	2348.63	2348.46	2349.43	3.01	.14	2345.40	186.84	20.77	260.00	3.42	.86
	24.000	2354.37	2354.29	2355.27	5.83	.01	2350.00	237.82	15.86	290.00	5.02	.88

	SECNO	CWSEL	CRIWS	EG	HL	OLOSS	ELMIN	10*KS	K*CHSL	XLCH	SHEAR	FRCH
*	25.000	2361.41	2361.41	2362.14	6.20	.54	2358.00	203.16	25.40	315.00	3.36	.87
*	26.000	2371.85	2371.85	2372.47	9.68	.49	2368.00	184.87	18.52	540.00	3.51	.85
*	27.000	2380.38	2380.38	2380.99	5.94	.53	2376.10	154.83	19.76	410.00	3.22	.79
*	28.000	2388.04	2388.04	2388.55	9.11	-1.97	2384.00	276.40	22.57	350.00	1.68	.88
	29.000	2400.37	2400.35	2401.33	12.73	.04	2395.00	202.16	20.56	535.00	3.68	.89
	30.000	2408.27	2408.00	2409.04	7.65	.06	2405.00	192.84	25.64	390.00	2.67	.83
	31.000	2420.82	2420.75	2421.31	12.19	.08	2419.60	284.92	28.08	520.00	2.00	.90
	32.000	2431.07	2431.02	2431.61	10.29	.01	2429.00	245.66	24.10	390.00	2.07	.86
*	33.000	2442.66	2442.66	2443.29	9.41	.52	2440.40	220.34	27.47	415.00	2.52	.85
	34.000	2451.85	2451.81	2452.46	9.15	.01	2450.10	272.49	25.53	380.00	1.39	.87
	35.000	2461.40	2461.30	2461.88	9.38	.04	2459.20	231.60	23.33	390.00	2.60	.88
*	36.000	2472.25	2472.25	2472.88	9.18	-.06	2468.80	235.41	24.62	390.00	3.11	.90
*	37.000	2484.72	2484.72	2485.56	10.37	.59	2480.80	210.72	24.54	489.00	4.32	.93
*	38.000	2496.85	2496.85	2497.70	8.53	1.02	2492.00	165.68	21.75	515.00	4.12	.84
*	39.000	2507.78	2507.78	2508.56	7.18	.43	2503.20	148.03	22.54	497.00	4.09	.81
*	40.000	2520.87	2520.87	2521.60	11.67	-1.88	2517.80	219.12	27.34	534.00	3.57	.91
*	41.000	2531.50	2531.50	2532.27	10.10	-.23	2526.50	229.78	19.04	457.00	1.91	.83
*	42.000	2543.93	2543.93	2544.87	11.37	-.15	2540.00	236.84	26.84	503.00	2.69	.89
*	43.000	2554.88	2554.88	2555.66	7.54	.80	2551.00	193.87	26.51	415.00	4.08	.89
*	44.000	2569.52	2569.52	2570.42	11.90	-.82	2565.90	225.51	27.59	540.00	3.93	.93
*	45.000	2584.06	2584.06	2585.09	11.58	-.78	2580.00	261.13	32.79	430.00	4.17	.98
*	46.000	2595.25	2595.25	2596.06	7.67	1.37	2592.00	185.56	30.00	400.00	3.40	.85
*	47.000	2612.06	2612.06	2612.71	14.27	-2.18	2610.00	269.67	33.96	530.00	2.29	.90
*	48.000	2631.64	2631.64	2632.70	12.13	1.27	2628.00	220.12	32.73	550.00	4.22	.93
*	49.000	2648.18	2648.18	2649.12	15.72	-2.22	2645.00	308.56	33.46	508.00	3.52	1.02
*	50.000	2672.00	2672.00	2672.60	15.55	-.57	2669.00	337.94	52.17	460.00	2.43	1.02

	SECNO	CWSEL	CRIWS	EG	HL	OLOSS	ELMIN	10*KS	K*CHSL	XLCH	SHEAR	FRCH
*	51.000	2694.85	2694.85	2695.59	10.78	.51	2692.00	308.09	65.71	350.00	3.06	.99
*	52.000	2715.17	2715.17	2715.92	12.52	-.79	2711.20	352.56	54.08	355.00	3.07	1.04
*	53.000	2730.87	2730.87	2731.85	4.38	1.74	2726.50	153.96	53.68	285.00	3.42	.80
*	54.000	2749.90	2749.90	2751.42	9.89	-1.63	2745.60	233.75	45.37	421.00	4.82	.97
*	55.000	2769.30	2769.30	2771.08	9.58	.85	2764.00	196.59	37.63	489.00	5.86	.94
	-6.000	2237.45	.00	2237.85	2.15	8.29	2234.50	75.09	.00	295.00	1.38	.54
*	56.000	2240.76	2240.73	2241.48	3.60	.03	2237.00	173.67	8.01	312.00	3.79	.85
*	57.000	2245.65	2245.65	2246.77	4.50	.51	2240.30	140.61	10.34	319.00	4.38	.81
	58.000	2251.99	2251.92	2252.98	6.17	.04	2245.60	114.36	10.60	500.00	3.84	.74
*	59.000	2258.03	2258.03	2259.65	7.73	-1.30	2253.00	176.80	16.82	440.00	4.76	.88
	60.000	2264.29	2263.44	2265.56	5.81	.10	2258.00	113.56	11.90	420.00	3.50	.72
	61.000	2268.88	2268.10	2270.00	4.39	.05	2263.30	107.22	13.32	398.00	3.23	.70
	62.000	2273.63	2272.96	2274.53	4.46	.07	2268.60	123.34	13.70	387.00	2.79	.72
*	63.000	2280.46	2280.46	2282.26	7.21	-1.02	2274.60	172.17	14.35	418.00	5.55	.90
*	64.000	2285.61	2284.19	2286.30	3.70	.33	2280.00	66.27	13.99	386.00	1.93	.55
	-22.000	2345.03	.00	2346.25	4.96	-.92	2340.00	153.67	.00	328.00	4.04	.82
*	123.000	2350.85	2350.85	2352.33	6.38	-.65	2346.00	194.74	18.46	325.00	4.76	.90
*	124.000	2355.57	2354.67	2356.04	3.42	.30	2352.20	80.60	20.67	300.00	1.54	.57
*	125.000	2365.08	2365.08	2366.16	8.03	-2.42	2361.70	211.20	25.00	380.00	4.26	.93
*	126.000	2374.03	2374.03	2375.35	7.10	.02	2370.00	211.68	24.78	335.00	4.26	.92
*	127.000	2382.10	2382.10	2383.17	7.16	-.10	2378.80	222.12	27.33	322.00	3.74	.92
*	128.000	2391.13	2391.13	2392.00	6.11	.57	2387.60	188.06	27.08	325.00	3.91	.88
*	129.000	2401.39	2401.39	2402.08	10.30	-.82	2398.00	226.43	22.86	455.00	3.45	.91
*	130.000	2413.09	2413.09	2413.75	5.96	1.44	2408.50	138.52	24.42	430.00	3.32	.76
*	131.000	2421.67	2421.67	2422.36	4.58	.05	2417.50	135.93	26.71	337.00	2.89	.74
*	132.000	2433.08	2433.08	2433.99	8.50	-1.04	2429.30	180.90	25.11	470.00	3.87	.86

SECNO	CWSEL	CRWS	EG	HL	OLOSS	ELMIN	10*KS	K*CHSL	XLCH	SHEAR	FRCH
* 133.000	2442.34	2442.34	2443.45	6.94	.25	2438.00	169.32	21.22	410.00	3.80	.84
134.000	2452.99	2452.96	2453.65	10.07	.13	2450.40	242.10	25.31	490.00	3.05	.91
135.000	2461.87	2461.75	2462.49	8.82	.01	2459.30	217.17	22.82	390.00	2.76	.87
* 136.000	2472.35	2472.35	2472.93	6.97	.69	2469.50	178.74	26.15	390.00	2.90	.82
-124.000	2355.57	.00	2356.04	2.40	5.26	2352.20	80.53	.00	300.00	1.54	.57
* 225.000	2361.88	2361.88	2362.49	12.96	-6.60	2359.60	335.54	18.97	390.00	2.69	1.02
* 226.000	2368.40	2367.84	2368.82	6.27	.06	2366.00	114.10	17.30	370.00	1.54	.63
* 227.000	2378.46	2378.38	2378.89	10.06	.00	2376.20	284.11	18.05	565.00	2.41	.91
* 228.000	2390.28	2390.23	2390.90	11.99	.02	2386.00	109.55	13.07	750.00	2.43	.66
* 229.000	2398.70	2398.59	2399.45	8.54	.01	2396.00	225.29	19.61	510.00	2.75	.88
230.000	2406.36	2406.18	2406.82	7.29	.08	2402.50	116.41	13.68	475.00	2.26	.68

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 1.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

WARNING SECNO= 6.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 7.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 7.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 10.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 10.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 12.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 12.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 13.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
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CAUTION SECNO= 14.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 14.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 17.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 17.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 20.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 22.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 22.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 23.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 25.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 25.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 26.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 26.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 27.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
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CAUTION SECNO= 38.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

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CAUTION SECNO= 55.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY
WARNING SECNO= 56.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 57.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 57.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 59.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 59.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 63.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 63.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 64.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 123.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 123.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 124.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 125.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 125.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 126.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 126.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 127.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
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CAUTION SECNO= 136.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 225.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 225.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 226.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 227.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

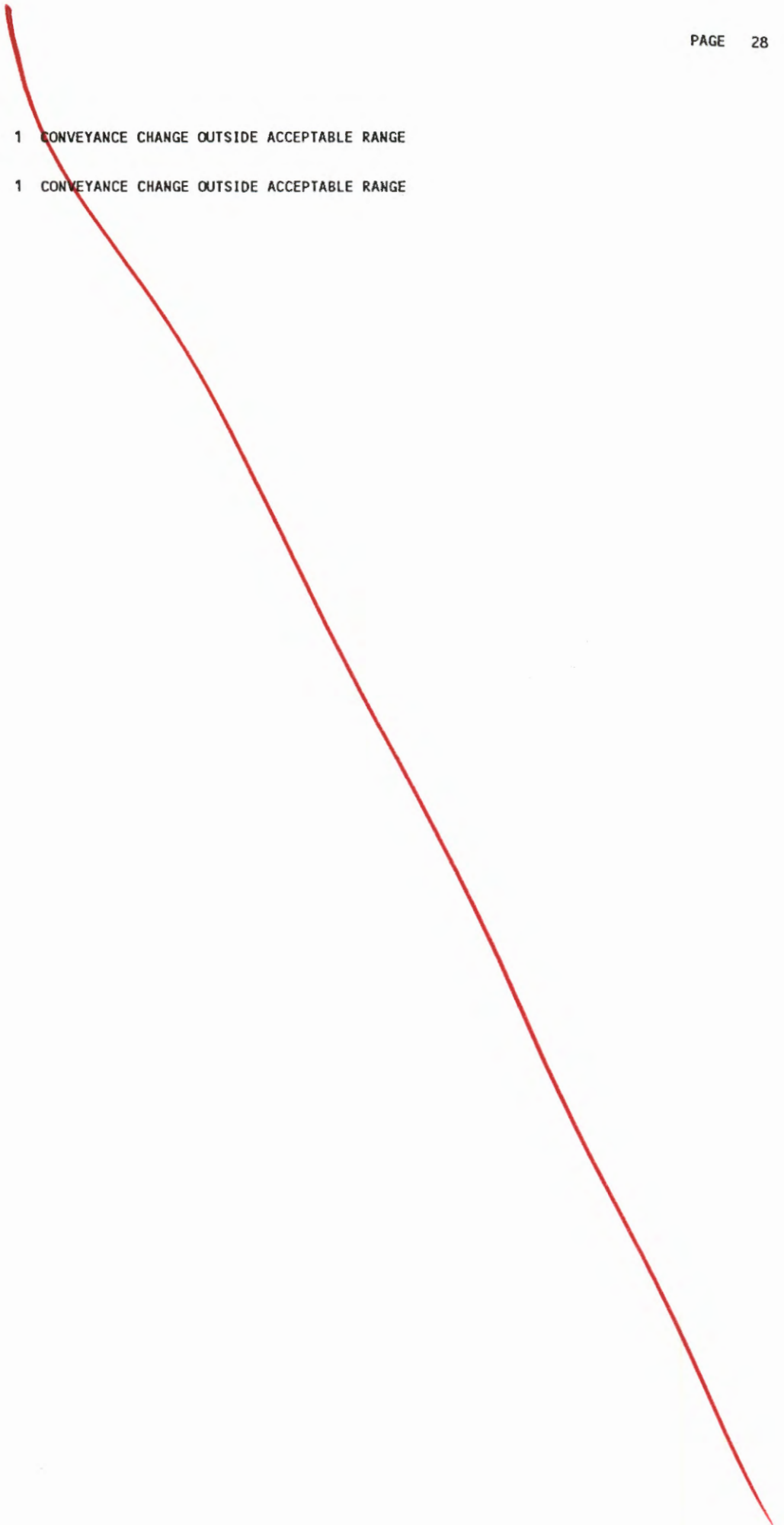
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PAGE 28

WARNING SECNO= 228.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 229.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE



**LETTER OF MAP REVISION FOR
IDLE HOUR WASH**

**APPENDIX D
LOMR SUBMITTAL**

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.13 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

1. OVERVIEW

1. The basis for this revision request is (are): (check all that apply)

- Physical change
 - Existing
 - Proposed
- Improved methodology
- Improved data
- Other

Other Performance of a detailed study

Explain Regulatory floodplain was mapped by approximate methods.

2. Flooding Source: Idle Hour Wash, East Idle Hour Wash & West Idle Hour Wash.

3. Project Name/Identifier: N/A

4. FEMA zone designations affected: Zone A

(example: A, AH, AO, A1-A30, A99, AE, V, V1-30, VE, B, C, D, X)

5. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	County	State	Map No.	Panel No.	Effective Date
EX: 480301	Katy, City	Harris, Fort Bend	TX	480301	0005D	02/08/83
480287	Harris County	Harris	TX	48201C	0220G	09/28/90
<u>040073</u>	<u>Pima County</u>	<u>Pima</u>	<u>AZ</u>	<u>1605D</u>	<u>1605D</u>	<u>09/30/92</u>
<u>040073</u>	<u>Pima County</u>	<u>Pima</u>	<u>AZ</u>	<u>1610D</u>	<u>1610D</u>	<u>09/30/92</u>
<u>040073</u>	<u>Pima County</u>	<u>Pima</u>	<u>AZ</u>	<u>1615B</u>	<u>1615B</u>	<u>02/15/83</u>

6. The area of revision encompasses the following types of flooding, structures, and associated disciplines: (check all that apply)

Types of Flooding

- Riverine
- Coastal
- Alluvial Fan
- Shallow Flooding (e.g. Zones AO and AH)
- Lakes

Affected by wind/wave action

- Yes
- No

Other (describe) _____

Structures

- Channelization
- Levee/Floodwall
- Bridge/Culvert
- Dam
- Coastal
- Fill
- Pump Station
- None
- Channel Relocation
- Excavation
- Other (describe) _____

Disciplines*

- Water Resources
 - Hydrology (CDM, PC FCD)
 - Hydraulics (SLA)
 - Sediment Transport
 - Interior Drainage
- Structural
- Geotechnical
- Land Surveying (McLain)
- Other (describe) _____

* Attach completed "Certification by Registered Professional Engineer and/or Land Surveyor" Form for each discipline checked. (Form 2)

2. FLOODWAY INFORMATION

- 7. Does the affected flooding source have a floodway designated on the effective FIRM or FBFM? Yes No
 - 8. Does the revised floodway delineation differ from that shown on the effective FIRM or FBFM? Yes No
- If yes, give reason: _____

Attach copy of either a public notice distributed by the community stating the community's intent to revise the floodway or a statement by the community that it has notified all affected property owners and affected adjacent jurisdictions.

9. Does the State have jurisdiction over the floodway or its adoption by communities participating in the NFIP? Yes No

If yes, attach a copy of a letter notifying the appropriate State agency of the floodway revision and documentation of the approval of the revised floodway by the appropriate State agency.

3. PROPOSED ENCROACHMENTS

10. With floodways:

1A. Does the revision request involve fill, new construction, substantial improvement, or other development in the floodway? Yes No

1B. If yes, does the development cause the 100-year water surface elevation to increase at any location by more than 0.000 feet? Yes No

11. Without floodways:

2A. Does the revision request involve fill, new construction, substantial improvement, or other development in the 100-year floodplain? Yes No

2B. If yes, does the cumulative effect of all development that has occurred since the effective date was originally identified cause the 100-year water surface elevation to increase at any location by more than one foot (or other surcharge limit if community or state has adopted more stringent criteria)? Yes No

If the answer to either Items 1B or 2B is yes, please provide documentation that all requirements of Section 65.12 of the NFIP regulations have been met, regarding evaluation of alternatives, notice to individual legal property owners, concurrence of CEO, and certification that no insurable structures are impacted.

4. REVISION REQUESTOR ACKNOWLEDGMENT

12. Having read NFIP Regulations, 44 CFR Ch. I, parts 59, 60, 61, and 72, I believe that the proposed revision is is not in compliance with the requirements of the aforementioned NFIP Regulations.

5. COMMUNITY OFFICIAL ACKNOWLEDGMENT

13. Was this revision request reviewed by the community for compliance with the community's adopted floodplain management ordinances? Yes No

14. Does this revision request have the endorsement of the community? Yes No

If no to either of the above questions, please explain: _____

Please note that community acknowledgment and /or notification is required for all requests as outlined in Section 65.4 (b) of the NFIP Regulations.

6. OPERATION AND MAINTENANCE

15. Does the physical change involve a flood control structure (e.g., levees, floodwalls, channelization, basins, dams)? Yes No

If yes, please provide the following information for each of the new flood control structures:

A. Inspection of the flood control project will be conducted periodically by _____ entity

_____ with a maximum interval of _____ months between inspections.

B. Based on the results of scheduled periodic inspections, appropriate maintenance of the flood control facilities will be conducted by _____ (entity)

to ensure the integrity and degree of flood protection of the structure.

C. A formal plan of operation, including documentation of the flood warning system, specific actions and assignments of responsibility by individual name or title, and provisions for testing the plan at intervals not less than one year, has has not been prepared for the flood control structure.

D. The community is willing to assume responsibility for performing overseeing compliance with the maintenance and operation plans of the _____ (Name)

flood control structure. If not performed promptly by an owner other than the community, the community will provide the necessary services without cost to the Federal government.

Attach operation and maintenance plans

7. REQUESTED RESPONSE FROM FEMA

16. After examining the pertinent NFIP regulations and reviewing the document entitled "Appeals, Revisions, and Amendments to Flood Insurance Maps: A guide for Community Officials," dated January 1990, this request is for a:

- a. CLOMR A letter from FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision (LOMR or PMR), or proposed hydrology changes (see 44 CFR Ch. I, Parts 60, 65, and 72).
- b. LOMR A letter from FEMA officially revising the current NFIP map to show changes to floodplains, floodways, or flood elevations. LOMRs typically depict decreased flood hazards. (See 44 CFR Ch. I, Parts 60 and 65.)
- c. PMR A reprinted NFIP map incorporating changes to floodplains, floodways, or flood elevations. Because of the time and cost involved to change, reprint, and redistribute an NFIP map, a PMR is usually processed when a revision reflects increased flood hazards or large-scope changes. (See 44 CFR Ch. I, Parts 60 and 65.)
- d. Other: Describe _____

8. FORMS INCLUDED

17 Form 2 entitled "Certification By Registered Professional Engineer and/or Land Surveyor" must be submitted

The following forms should be included with this request if (check the included forms):

- Hydrologic analysis for flooding source differs from that used to develop FIRM Hydrologic Analysis Form (Form 3)
- Hydraulic analysis for flooding differs from that used to develop FIRM Riverine Hydraulic Analysis Form (Form 4)
- The request is based on updated topographic information or a revised floodplain or floodway delineation is requested Riverine/Coastal Mapping Form (Form 5)
- The request involves any type of channel modification Channelization Form (Form 6)
- The request involves new bridge or culvert or revised analysis of an existing bridge or culvert Bridge/Culvert Form (Form 7)
- The request involves a new revised levee/floodwall system Levee/Floodwall System Analysis Form (Form 8)
- The request involves analysis of coastal flooding Coastal Analysis Form (Form 9)
- The request involves coastal structures credited as providing protection from the 100-year flood Coastal Structures (Form 10)
- The request involves an existing, proposed, or modified dam Dam Form (Form 11)
- The request involves structures credited as providing protection from the 100-year flood on an alluvial fan Alluvial Fan Flooding Form (Form 12)

9. INITIAL REVIEW FEE

18. The minimum initial review fee for the appropriate request category has been included. Yes No

Initial fee amount: \$ N/A

METHOD OF PAYMENT (Check one box)

PAYMENT ENCLOSED VISA MASTERCARD

CARD NUMBER

Check or money order only.

Make payable to National Flood Insurance Program

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	

EXP. Date

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Signature

or

19. This request is for a project that is for public benefit and is intended to reduce the flood hazard to existing development in identified flood hazard areas as opposed to planned floodplain development. Yes No

or

20. This request is to correct an error or to include the effects of natural changes within the area of special flood hazards. Yes No

Note: I understand that my signature indicates that all information submitted in support of this request is correct.

Signature of Revision Requester

Printed Name and Title of Revision Requester

Company Name

Date

Note: Signature indicates that the community understands, from the revision requester, the impacts of the revision on flooding conditions in the community.

BS Voelkel
Signature of Community Official

Senior Hydrologist
Printed Name and Title of Community Official

Pima County, Az 040073
Community Name

May 5' 95
Date

Does this request impact any other communities? Yes No

If yes, attach letters from all affected jurisdictions acknowledging revision request and approving changes to floodway, if applicable.

Note: Although a photograph of physical changes is not required, it may be helpful for FEMA's review.

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average .23 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

1. This certification is in accordance with 44 CFR Ch. I, Section 65.2
2. I am licensed with an expertise in water resources
[example: water resources (hydrology, hydraulics, sediment transport, interior drainage)* structural, geotechnical, land surveying.]
3. I have 16 years experience in the expertise listed above.
4. I have prepared reviewed the attached supporting data and analyses related to my expertise.
5. I have have not visited and physically viewed the project.
6. In my opinion, the following analyses and/or designs, is/are being certified:
hydraulic analysis (HEL-2) of the Idle Hour Wash
7. Base upon the following review, the modifications in place have been constructed in general accordance with plans and specifications.

Basis for above statement: (check all that apply)

- a. Viewed all phases of actual construction.
- b. Compared plans and specifications with as-built survey information.
- c. Examined plans and specifications and compared with completed projects.
- d. Other n/a

8. All information submitted in support of this request is correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: Robert L. Shand
(please print or type)

Title: Project Manager
(please print or type)

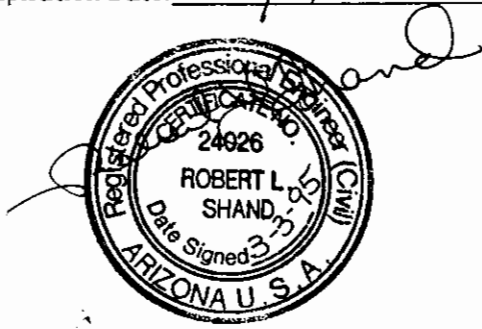
Registration No. 24026 Expiration Date: 6/96

State Arizona

Type of License PE (Civil)

Robert L. Shand
Signature

3-3-95
Date



Seal
(Optional)

*Specify Subdiscipline

Note: Insert not applicable (N/A) when statement does not apply.

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.67 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Pima County

Flooding Source: Idle Hour Wash, East Idle Hour Wash, & West Idle Hour Wash
(One form for each flooding source)

Project Name /Identifier: Idle Hour Wash LOMR

1. HYDROLOGIC ANALYSIS IN FIS

- Approximate study stream (Zone A)
- Detailed study stream (briefly explain methodology) Rainfall/Runoff Model: Hydrology Manual for Engineering Design & Floodplain Management within Pima County, AZ.

2. REASON FOR NEW HYDROLOGIC ANALYSIS

- No existing analysis
- Improved data (see data revision on page 3)
- Changed physical conditions of watershed (explain) _____
- Alternative methodology (justify why the revised model is better than model used in the effective FIS) _____
- Evaluation of proposed conditions (CLOMRs only) (explain) _____
- Other _____

If a computer program/model was used in revising the hydrologic analysis, please provide a diskette with the input files for the 10-, 50-, 100 - and 500-year recurrence intervals.

Only the 100-year recurrence interval need be included for SFHAs designated as Zone A.

3. APPROVAL OF ANALYSIS

- Approval of hydrologic analysis, including the resulting peak discharge value (s), has been provided by the appropriate local, state, or Federal Agency. (i.e., Pima County Department of Transportation & Flood Control District)
Attach evidence of approval.
- Approval of the hydrologic analysis is not required by any local, State, or Federal Agency.

4. REVIEW OF RESULTS

Stream: _____

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs):	Revised (cfs):
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Note: When revised discharges are not significantly different than FIS discharges, FEMA may require a confidence limits analysis on attachment D at a later date to complete the review.

As is often the case with revision requests, only a portion of a stream may actually be revised or be affected by a revision. Therefore, transition to the unrevised portion is important to maintain the continuity of the study. NFIP requires that the transition from the proposed discharges to the effective discharges be explained. What is the transition from the proposed discharges to the effective discharges? Please explain how the transition was made (*attach separate sheet if necessary*)

ATTACH A COMPLETED REVIEW OF RESULTS PAGE FOR EACH FLOODING SOURCE.

Is the new hydrologic analysis being developed solely to revise the flow values presented in the FIS (*i.e. no changed hydraulic conditions*)? Yes No

If yes, does the 100-year water surface elevation change by 1.0 foot or more? Yes No

FEMA does not normally revise NFIP maps solely due to insignificant flow changes where changes in 100-year water surface elevation are less than 1.0 foot.

5. HISTORICAL FLOODING INFORMATION

Is historical data available for the flooding source? Yes No

If yes, provide the following:

Location along flooding source: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site (along flooding source or similar watershed; specify)

None Found.

Gaging Station: _____

Drainage area at gage: _____ mi²

Number of years of data: _____

7. DATA REVISION

Please use the following table to list all the data and/or parameters affected by this request and identify them as new data (*New*) or as revising existing data (*Revised*). (If necessary, attach a separate sheet.)

Data Parameter	New	Revised	Data Source
<u>All data are new.</u>	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	_____

- Data source can be from a Federal, State, or local government agency, or from a private source. Some State and local governments may have less strict data requirements than Federal agencies, in which case the hydrologic data may not be accepted by FEMA unless it is demonstrated that the data give a better estimate of the flood discharge.
- Attach documentation corroborating each data source (i.e., certified statement, report, bibliographical reference to a published document). In the case of a published document or a government report, providing copies of the cover and pertinent pages may be helpful.

8. METHODOLOGY FOR NEW ANALYSIS

- Statistical Analysis of Gage Records (use Attachment A)
- Regional Regression Equations (use Attachment B)
- Precipitation/Runoff Model (use Attachment C)
- Other (specify; attach backup computations and supporting data) _____

Gaging Station: _____

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data	_____	_____
Systematic	_____	_____
Historical	_____	_____
2. Homogeneous data	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
3. Data adjustments	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
4. Number of high outliers	_____	_____
Low outliers	_____	_____
Zero events	_____	_____
5. Generalized skew	_____	_____
6. Station skew	_____	_____
7. Adopted skew	_____	_____
8. Probability distribution used (justify if log-Pearson III was not used)	_____	_____
9. Transfer equations to ungaged sites	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, specify method	_____	

10. Expected probability*	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
11. Comparison of results with other analyses	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, describe comparison	_____	

***FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.**

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference:

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____

Attach back up map

4. Provide parameters, values, and source of data used to define parameters.

- | | FIS: | Revised: |
|--|--|--|
| 5. Urbanized conditions calculations | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| 6. Percent of watershed urbanization | _____ | _____ |
| 7. Is the watershed controlled? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| 8. Comparison with other analyses | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> Yes <input type="checkbox"/> No |

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

ATTACHMENT C: PRECIPITATION/RUNOFF MODEL

		FIS:	Revised
1.	Method or model used:	N/A	
	Version:		
	Date:		
2.	Source of rainfall depth:		NOAA Atlas
3.	Source of rainfall distribution:		"
4.	Rainfall duration:		
5.	Areal adjustment to precipitation (%):		
6.	Hydrograph development method:		
7.	Loss rate method:		
	Source of soils information:		
	Source of land use information:		Aerial Photos
8.	Channel routing method:		N/A
9.	Reservoir routing:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
10.	Baseflow considerations:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	If yes, explain how baseflow was determined:		

11.	Snowmelt considerations:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
12.	Model calibration:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	If yes, explain how calibration was performed _____		

13.	Future land use condition:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	If yes, explain why		

NOTE: FEMA policy is to base flooding on existing conditions.
If data is not available, indicate by N/A.

Attach precipitation/runoff model, hydrologic model schematic, curve number calculations, time of concentration calculations, and supporting maps, delineating the watershed boundary and drainage area divides.

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Pima County

Flooding Source: East Idle Hour Wash
(One form for each flooding source)

Project Name/Identifier: Idle Hour Wash LOMR

1. REACH TO BE REVISED

Downstream limit: Confluence with West Idle Hour Wash

Upstream limit: Approximately 4400 feet upstream from confluence

2. EFFECTIVE FIS

Not studied

Studied by detailed methods
Downstream limit of study _____
Upstream limit of study _____

Studied by detailed methods
Downstream limit of study _____
Upstream limit of study _____

Floodway delineated
Downstream limit of Floodway _____
Upstream limit of Floodway _____

3. HYDRAULIC ANALYSIS

Why is the hydraulic analysis different from that used to develop the FIRM. (Check all that apply)

Not studied in FIS

Improved hydrologic data/analysis. Explain: _____

Improved hydraulic analysis. Explain: A detailed analysis has not previously been performed for this reach. See Attached.

Flood control structure. Explain: _____

Other. Explain: _____

3. RIVERINE HYDRAULIC ANALYSIS FORM
Models Submitted

Full input and output listings along with files on diskette (*if available*) for each of the models listed below and summary of the source of input parameters used in the models must be provided. The summary must include a complete description of any changes made from model to model (*e.g. duplicate effective model to corrected effective model*). Only the Duplicate Effective and the Revised or Post-Project Conditions models must be submitted. See instructions for directions on when other models may be required. Only the 100-year flood profile is required for SFHAs with a Zone A designation. For areas which do not have detailed flooding, a hydraulic model is not required; however BFE's may not be added to the revised FIRM.

Duplicate Effective Model

Natural

Floodway

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (*10-, 50-, 100-, and 500-year multi-profile runs and the* duplicate effective model *obtained and then reproduced on the requestor's equipment to produce the duplicate effective model*). This is required to assure that the effective model input data has been transferred correctly to the requestor's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

Corrected Effective Model

Natural

Floodway

The corrected effective model is the model that corrects any errors that occur in the duplicate effective model, adds any additional cross sections to the duplicate effective model, or incorporates more detailed topographic information than that used in the currently effective model. The corrected effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

Existing or Pre-Project Conditions Model

Natural

Floodway

The duplicate effective or corrected model is modified to produce the existing or pre-project conditions model to reflect any modifications that have occurred within the floodplain since the date of the effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the corrected effective or duplicate effective model.

Revised or Post-Project Conditions Model

Natural

Floodway

The existing or pre-project conditions model (*or duplicate effective or corrected effective model, as appropriate*) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for proposed project this model should reflect proposed conditions.

Other: Please attach a sheet describing all other models or calculations submitted. *See accompanying report*

Natural

Floodway

Attachment to Form 4, Section 3:

This model is the initial detailed hydraulic analysis which will replace the approximate methods used to develop the ZONE A in the existing FIRM

4. MODEL PARAMETERS (from model used to revise 100-year water surface elevation)

1. Discharges:	Upstream Limit	Downstream Limit
10-year	_____	_____
50-year	_____	_____
100-year	4119 cfs	4119 cfs
500-year	_____	_____

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined The starting water surface elevation for this reach was set to equal the computed water surface elevation for West Idle Hour Wash at the confluence.

3. Give range of friction loss coefficients (Manning's "N") Channel 0.050

Overbanks 0.050

If friction loss coefficients are different anywhere along the revised reach from those used to develop the FIRM, give location, value used in the effective FIS, and revised values and an explanation as to how the revised values were determined.

<u>Location</u>	<u>FIS</u>	<u>Revised</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Explain: _____

4. Describe how the cross section geometry data were determined (e.g., field survey, topographic map, taken from previous study) and list cross sections that were added.

Cross-section geometry data were taken from 1"=200', 2' contour interval, topographic mapping from photo dated 9-14-94. All cross-section data are new.

4. MODEL PARAMETERS (Cont'd)

5. Explain how reach lengths for channel and overbanks were determined:

Reach lengths for both channel and overbank areas were measured directly from the topographic mapping.

5. RESULTS (from model used to revise 100-year water surface elevations)

1. Do the results indicate:

- a. Water surface elevations higher than end points of cross sections? Yes No
- b. Supercritical depth? Yes No
- c. Critical depth? Yes No
- d. Other unique situations Yes No

If yes to any of the above, attach an explanation that discusses the situation and how it is presented on the profiles, tables, and maps. see Attached

- 2. What is the maximum change in energy gradient between cross-sections? 7.73'
Specify location btwn 62 & 63
- 3. What is the distance between the cross-sections in 2 above? 418 ft.
Specify location 62 & 63
- 4. What is the maximum distance between cross-sections? 471 ft.
Specify location btwn 57 & 58
- 5. Floodway determination
 - a. What is the maximum surcharge allowed by the community or State? N/A foot
 - b. What is the maximum surcharge for the revised conditions? N/A foot
Specify location N/A
 - c. What is the maximum velocity? N/A fps
Specify location N/A

Explain:

d. Are there any negative surcharge values at any cross-section N/A Yes No

If yes, the floodway may need to widen. If it is not widened, please explain and indicate the maximum negative surcharge.

Attachment to Form 4, Section 5, Question 1C:

the Hec-2 computer model gives a message stating that critical depth is assumed-
minimum specific energy occurs at cross-section 57, 59 and 63.

5. RESULTS (Cont'd)

6. Is the discharge value used to determine the floodway anywhere different from that used to determine the natural 100-year flood elevations? Yes No

If Yes, explain:

7. Do 100-year water surface elevations increase at any location? Yes No

If yes, please attach a list of the locations where the increases occur, state whether or not the increases are located on the requestor's property, and provide an explanation of the reason for the increases.

Please attach a completed comparison table entitled: Water Surface Elevation Check (See page 6)

6. REVISED FIRM/FBFM AND FLOOD PROFILES

A. The revised water surface elevations tie into those computed by the effective FIS Model (10-, 50-, 100-, and 500-year), downstream of the project at cross-section _____ within _____ feet and upstream of the project at cross section _____ within _____ feet.

B. The revised floodway elevations tie into those computed by the effective FIS model, downstream of the project at cross section _____ within _____ feet and upstream of the project at cross section _____ within _____ feet.

C. Attach profiles, at the same vertical and horizontal scale as the profiles in the effective FIS report, showing stream bed and profiles of all floods studied (without encroachment). Also, label all cross sections, road crossings (including low chord and top-of-road data), culverts, tributaries, corporate limits, and study limits. If channel distance has changed, the stationing should be revised for all profile sheets.

D. Attach a Floodway Data Table showing data for each cross section listed in the published Floodway Data Table in the FIS report.

Proceed to Riverine /Coastal Mapping Form

FEDERAL EMERGENCY MANAGEMENT AGENCY
WATER SURFACE ELEVATION CHECK

COMMUNITY NAME

Pima County, Arizona

FLOODING SOURCE

East Idle Hour Wash

PROJECT NAME / IDENTIFIER

SECNO	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REV SED/PROJECT		
	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³
-6													2237.5		
56													2240.8		
57													2245.7		
58													2252.0		
59													2258.0		
60													2264.3		
61													2268.9		
62													2273.6		
63													2280.5		
64													2285.6		

COMMENTS:

1-100-year (natural) Water Surface Elevation

2-Encroachment (floodway) Water Surface Elevation

3-Surge Value

Include all cross sections in the models between tie-in points. Any interpolated values should be indicated in parentheses.

PUBLIC BURDEN DISCLOSURE NOTICE

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Community Name: Pima County
Flooding Source: West Idle Hour Wash
(One form for each flooding source)
Project Name/Identifier: Idle Hour Wash LOMR

1. REACH TO BE REVISED

Downstream limit: Confluence with Santa Cruz River
Upstream limit: Approximately 22,810 feet

2. EFFECTIVE FIS

- Not studied
- Studied by approximate methods
 - Downstream limit of study Confluence with Santa Cruz River
 - Upstream limit of study Approximately 22,010 feet upstream from confluence
- Studied by detailed methods
 - Downstream limit of study _____
 - Upstream limit of study _____
- Floodway delineated
 - Downstream limit of Floodway _____
 - Upstream limit of Floodway _____

3. HYDRAULIC ANALYSIS

Why is the hydraulic analysis different from that used to develop the FIRM. *(Check all that apply)*

- Not studied in FIS
- Improved hydrologic data/analysis. Explain: _____
- Improved hydraulic analysis. Explain: A detailed study has not been performed for this reach. See attachment.
- Flood control structure. Explain: _____
- Other. Explain: _____

3. RIVERINE HYDRAULIC ANALYSIS FORM
Models Submitted

Full input and output listings along with files on diskette (*if available*) for each of the models listed below and summary of the source of input parameters used in the models must be provided. The summary must include a complete description of any changes made from model to model (*e.g. duplicate effective model to corrected effective model*). Only the Duplicate Effective and the Revised or Post-Project Conditions models must be submitted. See instructions for directions on when other models may be required. Only the 100-year flood profile is required for SFHAs with a Zone A designation. For areas which do not have detailed flooding, a hydraulic model is not required; however BFE's may not be added to the revised FIRM.

Duplicate Effective Model

Natural

Floodway

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (*10-, 50-, 100-, and 500-year multi-profile runs and the floodway run*) must be obtained and then reproduced on the requestor's equipment to produce the duplicate effective model. This is required to assure that the effective model input data has been transferred correctly to the requestor's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

Corrected Effective Model

Natural

Floodway

The corrected effective model is the model that corrects any errors that occur in the duplicate effective model, adds any additional cross sections to the duplicate effective model, or incorporates more detailed topographic information than that used in the currently effective model. The corrected effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

Existing or Pre-Project Conditions Model

Natural

Floodway

The duplicate effective or corrected model is modified to produce the existing or pre-project conditions model to reflect any modifications that have occurred within the floodplain since the date of the effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the corrected effective or duplicate effective model.

Revised or Post-Project Conditions Model

Natural

Floodway

The existing or pre-project conditions model (*or duplicate effective or corrected effective model, as appropriate*) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for proposed project this model should reflect proposed conditions.

Other: Please attach a sheet describing all other models or calculations submitted. *see accompanying report.*

Natural

Floodway

Attachment to Form 4, Section 3:

This model is the initial detailed hydraulic analysis which will replace the approximate methods used to develop the ZONE A in the existing FIRM.

4. MODEL PARAMETERS (from model used to revise 100-year water surface elevation)

1. Discharges:	Upstream Limit	Downstream Limit
10-year	_____	_____
50-year	_____	_____
100-year	3344 cfs	7675 cfs
500-year	_____	_____

Attach diagram showing changes in 100 year discharge see attached

2. Explain how the starting water surface elevations were determined critical depth was assumed.

3. Give range of friction loss coefficients (Manning's "N") Channel 0.050
 Overbanks 0.050

If friction loss coefficients are different anywhere along the revised reach from those used to develop the FIRM, give location, value used in the effective FIS, and revised values and an explanation as to how the revised values were determined.

<u>Location</u>	<u>FIS</u>	<u>Revised</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Explain: _____

4. Describe how the cross section geometry data were determined (e.g., field survey, topographic map, taken from previous study) and list cross sections that were added.

Cross-section geometry data were taken from 1"=200', 2' contour interval, topographic mapping from photo dated 9-14-94. All cross-section data are new. See Attachment

4. MODEL PARAMETERS (Cont'd)

5. Explain how reach lengths for channel and overbanks were determined:

Reach lengths for both channel & overbank areas were measured directly from the topographic mapping.

5. RESULTS (from model used to revise 100-year water surface elevations)

1. Do the results indicate:

- a. Water surface elevations higher than end points of cross sections? Yes No
- b. Supercritical depth? Yes No
- c. Critical depth? Yes No
- d. Other unique situations Yes No

If yes to any of the above, attach an explanation that discusses the situation and how it is presented on the profiles, tables, and maps. See attached.

2. What is the maximum change in energy gradient between cross-sections? 23.48 ft
Specify location between 49 & 50

3. What is the distance between the cross-sections in 2 above? 460 ft.
Specify location between 49 & 50

4. What is the maximum distance between cross-sections? 700 ft
Specify location btwn 7 & 8

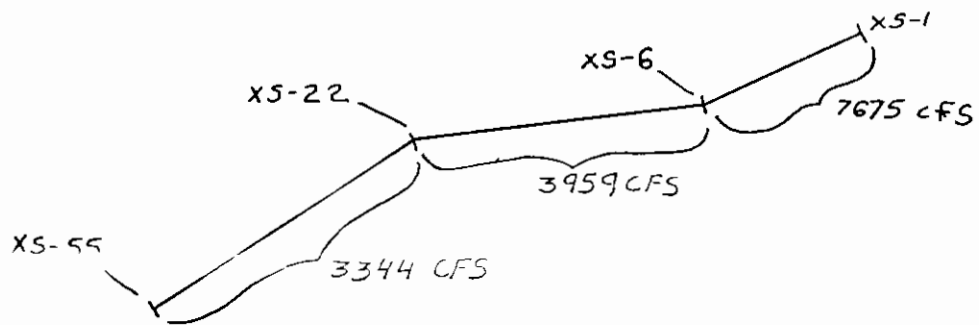
5. Floodway determination
- a. What is the maximum surcharge allowed by the community or State? N/A foot
 - b. What is the maximum surcharge for the revised conditions? _____ foot
Specify location _____
 - c. What is the maximum velocity? _____ fps
Specify location _____

Explain: _____

d. Are there any negeative surcharge values at any cross-section N/A Yes No

If yes, the floodway may need to widen. If it is not widened, please explain and indicate the maximum negative surcharge.

Attachment to Form 4, Section 4, Question 1
100-year Discharge Changes:



Attachment for Form 4, Section 5, Questions 1a, 1c, and 1d:

1a:

The computed water-surface elevation is higher than the end points of cross-sections 28, 32, 51, 53, 130, and 131. The result in all these cases is side-weir flow, which was estimated (using the split-flow option) to have a negligible effect on the computed water-surface elevations downstream.

1-c:

The HEC-2 computer model gives a message stating that "critical depth is assumed: minimum specific energy occurs at cross-sections 7, 10, 12-14, 17, 20, 22, 23, 25-28, 33, 36-55, 123, 125-133, and 136.

1-c:

The HEC-2 computer model gives a message stating that "critical depth is assumed at cross-section 1".

1d:

Along the West Idle Hour Wash, the flow is divided from cross-section 22 to 36 (a reach length of approximately 5,600 feet) between two primary channel sections or flow paths. The flow distribution at cross-sections 37 and 38, located just upstream of the bifurcation, were used to estimate the quantity of flow conveyed along each path. Based on the upstream distribution, flow was split such that approximately 55% of the flow (1839 cfs) was modeled down the right channel (i.e., the reach lying between cross-sections 22 and 36), and approximately 45% of the flow (1505 cfs) was modeled down the left channel (i.e., the reach lying between cross-sections 22 and 136). The split-flow option was not used in this case, since the split is not a result of a side-weir, but rather, it is the result of flow being diverted around both sides of an elevated land mass in a more or less gradual manner.

True split-flow situations, where flow exits the channel and overbank areas via a side-weir, occur at five locations along the West Idle Hour Wash: between cross-sections 27 and 29; between cross-sections 31 and 33; between cross-sections 50 and 52; between cross-sections 52 and 54; and between cross-sections 129 and 132. The side-weir discharge was determined for each of these locations using the split-flow option of HEC-2. Flow exiting the main channel at these locations varied from 3% to 13% of the main-channel flow. These losses were found to have a negligible effect on the computed water-surface elevations. For this reason, the split-flow option was ultimately not included in the final HEC-2 model.

5. RESULTS (Cont'd)

6. Is the discharge value used to determine the floodway anywhere different from that used to determine the natural 100-year flood elevations? Yes No

If Yes, explain:

7. Do 100-year water surface elevations increase at any location? Yes No

If yes, please attach a list of the locations where the increases occur, state whether or not the increases are located on the requestor's property, and provide an explanation of the reason for the increases.

Please attach a completed comparison table entitled: Water Surface Elevation Check (See page 6)

6. REVISED FIRM/FBFM AND FLOOD PROFILES

N/A

A. The revised water surface elevations tie into those computed by the effective FIS Model (10-, 50-, 100-, and 500-year), downstream of the project at cross-section _____ within _____ feet and upstream of the project at cross section _____ within _____ feet.

B. The revised floodway elevations tie into those computed by the effective FIS model, downstream of the project at cross section _____ within _____ feet and upstream of the project at cross section _____ within _____ feet.

C. Attach profiles, at the same vertical and horizontal scale as the profiles in the effective FIS report, showing stream bed and profiles of all floods studied (without encroachment). Also, label all cross sections, road crossings (including low chord and top-of-road data), culverts, tributaries, corporate limits, and study limits. If channel distance has changed, the stationing should be revised for all profile sheets.

D. Attach a Floodway Data Table showing data for each cross section listed in the published Floodway Data Table in the FIS report.

Proceed to Riverine /Coastal Mapping Form

FEDERAL EMERGENCY MANAGEMENT AGENCY
WATER SURFACE ELEVATION CHECK

COMMUNITY NAME

Pima County, AZ

FLOODING SOURCE

West Idle Hour Wash

PROJECT NAME / IDENTIFIER

SECNO	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³
1													2210.8		
2													2218.3		
3													2223.6		
4													2228.4		
5													2234.3		
6													2237.5		
7													2242.7		
8													2253.3		
9													2258.6		
10													2267.3		
11													2274.2		
12													2280.2		
13													2285.2		

COMMENTS:

1-100-year (natural) Water Surface Elevation

2-Encroachment (floodway) Water Surface Elevation

3-Surcharge Value

Include all cross sections in the models between tie-in points. Any interpolated values should be indicated in parentheses.

Sheet

FEDERAL EMERGENCY MANAGEMENT AGENCY
WATER SURFACE ELEVATION CHECK

COMMUNITY NAME

Pima County, Arizona

FLOODING SOURCE

West Idle Hour Wash

PROJECT NAME /IDENTIFIER

EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT			
SECNO	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³
14													2290.9		
15													2295.0		
16													2302.6		
17													2310.5		
18													2317.7		
19													2324.6		
20													2331.3		
21													2339.5		
22													2345.0		
23													2348.6		
24													2354.4		
25													2361.4		
26													2371.9		

COMMENTS:

1-100-year (natural) Water Surface Elevation

2-Encroachment (foodway) Water Surface Elevation

3-Surcharge Value

Include all cross sections in the models between tie-in points. Any interpolated values should be indicated in parentheses.

FEDERAL EMERGENCY MANAGEMENT AGENCY
 WATER SURFACE ELEVATION CHECK

COMMUNITY NAME

Pima County, Arizona

FLOODING SOURCE

West Idle Hour Wash

PROJECT NAME /IDENTIFIER

SECNO	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³
27													2380.4		
28													2388.0		
29													2400.4		
30													2408.3		
31													2420.8		
32													2431.1		
33													2442.7		
34													2451.9		
35													2461.4		
36													2472.3		
37													2484.7		
38													2496.9		
39													2507.8		

COMMENTS:

1-100-year (natural) Water Surface Elevation

2-Encroachment (floodway) Water Surface Elevation

3-Surcharge Value

Include all cross sections in the models between tie-in points. Any interpolated values should be indicated in parentheses.

FEDERAL EMERGENCY MANAGEMENT AGENCY
 WATER SURFACE ELEVATION CHECK

COMMUNITY NAME: Pima County, Arizona FLOODING SOURCE: West Idle Hour Wash PROJECT NAME /IDENTIFIER: _____

SECNO	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³
40													2520.9		
41													2531.5		
42													2543.9		
43													2554.9		
44													2569.5		
45													2584.1		
46													2595.3		
47													2612.1		
48													2631.6		
49													2648.2		
50													2672.0		
51													2694.9		
52													2715.2		

COMMENTS:

1-100-year (natural) Water Surface Elevation 2-Encroachment (floodway) Water Surface Elevation 3-Surcharge Value

Include all cross sections in the models between tie-in points. Any interpolated values should be indicated in parentheses.

FEDERAL EMERGENCY MANAGEMENT AGENCY
 WATER SURFACE ELEVATION CHECK

COMMUNITY NAME: *Pima County, Arizona* FLOODING SOURCE: *West Idle Hour Wash* PROJECT NAME /IDENTIFIER:

SECNO	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³
<i>53</i>													<i>2730.9</i>		
<i>54</i>													<i>2749.9</i>		
<i>55</i>													<i>2769.3</i>		
<i>123</i>													<i>2350.9</i>		
<i>124</i>													<i>2355.6</i>		
<i>125</i>													<i>2365.1</i>		
<i>126</i>													<i>2374.0</i>		
<i>127</i>													<i>2382.1</i>		
<i>128</i>													<i>2391.1</i>		
<i>129</i>													<i>2401.4</i>		
<i>130</i>													<i>2413.1</i>		
<i>131</i>													<i>2421.7</i>		
<i>132</i>													<i>2433.1</i>		

COMMENTS:

1-100-year (natural) Water Surface Elevation 2-Encroachment (floodway) Water Surface Elevation 3-Surcharge Value

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Pima County
Flooding Source: Un-named tributary to West Idle Hour Wash.
(One form for each flooding source)
Project Name/Identifier: Idle Hour Wash LOMR

1. REACH TO BE REVISED

Downstream limit: Confluence with West Idle Hour Wash
Upstream limit: Approximately 3060 feet upstream from confluence.

2. EFFECTIVE FIS

Not studied

Studied by approximate methods
Downstream limit of study _____
Upstream limit of study _____

Studied by detailed methods
Downstream limit of study _____
Upstream limit of study _____

Downstream limit of Floodway _____
Upstream limit of Floodway _____

3. HYDRAULIC ANALYSIS

Why is the hydraulic analysis different from that used to develop the FIRM. (Check all that apply)

Not studied in FIS see attached.

Improved hydrologic data/analysis. Explain: _____

Improved hydraulic analysis. Explain: _____

Flood control structure. Explain: _____

Other. Explain: _____

3. RIVERINE HYDRAULIC ANALYSIS FORM
Models Submitted

Full input and output listings along with files on diskette (*if available*) for each of the models listed below and summary of the source of input parameters used in the models must be provided. The summary must include a complete description of any changes made from model to model (*e.g. duplicate effective model to corrected effective model*). Only the Duplicate Effective and the Revised or Post-Project Conditions models must be submitted. See instructions for directions on when other models may be required. Only the 100-year flood profile is required for SFHAs with a Zone A designation. For areas which do not have detailed flooding, a hydraulic model is not required; however BFE's may not be added to the revised FIRM.

Duplicate Effective Model

Natural

Floodway

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (*10-, 50-, 100-, and 500-year multi-profile runs and the floodway run*) must be obtained and then reproduced on the requestor's equipment to produce the duplicate effective model. This is required to assure that the effective model input data has been transferred correctly to the requestor's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

Corrected Effective Model

Natural

Floodway

The corrected effective model is the model that corrects any errors that occur in the duplicate effective model, adds any additional cross sections to the duplicate effective model, or incorporates more detailed topographic information than that used in the currently effective model. The corrected effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

Existing or Pre-Project Conditions Model

Natural

Floodway

The duplicate effective or corrected model is modified to produce the existing or pre-project conditions model to reflect any modifications that have occurred within the floodplain since the date of the effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the corrected effective or duplicate effective model.

Revised or Post-Project Conditions Model

Natural

Floodway

The existing or pre-project conditions model (*or duplicate effective or corrected effective model, as appropriate*) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for proposed project this model should reflect proposed conditions.

Other: Please attach a sheet describing all other models or calculations submitted.

Natural

Floodway

Attachment to Form 4, Section 3:

This model is the initial detailed hydraulic analysis which will replace the approximate methods used to develop the ZONE A in the existing FIRM.

4. MODEL PARAMETERS (from model used to revise 100-year water surface elevation)

1. Discharges:	Upstream Limit	Downstream Limit
10-year	_____	_____
50-year	_____	_____
100-year	1113 cfs	1113 cfs
500-year	_____	_____

Attach diagram showing changes in 100-year discharge *N/A*

2. Explain how the starting water surface elevations were determined The starting water-surface elevation for this reach was set to equal the computed water-surface elevation for West Idle Hour Wash at the confluence.

3. Give range of friction loss coefficients (Manning's "N") Channel 0.050
 Overbanks 0.050

If friction loss coefficients are different anywhere along the revised reach from those used to develop the FIRM, give location, value used in the effective FIS, and revised values and an explanation as to how the revised values were determined.

<u>Location</u>	<u>FIS</u>	<u>Revised</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Explain: _____

4. Describe how the cross section geometry data were determined (e.g., field survey, topographic map, taken from previous study) and list cross sections that were added.

Cross-section geometry data were taken from 1"=200', 2' contour interval, topographic mapping from photo dated 9/14/94. All cross-section data are new.

4. MODEL PARAMETERS (Cont'd)

5. Explain how reach lengths for channel and overbanks were determined:

5. RESULTS (from model used to revise 100-year water surface elevations)

1. Do the results indicate:

- a. Water surface elevations higher than end points of cross sections? Yes No
- b. Supercritical depth? Yes No
- c. Critical depth? Yes No
- d. Other unique situations Yes No

If yes to any of the above, attach an explanation that discusses the situation and how it is presented on the profiles, tables, and maps. *see attached.*

- 2. What is the maximum change in energy gradient between cross-sections? 12.0 ft.
Specify location betwn 227 & 228
- 3. What is the distance between the cross-sections in 2 above? 750 ft.
Specify location channel
- 4. What is the maximum distance between cross-sections? 750 ft.
Specify location btwn. 227 & 228
- 5. Floodway determination
 - a. What is the maximum surcharge allowed by the community or State? N/A foot
 - b. What is the maximum surcharge for the revised conditions? _____ foot
Specify location _____
 - c. What is the maximum velocity? _____ fps
Specify location _____

Explain: _____

d. Are there any negative surcharge values at any cross-section N/A Yes No

If yes, the floodway may need to widen. If it is not widened, please explain and indicate the maximum negative surcharge.

Attachment to Form 4, Section 5, Question 1-C

the HEC-2 computer model gives a message stating that "critical depth is assumed: minimum specific energy" occurs at cross-section 225.

5. RESULTS (Cont'd)

6. Is the discharge value used to determine the floodway anywhere different from that used to determine the natural 100-year flood elevations? N/A Yes No

If Yes, explain:

7. Do 100-year water surface elevations increase at any location? Yes No

If yes, please attach a list of the locations where the increases occur, state whether or not the increases are located on the requestor's property, and provide an explanation of the reason for the increases.

Please attach a completed comparison table entitled: Water Surface Elevation Check (See page 6)

6. REVISED FIRM/FBFM AND FLOOD PROFILES N/A

A. The revised water surface elevations tie into those computed by the effective FIS Model (10-, 50-, 100-, and 500-year), downstream of the project at cross-section _____ within _____ feet and upstream of the project at cross section _____ within _____ feet.

B. The revised floodway elevations tie into those computed by the effective FIS model, downstream of the project at cross section _____ within _____ feet and upstream of the project at cross section _____ within _____ feet.

C. Attach profiles, at the same vertical and horizontal scale as the profiles in the effective FIS report, showing stream bed and profiles of all floods studied (without encroachment). Also, label all cross sections, road crossings (including low chord and top-of-road data), culverts, tributaries, corporate limits, and study limits. If channel distance has changed, the stationing should be revised for all profile sheets.

D. Attach a Floodway Data Table showing data for each cross section listed in the published Floodway Data Table in the FIS report.

Proceed to Riverine /Coastal Mapping Form

FEDERAL EMERGENCY MANAGEMENT AGENCY
 WATER SURFACE ELEVATION CHECK

COMMUNITY NAME: Pima County, AZ FLOODING SOURCE: Un-named Tributary PROJECT NAME / IDENTIFIER:

SECNO	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³	NCWSEL ¹	FCWSEL ²	SURC. ³
-124													2355.6		
225													2361.9		
226													2368.4		
227													2378.5		
228													2390.3		
229													2398.7		
230													2406.4		

COMMENTS:

1-100-year (natural) Water Surface Elevation 2-Encroachment (floodway) Water Surface Elevation 3-Surcharge Value

PUBLIC BURDEN DISCLOSURE NOTICE

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Community Name: Pima County

Flooding Source: Idle Hour Wash

Project Name/Identifier: Idle Hour Wash LOMR

1. MAPPING CHANGES

A topographic work map of suitable scale, contour interval, and planimetric definition must be submitted showing (indicate N/A when not applicable): revised maps are included in accompanying report.

- | | Included | | |
|---|---|-----------------------------|---|
| A. Revised approximate 100-year floodplain boundaries (Zone A) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| B. Revised detailed 100- and 500 -year floodplain boundaries | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| C. Revised 100-year floodway boundaries | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| D. Location and alignment of all cross sections used in the revised hydraulic model with stationing control indicated | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| E. Stream alignments, road and dam alignments | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| F. Current community boundaries | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| G. Effective 100- and 500 -year floodplain and 100-year floodway boundaries from the FIRM/FBFM reduced or enlarged to the scale of the topographic work map <u>see attached</u> | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| II. <u>Tie-ins</u> between the <u>effective</u> and <u>revised</u> 100- and 500 -year floodplains and 100-year floodway boundaries | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| I. The requestor's property boundaries and community easements | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| J. The signed certification of a registered professional engineer | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| K. Location and description of reference marks <u>See Attached</u> | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| L. Vertical datum (example: NGVD, NAVD etc.) <u>NAVD 88, Attached</u> | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| M. Coastal zone designations tie into adjacent areas not being revised | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| N. Location and alignment of all coastal transects used to revise the coastal analyses | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |

If any of the items above are marked no or N/A, please explain: This LOMR is a revised detailed 100-year analysis of a riverine system. The existing FIRM includes a ZONE A from approximate methods only. This analysis is not for a specific improvement.

2. What is the source and date of the updated topographic information (example: orthophoto maps, July 1985; field survey, May 1979, beach profiles, June 1987, etc.)? Topographic maps, 9/14/94.
3. What is the scale and contour interval of the following workmaps?
- | | | | | |
|---------------------|-------------------|-------|---------------|------------------|
| a. Effective FIS | <u>1" = 1000'</u> | scale | <u>N/A</u> | Contour interval |
| b. Revision Request | <u>1" = 200'</u> | scale | <u>2-foot</u> | Contour interval |

NOTE: Revised topographic information must be of equal or greater detail.

4. Attach an annotated FIRM and FBFM at the scale of the effective FIRM and FBFM showing the revised 100-year and 500-year floodplains and the 100-year floodway boundaries and how they tie into those shown on the effective FIRM and FBFM downstream and upstream of the revision or adjacent to the area of revision for coastal studies. Attach additional pages if needed.

1. MAPPING CHANGES (Cont'd)

5. Flood Boundaries and 100-year water surface elevations:

Has the 100-year floodplain been shifted or increased or the 100-year water surface elevation increased at any location on property other than the requestor's or community's? Yes No

If yes, please give the location of shift or increase and an explanation for the increase.

a. Have the affected property owners been notified of this shift or increase and the effect it will have on their property? Yes No

If yes, please attach letters from these property owners stating they have no objections to the revised flood boundaries if a LOMR is being requested.

b. What is the number of insurable structures that will be impacted by this shift or increase? _____

6. Have the floodway boundaries shifted or increased at any location compared to those shown on the effective FBFM or FIRM? N/A Yes No

If yes, explain:

7. If a V- zone has been designated, has it been delineated to extend landward to the heel of the primary frontal dune? N/A Yes No

If no, explain:

8. Manual or digital map submission:

Manual

Digital

Digital map submissions may be used to update digital FIRMs (DFIRMs). For updating DFIRMs, these submissions must be coordinated with FEMA Headquarters as far in advance of submission as possible.

2. EARTH FILL PLACEMENT

N/A

1. The fill is: Existing Proposed
2. Has fill been/will be placed in the regulatory floodway? Yes No
If yes, please attach completed Riverine Hydraulic Analysis Form.
3. Has fill been/will be placed in floodway fringe (*area between the floodway and 100-year floodplain boundaries*)? Yes No

If yes, then complete A, B, C, and D below.

- A. Are fill slopes for granular materials steeper than one vertical on one-and-one-half horizontal? Yes No

If yes, justify steeper slopes _____

- B. Is adequate erosion protection provided for fill slopes exposed to moving flood waters? (*Slopes exposed to flows with velocities of up to 5 feet per second (fps) during the 100-year flood must, at a minimum, be protected by a cover of grass, vines, weeds, or similar vegetation; slopes exposed to flows with velocities greater than 5 fps during the 100-year flood must, at a minimum, be protected by stone or rock riprap.*) Yes No

If no, describe erosion protection provided _____

- C. Has all fill placed in revised 100-year floodplain been compacted to 95 percent of the maximum density obtainable with the Standard Proctor Test Method or acceptable equivalent method? Yes No

- D. Can structures conceivably be constructed on the fill at any time in the future? Yes No

If yes, provide certification of fill compaction (item C. above) by the community's NFIP permit official, a registered professional engineer, or an accredited soils engineer.

4. Has fill been/will be placed in a V-zone? Yes No

- If yes, is the fill protected from erosion by a flood control structure such as a revetment or seawall? Yes No

If yes, attach the coastal structures form.

ATTACHMENT TO FORM 5, PAGE 1, SECTION 1 "MAPPING CHANGES", PART 1-K AND 1-L

BRIEF DESCRIPTION OF DATUM INFORMATION

HORIZONTAL DATUM : NAD 83 (HARN)

HORZ. CONTROL : "JAYNES", "NN 115" and "NN 137"

POINTS OCCUPIED WITH G.P.S. are: 170,171,51, 173,174,175,176,177,178,179,180 and 181. These photo control points are shown on Topo map "A". Also shown are 1/4 corners and section corner point numbers occupied but this package does not contain point descriptions, except point numbers 52,74 and 75, which were used as bench marks.

VERTICAL DATUM : NAVD 88

VERT. DATUM : Control = "JAYNES RM2" and "Q291" at Interstate 10

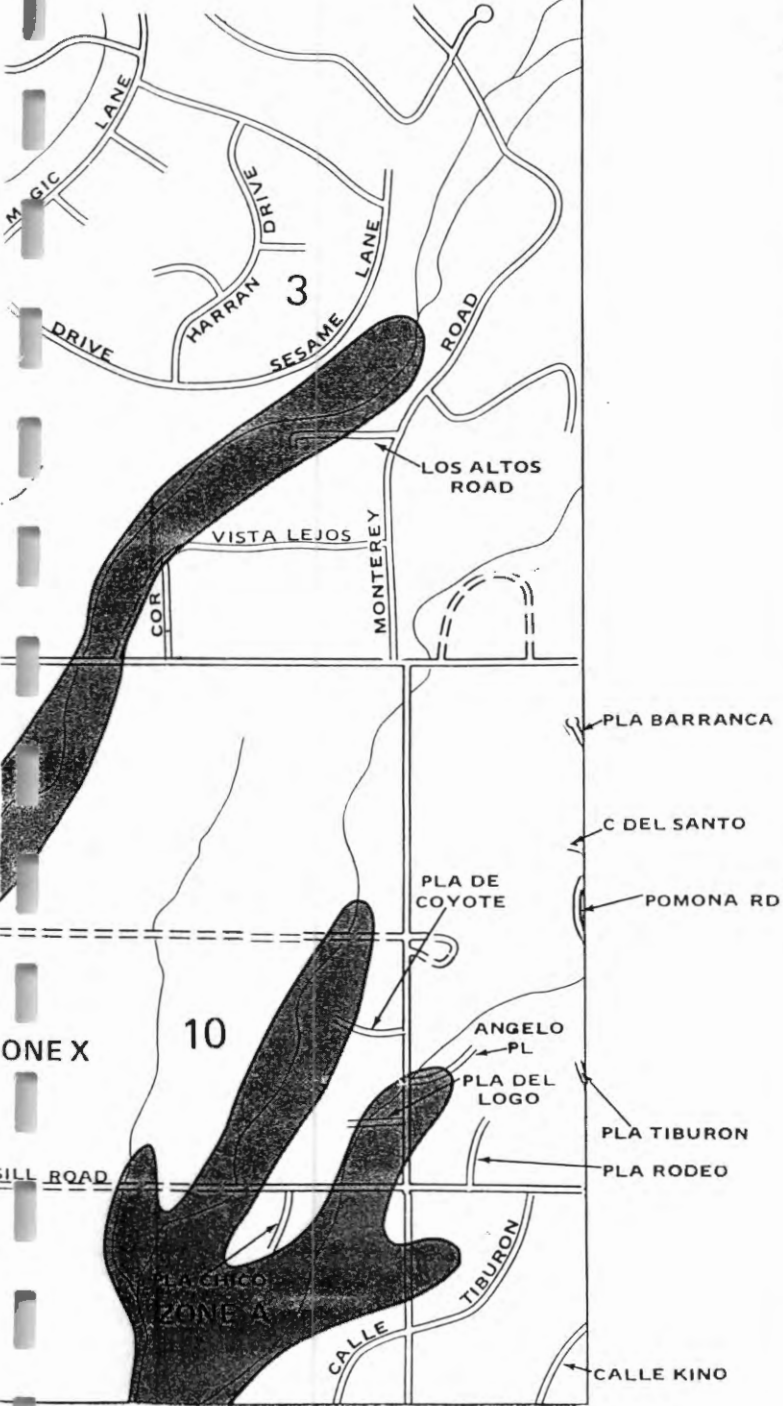
Bench run starts at N.E. of project at Orange Grove Rd. and I-10 "JAYNES RM2" and runs west and south to panel # 180 at S.W. of project, then east and north to Q 291, at Sunset Rd and I-10, then north to close into "JAYNES RM2". Topo map "B" shows the route of above bench run. Topo map "C" shows all panel points. Panel points 182,183,184,185,186,187,188,189,190 and 191 were added at a later date during project.

All other bench marks are listed above were found on route shown on Topo "B". They are designated with "BM" before number. ALL bench marks are listed in same order as field notes and occupation, and are listed in "LISTING IN ORDER AND DIRECTION OF BENCH RUNS", pages 1-7. Also included are:

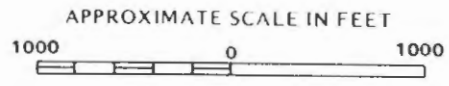
- A. Portions of FIRM Panel 040073 1610D which show reference marks common to this project ("JAYNES RM2" and "Q291")
- B. List by point number, 7 pages
- C. GPS list of Latitude, Longitude, northing, easting(meters) all points occupied, 2 pages
- D. Topo map "D" shows bench runs and direction of new vertical panels set at later date
- E. G.S. recovery sheets with information on "JAYNES RM 2" and "Q 291"

Silverbell Road, 0.9 mile north of intersection with
 approximately 500 feet north of corrugated culvert
 of 12" dia, section 7, T. 13 S., R.13E. Established by
 J. J. Inc.
 d. Geodetic Survey bronze disk stamped "P 291
 d at Interstate Highway 10 frontage road bridge
 eek at railroad mileage 975.95, in top of southeast
 eading of bridge.
 im. Power pole No. 15, located approximately 300
 of Magee Road, approximately 2,000 feet northwest
 od, 25 feet north of fence surrounding irrigation
 lines 32 and 33, T. 12 S., R. 13 E. Established by
 J. J. Inc.
 il. Aluminum cap stamped "LS 1052 1/4 Sect. 8, Sect. 9,
 ch. Above surface, located 1 foot northwest of fence
 imately 50 feet southeast of intersection of Rudasill
 non Road, T.13S., R.13E. Established by Kucera
 In

T. 12 S.
 T. 13 S.



To determine if flood insurance is available, contact an insurance
 agent or call the National Flood Insurance Program at (800)
 638-6620.



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
PIMA COUNTY,
ARIZONA
 (UNINCORPORATED AREAS)

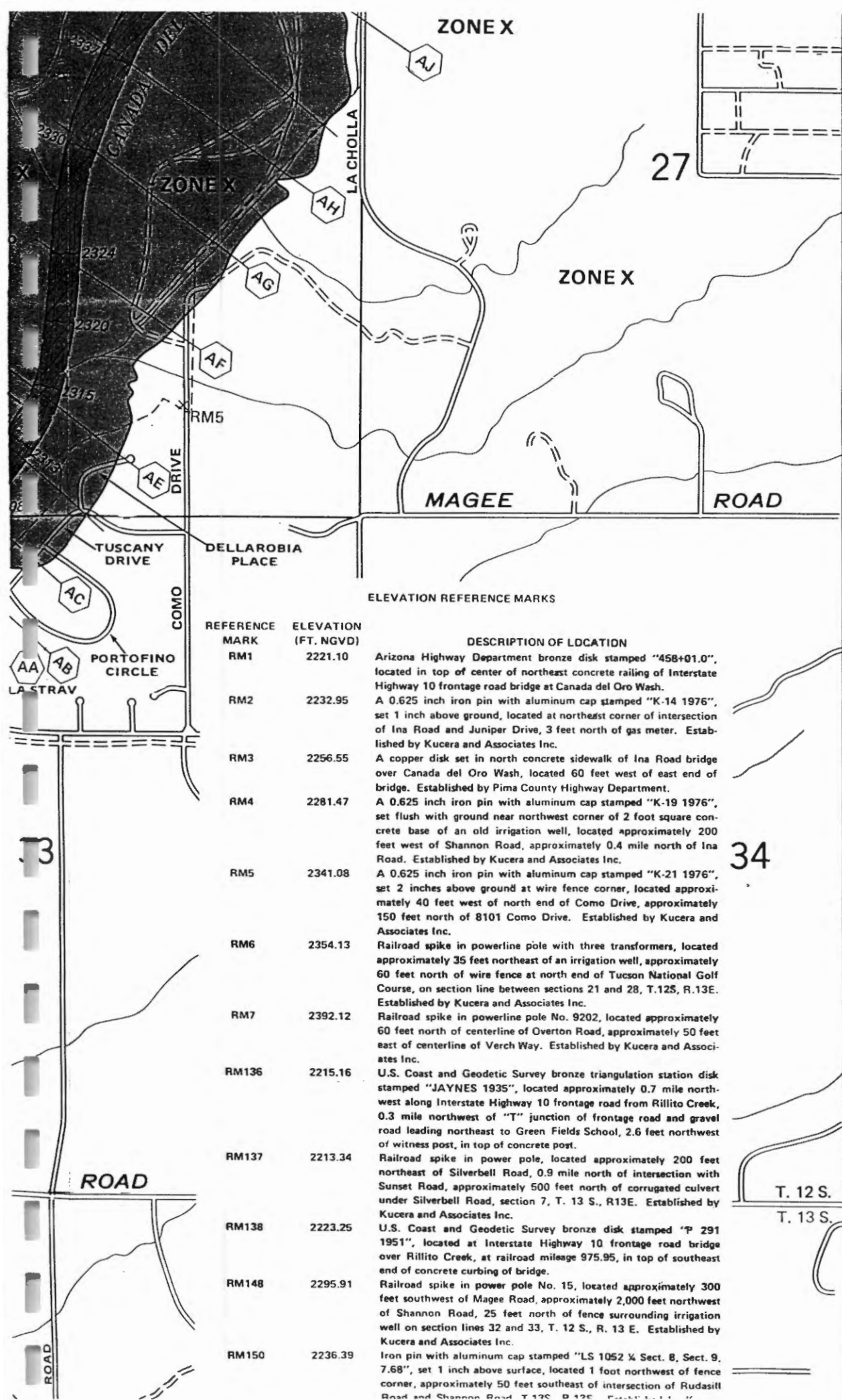
PANEL 1610 OF 4700
 (SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
040073 1610 D

MAP REVISED:
SEPTEMBER 30, 1992



Federal Emergency Management Agency



ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION (FT. NGVD)	DESCRIPTION OF LOCATION
RM1	2221.10	Arizona Highway Department bronze disk stamped "458+01.0", located in top of center of northeast concrete railing of Interstate Highway 10 frontage road bridge at Canada del Oro Wash.
RM2	2232.95	A 0.625 inch iron pin with aluminum cap stamped "K-14 1976", set 1 inch above ground, located at northeast corner of intersection of Ina Road and Juniper Drive, 3 feet north of gas meter. Established by Kucera and Associates Inc.
RM3	2256.55	A copper disk set in north concrete sidewalk of Ina Road bridge over Canada del Oro Wash, located 60 feet west of east end of bridge. Established by Pima County Highway Department.
RM4	2281.47	A 0.625 inch iron pin with aluminum cap stamped "K-19 1976", set flush with ground near northwest corner of 2 foot square concrete base of an old irrigation well, located approximately 200 feet west of Shannon Road, approximately 0.4 mile north of Ina Road. Established by Kucera and Associates Inc.
RM5	2341.08	A 0.625 inch iron pin with aluminum cap stamped "K-21 1976", set 2 inches above ground at wire fence corner, located approximately 40 feet west of north end of Como Drive, approximately 150 feet north of 8101 Como Drive. Established by Kucera and Associates Inc.
RM6	2354.13	Railroad spike in powerline pole with three transformers, located approximately 35 feet northeast of an irrigation well, approximately 60 feet north of wire fence at north end of Tucson National Golf Course, on section line between sections 21 and 28, T.12S, R.13E. Established by Kucera and Associates Inc.
RM7	2392.12	Railroad spike in powerline pole No. 9202, located approximately 60 feet north of centerline of Overton Road, approximately 50 feet east of centerline of Verch Way. Established by Kucera and Associates Inc.
RM136	2215.16	U.S. Coast and Geodetic Survey bronze triangulation station disk stamped "JAYNES 1935", located approximately 0.7 mile northwest along Interstate Highway 10 frontage road from Rillito Creek, 0.3 mile northwest of "T" junction of frontage road and gravel road leading northeast to Green Fields School, 2.6 feet northwest of witness post, in top of concrete post.
RM137	2213.34	Railroad spike in power pole, located approximately 200 feet northeast of Silverbell Road, 0.9 mile north of intersection with Sunset Road, approximately 500 feet north of corrugated culvert under Silverbell Road, section 7, T. 13 S., R13E. Established by Kucera and Associates Inc.
RM138	2223.25	U.S. Coast and Geodetic Survey bronze disk stamped "P 291 1951", located at Interstate Highway 10 frontage road bridge over Rillito Creek, at railroad mileage 975.95, in top of southeast end of concrete curbing of bridge.
RM148	2295.91	Railroad spike in power pole No. 15, located approximately 300 feet southwest of Magee Road, approximately 2,000 feet northwest of Shannon Road, 25 feet north of fence surrounding irrigation well on section lines 32 and 33, T. 12 S., R. 13 E. Established by Kucera and Associates Inc.
RM150	2236.39	Iron pin with aluminum cap stamped "LS 1052 1/2 Sect. 8, Sect. 9, 7.68", set 1 inch above surface, located 1 foot northwest of fence corner, approximately 50 feet southeast of intersection of Rudasill Road and Shannon Road, T.12S, R.13E.

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LIST BY NUMBER
 IDLE HOUR WASH PHOTO OF SEPT. 1994 T13S R12E 3/3/95
 LIST OF EXISTING BENCH MARKS SET OR FOUND BY PIMA COUNTY D.O.T. SURVEY
 SECTION DATUM = NAVD 88

NAME	ELEVATION	DESCRIPTION
BM19	2193.264	Set R/R spike in S.W. side of power pole, on north side of Silverbell Rd, +/- S.E. of intersection of Orange Grove Rd. and Silverbell Rd.
BM21A	2212.974	Set chiseled "square" in concrete on north rim of Tucson water manhole, east side of Silverbell Rd., 0.3 mile south of Orange Grove Rd.
BM50A	2228.543	Set R/R spike in N.W. side of power pole at S.E. corner of intersection of Sunset Rd. and Sunray Drive.
BM52	2237.439	Found 1/2 in. rebar tag "PCDOT", depressed 0.10 ft., east 1/4 corner section 12, T13S R12E, +/- 750 ft W. of Silverbell Rd. and 3 ft. N. of an east-west dirt trail on 1/4 section line.
BM65	2340.308	Found 80d nail in S.side of power pole marked "2337.80" W.side of Blue Bonnet Rd., N.of northwest-southeast Gas Pipeline dirt Rd.
BM67	2338.093	Set R/R spike in N.W. side of power pole at S.E. cor of intersection northwest-southeast Gas Pipeline Rd. and an unmarked E-W dirt Rd., +/- 650 ft south of Sunset Rd. aprox. area in northeast of section 14 , T13S R12E.
BM74	2429.637	Found 1/2 in. rebar, no tag, depressed 0.50 ft, west 1/4 corner of section 14, T13S R12E, intersection of Sunset Rd. where it turns west and becomes West Sunset Rd. Centerline of dirt Rd. heading west and 5 ft west of C/L dirt Rd. heading north.
BM75	2404.292	Found R/R spike with punch , depressed 0.20 ft, interior 1/4 corner section 14, T13S R12E. 3 ft west of centerline Gerhart Rd. , 300 ft south of Coyotito Drive, 15 ft north of Driveway to #5950 Gerhart Drive, 22.5 west of a power pole marked "NED R1".
BM78	2396.002	Set R/R spike in W. side of second power pole south of intersection of Molloy Rd. and Gerhart Rd.
BM101	2457.932	Set R/R spike in S.side power pole # 6384, N.side of West Sunset Rd., opposite to entrance to # 6485 West Sunset Rd.
BM101	2457.932	Set R/R spike in S.side power pole # 6384, N.side of West Sunset Rd., opposite to entrance to # 6485 West Sunset Rd.

LIST BY NUMBER

IDLE HOUR WASH PHOTO OF SEPT. 1994

T13S R12E

3/3/95

LIST OF EXISTING BENCH MARKS SET OR FOUND BY PIMA COUNTY D.O.T. SURVEY

SECTION DATUM = NAVD 88

NAME	ELEVATION	DESCRIPTION
BM108	2529.796	Set R/R spike in E.side of power pole on S.side of West Sunset Rd. W.side of Driveway to # 6501 West Sunset Rd.
BM115	2533.926	Set 60d nail in N.side of 7'x 9 1/2"x 6" wooden post at west side of Driveway to # 6681 West Sunset Drive.
BM122	2597.136	Set R/R spike in N.side of power pole # 33, +/- 110 ft south of West Sunset Rd. where power line makes a 90 degree angle point and is opposite to Driveway # 6820 and # 6802 West Sunset Rd.
BM167	2640.184	Set R/R spike in N.side of power pole, 0.25 mile W. of address # 6750 El Camino Del Cerro, 60 ft south of C/L El Camino Del Cerro and 15 ft N.W. of a Wash.
BM183A	2617.114	Set PK nail in concrete base of fence post. First fence post west of gate at southwest corner of Intersection of El Camino Del Cerro and N. Ave Dos Vistas.
BM191A	2542.314	Found 1/2 in. rebar tagged "RLS 7599" protruding 0.50 ft, 25 ft north of C/L El Camino Del Cerro and 50 ft east of C/L Wallace Way.
BM199	2513.808	Set chiseled "square" in S.W. corner of concrete Drive to #6050 El Camino Del Cerro.
BM206	2451.068	Set R/R spike in S.side power pole, N.side of El Camino Del Cerro and east of a Wash that lies 125 ft east of Driveway # 5990 El Camino Del Cerro.
BM212	2417.028	Set R/R spike in S.side of power pole, north of El Camino Del Cerro and 125 ft west of Gerhart Rd.
BM216	2390.368	Set R/R spike in N.side of power pole, north of El Camino Del Cerro and 140 ft east of Calle Llanura.
BM220	2365.743	Set R/R spike in S.side of power pole, north side of El Camino Del Cerro and 200 ft east of Tortolita Rd., third pole east of intersection.
BM226	2354.352	Set R/R spike in S.side of power pole, north side of a Rd. at the N.W. corner of El Camino Del Cerro and Paseo De Los Rancheros intersection.

LIST BY NUMBER

IDLE HOUR WASH PHOTO OF SEPT. 1994

T13S R12E

3/3/95

LIST OF EXISTING BENCH MARKS SET OR FOUND BY PIMA COUNTY D.O.T. SURVEY

SECTION DATUM = NAVD 88

NAME	ELEVATION	DESCRIPTION
BM229	2354.657	Set R/R spike in N.side of power pole, south side of El Camino Del Cerro and 100 ft east of Paseo Del Sueno.
BM233	2340.032	Set R/R spike in S.side of power pole at N.W. corner intersection of El Camino Del Cerro and Camino De Oeste.
BM238	2312.892	Set R/R spike in E.side of Power pole, west side of Camino De Oeste, 0.20 mile north of El Camino Del Cerro, 120 ft south of Driveway to house # 4950 (through # 5060).
BM248	2319.327	Set R/R spike in W.side of power pole, east side of Camino De Oeste, opposite entrance to address # 5245 Camino De Oeste.
BM255	2248.091	Set R/R spike in S.side of power pole, north side of Sunset Rd.and 45 ft east of Camino De Oeste.
BM269	2269.491	Set R/R spike in N.side of power pole, south side of Sunset Rd. 60 ft east of Driveway # 4260 & # 4300 Sunset Rd.
BM277	2217.506	Found R/R spike in E.side of power pole at southwest corner of intersection Silverbell Rd. and Sunset Rd.
BM239	2194.610	Found Witness Corner to S.E. section 1, T13S R12E, 2 in. aluminum cap, flush with ground, 190 ft west of top west bank of Santa Cruz River on the Orange Grove Rd. Alignment, 85 ft south of a dirt Rd. Stamped "COLLINS-PINA WC 350' PLS 21765"
Panel 170	2198.044	Set 1/2 in rebar tagged "PCDOT REF 20", flush, set atop 15 ft high bank, 30 ft southwest of top bank of large pond of water. From intersection of Silverbell Rd. and Orange Grove Rd. travel 400 ft on 15 degree azimuth to point. Marked by two 1/2 in. rebar references, no tags, set flush. Ref. No.1 is 34.42 ft north and Ref. No.2 is 40.08 ft east from point. (near southeast section 1, T13S R12E) LAT=32°-19'-27.46" LONG= 111°-04'-01.83"
Panel 171	2201.009	Set 1/2 in. rebar tagged "PCDOT REF 20", flush, 0.70 mile north of Sunset Rd. on Silverbell Rd. to a dirt Rd. leading west, this is east-west alignment between interior 1/4 of section 7 and the west 1/4 of section 7, T13S R13E. From this intersection proceed 175 ft on 45 degree azimuth to point. Marked by two references, hub and tacks, set flush. Ref. No.1 is 40.00 ft on 352 deg. azimuth, Ref. No.2 is 40.00 ft on 263 deg. azimuth from point. (near west section 7, T13S R13E) LAT= 32°-18'-58.74" LONG= 111°-03'-35.81"

LIST BY NUMBER

IDLE HOUR WASH PHOTO OF SEPT. 1994

T13S R12E

3/3/95

LIST OF EXISTING BENCH MARKS SET OR FOUND BY PIMA COUNTY D.O.T. SURVEY

SECTION DATUM = NAVD 88

NAME	ELEVATION	DESCRIPTION
Panel 51	2281.744	Found 1 in. open iron pipe with nail in center, set flush, approximate location of interior 1/4 corner section 12, T13S R12E, +/- 650 west of Panorama Drive, 0.6 ft N. of fence line, 3.5 ft E. of fence corner post, point lies inside fenced area.
Panel 173	2341.978	Set 1/2 in. rebar tagged "PCDOT REF 20", set flush. From the intersection of Abington Rd (northeast-southwest Rd.) and a Gas Line Dirt Rd. (northwest-southeast Rd.) travel southeast 0.25 mile to the top of a ridge. Pack 1200 ft on 50 degree azimuth to point. Point is marked by two 1/2 in. rebar references, no tags, set flush. Ref. No. 1 is 33.05 ft on 15 deg. azimuth, Ref. No. 2 is 20.45 ft on 260 deg. azimuth from point. (east of central section 11, T13S R12E) LAT= 32°-18'-50.23" LONG= 111°-05'-01.55"
Panel 174	2306.308	Set 1/2 in. rebar, tagged "PCDOT REF 20", set flush. From intersection of Sunray Drive and Sunset Rd. travel 0.22 mile south on Sunray Drive to a wash, from here go a distance of 110 ft on a 140 deg. azimuth to point. Marked by two 1/2 in. rebar references, no tags, set flush. Ref. No. 1 is 38.51 ft on 35 deg. azimuth, Ref. No. 2 is 39.92 ft on 140 deg. azimuth from point. (near northwest of section 13, T13S R12E) LAT= 32°-18'-17.91" LONG= 111°-04'-31.32"
Panel 175	2370.382	Set 1/2 in. rebar tagged "PCDOT REF 20", set flush. From intersection of Sunset Rd. and Gerhart Rd. travel 0.30 mile south on Gerhart Rd. to Molloy Rd., east on Molloy Rd. 0.15 mile to a wash running northeast -southwest, from this intersection pack 175 ft on 30 deg. azimuth to point. Marked by two 1/2 in. rebar references, no tags, set flush. Ref. No. 1 is 27.50 ft on 300 deg. azimuth, Ref. No. 2 is 28.29 ft on 190 deg. azimuth from point. (northeast of central section 14, T13S R12E) LAT= 32°-18'-16.36" LONG= 111°-05'-09.30"
Panel 176	2446.637	Set 1/2 in. rebar tagged "PCDOT REF 20", set flush. From intersection of Sunset Rd. and Gerhart Rd. travel south 0.75 mile to a dirt Rd. leading west, west on dirt Rd. 0.30 mile to a dirt Rd. heading north, north on dirt Rd. 0.175 mile to Driveway of house # 6010. Point lies west of Driveway, 51.8 ft north of west end of wood rail fence (355 deg. azimuth), 19 ft west of Ironwood tree, 26 ft south of large Saguaro cactus, 17 ft east of east edge of wash. (southwest of central section 14, T13S R12E) LAT= 32°-18'-00.12" LONG= 111°-05'-36.70"

LIST BY NUMBER

IDLE HOUR WASH PHOTO OF SEPT. 1994

T13S R12E

3/3/95

LIST OF EXISTING BENCH MARKS SET OR FOUND BY PIMA COUNTY D.O.T. SURVEY

SECTION DATUM = NAVD 88

NAME	ELEVATION	DESCRIPTION
Panel 177	2627.198	Set 1/2 in. rebar tagged "PCDOT REF 20", set flush. From the west 1/4 sec 14, where Sunset Rd which runs N.-S. and turns to the west and becomes West Sunset Rd., travel 0.40 mile west to where Rd. turns north, turn left and head south 0.20 mile on private Driveway, up steep hill to house #6501, at the top of hill. Point lies approx. 150 ft south of house in clearing and referenced by two large Saguaro Cactus. No.1 is 13 ft high at 15.5 ft on 330 deg. azimuth, No. 2 is 15 ft high at 83.4 ft on 55 deg. azimuth from point. PLEASE acquire permission to access as of 1994. (near center section 15, T13S R12E) LAT= 32°-17'-57.47" LONG=111°-06'-19.58"
Panel 178	2546.393	Set 1/2 in. rebar tagged "PCDOT REF 20", set flush. From S.W.section corner 13, at intersection of Blue Bonnet Rd. Alignment and El Camino Del Cerro, travel westerly 1.175 miles to two concrete Driveways heading north up hill, take westerly Drive north 200 ft to old intersecting dirt Rd. Point is 15.7 ft east of edge of concrete Driveway, and marked by two 1/2 in. rebar references, no tags, set flush. Ref. No.1 is 29.03 ft on 90 deg. azimuth, Ref. No.2 is 27.13 ft on 194 deg. azimuth from point. (near north 1/16 cor of 1/4 sec 22/23) LAT= 32°-17'-23.56" LONG= 111°-05'-48.77"
Panel 179	2609.229	Set 1/2 in. rebar tagged "PCDOT REF 20", set flush. From Silverbell Rd. and El Camino Del Cerro intersection, travel west 3.95 miles on El Camino Del Cerro to house # 6750. Point lies 40 ft west of Driveway to house and 71 ft south of south edge dirt Rd., 40 ft east of tall Saguaro Cactus with no arms just north of small wash. Marked by two 1/2 in. rebar references, no tags, set flush. Ref No.1 is 21.00 ft on 345 deg. azimuth and Ref. No.2 is 35.56 ft on 85 deg. azimuth from point. (northwest of central section 22, T13S R12E) LAT= 32°-17'-23.49" LONG= 111°-06'-26.69"
Panel 180	2792.205	Set 1/2 in. rebar tagged "PCDOT REF 20", set flush. From Silverbell Rd. and El Camino Del Cerro intersection, travel 4.9 miles west to El Camino Del Cerro TRAILHEAD parking lot. Point is 75 ft east of C/L entrance gate. Marked by two 1/2 in. rebar references, no tags, set flush. Ref. No. 1 is 9.82 ft on 268 deg. azimuth, Ref. No. 2 is 22.39 ft on 355 deg. azimuth from point. (northeast of center section 21, T13S R12E) LAT= 32°-17'-19.82" LONG= 111°-07'-13.57"

LIST BY NUMBER

IDLE HOUR WASH PHOTO OF SEPT. 1994

T13S R12E

3/3/95

LIST OF EXISTING BENCH MARKS SET OR FOUND BY PIMA COUNTY D.O.T. SURVEY

SECTION DATUM = NAVD 88

NAME	ELEVATION	DESCRIPTION
Panel 181	2841.601	Set 1/2 in. rebar tagged "PCDOT REF 20", set flush. From Silverbell Rd. and El Camino Del Cerro intersection, travel 3.6 miles west to two dirt roads leading south, aprox. 100 ft apart. Eastern Rd. is named N. Ave Dos Vistas and westerly Rd. has no name. Take westerly Rd. 0.70 mile southwest to a fork in road. Point is 70 ft west of intersection and 24 ft north of north edge dirt road. Marked by two 1/2 in. rebar references, no tags, set flush. Ref. No. 1 is 35.83 ft on 318 deg. azimuth, Ref. No. 2 is 32.88 ft on 224 azimuth from point. (near southwest of section 22, T13S R12E) LAT= 32°-16'- 48.71" LONG= 111°-06'-44.34"
Panel 182	2243.833	Set 1/2 in. rebar tagged "PCDOT REF", protruding 0.10 ft. From intersection of Silverbell Rd. and Foothills Drive, travel southerly 0.60 mile on Foothills Dr. to Desert Willow Rd. Point is 140 ft south and 90 ft west of intersection. (northeast of 1/4 corner 11/12, T13S R12E)
Panel 183	2240.126	Set 1/2 in. rebar tagged "PCDOT REF", protruding 0.10 ft. From intersection of Silverbell Rd. and Orange Grove Rd., travel west 0.10 mile on Orange Grove Rd. to where it turns south and becomes Panorama Drive, proceed south 0.40 mile to a fence line east of Rd., go east 700 ft then 200 ft north to point which is east of house # 6130. (northeast of interior section 12, T13S R12E)
Panel 184	2277.709	Set 1/2 in. rebar tagged "PCDOT REF", protruding 0.10 ft. From intersection of Camino De Oeste and Sunset Rd. travel west 2000 ft and north 500 to point. Also, from Sunray Drive and Sunset Rd. Travel east on Sunset Rd 0.15 mile to a wash, northeast 0.23 mile in wash, then 200 south to point. (northeast of south 1/4 corner sec 12, T13S R12E)
Panel 185	2315.183	Set 1/2 in. rebar tagged "PCDOT REF", protruding 0.10 ft. In the area southwest of interior of section 12, T13S R12E, at the intersection of Larkspur Ridge Drive and Senita Way, travel south 0.10 mile on Senita Way and 50 ft west of road to point.
Panel 186	2385.794	Set 1/2 in. rebar tagged "PCDOT REF", protruding 0.10 ft. At the northwest corner of section 14, T13S R12E, where Sunset Rd turns due south, travel east on Sunset Rd. 0.15 mile to a dirt Rd. heading south, with addresses # 6075, # 6085, & # 6159, go south 0.10 mile and 125 ft west of Rd. to point.

LIST BY NUMBER

IDLE HOUR WASH PHOTO OF SEPT. 1994

T13S R12E

3/3/95

LIST OF EXISTING BENCH MARKS SET OR FOUND BY PIMA COUNTY D.O.T. SURVEY

SECTION DATUM = NAVD 88

NAME	ELEVATION	DESCRIPTION
Panel 187	2399.887	Set 1/2 in. rebar tagged "PCDOT REF", protruding 0.20 ft From the south 1/4 corner section 14, T13S R12E, where Gerhart Rd. changes direction from east-west to a north- south direction, travel north 0.40 mile on Gerhart Rd to Owl Rd., east on Owl Rd. 0.13 mile and 165 ft south of Rd. to point.
Panel 188	2558.162	Set 1/2 in. rebar tagged "PCDOT REF", protruding 0.10 ft From area of interior of section 22, T13S R12E, at intersection of El Camino Del Cerro and N. Ave Dos Vistas, travel west 0.20 mile on El Camino Del Cerro to dirt Rd. heading north and turning east with address # 6630, north then east on dirt Rd. 0.30 mile to a dirt rd on the left heading northwest, northwest 0.15 mile on dirt Rd. to point on south side of Rd.
Panel 189	2623.245	Set 1/2 in. rebar tagged "PCDOT REF", protruding 0.10 ft From area of interior of section 22, T13S R12E, at intersection of El Camino Del Cerro and N. Ave Dos Vistas, travel south on N. Ave Dos Vistas 175 ft and 45 ft west to point.
Panel 190	2641.641	Set 1/2 in. rebar tagged "PCDOT REF", protruding 0.10 ft From area of interior of section 22, T13S R12E, at intersection of El Camino Del Cerro and N. Ave Dos Vistas, travel west on El Camino Del Cerro 0.50 mile to a point which is 100 ft east of north-south overhead power lines. From this point walk 180 ft due south to 1/2 rebar.
Panel 191	2637.066	Set 1/2 in. rebar tagged "PCDOT REF", protruding 0.10 ft From area of interior of section 22, T13S R12E, at intersection of El Camino Del Cerro and N. Ave Dos Vistas, travel west on El Camino Del Cerro 0.40 mile to dirt Rd. heading north with addresses # 6850, #6700 & # 6950. North on dirt Rd. 0.3 mile to where Rd. turns west, west 0.10 mile to where Rd. turns north, north 0.10 mile and 100 ft east of rd to point.

IDLE HOUR WASH PHOTO. 40IDHR JUNE 1994

NOTE: ** = SPIRIT ELEV. ALL OTHERS = GPS ESTIMATED ELEV.

Trimble Navigation Ltd., State Plane Conversion Utility

Datum: NAD83 (harn)
 Zone : 0202 Arizona Central
 State Plane in: Meters

Coordinate Source [ASCII FILE]: c:\tnl\utils\geo93\coords.4

Latitude	Longitude	hae Height (m)	Northing	Easting	ortho Height (m)	Convergence	Scale factor	Name	geoid/sp.	ortho(s.ft)	Spirit El = **
32:19'23.77822" N	111:03'16.17693" W	643.585	147037.508	294535.506	672.796	0:27'39.691"	0.999981233	28	-29.211	2207.332	
32:19'23.93986" N	111:02'45.23293" W	647.369	147049.031	295344.783	676.560	0:27'56.241"	0.999982861	29	-29.191	2219.682	
32:19'23.54812" N	111:05'49.08757" W	683.085	146999.033	290536.308	712.372	0:26'17.915"	0.999973426	35	-29.287	2337.172	
32:19'23.64966" N	111:05'18.25983" W	664.147	147008.361	291342.557	693.418	0:26'34.402"	0.999974969	36	-29.271	2274.987	
32:19'23.61656" N	111:04'47.54721" W	652.654	147013.582	292145.828	681.909	0:26'50.826"	0.999976521	37	-29.255	2237.229	
32:19'23.55398" N	111:04'16.95982" W	646.142	147017.934	292945.832	675.389	0:27'07.182"	0.999978083	38	-29.247	2215.837	
32:18'57.64199" N	111:02'45.45148" W	646.704	146238.960	295345.649	675.905	0:27'55.787"	0.999982863	42	-29.201	2217.530	
32:18'57.46406" N	111:05'49.08581" W	700.894	146195.599	290542.499	730.185	0:26'17.600"	0.999973438	48	-29.291	2395.616	
32:18'57.53231" N	111:04'47.53509" W	661.691	146210.143	292152.419	690.952	0:26'50.510"	0.999976534	50	-29.261	2266.898	
32:18'57.50994" N	111:04'16.85708" W	666.224	146215.752	292954.847	695.477	0:27'06.913"	0.999978101	51	-29.253	2281.744**	
32:18'57.47453" N	111:03'46.24979" W	652.736	146221.007	293755.429	681.973	0:27'23.277"	0.999979680	52	-29.237	2237.439**	
32:18'31.40901" N	111:03'16.49940" W	649.648	145424.371	294540.048	678.876	0:27'38.852"	0.999981243	54	-29.228	2274.979	
32:18'31.34146" N	111:02'45.66767" W	650.406	145428.809	295346.575	679.616	0:27'55.333"	0.999982865	55	-29.210	2229.707	
32:18'31.16066" N	111:06'50.19203" W	738.780	145373.313	288950.261	768.105	0:25'44.617"	0.999970440	59	-29.325	2520.025	
32:18'31.38544" N	111:06'19.39779" W	719.661	145386.301	289755.733	748.971	0:26'01.081"	0.999971949	60	-29.310	2457.250	
32:18'31.38270" N	111:05'48.88867" W	695.686	145392.288	290553.800	724.981	0:26'17.390"	0.999973460	61	-29.295	2378.543	
32:18'31.44717" N	111:05'18.31030" W	697.408	145400.423	291353.663	726.688	0:26'33.737"	0.999974990	62	-29.280	2384.142	
32:18'31.44471" N	111:04'47.51906" W	677.045	145406.603	292159.112	706.311	0:26'50.197"	0.999976547	63	-29.266	2317.289	
32:18'31.45489" N	111:04'16.85290" W	666.368	145413.211	292961.286	695.627	0:27'06.590"	0.999978113	64	-29.259	2282.235	
32:18'31.47719" N	111:03'46.18244" W	655.766	145420.256	293763.570	685.010	0:27'22.986"	0.999979696	65	-29.244	2247.404	
32:18'05.09557" N	111:06'50.22462" W	785.868	144570.460	288955.420	815.196	0:25'44.291"	0.999970449	72	-29.328	2674.524	
32:18'05.23271" N	111:06'19.43867" W	737.134	144580.746	289760.760	766.446	0:26'00.747"	0.999971958	73	-29.312	2514.582	
32:18'05.36331" N	111:05'48.94237" W	711.257	144590.837	290558.524	740.555	0:26'17.047"	0.999973469	74	-29.298	2429.637**	
32:18'05.36826" N	111:05'18.32936" W	703.546	144597.144	291359.371	732.830	0:26'33.408"	0.999975001	75	-29.284	2404.292**	
32:18'05.40127" N	111:04'47.47575" W	682.503	144604.429	292166.506	711.773	0:26'49.899"	0.999976561	76	-29.270	2335.208	
32:18'05.35563" N	111:04'16.83998" W	680.646	144609.310	292967.963	709.910	0:27'06.272"	0.999978127	77	-29.264	2329.095	
32:18'05.30575" N	111:03'46.16193" W	667.675	144614.134	293770.527	696.925	0:27'22.667"	0.999979710	78	-29.250	2286.494	
32:17'39.12236" N	111:07'20.99123" W	793.102	143764.451	288156.480	822.447	0:25'27.544"	0.999968968	84	-29.345	2698.313	
32:17'39.15385" N	111:06'50.17351" W	785.159	143771.424	288962.739	814.489	0:25'44.011"	0.999970463	85	-29.330	2672.202	
32:17'39.19730" N	111:06'19.47983" W	775.728	143778.806	289765.750	805.043	0:26'00.413"	0.999971968	86	-29.315	2641.212	
32:17'39.34278" N	111:05'48.99141" W	765.350	143789.353	290563.368	794.651	0:26'16.706"	0.999973478	87	-29.301	2607.118	
32:17'39.27929" N	111:05'18.35060" W	715.102	143793.557	291365.023	744.389	0:26'33.078"	0.999975012	88	-29.287	2442.217	
32:17'39.34112" N	111:04'47.47858" W	698.714	143801.732	292172.697	727.988	0:26'49.575"	0.999976574	89	-29.274	2388.409	
32:17'39.26170" N	111:04'16.82782" W	690.809	143805.575	292974.617	720.078	0:27'05.953"	0.999978140	90	-29.269	2362.455	
32:17'39.21962" N	111:03'46.14121" W	683.176	143810.640	293777.468	712.431	0:27'22.350"	0.999979724	91	-29.255	2337.366	
32:17'13.22641" N	111:07'21.15447" W	836.859	142966.785	288158.115	866.207	0:25'27.153"	0.999968971	97	-29.348	2841.879	
32:17'13.08622" N	111:06'50.19582" W	795.587	142968.497	288968.165	824.919	0:25'43.691"	0.999970473	98	-29.332	2706.422	
32:17'13.05538" N	111:06'19.67526" W	774.794	142973.555	289766.728	804.112	0:25'59.996"	0.999971970	99	-29.318	2638.157	
32:17'13.02809" N	111:05'48.85017" W	773.360	142978.846	290573.259	802.663	0:26'16.463"	0.999973497	100	-29.303	2633.403	

PANEL NO.

32:16'46.97302" N	111:07'20.86890" W	888.040	142158.197	288171.574	917.390	0:25'26.998"	0.999968996	110	-29.350	3009.804
32:16'47.02266" N	111:06'50.21881" W	845.971	142165.696	288973.571	875.305	0:25'43.370"	0.999970483	111	-29.334	2871.730
32:16'45.74760" N	111:06'19.88086" W	797.419	142132.393	289767.709	826.739	0:25'59.559"	0.999971972	112	-29.320	2712.391
32:16'46.75260" N	111:05'48.91242" W	759.126	142169.508	290577.815	788.432	0:26'16.112"	0.999973506	113	-29.306	2586.714
32:19'27.46351" N	111:04'01.83532" W	640.728	147141.483	293340.446	669.965	0:27'15.320"	0.999978859	170	-29.237	2198.044**
32:18'58.73558" N	111:03'35.80746" W	641.638	146262.030	294028.252	670.869	0:27'28.876"	0.999980221	171	-29.231	2201.009**
32:18'50.23513" N	111:05'01.54999" W	684.567	145982.522	291787.588	713.836	0:26'42.927"	0.999975827	173	-29.269	2341.978**
32:18'17.91524" N	111:04'31.32404" W	673.703	144993.188	292586.017	702.964	0:26'58.686"	0.999977379	174	-29.261	2306.308**
32:18'16.35664" N	111:05'09.29670" W	693.216	144937.433	291593.046	722.494	0:26'38.370"	0.999975451	175	-29.278	2370.382**
32:18'00.11592" N	111:05'36.69968" W	716.443	144431.663	290880.038	745.736	0:26'23.526"	0.999974082	176	-29.293	2446.637**
32:17'57.46915" N	111:06'19.58500" W	771.459	144341.587	289758.741	800.772	0:26'00.575"	0.999971955	177	-29.313	2627.198**
32:17'23.56146" N	111:05'48.77543" W	746.840	143303.306	290572.734	776.142	0:26'16.631"	0.999973496	178	-29.302	2546.393**
32:17'23.48584" N	111:06'26.69089" W	765.975	143293.443	289580.743	795.295	0:25'56.372"	0.999971620	179	-29.320	2609.229**
32:17'19.82153" N	111:07'13.5668" W	821.723	143171.397	288355.135	851.066	0:25'31.284"	0.999969335	180	-29.343	2792.205**
32:16'48.71322" N	111:06'44.3444" W	836.791	142218.919	289126.893	866.122	0:25'46.528"	0.999970770	181	-29.331	2841.601**
32:19'23.44863" N	111:03'50.4840" W	639.686	147020.176	293638.311	668.918	0:27'21.340"	0.999979448	239	-29.232	2194.610**
32:17'13.03892" N	111:07'20.9347" W	836.205	142961.053	288163.907	865.553	0:25'27.268"	0.999968982	297	-29.348	2839.734
32:19'25.13468" N	111:03'03.79050" W	646.644	147081.901	294859.127	675.847	0:27'46.332"	0.999981882	JAYNES	-29.203	2217.341
32:19'05.50525" N	111:09'18.88106" W	744.695	146402.801	285053.305	774.100	0:24'25.521"	0.999963364	NN-115	-29.405	2539.693
32:17'23.34894" N	111:03'50.55263" W	703.640	143320.877	293665.940	732.900	0:27'19.793"	0.999979503	NN-137	-29.260	2404.523

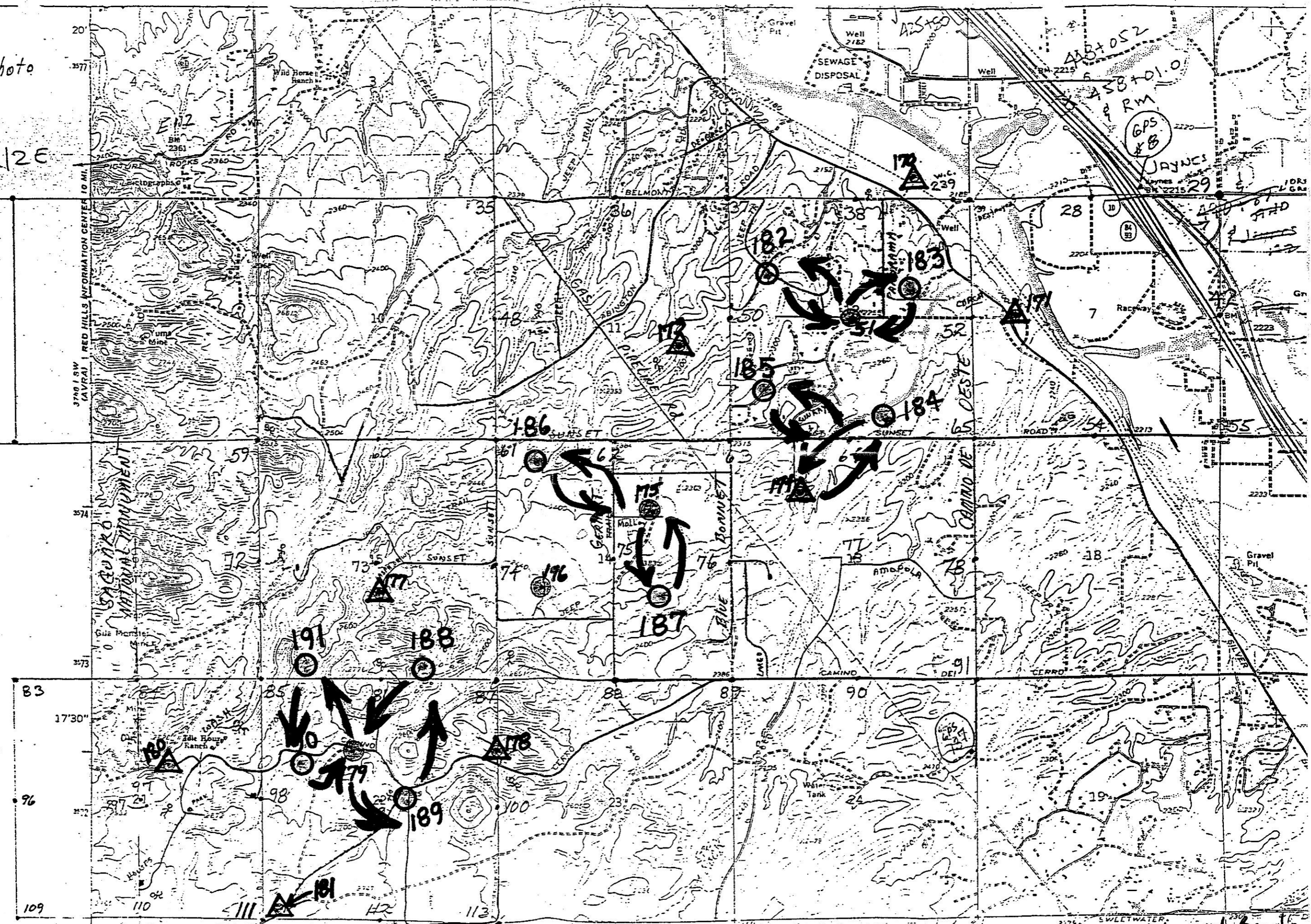
PANEL
No.

HORIZONTAL
CONTROL

IDLE HOUR WASH photo
10 IDHR
MAY 1994
MECREDIE TBS RIZE

GPS
115
1 sec 7
mi
8

BENCH RUN



Map D. 2nd Bench
Run to new points.

National Geodetic Survey, Retrieval Date = SEPTEMBER 4, 1992

DESIGNATION - JAYNES RM 2
PID - CZ0549
STATE/COUNTY- AZ/PIMA

HORZ DATUM - NAD 83
VERT DATUM - NAVD 88

POSITION - 32 19 25. (N) 111 03 03. (W) SCALED
83 minus 27 - +00. +02. SCALED

HEIGHT - 675.864 (meters) 2217.40 (feet) ADJUST
88 minus 29 +0.66 ADJ UNCHK

GEOID HEIGHT- -29.36 GEOID90
MODELED GRAV- 979,261.7 NAVD88

VERT ORDER - FIRST CLASS 2

THE HORIZONTAL COORDINATES WERE SCALED FROM A TOPOGRAPHIC MAP.
THE ORTHOMETRIC HEIGHT WAS DETERMINED BY DIFFERENTIAL LEVELING
AND ADJUSTED BY THE NATIONAL GEODETTIC SURVEY IN JUNE 1991

STATION MARK IS A REFERENCE MARK DISK
WITH SETTING: SET IN TOP OF CONCRETE MONUMENT (ROUND)
THE MONUMENT IS 0.3 METERS BELOW THE HEIGHT OF THE FRONTAGE ROAD
THE MARK IS STAMPED: JAYNES NO 2 1935

HISTORY	- Year Condition	Recov. By
HISTORY	- 1935 STATION MONUMENTED	COAST AND GEODETTIC SURVEY
HISTORY	- 1951 GOOD	NATIONAL GEODETTIC SURVEY
HISTORY	- 1980 GOOD	NATIONAL GEODETTIC SURVEY

STATION DESCRIPTION

DESCRIBED BY NATIONAL GEODETTIC SURVEY 1951
2.1 MILES NORTHWEST ALONG STATE HIGHWAY 84 AND THE SOUTHERN PACIFIC
RAILROAD FROM THE RAILROAD STATION AT JAYNES, 0.7 MILE NORTHWEST OF
RILLITO CREEK, 0.3 MILE NORTHWEST OF A T JUNCTION OF THE HIGHWAY AND A
GRAVEL ROAD LEADING NORTHEAST TO GREEN FIELDS BOYS SCHOOL, 8 POLES
SOUTHEAST OF MILE POLE 975, 66 YARDS SOUTHWEST OF THE SOUTHWEST RAIL
OF THE SOUTHERN PACIFIC SINGLE TRACKS, 69.3 FEET NORTHWEST OF JAYNES,
50 1/2 FEET SOUTHWEST OF THE HIGHWAY CENTERLINE, 5.6 FEET NORTHEAST OF
THE HIGHWAY RIGHT-OF-WAY FENCE, IN THE TOP OF A CONCRETE POST SET
ABOUT FLUSH WITH THE GROUND, AND ABOUT LEVEL WITH THE HIGHWAY IN
ELEVATION.

STATION RECOVERY (1980)

RECOVERY NOTE BY NATIONAL GEODETTIC SURVEY 1980
14.0 KILOMETERS (8.7 MILES) NORTHWEST ALONG THE SOUTHERN PACIFIC
RAILROAD FROM THE STATION AT TUCSON, 53.9 METERS (177 FEET) SOUTHWEST
OF AND ACROSS THE FRONTAGE ROAD FROM THE SOUTHWEST RAIL OF THE MAIN
TRACK, 93.5 METERS (307 FEET) NORTHWEST OF THE CENTERLINE OF ORANGE
GROVE ROAD, 28.6 METERS (94 FEET) NORTHEAST OF THE CENTERLINE OF
THE NORTHBOUND ON-RAMP TO INTERSTATE HIGHWAY 10, 21.1 METERS (69
FEET) NORTHWEST OF STATION JAYNES, 16.1 METERS (53 FEET) SOUTHWEST
OF THE CENTERLINE OF THE FRONTAGE ROAD AND 0.8 METER (2.8 FEET)
SOUTHWEST OF A FENCE LINE.
THE PIPE IS ABOVE GROUND LEVEL
THE STATION IS 0.3 METERS BELOW THE HEIGHT OF THE FRONTAGE ROAD .
THE STATION IS 0.2 METERS NE FROM A WITNESS POST

National Geodetic Survey, Retrieval Date = SEPTEMBER 4, 1992

DESIGNATION - Q 291
PID - C20554
STATE/COUNTY- AZ/PIMA

HORZ DATUM - NAD 83
VERT DATUM - NAVD 88

POSITION - 32 18 31. (N) 111 02 26. (W) SCALED
83 minus 27 - +00. +02. SCALED

HEIGHT - 680.389 (meters) 2232.24 (feet) ADJUST
88 minus 29 +0.66 ADJ UNCHK

GEOID HEIGHT- -29.35 GEOID90
MODELED GRAV- 979,259.8 NAVD88

VERT ORDER - FIRST CLASS 2

THE HORIZONTAL COORDINATES WERE SCALED FROM A TOPOGRAPHIC MAP.
THE ORTHOMETRIC HEIGHT WAS DETERMINED BY DIFFERENTIAL LEVELING
AND ADJUSTED BY THE NATIONAL GEODETTIC SURVEY IN JUNE 1991

STATION MARK IS A BENCH MARK DISK
WITH SETTING: SET IN TOP OF CONCRETE MONUMENT (ROUND)
THE MONUMENT IS LEVEL WITH THE HEIGHT OF THE RAILS
THE MARK IS STAMPED: Q 291 1951

HISTORY	- Year Condition	Recov. By
HISTORY	- 1951 STATION MONUMENTED	COAST AND GEODETTIC SURVEY
HISTORY	- 1980 GOOD	NATIONAL GEODETTIC SURVEY

STATION DESCRIPTION

DESCRIBED BY COAST AND GEODETTIC SURVEY 1951
0.8 MILE NORTHWEST ALONG STATE HIGHWAY 84 AND THE SOUTHERN PACIFIC
RAILROAD FROM THE RAILROAD STATION AT JAYNES, 0.5 MILE SOUTHEAST OF
RILLITO CREEK, AT THE T JUNCTION OF THE HIGHWAY WITH A GRAVEL ROAD
LEADING TO SUNSET DAIRY FARMS, 90 FEET NORTHEAST OF THE HIGHWAY
CENTERLINE, 49.7 FEET SOUTHWEST OF THE SOUTHWEST RAIL, 2.8 FEET
SOUTHEAST OF A TELEGRAPH POLE, 2.0 FEET NORTHWEST OF A WITNESS POST,
IN THE TOP OF A CONCRETE POST PROJECTING 0.5 FEET ABOVE GROUND, AND
ABOUT 1 FOOT LOWER THAN THE RAILROAD TRACKS.

STATION RECOVERY (1980)

RECOVERY NOTE BY NATIONAL GEODETTIC SURVEY 1980
11.9 KILOMETERS (7.4 MILES) NORTHWEST ALONG THE SOUTHERN PACIFIC
RAILROAD FROM THE STATION AT TUCSON, 2.0 KILOMETERS (1.25 MILES)
NORTHWEST OF THE CROSSING OF RUTHRAUFF ROAD, 0.1 KILOMETER (0.05 MILE)
SOUTHEAST OF SUNSET ROAD, 15.2 METERS (49.8 FEET) SOUTHWEST OF THE
SOUTHWEST RAIL, 31.7 METERS (104 FEET) NORTHEAST OF THE CENTERLINE
OF THE FRONTAGE ROAD, 10.6 METERS (34.6 FEET) EAST OF THE EAST EDGE
OF A 0.6 METER STEEL PIPE BILLBOARD AND 1.9 METERS (6.2 FEET)
SOUTHEAST OF A TELEGRAPH POLE.
THE PIPE IS ABOVE GROUND LEVEL
THE STATION IS LEVEL WITH THE HEIGHT OF THE RAILS .
THE STATION IS 0.6 METERS NE FROM A WITNESS POST

NOAA - NOS - C&GS
 NATIONAL GEODETIC SURVEY
 DATE PRINTED: Nov 12 1991

HEIGHT OF NGRS VERTICAL CONTROL POINTS
 SORTED BY DESIGNATION

GEODETIC CONTROL DIAGRAM:
 TUCSON
 LATITUDE RANGE: 32 TO 33 DEG N
 LONGITUDE RANGE: 111 TO 112 DEG W

DESIGNATION	MONUMENTING AGENCY	ORTHOMETRIC HEIGHT IN METERS		ORDER & CLASS	YEAR OBS.	YEAR REC.	DATE ADJUSTED	APPROXIMATE POSITION		PLOT #	PERMANENT IDENT.	ST
		NAVD 88	NGVD 29					LATITUDE	LONGITUDE			
D 422	NGS	428.308		1/2	1980	1984G	061591	32-51-54	111-45-25	158	CZ1514	AZ
D 424	NGS	623.170		1/2	1980		061591	32-25-28	111-09-46	24	CZ1434	AZ
D 7 8 USGS	USGS	467.435		1/2	*1984	1984G	061591	32-46-39	111-33-47	129	CZ1508	AZ
E 279	CGS	499.426		1/2	*1984	1984G	061591	32-42-09	111-28-36	102	CZ0331	AZ
E 363	CGS	408.071	407.474B	1/2	*1980	1980G	061591	32-55-40	111-50-21	186	CZ0980	AZ
E 422	NGS	432.805		1/2	*1984	1984G	061591	32-54-05	111-46-26	166	CZ1515	AZ
E 424	NGS	615.019		1/2	1980		061591	32-26-11	111-10-42	30	CZ1435	AZ
F 279	CGS	509.363	509.385B	1/2	*1984	1984G	061591	32-41-34	111-27-37	91	CZ0333	AZ
F 363	CGS	415.450	414.676B	1/2	*1980	1980G	061591	32-54-02	111-47-40	166	CZ0986	AZ
F 424	NGS	593.262		1/2	1980	1987G	061591	32-29-02	111-14-44	41	CZ1438	AZ
G 279	USGS	519.353		1/2	*1984	1984G	061591	32-40-53	111-26-31	91	CZ0335	AZ
G 363	CGS	419.244	418.643B	1/2	*1980	1980G	061591	32-53-33	111-46-56	166	CZ0989	AZ
G 429	NGS	585.842		1/2	1980		061591	32-31-51	111-17-10	52	CZ1441	AZ
H 140	CGS	637.019	636.392B	1/2	*1980	1987G	061591	32-23-46	111-07-22	21	CZ0522	AZ
H 363	CGS	422.511	421.901B	1/2	*1984	1984G	061591	32-53-06	111-46-10	166	CZ0994	AZ
H 424	NGS	578.271		1/2	1980		061591	32-33-15	111-18-21	58	CZ1443	AZ
J 278	CGS	431.668	431.099B	1/2	*1984	1984G	061591	32-51-57	111-44-23	158	CZ1011	AZ
J 291	CGS	622.895	622.204B	1/2	*1980	1980P	061591	32-25-19	111-09-30	24	CZ0513	AZ
J 363	CGS	428.416	427.823B	1/2	*1984	1984G	061591	32-52-16	111-44-51	158	CZ1010	AZ
J 424	NGS	551.727		1/2	1980		061591	32-37-10	111-21-37	74	CZ1450	AZ
JAYNES	CGS	675.847	675.183B	1/2	*1980	1990G	061591	32-19-24	111-03-01	8	CZ0547	AZ
JAYNES RM 2	CGS	675.864	675.202B	1/2	*1980	1980G	061591	32-19-25	111-03-01	8	CZ0549	AZ
JAYNES RM 3 AZIMUTH	CGS	674.477	673.812B	1/2	*1980	1980G	061591	32-19-17	111-02-52	8	CZ0551	AZ
K 279 AZHD	AZHD	540.776	540.182B	1/2	*1984	1984G	061591	32-39-17	111-24-00	79	CZ0339	AZ
K 291	CGS	627.388	626.767B	1/2	*1980	1980G	061591	32-24-55	111-08-59	24	CZ0515	AZ
K 363	CGS	436.905	436.373B	1/2	*1984	1984G	061591	32-51-14	111-43-09	152	CZ1014	AZ
K 424	NGS	534.626		1/2	*1984	1984G	061591	32-39-44	111-24-41	84	CZ1456	AZ
L 279 AZHD	AZHD	541.649	541.051B	1/2	*1984	1984G	061591	32-39-12	111-23-51	79	CZ0340	AZ
L 295	CGS	649.866	649.221B	1/2	*1980	1980G	061591	32-23-46	111-08-38	21	CZ0754	AZ
L 363	CGS	438.471	437.969B	1/2	*1984	1984G	061591	32-50-54	111-42-37	152	CZ1015	AZ

S INDICATES THIS POINT IS IN AN AREA OF APPARENT CRUSTAL MOVEMENT (WHEN IMPLEMENTED).

* INDICATES THIS POINT WAS INCLUDED ON MORE THAN ONE SURVEY.

FOR CONVERSION OF METERS TO U.S. SURVEY FEET, MULTIPLY THE METERS BY 3.2808333333 (TO 12 SIGNIFICANT FIGURES).

FOR CONVERSION OF METERS TO INTERNATIONAL FEET, MULTIPLY THE METERS BY 3.28083989501 (TO 12 SIGNIFICANT FIGURES).

NOAA - NOS - C&GS
 NATIONAL GEODETIC SURVEY
 DATE PRINTED: Nov 12 1991

HEIGHT OF NGRS VERTICAL CONTROL POINTS
 SORTED BY DESIGNATION

GEODETIC CONTROL DIAGRAM:
 TUCSON

LATITUDE RANGE: 32 TO 33 DEG N
 LONGITUDE RANGE: 111 TO 112 DEG W

DESIGNATION	MONUMENTING AGENCY	ORTHOMETRIC HEIGHT IN METERS		ORDER & CLASS	YEAR DATE			APPROXIMATE POSITION		PLOT #	PERMANENT IDENT.	ST
		NAVD 88	NGVD 29		OBS.	REC.	ADJUSTED	LATITUDE	LONGITUDE			
L 424	NGS	546.157		1/2	*1984	1984G	061591	32-38-51	111-23-27	79	CZ1453	AZ
LITO	CGS	627.214	626.591B	1/2	*1980	1980G	061591	32-24-54	111-09-00	21	CZ0854	AZ
M 260 AZHD	AZHD	592.385	591.908B	1/2	*1980	1980G	061591	32-30-53	111-16-22	40	CZ0362	AZ
M 278	CGS	441.379	440.871B	1/2	*1984	1984G	061591	32-50-24	111-41-48	148	CZ1018	AZ
M 279 AZHD	AZHD	547.524	546.918B	1/2	*1984	1987G	061591	32-38-42	111-23-10	79	CZ0342	AZ
M 363	CGS	444.296	443.926B	1/2	*1984	1984G	061591	32-49-57	111-41-05	148	CZ1023	AZ
MARANA AZ MK	CGS	620.047	619.438B	1/2	*1980	1980G	061591	32-25-47	111-10-11	24	CZ0505	AZ
N 260 AZHD	AZHD	594.127	593.610B	1/2	*1980	1980G	061591	32-30-33	111-16-05	40	CZ0369	AZ
N 278	CGS	444.778	444.359B	1/2	*1984	1984G	061591	32-49-50	111-40-54	148	CZ1024	AZ
N 291	CGS	657.537	656.885B	1/2	*1980	1980P	061591	32-21-25	111-05-10	14	CZ0535	AZ
N 363	CGS	445.726	445.378B	1/2	*1984	1984G	061591	32-49-38	111-40-35	148	CZ1025	AZ
NAVISKA 2 RESET	NGS	594.120		1/2	1980	1987G	061591	32-30-09	111-15-46	40	CZ1439	AZ
NAVISKA 2 RM 1	CGS	594.713	594.200B	1/2	*1980	1980G	061591	32-30-09	111-15-45	40	CZ0477	AZ
NAVISKA 2 RM 2	CGS	593.404	592.885B	1/2	*1980	1980G	061591	32-30-09	111-15-47	40	CZ0475	AZ
OCOTILLA	CGS	514.023	513.926B	1/2	*1984	1984G	061591	32-41-08	111-27-04	91	CZ0464	AZ
OVER PASS	CGS	577.932	577.464B	1/2	*1980	1980G	061591	32-34-21	111-19-20	64	CZ0470	AZ
OVERPASS RM 1	CGS	577.921		1/2	1980	1980G	061591	32-34-21	111-19-20	64	CZ1446	AZ
OVERPASS RM 2 AZHD	AZHD	577.969		1/2	1980	1980G	061591	32-34-21	111-19-20	64	CZ1445	AZ
P 260 AZHD	AZHD	594.340	593.839B	1/2	*1980	1980G	061591	32-30-06	111-15-42	49	CZ0375	AZ
P 278	CGS	447.960	447.562B	1/2	*1984	1984G	061591	32-49-23	111-40-10	140	CZ1026	AZ
P 291	CGS	678.317	677.648B	1/2	*1980	1980G	061591	32-18-56	111-02-37	8	CZ0552	AZ
P 363	CGS	462.574	462.285B	1/2	*1984	1984G	061591	32-47-03	111-36-24	134	CZ1038	AZ
Q 277	CGS	402.865	402.294B	1/2	*1980	1980G	061591	32-57-36	111-53-30	198	CZ0974	AZ
Q 278	CGS	450.717	450.207B	1/2	*1984	1984G	061591	32-48-57	111-39-29	140	CZ1028	AZ
Q 279	CGS	554.009	553.664B	1/2	*1980	1987G	061591	32-36-49	111-21-19	74	CZ0344	AZ
Q 291	CGS	680.389	679.727B	1/2	*1980	1980G	061591	32-18-31	111-02-24	8	CZ0554	AZ
Q 363	CGS	457.249	456.635B	1/2	*1984	1984G	061591	32-49-17	111-38-06	140	CZ1032	AZ
R 277	CGS	406.471	405.878B	1/2	*1980	1980G	061591	32-57-08	111-52-45	198	CZ0975	AZ
R 363	CGS	464.114	463.502B	1/2	*1984	1984G	061591	32-49-13	111-38-01	140	CZ1033	AZ
R 423	NGS	696.927		1/2	1980		061591	32-16-22	111-00-36	5	CZ1417	AZ

\$ INDICATES THIS POINT IS IN AN AREA OF APPARENT CRUSTAL MOVEMENT (WHEN IMPLEMENTED).

* INDICATES THIS POINT WAS INCLUDED ON MORE THAN ONE SURVEY.

FOR CONVERSION OF METERS TO U.S. SURVEY FEET, MULTIPLY THE METERS BY 3.280833333333 (TO 12 SIGNIFICANT FIGURES).

FOR CONVERSION OF METERS TO INTERNATIONAL FEET, MULTIPLY THE METERS BY 3.28083989501 (TO 12 SIGNIFICANT FIGURES).

2. EARTH FILL PLACEMENT

N/A

1. The fill is: Existing Proposed

2. Has fill been/will be placed in the regulatory floodway? Yes No
If yes, please attach completed Riverine Hydraulic Analysis Form.

3. Has fill been/will be placed in floodway fringe (area between the floodway and 100-year floodplain boundaries)? Yes No

If yes, then complete A, B, C, and D below.

A. Are fill slopes for granular materials steeper than one vertical on one-and-one-half horizontal? Yes No

If yes, justify steeper slopes _____

B. Is adequate erosion protection provided for fill slopes exposed to moving flood waters? (Slopes exposed to flows with velocities of up to 5 feet per second (fps) during the 100-year flood must, at a minimum, be protected by a cover of grass, vines, weeds, or similar vegetation; slopes exposed to flows with velocities greater than 5 fps during the 100-year flood must, at a minimum, be protected by stone or rock riprap.) Yes No

If no, describe erosion protection provided _____

C. Has all fill placed in revised 100-year floodplain been compacted to 95 percent of the maximum density obtainable with the Standard Proctor Test Method or acceptable equivalent method? Yes No

D. Can structures conceivably be constructed on the fill at any time in the future? Yes No

If yes, provide certification of fill compaction (item C. above) by the community's NFIP permit official, a registered professional engineer, or an accredited soils engineer.

4. Has fill been/will be placed in a V-zone? Yes No

If yes, is the fill protected from erosion by a flood control structure such as a revetment or seawall? Yes No

If yes, attach the coastal structures form.

131201

GREENWOOD ROAD

DRIVE

PANDRAMA

ROAD

SILVERBELL

ROAD

12

ZONE A

ZONE A

INDIAN LANE

CHINA TERRACE

SUNWAY CIRCLE

LARKSPUR

RIDGE DR.

DR.

WAY

SENITA

SUNPAT DR.

SUNSET

SUNSET

SUNSET

ROAD

ROAD

131212

131211

ZONE A

EXISTING ZONE A

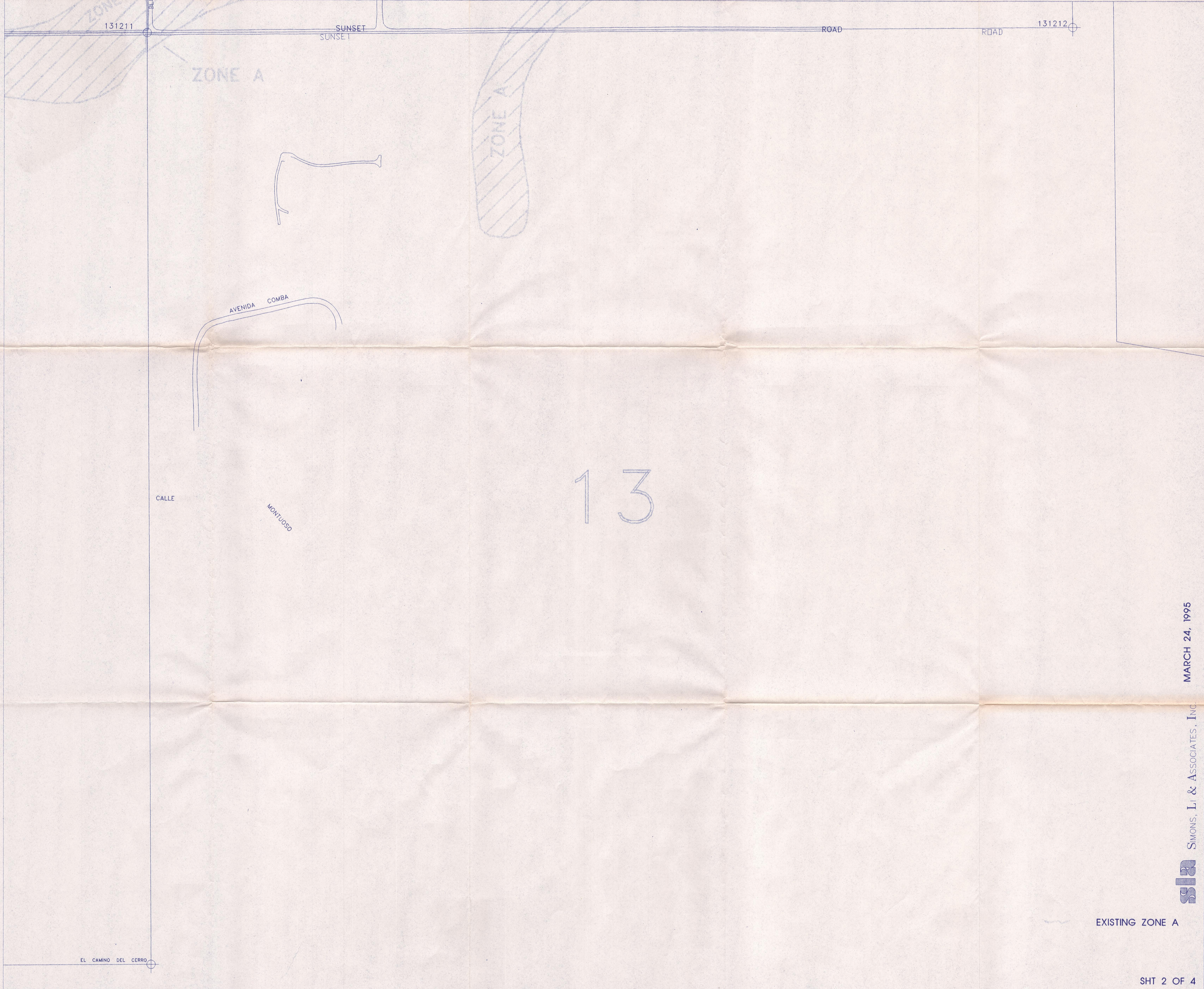
SHT 1 OF 4

ssia SIMONS, LI & ASSOCIATES, INC. MARCH 24, 1995

EFFECTIVE FIRM FLOODPLAIN LIMITS (2-15-83)
PROPERTY BOUNDARY MAP
SCALE: 1"=200'

PIMA COUNTY FLOOD CONTROL DISTRICT

IDLE HOUR WASH
SEC 12, T13S, R12E
PIMA COUNTY, AZ



EXISTING ZONE A



EFFECTIVE FIRM FLOODPLAIN LIMITS (2-15-83)
PROPERTY BOUNDARY MAP
SCALE: 1"=200'

PIMA COUNTY FLOOD CONTROL DISTRICT

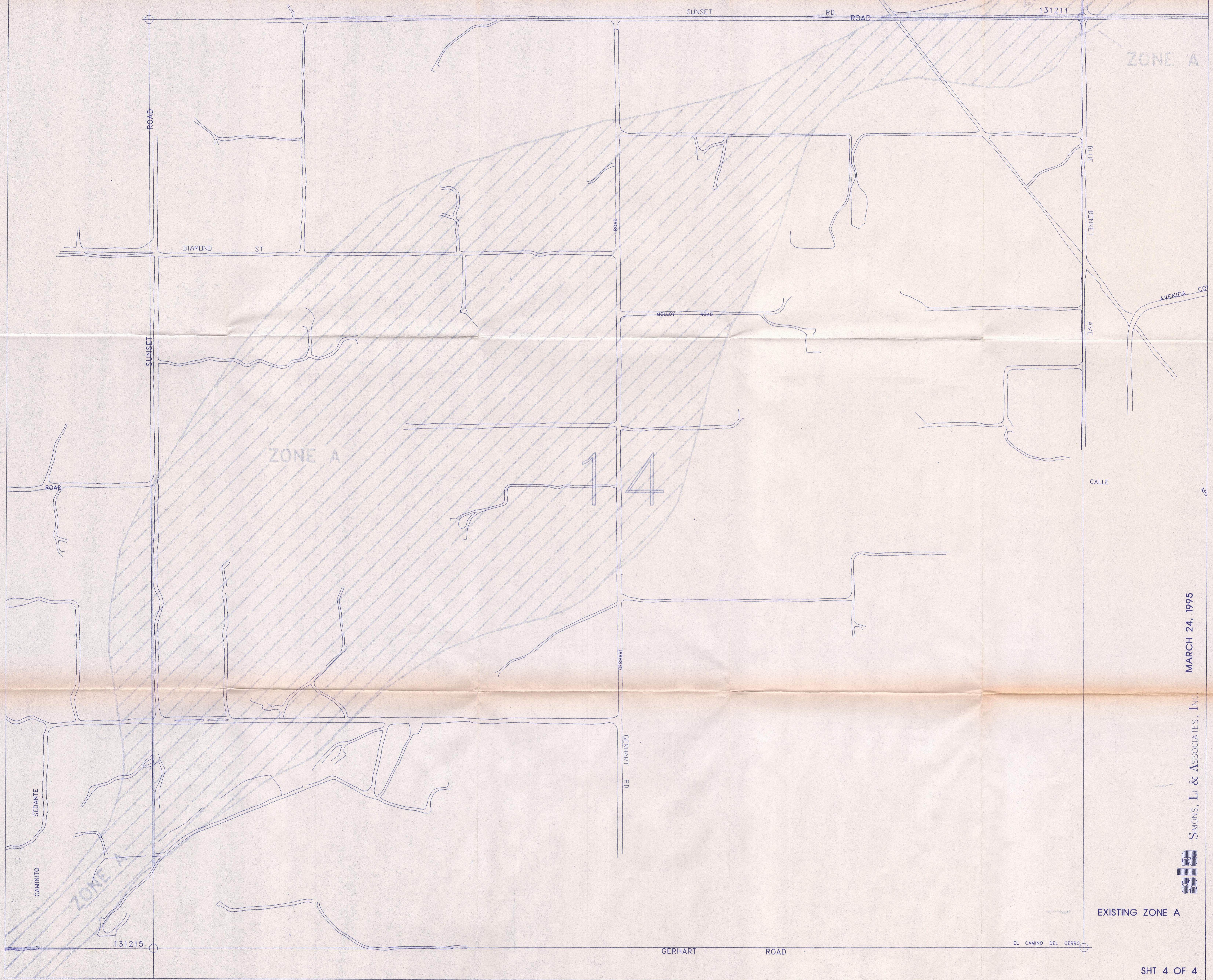
IDLE HOUR WASH
SEC 22, T13S, R12E
PIMA COUNTY, AZ

MARCH 24, 1995

SIMONS, L. & ASSOCIATES, INC.



EXISTING ZONE A



EFFECTIVE FIRM FLOODPLAIN LIMITS (2-15-83)
PROPERTY BOUNDARY MAP
SCALE: 1"=200'

PIMA COUNTY FLOOD CONTROL DISTRICT

IDLE HOUR WASH
SEC 14, T13S, R12E
PIMA COUNTY, AZ



EXISTING ZONE A