

Mission Wash Study

By MMLA

For FEMA

Effective date for FIRM Panels, July 24, 2000
FIRM panel # 0419C2810

assumed
~~1988 datum~~
(not in with firm June 1996 photo)
FIRM
USE corrected WSELs.
Steve Dotson
12-6-2002

PIMA COUNTY MICROGRAPHICS ADDITION & CORRECTION REPORT

FROM: BILL SNELL

SUBDIVISION ADDRESS MAP 41 79 1
BOOK PAGE SHEET

DEVELOPMENT PLAN _____
BOOK PAGE SHEET

SUBDIVISION / DEVELOPMENT PLAN INDEX

RESUBDIVISION TO _____
BOOK PAGE

ADDRESS CHANGE FROM: _____

TO: _____

PLEASE DESCRIBE THE ADDITION AND OR CORRECTION BELOW :

~~REMOVE NOTE 11 RELEAS NOTE 11~~

Bill Snell 9-6-01

P.D.S. FORM 57

Please keep work maps
in order 1: 2: 3!
WSEL are only accurate
between the wash boundary
lines. Outside of the lines
use the standard 2' above
highest adjacent grade.

Asad
3-17-03

2



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

(520) 740-6410
FAX (520) 620-1933

November 25, 1996

Chris Rod
Mc Govern MacVittie Lodge & Associates
800 E. Wetmore Road, Suite 110
Tucson, Arizona 85719

Re: Mission Wash Study

Dear Chris:

Thank you for allowing the Pima County Flood Control District the opportunity to review the work maps for the Mission Wash restudy covered under your firm's contract with the Federal Emergency Management Agency. The following questions are offered:

- The northern portion of cross-section 83 extends into the edge of a detention basin. As a result the increases in elevation at this end of the cross section are more gradual. If this cross-section was relocated slightly to the west, would lots 213 and 214 of Mission West be included into the revised floodplain?
- The berm to the west of San Xavier Estates would not meet FEMA's levee standards and the work maps indicate the modeling was performed assuming the berm does not impact the floodplain. This office agrees the berm would probably fail. However, it's presence may increase the width of the floodplain upstream. If the berm remains partially intact during the regulatory event, shouldn't the widths and depths of the flow upstream be larger?

Please let me know if you would like to further discuss the Mission Wash work maps.

Sincerely,

R. "Terry" Hendricks
Principal Hydrologist
Flood Control District

cc: Tim Morrison, Manager, Floodplain Management

c:\terry\letter96\mmmlamiss.ltr

PROJECT NAME AND LOCATION: FEMA 1994

DRAINAGE CONCENTRATION POINT: WATERSHED A @ C.P. A

WATERSHED AREA (A): 3560.50 acres

LENGTH OF WATERCOURSE (Lc): 59000. ft

LENGTH TO CENTER OF GRAVITY (Lca): 29500. ft

INCREMENTAL CHANGE IN LENGTH (Li) - ft INCREMENTAL CHANGE IN ELEV (Hi) - ft

16000.

180.0

43000.

1040.0

MEAN SLOPE (Sc): .0191 ft BASIN FACTOR (Nb): .0500

WATERSHED TYPE(S): VALLEY

RAINFALL VALUES

	EVENT					
	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
P 1	1.14	1.55	1.82	2.18	2.50	2.81
P 2	1.30	1.75	2.05	2.44	2.80	3.15
P 3	1.40	1.88	2.21	2.62	3.00	3.37
P 6	1.60	2.14	2.50	2.96	3.38	3.80
P24	2.10	2.74	3.16	3.71	4.21	4.70

SOIL GROUPS

7. % A, CN= 72, COVER TYPE= DESERT BRUSH , COVER DENSITY= 25 %
62. % B, CN= 82, COVER TYPE= DESERT BRUSH , COVER DENSITY= 25 %
31. % D, CN= 91, COVER TYPE= DESERT BRUSH , COVER DENSITY= 25 %

IMPERVIOUS COVER= 0. %

RAINFALL/RUNOFF AND PEAK DISCHARGE DATA

	EVENT					
	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
RUNOFF SUPPLY RATE (q/i):	.147	.305	.393	.484	.550	.602
Tc (FUNCTION OF i) :	372.50	278.27	251.44	231.32	219.87	212.06
SOLUTION OF Tc (MINUTES):	843	459	356	285	244	215
RAINFLL INT. @ Tc (IN/HR):	.130	.287	.420	.594	.772	.965
RUNOFF RATE @ Tc (IN/HR):	.019	.088	.165	.288	.424	.581
PEAK DISCHARGE (CFS) :	69.	314.	593.	1033.	1523.	2085.

PROJECT NAME AND LOCATION: FEMA 1994

DRAINAGE CONCENTRATION POINT: WATERSHED A & B & C @ C.P. C

WATERSHED AREA (A): 10632.00 acres

LENGTH OF WATERCOURSE (Lc): 67900. ft

LENGTH TO CENTER OF GRAVITY (Lca): 33950. ft

INCREMENTAL CHANGE IN LENGTH (Li) - ft INCREMENTAL CHANGE IN ELEV (Hi) - ft

16000.	180.0
43000.	1040.0
8900.	40.0

MEAN SLOPE (Sc): .0147 ft BASIN FACTOR (Nb): .0500

WATERSHED TYPE(S): VALLEY

RAINFALL VALUES

	EVENT					
	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
P 1	1.04	1.35	1.62	1.96	2.27	2.57
P 2	1.21	1.58	1.87	2.26	2.60	2.95
P 3	1.34	1.76	2.08	2.49	2.87	3.23
P 6	1.56	2.05	2.40	2.86	3.28	3.69
P24	2.05	2.63	3.05	3.59	4.09	4.58

SOIL GROUPS

2. % A,	CN= 72,	COVER TYPE= DESERT BRUSH	,	COVER DENSITY= 25 %
62. % B,	CN= 82,	COVER TYPE= DESERT BRUSH	,	COVER DENSITY= 25 %
36. % D,	CN= 91,	COVER TYPE= DESERT BRUSH	,	COVER DENSITY= 25 %

IMPERVIOUS COVER= 0. %

RAINFALL/RUNOFF AND PEAK DISCHARGE DATA

	EVENT					
	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
RUNOFF SUPPLY RATE (q/i):	.121	.250	.348	.451	.525	.583
Tc (FUNCTION OF i) :	486.14	363.89	318.66	287.32	270.42	259.28
SOLUTION OF Tc (MINUTES):	1252	708	526	402	338	297
RAINFL INT. @ Tc (IN/HR):	.094	.189	.286	.432	.574	.714
RUNOFF RATE @ Tc (IN/HR):	.011	.047	.099	.195	.301	.416
PEAK DISCHARGE (CFS) :	122.	507.	1066.	2087.	3227.	4460.

NOTE: AREA > 10 SQ. MI. RAINFALL VALUES SHOWN HAVE BEEN AREALY REDUCED



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

BROOKS A. KEENAN, P.E.
DIRECTOR

(520) 740-6410
FAX (520) 620-1933

September 20, 1999

Massoud Rezakhani, P.E.
c/o Baker Engineering
1313 E. Osborn Road, Suite 150
Phoenix, Arizona 85014

Re: Mission West LMMP

Dear Mr. Rezakhani:

Our office has reassessed the floodplain maps generated by McGovern, MacVittie, Lodge & Associates (MMLA) for the Mission West Wash LMMP, (FIRM panel 04019C2810 K). The MMLA study did not map the southern tributary flow which drains over 14 square miles. Because of tributary flow we recommend the area south of the Mission West Wash be kept as an A Zone unless additional mapping is performed.

Enclosed you will find two exhibits. Exhibit A shows the existing FIRM information overlaid on an aerial photograph. The photograph has been highlighted to show the floodplain limits generated by MMLA. Exhibit B is a U-2 photograph that has been highlighted to show the watersheds coming from the south. The box at the top left hand corner represents the outline of the area covered by Exhibit A.

Please let me know if you have any questions with this information or if you need additional data from this office for the Mission West Wash or its tributaries.

Sincerely,

A handwritten signature in black ink, appearing to read "Terry Hendricks".

R. "Terry" Hendricks
Principal Hydrologist
Floodplain Management

cc: Tim Morrison, P.E., Manager Floodplain Management Section

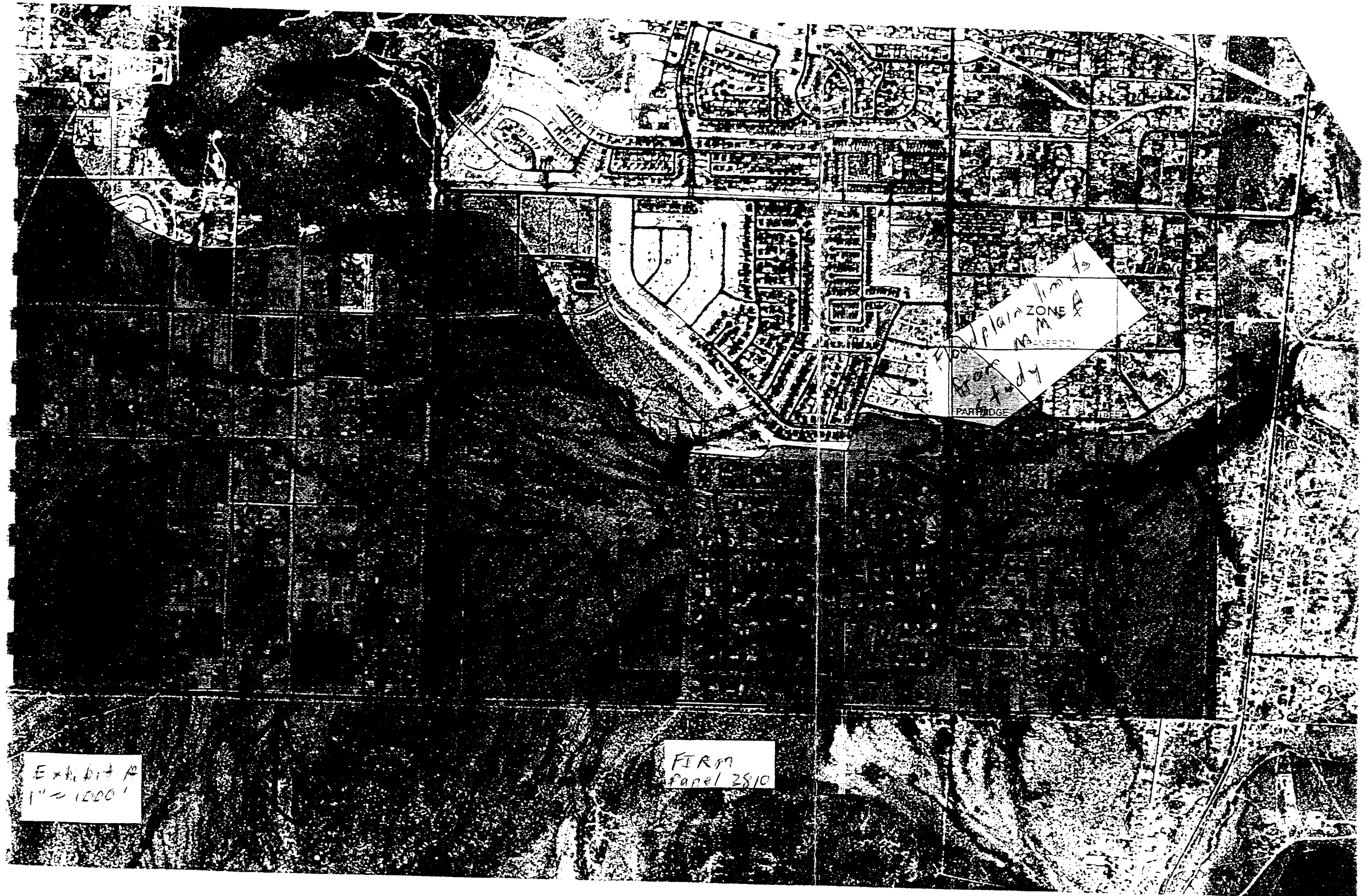


Exhibit A
1" = 1000'

FIRM
panel 2810

Plain Zone
M
M

Exhibit B
1972-U2 photos
1" ~ 1 mile

7.441
Sg notes
WEST
DRAINAGE
4149 cfs

6.761
Sg notes
EAST
DRAINAGE
3944 cfs

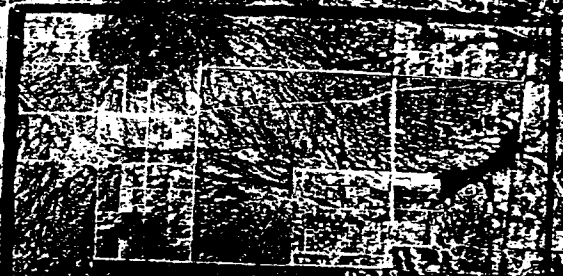
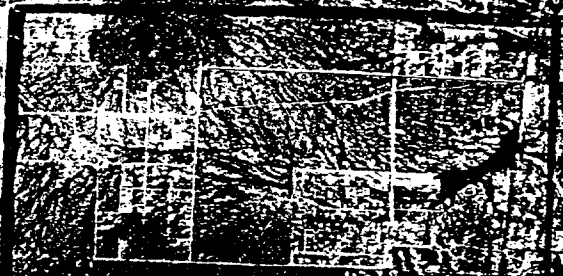


Exhibit B
1972-U2 photos
1" = 1 mile

7.441
S. 100' E
WEST
DRAINAGE
4149 cfs

6.761
S. 100' E
EAST
DRAINAGE
3944 cfs



The following Discharges
were generated using
the USGS Regression
Equations for Region 13

$$Q_{100} = 10^{(5.52 - 2.42 \text{ Area}^{-0.12})}$$

for the western watershed
the drainage area is

7.441 mi²

Therefore the discharge is

4,149 cfs

for the eastern watershed
the drainage area is 6.761
mi²

Therefore the discharge is

3,944 cfs

FEMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 97

STATION	200.00	ELEVATION	2564.00	MANNING'S 'n'	0.000
STATION	320.00	ELEVATION	2562.00	MANNING'S 'n'	0.060
STATION	440.00	ELEVATION	2560.00	MANNING'S 'n'	0.060
STATION	480.00	ELEVATION	2560.00	MANNING'S 'n'	0.060
STATION	560.00	ELEVATION	2558.00	MANNING'S 'n'	0.060
STATION	600.00	ELEVATION	2557.50	MANNING'S 'n'	0.060
STATION	910.00	ELEVATION	2558.00	MANNING'S 'n'	0.060
STATION	990.00	ELEVATION	2558.50	MANNING'S 'n'	0.060
STATION	1030.00	ELEVATION	2558.00	MANNING'S 'n'	0.035
STATION	1060.00	ELEVATION	2557.00	MANNING'S 'n'	0.035
STATION	1085.00	ELEVATION	2558.00	MANNING'S 'n'	0.035
STATION	1250.00	ELEVATION	2560.00	MANNING'S 'n'	0.060
STATION	1560.00	ELEVATION	2562.00	MANNING'S 'n'	0.060
STATION	1850.00	ELEVATION	2564.00	MANNING'S 'n'	0.060

RESULTS

Equivalent Manning's 'n' 0.056
Channel Slope 0.500%
W.S. Elevation 2559.37
Area 920.14 SF
Perimeter 693.06 Ft.
Near Bank 505.1
Far Bank 1198.1
Discharge 2086.12 cfs
Velocity 2.27 fps

EMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 98

STATION	200.00	ELEVATION	2566.00	MANNING'S 'n'	0.000
STATION	307.00	ELEVATION	2564.00	MANNING'S 'n'	0.060
STATION	412.00	ELEVATION	2562.00	MANNING'S 'n'	0.060
STATION	654.00	ELEVATION	2560.00	MANNING'S 'n'	0.060
STATION	682.00	ELEVATION	2558.00	MANNING'S 'n'	0.035
STATION	692.00	ELEVATION	2558.00	MANNING'S 'n'	0.035
STATION	742.00	ELEVATION	2560.00	MANNING'S 'n'	0.035
STATION	847.00	ELEVATION	2560.00	MANNING'S 'n'	0.060
STATION	952.00	ELEVATION	2560.00	MANNING'S 'n'	0.060
STATION	1032.00	ELEVATION	2560.00	MANNING'S 'n'	0.060
STATION	1172.00	ELEVATION	2560.00	MANNING'S 'n'	0.060
STATION	1297.00	ELEVATION	2562.00	MANNING'S 'n'	0.060
STATION	1447.00	ELEVATION	2562.00	MANNING'S 'n'	0.060
STATION	1662.00	ELEVATION	2564.00	MANNING'S 'n'	0.060

RESULTS

Equivalent Manning's 'n' 0.054
 Channel Slope 0.500%
 W.S. Elevation 2561.31
 Area 937.04 SF
 Perimeter 759.24 Ft.
 Near Bank 495.0
 Far Bank 1254.1
 Discharge 2086.31 cfs
 Velocity 2.23 fps

FEMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 99

STATION	200.00	ELEVATION	2566.00	MANNING'S 'n'	0.000
STATION	332.00	ELEVATION	2564.00	MANNING'S 'n'	0.060
STATION	449.00	ELEVATION	2562.00	MANNING'S 'n'	0.060
STATION	814.00	ELEVATION	2560.80	MANNING'S 'n'	0.035
STATION	1079.00	ELEVATION	2562.00	MANNING'S 'n'	0.035
STATION	1344.00	ELEVATION	2564.00	MANNING'S 'n'	0.060
STATION	1609.00	ELEVATION	2566.00	MANNING'S 'n'	0.060

RESULTS

Equivalent Manning's 'n' 0.036
Channel Slope 0.500%
W.S. Elevation 2562.50
Area 717.39 SF
Perimeter 725.65 Ft.
Near Bank 419.7
Far Bank 1145.3
Discharge 2087.59 cfs
Velocity 2.91 fps

MA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 100

STATION	200.00	ELEVATION	2568.00	MANNING'S 'n'	0.000
STATION	305.00	ELEVATION	2566.00	MANNING'S 'n'	0.060
STATION	477.00	ELEVATION	2564.00	MANNING'S 'n'	0.060
STATION	645.00	ELEVATION	2562.00	MANNING'S 'n'	0.060
STATION	785.00	ELEVATION	2561.30	MANNING'S 'n'	0.035
STATION	915.00	ELEVATION	2562.00	MANNING'S 'n'	0.035
STATION	1310.00	ELEVATION	2564.00	MANNING'S 'n'	0.060
STATION	1553.00	ELEVATION	2566.00	MANNING'S 'n'	0.060
STATION	1765.00	ELEVATION	2568.00	MANNING'S 'n'	0.060

RESULTS

Equivalent Manning's 'n' 0.045
Channel Slope 0.500%
W.S. Elevation 2563.48
Area 799.70 SF
Perimeter 685.53 Ft.
Near Bank 521.0
Far Bank 1206.5
Discharge 2088.44 cfs
Velocity 2.61 fps

EMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 96

STATION	600.00	ELEVATION	2560.00	MANNING'S 'n'	0.000
STATION	801.00	ELEVATION	2558.00	MANNING'S 'n'	0.060
STATION	850.00	ELEVATION	2556.00	MANNING'S 'n'	0.060
STATION	952.00	ELEVATION	2556.00	MANNING'S 'n'	0.060
STATION	993.00	ELEVATION	2556.00	MANNING'S 'n'	0.060
STATION	1093.00	ELEVATION	2555.60	MANNING'S 'n'	0.060
STATION	1227.00	ELEVATION	2556.00	MANNING'S 'n'	0.060
STATION	1295.00	ELEVATION	2556.00	MANNING'S 'n'	0.060
STATION	1310.00	ELEVATION	2554.30	MANNING'S 'n'	0.035
STATION	1330.00	ELEVATION	2556.00	MANNING'S 'n'	0.035
STATION	1610.00	ELEVATION	2558.00	MANNING'S 'n'	0.060
STATION	1880.00	ELEVATION	2560.00	MANNING'S 'n'	0.060

RESULTS

Equivalent Manning's 'n' 0.058
 Channel Slope 0.500%
 W.S. Elevation 2557.46
 Area 953.51 SF
 Perimeter 720.57 Ft.
 Near Bank 814.2
 Far Bank 1534.6
 Discharge 2086.45 cfs
 Velocity 2.19 fps

EMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 95

STATION	600.00	ELEVATION	2560.00	MANNING'S 'n'	0.000
STATION	700.00	ELEVATION	2558.00	MANNING'S 'n'	0.060
STATION	920.00	ELEVATION	2556.00	MANNING'S 'n'	0.060
STATION	989.00	ELEVATION	2554.00	MANNING'S 'n'	0.060
STATION	1102.00	ELEVATION	2554.00	MANNING'S 'n'	0.060
STATION	1400.00	ELEVATION	2554.00	MANNING'S 'n'	0.060
STATION	1408.00	ELEVATION	2553.50	MANNING'S 'n'	0.035
STATION	1420.00	ELEVATION	2554.00	MANNING'S 'n'	0.035
STATION	1470.00	ELEVATION	2556.00	MANNING'S 'n'	0.060
STATION	1735.00	ELEVATION	2558.00	MANNING'S 'n'	0.060
STATION	1940.00	ELEVATION	2558.00	MANNING'S 'n'	0.060
STATION	2180.00	ELEVATION	2560.00	MANNING'S 'n'	0.060

RESULTS

Equivalent Manning's 'n' 0.059
Channel Slope 0.500%
W.S. Elevation 2555.76
Area 854.93 SF
Perimeter 535.72 Ft.
Near Bank 928.3
Far Bank 1464.0
Discharge 2085.46 cfs
Velocity 2.44 fps

FEMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 94

STATION	200.00	ELEVATION	2560.00	MANNING'S 'n'	0.000
STATION	265.00	ELEVATION	2558.00	MANNING'S 'n'	0.060
STATION	395.00	ELEVATION	2556.00	MANNING'S 'n'	0.060
STATION	675.00	ELEVATION	2554.00	MANNING'S 'n'	0.060
STATION	895.00	ELEVATION	2552.00	MANNING'S 'n'	0.060
STATION	1030.00	ELEVATION	2552.90	MANNING'S 'n'	0.060
STATION	1175.00	ELEVATION	2552.00	MANNING'S 'n'	0.035
STATION	1190.00	ELEVATION	2551.40	MANNING'S 'n'	0.035
STATION	1205.00	ELEVATION	2552.00	MANNING'S 'n'	0.035
STATION	1485.00	ELEVATION	2554.00	MANNING'S 'n'	0.060
STATION	1815.00	ELEVATION	2556.00	MANNING'S 'n'	0.060
STATION	1895.00	ELEVATION	2556.00	MANNING'S 'n'	0.060
STATION	2135.00	ELEVATION	2558.00	MANNING'S 'n'	0.060

RESULTS

Equivalent Manning's 'n' 0.053
Channel Slope 0.500%
W.S. Elevation 2553.91
Area 932.79 SF
Perimeter 788.07 Ft.
Near Bank 684.7
Far Bank 1472.7
Discharge 2087.45 cfs
Velocity 2.24 fps

FEMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 93

STATION	200.00	ELEVATION	2558.00	MANNING'S 'n'	0.000
STATION	295.00	ELEVATION	2556.00	MANNING'S 'n'	0.060
STATION	435.00	ELEVATION	2554.00	MANNING'S 'n'	0.060
STATION	600.00	ELEVATION	2552.00	MANNING'S 'n'	0.060
STATION	805.00	ELEVATION	2550.00	MANNING'S 'n'	0.060
STATION	965.00	ELEVATION	2549.00	MANNING'S 'n'	0.060
STATION	980.00	ELEVATION	2549.00	MANNING'S 'n'	0.060
STATION	1010.00	ELEVATION	2550.00	MANNING'S 'n'	0.060
STATION	1160.00	ELEVATION	2549.10	MANNING'S 'n'	0.060
STATION	1340.00	ELEVATION	2550.00	MANNING'S 'n'	0.060
STATION	1363.00	ELEVATION	2548.00	MANNING'S 'n'	0.035
STATION	1371.00	ELEVATION	2547.80	MANNING'S 'n'	0.035
STATION	1380.00	ELEVATION	2548.00	MANNING'S 'n'	0.035
STATION	1395.00	ELEVATION	2550.00	MANNING'S 'n'	0.035
STATION	1610.00	ELEVATION	2550.00	MANNING'S 'n'	0.060
STATION	1860.00	ELEVATION	2550.00	MANNING'S 'n'	0.060
STATION	2310.00	ELEVATION	2552.00	MANNING'S 'n'	0.060

RESULTS

Equivalent Manning's 'n' 0.058
 Channel Slope 0.500%
 W.S. Elevation 2550.74
 Area 1204.44 SF
 Perimeter 1298.08 Ft.
 Near Bank 729.0
 Far Bank 2026.8
 Discharge 2089.34 cfs
 Velocity 1.73 fps

FEMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 92

STATION	50.00	ELEVATION	2554.00	MANNING'S 'n'	0.000
STATION	302.00	ELEVATION	2552.00	MANNING'S 'n'	0.060
STATION	442.00	ELEVATION	2550.00	MANNING'S 'n'	0.060
STATION	462.00	ELEVATION	2548.00	MANNING'S 'n'	0.060
STATION	757.00	ELEVATION	2547.00	MANNING'S 'n'	0.060
STATION	1089.00	ELEVATION	2548.00	MANNING'S 'n'	0.060
STATION	1147.00	ELEVATION	2548.00	MANNING'S 'n'	0.060
STATION	1162.00	ELEVATION	2547.00	MANNING'S 'n'	0.035
STATION	1177.00	ELEVATION	2548.00	MANNING'S 'n'	0.035
STATION	1302.00	ELEVATION	2548.30	MANNING'S 'n'	0.035
STATION	1985.00	ELEVATION	2550.00	MANNING'S 'n'	0.060
STATION	2125.00	ELEVATION	2550.00	MANNING'S 'n'	0.060
STATION	2176.00	ELEVATION	2550.00	MANNING'S 'n'	0.060
STATION	2387.00	ELEVATION	2552.00	MANNING'S 'n'	0.060

RESULTS

Equivalent Manning's 'n' 0.057
 Channel Slope 0.500%
 W.S. Elevation 2548.87
 Area 1110.77 SF
 Perimeter 1078.26 Ft.
 Near Bank 453.3
 Far Bank 1531.4
 Discharge 2086.92 cfs
 Velocity 1.88 fps

FEMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 91

STATION	400.00	ELEVATION	2550.00	MANNING'S 'n'	0.000
STATION	485.00	ELEVATION	2548.00	MANNING'S 'n'	0.045
STATION	790.00	ELEVATION	2546.00	MANNING'S 'n'	0.045
STATION	1015.00	ELEVATION	2545.00	MANNING'S 'n'	0.045
STATION	1200.00	ELEVATION	2546.00	MANNING'S 'n'	0.045
STATION	1360.00	ELEVATION	2546.00	MANNING'S 'n'	0.045
STATION	1370.00	ELEVATION	2545.70	MANNING'S 'n'	0.045
STATION	1380.00	ELEVATION	2546.00	MANNING'S 'n'	0.045
STATION	1590.00	ELEVATION	2546.00	MANNING'S 'n'	0.045
STATION	2140.00	ELEVATION	2548.00	MANNING'S 'n'	0.045
STATION	2330.00	ELEVATION	2548.00	MANNING'S 'n'	0.045

RESULTS

Equivalent Manning's 'n' 0.045
Channel Slope 0.500%
W.S. Elevation 2546.80
Area 985.97 SF
Perimeter 1142.46 Ft.
Near Bank 667.8
Far Bank 1810.3
Discharge 2086.92 cfs
Velocity 2.12 fps

FEMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 90

STATION	400.00	ELEVATION	2548.00
STATION	545.00	ELEVATION	2546.00
STATION	920.00	ELEVATION	2544.00
STATION	1025.00	ELEVATION	2544.00
STATION	1265.00	ELEVATION	2544.00
STATION	1477.00	ELEVATION	2543.60
STATION	1775.00	ELEVATION	2543.60
STATION	1975.00	ELEVATION	2544.00
STATION	2260.00	ELEVATION	2546.00
STATION	2395.00	ELEVATION	2546.00
STATION	2885.00	ELEVATION	2548.00

RESULTS

Manning's 'n' 0.045
Channel Slope 0.500%
W.S. Elevation 2544.94
Area 1344.30 SF
Perimeter 1366.48 Ft.
Near Bank 743.0
Far Bank 2109.5
Discharge 3104.92 cfs
Velocity 2.31 fps

FEMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 89

STATION	400.00	ELEVATION	2544.00
STATION	745.00	ELEVATION	2542.00
STATION	1265.00	ELEVATION	2540.00
STATION	1535.00	ELEVATION	2539.30
STATION	1845.00	ELEVATION	2540.00
STATION	2625.00	ELEVATION	2542.00
STATION	3067.00	ELEVATION	2542.70
STATION	3415.00	ELEVATION	2544.00

RESULTS

Manning's 'n' 0.045
Channel Slope 0.500%
W.S. Elevation 2541.46
Area 1749.60 SF
Perimeter 1532.00 Ft.
Near Bank 884.2
Far Bank 2416.2
Discharge 4463.57 cfs
Velocity 2.55 fps

FEMA 1994 MISSION WASH.

BY: Paul VC
8/21/96

CROSS SECTION 88

STATION	0.00	ELEVATION	2542.00
STATION	310.00	ELEVATION	2540.00
STATION	620.00	ELEVATION	2538.00
STATION	1405.00	ELEVATION	2536.00
STATION	1710.00	ELEVATION	2536.00
STATION	2030.00	ELEVATION	2536.00
STATION	2060.00	ELEVATION	2535.90
STATION	2090.00	ELEVATION	2536.00
STATION	2340.00	ELEVATION	2538.00
STATION	3115.00	ELEVATION	2540.00
STATION	3822.00	ELEVATION	2542.00
STATION	3960.00	ELEVATION	2544.00
STATION	4030.00	ELEVATION	2546.00
STATION	4110.00	ELEVATION	2548.00

RESULTS

Manning's 'n' 0.045
Channel Slope 0.500%
W.S. Elevation 2537.58
Area 1737.24 SF
Perimeter 1504.72 Ft.
Near Bank 783.3
Far Bank 2288.0
Discharge 4464.29 cfs
Velocity 2.57 fps

FEMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 87

STATION	200.00	ELEVATION	2540.00
STATION	415.00	ELEVATION	2538.00
STATION	822.00	ELEVATION	2536.00
STATION	1345.00	ELEVATION	2534.00
STATION	1620.00	ELEVATION	2533.70
STATION	1940.00	ELEVATION	2534.00
STATION	2320.00	ELEVATION	2534.00
STATION	2660.00	ELEVATION	2534.00
STATION	3180.00	ELEVATION	2536.00
STATION	3452.00	ELEVATION	2538.00
STATION	3660.00	ELEVATION	2540.00

RESULTS

Manning's 'n' 0.045
Channel Slope 0.500%
W.S. Elevation 2535.13
Area 1908.87 SF
Perimeter 1904.49 Ft.
Near Bank 1049.4
Far Bank 2953.9
Discharge 4464.09 cfs
Velocity 2.34 fps

JOB # 92145-02-45

EMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 86

STATION	0.00	ELEVATION	2536.00
STATION	465.00	ELEVATION	2534.00
STATION	675.00	ELEVATION	2532.00
STATION	1130.00	ELEVATION	2530.00
STATION	1150.00	ELEVATION	2528.00
STATION	1165.00	ELEVATION	2530.00
STATION	2175.00	ELEVATION	2532.00
STATION	2465.00	ELEVATION	2532.00
STATION	2755.00	ELEVATION	2534.00
STATION	2870.00	ELEVATION	2536.00
STATION	3180.00	ELEVATION	2538.00

RESULTS

Manning's 'n' 0.045
Channel Slope 0.500%
W.S. Elevation 2532.17
Area 1880.45 SF
Perimeter 1833.09 Ft.
Near Bank 657.0
Far Bank 2489.9
Discharge 4466.22 cfs
Velocity 2.38 fps

JOB # 92145-02-45

EMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 85

STATION	200.00	ELEVATION	2530.00
STATION	250.00	ELEVATION	2532.00
STATION	728.00	ELEVATION	2530.00
STATION	745.00	ELEVATION	2528.00
STATION	770.00	ELEVATION	2526.00
STATION	785.00	ELEVATION	2525.00
STATION	805.00	ELEVATION	2526.00
STATION	820.00	ELEVATION	2528.00
STATION	835.00	ELEVATION	2530.00
STATION	845.00	ELEVATION	2531.80
STATION	870.00	ELEVATION	2530.00
STATION	2590.00	ELEVATION	2530.00
STATION	2792.00	ELEVATION	2532.00
STATION	3180.00	ELEVATION	2534.00

RESULTS

Manning's 'n' 0.045
Channel Slope 0.500%
W.S. Elevation 2530.85
Area 2005.22 SF
Perimeter 2155.12 Ft.
Near Bank 524.4
Far Bank 2676.0
Discharge 4462.53 cfs
Velocity 2.23 fps

25

JOB # 92145-02-45

FEMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 84

STATION	100.00	ELEVATION	2530.00
STATION	210.00	ELEVATION	2528.00
STATION	495.00	ELEVATION	2528.00
STATION	508.00	ELEVATION	2526.00
STATION	538.00	ELEVATION	2524.30
STATION	570.00	ELEVATION	2526.00
STATION	590.00	ELEVATION	2530.00
STATION	620.00	ELEVATION	2530.00
STATION	1240.00	ELEVATION	2528.00
STATION	1450.00	ELEVATION	2527.90
STATION	1800.00	ELEVATION	2528.00
STATION	2830.00	ELEVATION	2530.00
STATION	3080.00	ELEVATION	2532.00

RESULTS

Manning's 'n' 0.045
Channel Slope 0.500%
W.S. Elevation 2529.18
Area 1935.83 SF
Perimeter 1972.44 Ft.
Near Bank 145.3
Far Bank 2406.3
Discharge 4464.10 cfs
Velocity 2.31 fps

26

JOB # 92145-02-45

FEMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 83

STATION	100.00	ELEVATION	2528.00
STATION	110.00	ELEVATION	2526.00
STATION	125.00	ELEVATION	2524.00
STATION	150.00	ELEVATION	2522.30
STATION	175.00	ELEVATION	2524.00
STATION	195.00	ELEVATION	2526.00
STATION	205.00	ELEVATION	2528.00
STATION	225.00	ELEVATION	2528.00
STATION	235.00	ELEVATION	2526.00
STATION	250.00	ELEVATION	2524.00
STATION	275.00	ELEVATION	2523.70
STATION	305.00	ELEVATION	2524.00
STATION	315.00	ELEVATION	2526.00
STATION	335.00	ELEVATION	2528.00
STATION	355.00	ELEVATION	2528.00
STATION	1505.00	ELEVATION	2526.00
STATION	2420.00	ELEVATION	2528.00
STATION	2825.00	ELEVATION	2530.00

RESULTS

Manning's 'n' 0.045
Channel Slope 0.500%
W.S. Elevation 2527.57
Area 1874.78 SF
Perimeter 1821.67 Ft.
Near Bank 102.2
Far Bank 2221.2
Discharge 4462.35 cfs
Velocity 2.38 fps

22

JOB # 92145-02-45

EMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 82

STATION	0.00	ELEVATION	2524.90
STATION	100.00	ELEVATION	2524.00
STATION	135.00	ELEVATION	2520.00
STATION	185.00	ELEVATION	2520.00
STATION	215.00	ELEVATION	2526.00
STATION	228.00	ELEVATION	2526.00
STATION	252.00	ELEVATION	2520.00
STATION	285.00	ELEVATION	2518.50
STATION	315.00	ELEVATION	2520.00
STATION	332.00	ELEVATION	2526.00
STATION	350.00	ELEVATION	2526.00
STATION	358.00	ELEVATION	2524.00
STATION	2320.00	ELEVATION	2524.00
STATION	2790.00	ELEVATION	2526.00
STATION	2805.00	ELEVATION	2528.00
STATION	2820.00	ELEVATION	2530.00

RESULTS

Manning's 'n' 0.045
Channel Slope 0.500%
W.S. Elevation 2524.63
Area 2089.93 SF
Perimeter 2386.82 Ft.
Near Bank 30.2
Far Bank 2467.6
Discharge 4466.47 cfs
Velocity 2.14 fps

FEMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 81

STATION	100.00	ELEVATION	2524.00
STATION	115.00	ELEVATION	2520.00
STATION	380.00	ELEVATION	2520.00
STATION	420.00	ELEVATION	2526.30
STATION	445.00	ELEVATION	2520.00
STATION	505.00	ELEVATION	2520.00
STATION	527.00	ELEVATION	2522.50
STATION	550.00	ELEVATION	2520.00
STATION	570.00	ELEVATION	2518.00
STATION	595.00	ELEVATION	2516.00
STATION	625.00	ELEVATION	2518.00
STATION	645.00	ELEVATION	2520.00
STATION	665.00	ELEVATION	2522.00
STATION	740.00	ELEVATION	2520.00
STATION	1215.00	ELEVATION	2518.00
STATION	2015.00	ELEVATION	2520.00
STATION	2425.00	ELEVATION	2522.00
STATION	2700.00	ELEVATION	2524.00
STATION	2784.00	ELEVATION	2526.00
STATION	3005.00	ELEVATION	2528.00

RESULTS

Manning's 'n' 0.045
Channel Slope 0.500%
W.S. Elevation 2520.21
Area 1849.01 SF
Perimeter 1756.32 Ft.
Near Bank 114.2
Far Bank 2058.8
Discharge 4468.09 cfs
Velocity 2.42 fps

FEMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 80

STATION	0.00	ELEVATION	2520.00	MANNING'S 'n'	0.000
STATION	145.00	ELEVATION	2518.00	MANNING'S 'n'	0.060
STATION	440.00	ELEVATION	2519.00	MANNING'S 'n'	0.060
STATION	674.00	ELEVATION	2518.00	MANNING'S 'n'	0.060
STATION	896.00	ELEVATION	2516.00	MANNING'S 'n'	0.060
STATION	1147.00	ELEVATION	2514.70	MANNING'S 'n'	0.035
STATION	1680.00	ELEVATION	2516.00	MANNING'S 'n'	0.035
STATION	2115.00	ELEVATION	2518.00	MANNING'S 'n'	0.060
STATION	2335.00	ELEVATION	2520.00	MANNING'S 'n'	0.060

RESULTS

Equivalent Manning's 'n' 0.037
Channel Slope 0.700%
W.S. Elevation 2516.76
Area 1201.35 SF
Perimeter 1033.99 Ft.
Near Bank 811.5
Far Bank 1845.5
Discharge 4463.87 cfs
Velocity 3.72 fps

FEMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 79

STATION	0.00	ELEVATION	2516.00	MANNING'S 'n'	0.000
STATION	527.00	ELEVATION	2514.00	MANNING'S 'n'	0.060
STATION	639.00	ELEVATION	2512.70	MANNING'S 'n'	0.035
STATION	917.00	ELEVATION	2512.70	MANNING'S 'n'	0.035
STATION	1067.00	ELEVATION	2514.00	MANNING'S 'n'	0.035
STATION	1162.00	ELEVATION	2516.00	MANNING'S 'n'	0.060
STATION	1352.00	ELEVATION	2518.00	MANNING'S 'n'	0.060
STATION	1627.00	ELEVATION	2520.00	MANNING'S 'n'	0.060

RESULTS

Equivalent Manning's 'n' 0.037
Channel Slope 0.700%
W.S. Elevation 2514.84
Area 1093.35 SF
Perimeter 800.61 Ft.
Near Bank 306.2
Far Bank 1106.8
Discharge 4462.38 cfs
Velocity 4.08 fps

FEMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 78

STATION	0.00	ELEVATION	2514.00	MANNING'S 'n'	0.000
STATION	295.00	ELEVATION	2512.00	MANNING'S 'n'	0.060
STATION	599.00	ELEVATION	2510.00	MANNING'S 'n'	0.060
STATION	640.00	ELEVATION	2510.00	MANNING'S 'n'	0.035
STATION	859.00	ELEVATION	2510.00	MANNING'S 'n'	0.035
STATION	1075.00	ELEVATION	2512.00	MANNING'S 'n'	0.060
STATION	1262.00	ELEVATION	2514.00	MANNING'S 'n'	0.060
STATION	1370.00	ELEVATION	2516.00	MANNING'S 'n'	0.060
STATION	1470.00	ELEVATION	2518.00	MANNING'S 'n'	0.060
STATION	1650.00	ELEVATION	2520.00	MANNING'S 'n'	0.060

RESULTS

Equivalent Manning's 'n' 0.048
 Channel Slope 0.750%
 W.S. Elevation 2512.29
 Area 1278.03 SF
 Perimeter 850.39 Ft.
 Near Bank 251.9
 Far Bank 1102.3
 Discharge 4463.80 cfs
 Velocity 3.49 fps

FEMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 77

STATION	0.00	ELEVATION	2512.00	MANNING'S 'n'	0.000
STATION	271.00	ELEVATION	2511.90	MANNING'S 'n'	0.060
STATION	698.00	ELEVATION	2510.00	MANNING'S 'n'	0.060
STATION	1011.00	ELEVATION	2508.30	MANNING'S 'n'	0.035
STATION	1465.00	ELEVATION	2510.00	MANNING'S 'n'	0.035
STATION	1532.00	ELEVATION	2512.00	MANNING'S 'n'	0.040
STATION	1690.00	ELEVATION	2514.00	MANNING'S 'n'	0.040
STATION	1875.00	ELEVATION	2516.00	MANNING'S 'n'	0.040
STATION	1971.00	ELEVATION	2518.00	MANNING'S 'n'	0.040
STATION	2150.00	ELEVATION	2520.00	MANNING'S 'n'	0.040

RESULTS

Equivalent Manning's 'n' 0.036
Channel Slope 0.600%
W.S. Elevation 2510.63
Area 1185.60 SF
Perimeter 929.50 Ft.
Near Bank 556.6
Far Bank 1486.1
Discharge 4462.75 cfs
Velocity 3.76 fps

EMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 76

STATION	0.00	ELEVATION	2510.00	MANNING'S 'n'	0.000
STATION	370.00	ELEVATION	2508.00	MANNING'S 'n'	0.060
STATION	695.00	ELEVATION	2506.00	MANNING'S 'n'	0.060
STATION	925.00	ELEVATION	2506.00	MANNING'S 'n'	0.035
STATION	1090.00	ELEVATION	2508.00	MANNING'S 'n'	0.040
STATION	1245.00	ELEVATION	2510.00	MANNING'S 'n'	0.040
STATION	1325.00	ELEVATION	2512.00	MANNING'S 'n'	0.040
STATION	1427.00	ELEVATION	2514.00	MANNING'S 'n'	0.040
STATION	1617.00	ELEVATION	2516.00	MANNING'S 'n'	0.040
STATION	1775.00	ELEVATION	2518.00	MANNING'S 'n'	0.040

RESULTS

Equivalent Manning's 'n' 0.045
Channel Slope 0.600%
W.S. Elevation 2508.46
Area 1309.97 SF
Perimeter 841.08 Ft.
Near Bank 284.7
Far Bank 1125.7
Discharge 4463.49 cfs
Velocity 3.41 fps

FEMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 75

STATION	0.00	ELEVATION	2510.00	MANNING'S 'n'	0.000
STATION	490.00	ELEVATION	2508.00	MANNING'S 'n'	0.060
STATION	815.00	ELEVATION	2506.00	MANNING'S 'n'	0.060
STATION	1080.00	ELEVATION	2504.00	MANNING'S 'n'	0.060
STATION	1240.00	ELEVATION	2504.00	MANNING'S 'n'	0.035
STATION	1349.00	ELEVATION	2506.00	MANNING'S 'n'	0.035
STATION	1450.00	ELEVATION	2508.00	MANNING'S 'n'	0.040
STATION	1575.00	ELEVATION	2510.00	MANNING'S 'n'	0.040
STATION	1760.00	ELEVATION	2512.00	MANNING'S 'n'	0.040
STATION	1839.00	ELEVATION	2514.00	MANNING'S 'n'	0.040
STATION	2200.00	ELEVATION	2516.00	MANNING'S 'n'	0.040

RESULTS

Equivalent Manning's 'n' 0.046
Channel Slope 0.600%
W.S. Elevation 2506.88
Area 1247.37 SF
Perimeter 721.76 Ft.
Near Bank 671.8
Far Bank 1393.5
Discharge 4462.43 cfs
Velocity 3.58 fps

FEMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 74

STATION	0.00	ELEVATION	2510.00	MANNING'S 'n'	0.000
STATION	315.00	ELEVATION	2508.00	MANNING'S 'n'	0.060
STATION	605.00	ELEVATION	2506.00	MANNING'S 'n'	0.060
STATION	985.00	ELEVATION	2504.00	MANNING'S 'n'	0.060
STATION	1094.00	ELEVATION	2502.00	MANNING'S 'n'	0.060
STATION	1140.00	ELEVATION	2501.80	MANNING'S 'n'	0.035
STATION	1220.00	ELEVATION	2502.00	MANNING'S 'n'	0.035
STATION	1353.00	ELEVATION	2500.00	MANNING'S 'n'	0.035
STATION	1370.00	ELEVATION	2500.00	MANNING'S 'n'	0.035
STATION	1436.00	ELEVATION	2502.00	MANNING'S 'n'	0.035
STATION	1538.00	ELEVATION	2504.00	MANNING'S 'n'	0.035
STATION	1825.00	ELEVATION	2506.00	MANNING'S 'n'	0.040
STATION	1940.00	ELEVATION	2508.00	MANNING'S 'n'	0.040
STATION	2105.00	ELEVATION	2510.00	MANNING'S 'n'	0.040
STATION	2250.00	ELEVATION	2512.00	MANNING'S 'n'	0.040
STATION	2365.00	ELEVATION	2514.00	MANNING'S 'n'	0.040

RESULTS

Equivalent Manning's 'n' 0.037
 Channel Slope 0.600%
 W.S. Elevation 2503.65
 Area 952.07 SF
 Perimeter 515.86 Ft.
 Near Bank 1004.2
 Far Bank 1520.0
 Discharge 4463.51 cfs
 Velocity 4.69 fps

'EMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 73

STATION	0.00	ELEVATION	2508.00	MANNING'S 'n'	0.000
STATION	335.00	ELEVATION	2506.00	MANNING'S 'n'	0.060
STATION	560.00	ELEVATION	2504.00	MANNING'S 'n'	0.060
STATION	922.00	ELEVATION	2502.00	MANNING'S 'n'	0.060
STATION	1188.00	ELEVATION	2500.00	MANNING'S 'n'	0.035
STATION	1250.00	ELEVATION	2499.00	MANNING'S 'n'	0.035
STATION	1340.00	ELEVATION	2500.00	MANNING'S 'n'	0.035
STATION	1465.00	ELEVATION	2502.00	MANNING'S 'n'	0.035
STATION	1565.00	ELEVATION	2504.00	MANNING'S 'n'	0.060
STATION	1630.00	ELEVATION	2506.00	MANNING'S 'n'	0.060
STATION	1780.00	ELEVATION	2508.00	MANNING'S 'n'	0.060
STATION	1950.00	ELEVATION	2510.00	MANNING'S 'n'	0.060

RESULTS

Equivalent Manning's 'n' 0.036
Channel Slope 0.500%
W.S. Elevation 2502.53
Area 1091.74 SF
Perimeter 665.65 Ft.
Near Bank 825.9
Far Bank 1491.5
Discharge 4463.30 cfs
Velocity 4.09 fps

'EMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION 72

STATION	500.00	ELEVATION	2504.00	MANNING'S 'n'	0.000
STATION	818.00	ELEVATION	2502.00	MANNING'S 'n'	0.060
STATION	1178.00	ELEVATION	2500.00	MANNING'S 'n'	0.060
STATION	1283.00	ELEVATION	2498.00	MANNING'S 'n'	0.035
STATION	1338.00	ELEVATION	2497.90	MANNING'S 'n'	0.035
STATION	1493.00	ELEVATION	2497.90	MANNING'S 'n'	0.035
STATION	1568.00	ELEVATION	2498.00	MANNING'S 'n'	0.035
STATION	1628.00	ELEVATION	2500.00	MANNING'S 'n'	0.035
STATION	1688.00	ELEVATION	2502.00	MANNING'S 'n'	0.060
STATION	1798.00	ELEVATION	2504.00	MANNING'S 'n'	0.060

RESULTS

Equivalent Manning's 'n' 0.036
Channel Slope 0.500%
W.S. Elevation 2500.51
Area 1016.29 SF
Perimeter 558.09 Ft.
Near Bank 1085.4
Far Bank 1643.4
Discharge 4462.69 cfs
Velocity 4.39 fps

BY: Paul VC
8/21/96

CROSS SECTION 71

STATION 300.00	ELEVATION 2504.00	MANNING'S 'n' 0.000
STATION 1084.00	ELEVATION 2502.00	MANNING'S 'n' 0.060
STATION 1247.00	ELEVATION 2500.00	MANNING'S 'n' 0.035
STATION 1440.00	ELEVATION 2498.00	MANNING'S 'n' 0.035
STATION 1982.00	ELEVATION 2496.00	MANNING'S 'n' 0.035
STATION 2053.00	ELEVATION 2498.00	MANNING'S 'n' 0.035
STATION 2207.00	ELEVATION 2498.00	MANNING'S 'n' 0.035
STATION 2362.00	ELEVATION 2500.00	MANNING'S 'n' 0.060

RESULTS

Equivalent Manning's 'n' 0.035
Channel Slope 0.500%
W.S. Elevation 2498.73
Area 1222.75 SF
Perimeter 894.74 Ft.
Near Bank 1369.2
Far Bank 2263.9
Discharge 4466.20 cfs
Velocity 3.65 fps

JOB # 92145-02-45

EMA 1994 MISSION WASH

BY: Paul VC
8/21/96

CROSS SECTION PROTECTIVE CHANNEL

STATION	0.00	ELEVATION	32.00
STATION	89.00	ELEVATION	30.00
STATION	100.00	ELEVATION	29.00
STATION	118.00	ELEVATION	30.00
STATION	125.00	ELEVATION	32.00

RESULTS

Manning's 'n' 0.030
Channel Slope 0.200%
W.S. Elevation 32.00
Area 168.50 SF
Perimeter 125.38 Ft.
Near Bank 0.0
Far Bank 125.0
Discharge 454.57 cfs
Velocity 2.70 fps

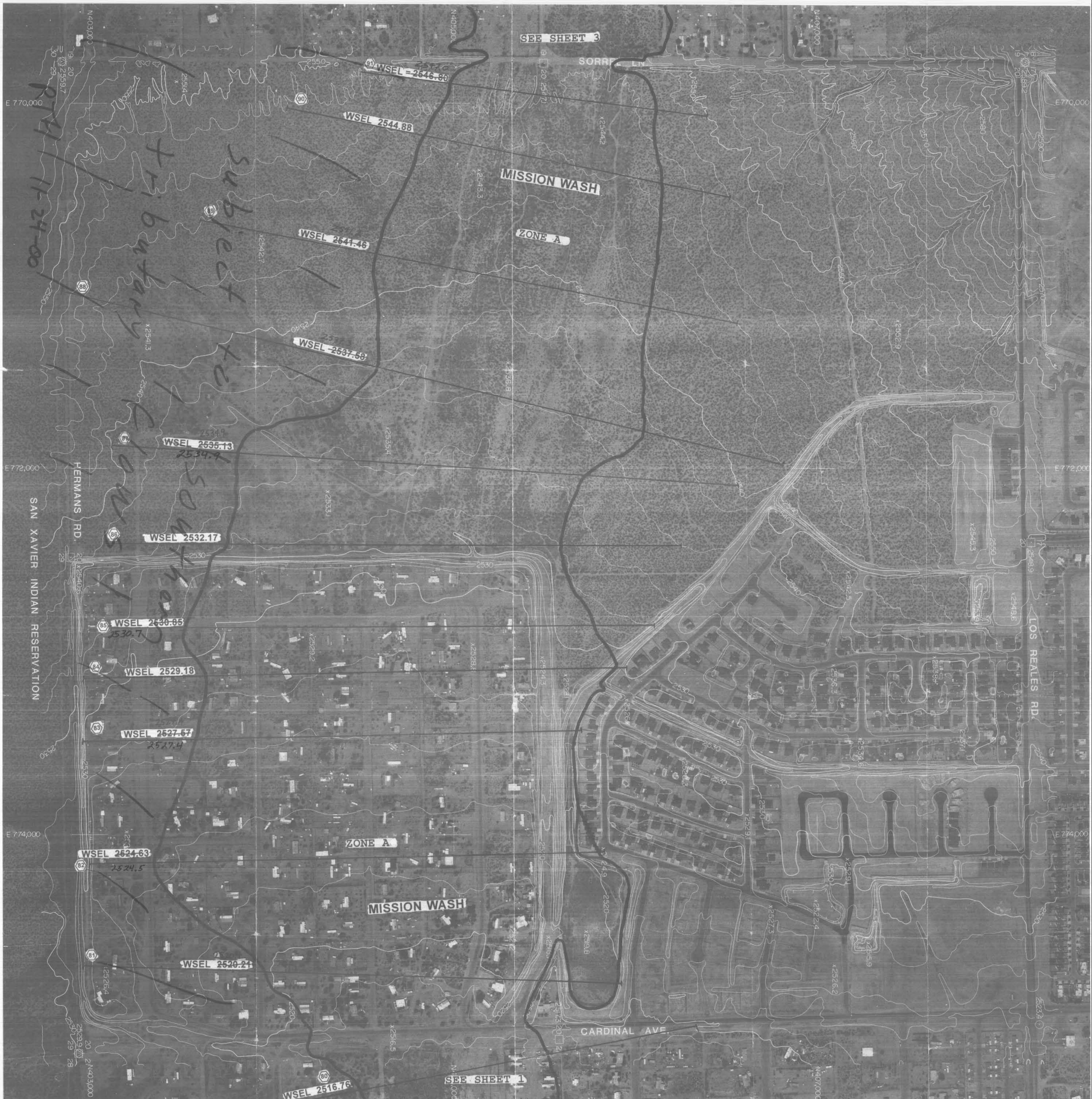


- Legend:
- 100 yr. Floodplain
 - Cross-Section
 - Cross-Section Designation
 - Flow Arrow

Scale: 1" = 200'
C.I. = 2'

**FEMA 1994 - Mission Wash
Approximate Study
Pima County; Tucson, Arizona
T15S, R13E, SEC 21**

AERIAL By:
McLain Aerial Mapping & Surveying, Inc.
1663 E. 18th Street
Tucson, Arizona 85705
Photo Date: June, 1986



Subject to
 San Xavier Indian Reservation
 11-24-00

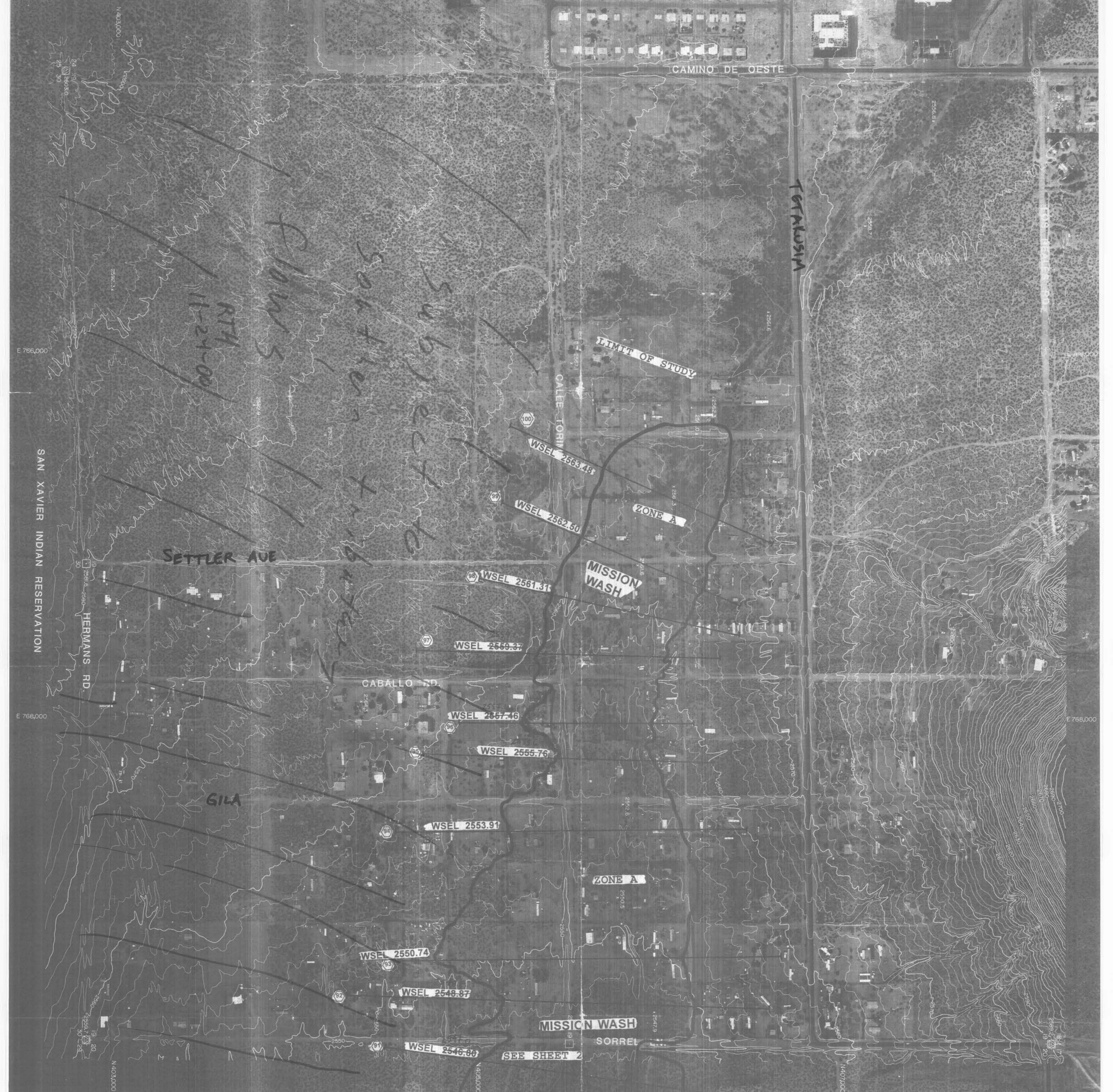
- Legend:**
- 100 yr. Floodplain
 - Cross-Section
 - Cross-Section Designation
 - Flow Arrow

Scale: 1" = 200'
 C.I. = 2'

FEMA 1994 - Mission Wash
Approximate Study
Pima County; Tucson, Arizona
T15S, R13E, SEC 20

AERIAL By:
 McLain Aerial Mapping & Surveying, Inc.
 1665 E. 18th Street
 Tucson, Arizona 85705
 Photo Date: June, 1986


MMLA
 McGovern MacVittie Lodge & Associates, Inc.
 MMLA 92145-02-45
 EMW-94-C-4542



- Legend:
- 100 yr. Floodplain
 - Cross-Section
 - Cross-Section Designation
 - Flow Arrow

Scale: 1" = 200'
C.I. = 2'

**FEMA 1994 - Mission Wash
Approximate Study
Pima County; Tucson, Arizona
T15S, R13E, SEC 19**

AERIAL By:
McLain Aerial Mapping & Surveying, Inc.
1665 E. 18th Street
Tucson, Arizona 85705
Photo Date: June, 1986

