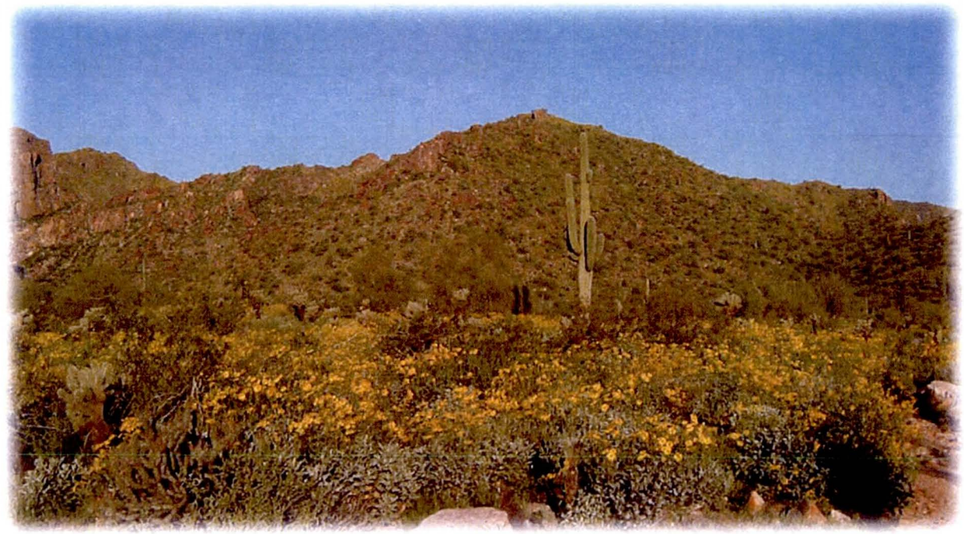

Volume 7: Subbasin Data – "L" Subbasins

Loop 303/White Tanks ADMPU Area Hydrologic Analysis in Maricopa County, Arizona

Flood Control District of Maricopa County

Version 1.2/ September 2009
HDR Project No. 079902
FCD Contract No. 2007C031

L01

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For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

Figure 5 SR303L Off-Site Drainage System (2 of 2)

Figure 5 – SR303L Off-Site Drainage System
2 of 2

L03

MASTER DRAINAGE REPORT

FOR

DEL WEBB'S GRAND AVENUE PROPERTY

Prepared For

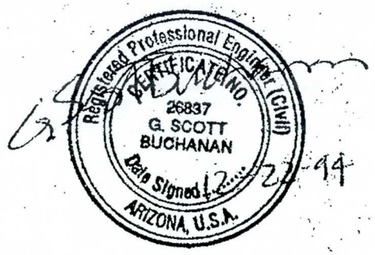
DEL E. WEBB DEVELOPMENT CO. L.P.,
a Delaware Limited Partnership,
Developer

DEL WEBB HOME CONSTRUCTION, INC.
an Arizona Corporation,
Owner

Prepared By

STANLEY CONSULTANTS, INC.
2929 E. Camelback Road, Suite 130
Phoenix, Arizona 85016
(602) 912-6500

December, 1994



DL03

Bell Rd

near Citrus

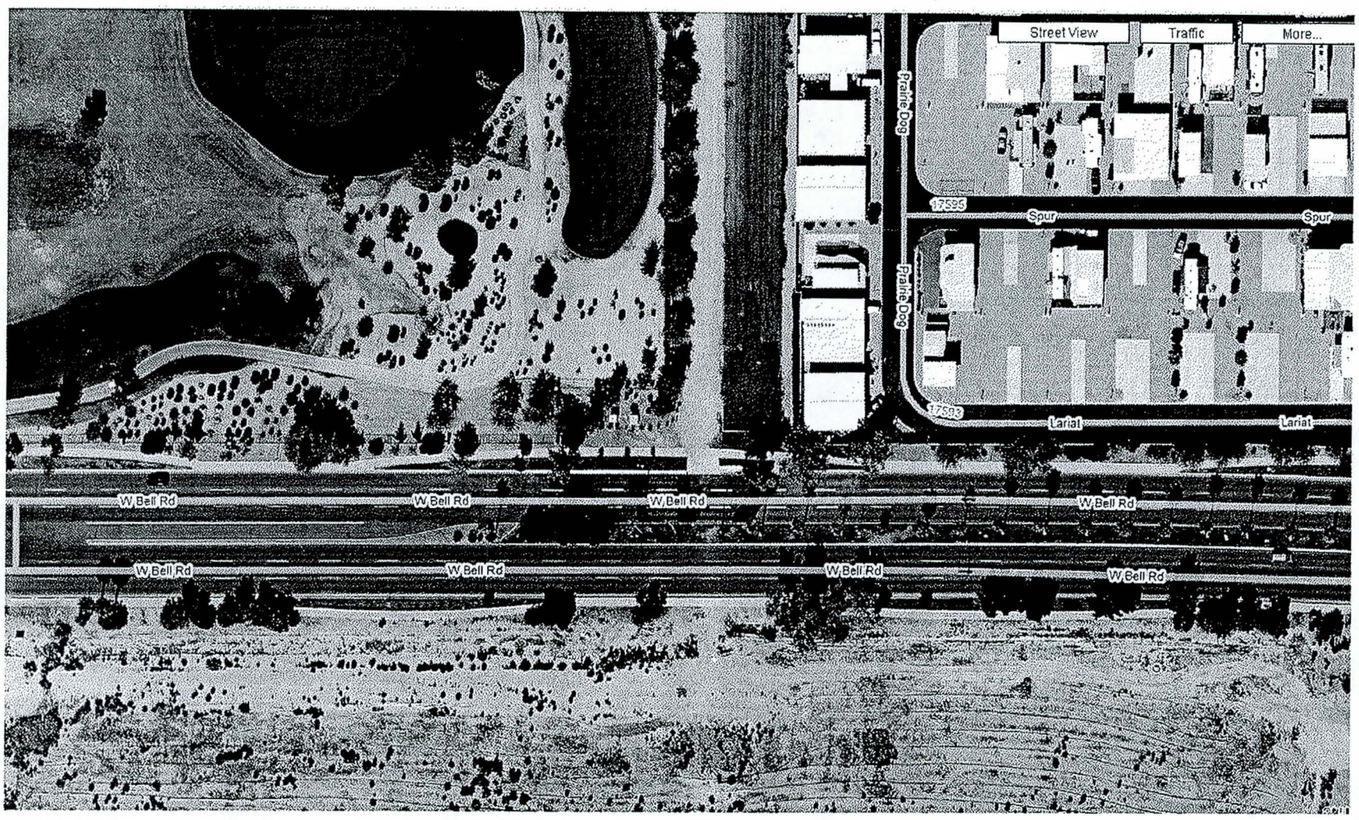
Bell Road

Diversion to South

37	237	537	1037
~~296~~	~~396~~	~~896~~	~~1396~~
~~296~~	~~296~~	~~596~~	~~1196~~
37	37	337	837

1" = 80'

C:\PWw J:\PHX\dms69520\linda_NewWorking.dwg, 10/17/2008 3:45:32 PM


Street View
Traffic
More...
Prairie Dog
17595
Spur
Spur
Prairie Dog
17609
Lariat
Lariat
W Bell Rd
W Bell Rd
W Bell Rd
W Bell Rd
W Bell Rd
W Bell Rd
W Bell Rd
W Bell Rd

Bell Near Citrus

Project Description

Solve For	Discharge

Input Data

Channel Slope	0.00727	ft/ft
Gutter Width	6.00	ft
Gutter Cross Slope	0.05	ft/ft
Road Cross Slope	0.03	ft/ft
Spread	40.00	ft
Roughness Coefficient	0.013	

Results

Discharge	205.65	ft^3/s
Flow Area	24.36	ft^2
Depth	1.32	ft
Gutter Depression	0.12	ft
Velocity	8.44	ft/s

Culvert Calculator Report
Bell near Citrus

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	1,304.00	ft	Headwater Depth/Height	1.33	
Computed Headwater Elev	1,304.00	ft	Discharge	146.76	cfs
Inlet Control HW Elev.	1,303.91	ft	Tailwater Elevation	1,302.00	ft
Outlet Control HW Elev.	1,304.00	ft	Control Type	Outlet Control	

Grades					
Upstream Invert	1,300.00	ft	Downstream Invert	1,299.50	ft
Length	140.00	ft	Constructed Slope	0.003571	ft/ft

Hydraulic Profile					
Profile	M2		Depth, Downstream	2.50	ft
Slope Type	Mild		Normal Depth	N/A	ft
Flow Regime	Subcritical		Critical Depth	2.28	ft
Velocity Downstream	7.77	ft/s	Critical Slope	0.006292	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	3.00	ft
Section Size	36 inch		Rise	3.00	ft
Number Sections	3				

Outlet Control Properties					
Outlet Control HW Elev.	1,304.00	ft	Upstream Velocity Head	0.78	ft
Ke	0.50		Entrance Loss	0.39	ft

Inlet Control Properties					
Inlet Control HW Elev.	1,303.91	ft	Flow Control	Transition	
Inlet Type	Square edge w/headwall		Area Full	21.2	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

Project: **Loop 303/White Tanks ADMPU AHA** HDR Prj. No.: **79902** By: **JM** Date: **9/12/2008**
Task: **Street Intersection Diversions** Client Prj. No.: **2007C031** Checked: Date: 3/10/09

Street Types (a = arterial (1 mi.), m = major collector, c = collector (½ mi.), r = residential):

	R/W, ft.	PW, ft.	F, ft
a	124	93	10.5
m	157	94	26.5
c	146	68	34
r	108	69	15.5

N-S D/S street R/W (ft)	108
Main flow to	EAST
Diversion to	SOUTH
Crown Direction	E-W
N-S street name	CT
E-W street name	BE

Conveyance, $K = (1.49/n)*(A^{1.67}/P^{0.67})$
Q = discharge, cfs
n = Manning's roughness
A = flow area, sq. ft.
P = wet perimeter, ft.
S = longitudinal slope, ft/ft

Curb height = 0.5 ft.
Capacity, $Q = K*S^{0.5}$
Weir Flow down side streets, $Q=CLH^{1.5}$
C = 2.9
L = weir length, ft.
H = flow depth, ft.

Streets
CT = Cotton Lane
BE = Bell Road
a = Bell Road U/S
m = Bell Road D/S
c = Cotton Lane U/S
r = Cotton Lane D/S

Diversion ID	Direction	Side	STREET PARAMETERS: Street Type (a)	Top of Slope Elev., ft	Bottom of Slope Elev., ft.	Slope Length, ft.	Ave. Long. Slope, ft/ft	Top of Crown ft.
DL04SE	E-W	U/S	a	1289.5	1289.0	166.0	0.0030	0.93
		D/S	m	1288.3	1288.0	130.0	0.0023	0.94
	N-S	U/S	c	1289.4	1288.3	316.0	0.0035	0.68
		D/S	r	1288.3	1286.6	277.0	0.0061	0.69
			Average Gutter Elev. at Curb Returns, ft					
		U/S	1288.5					
		D/S	1288.0					

Conveyance (K) of one side of E-W Streets (cfs)

U/S crown	curb	sidewalk	ROW	ft above crown
1282.1	227.3	332.9	556.9	

D/S crown	curb	sidewalk	ROW	0.50 ft above E-W D/S crown	1.00 ft above E-W D/S crown	2.00 ft above E-W D/S crown
1171.6	227.3	332.9	1298.0	4775.5	10145.0	25027.7
WSEL Elevations (ft)						
1288.94	1288.50	1288.59	1288.97	1289.44	1289.94	1290.94

Conveyance (K) of N-S Streets (cfs)

U/S crown	curb	sidewalk	ROW	ft above crown
910.2	454.6	605.8	3385.9	

D/S crown	curb	sidewalk	ROW	0.75 ft above N-S D/S crown	1.25 ft above N-S D/S crown	2.25 ft above N-S D/S crown
945.6	454.6	605.8	1422.6	8639.2	17049.9	38626.6
WSEL Elevations (ft)						
1288.69	1288.50	1288.57	1288.79	1289.44	1289.94	1290.94

FLOW CAPACITIES U/S OF INTERSECTION (cfs)

E-W

crown	curb	sidewalk	ROW	above crown
140.7	24.9	36.5	61.1	

N-S

crown	curb	sidewalk	ROW	above crown
53.7	26.8	35.7	199.8	

FLOW CAPACITIES D/S OF INTERSECTION (cfs)

E-W

crown	curb	sidewalk	ROW	0.5 ft above crown	1 ft above crown	2 ft above crown
112.6	21.8	32.0	124.7	459.0	975.0	2405.0

N-S

crown	curb	sidewalk	ROW	0.75 ft above E-W D/S crown	1.25 ft above E-W D/S crown	2.25 ft above E-W D/S crown
74.1	35.6	47.5	111.4	677.0	1336.0	3026.0

STORM DRAIN OR DITCH CAPACITY (cfs)

E-W	N-S
0	0

WEIR FLOW OVER E-W CROWN (cfs)

crown	curb	sidewalk	ROW	0.5 ft over	1 ft over	2 ft over
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
0.0	0.0	0.0	0.0	110.7	313.2	885.9

D/S INTERSECTION PARAMETERS

Location E-W Street	Location N-S Street	Street Slope, S, West ft/ft	Street Slope, S, South ft/ft	R/W Width West (1/2) ft.	R/W Width South ft.
BE		0.00231		157	
	CT		0.00614		108

D/S SLOPE, R/W AND COMPOSITE RATIOS

Slope Ratios,SR, (S^1/2) E-W (SR-W) $S_w^{½}/(S_w^{½}+S_s^{½})$	Slope Ratios,SR, (S^1/2) N-S (SR-S) $S_s^{½}/(Sw^{½}+Ss^{½})$	R/W Ratios, R/WR, E-W (R/WR-W) $W_w/(W_w+W_s)$	R/W Ratios, R/WR, N-S (R/WR-S) $W_s/(W_w+W_s)$	Composite Ratios,CR, E-W, 1/2 street (CR-W)	Composite Ratios,CR, N-S (CR-S)
0.380		0.592		0.420	
	0.620		0.408		0.580

		storm d.	1/2@crown	curb	sidewalk	ROW	0.5 ft over	1 ft over	2 ft over
INFLOW CAPACITY (DI)	0.0	0.0	56.3	17.4	25.3	171.0	1026.0	1998.0	4546.0
E-W OUTFLOW CAPACITY (NORTH SIDE)	0.0	0.0	56.3	11.0	16.0	62.0	119.0	174.0	317.0
E-W OUTFLOW CAPACITY (SOUTH SIDE)	0.0	0.0	0.0	0.0	0.0	73.0	381.0	766.0	1776.0
STORM DRAIN CAPACITY TO WEST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
STORM DRAIN CAPACITY TO SOUTH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OUTFLOW CAPACITY TO SOUTH (DQ)	0.0	0.0	0.0	6.4	9.3	36.0	526.0	1058.0	2453.0

	storm d.	1/2@crown	curb	sidewalk	ROW	0.5 ft over	1 ft over	2 ft over
	0.0	0.0	17.4	25.3	56.3	171.0	1026.0	1998.0	4546
	0.0	0.0			56.3	171.0	1026.0	1998.0	4546

INFLOW CAPACITY (DI), cfs

0.0	0.0	56.3	171.0	1026.0	1998.0	4546.0

OUTFLOW CAPACITY TO SOUTH (DQ), cfs

0.0	0.0	0.0	36.0	526.0	1058.0	2453.0

Project: **Loop 303/White Tanks ADMPU AHA** HDR Prj. No.: **79902** By: **JM** Date: **9/12/2008**
Task: **Street Intersection Diversions** Client Prj. No.: **2007C031** Checked: **LP** Date: **3/10/09**

Street Types (a = arterial (1 mi.), m = major collector, c = collector (½ mi.), r = residential):

	R/W, ft.	PW, ft.	F, ft
a	124	93	10.5
m	157	94	26.5
c	146	68	34
r	108	69	15.5

N-S D/S street R/W (ft)	108
Main flow to	EAST
Diversion to	SOUTH
Crown Direction	E-W
N-S street name	CT
E-W street name	BE

Conveyance, $K = (1.49/n)*(A^{1.67}/P^{0.67})$
Q = discharge, cfs
n = Manning's roughness
A = flow area, sq. ft.
P = wet perimeter, ft.
S = longitudinal slope, ft/ft

Curb height = 0.5 ft.
Capacity, $Q = K*S^{0.5}$
Weir Flow down side streets, $Q=CLH^{1.5}$
C = 2.9
L = weir length, ft.
H = flow depth, ft.

Streets
CT = Cotton Lane
BE = Bell Road
a = Bell Road U/S
m = Bell Road D/S
c = Cotton Lane U/S
r = Cotton Lane D/S

Diversion ID	Direction	Side	STREET PARAMETERS: Street Type (a)	Top of Slope Elev., ft	Bottom of Slope Elev., ft.	Slope Length, ft.	Ave. Long. Slope, ft/ft	Top of Crown ft.
DL04SE	E-W	U/S	a	1289.5	1289.0	166.0	0.0030	0.93
		D/S	m	1288.3	1288.0	130.0	0.0023	0.94
	N-S	U/S	c	1289.4	1288.3	316.0	0.0035	0.68
		D/S	r	1288.3	1286.6	277.0	0.0061	0.69
			Average Gutter Elev. at Curb Returns, ft					
		U/S	1288.5					
		D/S	1288.0					

Conveyance (K) of one side of E-W Streets (cfs)

U/S crown	curb	sidewalk	ROW	ft above crown
1282.1	227.3	332.9	556.9	

D/S crown	curb	sidewalk	ROW	0.50 ft above E-W D/S crown	1.00 ft above E-W D/S crown	2.00 ft above E-W D/S crown
1171.6	227.3	332.9	1298.0	4775.5	10145.0	25027.7
WSEL Elevations (ft)						
1288.94	1288.50	1288.59	1288.97	1289.44	1289.94	1290.94

Conveyance (K) of N-S Streets (cfs)

U/S crown	curb	sidewalk	ROW	ft above crown
910.2	454.6	605.8	3385.9	

D/S crown	curb	sidewalk	ROW	0.75 ft above N-S D/S crown	1.25 ft above N-S D/S crown	2.25 ft above N-S D/S crown
945.6	454.6	605.8	1422.6	8639.2	17049.9	38626.6
WSEL Elevations (ft)						
1288.69	1288.50	1288.57	1288.79	1289.44	1289.94	1290.94

FLOW CAPACITIES U/S OF INTERSECTION (cfs)

E-W

crown	curb	sidewalk	ROW	above crown
140.7	24.9	36.5	61.1	

N-S

crown	curb	sidewalk	ROW	above crown
53.7	26.8	35.7	199.8	

FLOW CAPACITIES D/S OF INTERSECTION (cfs)

E-W

crown	curb	sidewalk	ROW	0.5 ft above crown	1 ft above crown	2 ft above crown
112.6	21.8	32.0	124.7	459.0	975.0	2405.0

N-S

crown	curb	sidewalk	ROW	0.75 ft above E-W D/S crown	1.25 ft above E-W D/S crown	2.25 ft above E-W D/S crown
74.1	35.6	47.5	111.4	677.0	1336.0	3026.0

STORM DRAIN OR DITCH CAPACITY (cfs)

E-W	N-S
0	
	0

WEIR FLOW OVER E-W CROWN (cfs)

crown	curb	sidewalk	ROW	0.5 ft over	1 ft over	2 ft over
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
0.0	0.0	0.0	0.0	110.7	313.2	885.9

D/S INTERSECTION PARAMETERS

Location E-W Street	Location N-S Street	Street Slope, S, West ft/ft	Street Slope, S, South ft/ft	R/W Width West (1/2) ft.	R/W Width South ft.
BE		0.00231		157	
	CT		0.00614		108

D/S SLOPE, R/W AND COMPOSITE RATIOS

Slope Ratios,SR, (S^1/2) E-W (SR-W) $S_w^{1/2}/(S_w^{1/2}+S_s^{1/2})$	Slope Ratios,SR, (S^1/2) N-S (SR-S) $S_s^{1/2}/(Sw^{1/2}+Ss^{1/2})$	R/W Ratios, R/WR, E-W (R/WR-W) $W_w/(W_w+W_s)$	R/W Ratios, R/WR, N-S (R/WR-S) $W_s/(W_w+W_s)$	Composite Ratios,CR, E-W, 1/2 street (CR-W)	Composite Ratios,CR, N-S (CR-S)
0.380		0.592		0.420	
	0.620		0.408		0.580

		storm d.	1/2@crown	curb	sidewalk	ROW	0.5 ft over	1 ft over	2 ft over
INFLOW CAPACITY (DI)	0.0	0.0	56.3	17.4	25.3	171.0	1026.0	1998.0	4546.0
E-W OUTFLOW CAPACITY (NORTH SIDE)	0.0	0.0	56.3	11.0	16.0	62.0	119.0	174.0	317.0
E-W OUTFLOW CAPACITY (SOUTH SIDE)	0.0	0.0	0.0	0.0	0.0	73.0	381.0	766.0	1776.0
STORM DRAIN CAPACITY TO WEST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
STORM DRAIN CAPACITY TO SOUTH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OUTFLOW CAPACITY TO SOUTH (DQ)	0.0	0.0	0.0	6.4	9.3	36.0	526.0	1058.0	2453.0

	storm d.	1/2@crowr	curb	sidewalk	ROW	0.5 ft over	1 ft over	2 ft over
	0.0	0.0	17.4	25.3	56.3	171.0	1026.0	1998.0	4546
	0.0	0.0			56.3	171.0	1026.0	1998.0	4546

INFLOW CAPACITY (DI), cfs							
0.0	0.0	56.3	171.0	1026.0	1998.0	4546.0

OUTFLOW CAPACITY TO SOUTH (DQ), cfs						
0.0	0.0	0.0	36.0	526.0	1058.0	2453.0

Bell Road U/S

ROW to ROW (ft)	124
Curb to Curb (face) (ft)	93
Width of SW (ft)	6
SW to ROW (ft)	9.5

Curb Height	0.5
Top of Curb Width	0.5

Street Cross Slope, LT	0.02
Street Cross Slope, RT	0.02
SW Cross Slope, LT	0.015
SW Cross Slope, RT	0.015

SW to ROW slope, LT	0.015
SW to ROW slope, RT	0.015

	ROW, LT	Back SW, LT	Top Curb, Back, LT	Top Curb, Face, LT	Gutter, LT	Crown	Gutter, RT	Top Curb, Face RT	Top Curb, Back, RT	Back SW, RT	ROW, RT
x	0	9	15	15.5	15.5	62	108.5	108.5	109	115	124
y	-0.20	-0.34	-0.43	-0.43	-0.93	0.00	-0.93	-0.43	-0.43	-0.34	-0.20

<----- LEFT | RIGHT ------>

TOP curb elev. (ft)	-0.43
TOP crown elev. (ft)	0.00
TOP ROW elev. (ft)	-0.20
gutter elevation (ft)	-0.93
TOP SW elev. (ft)	-0.34
max flow depth (ft)	0.93
n1 (pavement)	0.0160
n2 (curb)	0.0160
n3 (SW)	0.0160
n4 (overland)	0.0250
n_c crown (composit)	0.0174
n_c curb (composit)	0.0160
n_c SW (composit)	0.0159
n_c ROW (composit)	0.0177
n_c .5 ft over (comp)	0.0175
n_c 1 ft over (comp)	0.0177
n_c 2 ft over (comp)	0.0178
n_c 3 ft over (comp)	0.0179

		Depth	
curb-crown	-0.43	crown Conv	2564.1	0.93
curb-gutter	0.50	curb Conv K	454.6	0.50
SW-curb	0.09	SW Conv K	665.8	0.59
ROW-SW	0.14	ROW Conv K	1113.7	0.73
SW-crown	-0.34	.5 ft over full	9129.2	1.43
ROW-crown	-0.20	1 ft over full	18365.2	1.93
crown-gutter	0.93	2 ft over full	43669.2	2.93
ROW-gutter	0.73	3 ft over full	76774.2	3.93
SW-gutter	0.59			

HALF P	crown elevation	curb elevation	SW elevation	ROW elevation	.5 ft over crown elevation	1 ft over crown elevation	2 ft over elevation	3 ft over elevation
P1 (pavement)	46.51	25.00	29.51	36.50	46.51	46.51	46.51	46.51
P2 (face curb)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
P3 (top curb)	0.50	0.00	0.50	0.50	0.50	0.50	0.50	0.50
P4 (SW)	6.00	0.00	6.00	6.00	6.00	6.00	6.00	6.00
P5 (ROW)	9.70	0.00	0.00	9.50	10.47	11.47	12.47	13.47
ΣP	63.21	25.50	36.51	53.00	63.98	64.98	65.98	66.98

HALF A	crown elevation	curb elevation	SW elevation	ROW elevation	.5 ft over crown elevation	1 ft over crown elevation	2 ft over elevation	3 ft over elevation
A1	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25
A2	2.77	0.00	2.77	2.77	2.77	2.77	2.77	2.77
A3	6.20	0.00	0.00	6.20	6.20	6.20	6.20	6.20
A4	11.50	0.00	0.00	0.00	11.50	11.50	11.50	11.50
A5					31.00	62.00	124.00	186.00
ΣA	26.72	6.25	9.02	15.22	57.72	88.72	150.72	212.72

0.5

curb-crown	-0.43	0.93
SW-crown	-0.34	0.84
ROW-crown	-0.20	0.70

A1	A2	A3	A4	A5
1	1	1	1	1
6.25	2.77	6.20	11.50	31.00

P1	P2	P3	P4	P5
1	1	1	1	1
46.51	0.50	0.50	6.00	9.77

1

curb-crown	-0.43	1.43
SW-crown	-0.34	1.34
ROW-crown	-0.20	1.20
1+curb-crown	0.57	0.43

A1	A2	A3	A4	A5
1	1	1	1	1
6.25	2.77	6.20	11.50	62.00

P1	P2	P3	P4	P5
1	1	1	1	1
46.51	0.50	0.50	6.00	10.27

2

curb-crown	-0.43	2.43
SW-crown	-0.34	2.34
ROW-crown	-0.20	2.20
2+curb-crown	1.57	0.43

A1	A2	A3	A4	A5
1	1	1	1	1
6.25	2.77	6.20	11.50	124.00

P1	P2	P3	P4	P5
1	1	1	1	1
46.51	0.50	0.50	6.00	11.27

3

curb-crown	-0.43	3.43
SW-crown	-0.34	3.34
ROW-crown	-0.20	3.20
3+curb-crown	2.57	0.43

A1	A2	A3	A4	A5
1	1	1	1	1
6.25	2.77	6.20	11.50	186.00

P1	P2	P3	P4	P5
1	1	1	1	1
46.51	0.50	0.50	6.00	12.27

CASE	A1 (sq ft)	A2 (sq ft)	A3 (sq ft)	A4
1	6.25	2.77	6.20	11.50
2	6.25	2.77	18.98	-13.82
3	6.25	21.75	-21.87	8.09
4	21.62	-20.00	4.50	8.09

1	6.25	2.77	6.20	11.50

CASE: 1

Top — Area calculator - **Crown > ROW**

			(Full Street)	(Half Street)	1	Components 2	3	4
curb	A1	(sq ft)	12.50	6.25	6.25			
back SW	A2	(sq ft)	5.54	2.77	0.27	0.05	2.45	
RW	A3	(sq ft)	12.40	6.20	0.67	0.84	0.07	4.62
crown	A4	(sq ft)	23.00	11.50	1.9	1.2	0.1	8.30
	A5	(sq ft)	0.00	0.00				

Top — Area calculator - **ROW > Crown > SW**

			(Full Street)	(Half Street)	1	Components 2	3	4
curb	A1	(sq ft)	12.50	6.25	6.25			
back SW	A2	(sq ft)	5.54	2.77	0.27	0.05	2.45	
crown	A3	(sq ft)	37.96	18.98	5.89	0.17	12.92	
RW	A4	(sq ft)	-27.64	-13.82	-4.417	-0.1	-9.3	
	A5	(sq ft)	0.00	0.00				

Top — Area calculator - **SW > Crown > TC**

			(Full Street)	(Half Street)	1	Components 2	3	4
curb	A1	(sq ft)	12.50	6.25	6.25			
crown	A2	(sq ft)	43.50	21.75	6.16	0.22	15.37	
back SW	A3	(sq ft)	-43.74	-21.87	-5.89	-0.17	-15.81	
RW	A4	(sq ft)	16.18	8.09	1.505	0.07	6.51	
	A5	(sq ft)	0.00	0.00				

Top — Area calculator - **TC > Crown > GUTTER**

			(Full Street)	(Half Street)	1	Components 2	3	4
crown	A1	(sq ft)	43.24	21.62	21.623			
curb	A2	(sq ft)	-40.00	-20.00	-20.00			
back SW	A3	(sq ft)	9.00	4.50	0.27	0.05	4.19	
RW	A4	(sq ft)	16.18	8.09	1.505	0.07	6.51	
	A5	(sq ft)	0.00	0.00				

Depth Sorter

Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	Conveyance (cfs)
0	0	0	0	0	0
0.93	0.50	0.50	0.50	0.50	454.6
0.50	0.93	0.59	0.59	0.59	665.8
0.59	0.59	0.93	0.73	0.73	1113.7
0.73	0.73	0.73	0.93	0.93	2564.1
1.43	1.43	1.43	1.43	1.43	9129.2
1.93	1.93	1.93	1.93	1.93	18365.2
2.93	2.93	2.93	2.93	2.93	43669.2
3.93	3.93	3.93	3.93	3.93	76774.2

Bell Road D/S

ROW to ROW (ft)	157	Curb Height	0.5	Street Cross Slope, LT	0.02	SW to ROW slope, LT	0.015
Curb to Curb (face) (ft)	94	Top of Curb Width	0.5	Street Cross Slope, RT	0.02	SW to ROW slope, RT	0.015
Width of SW (ft)	6			SW Cross Slope, LT	0.015		
SW to ROW (ft)	25.5			SW Cross Slope, RT	0.015		

	ROW, LT	Back SW, LT	Top Curb, Back, LT	Top Curb, Face, LT	Gutter, LT	Crown	Gutter, RT	Top Curb, Face RT	Top Curb, Back, RT	Back SW, RT	ROW, RT
x	0	25	31	31.5	31.5	78.5	125.5	125.5	126	132	157
y	0.03	-0.35	-0.44	-0.44	-0.94	0.00	-0.94	-0.44	-0.44	-0.35	0.03

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				Depth
TOP curb elev. (ft)	-0.44	curb-crown	-0.44	crown Conv 2343.2	0.94
TOP crown elev. (ft)	0.00	curb-gutter	0.50	curb Conv K 454.6	0.50
TOP ROW elev. (ft)	0.03	SW-curb	0.09	SW Conv K 665.8	0.59
gutter elevation (ft)	-0.94	ROW-SW	0.38	ROW Conv K 2596.0	0.97
TOP SW elev. (ft)	-0.35	SW-crown	-0.35	.5 ft over full 9550.9	1.44
max flow depth (ft)	0.94	ROW-crown	0.03	1 ft over full 20290.0	1.94
n1 (pavement)	0.0160	crown-gutter	0.94	2 ft over full 50055.4	2.94
n2 (curb)	0.0160	ROW-gutter	0.97	3 ft over full 90071.8	3.94
n3 (SW)	0.0160	SW-gutter	0.59		
n4 (overland)	0.0250				

		HALF P	crown elevation	curb elevation	SW elevation	ROW elevation	.5 ft over crown elevation	1 ft over crown elevation	2 ft over elevation	3 ft over elevation
n_c crown (composit)	0.0189	P1 (pavement)	47.01	25.00	29.51	47.01	47.01	47.01	47.01	47.01
n_c curb (composit)	0.0160	P2 (face curb)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
n_c SW (composit)	0.0159	P3 (top curb)	0.50	0.00	0.50	0.50	0.50	0.50	0.50	0.50
n_c ROW (composit)	0.0191	P4 (SW)	6.00	0.00	6.00	6.00	6.00	6.00	6.00	6.00
n_c .5 ft over (comp)	0.0191	P5 (ROW)	23.34	0.00	0.00	25.50	25.56	26.03	27.03	27.03
n_c 1 ft over (comp)	0.0191	ΣP	77.35	25.50	36.51	79.51	79.57	80.04	81.04	81.04
n_c 2 ft over (comp)	0.0192									
n_c 3 ft over (comp)	0.0192	HALF A	crown elevation	curb elevation	SW elevation	ROW elevation	.5 ft over crown elevation	1 ft over crown elevation	2 ft over elevation	3 ft over elevation
		A1	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25
		A2	2.77	0.00	2.77	2.77	2.77	2.77	2.77	2.77
		A3	19.75	0.00	0.00	19.75	19.75	19.75	19.75	19.75
		A4	0.00	0.00	0.00	2.34	2.34	2.34	2.34	2.34
		A5					36.90	76.15	154.65	233.15
		ΣA	28.77	6.25	9.02	31.11	68.01	107.26	185.76	264.26

0.5

			A1	A2	A3	A4	A5
curb-crown	-0.44	0.94	1	1	1	1	1
SW-crown	-0.35	0.85	6.25	2.77	19.75	2.34	36.90
ROW-crown	0.03	0.47					
			P1	P2	P3	P4	P5
			1	1	1	1	1
			47.01	0.50	0.50	6.00	25.53

1

			A1	A2	A3	A4	A5
curb-crown	-0.44	1.44	1	1	1	1	1
SW-crown	-0.35	1.35	6.25	2.77	19.75	2.34	76.15
ROW-crown	0.03	0.97					
1+curb-crown	0.56	0.44	P1	P2	P3	P4	P5
			1	1	1	1	1
			47.01	0.50	0.50	6.00	26.03

2

			A1	A2	A3	A4	A5
curb-crown	-0.44	2.44	1	1	1	1	1
SW-crown	-0.35	2.35	6.25	2.77	19.75	2.34	154.65
ROW-crown	0.03	1.97					
2+curb-crown	1.56	0.44	P1	P2	P3	P4	P5
			1	1	1	1	1
			47.01	0.50	0.50	6.00	27.03

3

			A1	A2	A3	A4	A5
curb-crown	-0.44	3.44	1	1	1	1	1
SW-crown	-0.35	3.35	6.25	2.77	19.75	2.34	233.15
ROW-crown	0.03	2.97					
3+curb-crown	2.56	0.44	P1	P2	P3	P4	P5
			1	1	1	1	1
			47.01	0.50	0.50	6.00	28.03

CASE	A1 (sq ft)	A2 (sq ft)	A3 (sq ft)	A4
1	6.25	2.77	22.14	2.39
2	6.25	2.77	19.75	2.34
3	6.25	22.51	-22.81	25.18
4	22.09	-20.68	4.55	25.18
2	6.25	2.77	19.75	2.34

CASE: **2**

Top — Area calculator - **Crown > ROW**

			(Full Street)	(Half Street)	1	Components 2	3	4
curb	A1	(sq ft)	12.50	6.25	6.25			
back SW	A2	(sq ft)	5.54	2.77	0.27	0.05	2.45	
RW	A3	(sq ft)	44.28	22.14	4.85	2.28	0.19	14.82
crown	A4	(sq ft)	4.78	2.39	0.765	0.18	0.015	1.43
	A5	(sq ft)	0.00	0.00				

Top — Area calculator - **ROW > Crown > SW**

			(Full Street)	(Half Street)	1	Components 2	3	4
curb	A1	(sq ft)	12.50	6.25	6.25			
back SW	A2	(sq ft)	5.54	2.77	0.27	0.05	2.45	
crown	A3	(sq ft)	39.50	19.75	6.18	0.18	13.39	
RW	A4	(sq ft)	4.68	2.34	0.9125	0.015	1.41	
	A5	(sq ft)	0.00	0.00				

Top — Area calculator - **SW > Crown > TC**

			(Full Street)	(Half Street)	1	Components 2	3	4
curb	A1	(sq ft)	12.50	6.25	6.25			
crown	A2	(sq ft)	45.02	22.51	6.45	0.22	15.84	
back SW	A3	(sq ft)	-45.62	-22.81	-6.18	-0.18	-16.45	
RW	A4	(sq ft)	50.36	25.18	7.125	0.19	17.86	
	A5	(sq ft)	0.00	0.00				

Top — Area calculator - **TC > Crown > GUTTER**

			(Full Street)	(Half Street)	1	Components 2	3	4
crown	A1	(sq ft)	44.18	22.09	22.09			
curb	A2	(sq ft)	-41.36	-20.68	-20.68			
back SW	A3	(sq ft)	9.10	4.55	0.27	0.05	4.23	
RW	A4	(sq ft)	50.36	25.18	7.125	0.19	17.86	
	A5	(sq ft)	0.00	0.00				

Depth Sorter

Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	Conveyance (cfs)
0	0	0	0	0	0
0.94	0.50	0.50	0.50	0.50	454.6
0.50	0.94	0.59	0.59	0.59	665.8
0.59	0.59	0.94	0.94	0.94	2343.2
0.97	0.97	0.97	0.97	0.97	2596
1.44	1.44	1.44	1.44	1.44	9550.9
1.94	1.94	1.94	1.94	1.94	20290
2.94	2.94	2.94	2.94	2.94	50055.4
3.94	3.94	3.94	3.94	3.94	90071.8

Cotton Lane U/S

ROW to ROW (ft)	146	Curb Height	0.5	Street Cross Slope, LT	0.02	SW to ROW slope, LT	0.015
Curb to Curb (face) (ft)	68	Top of Curb Width	0.5	Street Cross Slope, RT	0.02	SW to ROW slope, RT	0.015
Width of SW (ft)	5			SW Cross Slope, LT	0.015		
SW to ROW (ft)	34			SW Cross Slope, RT	0.015		

	ROW, LT	Back SW, LT	Top Curb, Back, LT	Top Curb, Face, LT	Gutter, LT	Crown	Gutter, RT	Top Curb, Face RT	Top Curb, Back, RT	Back SW, RT	ROW, RT
x	0	33.5	38.5	39	39	73	107	107	107.5	112.5	146
y	0.40	-0.11	-0.18	-0.18	-0.68	0.00	-0.68	-0.18	-0.18	-0.11	0.40
				<----- LEFT	|	RIGHT ------->					

				Depth
TOP curb elev. (ft)	-0.18	curb-crown	-0.18	crown Conv	910.2	0.68
TOP crown elev. (ft)	0.00	curb-gutter	0.50	curb Conv K	454.6	0.50
TOP ROW elev. (ft)	0.40	SW-curb	0.07	SW Conv K	605.8	0.57
gutter elevation (ft)	-0.68	ROW-SW	0.51	ROW Conv K	3385.9	1.08
TOP SW elev. (ft)	-0.11	SW-crown	-0.11	.5 ft over full	4553.7	1.18
max flow depth (ft)	0.68	ROW-crown	0.40	1 ft over full	12427.4	1.68
n1 (pavement)	0.0160	crown-gutter	0.68	2 ft over full	35948.3	2.68
n2 (curb)	0.0160	ROW-gutter	1.08	3 ft over full	68714.8	3.68
n3 (SW)	0.0160	SW-gutter	0.57			
n4 (overland)	0.0250					
n_c crown (composit)	0.0174					
n_c curb (composit)	0.0160					
n_c SW (composit)	0.0158					
n_c ROW (composit)	0.0203					
n_c .5 ft over (comp)	0.0203					
n_c 1 ft over (comp)	0.0203					
n_c 2 ft over (comp)	0.0204					
n_c 3 ft over (comp)	0.0204					

HALF P	crown elevation	curb elevation	SW elevation	ROW elevation	.5 ft over crown elevation	1 ft over crown elevation	2 ft over elevation	3 ft over elevation
P1 (pavement)	34.01	25.00	28.51	34.01	34.01	34.01	34.01	34.01
P2 (face curb)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
P3 (top curb)	0.50	0.00	0.50	0.50	0.50	0.50	0.50	0.50
P4 (SW)	5.00	0.00	5.00	5.00	5.00	5.00	5.00	5.00
P5 (ROW)	7.33	0.00	0.00	34.00	34.40	34.42	35.42	35.42
ΣP	47.34	25.50	34.51	74.01	74.41	74.43	75.43	75.43

HALF A	crown elevation	curb elevation	SW elevation	ROW elevation	.5 ft over crown elevation	1 ft over crown elevation	2 ft over elevation	3 ft over elevation
A1	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25
A2	2.08	0.00	2.08	2.08	2.08	2.08	2.08	2.08
A3	4.45	0.00	0.00	4.45	4.45	4.45	4.45	4.45
A4	0.00	0.00	0.00	24.07	24.07	24.07	24.07	24.07
A5					7.30	43.80	116.80	189.80
ΣA	12.78	6.25	8.33	36.85	44.15	80.65	153.65	226.65

0.5

curb-crown	-0.18	0.68
SW-crown	-0.11	0.61
ROW-crown	0.40	0.10

A1	A2	A3	A4	A5
1	1	1	1	1
6.25	2.08	4.45	24.07	7.30

P1	P2	P3	P4	P5
1	1	1	1	1
34.01	0.50	0.50	5.00	34.00

1

curb-crown	-0.18	1.18
SW-crown	-0.11	1.11
ROW-crown	0.40	0.60
1+curb-crown	0.82	0.18

A1	A2	A3	A4	A5
1	1	1	1	1
6.25	2.08	4.45	24.07	43.80

P1	P2	P3	P4	P5
1	1	1	1	1
34.01	0.50	0.50	5.00	34.42

2

curb-crown	-0.18	2.18
SW-crown	-0.11	2.11
ROW-crown	0.40	1.60
2+curb-crown	1.82	0.18

A1	A2	A3	A4	A5
1	1	1	1	1
6.25	2.08	4.45	24.07	116.80

P1	P2	P3	P4	P5
1	1	1	1	1
34.01	0.50	0.50	5.00	35.42

3

curb-crown	-0.18	3.18
SW-crown	-0.11	3.11
ROW-crown	0.40	2.60
3+curb-crown	2.82	0.18

A1	A2	A3	A4	A5
1	1	1	1	1
6.25	2.08	4.45	24.07	189.80

P1	P2	P3	P4	P5
1	1	1	1	1
34.01	0.50	0.50	5.00	36.42

CASE	A1 (sq ft)	A2 (sq ft)	A3 (sq ft)	A4
1	6.25	2.08	32.51	33.40
2	6.25	2.08	4.45	24.07
3	6.25	6.48	-4.73	28.82
4	11.56	-6.12	2.59	28.82

2	6.25	2.08	4.45	24.07

CASE

2

Top — Area calculator - **Crown > ROW**

			(Full Street)	(Half Street)	1	Components 2	3	4
curb	A1	(sq ft)	12.50	6.25	6.25			
back SW	A2	(sq ft)	4.16	2.08	0.18	0.04	1.87	
RW	A3	(sq ft)	65.02	32.51	8.67	2.55	0.26	21.04
crown	A4	(sq ft)	66.80	33.40	13.6	2	0.2	17.60
	A5	(sq ft)	0.00	0.00				

Top — Area calculator - **ROW > Crown > SW**

			(Full Street)	(Half Street)	1	Components 2	3	4
curb	A1	(sq ft)	12.50	6.25	6.25			
back SW	A2	(sq ft)	4.16	2.08	0.18	0.04	1.87	
crown	A3	(sq ft)	8.90	4.45	0.95	0.06	3.44	
RW	A4	(sq ft)	48.14	24.07	10.267	0.2	13.6	
	A5	(sq ft)	0.00	0.00				

Top — Area calculator - **SW > Crown > TC**

			(Full Street)	(Half Street)	1	Components 2	3	4
curb	A1	(sq ft)	12.50	6.25	6.25			
crown	A2	(sq ft)	12.96	6.48	1.08	0.09	5.31	
back SW	A3	(sq ft)	-9.46	-4.73	-0.94	-0.06	-3.74	
RW	A4	(sq ft)	57.64	28.82	11.22	0.255	17.34	
	A5	(sq ft)	0.00	0.00				

Top — Area calculator - **TC > Crown > GUTTER**

			(Full Street)	(Half Street)	1	Components 2	3	4
crown	A1	(sq ft)	23.12	11.56	11.56			
curb	A2	(sq ft)	-12.24	-6.12	-6.12			
back SW	A3	(sq ft)	5.18	2.59	0.18	0.04	2.38	
RW	A4	(sq ft)	57.64	28.82	11.22	0.255	17.34	
	A5	(sq ft)	0.00	0.00				

Cotton Lane D/S

ROW to ROW (ft)	108	Curb Height	0.5	Street Cross Slope, LT	0.02	SW to ROW slope, LT	0.015
Curb to Curb (face) (ft)	69	Top of Curb Width	0.5	Street Cross Slope, RT	0.02	SW to ROW slope, RT	0.015
Width of SW (ft)	5			SW Cross Slope, LT	0.015		
SW to ROW (ft)	14.5			SW Cross Slope, RT	0.015		

	ROW, LT	Back SW, LT	Top Curb, Back, LT	Top Curb, Face, LT	Gutter, LT	Crown	Gutter, RT	Top Curb, Face RT	Top Curb, Back, RT	Back SW, RT	ROW, RT
x	0	14	19	19.5	19.5	54	88.5	88.5	89	94	108
y	0.10	-0.12	-0.19	-0.19	-0.69	0.00	-0.69	-0.19	-0.19	-0.12	0.10

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						Depth	
TOP curb elev. (ft)	-0.19	curb-crown	-0.19	crown Conv	945.6	0.69	
TOP crown elev. (ft)	0.00	curb-gutter	0.50	curb Conv K	454.6	0.50	
TOP ROW elev. (ft)	0.10	SW-curb	0.07	SW Conv K	605.8	0.57	
gutter elevation (ft)	-0.69	ROW-SW	0.22	ROW Conv K	1422.6	0.79	
TOP SW elev. (ft)	-0.12	SW-crown	-0.12	.5 ft over full	5164.6	1.19	
max flow depth (ft)	0.69	ROW-crown	0.10	1 ft over full	12113.7	1.69	
n1 (pavement)	0.0160	crown-gutter	0.69	2 ft over full	31858.3	2.69	
n2 (curb)	0.0160	ROW-gutter	0.79	3 ft over full	58931.6	3.69	
n3 (SW)	0.0160	SW-gutter	0.57				
n4 (overland)	0.0250						

		HALF P	crown elevation	curb elevation	SW elevation	ROW elevation	.5 ft over crown elevation	1 ft over crown elevation	2 ft over elevation	3 ft over elevation
n_c crown (composit)	0.0175	P1 (pavement)	34.51	25.00	28.51	34.51	34.51	34.51	34.51	34.51
n_c curb (composit)	0.0160	P2 (face curb)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
n_c SW (composit)	0.0158	P3 (top curb)	0.50	0.00	0.50	0.50	0.50	0.50	0.50	0.50
n_c ROW (composit)	0.0185	P4 (SW)	5.00	0.00	5.00	5.00	5.00	5.00	5.00	5.00
n_c .5 ft over (comp)	0.0185	P5 (ROW)	8.00	0.00	0.00	14.50	14.81	15.21	16.21	16.21
n_c 1 ft over (comp)	0.0186	ΣP	48.51	25.50	34.51	55.01	55.32	55.72	56.72	56.72
n_c 2 ft over (comp)	0.0187									
n_c 3 ft over (comp)	0.0187									

	HALF A	crown elevation	curb elevation	SW elevation	ROW elevation	.5 ft over crown elevation	1 ft over crown elevation	2 ft over elevation	3 ft over elevation
	A1	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25
	A2	2.08	0.00	2.08	2.08	2.08	2.08	2.08	2.08
	A3	4.92	0.00	0.00	4.92	4.92	4.92	4.92	4.92
	A4	0.00	0.00	0.00	5.13	5.13	5.13	5.13	5.13
	A5					21.60	48.60	102.60	156.60
	ΣA	13.25	6.25	8.33	18.38	39.98	66.98	120.98	174.98

0.5

			A1	A2	A3	A4	A5
curb-crown	-0.19	0.69	1	1	1	1	1
SW-crown	-0.12	0.62	6.25	2.08	4.92	5.13	21.60
ROW-crown	0.10	0.40					
			P1	P2	P3	P4	P5
			1	1	1	1	1
			34.51	0.50	0.50	5.00	14.71

1

			A1	A2	A3	A4	A5
curb-crown	-0.19	1.19	1	1	1	1	1
SW-crown	-0.12	1.12	6.25	2.08	4.92	5.13	48.60
ROW-crown	0.10	0.90					
1+curb-crown	0.81	0.19	P1	P2	P3	P4	P5
			1	1	1	1	1
			34.51	0.50	0.50	5.00	15.21

2

			A1	A2	A3	A4	A5
curb-crown	-0.19	2.19	1	1	1	1	1
SW-crown	-0.12	2.12	6.25	2.08	4.92	5.13	102.60
ROW-crown	0.10	1.90					
2+curb-crown	1.81	0.19	P1	P2	P3	P4	P5
			1	1	1	1	1
			34.51	0.50	0.50	5.00	16.21

3

			A1	A2	A3	A4	A5
curb-crown	-0.19	3.19	1	1	1	1	1
SW-crown	-0.12	3.12	6.25	2.08	4.92	5.13	156.60
ROW-crown	0.10	2.90					
3+curb-crown	2.81	0.19	P1	P2	P3	P4	P5
			1	1	1	1	1
			34.51	0.50	0.50	5.00	17.21

CASE	A1 (sq ft)	A2 (sq ft)	A3 (sq ft)	A4
1	6.25	2.08	10.29	5.70
2	6.25	2.08	4.92	5.13
3	6.25	6.95	-5.26	10.40
4	11.90	-6.56	2.63	10.40

2	6.25	2.08	4.92	5.13

CASE **2**

Top — Area calculator - **Crown > ROW**

			(Full Street)	(Half Street)	1	Components 2	3	4
curb	A1	(sq ft)	12.50	6.25	6.25			
back SW	A2	(sq ft)	4.16	2.08	0.18	0.04	1.87	
RW	A3	(sq ft)	20.58	10.29	1.60	1.10	0.11	7.48
crown	A4	(sq ft)	11.40	5.70	1.45	0.5	0.05	3.70
	A5	(sq ft)	0.00	0.00				

Top — Area calculator - **ROW > Crown > SW**

			(Full Street)	(Half Street)	1	Components 2	3	4
curb	A1	(sq ft)	12.50	6.25	6.25			
back SW	A2	(sq ft)	4.16	2.08	0.18	0.04	1.87	
crown	A3	(sq ft)	9.84	4.92	1.08	0.06	3.78	
RW	A4	(sq ft)	10.26	5.13	1.625	0.05	3.45	
	A5	(sq ft)	0.00	0.00				

Top — Area calculator - **SW > Crown > TC**

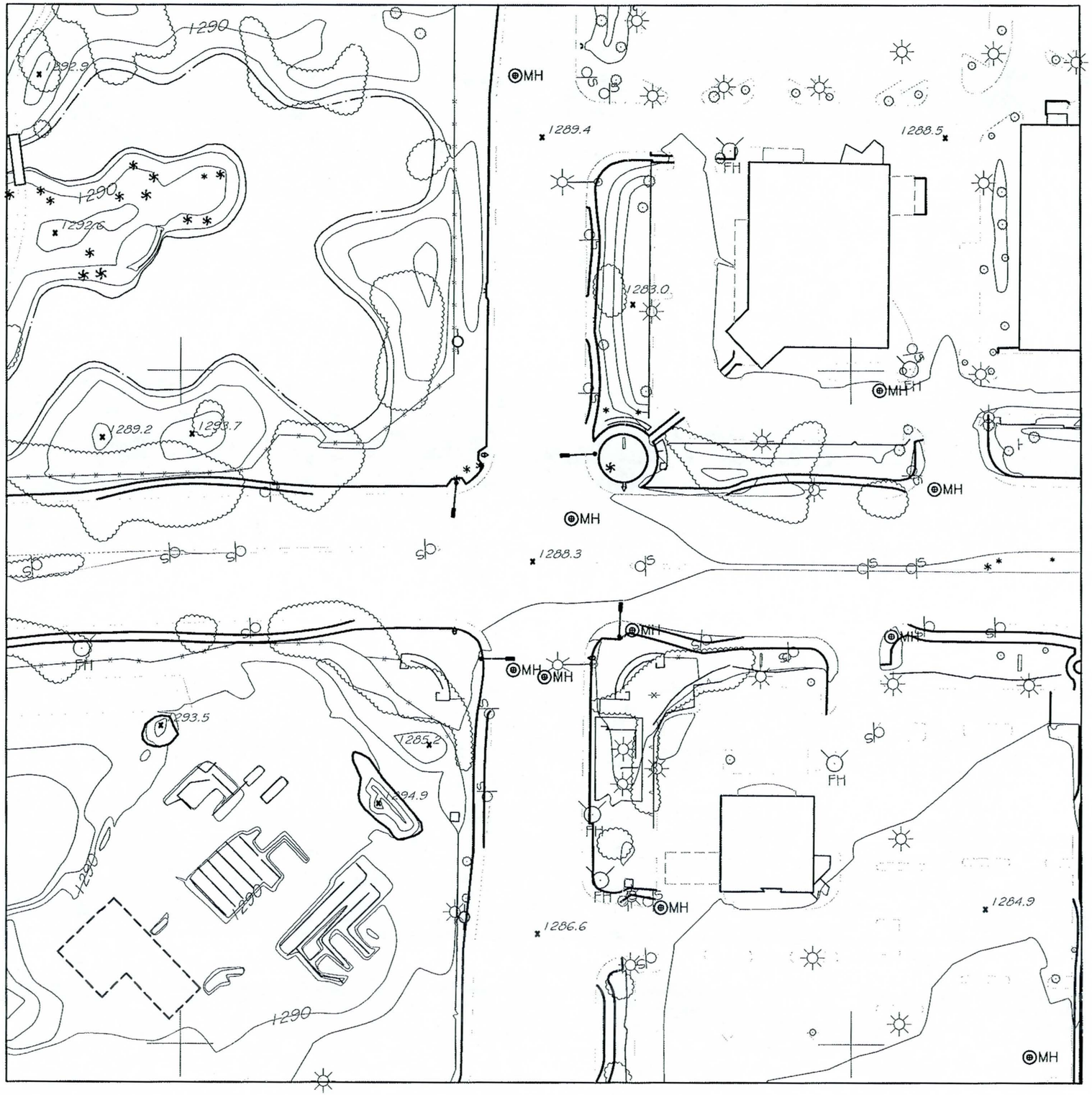
			(Full Street)	(Half Street)	1	Components 2	3	4
curb	A1	(sq ft)	12.50	6.25	6.25			
crown	A2	(sq ft)	13.90	6.95	1.20	0.10	5.65	
back SW	A3	(sq ft)	-10.52	-5.26	-1.06	-0.06	-4.14	
RW	A4	(sq ft)	20.80	10.40	2.695	0.11	7.59	
	A5	(sq ft)	0.00	0.00				

Top — Area calculator - **TC > Crown > GUTTER**

			(Full Street)	(Half Street)	1	Components 2	3	4
crown	A1	(sq ft)	23.80	11.90	11.903			
curb	A2	(sq ft)	-13.12	-6.56	-6.56			
back SW	A3	(sq ft)	5.26	2.63	0.18	0.04	2.42	
RW	A4	(sq ft)	20.80	10.40	2.695	0.11	7.59	
	A5	(sq ft)	0.00	0.00				

Bell @ Cotton

DL04



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L05

Loop 303 Corridor / White Tanks
Area Drainage Master Plan Update

DUPLICATE

MASTER DRAINAGE REPORT

BELL WEST RANCH

Reviewed 04-08-99
accepted,
B. Hustwy

MARCH, 1999
DEA PROJECT NO. ELLT0001

Outstanding Professionals . . .
Outstanding Quality

DAVID EVANS AND ASSOCIATES

CIP models

L05

FLOOD HYDROGRAPH PACKAGE (HEC-1)
JUN 1998
VERSION 4.1

DATE 07MAY09 TIME 08:05:50

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

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

    1         ID        LOOP 303 OFF-SITE HYDROLOGY
    2         ID        MODIFIED BASED ON FCDMC'S WHITE TANKS/LOOP 303 CORRIDOR ADMP
    3         ID        THE MODIFICATIONS ARE DESCRIBED AS FOLLOWS:
    4         ID        1. THE CACTUS RD BASIN WAS REMOVED AND TWO RELATIVELY SMALL BASINS
    5         ID           LOCATED AT NORTH OF WADDELL ROAD AND NORTH OF OLIVE AVENUE WERE
    6         ID           ADDED TO THE MODEL BASED ON CMX'S HEC-1 MODEL PROVIDED IN DEC,2006.
    7         ID        2. FLOW DIVERSION TO THE OFF-LINE BASINS, SUCH AS WADDELL ROAD
    8         ID           BASIN, OLIVE AVENUE BASIN, NORTHERN AVENUE BASIN WERE ESTIMATED
    9         ID           USING HEC-RAS LATERAL WEIR ROUTINE.
   10         ID        3. DETENTION BASIN ELEVATION AND VOLUME RELATIONSHIPS WERE ESTIMATED
   11         ID           BASED ON 30% DESIGN OF THE BASIN.
   12         ID        4. ELEVATION AND OUTFLOW RELATIONSHIP WERE ESTIMATED BASED ON 30% DESIG
   13         ID           USING CULVERTMASTER. THE OUTFLOW INCLUDES FLOW FROM BLEED-OFF PIPE
   14         ID           AND FLOW FROM OUTFLOW PIPE.
   15         ID        5. CHANNEL ROUTING WERE MODIFIED BASED ON 30% DESIGN.
   16         ID        6. FLOW FROM THE PROPOSED FCDMC CHANNEL ALONG NORTHEN AVENUE  WILL
   17         ID           NOT BE COMBINED WITH FLOW FROM LOOP 303 OFF-SITE CHANNEL.
   18         ID           INSTEAD THE FLOW FROM THE CHANNEL ALONG NORTHERN AVENUE WILL GO
   19         ID           TO THE NORTHERN AVENUE BASIN DIRECTLY.  SO THE FLOW FROM THE
   20         ID           NORTHERN AVENUE CHANNEL WILL BE COMBINED WITH THE DIVERTED FLOW
   21         ID           FROM LOOP 303 CHANNEL AT NORTHERN AVENUE BASIN.
   22         ID        7. IN THE ADMP MODEL, SOME OF THE OUTFLOW FROM CAMELBACK ROAD BASINS
   23         ID           WERE DIVERTED TO EAST ALONG CAMELBACK ROAD (THE PEAK FLOW IS
   24         ID           180 CFS).  NO STRUCTURE WAS RECOMMENDED IN THE ADMP UPDATE. PB
   25         ID           DESIGNED 3-30" PIPES TO DIVERT SOME FLOW TO THE EXISTING CAMELBACK
   26         ID           ROAD CHANNEL LOCATED AT SOUTH SIDE OF CAMELBACK ROAD.
   27         ID        9. PEBBLE CREEK AND PALM VALLEY 8 DEVELOPMENTS WERE INCLUDED IN THE
   28         ID           MODEL BASED ON HEC-1 MODEL PROVIDED BY DEL RIO ENGINEERING.
   29         ID        10. MCDOWELL ROAD DETENTION BASIN WERE DIVIDED INTO TWO DETENTION BASINS
   30         ID           ONE IS CALLED MCDOWELL ROAD UPPER BASIN AND THE OTHER ONE IS CALLED
   31         ID           MCDOWELL ROAD LOWER BASIN
   32         ID        11  PROPOSED I-10/303L TI (ULTIMATED CONDITION) ON-SITE DRAINAGE SYSTEM
   33         ID           WAS REFLECTED IN THE MODEL.  THERE ARE TOTAL 11 ON-SITE BASINS.
   34         ID
   35         ID        EXISTING CONDITION WITH PROJECTS IN PLACE SCENARIO
   36         ID        REVISED BY PARSONS BRINCKERHOFF     DATE: Aug 2008
   37         ID                                            FILE NAME: EX_SPLT.DAT
   38         ID        ************************************************************************
   39         ID        DRAFT PREFERRED ALTERNATIVE LEVEL III
   40         ID
   41         ID        INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
   42         ID        SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
   43         ID        BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
   44         ID        LUKE AIR FORCE BASE CRASH ZONE AREA
   45         ID
   46         ID        **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
   47         ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
   48         ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
   49         ID        TANKS/AGUA FRIA ADMS, Date: October 1991
   50         ID
   51         ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
   52         ID        100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
   53         ID
   54         ID                                  REVISED BY URS     DATE: 01-14-04
   55         ID                                                     FILE: L33PE4H.DAT
```



```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   56         ID
   57         ID        NOTES:
   58         ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
   59         ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
   60         ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
```

```
728          DI        0   10000
729          DQ        0   10000
                                   HEC-1 INPUT                                                    PAGE 20

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

730          KK   CP112
731          KM        ADD HYDROGRAPHS AT CP112.
732          HC        2    0.82
             *
             *       INSERT HYDROGRAPH STEP INTO ORIGINAL WTADMS.24 TO REFLECT RETENTION
             *       STORAGE - SUM OF ALL HAPPY TRAILS DEAD STORAGE RETENTION IN
             *       SUB-BASIN 112
             *

733          KK   1D112
734          KM        DIVERT TO CP120  FROM CP112
735          DT   DI120
736          DI        0       48      165      355      625      981     1434     1990
737          DQ        0       16       55      118      208      327      478      663

738          KK   2D112
739          KM        DIVERT TO CP121A FROM CP112
740          DT   1D121A
741          DI        0       32      110      237      417      654      956     1327
742          DQ        0       16       55      118      208      327      478      663

743          KK    R112
744          KM         ROUTE REMAINDER FROM CP112 TO CP113A
745          RS        6                -1        0
746          RC     .075     .035     .035     2640    .0023
747          RX     1000     1490     1830     2600     2770     2788     2789     2790
748          RY     1290     1288     1286     1284     1284     1285     1285     1285
             *

749          KK    113A
750          KM         RUNOFF HYDROGRAPH FROM SUB-BASIN 113A
751          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
752          KM    L=      1.4  Lca=       .8    S=   26.9  Kn= .030  LAG=  24.1
753          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
754          BA     .50
755          LG     .25      .25     5.80      .21    30.00
756          UI     70.     248.     391.     540.     829.     632.     460.     319.     152.     100.
757          UI     59.      21.      21.      21.       0.       0.       0.       0.       0.       0.
758          UI      0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
             *
             *       INSERT HYDROGRAPH STEP INTO ORIGINAL WTADMS.24 TO REFLECT RETENTION
             *       STORAGE - SUM OF ALL BELL WEST RANCH DEAD STORAGE RETENTION IN
             *       SUB-BASIN 113A
             *

759          KK   113AOT
760          KM        DIVERSION-RETENTION AT 113A
761          DT   113ART   18.71
762          DI        0   10000
763          DQ        0   10000
                                   HEC-1 INPUT                                                    PAGE 21
1
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

764          KK   DR113A
765          KM    RETURN DIVERT AT TOP OF NEXT DOWNSTREAM CHANNEL REACH
766          DR     DLP0
             *    ***************************************************************************
             *     PB  MODIFIED:
             *     ADDD FLOW ROUTING THROUGH THE PROPOSED CHANNEL 5332' LONG, BOTTOM WIDTH
             *     =8', DPETH=6', SS=2:1
             *    ***************************************************************************

767          KK   RCHNL1
768          KM     ROUTE FLOW S CLEARVIEW BLVD TO BELL ROAD THOUGH PROPOSED CHANNEL
769          RS      1.6               -1        0
770          RC     .035     .015     .035     5332    .0045
771          RX        0        3        5       17       25       37       49       52
772          RY     1290     1290     1289     1283     1283     1289     1290     1290
             * KKCP113A

773          KK     !LP0
774          KM          ADD HYDROGRAPHS AT CP113A (R106+R112+113A)
             * HC      2    1.34
775          HC        3    3.04
             *  DIVERT ALL FLOW TO THE NEXT DOWNSTREAM REACH

776          KK    D113A
777          KM         DIVERT TO CP121A FROM CP113A
778          DT   2D121A
779          DI        0   20000
780          DQ        0   20000

781          KK    R113A
782          KM         ROUTE REMAINDER FROM CP113A TO CP114
             * RY stations were increased by 2' at the ends to contain flow
783          RS        4               -1        0
784          RC     .035     .035     .035     2500    .0032
785          RX     1000     1020     1199     1200     1300     1301     1320     1340
786          RY     1282     1279     1280     1279     1279     1280     1279     1282
             *

787          KK      114
788          KM    BASIN 114 (revised)
```

L02L05

Job No. 79902 | No.

Computation

Project: Loop 303 / White Tanks ADMPU AHA

Location: L303 at Bell

Computed: AM | Date: 10/27/08

Subject: Weir Flow Analysis

Checked: [illegible] | Date: 3/10/09

Task: Weir Calculations

Sheet: 1 | Of: X

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	84	83	668	83.5	82.5	0	0.00	83	0	0.00	83.5	0	0.00	CHECK	84	0.5	708.52	DONE
south	83	82.6	281	82.8	82.5	0	0.00	83	0.2	75.40	83.5	0.7	493.71		84	1.2	1108.15	
south	82.6	82.2	20	82.4	82.5	0.1	1.90	83	0.6	27.89	83.5	1.1	69.22		84	1.6	121.43	
southeast	82.2	82	10	82.1	82.5	0.4	7.59	83	0.9	25.61	83.5	1.4	49.70		84	1.9	78.57	
east	82	82	276	82	82.5	0.5	292.74	83	1	828.00	83.5	1.5	1521.13		84	2	2341.94	
east	82	83	331	82.5	82.5	0	0.00	83	0.5	351.08	83.5	1	993.00		84	1.5	1824.26	
east	83	84	330	83.5	82.5	0	0.00	83	0	0.00	83.5	0	0.00		84	0.5	350.02	
east	84	84	1	84	82.5	0	0.00	83	0	0.00	83.5	0	0.00		84	0	0.00	
east	84	84	1	84	82.5	0	0.00	83	0	0.00	83.5	0	0.00		84	0	0.00	
						TOTALS:	302.23			1307.98			3126.76				6532.89	

Graph Computations:

Station	Elevation
0	84
668	83
949	82.6
969	82.2
979	82
1255	82
1586	83
1916	84
1917	84
1918	84

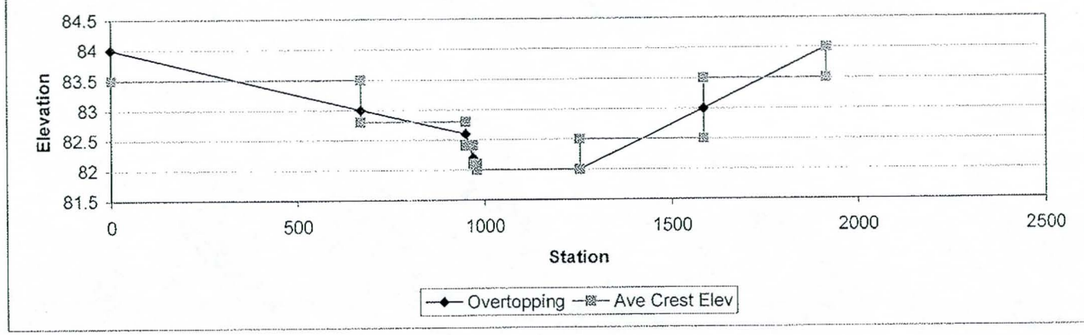
Weir Approximation:

Station	Elevation
0	83.5
668	83.5
668	82.8
949	82.8
949	82.4
969	82.4
969	82.1
979	82.1
979	82
1255	82
1255	82.5
1586	82.5
1586	83.5
1916	83.5
1916	84
1917	84
1917	84
1918	84

Culvert Flows (cfs):

south	0
southeast	0
east	0

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	1.90	1%	Q(south)	103.29	8%	Q(south)	562.93	18%	Q(south)	1938.10	30%
Q(southeast)	7.59	3%	Q(southeast)	25.61	2%	Q(southeast)	49.70	2%	Q(southeast)	78.57	1%
Q(east)	292.74	97%	Q(east)	1179.08	90%	Q(east)	2514.13	80%	Q(east)	4516.21	69%
	302.23			1307.98			3126.76			6532.89	

First DI	East to South			
Inflow	302.23	1307.98	3126.76	6532.89
Outflow	1.90	103.29	562.93	1938.10

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	300.33	1204.69	2563.83	4594.78
Outflow	7.59	25.61	49.70	78.57

Assumes diversion is to southeast

L303 @
Bell
DLOS

552' to 84

774' to 84

668' to 83

1284.7
1283.5
1281.5
1283.4
1283.6
1281.3
1280
276'
175'
82.6
1282.2
82
1281.7
1278.9
1288.4
1280.9
1277.9
1277.8

1" = 80'

N

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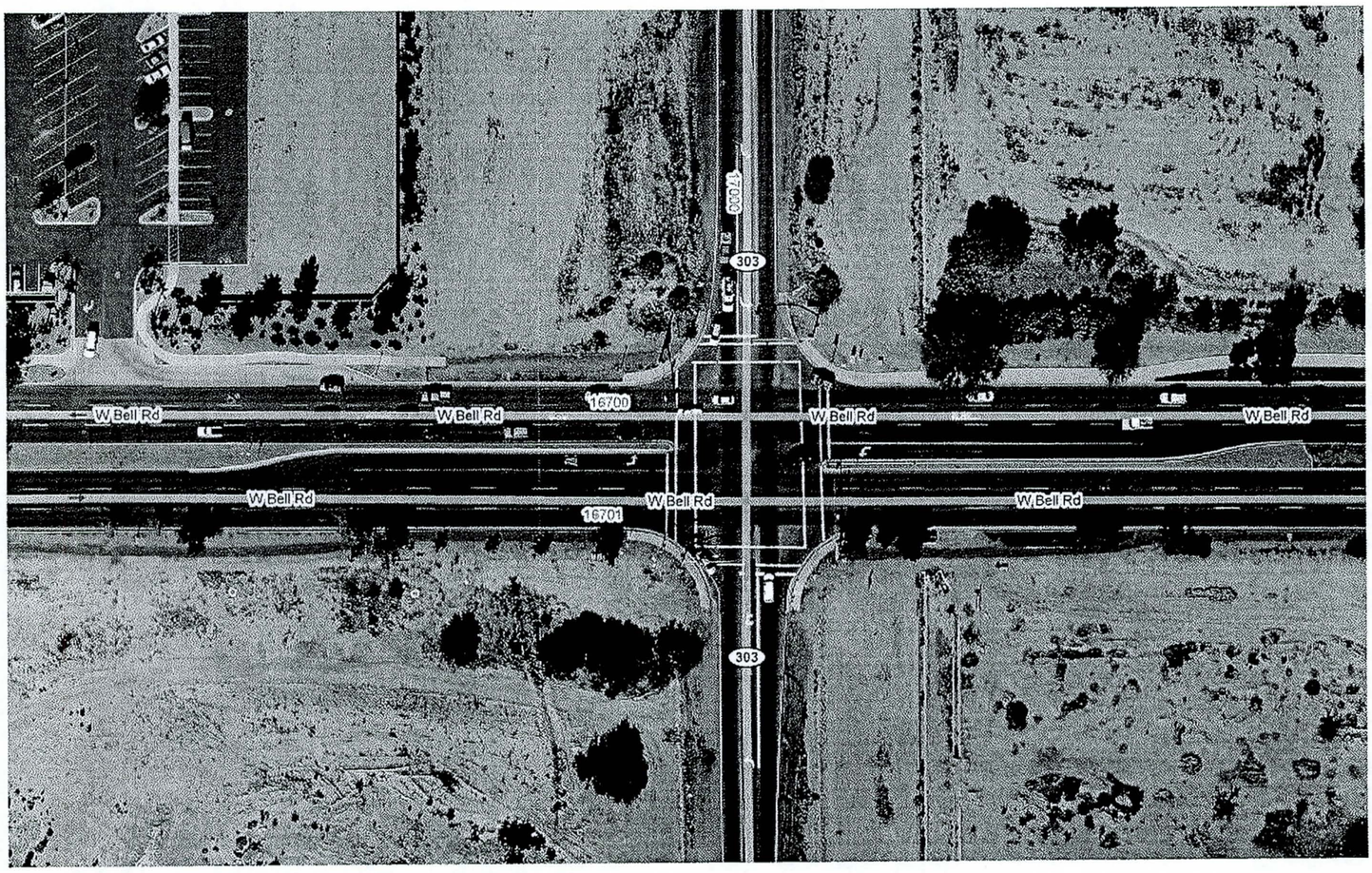

303
W Bell Rd
16700
W Bell Rd
W Bell Rd
W Bell Rd
W Bell Rd
16701
W Bell Rd
W Bell Rd
303

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Job No.	79902
Subject	Weir Flow Analysis	Computed	AM
Task	Weir Calculations	Checked	
		Sheet	1

Location: 179th at Greenway (DL06)

No.

Date 10/27/08

Date 3/10/09

Of x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	92.9	91.9	175	92.4	91.5	0	0.00	92	0	0.00	92.5	0.1	16.60	CHECK	93	0.6	244.00	DONE
south	91.9	90.9	357	91.4	91.5	0.1	33.87	92	0.6	497.76	92.5	1.1	1235.60		93	1.6	2167.55	
south	90.9	91.6	244	91.25	91.5	0.25	91.50	92	0.75	475.45	92.5	1.25	1023.00		93	1.75	1694.60	
east	91.6	92.6	360	92.1	91.5	0	0.00	92	0	0.00	92.5	0.4	273.22		93	0.9	922.12	
east	92.6	93.6	300	93.1	91.5	0	0.00	92	0	0.00	92.5	0	0.00		93	0	0.00	
east	93.6	93.7	20	93.65	91.5	0	0.00	92	0	0.00	92.5	0	0.00		93	0	0.00	
east	93.7	93.8	20	93.75	91.5	0	0.00	92	0	0.00	92.5	0	0.00		93	0	0.00	
east	93.8	93.9	20	93.85	91.5	0	0.00	92	0	0.00	92.5	0	0.00		93	0	0.00	
east	93.9	94	20	93.95	91.5	0	0.00	92	0	0.00	92.5	0	0.00		93	0	0.00	
						TOTALS:	125.37			973.20			2548.43				5028.27	

Graph Computations:

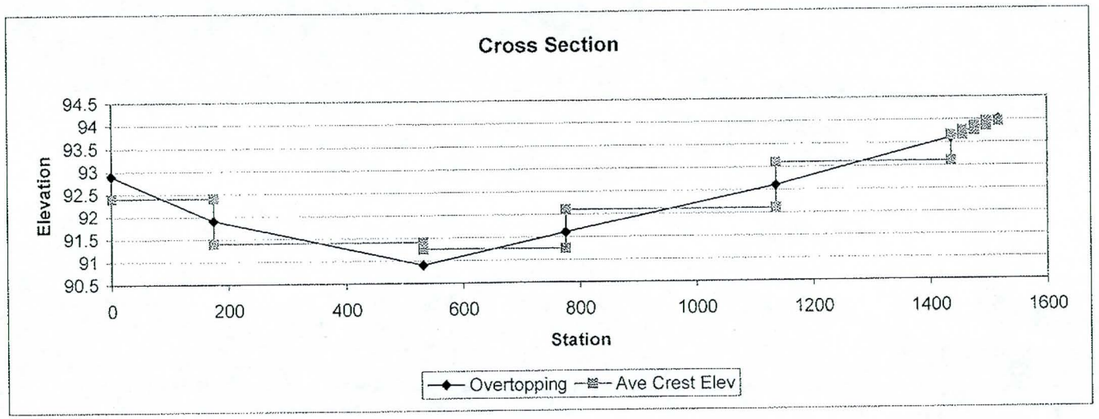
Station	Elevation
0	92.9
175	91.9
532	90.9
776	91.6
1136	92.6
1436	93.6
1456	93.7
1476	93.8
1496	93.9
1516	94

Weir Approximation:

Station	Elevation
0	92.4
175	92.4
175	91.4
532	91.4
532	91.25
776	91.25
776	92.1
1136	92.1
1136	93.1
1436	93.1
1436	93.65
1456	93.65
1456	93.75
1476	93.75
1476	93.85
1496	93.85
1496	93.95
1516	93.95

Culvert Flows (cfs):

south	0
southeast	0
east	0



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	125.37	100%	Q(south)	973.20	100%	Q(south)	2275.20	89%	Q(south)	4106.15	82%
Q(southeast)	0.00	0%	Q(southeast)	0.00	0%	Q(southeast)	0.00	0%	Q(southeast)	0.00	0%
Q(east)	0.00	0%	Q(east)	0.00	0%	Q(east)	273.22	11%	Q(east)	922.12	18%
	125.37			973.20			2548.43			5028.27	

First DI	East to South			
Inflow	125.37	973.20	2548.43	5028.27
Outflow	125.37	973.20	2275.20	4106.15

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	0.00	0.00	273.22	922.12
Outflow	0.00	0.00	0.00	0.00

Assumes diversion is to southeast

179th E Greenway

300' to 1293.6

1292.6

179th

1287.4

MH

FH

1291.4

1290

MH

360'

1290

MH

1289.1

MH

1290

1290.9

244'

1291.6

1290

1288.8

Greenway

175' to 1292.9

357' to 1291.9

1291.5

FH

1284.2

1289.3

MH

1290

MH

MH

1286.4

MH

FH

1" = 80'

N

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Street View
Traffic
More...
W Ivy Ln
18057
18000
17999
17900
N 179th Dr
N 180th Ave
W Carmen Dr
18063
18000
17900
N 179th Ave
N 178th Dr
17899
16354
16353
18262
W Greenway Rd
15400 N
18467
18000
17900
W Caribbean Ln
N 180th Ave
N 179th Ave
17899
17800
N 178th Ln

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Job No.	79902
Subject	Weir Flow Analysis	Computed	AM
Task	Weir Calculations	Checked	tP
Location: Paradise at Greenway (DL07)		Sheet	1

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	84.2	84	130	84.1	83	0	0.00	83.5	0	0.00	84	0	0.00	CHECK	84.5	0.4	98.66	DONE
south	84	83.8	60	83.9	83	0	0.00	83.5	0	0.00	84	0.1	5.69		84.5	0.6	83.66	
south	83.8	84	80	83.9	83	0	0.00	83.5	0	0.00	84	0.1	7.59		84.5	0.6	111.54	
south	84	84.2	105	84.1	83	0	0.00	83.5	0	0.00	84	0	0.00		84.5	0.4	79.69	
south	84.2	84	16	84.1	83	0	0.00	83.5	0	0.00	84	0	0.00		84.5	0.4	12.14	
south	84	83	45	83.5	83	0	0.00	83.5	0	0.00	84	0.5	47.73		84.5	1	135.00	
south	83	82	45	82.5	83	0.5	47.73	83.5	1	135.00	84	1.5	248.01		84.5	2	381.84	
east	82	83	175	82.5	83	0.5	185.62	83.5	1	525.00	84	1.5	964.49		84.5	2	1484.92	
east	83	84	175	83.5	83	0	0.00	83.5	0	0.00	84	0.5	185.62		84.5	1	525.00	
					TOTALS:		233.35			660.00			1459.12				2912.46	

Graph Computations:

Station	Elevation
0	84.2
130	84
190	83.8
270	84
375	84.2
391	84
436	83
481	82
656	83
831	84

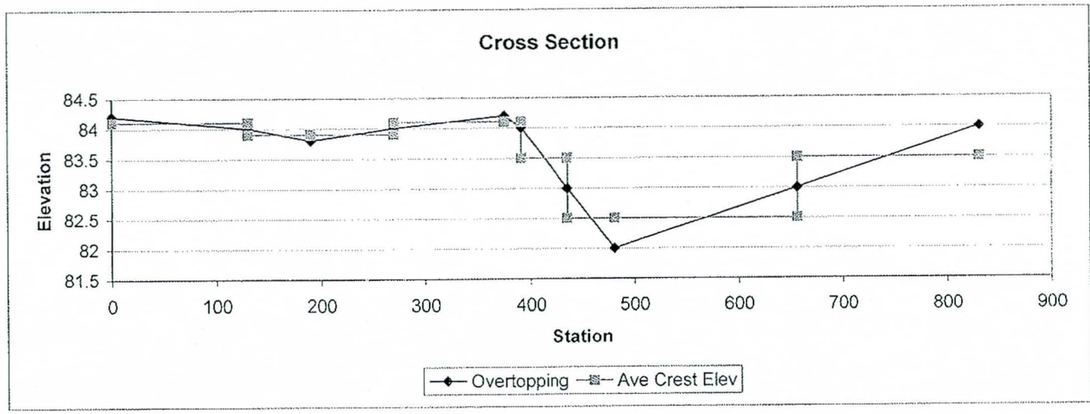
Weir Approximation:

Station	Elevation
0	84.1
130	84.1
130	83.9
190	83.9
190	83.9
270	83.9
270	84.1
375	84.1
375	84.1
391	84.1
391	83.5
436	83.5
436	82.5
481	82.5
481	82.5
656	82.5
656	83.5
831	83.5

Culvert Flows (cfs):

south	0
southeast	0
east	0

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	47.73	20%	Q(south)	135.00	20%	Q(south)	309.02	21%	Q(south)	902.53	31%
Q(southeast)	0.00	0%	Q(southeast)	0.00	0%	Q(southeast)	0.00	0%	Q(southeast)	0.00	0%
Q(east)	185.62	80%	Q(east)	525.00	80%	Q(east)	1150.10	79%	Q(east)	2009.92	69%
	233.35			660.00			1459.12			2912.46	

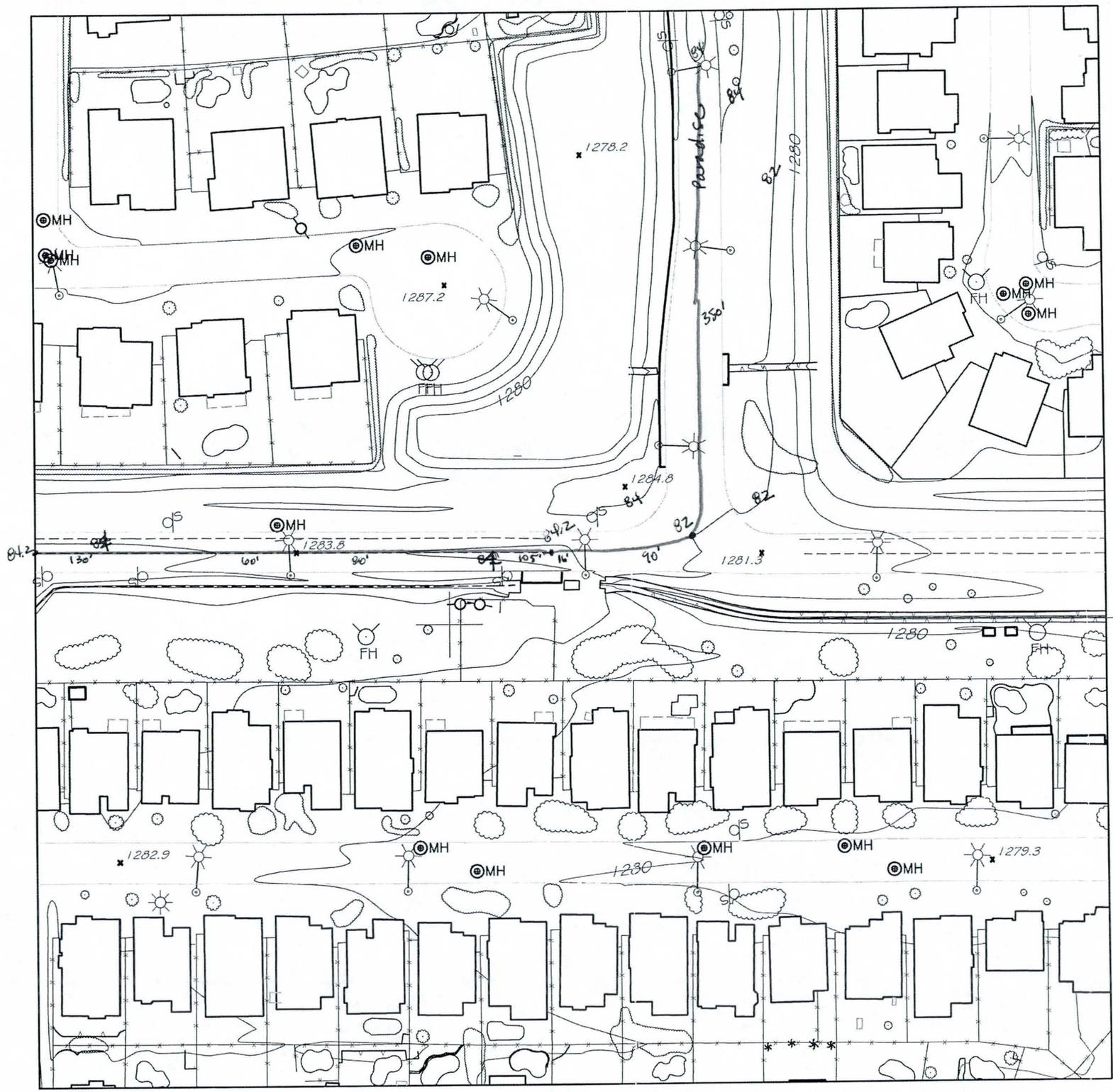
First DI	East to South			
Inflow	233.35	660.00	1459.12	2912.46
Outflow	47.73	135.00	309.02	902.53

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	185.62	525.00	1150.10	2009.92
Outflow	0.00	0.00	0.00	0.00

Assumes diversion is to southeast

Paradise @
Greenway



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W Carmen Dr
17999
W Carmen Dr
17930
W Carmen Dr
N Sepulveda Ave
15400 N
W Greenway Rd
18003
18001
15400 N
W Greenway Rd
aribbean Ln
W Caribbean Ln
W Caribbean Ln
W Caribbean Ln
W Caribbean

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For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

CIP models

L09

```
L*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN  1998                 *
*           VERSION 4.1                 *
*                                       *
*    DATE   07MAY09  TIME  08:05:50     *
*                                       *
*****************************************
```

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

```
X    X  XXXXXXX   XXXXX          X
X    X  X        X     X        XX
X    X  X        X              X
XXXXXXX  XXXX     X       XXXXX  X
X    X  X        X              X
X    X  X        X     X        X
X    X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   1          ID         LOOP 303 OFF-SITE HYDROLOGY
   2          ID         MODIFIED BASED ON FCDMC'S WHITE TANKS/LOOP 303 CORRIDOR ADMP
   3          ID         THE MODIFICATIONS ARE DESCRIBED AS FOLLOWS:
   4          ID         1. THE CACTUS RD BASIN WAS REMOVED AND TWO RELATIVELY SMALL BASINS
   5          ID            LOCATED AT NORTH OF WADDELL ROAD AND NORTH OF OLIVE AVENUE WERE
   6          ID            ADDED TO THE MODEL BASED ON CMX'S HEC-1 MODEL PROVIDED IN DEC,2006.
   7          ID         2. FLOW DIVERSION TO THE OFF-LINE BASINS, SUCH AS WADDELL ROAD
   8          ID            BASIN, OLIVE AVENUE BASIN, NORTHERN AVENUE BASIN WERE ESTIMATED
   9          ID            USING HEC-RAS LATERAL WEIR ROUTINE.
  10          ID         3. DETENTION BASIN ELEVATION AND VOLUME RELATIONSHIPS WERE ESTIMATED
  11          ID            BASED ON 30% DESIGN OF THE BASIN.
  12          ID         4. ELEVATION AND OUTFLOW RELATIONSHIP WERE ESTIMATED BASED ON 30% DESIG
  13          ID            USING CULVERTMASTER.  THE OUTFLOW INCLUDES FLOW FROM BLEED-OFF PIPE
  14          ID            AND FLOW FROM OUTFLOW PIPE.
  15          ID         5. CHANNEL ROUTING WERE MODIFIED BASED ON 30% DESIGN.
  16          ID         6. FLOW FROM THE PROPOSED FCDMC CHANNEL ALONG NORTHEN AVENUE  WILL
  17          ID            NOT BE COMBINED WITH FLOW FROM LOOP 303 OFF-SITE CHANNEL.
  18          ID            INSTEAD THE FLOW FROM THE CHANNEL ALONG NORTHERN AVENUE WILL GO
  19          ID            TO THE NORTHERN AVENUE BASIN DIRECTLY.  SO THE FLOW FROM THE
  20          ID            NORTHERN AVENUE CHANNEL WILL BE COMBINED WITH THE DIVERTED FLOW
  21          ID            FROM LOOP 303 CHANNEL AT NORTHERN AVENUE BASIN.
  22          ID         7. IN THE ADMP MODEL, SOME OF THE OUTFLOW FROM CAMELBACK ROAD BASINS
  23          ID            WERE DIVERTED TO EAST ALONG CAMELBACK ROAD (THE PEAK FLOW IS
  24          ID            180 CFS).  NO STRUCTURE WAS RECOMMENDED IN THE ADMP UPDATE. PB
  25          ID            DESIGNED 3-30" PIPES TO DIVERT SOME FLOW TO THE EXISTING CAMELBACK
  26          ID            ROAD CHANNEL LOCATED AT SOUTH SIDE OF CAMELBACK ROAD.
  27          ID         9. PEBBLE CREEK AND PALM VALLEY 8 DEVELOPMENTS WERE INCLUDED IN THE
  28          ID            MODEL BASED ON HEC-1 MODEL PROVIDED BY DEL RIO ENGINEERING.
  29          ID        10. MCDOWELL ROAD DETENTION BASIN WERE DIVIDED INTO TWO DETENTION BASINS
  30          ID            ONE IS CALLED MCDOWELL ROAD UPPER BASIN AND THE OTHER ONE IS CALLED
  31          ID            MCDOWELL ROAD LOWER BASIN
  32          ID        11  PROPOSED I-10/303L TI (ULTIMATED CONDITION) ON-SITE DRAINAGE SYSTEM
  33          ID            WAS REFLECTED IN THE MODEL.  THERE ARE TOTAL 11 ON-SITE BASINS.
  34          ID
  35          ID         EXISTING CONDITION WITH PROJECTS IN PLACE SCENARIO
  36          ID         REVISED BY PARSONS BRINCKERHOFF    DATE: Aug 2008
  37          ID                                            FILE NAME: EX_SPLT.DAT
  38          ID         ************************************************************************
  39          ID         DRAFT PREFERRED ALTERNATIVE LEVEL III
  40          ID
  41          ID         INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
  42          ID         SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
  43          ID         BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
  44          ID         LUKE AIR FORCE BASE CRASH ZONE AREA
  45          ID
  46          ID         **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
  47          ID         WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
  48          ID         Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
  49          ID         TANKS/AGUA FRIA ADMS, Date: October 1991
  50          ID
  51          ID         REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
  52          ID         100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
  53          ID
  54          ID                                    REVISED BY URS     DATE: 01-14-04
  55          ID                                                       FILE: L33PE4H.DAT
```

HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  56          ID
  57          ID        NOTES:
  58          ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
  59          ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
  60          ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
```

```
1154            KK   R131A
1155            KM        ROUTE FLOW FROM CP131A TO R131
1156            RS      8              -1
1157            RC   .075      .04      .04     2640    .0051
1158            RX    1000     1001     1640     2050     2290     2328     2329     2330
1159            RY    1234     1234     1232     1230     1230     1231     1231     1231
                *

1160            KK     131
1161            KM         RUNOFF HYDROGRAPH FROM SUB-BASIN 131
1162            BA    .49
1163            LG    .50      .00     5.00      .45      .00
1164            UI    22.      22.      22.      49.      78.      94.     107.     120.     130.     143.
1165            UI   161.     177.     212.     261.     285.     241.     211.     190.     174.     157.
1166            UI   140.     127.     111.     103.      83.      63.      42.      39.      36.      36.
```



```
                                    HEC-1 INPUT
LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1167            UI     25.      22.      22.      17.       7.       7.       7.       7.       7.       7.
1168            UI      7.       7.       7.       7.       0.       0.       0.       0.       0.       0.
1169            UI      0.       0.       0.       0.       0.       0.       0.       0.       0.       0.

1170            KK   1I131
1171            KM        ADD HYDROGRAPHS AT CP131
1172            HC      2    9.57

1173            KK   2D112
1174            KM        RETURN DIVERT AT CP112
1175            DR   1D121A

1176            KK    R112
1177            KM        ROUTE FLOW FROM CP112 TO CP121A
1178            RS       6              -1        0
1179            RC     .05      .022      .05     6700    .0034
1180            RX    1000     1180     1205     1225     1295     1320     1345     1670
1181            RY    1265     1264     1262     1260     1260     1262     1264     1265
                *

1182            KK    121A
1183            KM         RUNOFF HYDROGRAPH FROM SUB-BASIN 121A
1184            BA     .50
1185            LG     .46      .09     5.76      .28      .00
1186            UI    26.      26.      30.      89.     109.     129.     146.     161.     183.     205.
1187            UI   248.     317.     331.     274.     238.     214.     190.     166.     147.     129.
1188            UI   109.      80.      52.      46.      43.      37.      26.      26.      19.       8.
1189            UI     8.       8.       8.       8.       8.       8.       8.       8.       0.       0.
1190            UI     0.       0.       0.       0.       0.       0.       0.       0.       0.       0.

1191            KK   1I121A
1192            KM        ADD HYDROGRAPHS AT 1I121A
1193            HC      2    1.34
                *

1194            KK    D113A
1195            KM         RETURN DIVERT AT CP113A
1196            DR   2D121A
                *  INSERT PROPOSED CHANNEL ROUTE
                * KK R113A
                *  ************************************************************************************
                *   PB MODIFIED
                *   CHANNEL ROUTING WERE MODIFIED BASED ON REVISED CHANNEL DIMENSION
                *  ************************************************************************************
                *
                *  KK  RLP0
                *  RS   1.3              -1.0      0.0
                *  RC 0.013    0.013    0.013     5360   0.0050
                *  RX      0     11.2     13.2     15.2     17.2     19.2     21.2     32.4
                *  RY1253.5  1247.9  1247.9  1247.9  1247.9  1247.9  1247.9  1253.5
```



```
                                    HEC-1 INPUT
LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1197            KK     RLP0
1198            KM    ROUTE FLOW FROM BELL ROAD TO GREENWAY ROAD
1199            RS      1.6              -1.0      0.0
1200            RC    0.035    0.015    0.035     5174   0.0036
1201            RX        0        3        5       16       26       37       57       60
1202            RY   1269.5   1268.5   1268.5     1263     1263   1268.5   1268.5   1269.5
                *
                * KKCP121A

1203            KK      !LP
1204            KM         ADD HYDROGRAPHS AT CP121A
1205            HC       2    3.54
                * HC     2    5.24

1206            KK   DC121A
1207            KM    DIVERT 121A FOR RETRIEVAL LATER
1208            DT    DI131A
1209            DI         0   10000
1210            DQ         0   10000

1211            KK    R121A
1212            KM         ROUTE FLOW FROM CP121A TO CP121
1213            RS       2              -1        0
1214            RC    .035     .035     .035     2640    .0096
1215            RX    1000     1001     1002     1180     1200     1213     1214     1215
1216            RY    1278     1278     1278     1276     1276     1277     1277     1277
                *
```

L05 L09

Job No. 79902 | No.

Computation

Project: Loop 303 / White Tanks ADMPU AHA | **Location: L303 at Greenway (DL09)** | Computed AM | Date 10/27/08

Subject: Weir Flow Analysis | Checked [illegible] | Date 3/10/09

Task: Weir Calculations | Sheet 1 | Of x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	60.2	59.2	150	59.7	58.5	0	0.00	59	0	0.00	59.5	0	0.00	CHECK	60	0.3	73.94	DONE
south	59.2	58.7	220	58.95	58.5	0	0.00	59	0.05	7.38	59.5	0.55	269.21		60	1.05	710.11	
south	58.7	58.2	220	58.45	58.5	0.05	7.38	59	0.55	269.21	59.5	1.05	710.11		60	1.55	1273.62	
south	58.2	58.65	120	58.425	58.5	0.075	7.39	59	0.575	156.97	59.5	1.075	401.25		60	1.575	711.58	
southeast	58.65	59.1	120	58.875	58.5	0	0.00	59	0.125	15.91	59.5	0.625	177.88		60	1.125	429.57	
east	59.1	59.1	20	59.1	58.5	0	0.00	59	0	0.00	59.5	0.4	15.18		60	0.9	51.23	
east	59.1	59.7	132	59.4	58.5	0	0.00	59	0	0.00	59.5	0.1	12.52		60	0.6	184.04	
east	59.7	60	50	59.85	58.5	0	0.00	59	0	0.00	59.5	0	0.00		60	0.15	8.71	
east	60	60.2	100	60.1	58.5	0	0.00	59	0	0.00	59.5	0	0.00		60	0	0.00	
					TOTALS:		14.77			449.46			1586.15				3442.81	

Graph Computations:

Station	Elevation
0	60.2
150	59.2
370	58.7
590	58.2
710	58.65
830	59.1
850	59.1
982	59.7
1032	60
1132	60.2

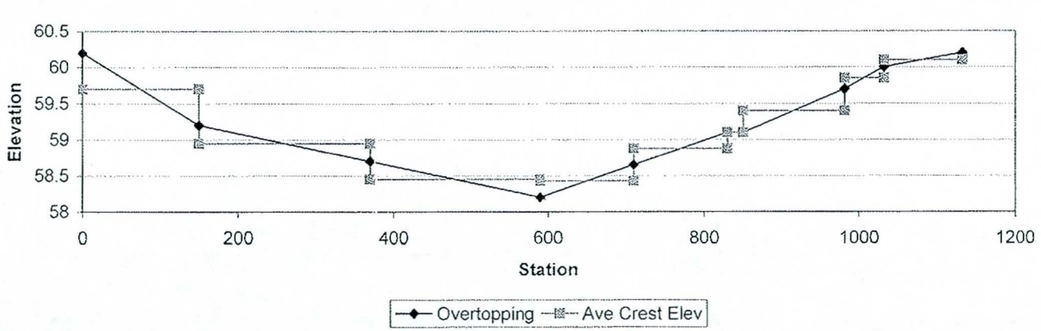
Weir Approximation:

Station	Elevation
0	59.7
150	59.7
150	58.95
370	58.95
370	58.45
590	58.45
590	58.425
710	58.425
710	58.875
830	58.875
830	59.1
850	59.1
850	59.4
982	59.4
982	59.85
1032	59.85
1032	60.1
1132	60.1

Culvert Flows (cfs):

south	0
southeast	0
east	125

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	14.77	11%	Q(south)	433.55	75%	Q(south)	1380.57	81%	Q(south)	2769.26	78%
Q(southeast)	0.00	0%	Q(southeast)	15.91	3%	Q(southeast)	177.88	10%	Q(southeast)	429.57	12%
Q(east)	125.00	89%	Q(east)	125.00	22%	Q(east)	152.70	9%	Q(east)	368.99	10%
	139.77			574.46			1711.15			3567.81	

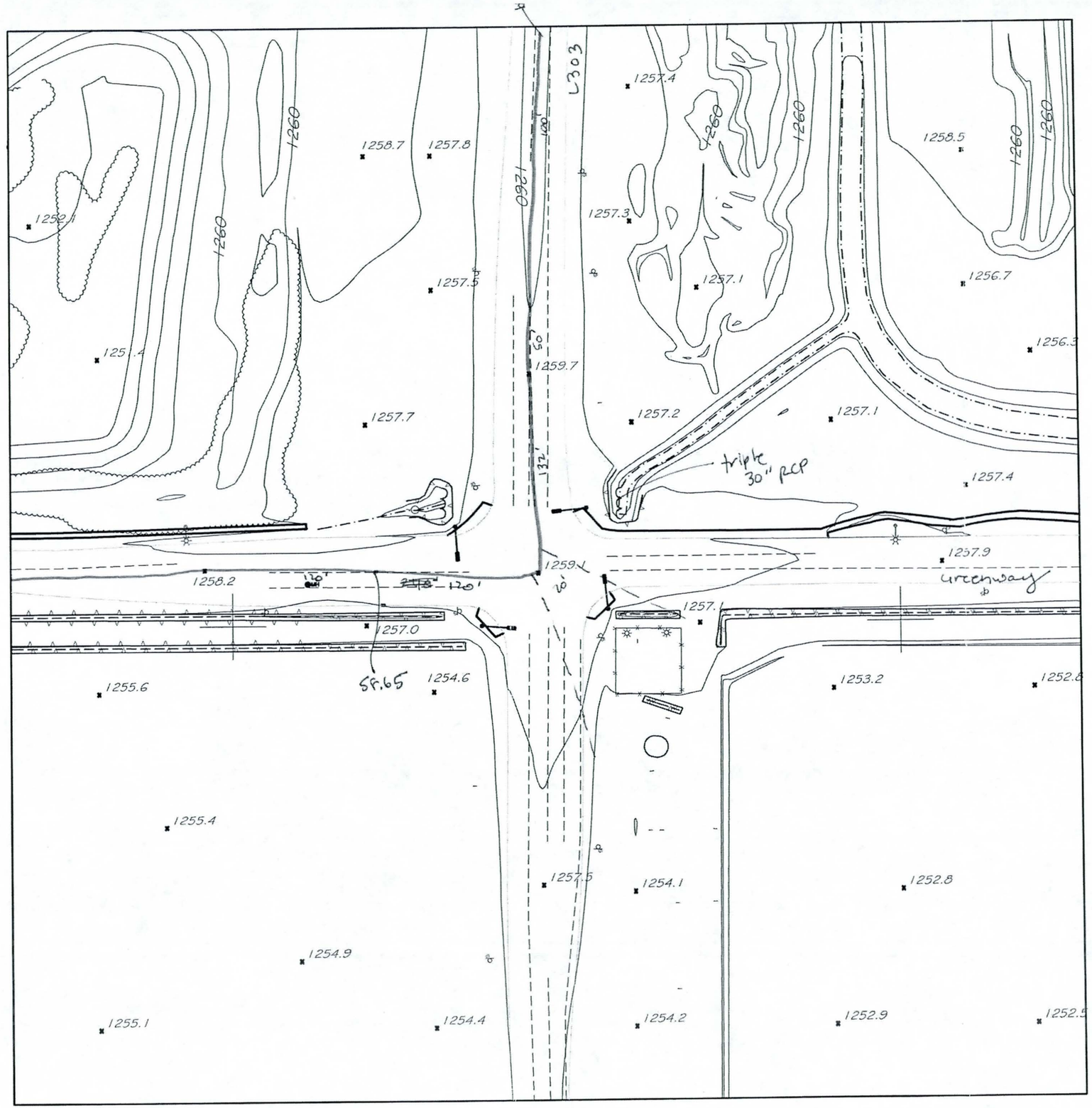
First DI	East to South			
Inflow	139.77	574.46	1711.15	3567.81
Outflow	14.77	433.55	1380.57	2769.26

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	125.00	140.91	330.58	798.55
Outflow	0.00	15.91	177.88	429.57

Assumes diversion is to southeast

L303 @ Greenway (DL09)



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Culvert Calculator Report
L303atGreenway

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	59.50	ft	Headwater Depth/Height	2.20	
Computed Headwater Elev	59.50	ft	Discharge	124.56	cfs
Inlet Control HW Elev.	58.52	ft	Tailwater Elevation	56.50	ft
Outlet Control HW Elev.	59.50	ft	Control Type	Outlet Control	

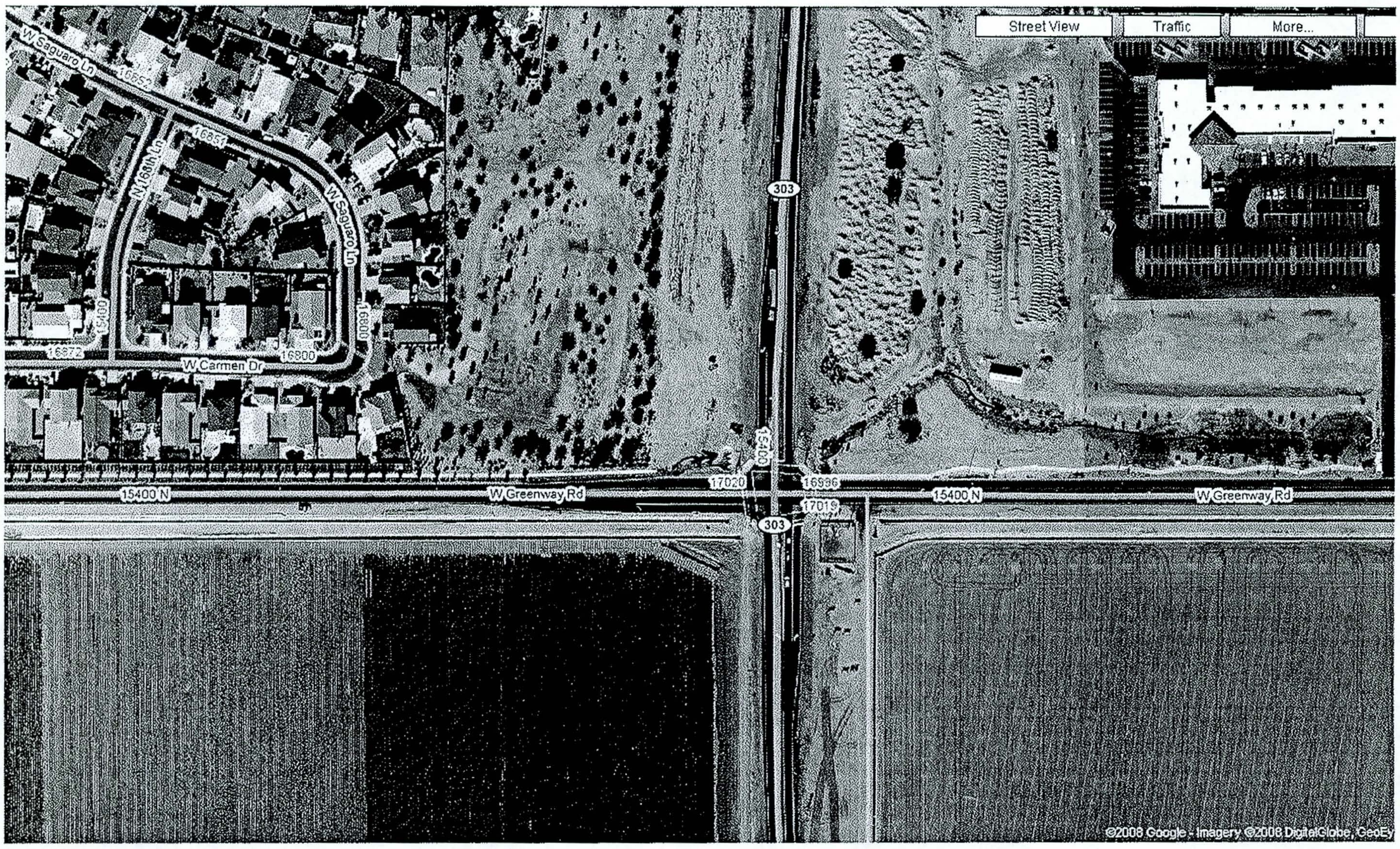
Grades					
Upstream Invert	54.00	ft	Downstream Invert	53.50	ft
Length	130.00	ft	Constructed Slope	0.003846	ft/ft

Hydraulic Profile					
Profile	PressureProfile		Depth, Downstream	3.00	ft
Slope Type	N/A		Normal Depth	N/A	ft
Flow Regime	N/A		Critical Depth	2.16	ft
Velocity Downstream	8.46	ft/s	Critical Slope	0.009425	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	2.50	ft
Section Size	30 inch		Rise	2.50	ft
Number Sections	3				

Outlet Control Properties					
Outlet Control HW Elev.	59.50	ft	Upstream Velocity Head	1.11	ft
Ke	0.50		Entrance Loss	0.56	ft

Inlet Control Properties					
Inlet Control HW Elev.	58.52	ft	Flow Control	Submerged	
Inlet Type	Square edge w/headwall		Area Full	14.7	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				


Street View
Traffic
More...
W Saguaro Ln
N 168th Ln
W Carmen Dr
16800
16872
15400 N
W Greenway Rd
17020
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17019
303
15400
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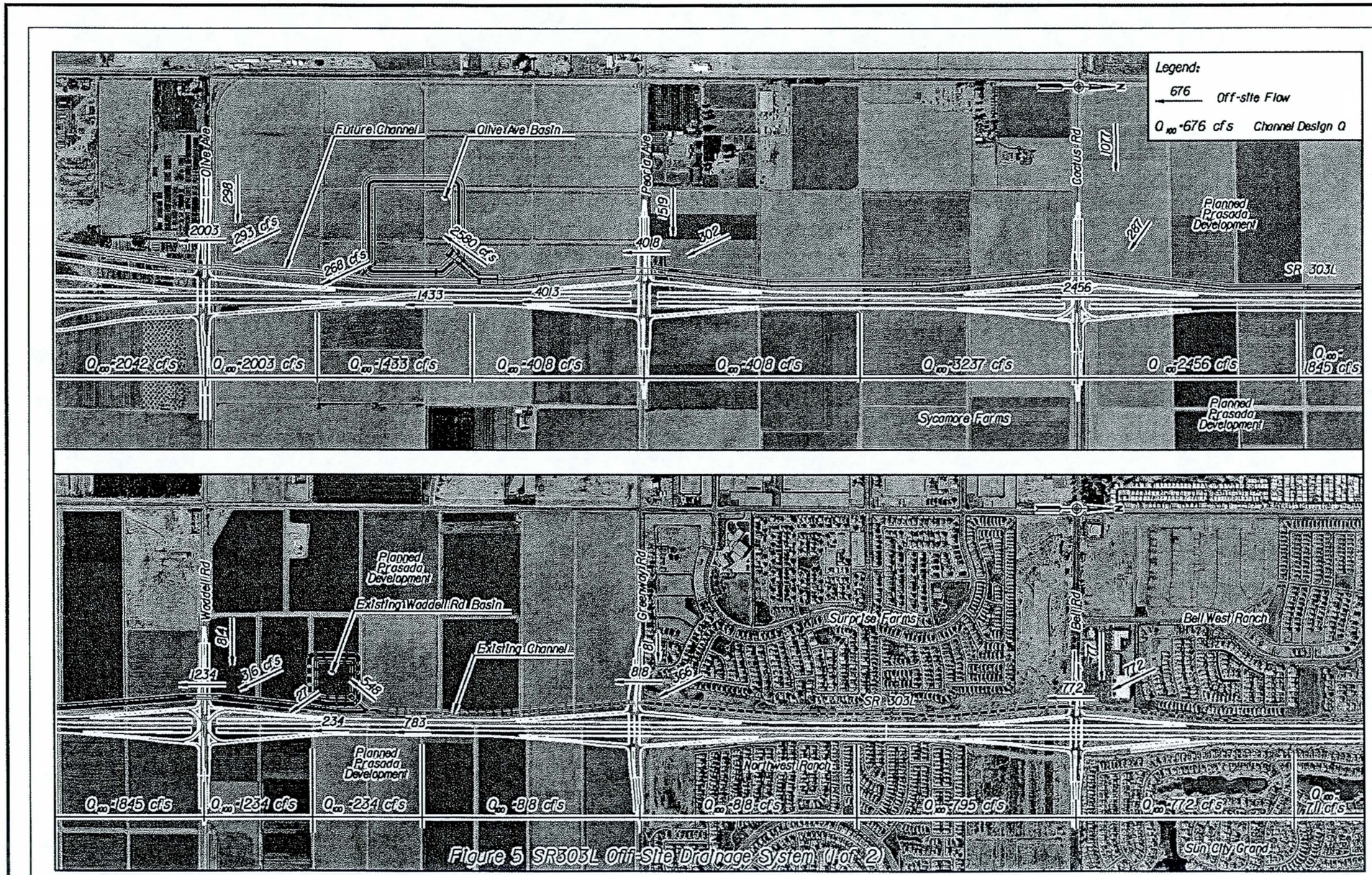


Figure 5 SR303L Off-Site Drainage System (1 of 2)

Figure 5 – SR303L Off-Site Drainage System
1 of 2

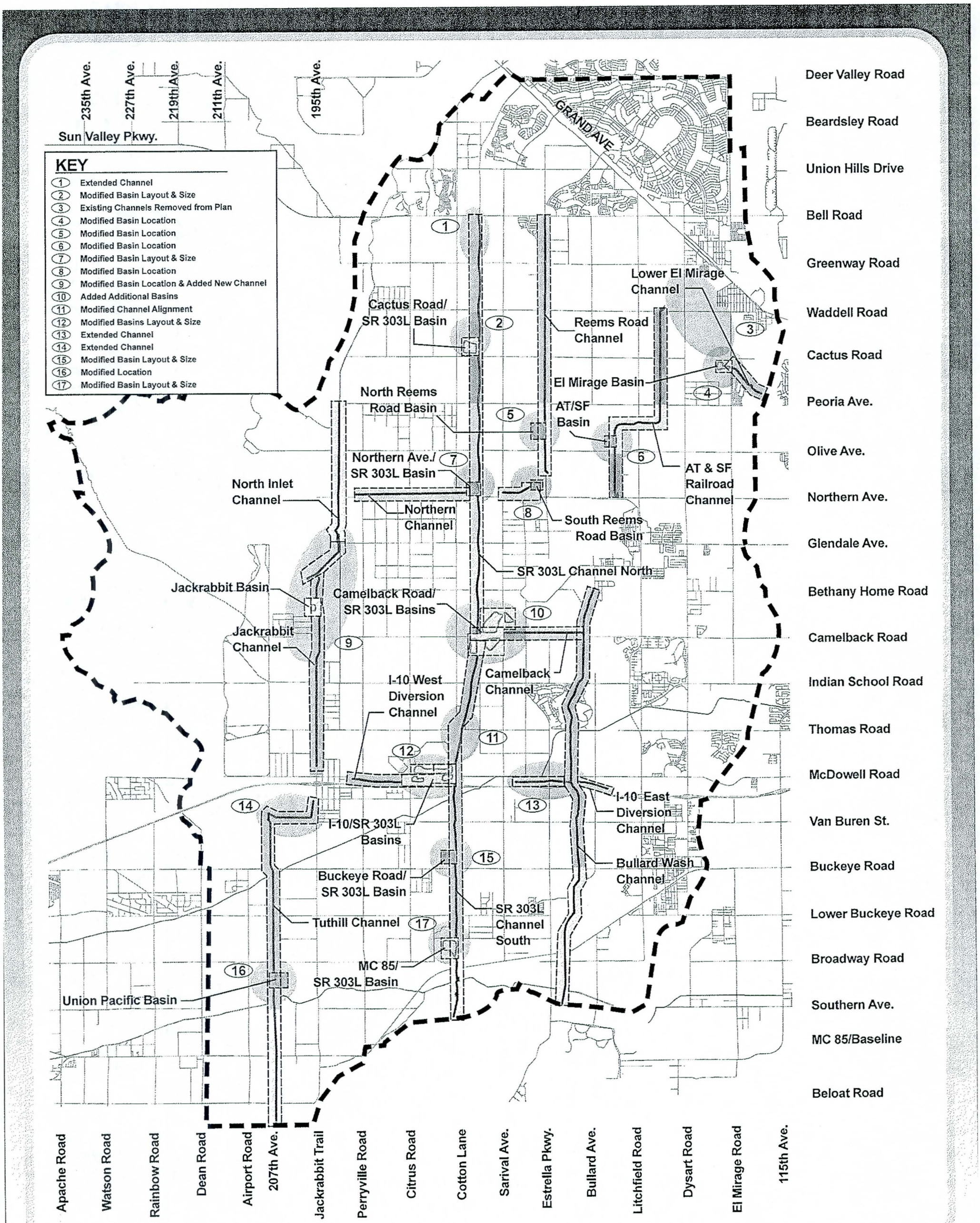
Figure 5 SR303L Off-Site Drainage System (2 of 2)

Figure 5 – SR303L Off-Site Drainage System
2 of 2

W28, S70, L72, B65, D69
L09, L13, L19, L27, L34

Table 2.4B
Proposed Basin Summary
Existing Condition Hydrology

Channel/ Location ID	Qin (cfs)	Qout (cfs)	Vin (ac-ft)	Peak Storage (ac-ft)	Max. Vol. Provided (ac-ft)	Peak Stage (ft)	on/off line	Combined Total Outflow (cfs)	Length Low-Flow Basin Drain (ft)	Prop. Bot. Elev. (ft)	Prop. Top Elev. (ft)	Design FB (ft)	Actual FB (ft)	Backwater
Jackrabbit Channel														
SRJR1 (N. of Camelback)	850	65	42	41.5	43.9	1185.5	off-line	151	8,323	1,173.5	1,186.0	0.0	0.5	-----
Tuthill Channel														
SRTC5 (@ RxR)	1,646	550	109	108.5	108.5	898.0	off-line	618	4,390	890.0	898.0	0.0	-0.6	-----
I-10 Channel West														
SR10W7	1593	741	282	85.2	85.2	1022.0	on-line	N/A	2,487	1,010.5	1,022.0	0.0	0.0	-----
L303 Channel														
SRLP2 (Cactus Road)	2311	311	543	440	440.0	1212.0	off-line	587	5,630	1,197.0	1,212.0	0.0	0.0	-----
SRLP5 (Northern)	4241	442	354	334	333.0	1141.0	off-line	1380	6,934	1,126.0	1,141.0	0.0	0.0	-----
SRLP8 (Camelback)	2102	340	1081	705.9	700.0	1065.0	on-line	N/A	14,062	1,059.0	1,065.0	0.0	0.0	-----
SRLP12 (I-10)	1781	701	1166	591.5	590.0	1016.0	on-line	N/A	4,961	1,001.0	1,016.0	0.0	0.0	-----
SRLP14 (Yuma/Buckeye)	695	523	823	189.0	190.0	968.0	on-line	N/A	4,092	959.0	968.0	0.0	0.0	-----
SRLP16 (MC85)	751	448	938	325.0	325.0	913.0	on-line	N/A	2,872	903.0	913.0	0.0	0.0	-----
Reems/Northern Channel														
SRRM5 (Olive)	1,752	198	189	165.0	165.0	1134.0	off-line	818	1,449	1,127.0	1,134.0	0.0	0.0	-----
BSNR6(Northern)	477	0	55	55.0	61.1	1107.5	in-line	0	1,413	1,095.0	1,108.5	0.0	1.2	-----
AT&SF Railroad Channel														
SRRR7 (@Olive)	1,770	1285	331	81.3	142.7	1105.6	off-line	1439	1,832	1,097.5	1,111.5	0.0	6.1	-----
Lower El Mirage Channel														
(SRLE4 SW corner of Cactus and El Mirage)	1,312	813	191	56.9	80.0	1111.4	off-line	852	2,069	1,104.5	1,114.0	0.0	2.1	-----
Bullard Wash														
SRBD1S (I-10 and Bullard Wash)	2682	2011	813	134.9	138.0	990.2	off-line	575 - ADOT	4,390	978.5	990.2	0.0	-0.2	-----
								2239 - BLRD						



Basin & Channel Locations

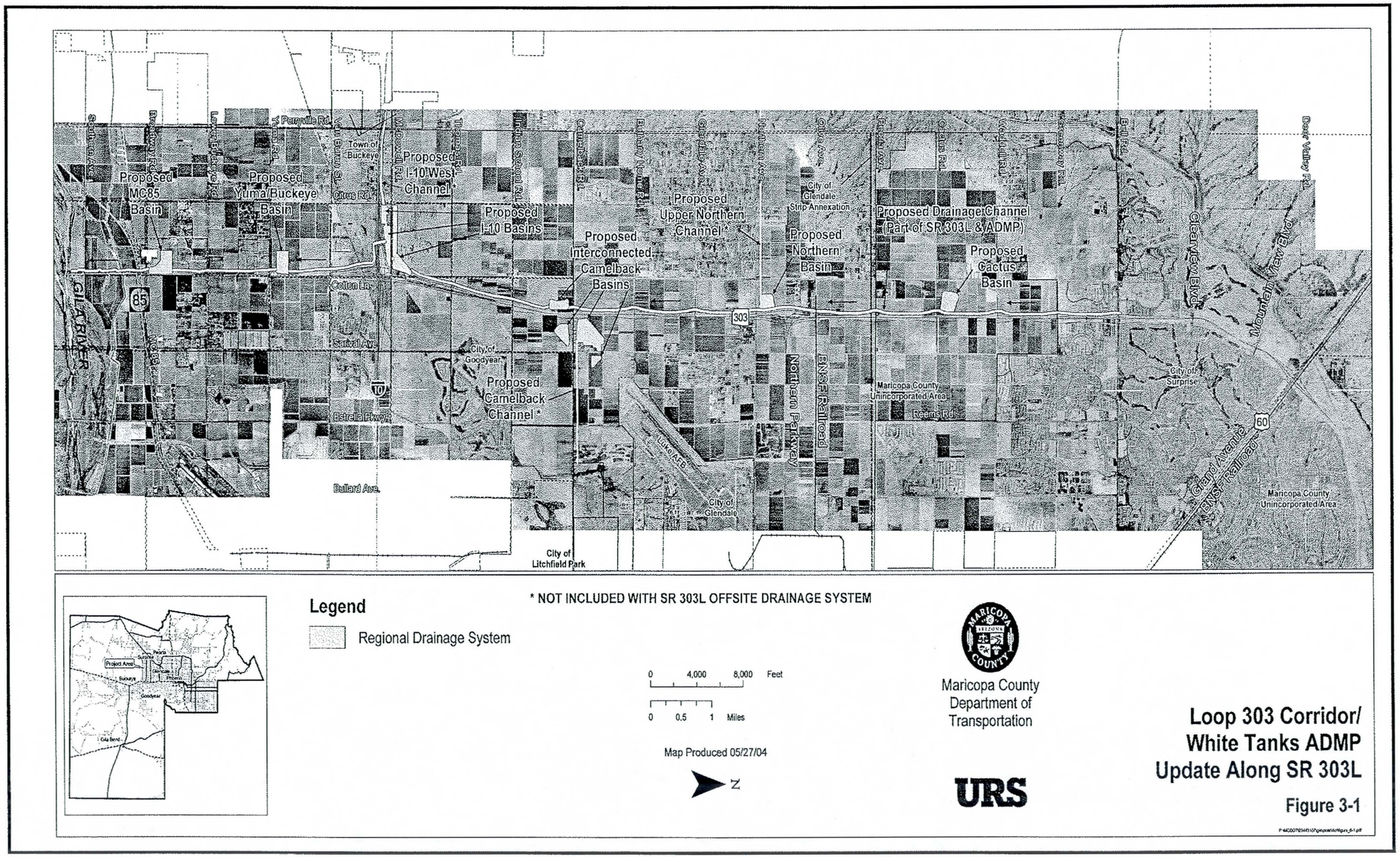


Figure 3 - Loop 303 Corridor/White Tanks ADMP Update Along SR303L

Table 2.2A
Proposed Channel Summary
Existing Condition Hydrology

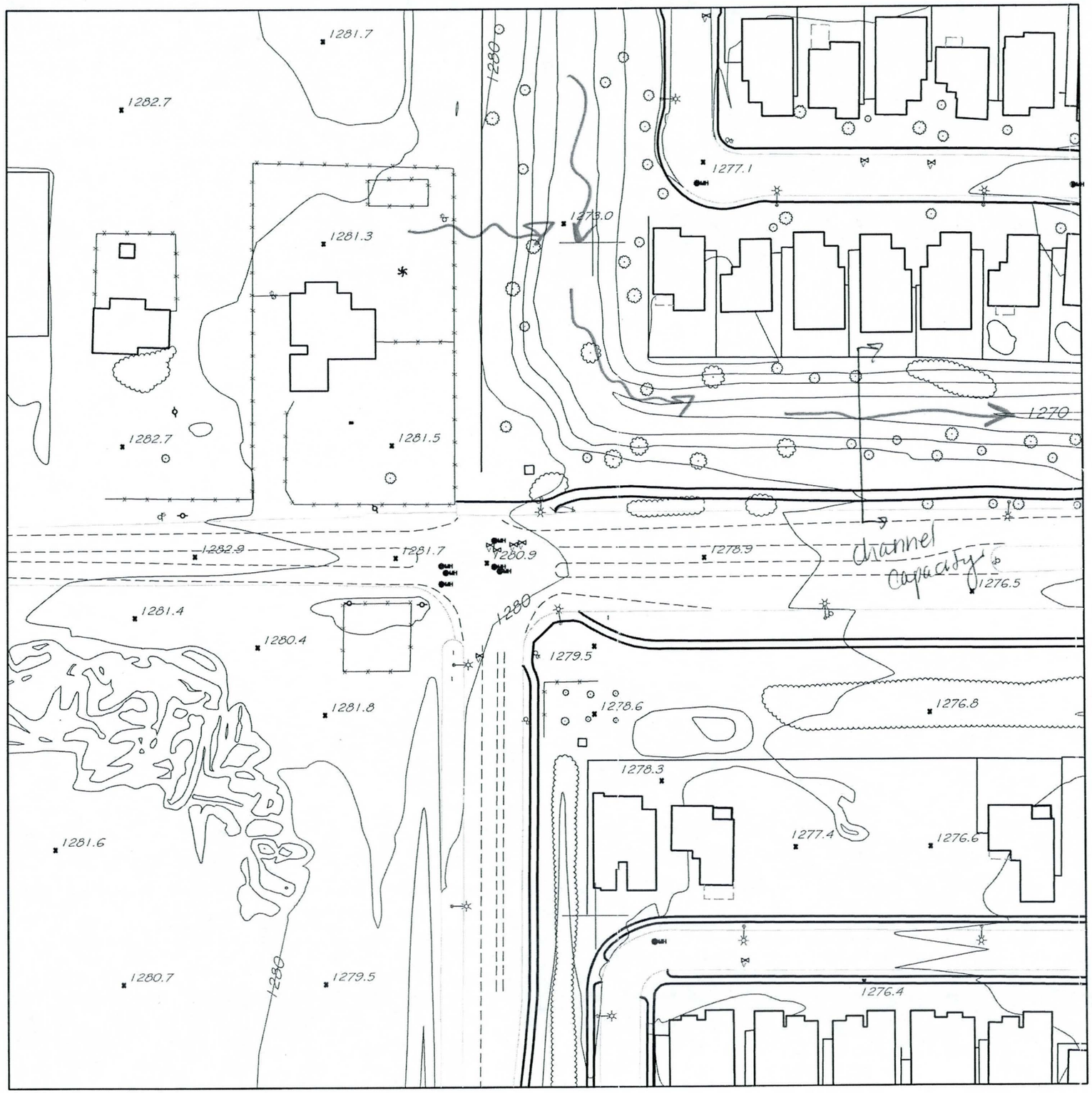
Channel Name	Concentration Point	Qexist	[1]Approximate Qcap (cfs)	DS Invert (ft)	WSEL (ft)	Flow Depth (ft)	Channel Depth (ft)	Bottom Width (ft)	Side Slope (H:V)	Design s (ft/ft)	(Q/A) V ft/s	Froude Number F_N	Channel [3]Tw (ft)	(WSEL) [3]Tw (ft)
Camelback Channel														
	!CM2	372	372	1052.7	1056.5	3.8	4.7	5	(6:1)	*0.0020*	3.6	0.44	132	51
	!CM3	485	485	1047.5	1051.8	4.2	5.4	5	(6:1)	*0.0020*	3.8	0.45	143	57
	!CM4	783	783	1040.7	1044.8	4.1	6.3	26	(4:1)	*0.0020*	4.5	0.46	152	59
Jackrabbit Channel														
	!JR1	953	953	1177.1	1182.6	5.5	6.9	5	(6:1)	*0.0021*	4.6	0.47	167	71
	!JR2	813	813	1165.0	1169.3	4.3	5.3	15	(6:1)	*0.0025*	4.7	0.51	154	67
	!JR3	933	933	1147.4	1150.4	4.0	4.4	15	(6:1)	*0.0046*	6.1	0.61	140	51
	!JR4	1,324	1,324	1109.9	1114.3	4.4	4.4	25	(6:1)	*0.0035*	5.9	0.61	153	78
	!JR5	1,683	1,683	1080.3	1084.6	4.3	4.3	40	(6:1)	*0.0033*	6.0	0.60	171	92
SR303L URS DCR - Channel														
	!LP0	772	772	1275.6	1279.0	3.4	5.5	10	(2:1)	*0.0049*	13.7	1.57	62	24
	!LP	854	854	1247.9	1251.5	3.5	5.4	10	(2:1)	*0.0050*	14.3	1.61	62	24
	!LP1	1,612	1,612	1227.3	1232.5	5.1	5.9	12	(2:1)	*0.0031*	14.1	1.33	66	33
Cactus Road Basin	!LP2	2,898	2,898	1209.8	1215.9	6.0	6.1	20	(2:1)	*0.0026*	15.0	1.26	74	44
offline low flow/bypass channel	2LP2	587	587	1200.0	1202.6	2.5	4.8	20	(2:1)	*0.0026*	9.3	1.14	69	30
	!LP3	2,140	2,140	1180.8	1185.9	5.0	5.1	21	(2:1)	*0.0027*	13.8	1.26	71	41
	!LP4	2,636	2,636	1160.7	1165.9	5.2	5.2	26	(2:1)	*0.0025*	14.1	1.24	77	47
	!LP5	2,624	2,636	1136.3	1141.5	5.2	5.2	26	(2:1)	*0.0025*	14.0	1.23	77	47
offline low flow/bypass channel	2LP5	1,380	1,380	1130.4	1133.8	3.4	3.7	26	(2:1)	*0.0032*	12.5	1.32	71	40
	!LP6	1,539	1,539	1110.0	1115.1	5.1	6.4	16	(2:1)	*0.0020*	11.6	1.07	72	36
	!LP7	1,770	1,770	1087.1	1092.2	5.0	6.2	19	(2:1)	*0.0021*	12.1	1.10	74	39
	!LP8	2,097	2,097	1065.8	1070.7	4.9	6.1	26	(2:1)	*0.0020*	12.1	1.09	80	46
	!LP9	557	557	1047.9	1052.2	4.2	4.3	5	(2:1)	*0.0023*	9.8	1.08	52	22
	!LP10	624	624	1032.4	1036.1	3.7	3.7	5	(2:1)	*0.0052*	13.7	1.58	50	20
	!LP11	988	988	1014.5	1019.2	4.7	5.7	5	(2:1)	*0.0047*	14.8	1.56	58	24
	!LP13	697	701	984.8	988.5	3.6	3.8	8	(2:1)	*0.0041*	12.7	1.45	53	23
	!LP14	695	701	966.2	969.7	3.5	3.7	8	(2:1)	*0.0048*	13.5	1.54	53	22
	!LP15	676	676	934.2	937.7	3.4	4.2	8	(2:1)	*0.0048*	13.3	1.54	55	22
	!LP16	751	751	914.8	918.3	3.5	4.2	8	(2:1)	*0.0056*	14.5	1.67	55	22
	!LP17	447	448	884.3	888.7	4.3	5.5	5	(2:1)	*0.0013*	7.6	0.82	57	23
Upper Northern Channel														
	!NR1	256	256	1219.0	0.0	2.7	3.6	5	(6:1)	*0.0050*	4.6	0.66	115	37
	!NR2	1,309	1,309	1182.2	1186.3	4.0	4.1	30	(6:1)	*0.0039*	6.1	0.65	155	79
	!NR3	2,246	2,246	1143.5	1148.5	5.0	5.0	45	(6:1)	*0.0028*	6.0	0.56	189	105
	!NR4	2,308	2,308	1136.0	1141.0	5.0	5.0	50	(6:1)	*0.0025*	5.8	0.54	195	110
Lower Northern Channel	!NR5	262	262	1122.6	1125.9	3.3	4.3	5	(6:1)	*0.0020*	3.3	0.43	126	45
	!NR6	477	477	1096.7	1100.2	3.4	4.5	5	(6:1)	*0.0053*	5.5	0.71	129	47
Reems Road Channel														
	[2]RM1	709	516	1222.1	1226.6	4.5	5.7	6.5	(3:1)	*0.0040*	5.8	0.63	105	34
	[2]RM2	957	1,382	1208.2	1214.3	6.0	7.7	11.5	(4:1)	*0.0032*	6.5	0.60	147	60
	!RM3	1,366	1,366	1167.8	1172.0	4.1	4.2	30	(6:1)	*0.0037*	6.0	0.63	157	80
	!RM4	1,640	1,640	1142.7	1147.7	5.0	5.0	30	(6:1)	*0.0025*	5.5	0.53	169	90
	!RM5	2,179	2,179	1119.4	1124.6	5.1	5.2	40	(6:1)	*0.0027*	6.0	0.57	185	102
	!RM6	826	826	1100.6	1105.0	4.3	5.3	10	(6:1)	*0.0034*	5.3	0.59	148	63

Table 2.2A (continued)
Proposed Channel Summary
Existing Condition Hydrology

Channel Name	Concentration Point	Qexist	[1]Approximate Qcap (cfs)	DS Invert (ft)	WSEL (ft)	Flow Depth (ft)	Channel Depth (ft)	Bottom Width (ft)	Side Slope (H:V)	Design s (ft/ft)	(Q/A) V ft/s	Froude Number F_N	Channel [3]Tw (ft)	(WSEL) [3]Tw (ft)
AT&SF Railroad Channel														
	!RR1	425	425	1150.8	1154.5	3.6	3.9	10	(6:1)	*0.0020*	3.7	0.44	126	54
	!RR2	492	492	1146.2	1149.7	3.4	3.5	10	(6:1)	*0.0035*	4.7	0.58	120	52
	!RR3	785	785	1127.9	1131.9	4.0	4.0	10	(6:1)	*0.0046*	5.9	0.68	127	58
	!RR4	936	936	1110.1	1114.4	4.3	4.3	15	(6:1)	*0.0034*	5.4	0.59	139	67
	!RR5	970	970	1103.3	1108.5	5.2	5.2	15	(6:1)	*0.0015*	4.0	0.41	153	77
	!RR6	1,733	1,733	1098.8	1105.5	6.7	6.7	15	(6:1)	*0.0015*	4.7	0.42	176	95
	!RR7	1,770	1,770	1095.1	1101.9	6.8	6.8	15	(6:1)	*0.0015*	4.7	0.42	178	97
	!RR8	1,585	1,585	1081.1	1086.9	5.8	5.8	15	(6:1)	*0.0025*	5.5	0.53	162	85
Lower El Mirage Channel														
	!LE4	1,356	1,356	1107.2	1111.9	4.7	6.8	35	(3:1)	*0.0026*	5.9	0.54	151	63
	!LE5	865	865	1086.6	1090.6	4.0	5.1	15	(6:1)	*0.0038*	5.6	0.63	152	63
Bullard Wash Channel														
	!BD1N	2,103	2,103	1057.0	1047.3	5.2	7.0	45	(6:1)	*0.0020*	5.3	0.49	219	109
	!BD2N	3,244	3,244	1044.1	1049.8	5.7	7.8	65	(6:1)	*0.0020*	5.8	0.49	258	133
	!BD3N	3,410	3,410	1015.6	1020.7	5.0	6.7	65	(10:1)	*0.0027*	5.9	0.56	312	167
	!BD4N	3,248	3,410	1006.0	1010.8	4.7	6.4	102	(9:1)	*0.0018*	5.0	0.47	335	188
	!BD1S	3,556	3,556	985.5	990.4	4.9	6.4	90	(6:1)	*0.0025*	6.1	0.55	269	149
	!BD2S	2,321	2,321	980.9	984.4	3.5	3.8	95	(6:1)	*0.0033*	5.8	0.60	235	137
I-10 West Diversion Channel														
	!10W1	970	970	1045.8	N/A	3.8	4.5	25	(6:1)	*0.0035*	5.4	0.60	155	71
	!10W2	1,010	1,010	1039.7	1043.4	3.7	4.2	25	(6:1)	*0.0042*	5.9	0.66	150	69
	!10W3	1,046	1,046	1032.7	1036.5	3.7	4.1	25	(6:1)	*0.0042*	5.9	0.66	148	71
	!10W4	1,175	1,175	1028.5	1032.4	3.8	4.3	30	(6:1)	*0.0038*	5.8	0.63	158	77
	!10W5	1,588	1,588	1014.6	1018.9	4.3	5.0	35	(6:1)	*0.0036*	6.1	0.62	175	87
	!10W7	1,593	1,593	1014.6	1019.6	5.0	5.7	35	(6:1)	*0.0020*	5.0	0.48	186	95
	!10W8	743	743	1005.8	1010.5	4.6	5.5	10	(6:1)	*0.0020*	4.2	0.46	151	66
Tuthill Channel														
	!TC1	1,417	1,417	998.7	1003.5	4.7	5.8	20	(6:1)	*0.0037*	6.2	0.63	168	78
	!TC2	1,553	1,553	991.8	997.1	5.2	6.1	25	(6:1)	*0.0023*	5.3	0.51	180	89
	!TC3	1,491	1,491	957.0	961.9	4.8	5.1	25	(6:1)	*0.0029*	5.7	0.57	163	84
	!TC4	1,546	1,546	914.7	919.3	4.6	4.6	30	(6:1)	*0.0032*	5.9	0.59	163	85
	!TC5	1,926	1,926	886.8	891.4	4.6	4.6	40	(6:1)	*0.0033*	6.3	0.61	176	95
	!TC6	646	646	882.3	885.9	3.6	3.6	15	(6:1)	*0.0035*	5.0	0.59	128	58
	!TC7	1,323	1,323	863.6	867.8	4.1	4.2	45	(6:1)	*0.0020*	4.6	0.47	176	95
	!TC8	1,506	1,506	859.4	864.6	5.2	5.2	45	(6:1)	*0.0011*	3.8	0.35	192	107
	!TC9	1,503	1,506	854.8	860.1	5.3	5.3	45	(6:1)	*0.0010*	3.7	0.34	193	109
I-10 East Diversion Channel														
	10CE-US	575	575	984.5	988.6	4.1	4.5	12	(6:1)	*0.0019*	3.9	0.44	138	61
	10CE1	556	575	978.5	985.2	4.1	4.5	12	(6:1)	*0.0018*	3.8	0.43	138	62
I-10 Central Channel														
	!10C1	79	79	1005.4	1007.7	2.2	2.3	2	(6:1)	*0.0020*	2.4	0.40	90	29
	!10C2	131	131	1002.6	1005.3	2.7	2.7	2	(6:1)	*0.0020*	2.8	0.41	96	34
	!10C3	170	170	995.9	998.9	3.0	3.0	2	(6:1)	*0.0020*	2.9	0.42	101	38
	!10C4	243	243	982.2	985.5	3.2	3.3	2	(6:1)	*0.0026*	3.6	0.49	105	41

1. By normal depth computation.
2. Channel reach exists.
3. Top width.

Waddell @ Citrus
(DL10)



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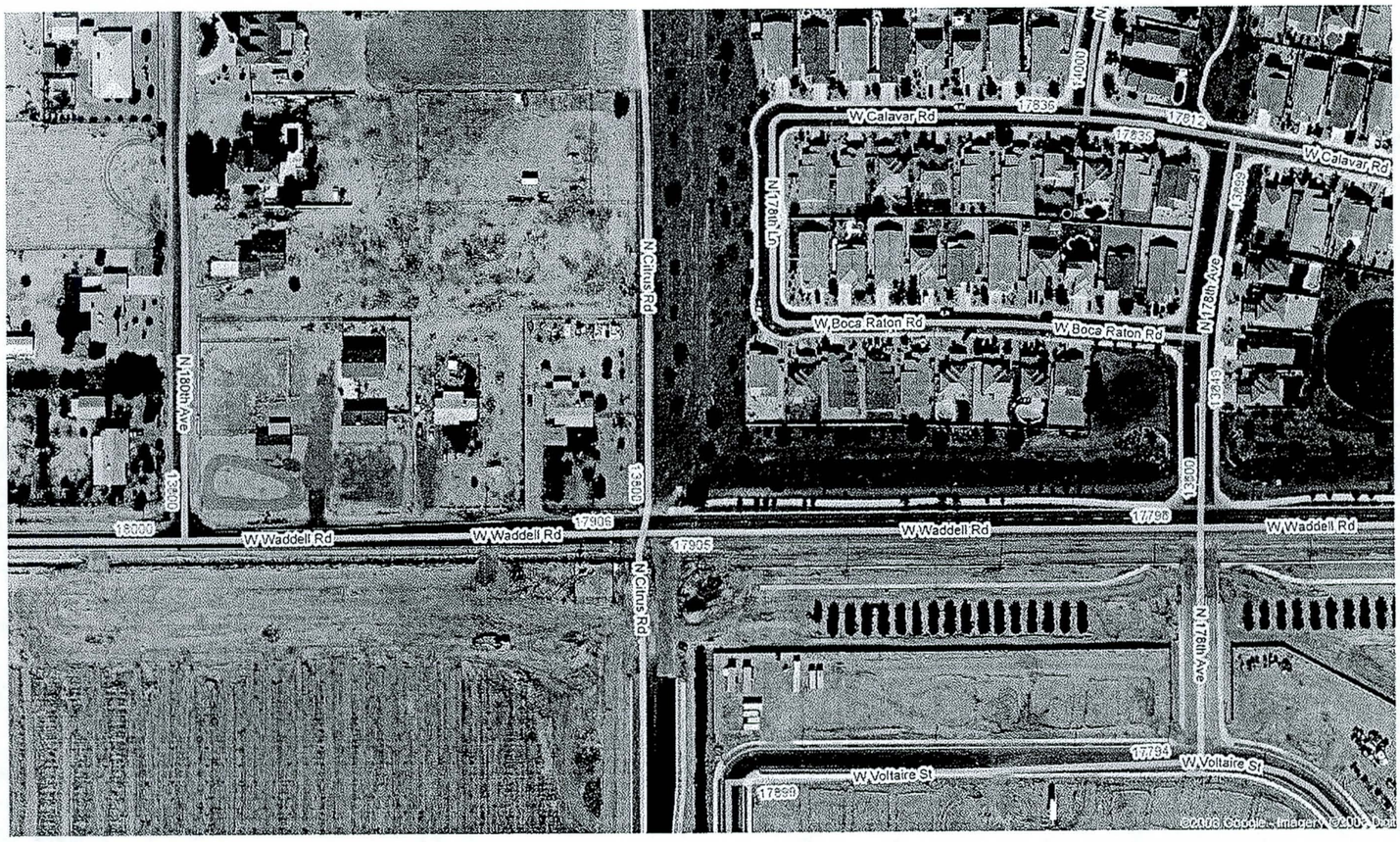
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13500
13000
W Waddell Rd
17906
W Waddell Rd
N Citrus Rd
17905
W Waddell Rd
W Waddell Rd
N 178th Ave
17794
W Voltaire St
W Voltaire St
17899

Worksheet for Trapezoidal Channel - 1

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.032	
Channel Slope	0.00667	ft/ft
Normal Depth	5.50	ft
Left Side Slope	7.00	ft/ft (H:V)
Right Side Slope	7.00	ft/ft (H:V)
Bottom Width	10.00	ft

Results

Discharge	2122.33	ft³/s
Flow Area	266.75	ft²
Wetted Perimeter	87.78	ft
Top Width	87.00	ft
Critical Depth	4.98	ft
Critical Slope	0.01071	ft/ft
Velocity	7.96	ft/s
Velocity Head	0.98	ft
Specific Energy	6.48	ft
Froude Number	0.80	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	5.50	ft
Critical Depth	4.98	ft
Channel Slope	0.00667	ft/ft
Critical Slope	0.01071	ft/ft

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Job No. 79902	No.
Subject	Weir Flow Analysis	Computed AM	Date 10/27/08
Task	Weir Calculations	Checked [illegible]	Date 3/10/09
	Location: Waddell at 173rd (DL11)	Sheet 1	Of x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	58	57	84	57.5	56.2	0	0.00	56.7	0	0.00	57.2	0	0.00	CHECK	57.7	0.2	22.54	DONE
south	57	56	84	56.5	56.2	0	0.00	56.7	0.2	22.54	57.2	0.7	147.59		57.7	1.2	331.26	
east	56	55.2	150	55.6	56.2	0.6	209.14	56.7	1.1	519.16	57.2	1.6	910.74		57.7	2.1	1369.44	
east	55.2	56	58	55.6	56.2	0.6	80.87	56.7	1.1	200.74	57.2	1.6	352.15		57.7	2.1	529.51	
east	56	56.3	35	56.15	56.2	0.05	1.17	56.7	0.55	42.83	57.2	1.05	112.97		57.7	1.55	202.62	
east	56.3	56	82	56.15	56.2	0.05	2.75	56.7	0.55	100.34	57.2	1.05	264.68		57.7	1.55	474.71	
east	56	56	30	56	56.2	0.2	8.05	56.7	0.7	52.71	57.2	1.2	118.31		57.7	1.7	199.49	
east	56	56.3	210	56.15	56.2	0.05	7.04	56.7	0.55	256.97	57.2	1.05	677.84		57.7	1.55	1215.73	
east	56.3	56.4	20	56.35	56.2	0	0.00	56.7	0.35	12.42	57.2	0.85	47.02		57.7	1.35	94.11	
						TOTALS:	309.03			1207.72			2631.29				4439.42	

Graph Computations:

Station	Elevation
0	58
84	57
168	56
318	55.2
376	56
411	56.3
493	56
523	56
733	56.3
753	56.4

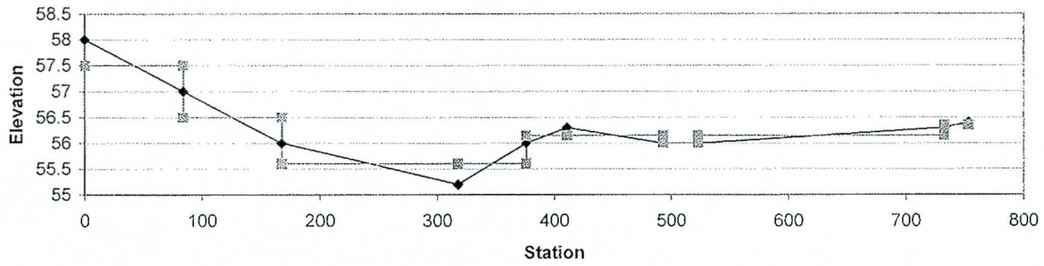
Weir Approximation:

Station	Elevation
0	57.5
84	57.5
84	56.5
168	56.5
168	55.6
318	55.6
318	55.6
376	55.6
376	56.15
411	56.15
411	56.15
493	56.15
493	56
523	56
523	56.15
733	56.15
733	56.35
753	56.35

Culvert Flows (cfs):

south	0
southeast	0
east	0

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	0.00	0%	Q(south)	22.54	2%	Q(south)	147.59	6%	Q(south)	353.80	8%
Q(southeast)	0.00	0%	Q(southeast)	0.00	0%	Q(southeast)	0.00	0%	Q(southeast)	0.00	0%
Q(east)	309.03	100%	Q(east)	1185.18	98%	Q(east)	2483.70	94%	Q(east)	4085.62	92%
	309.03			1207.72			2631.29			4439.42	

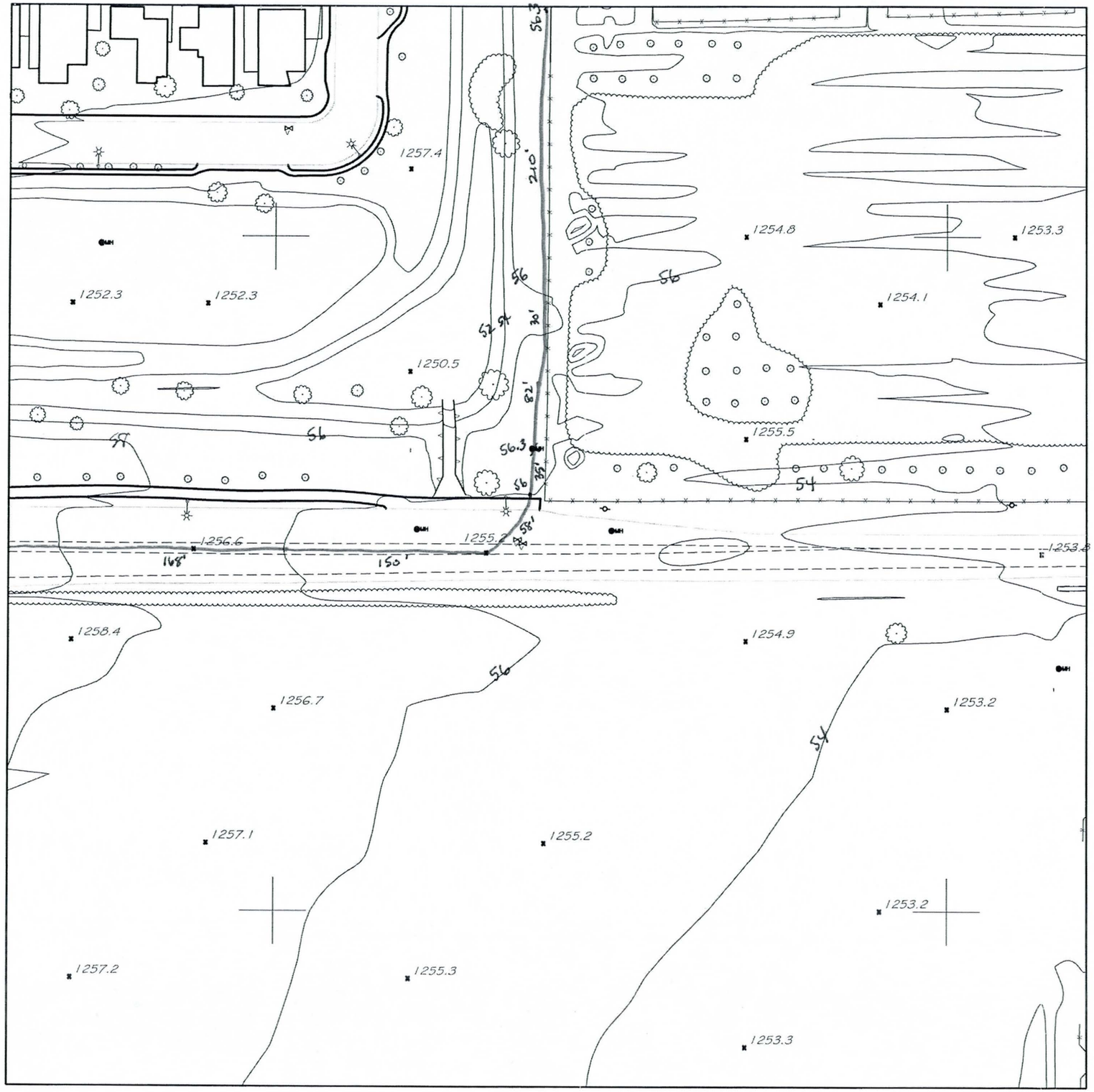
First DI	East to South			
Inflow	309.03	1207.72	2631.29	4439.42
Outflow	0.00	22.54	147.59	353.80

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	309.03	1185.18	2483.70	4085.62
Outflow	0.00	0.00	0.00	0.00

Assumes diversion is to southeast

177'
Waddell @ ~~Civic~~
(DL ~~xxx~~)
11



C:\PW\ 3\PHX\dms69520\Linda_NewWorking.dwg, 10/20/2008 9:48:46 AM

Job No.	79902	No.	

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Location: Waddell & Cotton (L12)	Computed	AHM	Date	10/23/2008
Subject	Weir Flow Analysis		Checked		Date	3/10/09
Task	Weir Calculations		Sheet	1	Of	x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	1251.7	1249.6	360	1250.65	1249.5	0	0.00	1250	0	0.00	1250.5	0	0.00	CHECK	1251	0.35	223.63	DONE
south	1249.6	1249	570	1249.3	1249.5	0.2	152.95	1250	0.7	1001.48	1250.5	1.2	2247.85		1251	1.7	3790.26	
south	1249	1249	375	1249	1249.5	0.5	397.75	1250	1	1125.00	1250.5	1.5	2066.76		1251	2	3181.98	
southeast	1249	1249	15	1249	1249.5	0.5	15.91	1250	1	45.00	1250.5	1.5	82.67		1251	2	127.28	
southeast	1249	1249	15	1249	1249.5	0.5	15.91	1250	1	45.00	1250.5	1.5	82.67		1251	2	127.28	
east	1249	1248	295	1248.5	1249.5	1	885.00	1250	1.5	1625.85	1250.5	2	2503.16		1251	2.5	3498.27	
east	1248	1249.4	780	1248.7	1249.5	0.8	1674.37	1250	1.3	3468.41	1250.5	1.8	5650.99		1251	2.3	8162.21	
east	1249.4	1250	200	1249.7	1249.5	0	0.00	1250	0.3	98.59	1250.5	0.8	429.33		1251	1.3	889.34	
east	1250	1251.1	350	1250.55	1249.5	0	0.00	1250	0	0.00	1250.5	0	0.00		1251	0.45	316.96	
					TOTALS:		3141.88			7409.33			13063.42				20317.21	

Graph Computations:

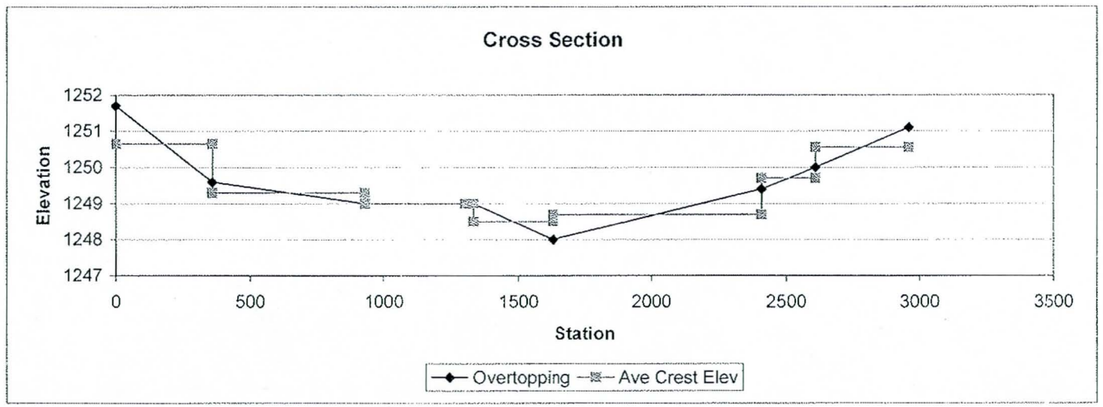
Station	Elevation
0	1251.7
360	1249.6
930	1249
1305	1249
1320	1249
1335	1249
1630	1248
2410	1249.4
2610	1250
2960	1251.1

Weir Approximation:

Station	Elevation
0	1250.65
360	1250.65
360	1249.3
930	1249.3
930	1249
1305	1249
1305	1249
1320	1249
1320	1249
1335	1249
1335	1248.5
1630	1248.5
1630	1248.7
2410	1248.7
2410	1249.7
2610	1249.7
2610	1250.55
2960	1250.55

Culvert Flows (cfs):

south	0
southeast	0
east	0



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	550.69	18%	Q(south)	2126.48	29%	Q(south)	4314.61	33%	Q(south)	7195.87	35%
Q(southeast)	31.82	1%	Q(southeast)	90.00	1%	Q(southeast)	165.34	1%	Q(southeast)	254.56	1%
Q(east)	2559.37	81%	Q(east)	5192.85	70%	Q(east)	8583.47	66%	Q(east)	12866.78	63%
	3141.88			7409.33			13063.42			20317.21	

First DI	East to South			
Inflow	3141.88	7409.33	13063.42	20317.21
Outflow	550.69	2126.48	4314.61	7195.87

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	2591.19	5282.85	8748.81	13121.33
Outflow	31.82	90.00	165.34	254.56

Assumes diversion is to southeast

Crocus Dr
174th Dr
Watson Ln
Ventura St
L11
Calavar Rd
174th Dr
Boca Raton
1262
1260
1258
1256
172nd Ave
L12
Waddell Rd
1254
1256
1254.5
1253.3
1251.7
1249.6
1248.7
1248.8
L18
1252
237'
1252.2
1250.8
1242.6
1252
1249.4
1249.1
1244
1246
Cotton Ln
1248
1250
1249.1
1246
1248
1247.9
1245.4
1248.2
1248.7
1248.3
1248.7
1246.3
L13
1245.2
NTS
1249
15'
1249
525'
15'
1249
1249
360'
570'
LOW POINT
1242
1244.3
L19
1244
1240
1240
N
1 inch equals 200 feet

CIP models
Source

L13

```
**********************************************
*                                            *
*    FLOOD HYDROGRAPH PACKAGE  (HEC-1)       *
*              JUN  1998                     *
*            VERSION 4.1                     *
*                                            *
*      DATE   07MAY09  TIME  08:05:50        *
*                                            *
**********************************************
```

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

```
X    X  XXXXXXX   XXXXX          X
X    X  X        X     X        XX
X    X  X        X              X
XXXXXX  XXXX     X        XXXXX  X
X    X  X        X              X
X    X  X        X     X        X
X    X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
   1          ID        LOOP 303 OFF-SITE HYDROLOGY
   2          ID        MODIFIED BASED ON FCDMC'S WHITE TANKS/LOOP 303 CORRIDOR ADMP
   3          ID        THE MODIFICATIONS ARE DESCRIBED AS FOLLOWS:
   4          ID        1. THE CACTUS RD BASIN WAS REMOVED AND TWO RELATIVELY SMALL BASINS
   5          ID           LOCATED AT NORTH OF WADDELL ROAD AND NORTH OF OLIVE AVENUE WERE
   6          ID           ADDED TO THE MODEL BASED ON CMX'S HEC-1 MODEL PROVIDED IN DEC,2006.
   7          ID        2. FLOW DIVERSION TO THE OFF-LINE BASINS, SUCH AS WADDELL ROAD
   8          ID           BASIN, OLIVE AVENUE BASIN, NORTHERN AVENUE BASIN WERE ESTIMATED
   9          ID           USING HEC-RAS LATERAL WEIR ROUTINE.
  10          ID        3. DETENTION BASIN ELEVATION AND VOLUME RELATIONSHIPS WERE ESTIMATED
  11          ID           BASED ON 30% DESIGN OF THE BASIN.
  12          ID        4. ELEVATION AND OUTFLOW RELATIONSHIP WERE ESTIMATED BASED ON 30% DESIG
  13          ID           USING CULVERTMASTER. THE OUTFLOW INCLUDES FLOW FROM BLEED-OFF PIPE
  14          ID           AND FLOW FROM OUTFLOW PIPE.
  15          ID        5. CHANNEL ROUTING WERE MODIFIED BASED ON 30% DESIGN.
  16          ID        6. FLOW FROM THE PROPOSED FCDMC CHANNEL ALONG NORTHEN AVENUE  WILL
  17          ID           NOT BE COMBINED WITH FLOW FROM LOOP 303 OFF-SITE CHANNEL.
  18          ID           INSTEAD THE FLOW FROM THE CHANNEL ALONG NORTHERN AVENUE WILL GO
  19          ID           TO THE NORTHERN AVENUE BASIN DIRECTLY.  SO THE FLOW FROM THE
  20          ID           NORTHERN AVENUE CHANNEL WILL BE COMBINED WITH THE DIVERTED FLOW
  21          ID           FROM LOOP 303 CHANNEL AT NORTHERN AVENUE BASIN.
  22          ID        7. IN THE ADMP MODEL, SOME OF THE OUTFLOW FROM CAMELBACK ROAD BASINS
  23          ID           WERE DIVERTED TO EAST ALONG CAMELBACK ROAD (THE PEAK FLOW IS
  24          ID           180 CFS).  NO STRUCTURE WAS RECOMMENDED IN THE ADMP UPDATE. PB
  25          ID           DESIGNED 3-30" PIPES TO DIVERT SOME FLOW TO THE EXISTING CAMELBACK
  26          ID           ROAD CHANNEL LOCATED AT SOUTH SIDE OF CAMELBACK ROAD.
  27          ID        9. PEBBLE CREEK AND PALM VALLEY 8 DEVELOPMENTS WERE INCLUDED IN THE
  28          ID           MODEL BASED ON HEC-1 MODEL PROVIDED BY DEL RIO ENGINEERING.
  29          ID       10. MCDOWELL ROAD DETENTION BASIN WERE DIVIDED INTO TWO DETENTION BASINS
  30          ID           ONE IS CALLED MCDOWELL ROAD UPPER BASIN AND THE OTHER ONE IS CALLED
  31          ID           MCDOWELL ROAD LOWER BASIN
  32          ID       11  PROPOSED I-10/303L TI (ULTIMATED CONDITION) ON-SITE DRAINAGE SYSTEM
  33          ID           WAS REFLECTED IN THE MODEL.  THERE ARE TOTAL 11 ON-SITE BASINS.
  34          ID
  35          ID        EXISTING CONDITION WITH PROJECTS IN PLACE SCENARIO
  36          ID        REVISED BY PARSONS BRINCKERHOFF    DATE: Aug 2008
  37          ID                                           FILE NAME: EX_SPLT.DAT
  38          ID        **************************************************************************
  39          ID        DRAFT PREFERRED ALTERNATIVE LEVEL III
  40          ID
  41          ID        INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
  42          ID        SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
  43          ID        BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
  44          ID        LUKE AIR FORCE BASE CRASH ZONE AREA
  45          ID
  46          ID        **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
  47          ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
  48          ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
  49          ID        TANKS/AGUA FRIA ADMS, Date: October 1991
  50          ID
  51          ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
  52          ID        100-YEAR, 24-HOUR STORM                 original file: WTADMS.24
  53          ID
  54          ID                                  REVISED BY URS     DATE: 01-14-04
  55          ID                                                     FILE: L33PE4H.DAT
```

HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
  56          ID
  57          ID        NOTES:
  58          ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
  59          ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
  60          ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
```

```
*  KO     1                                    21
KM   COMBINE HYDROGRAPHS
HC       2    5.78
* DIVERT ALL - IN LINE BASIN @NR4

KK   DNR4
* KO     1                                    21
KM   DIVERT TO OFF-LINE BASIN
DT   DINR4
DI        0     476     952    1428    1904    2382    2582    2782
DQ        0     476     952    1428    1904    2382    2582    2782
* DQ      0     197     599     988    1362    1726    1876    2024
*
*
* ************************************************************************************
*
*
* ************************************************************************************
* ***************************    LOOP 303 CHANNEL    ********************************
* ***************************   SECTION OF THE MODEL   ********************************
* ********************  CMX REVISION TAKE PLACE HERE  ********************************
* ************************************************************************************
*
*
* ************************************************************************************
*

KK   D121A
KM   RETURN DIVERT AT LOOP 303
DR  DI131A
* KKR131AC
*  ***********************************************************************************
*   PB MODIFIED
*   CHANNEL ROUTING WERE MODIFIED BASED ON REVISED CHANNEL DIMENSION & CMX's
*   HEC-1 MODEL
*  ***********************************************************************************
*  KK RLPUS
*  RS   1.2                -1.0     0.0
*  RC 0.013   0.013   0.013    5257  0.0031
*  RX     0    14.4    16.8    19.2    21.6    24.0    26.4    40.8
*  RY1234.5  1227.3  1227.3  1227.3  1227.3  1227.3  1227.3  1234.5

KK   RLPUS
KM   ROUTE FLOW FROM GREENWAY ROAD TO WADDELL BASIN
RS     0.9              -1.0     0.0
RC   0.035   0.015   0.035    3314  0.0037
RX       0       3       5      15      29      39      59      62
RY  1248.0  1247.0  1247.0    1242    1242  1247.0  1247.0  1248.0
*  ***********************************************************************************
*   PB MODIFIED
*   DIVERT FLOW TO THE UPPER BASIN LOCATED AT NORTH OF WADDELL ROAD.  THE
*   DIVERSION RATING CRURVE WAS DERIVED BASED ON THE PROPOSED LATERAL
*   WEIR USING HEC-RAS SOFTWARE.  THE PROPOSED LATERAL WEIR LENGTH IS 100'.
*  ***********************************************************************************
```

L0913B


```
LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

KK   DLP2A
* KO     1                                    21
KM   DIVERT TO OFF-LINE BASIN AT NORTH OF WADDEL ROAD AND WEST OF LOOP 303
KM   W/ 95' LATERAL  WEIR INTO BASIN.
DT  DILP2A
*  DI     0      60     100     200     400     600     750     855    2000
*  DQ     0       0   63.92   63.92   117.2   335.0  530.98  660.77    1350
DI        0     120     300     400     500     600     700     783     900
DQ        0       0   119.8   194.4   278.8   367.9   466.2   549.0   663.0

KK  DRLP2A
*  KO     2      2                             21
KM   RETURN DIVERT AT PROPSED OFF-LINE BASIN LOCATED NORTH OF WADDELL ROAD
DR  DILP2A
*
* STORAGE ROUTE THROUGH PROPOSED BASIN AT NORTH OF WADDELL ROAD
*  ***********************************************************************************
*   PB MODIFIED
*   THE STORAGE-ELEVATION RELATIONSHIP AND ELEVATION-OUTFLOW RELATIONSHIP
*   FOR THE PROPOSED BASIN WERE REVISED BASED ON PB'S PRELIMINARY DESIGN
*   FOR BASIN AND BLEEDOFF PIPE.  BASIN BOTTOM HAS 0.3% TO 0.5% SLOPE.
*   ELEVATION-OUTFLOW RELATIONSHIP WAS ESTIMATED BASED ON BLEEDOFF PIPE SIZE.
*
*  ***********************************************************************************

KK  SRLP2A
*  KO     2      2                             21
KM   STORAGE ROUTE
RS       1    STOR       0       0
*
*  PROTOTYPICAL BASIN BY CMX W/ 95' BROADCRESTED WEIR FOR DISCHARGE BACK TO CHAN
*
*  SV     0     4.6    14.6    19.9    31.5    44.0    57.7    65.5    77.9    96
*  SE  1224    1225    1227    1228    1230    1232    1234    1235  1236.5   123
*  SL  1224    1.77    0.67     0.5
*  SL  1229    1.23    0.67     0.5
*  SS1236.5    95.0    2.92     1.5
SV        0    0.48    1.95    4.98    9.10   13.45   18.05   22.89   27.99   33.34
SV    38.96   44.86   51.02   57.47   64.20   71.91   79.96   88.17
SE     1223    1224    1225    1226    1227    1228    1229    1230    1231  1232.0
SE   1233.0    1234    1235    1136    1237    1238    1239    1240
*  SQ     0    2.59    8.34   12.32   16.79   20.28   23.27   25.94   28.36    29
*  SQ     0    2.19    5.88    7.40    9.79   11.69   13.33   14.80   16.14    16
```

DL13BN

SRL13B

```
3528  SQ       0    6.20   18.40   19.44   20.17   21.07   21.99   22.87   23.70   24.50
3529  SQ   25.23   26.05   26.79   27.51   28.22  245.29  767.13 1687.75
      *
3530  KK    1LP1
3531  KM   COMBINE HYDROGRAPHS
3532  HC       2
      * ************************************************************************************
      *   PB MODIFIED
      *   THE ROUTING FROM BASIN TO WADDELL ROAD ROAD WAS MODIFIED BASED ON PB'S DESIG
      * ************************************************************************************
      *
```



```
LINE  ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3533  KK   RLPDS
3534  KM   ROUTING CHANNEL LENGTH TO !LP1
      *   FROM THE BASIN NORTH OF WADDELL ROAD TO WADDELL ROAD
      *
      *  RS   1.7             -1.0     0.0
      *  RC 0.013   0.013   0.013    2628  0.0027
      *  RX       0    20.0    26.0    32.0    42.0    48.0    54.0    74.0
      *  RY1187.8  1186.8  1183.8  1180.8  1180.8  1183.8  1186.8  1187.8
3535  RS     0.6             -1.0     0.0
3536  RC   0.035   0.015   0.035    1594  0.0036
3537  RX       0       3       5      15      31      41      61      64
3538  RY    1134    1133    1133    1128    1128    1133    1133    1134
      *
```

L13B13

```
3539  KK  DC131A
3540  KM   RETURN DIVERT AT LP1
3541  DR  DI145A
      *  COMBINE PER LEVEL III

3542  KK    !LP1
3543  KM   COMBINE HYDROGRAPHS
3544  HC       2    5.87
      * HC     2   10.44
      * KKR145AC
      * KM   RIUTE FLOW FROM CP131A TO CP145A
      *  KK  2LP1
      *  KM COMBINE ROUTED FLOW FROM OFFLINE BASIN WITH MAIN-CHANNEL FLOW AT !LP1
      *  HC     2    9.31
      * HC     2   11.22
      *  ************************************************************************************
      *   PB MODIFIED
      *   CHANNEL ROUTING WERE MODIFIED BASED ON REVISED CHANNEL DIMENSION
      *  ************************************************************************************
      *  KK  RLP1
      *  RS   1.0             -1.0     0.0
      *  RC 0.013   0.013   0.013    3990  0.0026
      *  RX       0    16.2    20.2    24.2    28.2    32.2    36.2    52.4
      *  RY1235.4  1227.3  1227.3  1227.3  1227.3  1227.3  1227.3  1235.4

3545  KK  RLP1-1
3546  KM   ROUTING CHANNEL FROM WADDELL ROAD TO DROP STRUCTURE #5
3547  RS     0.7             -1.0     0.0
3548  RC   0.035   0.015   0.035    2450  0.0035
3549  RX       0       3       5      17      33      45      65      68
3550  RY  1227.0  1226.0  1226.0    1220    1220  1226.0  1226.0  1227.0

3551  KK  RLP1-2
3552  KM   ROUTING CHANNEL FROM  DROP STRUCTURE #5 TO CACTUS ROAD
3553  RS     0.6             -1.0     0.0
3554  RC   0.035   0.015   0.035    2632  0.0033
3555  RX       0       3       5      17      42      54      74      77
3556  RY  1217.0  1216.0  1216.0    1210    1210  1216.0  1216.0  1217.0
```



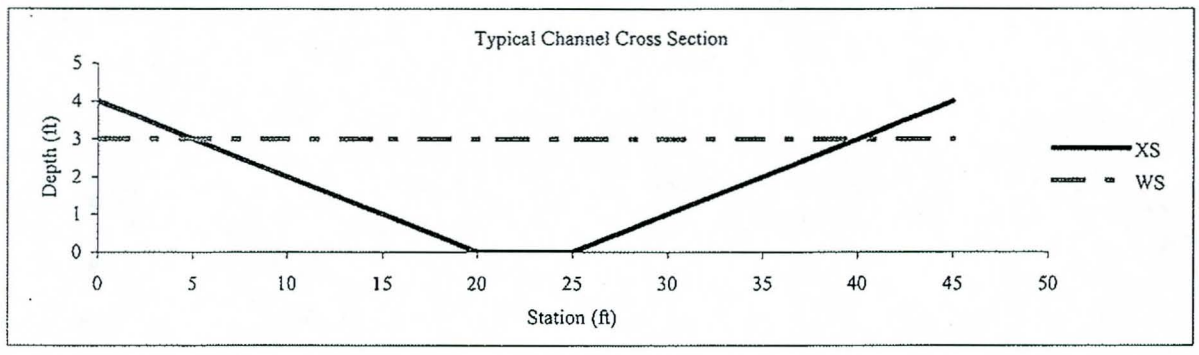
```
LINE  ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3557  KK  DC145A
3558  KM   RETURN DIVERT AT LP2
3559  DR  2D164A
      *  COMBINE PER LEVEL III

3560  KK    !LP2
      * KO     1                              21
3561  KM   COMBINE HYDROGRAPHS AT LP2
3562  HC       2    8.17
      *  ************************************************************************************
      *   PB MODIFIED
      *   CHANNEL ROUTING WERE MODIFIED BASED ON REVISED CHANNEL DIMENSION
      *  ************************************************************************************
      *  KK  RLP2
      *  RS   1.3             -1.0     0.0
      *  RC 0.013   0.013   0.013    5444  0.0027
      *  RX       0    14.0    18.2    22.4    26.6    30.8    35.0    49.0
      *  RY1187.8  1180.8  1180.8  1180.8  1180.8  1180.8  1180.8  1187.8

3563  KK  RLP2-1
3564  KM   ROUTE FLOW FROM CACTUS ROAD TO DROP STRUCTURE #7
3565  RS     0.6             -1.0     0.0
3566  RC   0.035   0.015   0.035    2065  0.0040
3567  RX       0       3       5      17      52      64      84      87
3568  RY    1204    1203    1203    1197    1197    1203    1203    1203

3569  KK  RLP2-2
3570  KM   ROUTE FLOW FROM DROP STRUCTURE #7 TO PEORIA AVE
```

Recommended Alternative
RID - Van Buren

Design: YX
Check: MDH
Date: 12/20/2007

Channel Geometry:

X		0	10	15	20	25	30	35	45
Y		4	2	1	0	0	1	2	4
Z (WS)		2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99



Discharge:		215	cfs
Mannings n:		0.04	
Bottom Width:	1	5	ft
Side Slope	1	5	:1
Channel Slope:		0.0047	ft/ft
Water Depth:	2	2.99	ft
Top Width:	3	34.92	ft
Flow Area:	1	59.7	sq.ft
Velocity:		3.6	ft/s
Froud Number:		0.49	
Flow Type:		Subcritical	

NOTES:

1 Cross Section can be modified (to meet the free board and other requirements), but the flow area should be mantained to convey the storm water.

2 Free board (1-ft for subcritical flow, 2-ft for supercritical flow) is required.

3 This is the width of the water surface.

LI3

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Job No. 79902	No.
Subject	Weir Flow Analysis	Computed AM	Date 10/27/08
Task	Weir Calculations	Checked LP	Date 3/20/09
	Location: Waddell at L303 (DL13)	Sheet 1	Of x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	39	38	148	38.5	37.2	0	0.00	37.7	0	0.00	38.2	0	0.00	CHECK	38.7	0.2	39.71	DONE
south	38	37.6	53	37.8	37.2	0	0.00	37.7	0	0.00	38.2	0.4	40.22		38.7	0.9	135.76	
south	37.6	37	80	37.3	37.2	0	0.00	37.7	0.4	60.72	38.2	0.9	204.92		38.7	1.4	397.56	
south	37	36.76	84	36.88	37.2	0.32	45.62	37.7	0.82	187.12	38.2	1.32	382.17		38.7	1.82	618.74	
south	36.76	37	100	36.88	37.2	0.32	54.31	37.7	0.82	222.76	38.2	1.32	454.97		38.7	1.82	736.59	
southeast	37	37.26	11	37.13	37.2	0.07	0.61	37.7	0.57	14.20	38.2	1.07	36.52		38.7	1.57	64.92	
east	37.26	38	128	37.63	37.2	0	0.00	37.7	0.07	7.11	38.2	0.57	165.25		38.7	1.07	425.02	
east	38	38.37	114	38.185	37.2	0	0.00	37.7	0	0.00	38.2	0.015	0.63		38.7	0.515	126.40	
east	38.37	39	49	38.685	37.2	0	0.00	37.7	0	0.00	38.2	0	0.00		38.7	0.015	0.27	
					TOTALS:		100.53			491.91			1284.69				2544.97	

Graph Computations:

Station	Elevation
0	39
148	38
201	37.6
281	37
365	36.76
465	37
476	37.26
604	38
718	38.37
767	39

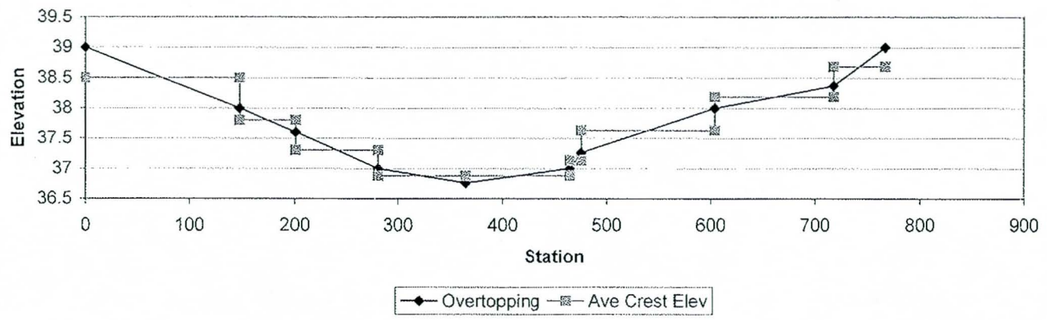
Weir Approximation:

Station	Elevation
0	38.5
148	38.5
148	37.8
201	37.8
201	37.3
281	37.3
281	36.88
365	36.88
365	36.88
465	36.88
465	37.13
476	37.13
476	37.63
604	37.63
604	38.185
718	38.185
718	38.685
767	38.685

Culvert Flows (cfs):

south	0
southeast	0
east	0

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	99.92	99%	Q(south)	470.60	96%	Q(south)	1082.28	84%	Q(south)	1928.36	76%
Q(southeast)	0.61	1%	Q(southeast)	14.20	3%	Q(southeast)	36.52	3%	Q(southeast)	64.92	3%
Q(east)	0.00	0%	Q(east)	7.11	1%	Q(east)	165.88	13%	Q(east)	551.68	22%
	100.53			491.91			1284.69			2544.97	

First DI	East to South			
Inflow	100.53	491.91	1284.69	2544.97
Outflow	99.92	470.60	1082.28	1928.36

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	0.61	21.31	202.40	616.60
Outflow	0.61	14.20	36.52	64.92

Assumes diversion is to southeast

L303 @ Waddell

Review by L. Potter 9/29/08

DL13

Kimley-Horn and Associates, Inc.

CALCULATION SUMMARY SHEET

Calculation Title: Existing Roadway Overtopping Hydraulic Analysis
Project: State Route 303 Loop, Cactus, Waddell & Bell Roads
Client: Arizona Department of Transportation
KHA Project Number: 091665004
Total Number of Pages (including this page): 26
Prepared By: Ben Liu Date: 9/25/08
Responsible Professional Check: John R. Klamut, P.E. Date: 9/25/08
Quality Reviewer Check: Robert A. Eichinger, P.E. Date: 9/26/08
Corrected by Responsible Professional: John R. Klamut Date: 9/29/08
Corrections Verified by Quality Reviewer: Robert A. Eichinger Date: 9/29/08

Purpose:

Determine existing 100-year flow hydraulics at the Cactus Road & Loop 303 and Waddell Road & Loop 303 intersections.

Assumptions/References:

1. Broad-crested weir calculations were completed using Bentley's software – FlowMaster *Service Pack 3*, 2005.
2. Weir calculations were back-checked using the general weir equation $Q=CLH^{3/2}$.
3. Composite roadway overtopping performance curves creating following methodology outlined in Flood Control District of Maricopa County *Drainage Design Manual for Maricopa County, Hydraulics: Culverts & Bridges*, September 2003 (Draft). Applicable pages attached at the back of this document.
4. 100-year flows were taken from the Flood Control District of Maricopa County *Loop 303 Corridor/White Tanks, Level III Area Drainage Master Plan Update Report (Contract FCD 99-40),* Final Volume IV, prepared by URS, February 2005.

NOAA 2

5. General direction of overland flow in this region is from the northwest towards the southeast.
6. Weir profiles drawn from1 ft existing contours data, surveyed by Aztec Engineering in February 2006.

Component of flow to SE?

Vimley-Horn
and Associates, Inc.

CALCULATION SUMMARY SHEET

Conclusion/Recommendation/Results:

For greater accuracy, the overtopping crest at each intersection was split into a number of sections based on known survey. These segments for each weir profile can be seen in the attached exhibits. Complete hydraulic results of the composite weir analysis are shown in the attached summary tables and FlowMaster reports.

CACTUS ROAD INTERSECTION

100-Year Water Surface Elevation	1213.44	ft
Cactus Rd Overflow Q_{100}	1270	cfs
L303 Overflow Q_{100}	53	cfs
TOTAL Q_{100}	1323	cfs
ADMP Q_{100}	1318	cfs

WADDELL ROAD INTERSECTION

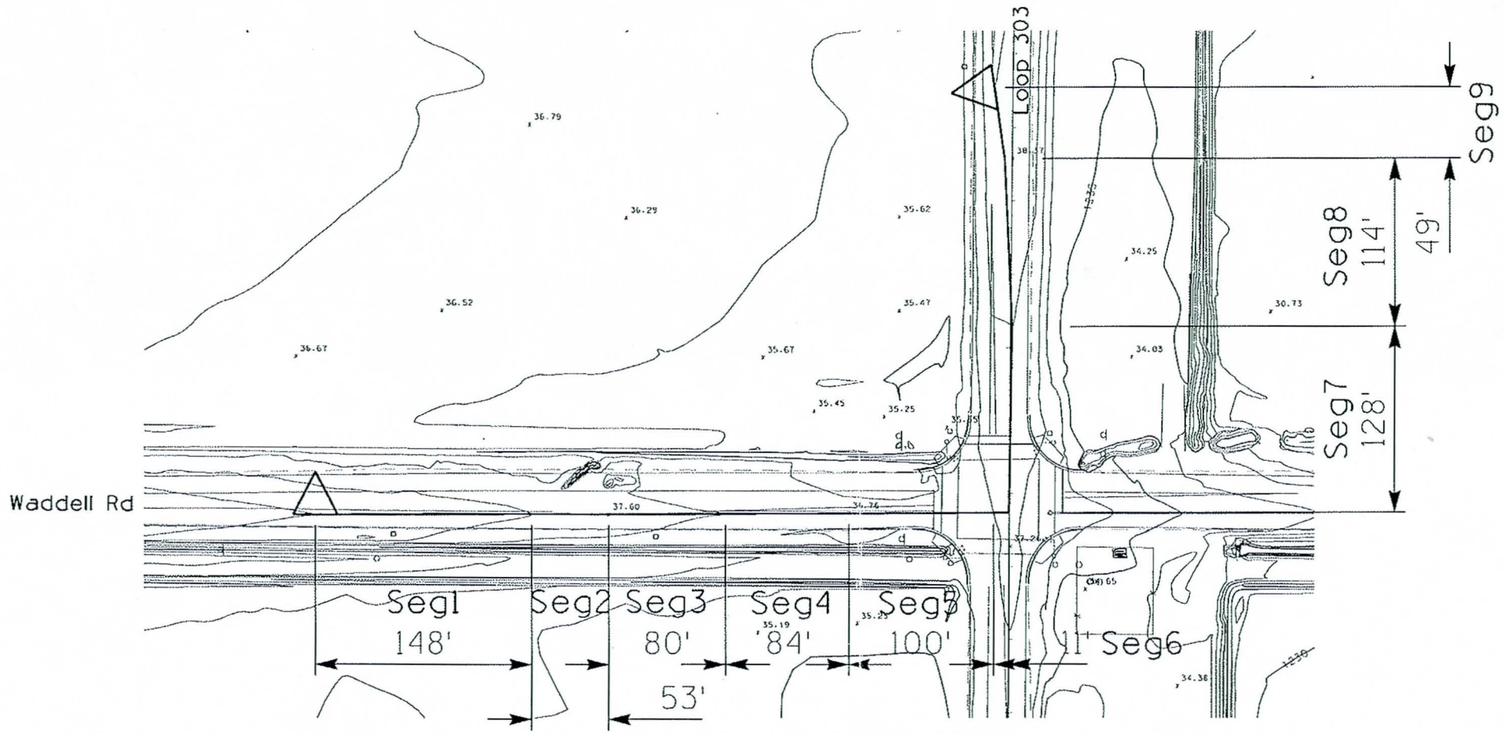
100-Year Water Surface Elevation	1238.03	ft
Waddell Rd Overflow Q_{100}	886	cfs
L303 Overflow Q_{100}	97	cfs
TOTAL Q_{100}	983	cfs
ADMP Q_{100}	979	cfs

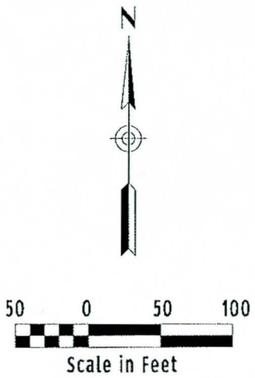
} to SE?

The hydrologic model in the Area Drainage Master Plan shows the 100-year flows heading to the east at these intersections (see "Existing Conditions HEC-1" exhibit attached), but this more detailed hydraulic analysis indicates that the bulk of 100-year flows head towards the south at both intersections. In order to replicate existing conditions, interim improvements constructed as part of this project will be built to continue directing flow towards the south.

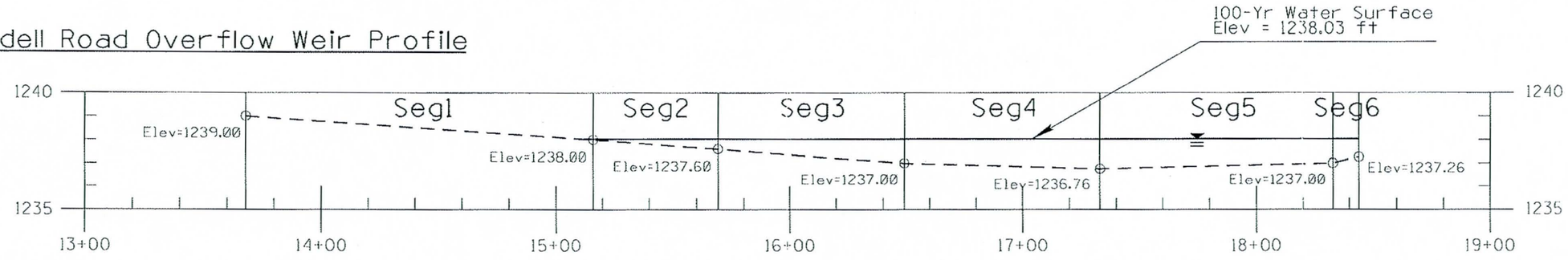
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	303-A-NFA		117	

303 MA 013

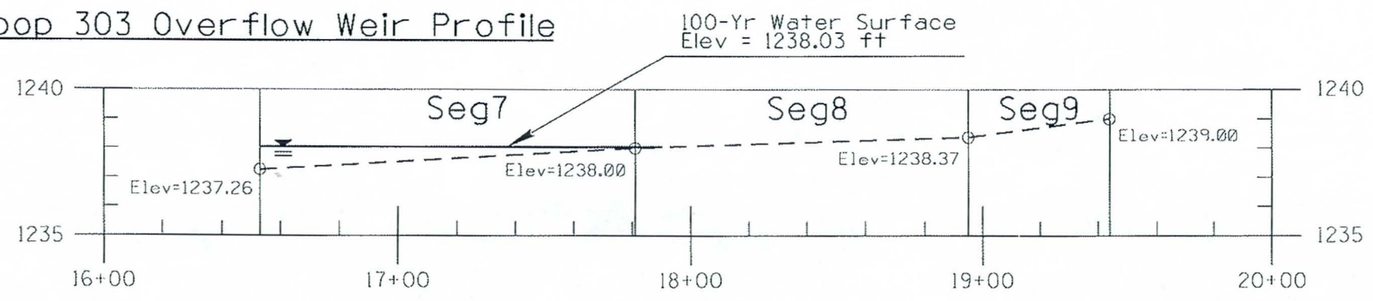




Waddell Road Overflow Weir Profile



Loop 303 Overflow Weir Profile



Notes:
1. Segment break points defined by contours and known survey points.

	NAME	DATE
DESIGN	BML	09/08
DRAWN	BML	09/08
CHECKED	JRK	09/08

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION

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EXISTING ROADWAY OVERTOPPING HYDRAULIC ANALYSIS

ROUTE: SR 303L
LOCATION: WADDELL ROAD TRAFFIC INTERCHANGE

TRACS NO. H7239 01D

PRELIMINARY
STAGE IV
Review
NOT FOR CONSTRUCTION OR RECORDING

DWG NO. OF
___ OF ___

9:52:37 AM 9/29/2008 BENJAMIN LIU K:\RDWY\091665004-L303BELL\CADD\WADDELL\DRAINAGE\SPLIT FLOW ANALYSIS\W-SPLIT_FLOW3.DGN

DATE | LOCATION | REVISIONS | FINISHED PLANS | SURVEY NO.

Weir Equation Backcheck

Label	Crest Length L (ft)	Crest Elev (ft)	HW Above Crest H (ft)	Discharge (cfs)
Waddell Weir Seg 1	148	38.5	-0.466691	0
Waddell Weir Seg 2	53	37.8	0.233309	17.91819448
Waddell Weir Seg 3	80	37.3	0.733309	150.7098812
Waddell Weir Seg 4	84	36.88	1.153309	312.1181606
Waddell Weir Seg 5	100	36.88	1.153309	371.5692389
Waddell Weir Seg 6	11	37.13	0.903309	28.33142479
L303 Weir Seg 7	128	37.63	0.403309	98.35309417
L303 Weir Seg 8	114	38.19	-0.156691	0
L303 Weir Seg 9	49	38.69	-0.656691	0
Waddell Rd Sum =				881
L303 Sum =				98
TOTAL =				979

Constants	
Headwater Elev (ft) =	38.03
Weir Coef C =	3.0

Discharge calculated using Weir Equation:

$Q = CLH^{1.5}$

(Submergence Factor assumed to be 1.0)

Q_{100} in ADMP (cfs) = 979

Iterated to find Sum Q that matched Q_{100} in ADMP

FlowMaster Analysis

Label	Discharge (cfs)	Headwater Elev (ft)	Crest Elev (ft)	Tailwater Elev (ft)	Surface Type	Crest Breadth (ft)	Crest Length (ft)	HW Above Crest (ft)	Adj Weir Coef C	Velocity (ft/s)
Waddell Weir Seg 1		38.03	38.5	36	Paved	20	148	0.5	3.01	2.13
Waddell Weir Seg 2	17	38.03	37.8	36	Paved	20	53	0.23	2.96	1.42
Waddell Weir Seg 3	151	38.03	37.3	36	Paved	20	80	0.73	3.03	2.59
Waddell Weir Seg 4	315	38.03	36.88	36	Paved	20	84	1.15	3.04	3.26
Waddell Weir Seg 5	375	38.03	36.88	36	Paved	20	100	1.15	3.04	3.26
Waddell Weir Seg 6	29	38.03	37.13	36	Paved	20	11	0.9	3.03	2.88
L303 Weir Seg 7	97	38.03	37.63	36	Paved	20	128	0.4	2.99	1.89
L303 Weir Seg 8		38.03	38.19	36	Paved	20	114	0.81	3.03	2.73
L303 Weir Seg 9		38.03	38.69	36	Paved	20	49	0.31	2.98	1.66

Waddell Rd Sum = 886

L303 Sum = 97

TOTAL = 983

Q_{100} in ADMP (cfs) = 979

Notes:

1. Headwater Elev determined iteratively to match total discharge in ADMP.
2. Crest Elev taken as the average roadway elevation for each segment.
3. Tailwater Elev set at constant value below roadway elev -- submergence factor assumed to be 1.0 for this analysis.
4. Adj Weir Coef calculated within Flowmaster from headwater and tailwater depths; per methodology in FHWA HDS No. 5 (1985).

Worksheet for Waddell Weir Seg 2

Project Description

Solve For	Discharge

Input Data

Headwater Elevation	38.03	ft
Crest Elevation	37.80	ft
Tailwater Elevation	36.00	ft
Crest Surface Type	Paved	
Crest Breadth	20.00	ft
Crest Length	53.00	ft

Results

Discharge	17.33	ft^3/s
Headwater Height Above Crest	0.23	ft
Tailwater Height Above Crest	-1.80	ft
Weir Coefficient	2.96	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	2.96	US
Flow Area	12.19	ft^2
Velocity	1.42	ft/s
Wetted Perimeter	53.46	ft
Top Width	53.00	ft

Worksheet for Waddell Weir Seg 3

Project Description

Solve For	Discharge

Input Data

Headwater Elevation	38.03	ft
Crest Elevation	37.30	ft
Tailwater Elevation	36.00	ft
Crest Surface Type	Paved	
Crest Breadth	20.00	ft
Crest Length	80.00	ft

Results

Discharge	151.06	ft^3/s
Headwater Height Above Crest	0.73	ft
Tailwater Height Above Crest	-1.30	ft
Weir Coefficient	3.03	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	3.03	US
Flow Area	58.40	ft^2
Velocity	2.59	ft/s
Wetted Perimeter	81.46	ft
Top Width	80.00	ft

Worksheet for Waddell Weir Seg 4

Project Description

Solve For	Discharge

Input Data

Headwater Elevation	38.03	ft
Crest Elevation	36.88	ft
Tailwater Elevation	36.00	ft
Crest Surface Type	Paved	
Crest Breadth	20.00	ft
Crest Length	84.00	ft

Results

Discharge	314.70	ft^3/s
Headwater Height Above Crest	1.15	ft
Tailwater Height Above Crest	-0.88	ft
Weir Coefficient	3.04	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	3.04	US
Flow Area	96.60	ft^2
Velocity	3.26	ft/s
Wetted Perimeter	86.30	ft
Top Width	84.00	ft

Worksheet for Waddell Weir Seg 5

Project Description

Solve For	Discharge

Input Data

Headwater Elevation	38.03	ft
Crest Elevation	36.88	ft
Tailwater Elevation	36.00	ft
Crest Surface Type	Paved	
Crest Breadth	20.00	ft
Crest Length	100.00	ft

Results

Discharge	374.65	ft^3/s
Headwater Height Above Crest	1.15	ft
Tailwater Height Above Crest	-0.88	ft
Weir Coefficient	3.04	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	3.04	US
Flow Area	115.00	ft^2
Velocity	3.26	ft/s
Wetted Perimeter	102.30	ft
Top Width	100.00	ft

Worksheet for Waddell Weir Seg 6

Project Description

Solve For	Discharge

Input Data

Headwater Elevation	38.03	ft
Crest Elevation	37.13	ft
Tailwater Elevation	36.00	ft
Crest Surface Type	Paved	
Crest Breadth	20.00	ft
Crest Length	11.00	ft

Results

Discharge	28.50	ft^3/s
Headwater Height Above Crest	0.90	ft
Tailwater Height Above Crest	-1.13	ft
Weir Coefficient	3.03	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	3.03	US
Flow Area	9.90	ft^2
Velocity	2.88	ft/s
Wetted Perimeter	12.80	ft
Top Width	11.00	ft

Worksheet for L303 Weir Seg 7

Project Description

Solve For	Discharge

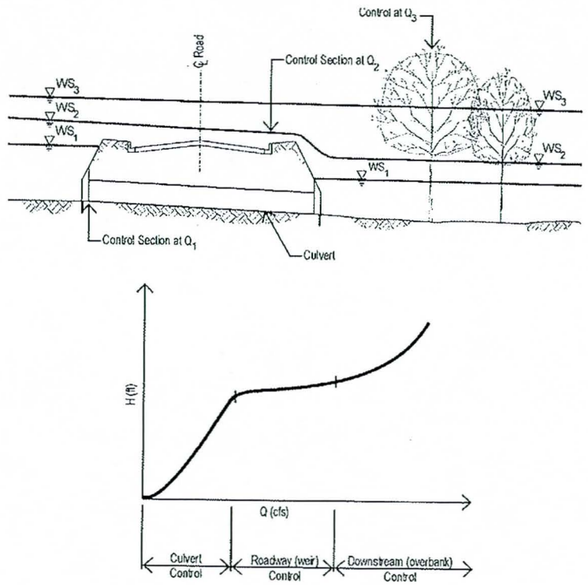
Input Data

Headwater Elevation	38.03	ft
Crest Elevation	37.63	ft
Tailwater Elevation	36.00	ft
Crest Surface Type	Paved	
Crest Breadth	20.00	ft
Crest Length	128.00	ft

Results

Discharge	96.96	ft^3/s
Headwater Height Above Crest	0.40	ft
Tailwater Height Above Crest	-1.63	ft
Weir Coefficient	2.99	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	2.99	US
Flow Area	51.20	ft^2
Velocity	1.89	ft/s
Wetted Perimeter	128.80	ft
Top Width	128.00	ft

FIGURE 5.16
CULVERT PERFORMANCE CURVE WITH ROADWAY OVERTOPPING
(USDOT, FHWA, HDS-5, 1985)



The overall performance curve can be determined by performing the following steps:

1. Select a range of flow rates and determine the corresponding headwater elevations for the culvert flow alone. These flow rates should fall above and below the design discharge and cover the entire flow range of interest. Both inlet and outlet control headwaters should be calculated. It is recommended that the 2-, 10-, 50- and 100-year flow rates be included in the range of flow rates considered.
2. Combine the inlet and outlet control performance curves to define a single performance curve for the culvert based on the controlling stage for each discharge.
3. When the culvert headwater stages exceed the roadway crest elevation, overtopping will begin. Calculate the equivalent upstream water surface depth above the roadway (crest of weir) for each selected flow rate. Use these water surface depths and Equation (5.7a) or Equation (5.7b) to calculate flow rates across the roadway.
4. Add the culvert flow and the roadway overtopping flow at the corresponding headwater elevations to obtain the overall culvert performance curve.

Using the combined culvert performance curve, it is an easy matter to determine the headwater stage for any flow rate, or to visualize the performance of the culvert installation over a range of flow rates. When roadway overtopping begins, the rate of headwater increase will diminish. The

headwater will rise very slowly from that point on. Figure 5.16 depicts an overall culvert performance curve with roadway overtopping. Example 4 in Section 5.3.5 illustrates the development of an overall culvert performance curve. The 100-year discharge should be identified on the performance curve and the corresponding depth of flow over the roadway.

The Federal Highway Administration's computer program, HY8 (USDOT, 1999), can be used in the development of performance curves. HY8 automates the design methods described in HDS-5 (USDOT, 1985), and HEC-14 (USDOT, 1983). The U.S. Army Corps of Engineers HEC-2 (USACOE, 1990) and HEC-RAS computer programs (USACOE, 2001a and 2001b) are also capable of analyzing culverts. The use of HY8 is preferred for design of culverts that are not subject to backwater conditions. HEC-RAS is preferred for modeling and design of culverts in river systems where backwater effects are of concern

Roadway overtopping will begin as the headwater rises to the elevation of the lowest point of the roadway. This type of flow is similar to flow over a broad crested weir. The length of the weir can be taken as the horizontal length along the roadway. The flow across the roadway is calculated from the broad crested weir equation:

$$Q_o = K_t\, C_r\, L_x (HW_r)^{1.5} \qquad (5.7a)$$

The charts in Figure 5.17 provide estimates of the correction factors K_t *and* C_r.

If the elevation of the roadway crest varies, for instance where the crest is defined by a roadway sag vertical curve, the vertical curve can be approximated as a series of horizontal segments. The flow over each is calculated separately and the total flow across the roadway is the sum of the incremental flows for each segment (Figure 5.18). If the assumption of horizontal segments is invalid ($HW_{ra} > 1.5\, HW_{rb}$), the following formula may be used, assuming the value of C_r remains constant:

$$Q_o = \frac{2K_t C_r L_x (HW_{rb}^{5/2} - HW_{ra}^{5/2})}{5(HW_{rb} - HW_{ra})} \qquad (5.7b)$$

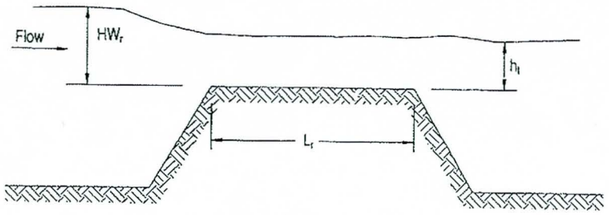
where: HW_{ra} = flow depth above the roadway at the high end of the weir segment, ft.

HW_{rb} = flow depth above the roadway at the low end of the weir segment, ft.

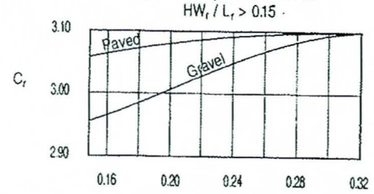
Adapted from Hulsing (1968).

The total flow across the roadway then equals the sum of the roadway overflow plus the culvert flow. A performance curve must be plotted including both culvert flow and road overflow. The headwater depth for a specific discharge, such as the 100-year discharge can then be read from the curve. Design Example 4 in Section 5.3.5 illustrates this procedure.

FIGURE 5.17
DISCHARGE COEFFICIENT AND SUBMERGENCE FACTOR FOR ROADWAY OVERTOPPING
(USDOT, FWHA, HDS-5, 1985)

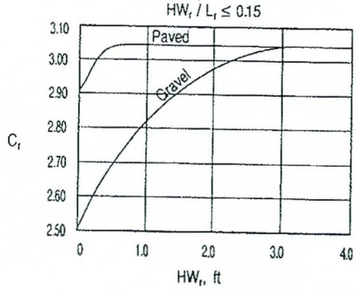


(A) Discharge Coefficient for $HW_r / L_t > 0.15$



$C_d = K_t C_r$

(B) Discharge Coefficient for $HW_r / L_t \leq 0.15$



(C) Submergence Factor

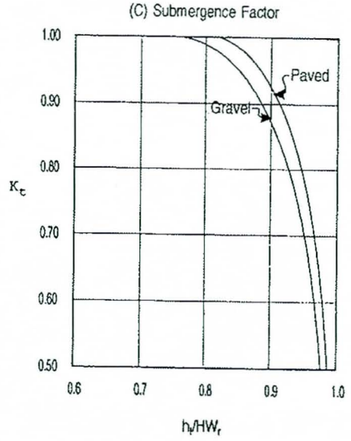
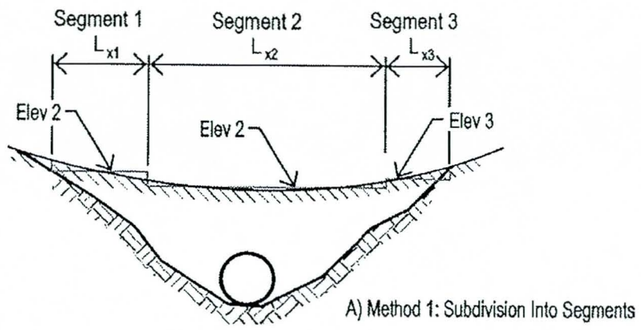
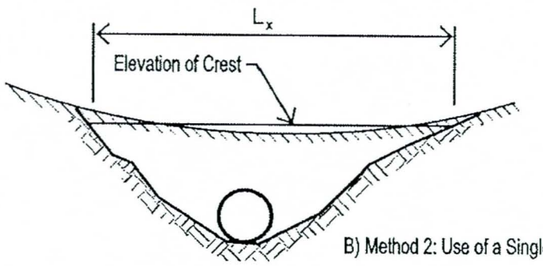


FIGURE 5.18
WEIR CREST LENGTH DETERMINATIONS FOR ROADWAY OVERTOPPING
(USDOT, FHWA, HDS-5, 1985)



A) Method 1: Subdivision Into Segments



B) Method 2: Use of a Single Segment

5.3.4 Design Aids

Computer programs for culvert design are acceptable provided they are based on USDOT, FHWA, HDS-5, 1985.

The Culvert Design Form (Figure 5.10) has been formulated to guide the user through the design process. Summary blocks are provided at the top of the form for the project description, and the designer's identification. Summaries of hydrologic data are also included. At the top right is a small sketch of a culvert with blanks for inserting important dimensions and elevations.

The central portion of the design form contains lines for inserting the trial culvert description and calculating the inlet control and outlet control headwater elevations. Space is provided at the lower center for comments and at the lower right for a description of the culvert barrel selected. The design chart should be completely filled out, including consideration of inlet and outlet control. Table 5.1 and Figure 5.19 through Figure 5.38 should facilitate completion of the Culvert Design Form.

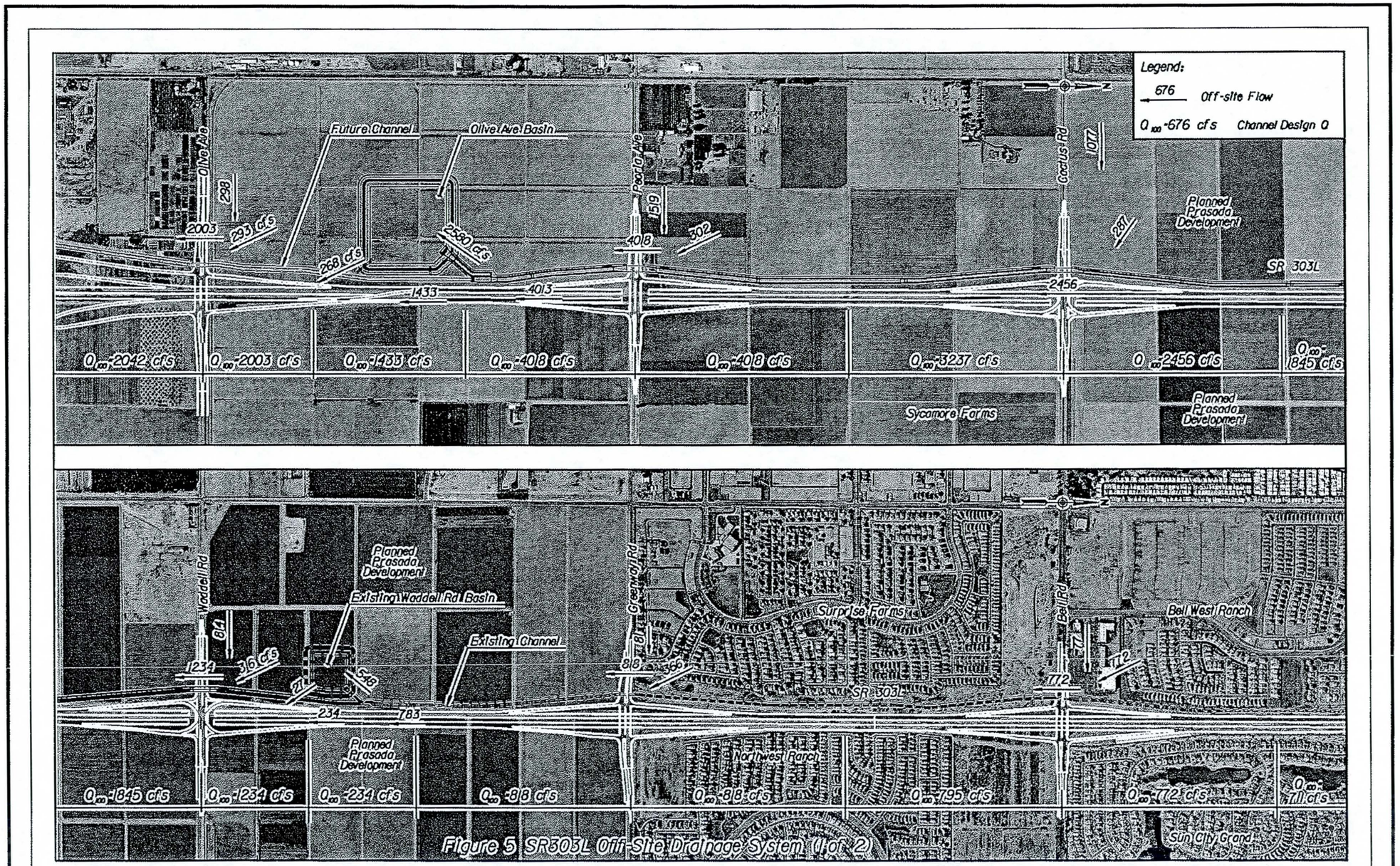


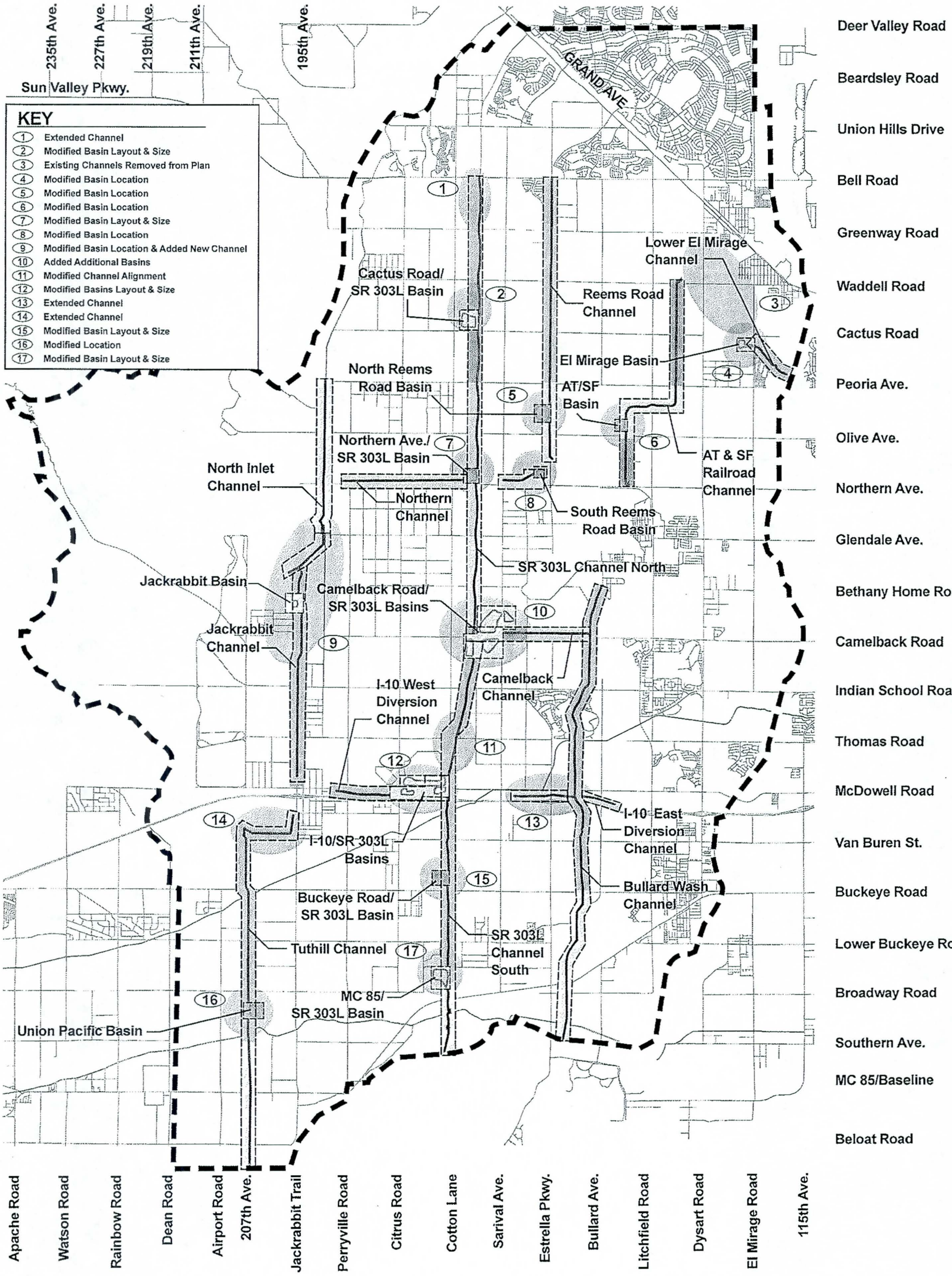
Figure 5 SR303L Off-Site Drainage System (1 of 2)

Figure 5 – SR303L Off-Site Drainage System
1 of 2

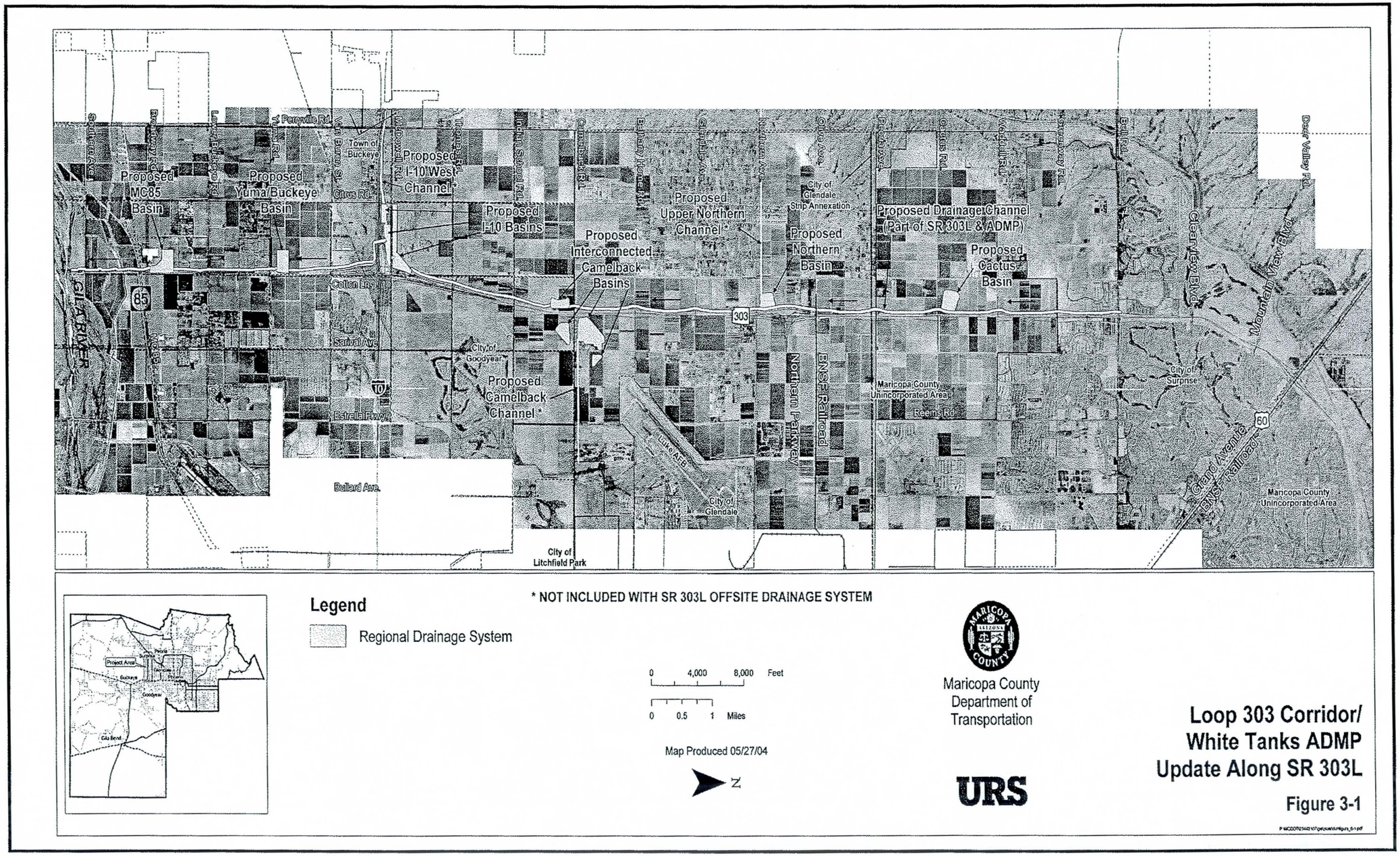
W28, S70, L72, B65, D69
L09, L13, L19, L27, L34

Table 2.4B
Proposed Basin Summary
Existing Condition Hydrology

Channel/ Location ID	Qin (cfs)	Qout (cfs)	Vin (ac-ft)	Peak Storage (ac-ft)	Max. Vol. Provided (ac-ft)	Peak Stage (ft)	on/off line	Combined Total Outflow (cfs)	Length Low-Flow Basin Drain (ft)	Prop. Bot. Elev. (ft)	Prop. Top Elev. (ft)	Design FB (ft)	Actual FB (ft)	Backwater
Jackrabbit Channel														
SRJR1 (N. of Camelback)	850	65	42	41.5	43.9	1185.5	off-line	151	8,323	1,173.5	1,186.0	0.0	0.5	-----
Tuthill Channel														
SRTC5 (@ RxR)	1,646	550	109	108.5	108.5	898.0	off-line	618	4,390	890.0	898.0	0.0	-0.6	-----
I-10 Channel West														
SR10W7	1593	741	282	85.2	85.2	1022.0	on-line	N/A	2,487	1,010.5	1,022.0	0.0	0.0	-----
L303 Channel														
SRLP2 (Cactus Road)	2311	311	543	440	440.0	1212.0	off-line	587	5,630	1,197.0	1,212.0	0.0	0.0	-----
SRLP5 (Northern)	4241	442	354	334	333.0	1141.0	off-line	1380	6,934	1,126.0	1,141.0	0.0	0.0	-----
SRLP8 (Camelback)	2102	340	1081	705.9	700.0	1065.0	on-line	N/A	14,062	1,059.0	1,065.0	0.0	0.0	-----
SRLP12 (I-10)	1781	701	1166	591.5	590.0	1016.0	on-line	N/A	4,961	1,001.0	1,016.0	0.0	0.0	-----
SRLP14 (Yuma/Buckeye)	695	523	823	189.0	190.0	968.0	on-line	N/A	4,092	959.0	968.0	0.0	0.0	-----
SRLP16 (MC85)	751	448	938	325.0	325.0	913.0	on-line	N/A	2,872	903.0	913.0	0.0	0.0	-----
Reems/Northern Channel														
SRRM5 (Olive)	1,752	198	189	165.0	165.0	1134.0	off-line	818	1,449	1,127.0	1,134.0	0.0	0.0	-----
BSNR6(Northern)	477	0	55	55.0	61.1	1107.5	in-line	0	1,413	1,095.0	1,108.5	0.0	1.2	-----
AT&SF Railroad Channel														
SRRR7 (@Olive)	1,770	1285	331	81.3	142.7	1105.6	off-line	1439	1,832	1,097.5	1,111.5	0.0	6.1	-----
Lower El Mirage Channel														
(SRLE4 SW corner of Cactus and El Mirage)	1,312	813	191	56.9	80.0	1111.4	off-line	852	2,069	1,104.5	1,114.0	0.0	2.1	-----
Bullard Wash														
SRBD1S (I-10 and Bullard Wash)	2682	2011	813	134.9	138.0	990.2	off-line	575 - ADOT	4,390	978.5	990.2	0.0	-0.2	-----
								2239 - BLRD						



Basin & Channel Locations



Legend

Regional Drainage System

* NOT INCLUDED WITH SR 303L OFFSITE DRAINAGE SYSTEM

0 4,000 8,000 Feet

0 0.5 1 Miles

Map Produced 05/27/04

N

Maricopa County Department of Transportation

URS

Loop 303 Corridor/ White Tanks ADMP Update Along SR 303L

Figure 3-1

Figure 3 - Loop 303 Corridor/White Tanks ADMP Update Along SR303L

Table 2.2A
Proposed Channel Summary
Existing Condition Hydrology

Channel Name	Concentration Point	Qexist	[1]Approximate Qcap (cfs)	DS Invert (ft)	WSEL (ft)	Flow Depth (ft)	Channel Depth (ft)	Bottom Width (ft)	Side Slope (H:V)	Design s (ft/ft)	(Q/A) V ft/s	Froude Number F_N	Channel [3]Tw (ft)	(WSEL) [3]Tw (ft)
Camelback Channel														
	!CM2	372	372	1052.7	1056.5	3.8	4.7	5	(6:1)	*0.0020*	3.6	0.44	132	51
	!CM3	485	485	1047.5	1051.8	4.2	5.4	5	(6:1)	*0.0020*	3.8	0.45	143	57
	!CM4	783	783	1040.7	1044.8	4.1	6.3	26	(4:1)	*0.0020*	4.5	0.46	152	59
Jackrabbit Channel														
	!JR1	953	953	1177.1	1182.6	5.5	6.9	5	(6:1)	*0.0021*	4.6	0.47	167	71
	!JR2	813	813	1165.0	1169.3	4.3	5.3	15	(6:1)	*0.0025*	4.7	0.51	154	67
	!JR3	933	933	1147.4	1150.4	4.0	4.4	15	(6:1)	*0.0046*	6.1	0.61	140	51
	!JR4	1,324	1,324	1109.9	1114.3	4.4	4.4	25	(6:1)	*0.0035*	5.9	0.61	153	78
	!JR5	1,683	1,683	1080.3	1084.6	4.3	4.3	40	(6:1)	*0.0033*	6.0	0.60	171	92
SR303L URS DCR - Channel														
	!LP0	772	772	1275.6	1279.0	3.4	5.5	10	(2:1)	*0.0049*	13.7	1.57	62	24
	!LP	854	854	1247.9	1251.5	3.5	5.4	10	(2:1)	*0.0050*	14.3	1.61	62	24
	!LP1	1,612	1,612	1227.3	1232.5	5.1	5.9	12	(2:1)	*0.0031*	14.1	1.33	66	33
Cactus Road Basin	!LP2	2,898	2,898	1209.8	1215.9	6.0	6.1	20	(2:1)	*0.0026*	15.0	1.26	74	44
offline low flow/bypass channel	2LP2	587	587	1200.0	1202.6	2.5	4.8	20	(2:1)	*0.0026*	9.3	1.14	69	30
	!LP3	2,140	2,140	1180.8	1185.9	5.0	5.1	21	(2:1)	*0.0027*	13.8	1.26	71	41
	!LP4	2,636	2,636	1160.7	1165.9	5.2	5.2	26	(2:1)	*0.0025*	14.1	1.24	77	47
	!LP5	2,624	2,636	1136.3	1141.5	5.2	5.2	26	(2:1)	*0.0025*	14.0	1.23	77	47
offline low flow/bypass channel	2LP5	1,380	1,380	1130.4	1133.8	3.4	3.7	26	(2:1)	*0.0032*	12.5	1.32	71	40
	!LP6	1,539	1,539	1110.0	1115.1	5.1	6.4	16	(2:1)	*0.0020*	11.6	1.07	72	36
	!LP7	1,770	1,770	1087.1	1092.2	5.0	6.2	19	(2:1)	*0.0021*	12.1	1.10	74	39
	!LP8	2,097	2,097	1065.8	1070.7	4.9	6.1	26	(2:1)	*0.0020*	12.1	1.09	80	46
	!LP9	557	557	1047.9	1052.2	4.2	4.3	5	(2:1)	*0.0023*	9.8	1.08	52	22
	!LP10	624	624	1032.4	1036.1	3.7	3.7	5	(2:1)	*0.0052*	13.7	1.58	50	20
	!LP11	988	988	1014.5	1019.2	4.7	5.7	5	(2:1)	*0.0047*	14.8	1.56	58	24
	!LP13	697	701	984.8	988.5	3.6	3.8	8	(2:1)	*0.0041*	12.7	1.45	53	23
	!LP14	695	701	966.2	969.7	3.5	3.7	8	(2:1)	*0.0048*	13.5	1.54	53	22
	!LP15	676	676	934.2	937.7	3.4	4.2	8	(2:1)	*0.0048*	13.3	1.54	55	22
	!LP16	751	751	914.8	918.3	3.5	4.2	8	(2:1)	*0.0056*	14.5	1.67	55	22
	!LP17	447	448	884.3	888.7	4.3	5.5	5	(2:1)	*0.0013*	7.6	0.82	57	23
Upper Northern Channel														
	!NR1	256	256	1219.0	0.0	2.7	3.6	5	(6:1)	*0.0050*	4.6	0.66	115	37
	!NR2	1,309	1,309	1182.2	1186.3	4.0	4.1	30	(6:1)	*0.0039*	6.1	0.65	155	79
	!NR3	2,246	2,246	1143.5	1148.5	5.0	5.0	45	(6:1)	*0.0028*	6.0	0.56	189	105
	!NR4	2,308	2,308	1136.0	1141.0	5.0	5.0	50	(6:1)	*0.0025*	5.8	0.54	195	110
Lower Northern Channel	!NR5	262	262	1122.6	1125.9	3.3	4.3	5	(6:1)	*0.0020*	3.3	0.43	126	45
	!NR6	477	477	1096.7	1100.2	3.4	4.5	5	(6:1)	*0.0053*	5.5	0.71	129	47
Reems Road Channel														
	[2]RM1	709	516	1222.1	1226.6	4.5	5.7	6.5	(3:1)	*0.0040*	5.8	0.63	105	34
	[2]RM2	957	1,382	1208.2	1214.3	6.0	7.7	11.5	(4:1)	*0.0032*	6.5	0.60	147	60
	!RM3	1,366	1,366	1167.8	1172.0	4.1	4.2	30	(6:1)	*0.0037*	6.0	0.63	157	80
	!RM4	1,640	1,640	1142.7	1147.7	5.0	5.0	30	(6:1)	*0.0025*	5.5	0.53	169	90
	!RM5	2,179	2,179	1119.4	1124.6	5.1	5.2	40	(6:1)	*0.0027*	6.0	0.57	185	102
	!RM6	826	826	1100.6	1105.0	4.3	5.3	10	(6:1)	*0.0034*	5.3	0.59	148	63

Table 2.2A (continued)
Proposed Channel Summary
Existing Condition Hydrology

Channel Name	Concentration Point	Qexist	[1]Approximate Qcap (cfs)	DS Invert (ft)	WSEL (ft)	Flow Depth (ft)	Channel Depth (ft)	Bottom Width (ft)	Side Slope (H:V)	Design s (ft/ft)	(Q/A) V ft/s	Froude Number F_N	Channel [3]Tw (ft)	(WSEL) [3]Tw (ft)
AT&SF Railroad Channel														
	!RR1	425	425	1150.8	1154.5	3.6	3.9	10	(6:1)	*0.0020*	3.7	0.44	126	54
	!RR2	492	492	1146.2	1149.7	3.4	3.5	10	(6:1)	*0.0035*	4.7	0.58	120	52
	!RR3	785	785	1127.9	1131.9	4.0	4.0	10	(6:1)	*0.0046*	5.9	0.68	127	58
	!RR4	936	936	1110.1	1114.4	4.3	4.3	15	(6:1)	*0.0034*	5.4	0.59	139	67
	!RR5	970	970	1103.3	1108.5	5.2	5.2	15	(6:1)	*0.0015*	4.0	0.41	153	77
	!RR6	1,733	1,733	1098.8	1105.5	6.7	6.7	15	(6:1)	*0.0015*	4.7	0.42	176	95
	!RR7	1,770	1,770	1095.1	1101.9	6.8	6.8	15	(6:1)	*0.0015*	4.7	0.42	178	97
	!RR8	1,585	1,585	1081.1	1086.9	5.8	5.8	15	(6:1)	*0.0025*	5.5	0.53	162	85
Lower El Mirage Channel														
	!LE4	1,356	1,356	1107.2	1111.9	4.7	6.8	35	(3:1)	*0.0026*	5.9	0.54	151	63
	!LE5	865	865	1086.6	1090.6	4.0	5.1	15	(6:1)	*0.0038*	5.6	0.63	152	63
Bullard Wash Channel														
	!BD1N	2,103	2,103	1057.0	1047.3	5.2	7.0	45	(6:1)	*0.0020*	5.3	0.49	219	109
	!BD2N	3,244	3,244	1044.1	1049.8	5.7	7.8	65	(6:1)	*0.0020*	5.8	0.49	258	133
	!BD3N	3,410	3,410	1015.6	1020.7	5.0	6.7	65	(10:1)	*0.0027*	5.9	0.56	312	167
	!BD4N	3,248	3,410	1006.0	1010.8	4.7	6.4	102	(9:1)	*0.0018*	5.0	0.47	335	188
	!BD1S	3,556	3,556	985.5	990.4	4.9	6.4	90	(6:1)	*0.0025*	6.1	0.55	269	149
	!BD2S	2,321	2,321	980.9	984.4	3.5	3.8	95	(6:1)	*0.0033*	5.8	0.60	235	137
I-10 West Diversion Channel														
	!10W1	970	970	1045.8	N/A	3.8	4.5	25	(6:1)	*0.0035*	5.4	0.60	155	71
	!10W2	1,010	1,010	1039.7	1043.4	3.7	4.2	25	(6:1)	*0.0042*	5.9	0.66	150	69
	!10W3	1,046	1,046	1032.7	1036.5	3.7	4.1	25	(6:1)	*0.0042*	5.9	0.66	148	71
	!10W4	1,175	1,175	1028.5	1032.4	3.8	4.3	30	(6:1)	*0.0038*	5.8	0.63	158	77
	!10W5	1,588	1,588	1014.6	1018.9	4.3	5.0	35	(6:1)	*0.0036*	6.1	0.62	175	87
	!10W7	1,593	1,593	1014.6	1019.6	5.0	5.7	35	(6:1)	*0.0020*	5.0	0.48	186	95
	!10W8	743	743	1005.8	1010.5	4.6	5.5	10	(6:1)	*0.0020*	4.2	0.46	151	66
Tuthill Channel														
	!TC1	1,417	1,417	998.7	1003.5	4.7	5.8	20	(6:1)	*0.0037*	6.2	0.63	168	78
	!TC2	1,553	1,553	991.8	997.1	5.2	6.1	25	(6:1)	*0.0023*	5.3	0.51	180	89
	!TC3	1,491	1,491	957.0	961.9	4.8	5.1	25	(6:1)	*0.0029*	5.7	0.57	163	84
	!TC4	1,546	1,546	914.7	919.3	4.6	4.6	30	(6:1)	*0.0032*	5.9	0.59	163	85
	!TC5	1,926	1,926	886.8	891.4	4.6	4.6	40	(6:1)	*0.0033*	6.3	0.61	176	95
	!TC6	646	646	882.3	885.9	3.6	3.6	15	(6:1)	*0.0035*	5.0	0.59	128	58
	!TC7	1,323	1,323	863.6	867.8	4.1	4.2	45	(6:1)	*0.0020*	4.6	0.47	176	95
	!TC8	1,506	1,506	859.4	864.6	5.2	5.2	45	(6:1)	*0.0011*	3.8	0.35	192	107
	!TC9	1,503	1,506	854.8	860.1	5.3	5.3	45	(6:1)	*0.0010*	3.7	0.34	193	109
I-10 East Diversion Channel														
	10CE-US	575	575	984.5	988.6	4.1	4.5	12	(6:1)	*0.0019*	3.9	0.44	138	61
	10CE1	556	575	978.5	985.2	4.1	4.5	12	(6:1)	*0.0018*	3.8	0.43	138	62
I-10 Central Channel														
	!10C1	79	79	1005.4	1007.7	2.2	2.3	2	(6:1)	*0.0020*	2.4	0.40	90	29
	!10C2	131	131	1002.6	1005.3	2.7	2.7	2	(6:1)	*0.0020*	2.8	0.41	96	34
	!10C3	170	170	995.9	998.9	3.0	3.0	2	(6:1)	*0.0020*	2.9	0.42	101	38
	!10C4	243	243	982.2	985.5	3.2	3.3	2	(6:1)	*0.0026*	3.6	0.49	105	41

1. By normal depth computation.
2. Channel reach exists.
3. Top width.

This Section Intentionally Left Blank

For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

This Section Intentionally Left Blank

For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

This Section Intentionally Left Blank

For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Job No. 79902	No.
Subject	Weir Flow Analysis	Computed AM	Date 10/27/08
Task	Weir Calculations	Checked [illegible]	Date 3/10/09
	Location: 175th at Cactus (DL17)	Sheet 1	Of x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
southeast	42.5	42	90	42.25	41	0	0.00	41.5	0	0.00	42	0	0.00	CHECK	42.5	0.25	33.75	DONE
southeast	42	41.7	82	41.85	41	0	0.00	41.5	0	0.00	42	0.15	14.29		42.5	0.65	128.92	
southeast	41.7	41	100	41.35	41	0	0.00	41.5	0.15	17.43	42	0.65	157.21		42.5	1.15	369.97	
southeast	41	40.6	30	40.8	41	0.2	8.05	41.5	0.7	52.71	42	1.2	118.31		42.5	1.7	199.49	
east	40.6	41.1	102	40.85	41	0.15	17.78	41.5	0.65	160.36	42	1.15	377.37		42.5	1.65	648.56	
east	41.1	41.6	103	41.35	41	0	0.00	41.5	0.15	17.95	42	0.65	161.93		42.5	1.15	381.07	
east	41.6	42	102	41.8	41	0	0.00	41.5	0	0.00	42	0.2	27.37		42.5	0.7	179.21	
east	42	42.5	50	42.25	41	0	0.00	41.5	0	0.00	42	0	0.00		42.5	0.25	18.75	
east	42.5	42.5	1	42.5	41	0	0.00	41.5	0	0.00	42	0	0.00		42.5	0	0.00	
					TOTALS:		25.83			248.45			856.48				1959.71	

Graph Computations:

Station	Elevation
0	42.5
90	42
172	41.7
272	41
302	40.6
404	41.1
507	41.6
609	42
659	42.5
660	42.5

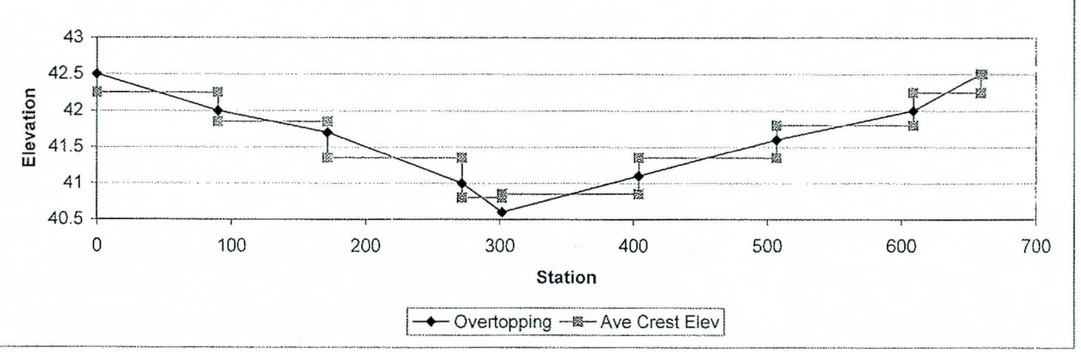
Weir Approximation:

Station	Elevation
0	42.25
90	42.25
90	41.85
172	41.85
172	41.35
272	41.35
272	40.8
302	40.8
302	40.85
404	40.85
404	41.35
507	41.35
507	41.8
609	41.8
609	42.25
659	42.25
659	42.5
660	42.5

Culvert Flows (cfs):

south	0
southeast	0
east	488

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	0.00	0%	Q(south)	0.00	0%	Q(south)	0.00	0%	Q(south)	0.00	0%
Q(southeast)	8.05	2%	Q(southeast)	70.14	10%	Q(southeast)	289.81	22%	Q(southeast)	732.12	30%
Q(east)	505.78	98%	Q(east)	666.31	90%	Q(east)	1054.67	78%	Q(east)	1715.59	70%
	513.83			736.45			1344.48			2447.71	

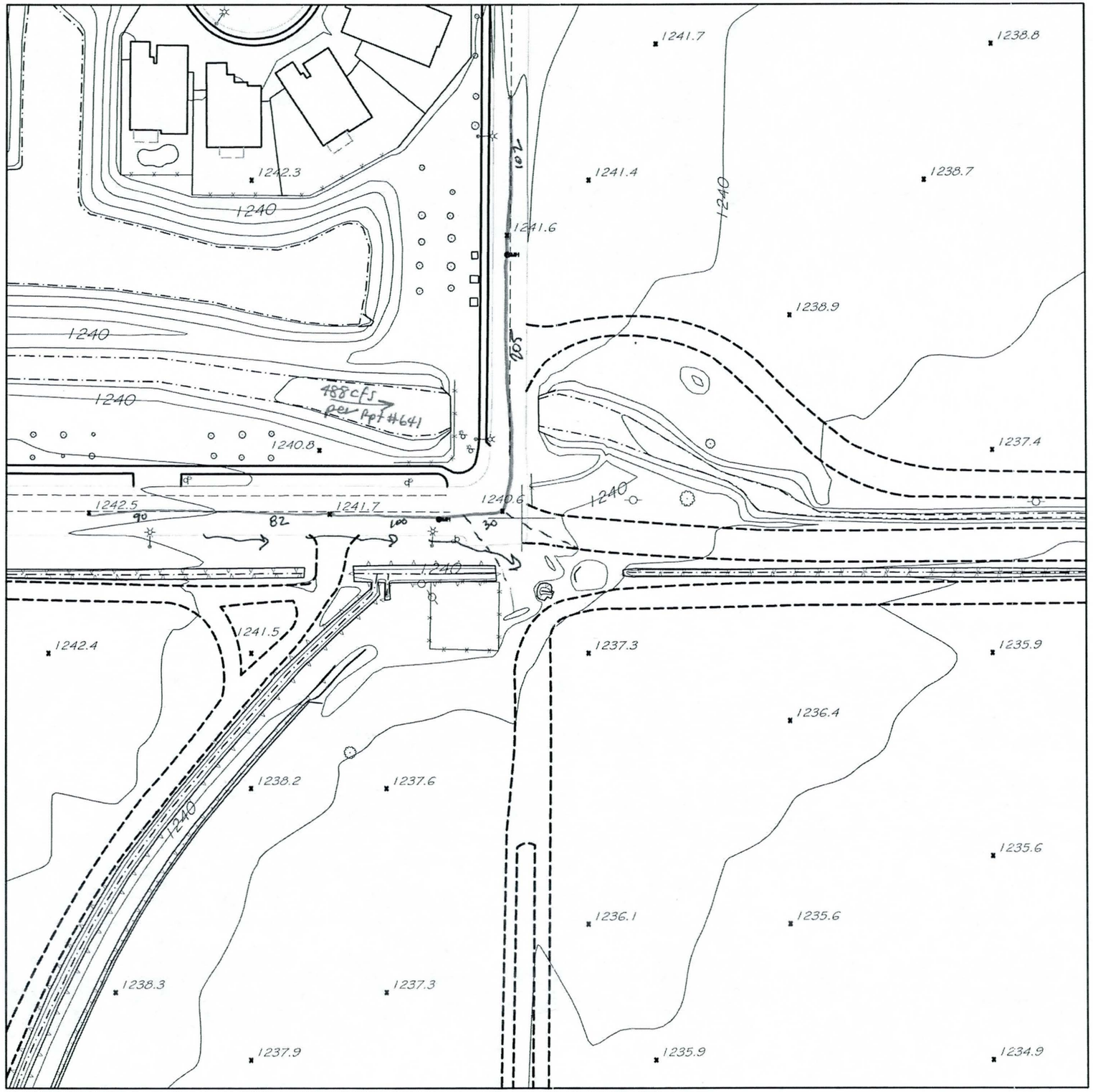
First DI	East to South			
Inflow	513.83	736.45	1344.48	2447.71
Outflow	0.00	0.00	0.00	0.00

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	513.83	736.45	1344.48	2447.71
Outflow	8.05	70.14	289.81	732.12

Assumes diversion is to southeast

Cactus @ 175th



1" = 80'

N

C:\PW...g\PHX\dms69520\Linda_NewWorking.dwg, 10/20/2008 11:46:04 AM

W Bloomfield Rd
W Bloomfield Rd
W Bloomfield Rd
17531
N 182nd Ln
W Charter Oak Dr
17536
W Charter Oak Dr
W Charter Oak Dr
17649
N 178th Dr
N 178th Ln
17598
W Cactus Rd
17797
W Cactus Rd
W Cactus Rd
17589
W Cactus Rd

Culvert Calculator Report
Cactusat175th

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	40.80	ft	Headwater Depth/Height	1.45	
Computed Headwater Elev	40.80	ft	Discharge	542.57	cfs
Inlet Control HW Elev.	39.80	ft	Tailwater Elevation	39.80	ft
Outlet Control HW Elev.	40.80	ft	Control Type	Outlet Control	

Grades					
Upstream Invert	35.00	ft	Downstream Invert	34.50	ft
Length	65.00	ft	Constructed Slope	0.007692	ft/ft

Hydraulic Profile					
Profile	PressureProfile		Depth, Downstream	5.30	ft
Slope Type	N/A		Normal Depth	2.09	ft
Flow Regime	N/A		Critical Depth	2.84	ft
Velocity Downstream	6.78	ft/s	Critical Slope	0.003168	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	10.00	ft
Section Size	10 x 4 ft		Rise	4.00	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	40.80	ft	Upstream Velocity Head	0.71	ft
Ke	0.20		Entrance Loss	0.14	ft

Inlet Control Properties					
Inlet Control HW Elev.	39.80	ft	Flow Control	Unsubmerged	
Inlet Type	90° headwall w 45° bevels		Area Full	80.0	ft²
K	0.49500		HDS 5 Chart	10	
M	0.66700		HDS 5 Scale	2	
C	0.03140		Equation Form	2	
Y	0.82000				

verification of Subdivision drainage rpt.
LP

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Location: Cactus at Cotton (DL18)	Job No. 79902
Subject	Weir Flow Analysis		Computed AM
Task	Weir Calculations		Checked LP
			Sheet 1

No. | Date 10/28/07 | Date 3/10/09 | Of x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	26	25	188	25.5	23.2	0	0.00	23.7	0	0.00	24.2	0	0.00	CHECK	24.7	0	0.00	DONE
south	25	24	188	24.5	23.2	0	0.00	23.7	0	0.00	24.2	0	0.00		24.7	0.2	50.45	
south	24	22.7	30	23.35	23.2	0	0.00	23.7	0.35	18.64	24.2	0.85	70.53		24.7	1.35	141.17	
southeast	22.7	22.7	12	22.7	23.2	0.5	12.73	23.7	1	36.00	24.2	1.5	66.14		24.7	2	101.82	
east	22.7	22.6	60	22.65	23.2	0.55	73.42	23.7	1.05	193.67	24.2	1.55	347.35		24.7	2.05	528.33	
east	22.6	23.1	290	22.85	23.2	0.35	180.14	23.7	0.85	681.79	24.2	1.35	1364.65		24.7	1.85	2189.16	
east	23.1	24	308	23.55	23.2	0	0.00	23.7	0.15	53.68	24.2	0.65	484.22		24.7	1.15	1139.51	
east	24	25	241	24.5	23.2	0	0.00	23.7	0	0.00	24.2	0	0.00		24.7	0.2	64.67	
east	25	26	241	25.5	23.2	0	0.00	23.7	0	0.00	24.2	0	0.00		24.7	0	0.00	
						TOTALS:	266.29			983.77			2332.88				4215.10	

Graph Computations:

Station	Elevation
0	26
188	25
376	24
406	22.7
418	22.7
478	22.6
768	23.1
1076	24
1317	25
1558	26

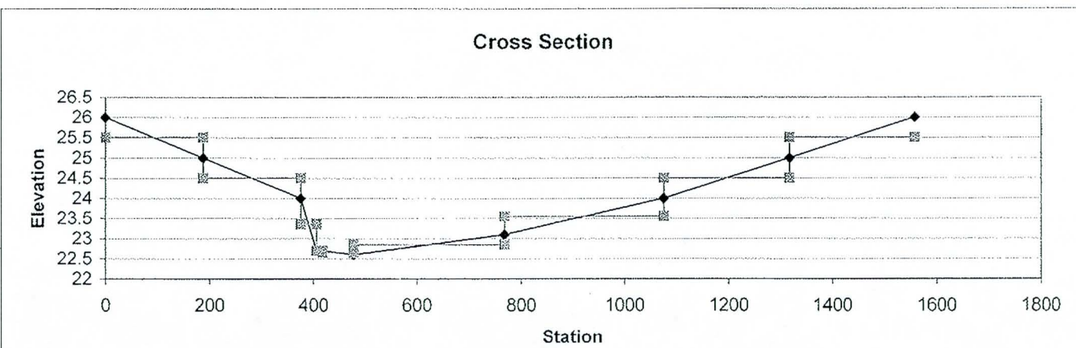
Weir Approximation:

Station	Elevation
0	25.5
188	25.5
188	24.5
376	24.5
376	23.35
406	23.35
406	22.7
418	22.7
418	22.65
478	22.65
478	22.85
768	22.85
768	23.55
1076	23.55
1076	24.5
1317	24.5
1317	25.5
1558	25.5

Culvert Flows (cfs):

south	0
southeast	0
east	0

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	0.00	0%	Q(south)	18.64	2%	Q(south)	70.53	3%	Q(south)	191.62	5%
Q(southeast)	12.73	5%	Q(southeast)	36.00	4%	Q(southeast)	66.14	3%	Q(southeast)	101.82	2%
Q(east)	253.56	95%	Q(east)	929.13	94%	Q(east)	2196.22	94%	Q(east)	3921.66	93%
	266.29			983.77			2332.88			4215.10	

First DI	East to South			
Inflow	266.29	983.77	2332.88	4215.10
Outflow	0.00	18.64	70.53	191.62

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	266.29	965.13	2262.35	4023.49
Outflow	12.73	36.00	66.14	101.82

Assumes diversion is to southeast

Cactus @ Cotton
DL 18

272' to 1224'
36'
1223.1
1224.9
1223.1
SD
SD
1224
1220
1219.4
1221.6
22.6'
SD
1221.7
60'
1220
1222.7
15'
188'
1225
188'
(1224)
20'
MH
12"
1222
FH
1222.4
1224.6
1224
1220.4
1218.8
1220.6
1220
1223.4
MH
1" = 80'
N

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DELETE
Cactus
Cotton

Cotton

Cactus

1" = 80'
N

1224.9
1220
1221.6
1220
1222
MH
EH
1220.4
1222.4
1220.4
1223.6
1218.8
1220.6
1220
1223.4
MH
P

C:\Documents and Settings\JPeiter\Local Settings\Temporary Internet Files\OLK5\Main - low-res.dwg, 10/16/2008 9:31:25 AM

CIP model source

L19

```
1*****************************************
*                                       *
*    FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              JUN  1998                *
*            VERSION 4.1                *
*                                       *
*      DATE   07MAY09  TIME  08:05:50   *
*                                       *
*****************************************
```

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

```
X    X  XXXXXXX   XXXXX          X
X    X  X        X     X        XX
X    X  X        X              X
XXXXXXX  XXXX    X        XXXXX  X
X    X  X        X              X
X    X  X        X     X        X
X    X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
   1          ID        LOOP 303 OFF-SITE HYDROLOGY
   2          ID        MODIFIED BASED ON FCDMC'S WHITE TANKS/LOOP 303 CORRIDOR ADMP
   3          ID        THE MODIFICATIONS ARE DESCRIBED AS FOLLOWS:
   4          ID        1. THE CACTUS RD BASIN WAS REMOVED AND TWO RELATIVELY SMALL BASINS
   5          ID           LOCATED AT NORTH OF WADDELL ROAD AND NORTH OF OLIVE AVENUE WERE
   6          ID           ADDED TO THE MODEL BASED ON CMX'S HEC-1 MODEL PROVIDED IN DEC,2006.
   7          ID        2. FLOW DIVERSION TO THE OFF-LINE BASINS, SUCH AS WADDELL ROAD
   8          ID           BASIN, OLIVE AVENUE BASIN, NORTHERN AVENUE BASIN WERE ESTIMATED
   9          ID           USING HEC-RAS LATERAL WEIR ROUTINE.
  10          ID        3. DETENTION BASIN ELEVATION AND VOLUME RELATIONSHIPS WERE ESTIMATED
  11          ID           BASED ON 30% DESIGN OF THE BASIN.
  12          ID        4. ELEVATION AND OUTFLOW RELATIONSHIP WERE ESTIMATED BASED ON 30% DESIG
  13          ID           USING CULVERTMASTER. THE OUTFLOW INCLUDES FLOW FROM BLEED-OFF PIPE
  14          ID           AND FLOW FROM OUTFLOW PIPE.
  15          ID        5. CHANNEL ROUTING WERE MODIFIED BASED ON 30% DESIGN.
  16          ID        6. FLOW FROM THE PROPOSED FCDMC CHANNEL ALONG NORTHEN AVENUE  WILL
  17          ID           NOT BE COMBINED WITH FLOW FROM LOOP 303 OFF-SITE CHANNEL.
  18          ID           INSTEAD THE FLOW FROM THE CHANNEL ALONG NORTHERN AVENUE WILL GO
  19          ID           TO THE NORTHERN AVENUE BASIN DIRECTLY.  SO THE FLOW FROM THE
  20          ID           NORTHERN AVENUE CHANNEL WILL BE COMBINED WITH THE DIVERTED FLOW
  21          ID           FROM LOOP 303 CHANNEL AT NORTHERN AVENUE BASIN.
  22          ID        7. IN THE ADMP MODEL, SOME OF THE OUTFLOW FROM CAMELBACK ROAD BASINS
  23          ID           WERE DIVERTED TO EAST ALONG CAMELBACK ROAD (THE PEAK FLOW IS
  24          ID           180 CFS).  NO STRUCTURE WAS RECOMMENDED IN THE ADMP UPDATE. PB
  25          ID           DESIGNED 3-30" PIPES TO DIVERT SOME FLOW TO THE EXISTING CAMELBACK
  26          ID           ROAD CHANNEL LOCATED AT SOUTH SIDE OF CAMELBACK ROAD.
  27          ID        9. PEBBLE CREEK AND PALM VALLEY 8 DEVELOPMENTS WERE INCLUDED IN THE
  28          ID           MODEL BASED ON HEC-1 MODEL PROVIDED BY DEL RIO ENGINEERING.
  29          ID       10. MCDOWELL ROAD DETENTION BASIN WERE DIVIDED INTO TWO DETENTION BASINS
  30          ID           ONE IS CALLED MCDOWELL ROAD UPPER BASIN AND THE OTHER ONE IS CALLED
  31          ID           MCDOWELL ROAD LOWER BASIN
  32          ID       11  PROPOSED I-10/303L TI (ULTIMATED CONDITION) ON-SITE DRAINAGE SYSTEM
  33          ID           WAS REFLECTED IN THE MODEL.  THERE ARE TOTAL 11 ON-SITE BASINS.
  34          ID
  35          ID        EXISTING CONDITION WITH PROJECTS IN PLACE SCENARIO
  36          ID        REVISED BY PARSONS BRINCKERHOFF    DATE: Aug 2008
  37          ID                                           FILE NAME: EX_SPLT.DAT
  38          ID        ************************************************************************
  39          ID        DRAFT PREFERRED ALTERNATIVE LEVEL III
  40          ID
  41          ID        INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
  42          ID        SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
  43          ID        BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
  44          ID        LUKE AIR FORCE BASE CRASH ZONE AREA
  45          ID
  46          ID        **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
  47          ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
  48          ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
  49          ID        TANKS/AGUA FRIA ADMS, Date: October 1991
  50          ID
  51          ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
  52          ID        100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
  53          ID
  54          ID                                  REVISED BY URS     DATE: 01-14-04
  55          ID                                                     FILE: L33PE4H.DAT
```

HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
  56          ID
  57          ID        NOTES:
  58          ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
  59          ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
  60          ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
```

```
SQ       0    6.20   18.40   19.44   20.17   21.07   21.99   22.87   23.70   24.50
SQ   25.23   26.05   26.79   27.51   28.22  245.29  767.13 1687.75
*

KK    1LP1
KM   COMBINE HYDROGRAPHS
HC        2
* ************************************************************************************
*   PB MODIFIED
*   THE ROUTING FROM BASIN TO WADDELL ROAD ROAD WAS MODIFIED BASED ON PB'S DESIG
* ************************************************************************************
*
```



```
LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

KK   RLPDS
KM    ROUTING CHANNEL LENGTH TO !LP1
*    FROM THE BASIN NORTH OF WADDELL ROAD TO WADDELL ROAD
*
*  RS   1.7              -1.0     0.0
*  RC 0.013   0.013   0.013    2628  0.0027
*  RX     0    20.0    26.0    32.0    42.0    48.0    54.0    74.0
*  RY1187.8  1186.8  1183.8  1180.8  1180.8  1183.8  1186.8  1187.8
RS      0.6              -1.0     0.0
RC    0.035   0.015   0.035    1594  0.0036
RX        0       3       5      15      31      41      61      64
RY     1134    1133    1133    1128    1128    1133    1133    1134
*

KK  DC131A
KM   RETURN DIVERT AT LP1
DR  DI145A
*  COMBINE PER LEVEL III

KK    !LP1
KM   COMBINE HYDROGRAPHS
HC        2    5.87
* HC      2   10.44
* KKR145AC
* KM   RIUTE FLOW FROM CP131A TO CP145A
*  KK  2LP1
*  KM COMBINE ROUTED FLOW FROM OFFLINE BASIN WITH MAIN-CHANNEL FLOW AT !LP1
*  HC      2    9.31
* HC      2   11.22
*  ************************************************************************************
*   PB MODIFIED
*   CHANNEL ROUTING WERE MODIFIED BASED ON REVISED CHANNEL DIMENSION
*  ************************************************************************************
*  KK  RLP1
*  RS   1.0              -1.0     0.0
*  RC 0.013   0.013   0.013    3990  0.0026
*  RX     0    16.2    20.2    24.2    28.2    32.2    36.2    52.4
*  RY1235.4  1227.3  1227.3  1227.3  1227.3  1227.3  1227.3  1235.4

KK  RLP1-1
KM   ROUTING CHANNEL FROM WADDELL ROAD TO DROP STRUCTURE #5
RS      0.7              -1.0     0.0
RC    0.035   0.015   0.035    2450  0.0035
RX        0       3       5      17      33      45      65      68
RY   1227.0  1226.0  1226.0    1220    1220  1226.0  1226.0  1227.0

KK  RLP1-2
KM   ROUTING CHANNEL FROM  DROP STRUCTURE #5 TO CACTUS ROAD
RS      0.6              -1.0     0.0
RC    0.035   0.015   0.035    2632  0.0033
RX        0       3       5      17      42      54      74      77
RY   1217.0  1216.0  1216.0    1210    1210  1216.0  1216.0  1217.0
```

L13 DS5

DS5 L19


```
LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

KK  DC145A
KM   RETURN DIVERT AT LP2
DR  2D164A
*  COMBINE PER LEVEL III

KK    !LP2
* KO     1                                21
KM   COMBINE HYDROGRAPHS AT LP2
HC        2    8.17
*  ************************************************************************************
*   PB MODIFIED
*   CHANNEL ROUTING WERE MODIFIED BASED ON REVISED CHANNEL DIMENSION
*  ************************************************************************************
*  KK  RLP2
*  RS   1.3              -1.0     0.0
*  RC 0.013   0.013   0.013    5444  0.0027
*  RX     0    14.0    18.2    22.4    26.6    30.8    35.0    49.0
*  RY1187.8  1180.8  1180.8  1180.8  1180.8  1180.8  1180.8  1187.8

KK  RLP2-1
KM   ROUTE FLOW FROM CACTUS ROAD TO DROP STRUCTURE #7
RS      0.6              -1.0     0.0
RC    0.035   0.015   0.035    2065  0.0040
RX        0       3       5      17      52      64      84      87
RY     1204    1203    1203    1197    1197    1203    1203    1203

KK  RLP2-2
KM   ROUTE FLOW FROM DROP STRUCTURE #7 TO PEORIA AVE
```

SRL19
(From URS Model)

```
3981      KK  DRLP2
        * KO   1                    21
3982      KM  RETURN DIVERT AT PROPSED OFF-LINE BASIN CACTUS
3983      DR  DILP2
        * STORAGE ROUTE THROUGH PROPOSED BASIN AT LP2 - CACTUS

3984      KK  SRLP2
        * KO   1                    21
3985      KM  STORAGE ROUTE
3986      RS    1  STOR    0     0
3987      SV    0  29.9  44.8  59.7  74.7  89.6  119.5  238.9  358.4   448
3988      SQ    0    0    0    0    0    0    0    42   253   308
3989      SE  1197  1198 1198.5  1199 1199.5  1200  1201  1205  1209  1212
```

Job No. 79902 | No.

Computation

Project: Loop 303 / White Tanks ADMPU AHA | **Location: Cactus at L303 (DL19)** | Computed AM | Date 10/27/08

Subject: Weir Flow Analysis | Checked LP | Date 3/10/09

Task: Weir Calculations | Sheet 1 | Of x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	14	13.5	139	13.75	12.5	0	0.00	13	0	0.00	13.5	0	0.00	CHECK	14	0.25	52.13	DONE
south	13.5	13	139	13.25	12.5	0	0.00	13	0	0.00	13.5	0.25	52.13		14	0.75	270.85	
south	13	12.54	129	12.77	12.5	0	0.00	13	0.23	42.69	13.5	0.73	241.38		14	1.23	527.92	
south	12.54	12	146	12.27	12.5	0.23	48.31	13	0.73	273.19	13.5	1.23	597.49		14	1.73	996.65	
south	12	12	69	12	12.5	0.5	73.19	13	1	207.00	13.5	1.5	380.28		14	2	585.48	
south	12	12.85	32	12.425	12.5	0.075	1.97	13	0.575	41.86	13.5	1.075	107.00		14	1.575	189.75	
southeast	12.85	13	32	12.925	12.5	0	0.00	13	0.075	1.97	13.5	0.575	41.86		14	1.075	107.00	
east	13	13.58	103	13.29	12.5	0	0.00	13	0	0.00	13.5	0.21	29.74		14	0.71	184.86	
east	13.58	14	79	13.79	12.5	0	0.00	13	0	0.00	13.5	0	0.00		14	0.21	22.81	
						TOTALS:	123.47			566.70			1449.87				2937.45	

Graph Computations:

Station	Elevation
0	14
139	13.5
278	13
407	12.54
553	12
622	12
654	12.85
686	13
789	13.58
868	14

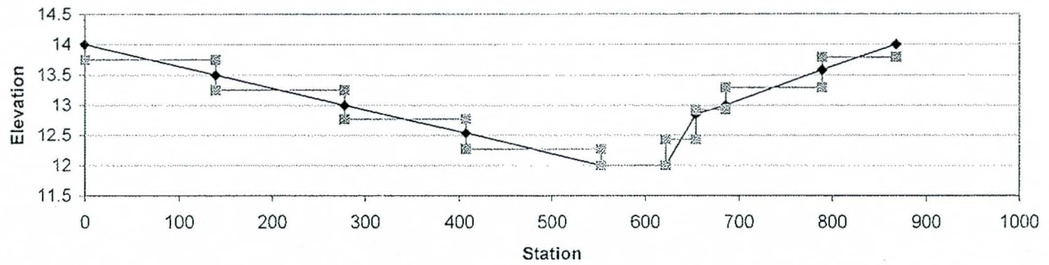
Weir Approximation:

Station	Elevation
0	13.75
139	13.75
139	13.25
278	13.25
278	12.77
407	12.77
407	12.27
553	12.27
553	12
622	12
622	12.425
654	12.425
654	12.925
686	12.925
686	13.29
789	13.29
789	13.79
868	13.79

Culvert Flows (cfs):

south	0
southeast	0
east	0

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	123.47	100%	Q(south)	564.73	100%	Q(south)	1378.28	95%	Q(south)	2622.79	89%
Q(southeast)	0.00	0%	Q(southeast)	1.97	0%	Q(southeast)	41.86	3%	Q(southeast)	107.00	4%
Q(east)	0.00	0%	Q(east)	0.00	0%	Q(east)	29.74	2%	Q(east)	207.67	7%
	123.47			566.70			1449.87			2937.45	

First DI	East to South			
Inflow	123.47	566.70	1449.87	2937.45
Outflow	123.47	564.73	1378.28	2622.79

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	0.00	1.97	71.59	314.67
Outflow	0.00	1.97	41.86	107.00

Assumes diversion is to southeast

L303 @ Cactus

Review by L. Potter 9/29/08

DL 19

mley-Horn and Associates, Inc.

CALCULATION SUMMARY SHEET

Calculation Title: Existing Roadway Overtopping Hydraulic Analysis

Project: State Route 303 Loop, Cactus, Waddell & Bell Roads

Client: Arizona Department of Transportation

KHA Project Number: 091665004

Total Number of Pages (including this page): 26

Prepared By: Ben Liu Date: 9/25/08

Responsible Professional Check: John R. Klamut, P.E. Date: 9/25/08

Quality Reviewer Check: Robert A. Eichinger, P.E. Date: 9/26/08

Corrected by Responsible Professional: John R. Klamut Date: 9/29/08

Corrections Verified by Quality Reviewer: Robert A. Eichinger Date: 9/29/08

Purpose:

Determine existing 100-year flow hydraulics at the Cactus Road & Loop 303 and Waddell Road & Loop 303 intersections.

component of flow to SE?

Assumptions/References:

1. Broad-crested weir calculations were completed using Bentley's software – FlowMaster *Service Pack 3*, 2005.
2. Weir calculations were back-checked using the general weir equation $Q=CLH^{3/2}$.
3. Composite roadway overtopping performance curves creating following methodology outlined in Flood Control District of Maricopa County *Drainage Design Manual for Maricopa County, Hydraulics: Culverts & Bridges*, September 2003 (Draft). Applicable pages attached at the back of this document.
4. 100-year flows were taken from the Flood Control District of Maricopa County *Loop 303 Corridor/White Tanks, Level III Area Drainage Master Plan Update Report (Contract FCD 99-40),* Final Volume IV, prepared by URS, February 2005.

NOAA 2

5. General direction of overland flow in this region is from the northwest towards the southeast.
6. Weir profiles drawn from1 ft existing contours data, surveyed by Aztec Engineering in February 2006.

mley-Horn
and Associates, Inc.

CALCULATION SUMMARY SHEET

Conclusion/Recommendation/Results:

For greater accuracy, the overtopping crest at each intersection was split into a number of sections based on known survey. These segments for each weir profile can be seen in the attached exhibits. Complete hydraulic results of the composite weir analysis are shown in the attached summary tables and FlowMaster reports.

CACTUS ROAD INTERSECTION

100-Year Water Surface Elevation	1213.44	ft
Cactus Rd Overflow Q_{100}	1270	cfs
L303 Overflow Q_{100}	53	cfs
TOTAL Q_{100}	1323	cfs
ADMP Q_{100}	1318	cfs

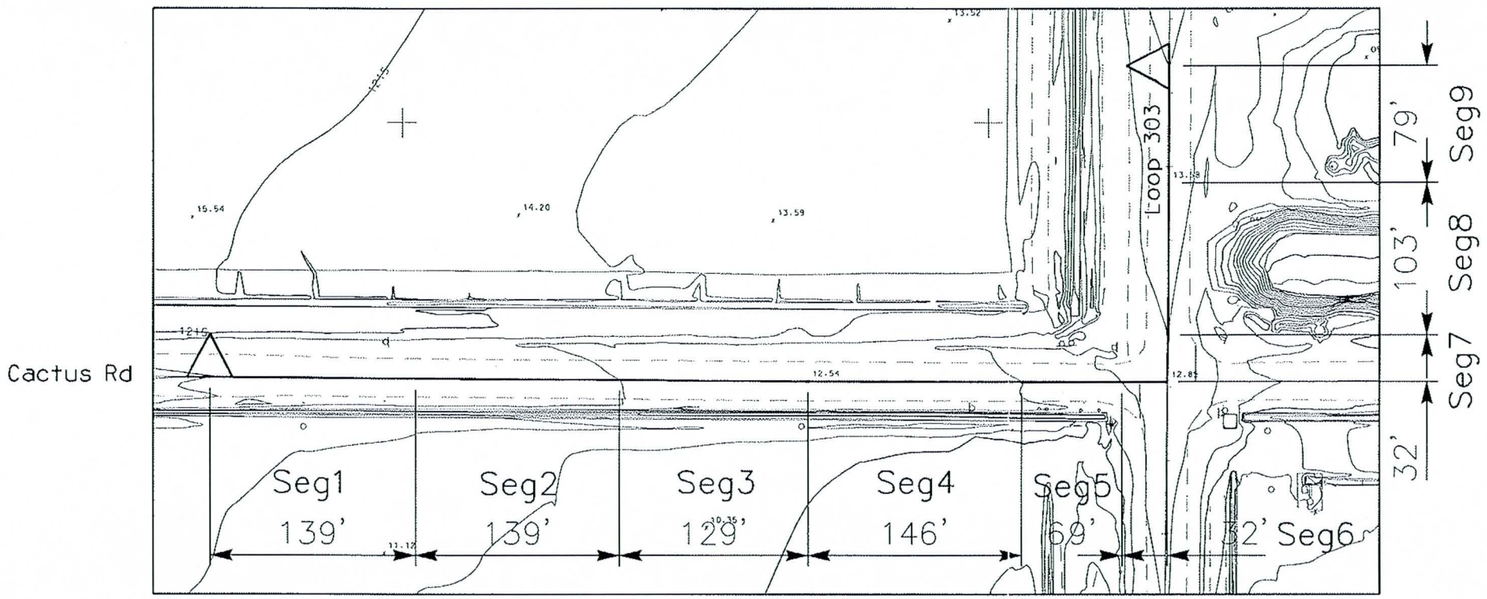
TO SE?

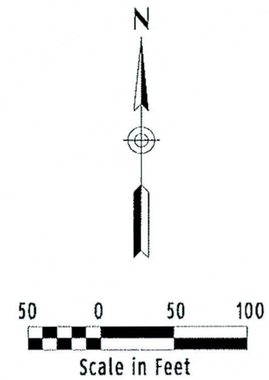
WADDELL ROAD INTERSECTION

100-Year Water Surface Elevation	1238.03	ft
Waddell Rd Overflow Q_{100}	886	cfs
L303 Overflow Q_{100}	97	cfs
TOTAL Q_{100}	983	cfs
ADMP Q_{100}	979	cfs

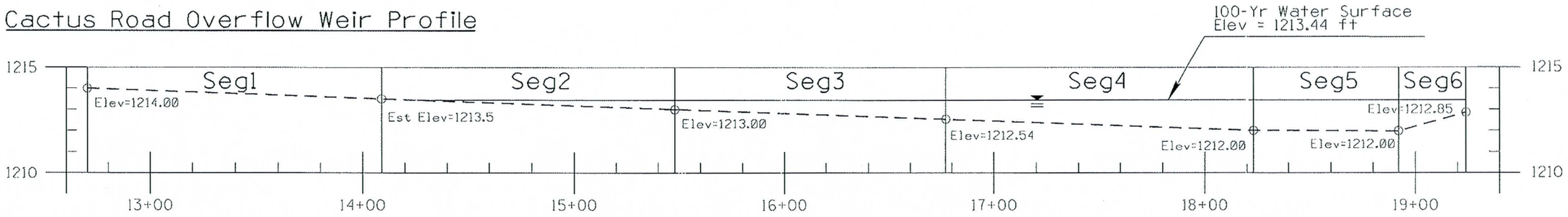
The hydrologic model in the Area Drainage Master Plan shows the 100-year flows heading to the east at these intersections (see "Existing Conditions HEC-1" exhibit attached), but this more detailed hydraulic analysis indicates that the bulk of 100-year flows head towards the south at both intersections. In order to replicate existing conditions, interim improvements constructed as part of this project will be built to continue directing flow towards the south.

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	303-A-NFA		117	
		303 MA 013			

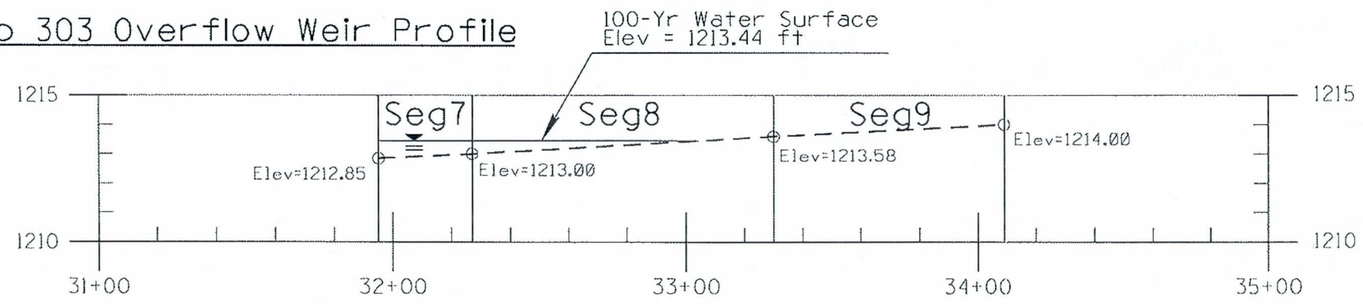




Cactus Road Overflow Weir Profile



Loop 303 Overflow Weir Profile



Notes:
1. Segment break points defined by contours and known survey points.

	NAME	DATE
DESIGN	BMI	09/08
DRAWN	BMI	09/08
CHECKED	JRH	09/08

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION

Kimley-Horn and Associates, Inc.
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EXISTING ROADWAY OVERTOPPING HYDRAULIC ANALYSIS

ROUTE: SR 303L
LOCATION: CACTUS ROAD TRAFFIC INTERCHANGE

TRACS NO. H7239 01D

DWG NO. ___ OF ___

SURVEY NO. | FINISHED PLANS | REVISIONS | LOCATION | DATE

9:51:44 AM 9/29/2008 BENJAMIN.LIU K:\RDWY\09]665004-L303BELL\CADD\CACTUS\DRAINAGE\SPLIT FLOW ANALYSIS\C-SPLIT_FLOW.DGN

Weir Equation Backcheck

Label	Crest Length L (ft)	Crest Elev (ft)	HW Above Crest H (ft)	Discharge (cfs)
Cactus Weir Seg 1	139	13.75	-0.306084	0
Cactus Weir Seg 2	139	13.25	0.193916	35.60881
Cactus Weir Seg 3	129	12.77	0.673916	214.1016
Cactus Weir Seg 4	146	12.27	1.173916	557.0957
Cactus Weir Seg 5	69	12	1.443916	359.1562
Cactus Weir Seg 6	32	12.43	1.013916	98.0109
L303 Weir Seg 7	32	12.93	0.513916	35.36794
L303 Weir Seg 8	103	13.29	0.153916	18.65887
L303 Weir Seg 9	79	13.79	-0.346084	0
Cactus Rd Sum =				1264
L303 Sum =				54
TOTAL =				1318

Constants	
Headwater Elev (ft) =	13.44
Weir Coef C =	3.0

Discharge calculated using Weir Equation:

$Q = CLH^{1.5}$

(Submergence Factor assumed to be 1.0)

Q_{100} in ADMP (cfs) = 1318

Iterated to find Sum Q that matched Q_{100} in ADMP

FlowMaster Analysis

Label	Discharge (cfs)	Headwater Elev (ft)	Crest Elev (ft)	Tailwater Elev (ft)	Surface Type	Crest Breadth (ft)	Crest Length (ft)	HW Above Crest (ft)	Adj Weir Coef C	Velocity (ft/s)
Cactus Weir Seg 1		13.44	13.75	10	Paved	20	139			
Cactus Weir Seg 2	34	13.44	13.25	10	Paved	20	139	0.19	2.96	1.29
Cactus Weir Seg 3	214	13.44	12.77	10	Paved	20	129	0.67	3.02	2.47
Cactus Weir Seg 4	561	13.44	12.27	10	Paved	20	146	1.17	3.04	3.29
Cactus Weir Seg 5	362	13.44	12	10	Paved	20	69	1.44	3.04	3.65
Cactus Weir Seg 6	99	13.44	12.43	10	Paved	20	32	1.01	3.04	3.05
L303 Weir Seg 7	35	13.44	12.93	10	Paved	20	32	0.51	3.01	2.15
L303 Weir Seg 8	18	13.44	13.29	10	Paved	20	103	0.15	2.95	1.14
L303 Weir Seg 9		13.44	13.79	10	Paved	20	79			

Cactus Rd Sum = 1270

L303 Sum = 53

TOTAL = 1323

Q_{100} in ADMP (cfs) = 1318

Notes:

1. Headwater Elev determined iteratively to match total discharge in ADMP.
2. Crest Elev taken as the average roadway elevation for each segment.
3. Tailwater Elev set at constant value below roadway elev -- submergence factor assumed to be 1.0 for this analysis.
4. Adj Weir Coef calculated within Flowmaster from headwater and tailwater depths; per methodology in FHWA HDS No. 5 (1985).

Worksheet for Cactus Weir Seg 2

Project Description

Solve For	Discharge

Input Data

Headwater Elevation	13.44	ft
Crest Elevation	13.25	ft
Tailwater Elevation	10.00	ft
Crest Surface Type	Paved	
Crest Breadth	20.00	ft
Crest Length	139.00	ft

Results

Discharge	34.02	ft^3/s
Headwater Height Above Crest	0.19	ft
Tailwater Height Above Crest	-3.25	ft
Weir Coefficient	2.96	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	2.96	US
Flow Area	26.41	ft^2
Velocity	1.29	ft/s
Wetted Perimeter	139.38	ft
Top Width	139.00	ft

Worksheet for Cactus Weir Seg 3

Project Description

Solve For	Discharge

Input Data

Headwater Elevation	13.44	ft
Crest Elevation	12.77	ft
Tailwater Elevation	10.00	ft
Crest Surface Type	Paved	
Crest Breadth	20.00	ft
Crest Length	129.00	ft

Results

Discharge	213.90	ft³/s
Headwater Height Above Crest	0.67	ft
Tailwater Height Above Crest	-2.77	ft
Weir Coefficient	3.02	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	3.02	US
Flow Area	86.43	ft²
Velocity	2.47	ft/s
Wetted Perimeter	130.34	ft
Top Width	129.00	ft

Worksheet for Cactus Weir Seg 4

Project Description

Solve For	Discharge

Input Data

Headwater Elevation	13.44	ft
Crest Elevation	12.27	ft
Tailwater Elevation	10.00	ft
Crest Surface Type	Paved	
Crest Breadth	20.00	ft
Crest Length	146.00	ft

Results

Discharge	561.30	ft^3/s
Headwater Height Above Crest	1.17	ft
Tailwater Height Above Crest	-2.27	ft
Weir Coefficient	3.04	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	3.04	US
Flow Area	170.82	ft^2
Velocity	3.29	ft/s
Wetted Perimeter	148.34	ft
Top Width	146.00	ft

Worksheet for Cactus Weir Seg 5

Project Description

Solve For	Discharge

Input Data

Headwater Elevation	13.44	ft
Crest Elevation	12.00	ft
Tailwater Elevation	10.00	ft
Crest Surface Type	Paved	
Crest Breadth	20.00	ft
Crest Length	69.00	ft

Results

Discharge	362.47	ft^3/s
Headwater Height Above Crest	1.44	ft
Tailwater Height Above Crest	-2.00	ft
Weir Coefficient	3.04	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	3.04	US
Flow Area	99.36	ft^2
Velocity	3.65	ft/s
Wetted Perimeter	71.88	ft
Top Width	69.00	ft

Worksheet for Cactus Weir Seg 6

Project Description

Solve For	Discharge

Input Data

Headwater Elevation	13.44	ft
Crest Elevation	12.43	ft
Tailwater Elevation	10.00	ft
Crest Surface Type	Paved	
Crest Breadth	20.00	ft
Crest Length	32.00	ft

Results

Discharge	98.65	ft^3/s
Headwater Height Above Crest	1.01	ft
Tailwater Height Above Crest	-2.43	ft
Weir Coefficient	3.04	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	3.04	US
Flow Area	32.32	ft^2
Velocity	3.05	ft/s
Wetted Perimeter	34.02	ft
Top Width	32.00	ft

Worksheet for L303 Weir Seg 7

Project Description

Solve For	Discharge

Input Data

Headwater Elevation	13.44	ft
Crest Elevation	12.93	ft
Tailwater Elevation	10.00	ft
Crest Surface Type	Paved	
Crest Breadth	20.00	ft
Crest Length	32.00	ft

Results

Discharge	35.07	ft^3/s
Headwater Height Above Crest	0.51	ft
Tailwater Height Above Crest	-2.93	ft
Weir Coefficient	3.01	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	3.01	US
Flow Area	16.32	ft^2
Velocity	2.15	ft/s
Wetted Perimeter	33.02	ft
Top Width	32.00	ft

Worksheet for L303 Weir Seg 8

Project Description

Solve For	Discharge

Input Data

Headwater Elevation	13.44	ft
Crest Elevation	13.29	ft
Tailwater Elevation	10.00	ft
Crest Surface Type	Paved	
Crest Breadth	20.00	ft
Crest Length	103.00	ft

Results

Discharge	17.63	ft^3/s
Headwater Height Above Crest	0.15	ft
Tailwater Height Above Crest	-3.29	ft
Weir Coefficient	2.95	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	2.95	US
Flow Area	15.45	ft^2
Velocity	1.14	ft/s
Wetted Perimeter	103.30	ft
Top Width	103.00	ft

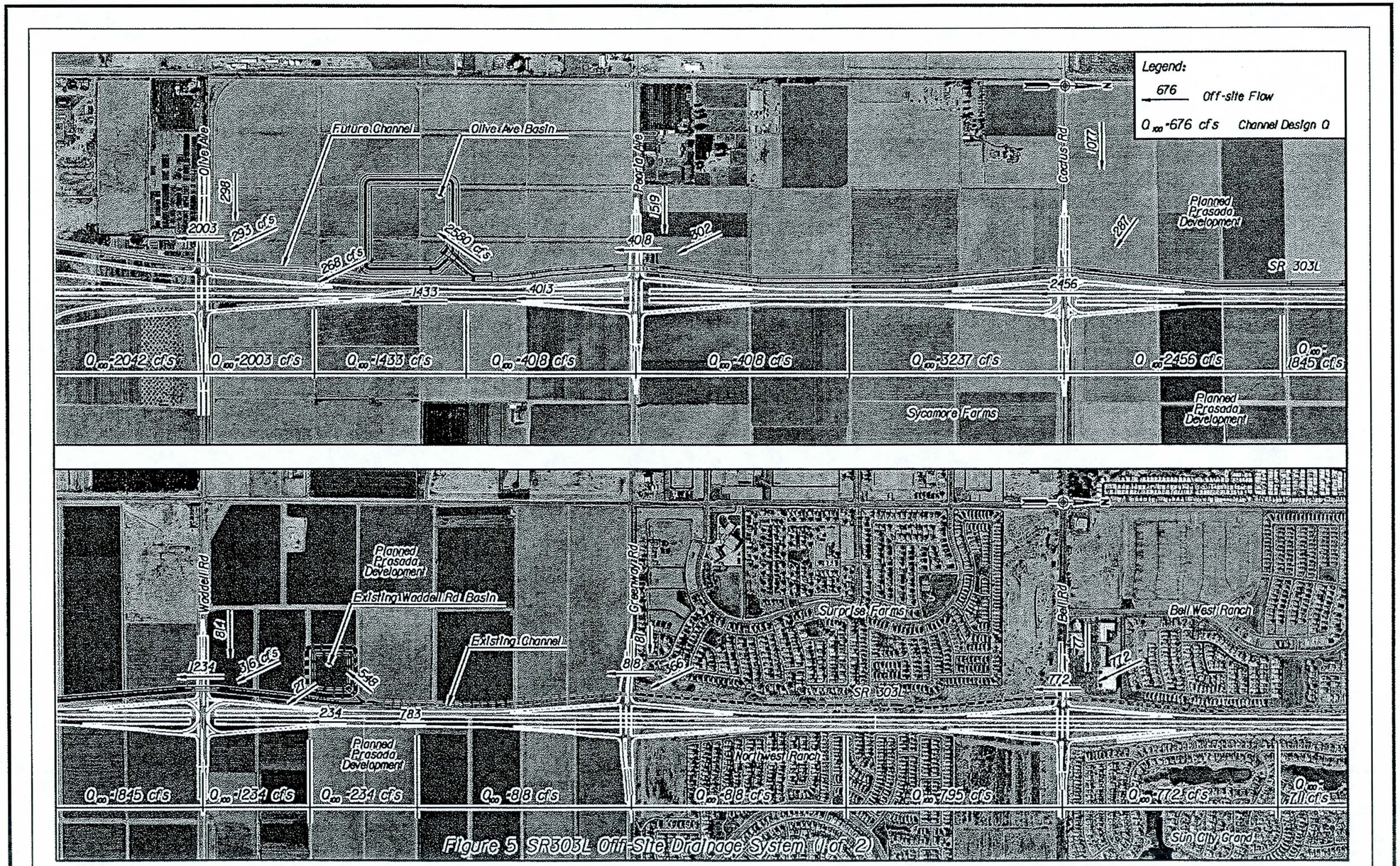


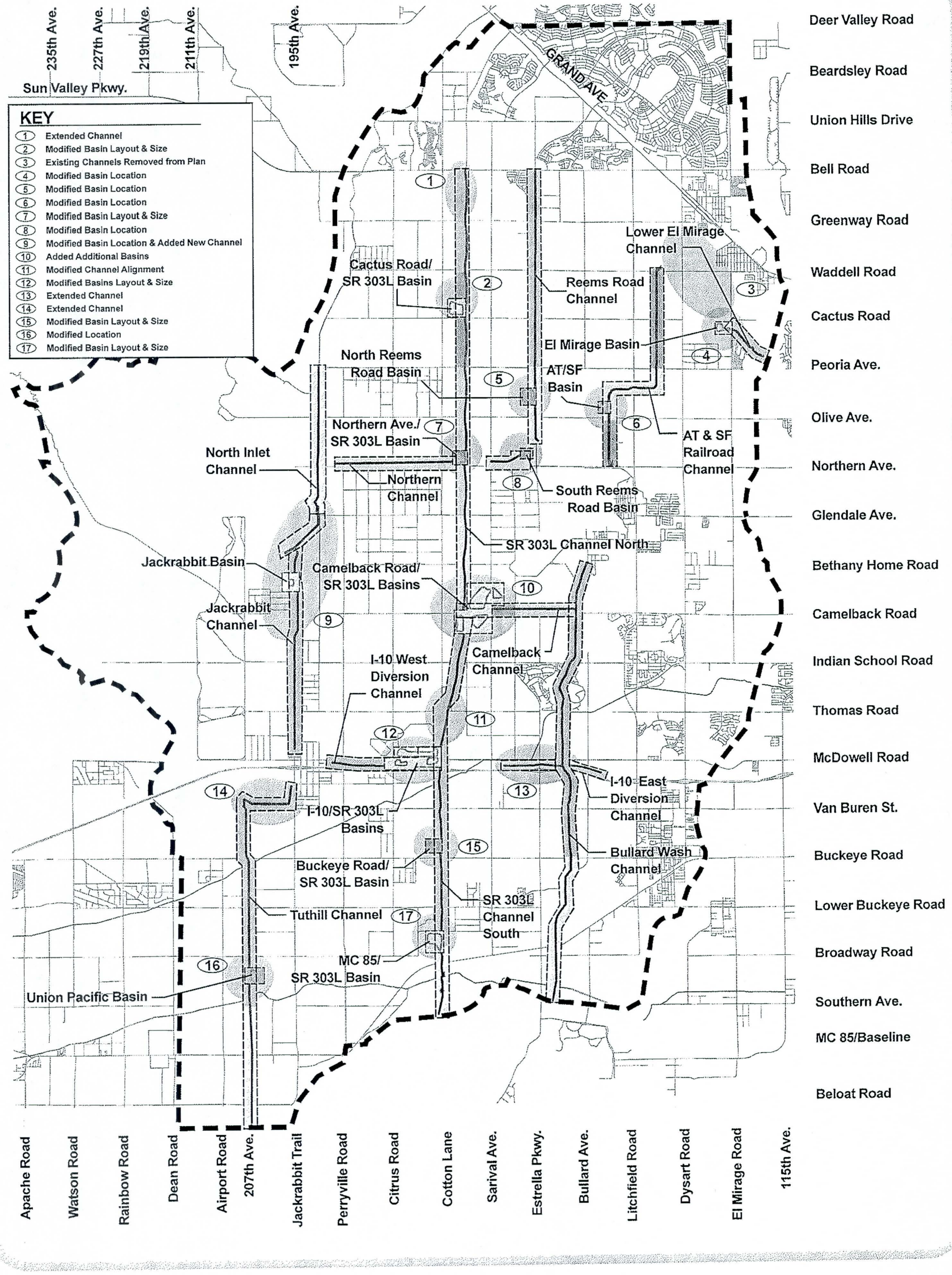
Figure 5 SR303L Off-Site Drainage System (1 of 2)

Figure 5 – SR303L Off-Site Drainage System
1 of 2

W28, S70, L72, B65, D69
L09, L13, L19, L27, L34

Table 2.4B
Proposed Basin Summary
Existing Condition Hydrology

Channel/ Location ID	Qin (cfs)	Qout (cfs)	Vin (ac-ft)	Peak Storage (ac-ft)	Max. Vol. Provided (ac-ft)	Peak Stage (ft)	on/off line	Combined Total Outflow (cfs)	Length Low-Flow Basin Drain (ft)	Prop. Bot. Elev. (ft)	Prop. Top Elev. (ft)	Design FB (ft)	Actual FB (ft)	Backwater
Jackrabbit Channel														
SRJR1 (N. of Camelback)	850	65	42	41.5	43.9	1185.5	off-line	151	8,323	1,173.5	1,186.0	0.0	0.5	-----
Tuthill Channel														
SRTC5 (@ RxR)	1,646	550	109	108.5	108.5	898.0	off-line	618	4,390	890.0	898.0	0.0	-0.6	-----
I-10 Channel West														
SR10W7	1593	741	282	85.2	85.2	1022.0	on-line	N/A	2,487	1,010.5	1,022.0	0.0	0.0	-----
L303 Channel														
SRLP2 (Cactus Road)	2311	311	543	440	440.0	1212.0	off-line	587	5,630	1,197.0	1,212.0	0.0	0.0	-----
SRLP5 (Northern)	4241	442	354	334	333.0	1141.0	off-line	1380	6,934	1,126.0	1,141.0	0.0	0.0	-----
SRLP8 (Camelback)	2102	340	1081	705.9	700.0	1065.0	on-line	N/A	14,062	1,059.0	1,065.0	0.0	0.0	-----
SRLP12 (I-10)	1781	701	1166	591.5	590.0	1016.0	on-line	N/A	4,961	1,001.0	1,016.0	0.0	0.0	-----
SRLP14 (Yuma/Buckeye)	695	523	823	189.0	190.0	968.0	on-line	N/A	4,092	959.0	968.0	0.0	0.0	-----
SRLP16 (MC85)	751	448	938	325.0	325.0	913.0	on-line	N/A	2,872	903.0	913.0	0.0	0.0	-----
Reems/Northern Channel														
SRRM5 (Olive)	1,752	198	189	165.0	165.0	1134.0	off-line	818	1,449	1,127.0	1,134.0	0.0	0.0	-----
BSNR6(Northern)	477	0	55	55.0	61.1	1107.5	in-line	0	1,413	1,095.0	1,108.5	0.0	1.2	-----
AT&SF Railroad Channel														
SRRR7 (@Olive)	1,770	1285	331	81.3	142.7	1105.6	off-line	1439	1,832	1,097.5	1,111.5	0.0	6.1	-----
Lower El Mirage Channel														
(SRLE4 SW corner of Cactus and El Mirage)	1,312	813	191	56.9	80.0	1111.4	off-line	852	2,069	1,104.5	1,114.0	0.0	2.1	-----
Bullard Wash														
SRBD1S (I-10 and Bullard Wash)	2682	2011	813	134.9	138.0	990.2	off-line	575 - ADOT	4,390	978.5	990.2	0.0	-0.2	-----
								2239 - BLRD						



Basin & Channel Locations

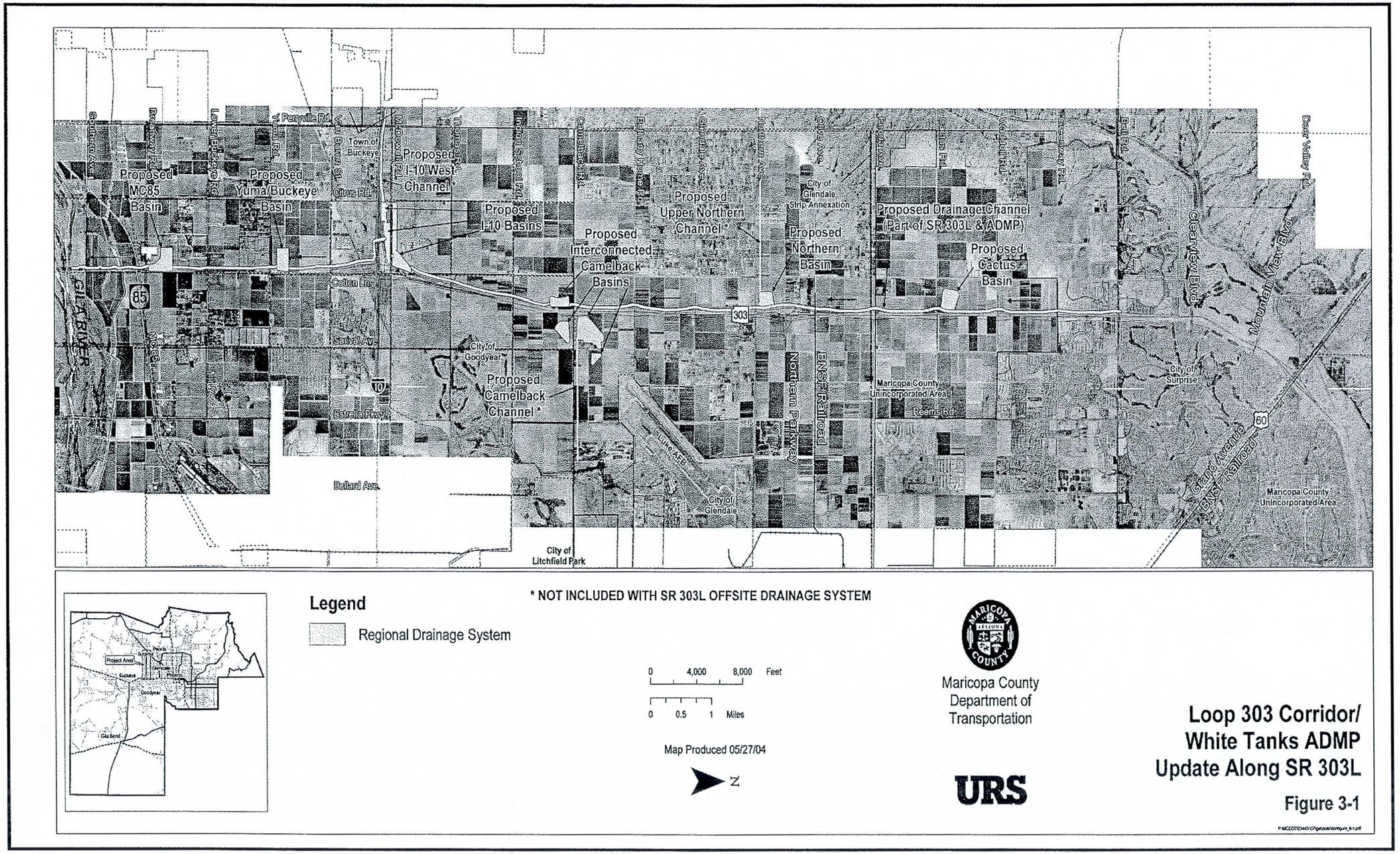


Figure 3 - Loop 303 Corridor/White Tanks ADMP Update Along SR303L

Table 2.2A
Proposed Channel Summary
Existing Condition Hydrology

Channel Name	Concentration Point	Qexist	[1]Approximate Qcap (cfs)	DS Invert (ft)	WSEL (ft)	Flow Depth (ft)	Channel Depth (ft)	Bottom Width (ft)	Side Slope (H:V)	Design s (ft/ft)	(Q/A) V ft/s	Froude Number F_N	Channel [3]Tw (ft)	(WSEL) [3]Tw (ft)
Camelback Channel														
	!CM2	372	372	1052.7	1056.5	3.8	4.7	5	(6:1)	*0.0020*	3.6	0.44	132	51
	!CM3	485	485	1047.5	1051.8	4.2	5.4	5	(6:1)	*0.0020*	3.8	0.45	143	57
	!CM4	783	783	1040.7	1044.8	4.1	6.3	26	(4:1)	*0.0020*	4.5	0.46	152	59
Jackrabbit Channel														
	!JR1	953	953	1177.1	1182.6	5.5	6.9	5	(6:1)	*0.0021*	4.6	0.47	167	71
	!JR2	813	813	1165.0	1169.3	4.3	5.3	15	(6:1)	*0.0025*	4.7	0.51	154	67
	!JR3	933	933	1147.4	1150.4	4.0	4.4	15	(6:1)	*0.0046*	6.1	0.61	140	51
	!JR4	1,324	1,324	1109.9	1114.3	4.4	4.4	25	(6:1)	*0.0035*	5.9	0.61	153	78
	!JR5	1,683	1,683	1080.3	1084.6	4.3	4.3	40	(6:1)	*0.0033*	6.0	0.60	171	92
SR303L URS DCR - Channel														
	!LP0	772	772	1275.6	1279.0	3.4	5.5	10	(2:1)	*0.0049*	13.7	1.57	62	24
	!LP	854	854	1247.9	1251.5	3.5	5.4	10	(2:1)	*0.0050*	14.3	1.61	62	24
	!LP1	1,612	1,612	1227.3	1232.5	5.1	5.9	12	(2:1)	*0.0031*	14.1	1.33	66	33
Cactus Road Basin	!LP2	2,898	2,898	1209.8	1215.9	6.0	6.1	20	(2:1)	*0.0026*	15.0	1.26	74	44
offline low flow/bypass channel	2LP2	587	587	1200.0	1202.6	2.5	4.8	20	(2:1)	*0.0026*	9.3	1.14	69	30
	!LP3	2,140	2,140	1180.8	1185.9	5.0	5.1	21	(2:1)	*0.0027*	13.8	1.26	71	41
	!LP4	2,636	2,636	1160.7	1165.9	5.2	5.2	26	(2:1)	*0.0025*	14.1	1.24	77	47
	!LP5	2,624	2,636	1136.3	1141.5	5.2	5.2	26	(2:1)	*0.0025*	14.0	1.23	77	47
offline low flow/bypass channel	2LP5	1,380	1,380	1130.4	1133.8	3.4	3.7	26	(2:1)	*0.0032*	12.5	1.32	71	40
	!LP6	1,539	1,539	1110.0	1115.1	5.1	6.4	16	(2:1)	*0.0020*	11.6	1.07	72	36
	!LP7	1,770	1,770	1087.1	1092.2	5.0	6.2	19	(2:1)	*0.0021*	12.1	1.10	74	39
	!LP8	2,097	2,097	1065.8	1070.7	4.9	6.1	26	(2:1)	*0.0020*	12.1	1.09	80	46
	!LP9	557	557	1047.9	1052.2	4.2	4.3	5	(2:1)	*0.0023*	9.8	1.08	52	22
	!LP10	624	624	1032.4	1036.1	3.7	3.7	5	(2:1)	*0.0052*	13.7	1.58	50	20
	!LP11	988	988	1014.5	1019.2	4.7	5.7	5	(2:1)	*0.0047*	14.8	1.56	58	24
	!LP13	697	701	984.8	988.5	3.6	3.8	8	(2:1)	*0.0041*	12.7	1.45	53	23
	!LP14	695	701	966.2	969.7	3.5	3.7	8	(2:1)	*0.0048*	13.5	1.54	53	22
	!LP15	676	676	934.2	937.7	3.4	4.2	8	(2:1)	*0.0048*	13.3	1.54	55	22
	!LP16	751	751	914.8	918.3	3.5	4.2	8	(2:1)	*0.0056*	14.5	1.67	55	22
	!LP17	447	448	884.3	888.7	4.3	5.5	5	(2:1)	*0.0013*	7.6	0.82	57	23
Upper Northern Channel														
	!NR1	256	256	1219.0	0.0	2.7	3.6	5	(6:1)	*0.0050*	4.6	0.66	115	37
	!NR2	1,309	1,309	1182.2	1186.3	4.0	4.1	30	(6:1)	*0.0039*	6.1	0.65	155	79
	!NR3	2,246	2,246	1143.5	1148.5	5.0	5.0	45	(6:1)	*0.0028*	6.0	0.56	189	105
	!NR4	2,308	2,308	1136.0	1141.0	5.0	5.0	50	(6:1)	*0.0025*	5.8	0.54	195	110
Lower Northern Channel	!NR5	262	262	1122.6	1125.9	3.3	4.3	5	(6:1)	*0.0020*	3.3	0.43	126	45
	!NR6	477	477	1096.7	1100.2	3.4	4.5	5	(6:1)	*0.0053*	5.5	0.71	129	47
Reems Road Channel														
	[2]RM1	709	516	1222.1	1226.6	4.5	5.7	6.5	(3:1)	*0.0040*	5.8	0.63	105	34
	[2]RM2	957	1,382	1208.2	1214.3	6.0	7.7	11.5	(4:1)	*0.0032*	6.5	0.60	147	60
	!RM3	1,366	1,366	1167.8	1172.0	4.1	4.2	30	(6:1)	*0.0037*	6.0	0.63	157	80
	!RM4	1,640	1,640	1142.7	1147.7	5.0	5.0	30	(6:1)	*0.0025*	5.5	0.53	169	90
	!RM5	2,179	2,179	1119.4	1124.6	5.1	5.2	40	(6:1)	*0.0027*	6.0	0.57	185	102
	!RM6	826	826	1100.6	1105.0	4.3	5.3	10	(6:1)	*0.0034*	5.3	0.59	148	63

Table 2.2A (continued)
Proposed Channel Summary
Existing Condition Hydrology

Channel Name	Concentration Point	Qexist	[1]Approximate Qcap (cfs)	DS Invert (ft)	WSEL (ft)	Flow Depth (ft)	Channel Depth (ft)	Bottom Width (ft)	Side Slope (H:V)	Design s (ft/ft)	(Q/A) V ft/s	Froude Number F_N	Channel [3]Tw (ft)	(WSEL) [3]Tw (ft)
AT&SF Railroad Channel														
	!RR1	425	425	1150.8	1154.5	3.6	3.9	10	(6:1)	*0.0020*	3.7	0.44	126	54
	!RR2	492	492	1146.2	1149.7	3.4	3.5	10	(6:1)	*0.0035*	4.7	0.58	120	52
	!RR3	785	785	1127.9	1131.9	4.0	4.0	10	(6:1)	*0.0046*	5.9	0.68	127	58
	!RR4	936	936	1110.1	1114.4	4.3	4.3	15	(6:1)	*0.0034*	5.4	0.59	139	67
	!RR5	970	970	1103.3	1108.5	5.2	5.2	15	(6:1)	*0.0015*	4.0	0.41	153	77
	!RR6	1,733	1,733	1098.8	1105.5	6.7	6.7	15	(6:1)	*0.0015*	4.7	0.42	176	95
	!RR7	1,770	1,770	1095.1	1101.9	6.8	6.8	15	(6:1)	*0.0015*	4.7	0.42	178	97
	!RR8	1,585	1,585	1081.1	1086.9	5.8	5.8	15	(6:1)	*0.0025*	5.5	0.53	162	85
Lower El Mirage Channel														
	!LE4	1,356	1,356	1107.2	1111.9	4.7	6.8	35	(3:1)	*0.0026*	5.9	0.54	151	63
	!LE5	865	865	1086.6	1090.6	4.0	5.1	15	(6:1)	*0.0038*	5.6	0.63	152	63
Bullard Wash Channel														
	!BD1N	2,103	2,103	1057.0	1047.3	5.2	7.0	45	(6:1)	*0.0020*	5.3	0.49	219	109
	!BD2N	3,244	3,244	1044.1	1049.8	5.7	7.8	65	(6:1)	*0.0020*	5.8	0.49	258	133
	!BD3N	3,410	3,410	1015.6	1020.7	5.0	6.7	65	(10:1)	*0.0027*	5.9	0.56	312	167
	!BD4N	3,248	3,410	1006.0	1010.8	4.7	6.4	102	(9:1)	*0.0018*	5.0	0.47	335	188
	!BD1S	3,556	3,556	985.5	990.4	4.9	6.4	90	(6:1)	*0.0025*	6.1	0.55	269	149
	!BD2S	2,321	2,321	980.9	984.4	3.5	3.8	95	(6:1)	*0.0033*	5.8	0.60	235	137
I-10 West Diversion Channel														
	!10W1	970	970	1045.8	N/A	3.8	4.5	25	(6:1)	*0.0035*	5.4	0.60	155	71
	!10W2	1,010	1,010	1039.7	1043.4	3.7	4.2	25	(6:1)	*0.0042*	5.9	0.66	150	69
	!10W3	1,046	1,046	1032.7	1036.5	3.7	4.1	25	(6:1)	*0.0042*	5.9	0.66	148	71
	!10W4	1,175	1,175	1028.5	1032.4	3.8	4.3	30	(6:1)	*0.0038*	5.8	0.63	158	77
	!10W5	1,588	1,588	1014.6	1018.9	4.3	5.0	35	(6:1)	*0.0036*	6.1	0.62	175	87
	!10W7	1,593	1,593	1014.6	1019.6	5.0	5.7	35	(6:1)	*0.0020*	5.0	0.48	186	95
	!10W8	743	743	1005.8	1010.5	4.6	5.5	10	(6:1)	*0.0020*	4.2	0.46	151	66
Tuthill Channel														
	!TC1	1,417	1,417	998.7	1003.5	4.7	5.8	20	(6:1)	*0.0037*	6.2	0.63	168	78
	!TC2	1,553	1,553	991.8	997.1	5.2	6.1	25	(6:1)	*0.0023*	5.3	0.51	180	89
	!TC3	1,491	1,491	957.0	961.9	4.8	5.1	25	(6:1)	*0.0029*	5.7	0.57	163	84
	!TC4	1,546	1,546	914.7	919.3	4.6	4.6	30	(6:1)	*0.0032*	5.9	0.59	163	85
	!TC5	1,926	1,926	886.8	891.4	4.6	4.6	40	(6:1)	*0.0033*	6.3	0.61	176	95
	!TC6	646	646	882.3	885.9	3.6	3.6	15	(6:1)	*0.0035*	5.0	0.59	128	58
	!TC7	1,323	1,323	863.6	867.8	4.1	4.2	45	(6:1)	*0.0020*	4.6	0.47	176	95
	!TC8	1,506	1,506	859.4	864.6	5.2	5.2	45	(6:1)	*0.0011*	3.8	0.35	192	107
	!TC9	1,503	1,506	854.8	860.1	5.3	5.3	45	(6:1)	*0.0010*	3.7	0.34	193	109
I-10 East Diversion Channel														
	10CE-US	575	575	984.5	988.6	4.1	4.5	12	(6:1)	*0.0019*	3.9	0.44	138	61
	10CE1	556	575	978.5	985.2	4.1	4.5	12	(6:1)	*0.0018*	3.8	0.43	138	62
I-10 Central Channel														
	!10C1	79	79	1005.4	1007.7	2.2	2.3	2	(6:1)	*0.0020*	2.4	0.40	90	29
	!10C2	131	131	1002.6	1005.3	2.7	2.7	2	(6:1)	*0.0020*	2.8	0.41	96	34
	!10C3	170	170	995.9	998.9	3.0	3.0	2	(6:1)	*0.0020*	2.9	0.42	101	38
	!10C4	243	243	982.2	985.5	3.2	3.3	2	(6:1)	*0.0026*	3.6	0.49	105	41

1. By normal depth computation.
2. Channel reach exists.
3. Top width.

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For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

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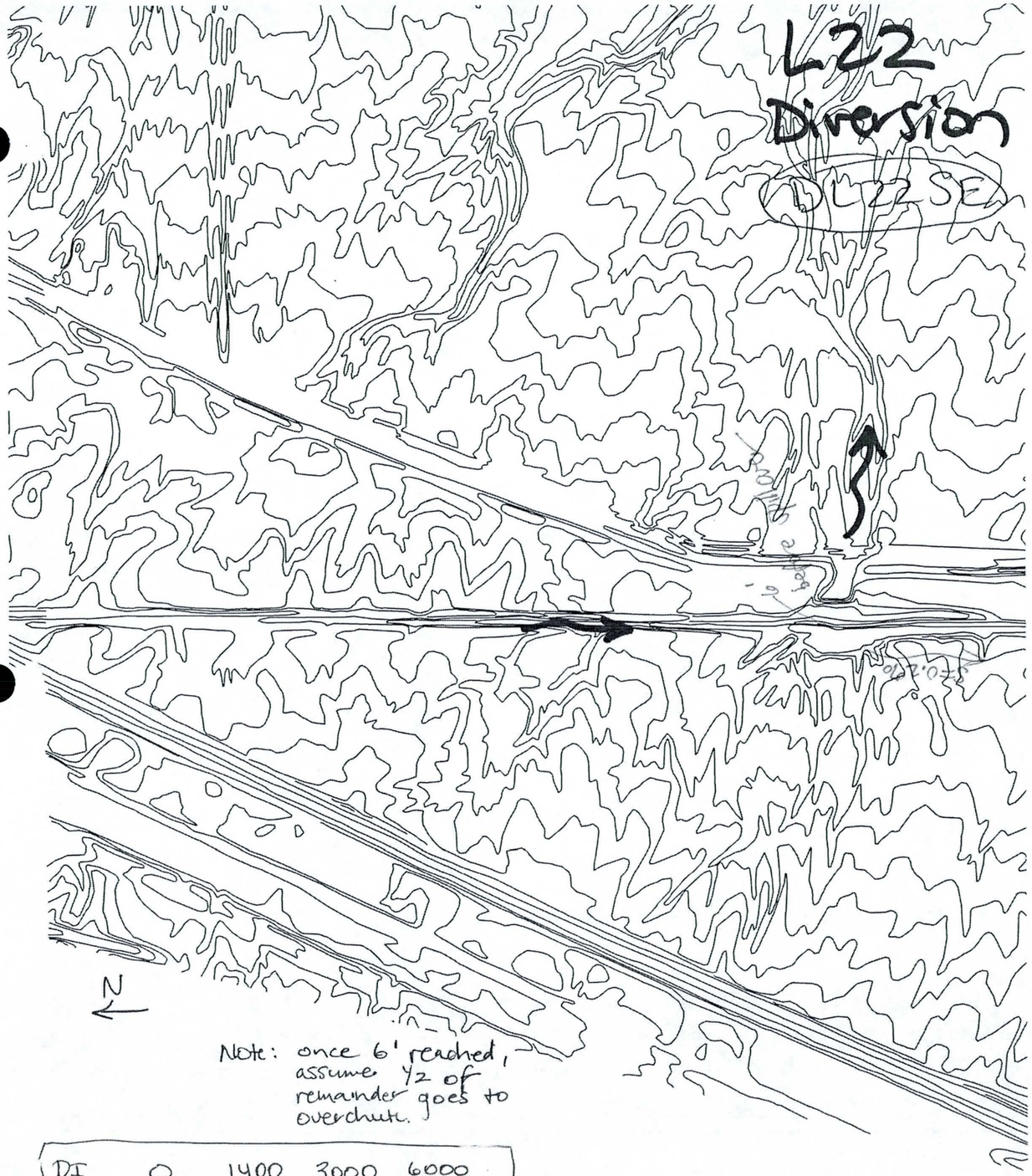
For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis



Note: once 6' reached, assume 1/2 of remainder goes to overchute.

DI	0	1400	3000	6000
DQ	0	0	800	2300

(to east)

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Diversion @ L22

Worksheet for Trapezoidal Channel - 1

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00200	ft/ft
Normal Depth	6.00	ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	25.00	ft

Results

Discharge	1394.24	ft^3/s
Flow Area	294.00	ft^2
Wetted Perimeter	74.48	ft
Top Width	73.00	ft
Critical Depth	3.73	ft
Critical Slope	0.01308	ft/ft
Velocity	4.74	ft/s
Velocity Head	0.35	ft
Specific Energy	6.35	ft
Froude Number	0.42	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.00	ft
Critical Depth	3.73	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.01308	ft/ft

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For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

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For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

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For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Location: Peoria at Cotton Ln (DL26)	Job No. 79902
Subject	Weir Flow Analysis		Computed AM
Task	Weir Calculations		Checked AP
			Sheet 1

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	7.9	6	281	6.95	5.2	0	0.00	5.7	0	0.00	6.2	0	0.00	CHECK	6.7	0	0.00	DONE
south	6	5.5	5	5.75	5.2	0	0.00	5.7	0	0.00	6.2	0.45	4.53		6.7	0.95	13.89	
southeast	5.5	5.5	15	5.5	5.2	0	0.00	5.7	0.2	4.02	6.2	0.7	26.35		6.7	1.2	59.15	
east	5.5	5	90	5.25	5.2	0	0.00	5.7	0.45	81.50	6.2	0.95	250.01		6.7	1.45	471.43	
east	5	4.7	203	4.85	5.2	0.35	126.10	5.7	0.85	477.25	6.2	1.35	955.25		6.7	1.85	1532.41	
east	4.7	5	104	4.85	5.2	0.35	64.60	5.7	0.85	244.50	6.2	1.35	489.39		6.7	1.85	785.08	
east	5	6	225	5.5	5.2	0	0.00	5.7	0.2	60.37	6.2	0.7	395.32		6.7	1.2	887.31	
east	6	7	220	6.5	5.2	0	0.00	5.7	0	0.00	6.2	0	0.00		6.7	0.2	59.03	
east	7	7	1	7	5.2	0	0.00	5.7	0	0.00	6.2	0	0.00		6.7	0	0.00	
						TOTALS:	190.70			867.66			2120.85				3808.30	

Graph Computations:

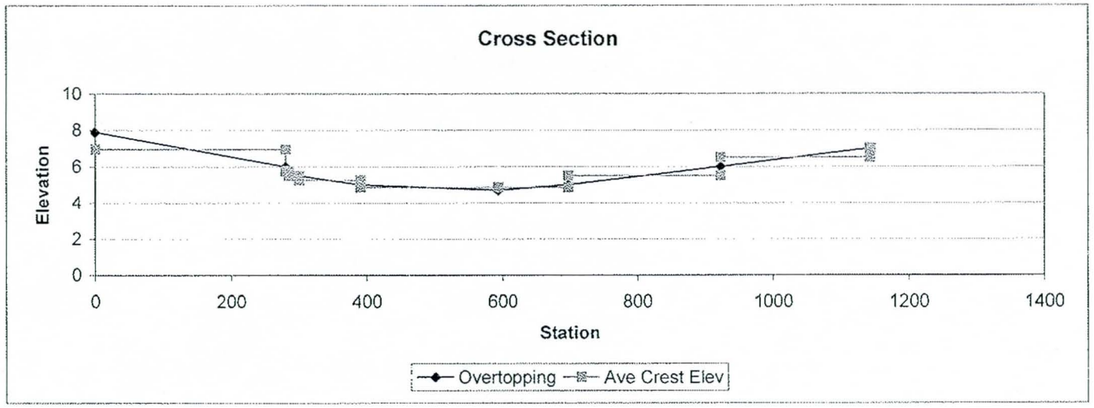
Station	Elevation
0	7.9
281	6
286	5.5
301	5.5
391	5
594	4.7
698	5
923	6
1143	7
1144	7

Weir Approximation:

Station	Elevation
0	6.95
281	6.95
281	5.75
286	5.75
286	5.5
301	5.5
301	5.25
391	5.25
391	4.85
594	4.85
594	4.85
698	4.85
698	5.5
923	5.5
923	6.5
1143	6.5
1143	7
1144	7

Culvert Flows (cfs):

south	0
southeast	0
east	0



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	0.00	0%	Q(south)	0.00	0%	Q(south)	4.53	0%	Q(south)	13.89	0%
Q(southeast)	0.00	0%	Q(southeast)	4.02	0%	Q(southeast)	26.35	1%	Q(southeast)	59.15	2%
Q(east)	190.70	100%	Q(east)	863.63	100%	Q(east)	2089.97	99%	Q(east)	3735.26	98%
	190.70			867.66			2120.85			3808.30	

First DI	East to South			
Inflow	190.70	867.66	2120.85	3808.30
Outflow	0.00	0.00	4.53	13.89

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	190.70	867.66	2116.32	3794.41
Outflow	0.00	4.02	26.35	59.15

Assumes diversion is to southeast

Cotton

↑104' to 1205, 455' to 1207

1206.5

1206.1

1205.6

1204.7

293'

1202.7

1201.6

1201.4

Small culvert (irrigation, diverged)

1207.9

281'

MH 1205.5

1201.1

15'

1209.4

1204.8

1204.1

1200

1199.3

1199.0

Peoria

↑ N

1" = 80'

D 26

Peoria @ Cotton Ln.

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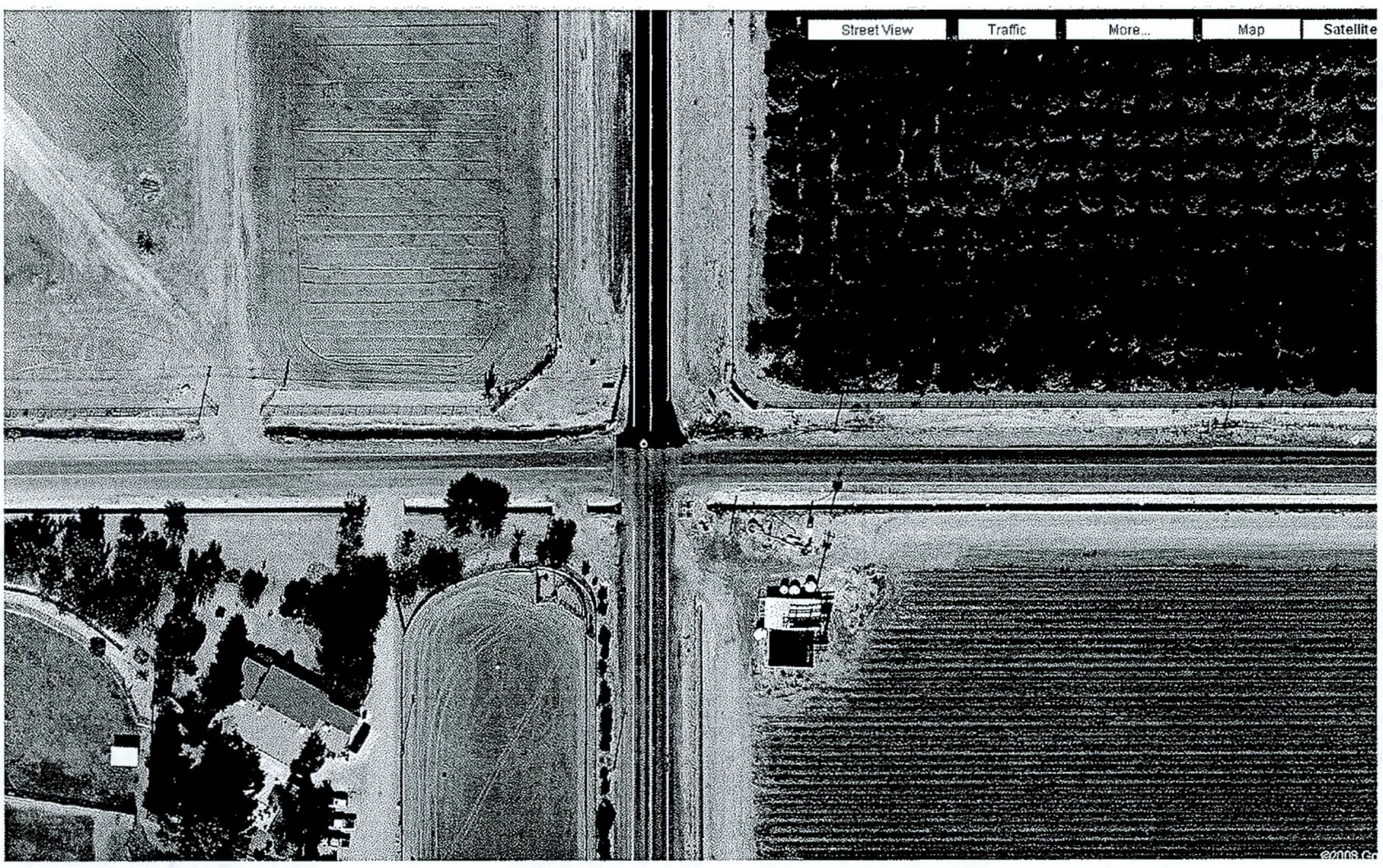

↑N

Peoria @ Cotton

CIP models
-Source

L27

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1*****************************************
*                                       *
*  FLOOD HYDROGRAPH PACKAGE (HEC-1)     *
*            JUN  1998                  *
*          VERSION 4.1                  *
*                                       *
*  DATE   07MAY09  TIME  08:05:50       *
*                                       *
*****************************************
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*****************************************
*                                       *
*  U.S. ARMY CORPS OF ENGINEERS         *
*  HYDROLOGIC ENGINEERING CENTER        *
*       609 SECOND STREET               *
*    DAVIS, CALIFORNIA 95616            *
*       (916) 756-1104                  *
*                                       *
*****************************************
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X     X  XXXXXXX   XXXXX          X
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X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
    1         ID         LOOP 303 OFF-SITE HYDROLOGY
    2         ID         MODIFIED BASED ON FCDMC'S WHITE TANKS/LOOP 303 CORRIDOR ADMP
    3         ID         THE MODIFICATIONS ARE DESCRIBED AS FOLLOWS:
    4         ID         1. THE CACTUS RD BASIN WAS REMOVED AND TWO RELATIVELY SMALL BASINS
    5         ID            LOCATED AT NORTH OF WADDELL ROAD AND NORTH OF OLIVE AVENUE WERE
    6         ID            ADDED TO THE MODEL BASED ON CMX'S HEC-1 MODEL PROVIDED IN DEC,2006.
    7         ID         2. FLOW DIVERSION TO THE OFF-LINE BASINS, SUCH AS WADDELL ROAD
    8         ID            BASIN, OLIVE AVENUE BASIN, NORTHERN AVENUE BASIN WERE ESTIMATED
    9         ID            USING HEC-RAS LATERAL WEIR ROUTINE.
   10         ID         3. DETENTION BASIN ELEVATION AND VOLUME RELATIONSHIPS WERE ESTIMATED
   11         ID            BASED ON 30% DESIGN OF THE BASIN.
   12         ID         4. ELEVATION AND OUTFLOW RELATIONSHIP WERE ESTIMATED BASED ON 30% DESIG
   13         ID            USING CULVERTMASTER. THE OUTFLOW INCLUDES FLOW FROM BLEED-OFF PIPE
   14         ID            AND FLOW FROM OUTFLOW PIPE.
   15         ID         5. CHANNEL ROUTING WERE MODIFIED BASED ON 30% DESIGN.
   16         ID         6. FLOW FROM THE PROPOSED FCDMC CHANNEL ALONG NORTHEN AVENUE  WILL
   17         ID            NOT BE COMBINED WITH FLOW FROM LOOP 303 OFF-SITE CHANNEL.
   18         ID            INSTEAD THE FLOW FROM THE CHANNEL ALONG NORTHERN AVENUE WILL GO
   19         ID            TO THE NORTHERN AVENUE BASIN DIRECTLY.  SO THE FLOW FROM THE
   20         ID            NORTHERN AVENUE CHANNEL WILL BE COMBINED WITH THE DIVERTED FLOW
   21         ID            FROM LOOP 303 CHANNEL AT NORTHERN AVENUE BASIN.
   22         ID         7. IN THE ADMP MODEL, SOME OF THE OUTFLOW FROM CAMELBACK ROAD BASINS
   23         ID            WERE DIVERTED TO EAST ALONG CAMELBACK ROAD (THE PEAK FLOW IS
   24         ID            180 CFS).  NO STRUCTURE WAS RECOMMENDED IN THE ADMP UPDATE. PB
   25         ID            DESIGNED 3-30" PIPES TO DIVERT SOME FLOW TO THE EXISTING CAMELBACK
   26         ID            ROAD CHANNEL LOCATED AT SOUTH SIDE OF CAMELBACK ROAD.
   27         ID         9. PEBBLE CREEK AND PALM VALLEY 8 DEVELOPMENTS WERE INCLUDED IN THE
   28         ID            MODEL BASED ON HEC-1 MODEL PROVIDED BY DEL RIO ENGINEERING.
   29         ID        10. MCDOWELL ROAD DETENTION BASIN WERE DIVIDED INTO TWO DETENTION BASINS
   30         ID            ONE IS CALLED MCDOWELL ROAD UPPER BASIN AND THE OTHER ONE IS CALLED
   31         ID            MCDOWELL ROAD LOWER BASIN
   32         ID        11  PROPOSED I-10/303L TI (ULTIMATED CONDITION) ON-SITE DRAINAGE SYSTEM
   33         ID            WAS REFLECTED IN THE MODEL.  THERE ARE TOTAL 11 ON-SITE BASINS.
   34         ID
   35         ID         EXISTING CONDITION WITH PROJECTS IN PLACE SCENARIO
   36         ID         REVISED BY PARSONS BRINCKERHOFF    DATE: Aug 2008
   37         ID                                            FILE NAME: EX_SPLT.DAT
   38         ID         ********************************************************************
   39         ID         DRAFT PREFERRED ALTERNATIVE LEVEL III
   40         ID
   41         ID         INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
   42         ID         SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
   43         ID         BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
   44         ID         LUKE AIR FORCE BASE CRASH ZONE AREA
   45         ID
   46         ID         **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
   47         ID         WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
   48         ID         Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
   49         ID         TANKS/AGUA FRIA ADMS, Date: October 1991
   50         ID
   51         ID         REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
   52         ID         100-YEAR, 24-HOUR STORM                 original file: WTADMS.24
   53         ID
   54         ID                                    REVISED BY URS     DATE: 01-14-04
   55         ID                                                       FILE: L33PE4H.DAT
```

HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
   56         ID
   57         ID         NOTES:
   58         ID         1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
   59         ID            2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
   60         ID         2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
```

```
3528          SQ       0    6.20   18.40   19.44   20.17   21.07   21.99   22.87   23.70   24.50
3529          SQ   25.23   26.05   26.79   27.51   28.22  245.29  767.13 1687.75
              *
3530          KK    1LP1
3531          KM   COMBINE HYDROGRAPHS
3532          HC       2
              * ************************************************************************************
              *   PB MODIFIED
              *   THE ROUTING FROM BASIN TO WADDELL ROAD ROAD WAS MODIFIED BASED ON PB'S DESIG
              * ************************************************************************************
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9.....10

3533          KK   RLPDS
3534          KM   ROUTING CHANNEL LENGTH TO !LP1
              *   FROM THE BASIN NORTH OF WADDELL ROAD TO WADDELL ROAD
              *
              *  RS   1.7              -1.0     0.0
              *  RC 0.013   0.013   0.013    2628  0.0027
              *  RX     0    20.0    26.0    32.0    42.0    48.0    54.0    74.0
              *  RY1187.8  1186.8  1183.8  1180.8  1180.8  1183.8  1186.8  1187.8
3535          RS     0.6             -1.0     0.0
3536          RC   0.035   0.015   0.035    1594  0.0036
3537          RX       0       3       5      15      31      41      61      64
3538          RY    1134    1133    1133    1128    1128    1133    1133    1134
              *
3539          KK  DC131A
3540          KM   RETURN DIVERT AT LP1
3541          DR  DI145A
              *  COMBINE PER LEVEL III

3542          KK    !LP1
3543          KM   COMBINE HYDROGRAPHS
3544          HC       2    5.87
              * HC     2   10.44
              * KKR145AC
              * KM   RIUTE FLOW FROM CP131A TO CP145A
              *  KK  2LP1
              *  KM COMBINE ROUTED FLOW FROM OFFLINE BASIN WITH MAIN-CHANNEL FLOW AT !LP1
              *  HC     2    9.31
              * HC     2   11.22
              *  ************************************************************************************
              *   PB MODIFIED
              *   CHANNEL ROUTING WERE MODIFIED BASED ON REVISED CHANNEL DIMENSION
              *  ************************************************************************************
              *  KK  RLP1
              *  RS   1.0              -1.0     0.0
              *  RC 0.013   0.013   0.013    3990  0.0026
              *  RX     0    16.2    20.2    24.2    28.2    32.2    36.2    52.4
              *  RY1235.4  1227.3  1227.3  1227.3  1227.3  1227.3  1227.3  1235.4

3545          KK  RLP1-1
3546          KM   ROUTING CHANNEL FROM WADDELL ROAD TO DROP STRUCTURE #5
3547          RS     0.7             -1.0     0.0
3548          RC   0.035   0.015   0.035    2450  0.0035
3549          RX       0       3       5      17      33      45      65      68
3550          RY  1227.0  1226.0  1226.0    1220    1220  1226.0  1226.0  1227.0

3551          KK  RLP1-2
3552          KM   ROUTING CHANNEL FROM  DROP STRUCTURE #5 TO CACTUS ROAD
3553          RS     0.6             -1.0     0.0
3554          RC   0.035   0.015   0.035    2632  0.0033
3555          RX       0       3       5      17      42      54      74      77
3556          RY  1217.0  1216.0  1216.0    1210    1210  1216.0  1216.0  1217.0
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9.....10

3557          KK  DC145A
3558          KM   RETURN DIVERT AT LP2
3559          DR  2D164A
              *  COMBINE PER LEVEL III

3560          KK    !LP2
              * KO     1                              21
3561          KM   COMBINE HYDROGRAPHS AT LP2
3562          HC       2    8.17
              *  ************************************************************************************
              *   PB MODIFIED
              *   CHANNEL ROUTING WERE MODIFIED BASED ON REVISED CHANNEL DIMENSION
              *  ************************************************************************************
              *  KK  RLP2
              *  RS   1.3              -1.0     0.0
              *  RC 0.013   0.013   0.013    5444  0.0027
              *  RX     0    14.0    18.2    22.4    26.6    30.8    35.0    49.0
              *  RY1187.8  1180.8  1180.8  1180.8  1180.8  1180.8  1180.8  1187.8

3563          KK  RLP2-1
3564          KM   ROUTE FLOW FROM CACTUS ROAD TO DROP STRUCTURE #7
3565          RS     0.6             -1.0     0.0
3566          RC   0.035   0.015   0.035    2065  0.0040
3567          RX       0       3       5      17      52      64      84      87
3568          RY    1204    1203    1203    1197    1197    1203    1203    1203

3569          KK  RLP2-2
3570          KM   ROUTE FLOW FROM DROP STRUCTURE #7 TO PEORIA AVE
```

L19DS7

DS7L27

```
3571          RS     0.7              -1.0     0.0
3572          RC   0.035   0.015   0.035    3055  0.0033
3573          RX       0       3       5      17      62      74      94      97
3574          RY    1196    1195    1195    1189    1189    1195    1195    1196

3575          KK  DC164A
3576          KM   RETURN DIVERT AT LP3
3577          DR  DI177A
              *  COMBINE PER LEVEL III

3578          KK    !LP3
3579          KM   COMBINE HYDROGRAPHS AT LP3
3580          HC       2   10.64
              * HC     2    2.96
              * PER LEVEL III PRELIMINARY-DRAFT PREFERRED ALTERNATIVE
              *  ************************************************************************************
              *   PB MODIFIED
              *   CHANNEL ROUTING TO THE PROPOSED BASIN AT NORTH OF OLIVE AVENUE
              *   WERE MODIFIED BASED ON REVISED CHANNEL DIMENSION
              *  ************************************************************************************
              *  KK  RLP3
              *  RS   1.3              -1.0     0.0
              *  RC 0.013   0.013   0.013    5368  0.0025
              *  RX     0    14.2    19.4    24.6    29.8    35.0    40.2    54.4
              *  RY1167.8  1160.7  1160.7  1160.7  1160.7  1160.7  1160.7  1167.8
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3581          KK  RLP3-1
3582          KM    ROUTE FLOW FROM PEORIA AVENUE TO OLIVE BASIN
3583          RS     0.5              -1.0     0.0
3584          RC   0.035   0.015   0.035    2233  0.0034
3585          RX       0       3       5      17      62      74      94      97
3586          RY    1177    1176    1176    1170    1170    1176    1176    1177
              *  ************************************************************************************
              *   PB MODIFIED
              *   DIVERT FLOW TO THE PROPOSED BASIN AT NORTH OF OLIVE AVENUE
              *   DIVERATION RATING CURVE WAS DERIVED BASED ON PROPOSED WEIR DESIGN.
              *   THE PROPOSED WEIR LENGTH IS 200 FEET. HEC-RAS LATERAL WEIR ROUTINE WAS
              *   USED TO ESTIMATE THE RATING CURVE.
              *  ************************************************************************************

3587          KK   DLP3A
              *  KO     1                                21
3588          KM   DIVERT TO OFF-LINE BASIN AT NORTH OF OLIVE AVENUE AND WEST LOOP 303
3589          DT  DILP3A
3590          DI       0     415    1000    1500    2000    2500    3000    3500    4000    4500
3591          DQ       0       0     356     688     956    1301    1714    2144    2567    3027
              *
              * ************************************************************************************
              *

3592          KK  DRLP3A
              *  KO     1                                21
3593          KM   RETURN DIVERT AT PROPSED OFF-LINE BASIN NORTH OF OLIVE AVENUE
3594          DR  DILP3A
              *
              *  ************************************************************************************
              *   PB MODIFIED
              *   STORAGE ROUTING THROUGH THE PROPOSED BASIN AT NORTH OF OLIVE AVENUE
              *   WAS MODIFIED BASED ON PRELIMINARY BASIN DESIGN.
              *  ************************************************************************************
              *

3595          KK  SRLP3A
              *  KO     1                                21
3596          KM   STORAGE ROUTE
3597          RS       1    STOR       0       0
              *  SV     0    16.2    49.8    85.2   122.5   161.7   202.8   290.9   351.4    40
              *  SE  1157    1158    1160    1162    1164    1166    1168    1172  1174.5     1
              *  SL  1157    7.07    0.67     0.5
              *  SL  1164    4.91    0.67     0.5
              *  SS  1175.5     205     2.
3598          SV       0    1.73    6.08   14.84   30.50   50.78   71.58   92.90  114.74  137.11
3599          SV  160.02  183.46  207.45  231.99  257.08  282.74  310.25  338.42  366.89  395.64
3600          SE    1157    1158    1159    1160    1161    1162    1163    1164    1165    1166
3601          SE    1167    1168    1169    1170    1171    1172    1173    1174    1175    1176
              *  SQ     0    8.38   27.77   40.88   52.53   62.31   70.88   78.61   85.71    92
              *  SQ     0    8.38   27.77   40.88   52.53   62.31   70.88   78.61   85.71    92
3602          SQ       0   11.00   36.50   59.50   67.50   74.30   81.40   87.90   94.00   99.70
3603          SQ  105.00  110.10  125.35  158.64  204.98  260.15  531.19 1478.51 2805.34 5584.10
              *
              *
              * ************************************************************************************
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3604          KK    1LP4
3605          KM   COMBINE FLOW FROM BASIN BLEEDOFF PIPE AND FLOW FROM CHANNEL
3606          HC       2
              *

3607          KK  RLP3-2
3608          KM    ROUTE FLOW FROM BASIN  TO OLIVE AVE
3609          RS     0.9              -1.0     0.0
3610          RC   0.035   0.015   0.035    2685  0.0026
3611          RX       0       3       5      15      41      51      71      74
3612          RY    1174    1173    1173    1167    1167    1173    1173    1174
```

Job No. 79902 | No.

Computation

Project: Loop 303 / White Tanks ADMPU AHA

Location: Peoria at Loop 303 (DL27)

Computed: AM | Date: 10/27/08

Subject: Weir Flow Analysis

Checked: [illegible] | Date: 3/10/09

Task: Weir Calculations

Sheet: 1 | Of: x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	89	88	39	88.5	87.5	0	0.00	88	0	0.00	88.5	0	0.00	CHECK	89	0.5	41.37	DONE
south	88	87.1	207	87.55	87.5	0	0.00	88	0.45	187.46	88.5	0.95	575.01		89	1.45	1084.29	
south	87.1	87.1	53	87.1	87.5	0.4	40.22	88	0.9	135.76	88.5	1.4	263.38		89	1.9	416.42	
south	87.1	87.2	50	87.15	87.5	0.35	31.06	88	0.85	117.55	88.5	1.35	235.28		89	1.85	377.44	
southeast	87.2	87.2	45	87.2	87.5	0.3	22.18	88	0.8	96.60	88.5	1.3	200.10		89	1.8	326.02	
east	87.2	88	35	87.6	87.5	0	0.00	88	0.4	26.56	88.5	0.9	89.65		89	1.4	173.93	
east	88	88	180	88	87.5	0	0.00	88	0	0.00	88.5	0.5	190.92		89	1	540.00	
east	88	87.8	180	87.9	87.5	0	0.00	88	0.1	17.08	88.5	0.6	250.97		89	1.1	622.99	
east	87.8	88.4	239	88.1	87.5	0	0.00	88	0	0.00	88.5	0.4	181.39		89	0.9	612.19	
					TOTALS:		93.47			581.00			1986.71				4194.64	

Graph Computations:

Station	Elevation
0	89
39	88
246	87.1
299	87.1
349	87.2
394	87.2
429	88
609	88
789	87.8
1028	88.4

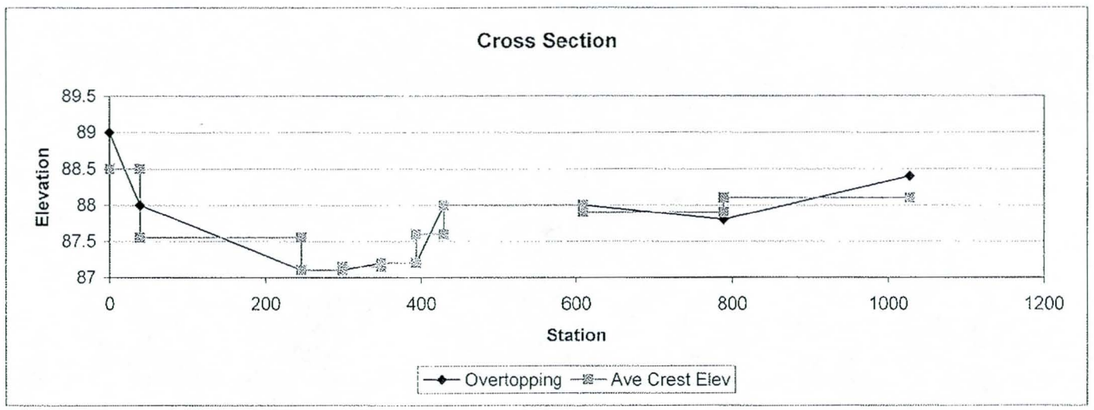
Weir Approximation:

Station	Elevation
0	88.5
39	88.5
39	87.55
246	87.55
246	87.1
299	87.1
299	87.15
349	87.15
349	87.2
394	87.2
394	87.6
429	87.6
429	88
609	88
609	87.9
789	87.9
789	88.1
1028	88.1

Culvert Flows (cfs):

south	0
southeast	0
east	39.85

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	71.28	53%	Q(south)	440.77	71%	Q(south)	1073.68	53%	Q(south)	1919.51	45%
Q(southeast)	22.18	17%	Q(southeast)	96.60	16%	Q(southeast)	200.10	10%	Q(southeast)	326.02	8%
Q(east)	39.85	30%	Q(east)	83.49	13%	Q(east)	752.78	37%	Q(east)	1988.96	47%
	133.32			620.85			2026.56			4234.49	

First DI	East to South			
Inflow	133.32	620.85	2026.56	4234.49
Outflow	71.28	440.77	1073.68	1919.51

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	62.03	180.09	952.88	2314.98
Outflow	22.18	96.60	200.10	326.02

Assumes diversion is to southeast

Peoria @ L303 DL27

L303

Sediments / Debris seen

Poss. Triple CMP's (39.85 cfs max)

Double CMP's

Peoria

1' CI topo

Street View
Traffic
More...
Map

Culvert Calculator Report
L303atPeoria

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	4.00	ft	Headwater Depth/Height	1.50	
Computed Headwater Elev	4.00	ft	Discharge	39.85	cfs
Inlet Control HW Elev.	3.07	ft	Tailwater Elevation	2.00	ft
Outlet Control HW Elev.	4.00	ft	Control Type	Outlet Control	

Grades					
Upstream Invert	1.00	ft	Downstream Invert	0.50	ft
Length	120.00	ft	Constructed Slope	0.004167	ft/ft

Hydraulic Profile					
Profile	CompositeM2PressureProfile		Depth, Downstream	1.50	ft
Slope Type	Mild		Normal Depth	N/A	ft
Flow Regime	Subcritical		Critical Depth	1.31	ft
Velocity Downstream	5.26	ft/s	Critical Slope	0.020015	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.024	
Section Material	CMP		Span	2.00	ft
Section Size	24 inch		Rise	2.00	ft
Number Sections	3				

Outlet Control Properties					
Outlet Control HW Elev.	4.00	ft	Upstream Velocity Head	0.28	ft
Ke	0.70		Entrance Loss	0.19	ft

Inlet Control Properties					
Inlet Control HW Elev.	3.07	ft	Flow Control	Unsubmerged	
Inlet Type	Mitered to slope		Area Full	9.4	ft²
K	0.02100		HDS 5 Chart	2	
M	1.33000		HDS 5 Scale	2	
C	0.04630		Equation Form	1	
Y	0.75000				

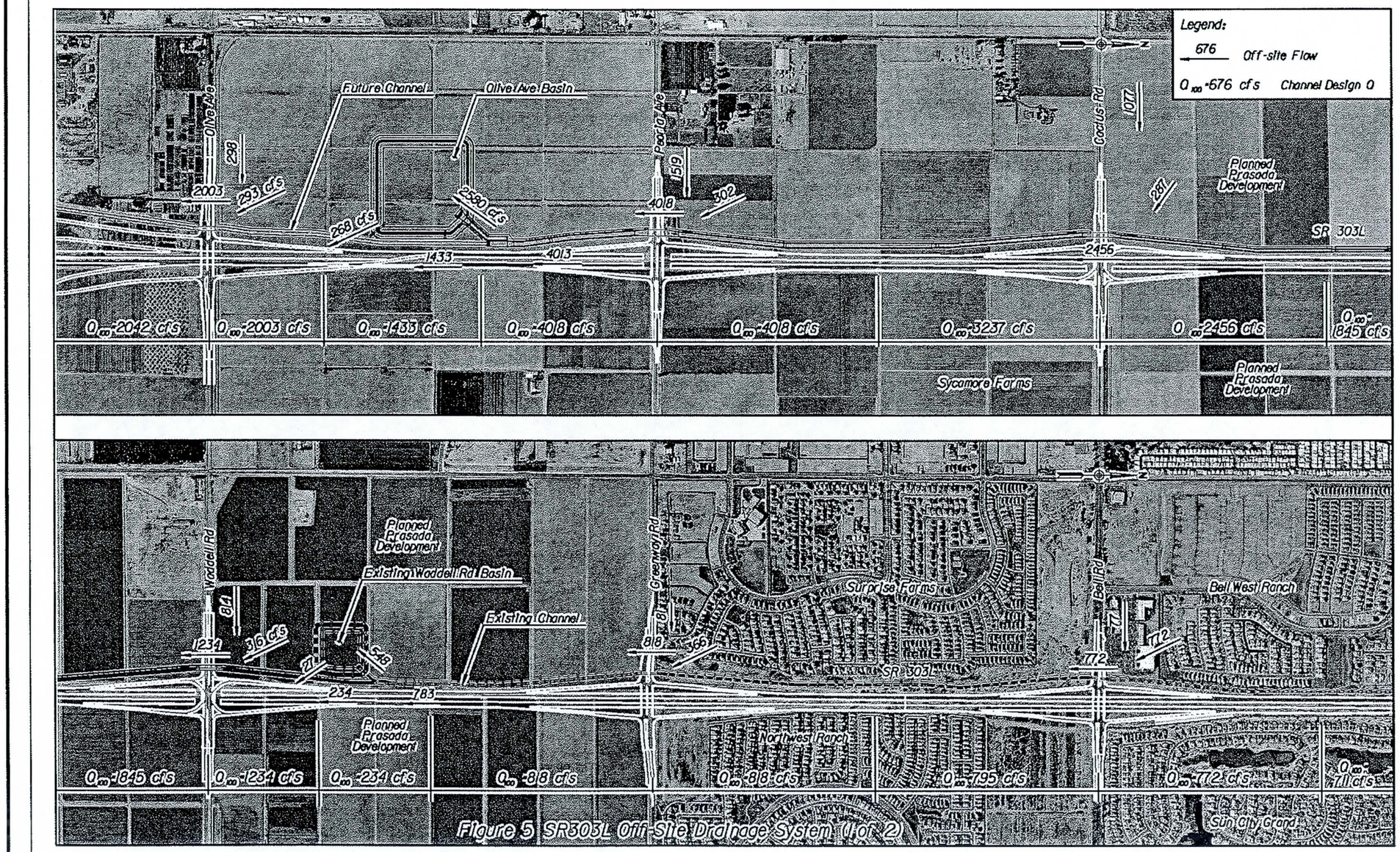


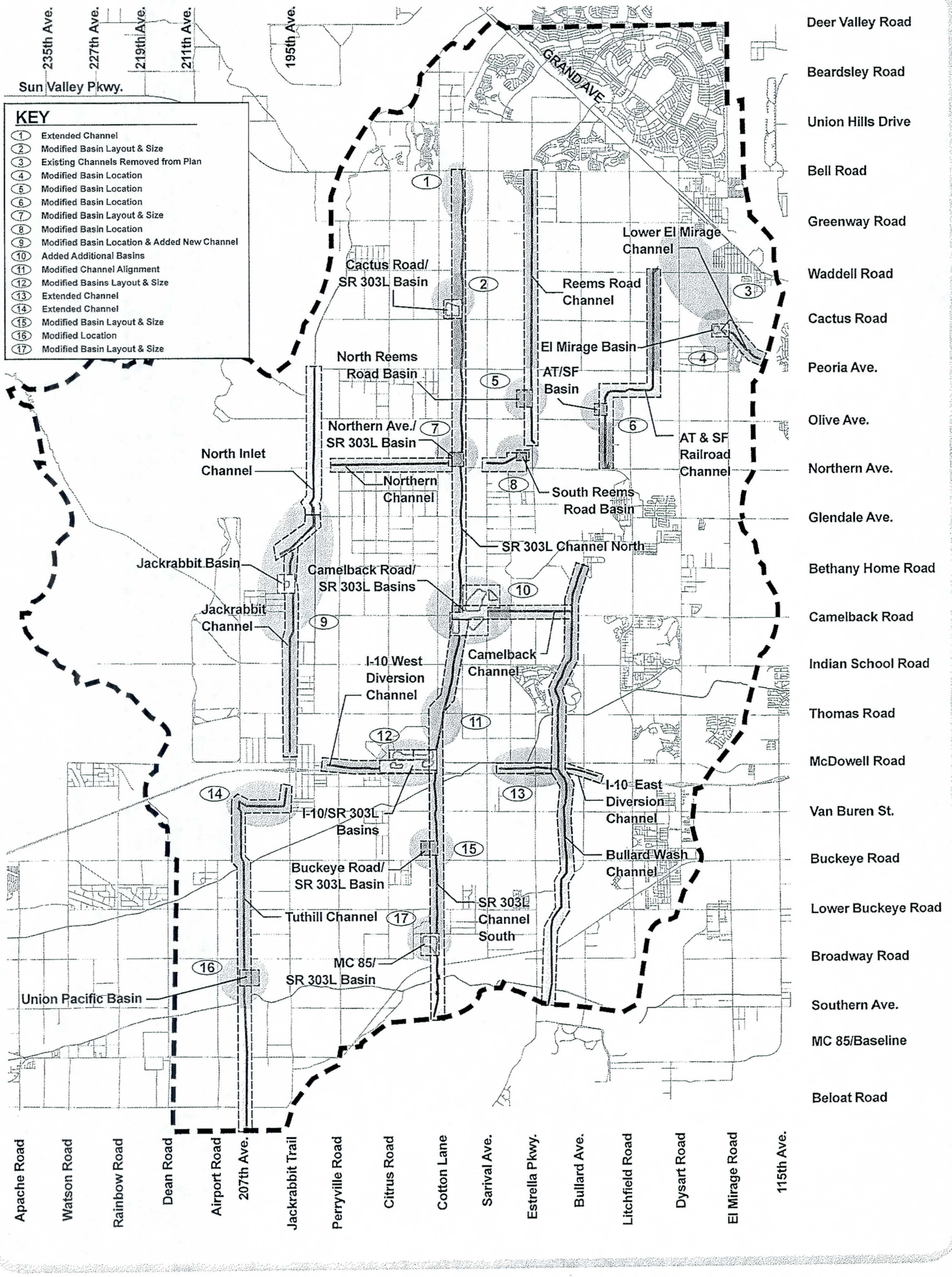
Figure 5 SR303L Off-Site Drainage System (1 of 2)

Figure 5 – SR303L Off-Site Drainage System
1 of 2

W28, S70, L72, B65, D69
L09, L13, L19, L27, L34

Table 2.4B
Proposed Basin Summary
Existing Condition Hydrology

Channel/ Location ID	Qin (cfs)	Qout (cfs)	Vin (ac-ft)	Peak Storage (ac-ft)	Max. Vol. Provided (ac-ft)	Peak Stage (ft)	on/off line	Combined Total Outflow (cfs)	Length Low-Flow Basin Drain (ft)	Prop. Bot. Elev. (ft)	Prop. Top Elev. (ft)	Design FB (ft)	Actual FB (ft)	Backwater
Jackrabbit Channel														
SRJR1 (N. of Camelback)	850	65	42	41.5	43.9	1185.5	off-line	151	8,323	1,173.5	1,186.0	0.0	0.5	-----
Tuthill Channel														
SRTC5 (@ RxR)	1,646	550	109	108.5	108.5	898.0	off-line	618	4,390	890.0	898.0	0.0	-0.6	-----
I-10 Channel West														
SR10W7	1593	741	282	85.2	85.2	1022.0	on-line	N/A	2,487	1,010.5	1,022.0	0.0	0.0	-----
L303 Channel														
SRLP2 (Cactus Road)	2311	311	543	440	440.0	1212.0	off-line	587	5,630	1,197.0	1,212.0	0.0	0.0	-----
SRLP5 (Northern)	4241	442	354	334	333.0	1141.0	off-line	1380	6,934	1,126.0	1,141.0	0.0	0.0	-----
SRLP8 (Camelback)	2102	340	1081	705.9	700.0	1065.0	on-line	N/A	14,062	1,059.0	1,065.0	0.0	0.0	-----
SRLP12 (I-10)	1781	701	1166	591.5	590.0	1016.0	on-line	N/A	4,961	1,001.0	1,016.0	0.0	0.0	-----
SRLP14 (Yuma/Buckeye)	695	523	823	189.0	190.0	968.0	on-line	N/A	4,092	959.0	968.0	0.0	0.0	-----
SRLP16 (MC85)	751	448	938	325.0	325.0	913.0	on-line	N/A	2,872	903.0	913.0	0.0	0.0	-----
Reems/Northern Channel														
SRRM5 (Olive)	1,752	198	189	165.0	165.0	1134.0	off-line	818	1,449	1,127.0	1,134.0	0.0	0.0	-----
BSNR6(Northern)	477	0	55	55.0	61.1	1107.5	in-line	0	1,413	1,095.0	1,108.5	0.0	1.2	-----
AT&SF Railroad Channel														
SRRR7 (@Olive)	1,770	1285	331	81.3	142.7	1105.6	off-line	1439	1,832	1,097.5	1,111.5	0.0	6.1	-----
Lower El Mirage Channel														
(SRLE4 SW corner of Cactus and El Mirage)	1,312	813	191	56.9	80.0	1111.4	off-line	852	2,069	1,104.5	1,114.0	0.0	2.1	-----
Bullard Wash														
SRBD1S (I-10 and Bullard Wash)	2682	2011	813	134.9	138.0	990.2	off-line	575 - ADOT	4,390	978.5	990.2	0.0	-0.2	-----
								2239 - BLRD						



Basin & Channel Locations

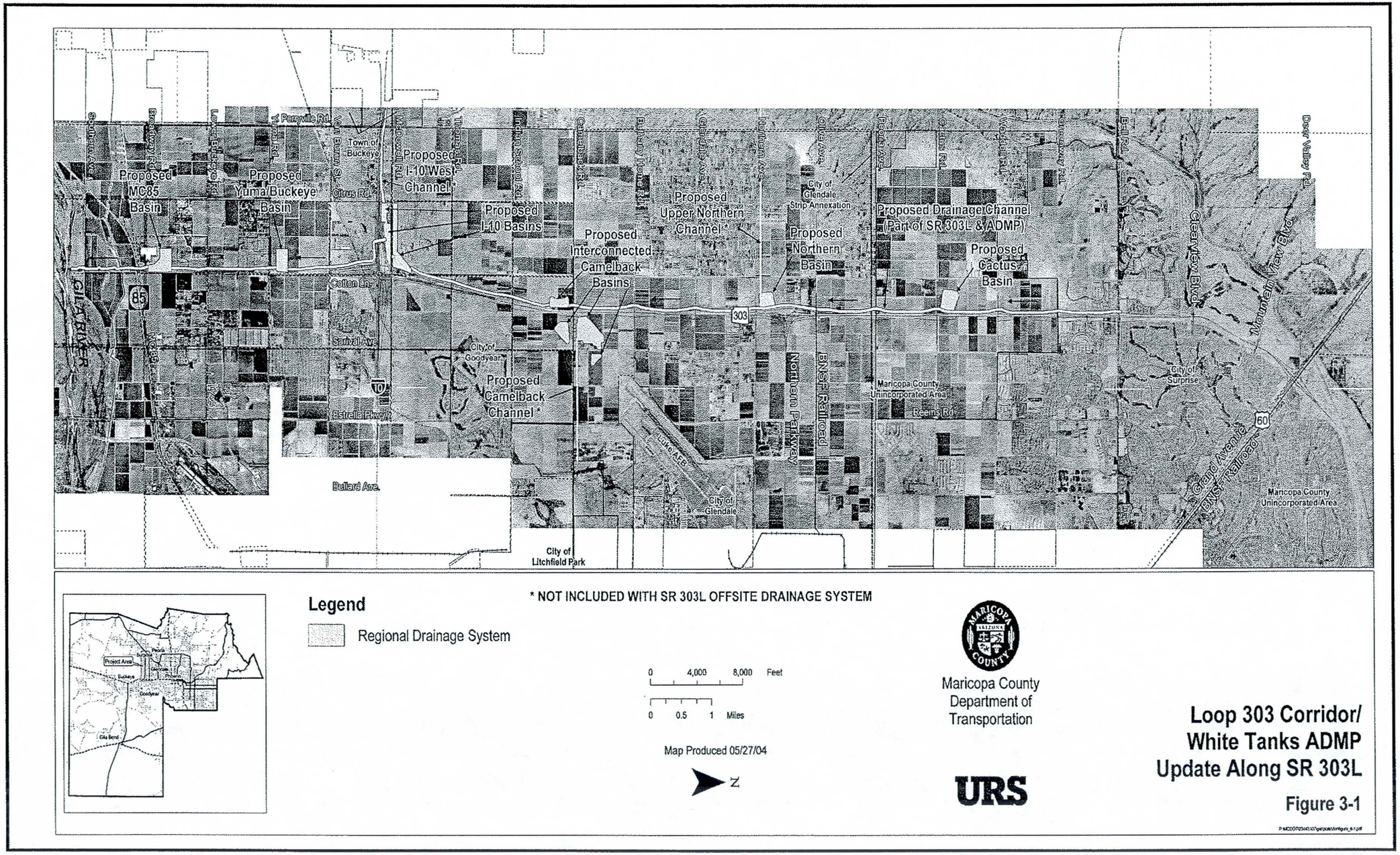


Figure 3 - Loop 303 Corridor/White Tanks ADMP Update Along SR303L

Table 2.2A
Proposed Channel Summary
Existing Condition Hydrology

Channel Name	Concentration Point	Qexist	[1]Approximate Qcap (cfs)	DS Invert (ft)	WSEL (ft)	Flow Depth (ft)	Channel Depth (ft)	Bottom Width (ft)	Side Slope (H:V)	Design s (ft/ft)	(Q/A) V ft/s	Froude Number F_N	Channel [3]Tw (ft)	(WSEL) [3]Tw (ft)
Camelback Channel														
	!CM2	372	372	1052.7	1056.5	3.8	4.7	5	(6:1)	*0.0020*	3.6	0.44	132	51
	!CM3	485	485	1047.5	1051.8	4.2	5.4	5	(6:1)	*0.0020*	3.8	0.45	143	57
	!CM4	783	783	1040.7	1044.8	4.1	6.3	26	(4:1)	*0.0020*	4.5	0.46	152	59
Jackrabbit Channel														
	!JR1	953	953	1177.1	1182.6	5.5	6.9	5	(6:1)	*0.0021*	4.6	0.47	167	71
	!JR2	813	813	1165.0	1169.3	4.3	5.3	15	(6:1)	*0.0025*	4.7	0.51	154	67
	!JR3	933	933	1147.4	1150.4	4.0	4.4	15	(6:1)	*0.0046*	6.1	0.61	140	51
	!JR4	1,324	1,324	1109.9	1114.3	4.4	4.4	25	(6:1)	*0.0035*	5.9	0.61	153	78
	!JR5	1,683	1,683	1080.3	1084.6	4.3	4.3	40	(6:1)	*0.0033*	6.0	0.60	171	92
SR303L URS DCR - Channel														
	!LP0	772	772	1275.6	1279.0	3.4	5.5	10	(2:1)	*0.0049*	13.7	1.57	62	24
	!LP	854	854	1247.9	1251.5	3.5	5.4	10	(2:1)	*0.0050*	14.3	1.61	62	24
	!LP1	1,612	1,612	1227.3	1232.5	5.1	5.9	12	(2:1)	*0.0031*	14.1	1.33	66	33
Cactus Road Basin	!LP2	2,898	2,898	1209.8	1215.9	6.0	6.1	20	(2:1)	*0.0026*	15.0	1.26	74	44
offline low flow/bypass channel	2LP2	587	587	1200.0	1202.6	2.5	4.8	20	(2:1)	*0.0026*	9.3	1.14	69	30
	!LP3	2,140	2,140	1180.8	1185.9	5.0	5.1	21	(2:1)	*0.0027*	13.8	1.26	71	41
	!LP4	2,636	2,636	1160.7	1165.9	5.2	5.2	26	(2:1)	*0.0025*	14.1	1.24	77	47
	!LP5	2,624	2,636	1136.3	1141.5	5.2	5.2	26	(2:1)	*0.0025*	14.0	1.23	77	47
offline low flow/bypass channel	2LP5	1,380	1,380	1130.4	1133.8	3.4	3.7	26	(2:1)	*0.0032*	12.5	1.32	71	40
	!LP6	1,539	1,539	1110.0	1115.1	5.1	6.4	16	(2:1)	*0.0020*	11.6	1.07	72	36
	!LP7	1,770	1,770	1087.1	1092.2	5.0	6.2	19	(2:1)	*0.0021*	12.1	1.10	74	39
	!LP8	2,097	2,097	1065.8	1070.7	4.9	6.1	26	(2:1)	*0.0020*	12.1	1.09	80	46
	!LP9	557	557	1047.9	1052.2	4.2	4.3	5	(2:1)	*0.0023*	9.8	1.08	52	22
	!LP10	624	624	1032.4	1036.1	3.7	3.7	5	(2:1)	*0.0052*	13.7	1.58	50	20
	!LP11	988	988	1014.5	1019.2	4.7	5.7	5	(2:1)	*0.0047*	14.8	1.56	58	24
	!LP13	697	701	984.8	988.5	3.6	3.8	8	(2:1)	*0.0041*	12.7	1.45	53	23
	!LP14	695	701	966.2	969.7	3.5	3.7	8	(2:1)	*0.0048*	13.5	1.54	53	22
	!LP15	676	676	934.2	937.7	3.4	4.2	8	(2:1)	*0.0048*	13.3	1.54	55	22
	!LP16	751	751	914.8	918.3	3.5	4.2	8	(2:1)	*0.0055*	14.5	1.67	55	22
	!LP17	447	448	884.3	888.7	4.3	5.5	5	(2:1)	*0.0013*	7.6	0.82	57	23
Upper Northern Channel														
	!NR1	256	256	1219.0	0.0	2.7	3.6	5	(6:1)	*0.0050*	4.6	0.66	115	37
	!NR2	1,309	1,309	1182.2	1186.3	4.0	4.1	30	(6:1)	*0.0039*	6.1	0.65	155	79
	!NR3	2,246	2,246	1143.5	1148.5	5.0	5.0	45	(6:1)	*0.0028*	6.0	0.56	189	105
	!NR4	2,308	2,308	1136.0	1141.0	5.0	5.0	50	(6:1)	*0.0025*	5.8	0.54	195	110
Lower Northern Channel	!NR5	262	262	1122.6	1125.9	3.3	4.3	5	(6:1)	*0.0020*	3.3	0.43	126	45
	!NR6	477	477	1096.7	1100.2	3.4	4.5	5	(6:1)	*0.0053*	5.5	0.71	129	47
Reems Road Channel														
	[2]RM1	709	516	1222.1	1226.6	4.5	5.7	6.5	(3:1)	*0.0040*	5.8	0.63	105	34
	[2]RM2	957	1,382	1208.2	1214.3	6.0	7.7	11.5	(4:1)	*0.0032*	6.5	0.60	147	60
	!RM3	1,366	1,366	1167.8	1172.0	4.1	4.2	30	(6:1)	*0.0037*	6.0	0.63	157	80
	!RM4	1,640	1,640	1142.7	1147.7	5.0	5.0	30	(6:1)	*0.0025*	5.5	0.53	169	90
	!RM5	2,179	2,179	1119.4	1124.6	5.1	5.2	40	(6:1)	*0.0027*	6.0	0.57	185	102
	!RM6	826	826	1100.6	1105.0	4.3	5.3	10	(6:1)	*0.0034*	5.3	0.59	148	63

Table 2.2A (continued)
Proposed Channel Summary
Existing Condition Hydrology

Channel Name	Concentration Point	Qexist	[1]Approximate Qcap (cfs)	DS Invert (ft)	WSEL (ft)	Flow Depth (ft)	Channel Depth (ft)	Bottom Width (ft)	Side Slope (H:V)	Design s (ft/ft)	(Q/A) V ft/s	Froude Number F_N	Channel [3]Tw (ft)	(WSEL) [3]Tw (ft)
AT&SF Railroad Channel														
	!RR1	425	425	1150.8	1154.5	3.6	3.9	10	(6:1)	*0.0020*	3.7	0.44	126	54
	!RR2	492	492	1146.2	1149.7	3.4	3.5	10	(6:1)	*0.0035*	4.7	0.58	120	52
	!RR3	785	785	1127.9	1131.9	4.0	4.0	10	(6:1)	*0.0046*	5.9	0.68	127	58
	!RR4	936	936	1110.1	1114.4	4.3	4.3	15	(6:1)	*0.0034*	5.4	0.59	139	67
	!RR5	970	970	1103.3	1108.5	5.2	5.2	15	(6:1)	*0.0015*	4.0	0.41	153	77
	!RR6	1,733	1,733	1098.8	1105.5	6.7	6.7	15	(6:1)	*0.0015*	4.7	0.42	176	95
	!RR7	1,770	1,770	1095.1	1101.9	6.8	6.8	15	(6:1)	*0.0015*	4.7	0.42	178	97
	!RR8	1,585	1,585	1081.1	1086.9	5.8	5.8	15	(6:1)	*0.0025*	5.5	0.53	162	85
Lower El Mirage Channel														
	!LE4	1,356	1,356	1107.2	1111.9	4.7	6.8	35	(3:1)	*0.0026*	5.9	0.54	151	63
	!LE5	865	865	1086.6	1090.6	4.0	5.1	15	(6:1)	*0.0038*	5.6	0.63	152	63
Bullard Wash Channel														
	!BD1N	2,103	2,103	1057.0	1047.3	5.2	7.0	45	(6:1)	*0.0020*	5.3	0.49	219	109
	!BD2N	3,244	3,244	1044.1	1049.8	5.7	7.8	65	(6:1)	*0.0020*	5.8	0.49	258	133
	!BD3N	3,410	3,410	1015.6	1020.7	5.0	6.7	65	(10:1)	*0.0027*	5.9	0.56	312	167
	!BD4N	3,248	3,410	1006.0	1010.8	4.7	6.4	102	(9:1)	*0.0018*	5.0	0.47	335	188
	!BD1S	3,556	3,556	985.5	990.4	4.9	6.4	90	(6:1)	*0.0025*	6.1	0.55	269	149
	!BD2S	2,321	2,321	980.9	984.4	3.5	3.8	95	(6:1)	*0.0033*	5.8	0.60	235	137
I-10 West Diversion Channel														
	!10W1	970	970	1045.8	N/A	3.8	4.5	25	(6:1)	*0.0035*	5.4	0.60	155	71
	!10W2	1,010	1,010	1039.7	1043.4	3.7	4.2	25	(6:1)	*0.0042*	5.9	0.66	150	69
	!10W3	1,046	1,046	1032.7	1036.5	3.7	4.1	25	(6:1)	*0.0042*	5.9	0.66	148	71
	!10W4	1,175	1,175	1028.5	1032.4	3.8	4.3	30	(6:1)	*0.0038*	5.8	0.63	158	77
	!10W5	1,588	1,588	1014.6	1018.9	4.3	5.0	35	(6:1)	*0.0036*	6.1	0.62	175	87
	!10W7	1,593	1,593	1014.6	1019.6	5.0	5.7	35	(6:1)	*0.0020*	5.0	0.48	186	95
	!10W8	743	743	1005.8	1010.5	4.6	5.5	10	(6:1)	*0.0020*	4.2	0.46	151	66
Tuthill Channel														
	!TC1	1,417	1,417	998.7	1003.5	4.7	5.8	20	(6:1)	*0.0037*	6.2	0.63	168	78
	!TC2	1,553	1,553	991.8	997.1	5.2	6.1	25	(6:1)	*0.0023*	5.3	0.51	180	89
	!TC3	1,491	1,491	957.0	961.9	4.8	5.1	25	(6:1)	*0.0029*	5.7	0.57	163	84
	!TC4	1,546	1,546	914.7	919.3	4.6	4.6	30	(6:1)	*0.0032*	5.9	0.59	163	85
	!TC5	1,926	1,926	886.8	891.4	4.6	4.6	40	(6:1)	*0.0033*	6.3	0.61	176	95
	!TC6	646	646	882.3	885.9	3.6	3.6	15	(6:1)	*0.0035*	5.0	0.59	128	58
	!TC7	1,323	1,323	863.6	867.8	4.1	4.2	45	(6:1)	*0.0020*	4.6	0.47	176	95
	!TC8	1,506	1,506	859.4	864.6	5.2	5.2	45	(6:1)	*0.0011*	3.8	0.35	192	107
	!TC9	1,503	1,506	854.8	860.1	5.3	5.3	45	(6:1)	*0.0010*	3.7	0.34	193	109
I-10 East Diversion Channel														
	10CE-US	575	575	984.5	988.6	4.1	4.5	12	(6:1)	*0.0019*	3.9	0.44	138	61
	10CE1	556	575	978.5	985.2	4.1	4.5	12	(6:1)	*0.0018*	3.8	0.43	138	62
I-10 Central Channel														
	!10C1	79	79	1005.4	1007.7	2.2	2.3	2	(6:1)	*0.0020*	2.4	0.40	90	29
	!10C2	131	131	1002.6	1005.3	2.7	2.7	2	(6:1)	*0.0020*	2.8	0.41	96	34
	!10C3	170	170	995.9	998.9	3.0	3.0	2	(6:1)	*0.0020*	2.9	0.42	101	38
	!10C4	243	243	982.2	985.5	3.2	3.3	2	(6:1)	*0.0026*	3.6	0.49	105	41

1. By normal depth computation.
2. Channel reach exists.
3. Top width.

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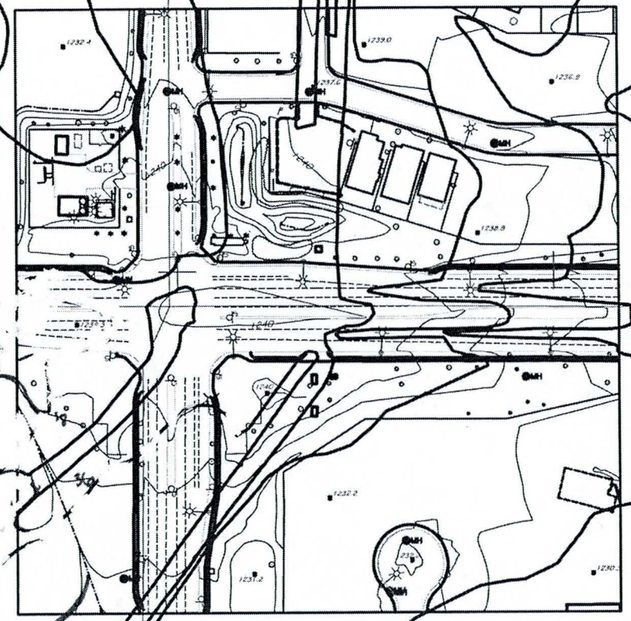
For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

T74FS3

T73FS1

T74FS2



E 534000
E 534500
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SRL29

1" = 200'

N

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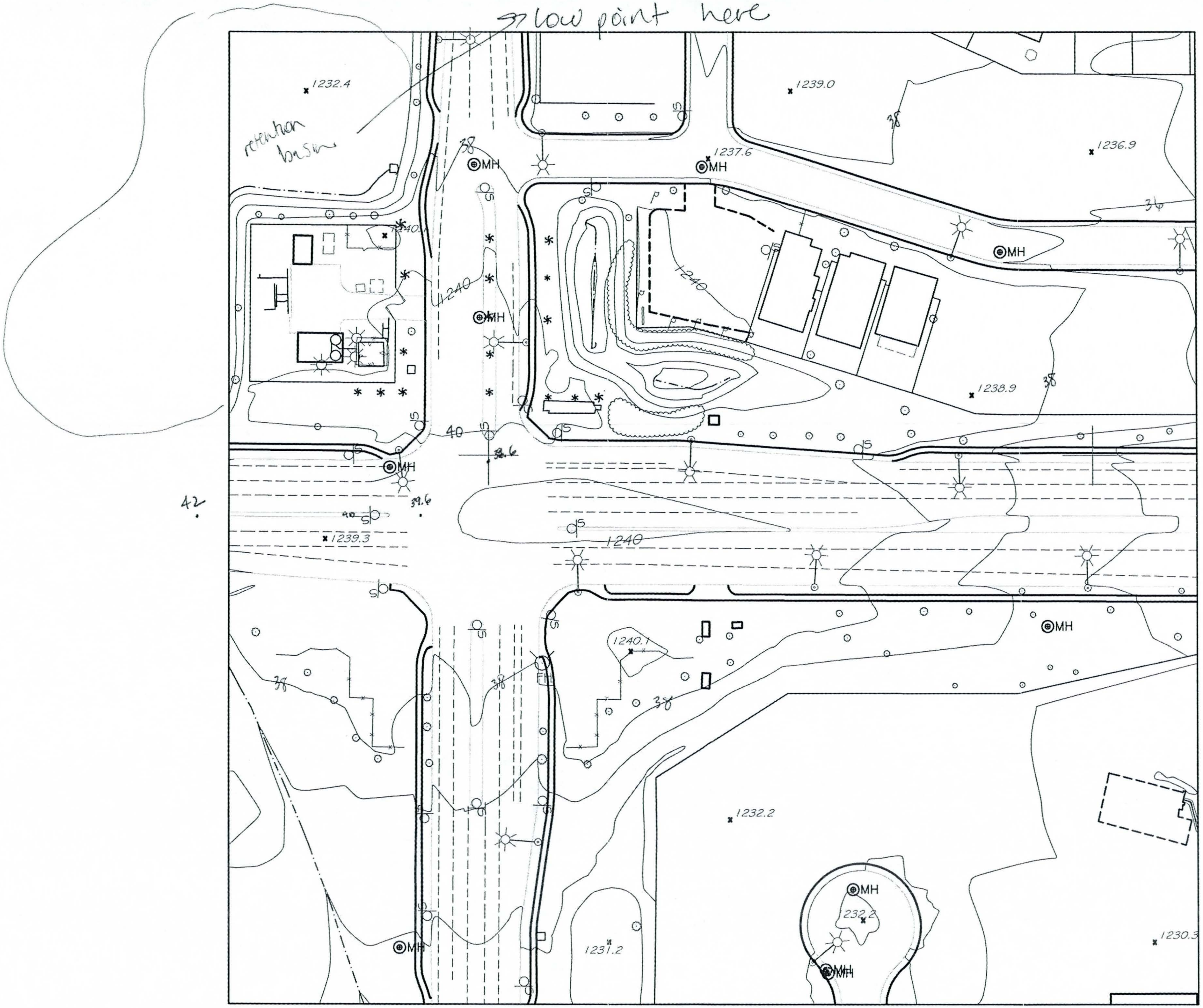
Olive @ Cortessa (183rd)

CP L30



Does not match master drainage rpt

1" = 80'

N

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N 182nd Ave
W Olive Ave
W Eva St
W Sanna St
N Dimmo Ct
W Townley Ave
N Edminton Ct
N 182nd Ln
N Cortessa Pkwy
N 183rd Ave
N 183rd Ln
W 184th Ln
9200
9100
18299
18270
18239
18259
18300
18339
18378
18409
18369
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last part

ADMS BASIN
175A

ADMS BASIN
174

AREA

D

A

67 CFS

R-15

CP RAT1

E

R-2

A

E

174

R-4

0.0

28

1285

R-5

R-6

R-12

R-11

ADMS BASIN
175

SUB-BASIN
176-1

R-13

AVENUE

CITRUS

362 CFS

LIMITS OF 100-YEAR FLOW

R-7

R-8

R-14

R-10

R-9

175

1222

BM 1278

374 CFS

175A

R-16

ADMS BASIN
189

Siphon

VEMENT

1260

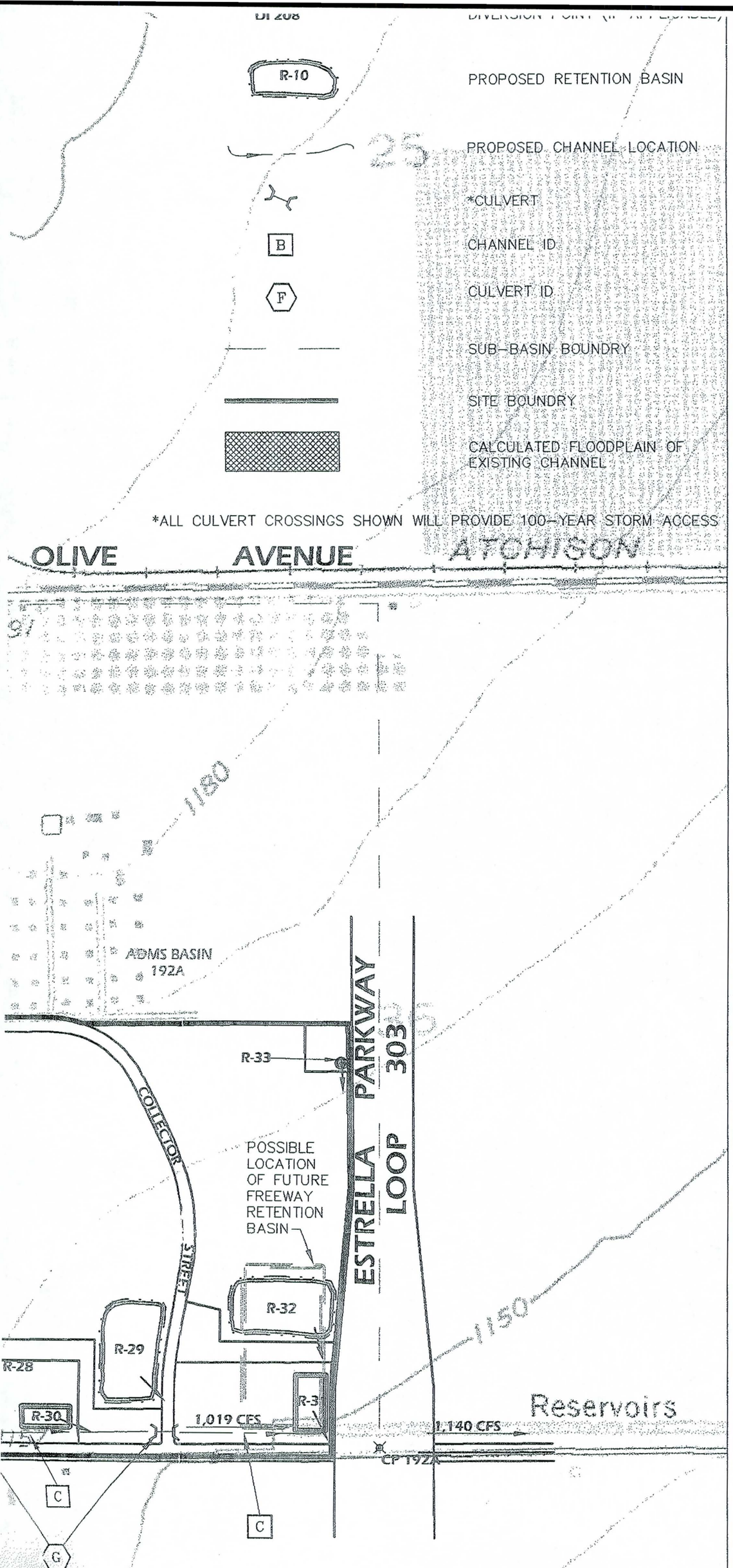

PLATE 5 - POST-DEVELO

Hunn & As

3200 N. CENTRAL #2100 PHOENIX, AZ 8

WHITE TANK MOUNTAIN RANCH
DEVELOPMENT MASTER PLAN

Designed by: HPK/DMH	Checked by: DMH	Revisions	Date	By	
Drawn by: HPK	Date: 12/26/99				
Horiz. Scale: 1"=600'					
Vertical Scale: N/A					

SEAL

JOB NUMBER
99015

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For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

This Section Intentionally Left Blank

For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Job No. 79902	No.
Subject	Weir Flow Analysis	Computed AM	Date 10/27/08
Task	Weir Calculations	Checked CP	Date 3/10/09
	Location: Olive at Cotton (DL33)	Sheet 1	Of x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	86.5	86	250	86.25	84.8	0	0.00	85.3	0	0.00	85.8	0	0.00	CHECK	86.3	0.05	8.39	DONE
south	86	84.5	80	85.25	84.8	0	0.00	85.3	0.05	2.68	85.8	0.55	97.89		86.3	1.05	258.22	
east	84.5	84.5	400	84.5	84.8	0.3	197.18	85.3	0.8	858.65	85.8	1.3	1778.67		86.3	1.8	2897.94	
east	84.5	85	100	84.75	84.8	0.05	3.35	85.3	0.55	122.37	85.8	1.05	322.78		86.3	1.55	578.92	
east	85	85.5	100	85.25	84.8	0	0.00	85.3	0.05	3.35	85.8	0.55	122.37		86.3	1.05	322.78	
east	85.5	86.5	100	86	84.8	0	0.00	85.3	0	0.00	85.8	0	0.00		86.3	0.3	49.30	
east	86.5	86.5	1	86.5	84.8	0	0.00	85.3	0	0.00	85.8	0	0.00		86.3	0	0.00	
east	86.5	86.5	1	86.5	84.8	0	0.00	85.3	0	0.00	85.8	0	0.00		86.3	0	0.00	
east	86.5	86.5	1	86.5	84.8	0	0.00	85.3	0	0.00	85.8	0	0.00		86.3	0	0.00	
						TOTALS:	200.53			987.05			2321.71				4115.55	

Graph Computations:

Station	Elevation
0	86.5
250	86
330	84.5
730	84.5
830	85
930	85.5
1030	86.5
1031	86.5
1032	86.5
1033	86.5

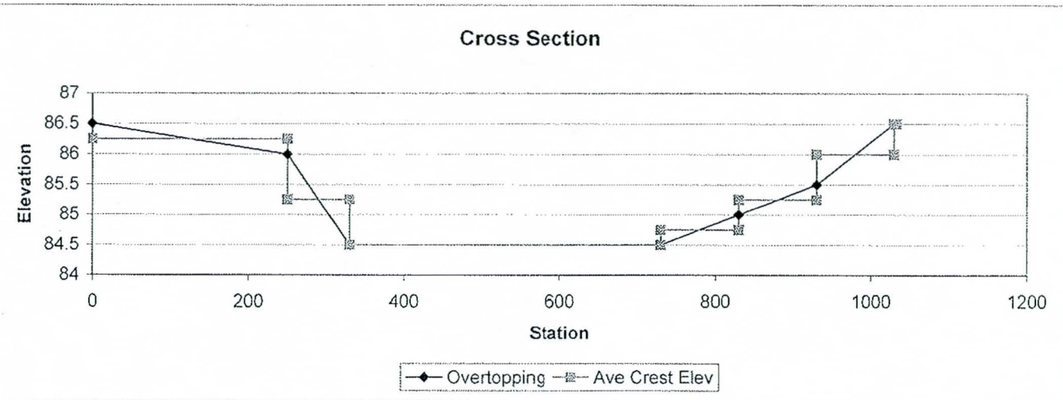
Weir Approximation:

Station	Elevation
0	86.25
250	86.25
250	85.25
330	85.25
330	84.5
730	84.5
730	84.75
830	84.75
830	85.25
930	85.25
930	86
1030	86
1030	86.5
1031	86.5
1031	86.5
1032	86.5
1032	86.5
1033	86.5

Culvert Flows (cfs):

south	0
southeast	0
east	0

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	0.00	0%	Q(south)	2.68	0%	Q(south)	97.89	4%	Q(south)	266.61	6%
Q(southeast)	0.00	0%	Q(southeast)	0.00	0%	Q(southeast)	0.00	0%	Q(southeast)	0.00	0%
Q(east)	200.53	100%	Q(east)	984.37	100%	Q(east)	2223.82	96%	Q(east)	3848.94	94%
	200.53			987.05			2321.71			4115.55	

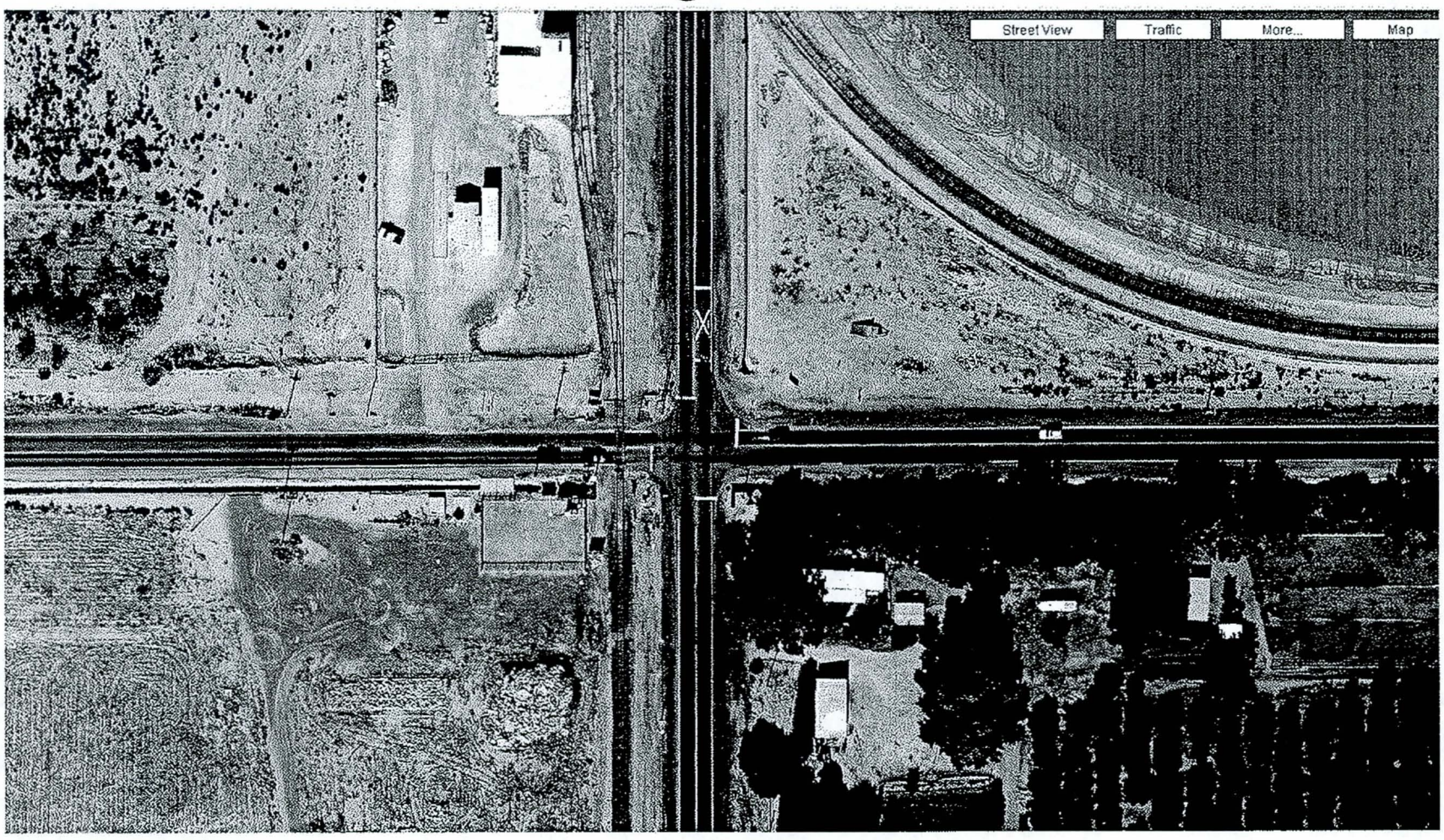
First DI	East to South			
Inflow	200.53	987.05	2321.71	4115.55
Outflow	0.00	2.68	97.89	266.61

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	200.53	984.37	2223.82	3848.94
Outflow	0.00	0.00	0.00	0.00

Assumes diversion is to southeast

Cotter



Olive

Olive @
Cotter

Olive @ Cotton

Olive

Cotton

Railroad tracks form over

1185.4

1182.3

1183.1

1180.7

1182.9

1179.6

1185.0

1183.6

1180.6

1179.4

1181.1

1178.5

FH

24" outlet (ignore)

250'

↑N
1" = 80'

DL33

C:\PWwn ,PHX\dms807R3\Topo-I 303 Intersections-North.dwg, 10/9/2008 4:17:21

CIP models
Source

L34

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*             JUN  1998                 *
*          VERSION 4.1                  *
*                                       *
*    DATE   07MAY09  TIME  08:05:50     *
*                                       *
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
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X    X  XXXXXXX   XXXXX          X
X    X  X        X     X        XX
X    X  X        X              X
XXXXXX  XXXX     X        XXXXX  X
X    X  X        X              X
X    X  X        X     X        X
X    X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   1          ID        LOOP 303 OFF-SITE HYDROLOGY
   2          ID        MODIFIED BASED ON FCDMC'S WHITE TANKS/LOOP 303 CORRIDOR ADMP
   3          ID        THE MODIFICATIONS ARE DESCRIBED AS FOLLOWS:
   4          ID        1. THE CACTUS RD BASIN WAS REMOVED AND TWO RELATIVELY SMALL BASINS
   5          ID           LOCATED AT NORTH OF WADDELL ROAD AND NORTH OF OLIVE AVENUE WERE
   6          ID           ADDED TO THE MODEL BASED ON CMX'S HEC-1 MODEL PROVIDED IN DEC,2006.
   7          ID        2. FLOW DIVERSION TO THE OFF-LINE BASINS, SUCH AS WADDELL ROAD
   8          ID           BASIN, OLIVE AVENUE BASIN, NORTHERN AVENUE BASIN WERE ESTIMATED
   9          ID           USING HEC-RAS LATERAL WEIR ROUTINE.
  10          ID        3. DETENTION BASIN ELEVATION AND VOLUME RELATIONSHIPS WERE ESTIMATED
  11          ID           BASED ON 30% DESIGN OF THE BASIN.
  12          ID        4. ELEVATION AND OUTFLOW RELATIONSHIP WERE ESTIMATED BASED ON 30% DESIG
  13          ID           USING CULVERTMASTER. THE OUTFLOW INCLUDES FLOW FROM BLEED-OFF PIPE
  14          ID           AND FLOW FROM OUTFLOW PIPE.
  15          ID        5. CHANNEL ROUTING WERE MODIFIED BASED ON 30% DESIGN.
  16          ID        6. FLOW FROM THE PROPOSED FCDMC CHANNEL ALONG NORTHEN AVENUE  WILL
  17          ID           NOT BE COMBINED WITH FLOW FROM LOOP 303 OFF-SITE CHANNEL.
  18          ID           INSTEAD THE FLOW FROM THE CHANNEL ALONG NORTHERN AVENUE WILL GO
  19          ID           TO THE NORTHERN AVENUE BASIN DIRECTLY.  SO THE FLOW FROM THE
  20          ID           NORTHERN AVENUE CHANNEL WILL BE COMBINED WITH THE DIVERTED FLOW
  21          ID           FROM LOOP 303 CHANNEL AT NORTHERN AVENUE BASIN.
  22          ID        7. IN THE ADMP MODEL, SOME OF THE OUTFLOW FROM CAMELBACK ROAD BASINS
  23          ID           WERE DIVERTED TO EAST ALONG CAMELBACK ROAD (THE PEAK FLOW IS
  24          ID           180 CFS).  NO STRUCTURE WAS RECOMMENDED IN THE ADMP UPDATE. PB
  25          ID           DESIGNED 3-30" PIPES TO DIVERT SOME FLOW TO THE EXISTING CAMELBACK
  26          ID           ROAD CHANNEL LOCATED AT SOUTH SIDE OF CAMELBACK ROAD.
  27          ID        9. PEBBLE CREEK AND PALM VALLEY 8 DEVELOPMENTS WERE INCLUDED IN THE
  28          ID           MODEL BASED ON HEC-1 MODEL PROVIDED BY DEL RIO ENGINEERING.
  29          ID       10. MCDOWELL ROAD DETENTION BASIN WERE DIVIDED INTO TWO DETENTION BASINS
  30          ID           ONE IS CALLED MCDOWELL ROAD UPPER BASIN AND THE OTHER ONE IS CALLED
  31          ID           MCDOWELL ROAD LOWER BASIN
  32          ID       11  PROPOSED I-10/303L TI (ULTIMATED CONDITION) ON-SITE DRAINAGE SYSTEM
  33          ID           WAS REFLECTED IN THE MODEL.  THERE ARE TOTAL 11 ON-SITE BASINS.
  34          ID
  35          ID        EXISTING CONDITION WITH PROJECTS IN PLACE SCENARIO
  36          ID        REVISED BY PARSONS BRINCKERHOFF    DATE: Aug 2008
  37          ID                                           FILE NAME: EX_SPLT.DAT
  38          ID        ********************************************************************
  39          ID        DRAFT PREFERRED ALTERNATIVE LEVEL III
  40          ID
  41          ID        INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
  42          ID        SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
  43          ID        BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
  44          ID        LUKE AIR FORCE BASE CRASH ZONE AREA
  45          ID
  46          ID        **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
  47          ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
  48          ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
  49          ID        TANKS/AGUA FRIA ADMS, Date: October 1991
  50          ID
  51          ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
  52          ID        100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
  53          ID
  54          ID                                  REVISED BY URS     DATE: 01-14-04
  55          ID                                                     FILE: L33PE4H.DAT
```

HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  56          ID
  57          ID        NOTES:
  58          ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
  59          ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
  60          ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
```

```
3571          RS      0.7              -1.0     0.0
3572          RC   0.035   0.015   0.035   3055  0.0033
3573          RX       0       3       5      17      62      74      94      97
3574          RY    1196    1195    1195    1189    1189    1195    1195    1196

3575          KK  DC164A
3576          KM   RETURN DIVERT AT LP3
3577          DR  DI177A
              *  COMBINE PER LEVEL III

3578          KK    !LP3
3579          KM   COMBINE HYDROGRAPHS AT LP3
3580          HC       2   10.64
              * HC     2    2.96
              * PER LEVEL III PRELIMINARY-DRAFT PREFERRED ALTERNATIVE
              *  ***************************************************************************************
              *   PB MODIFIED
              *   CHANNEL ROUTING TO THE PROPOSED BASIN AT NORTH OF OLIVE AVENUE
              *   WERE MODIFIED BASED ON REVISED CHANNEL DIMENSION
              *  ***************************************************************************************
              *  KK  RLP3
              *  RS   1.3              -1.0     0.0
              *  RC 0.013   0.013   0.013   5368  0.0025
              *  RX     0    14.2    19.4    24.6    29.8    35.0    40.2    54.4
              *  RY1167.8  1160.7  1160.7  1160.7  1160.7  1160.7  1160.7  1167.8
```



```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

3581          KK  RLP3-1
3582          KM    ROUTE FLOW FROM PEORIA AVENUE TO OLIVE BASIN
3583          RS      0.5              -1.0     0.0
3584          RC   0.035   0.015   0.035   2233  0.0034
3585          RX       0       3       5      17      62      74      94      97
3586          RY    1177    1176    1176    1170    1170    1176    1176    1177
              *  ***************************************************************************************
              *   PB MODIFIED
              *   DIVERT FLOW TO THE PROPOSED BASIN AT NORTH OF OLIVE AVENUE
              *   DIVERATION RATING CURVE WAS DERIVED BASED ON PROPOSED WEIR DESIGN.
              *   THE PROPOSED WEIR LENGTH IS 200 FEET. HEC-RAS LATERAL WEIR ROUTINE WAS
              *   USED TO ESTIMATE THE RATING CURVE.
              *  ***************************************************************************************

3587          KK   DLP3A
              *  KO     1                              21
3588          KM   DIVERT TO OFF-LINE BASIN AT NORTH OF OLIVE AVENUE AND WEST LOOP 303
3589          DT  DILP3A
3590          DI       0     415    1000    1500    2000    2500    3000    3500    4000    4500
3591          DQ       0       0     356     688     956    1301    1714    2144    2567    3027
              *
              *  ***************************************************************************************
              *

3592          KK  DRLP3A
              *  KO     1                              21
3593          KM   RETURN DIVERT AT PROPSED OFF-LINE BASIN NORTH OF OLIVE AVENUE
3594          DR  DILP3A
              *
              *  ***************************************************************************************
              *   PB MODIFIED
              *   STORAGE ROUTING THROUGH THE PROPOSED BASIN AT NORTH OF OLIVE AVENUE
              *   WAS MODIFIED BASED ON PRELIMINARY BASIN DESIGN.
              *  ***************************************************************************************
              *

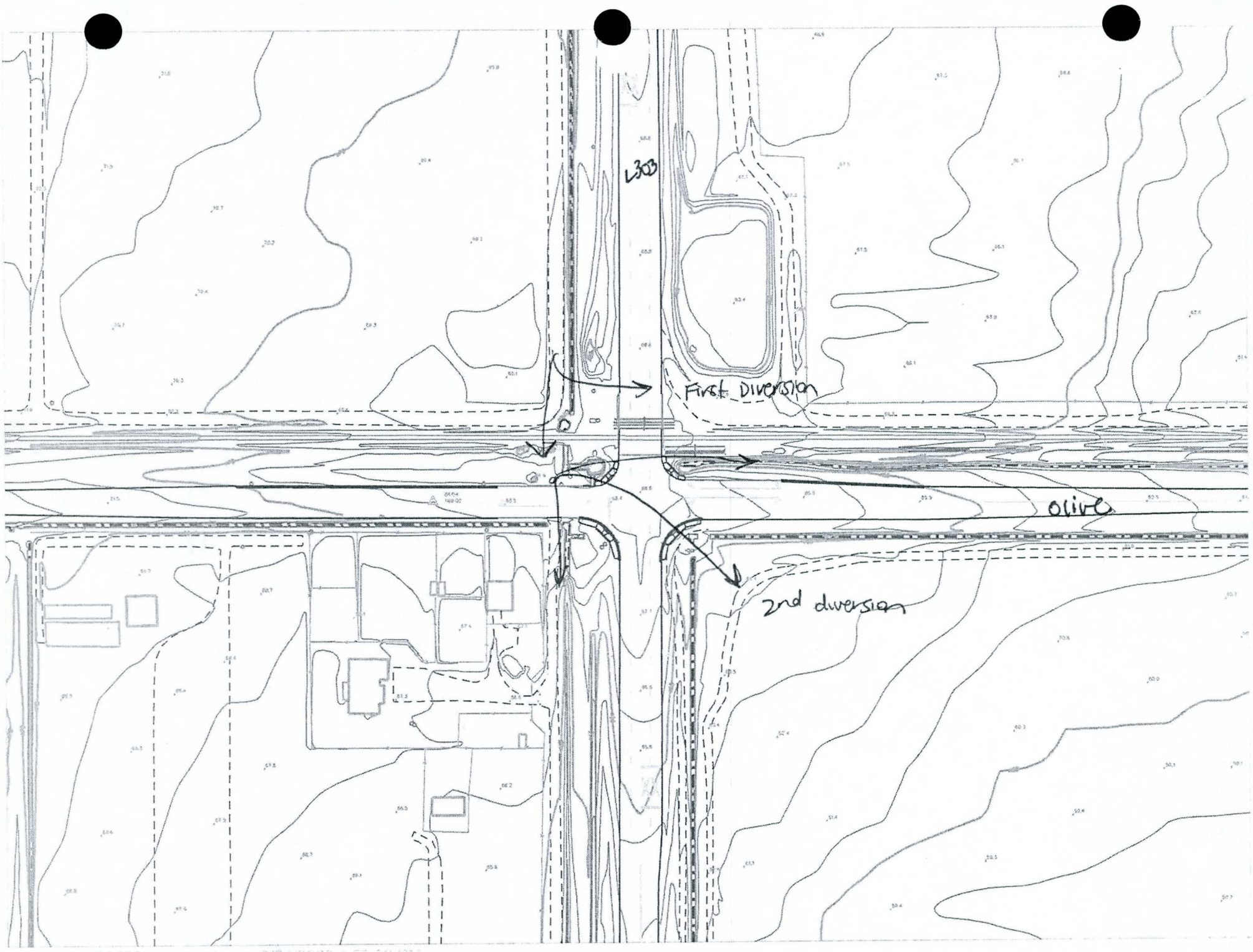
3595          KK  SRLP3A
              *  KO     1                              21
3596          KM   STORAGE ROUTE
3597          RS       1    STOR       0       0
              *  SV     0    16.2    49.8    85.2   122.5   161.7   202.8   290.9   351.4    40
              *  SE  1157    1158    1160    1162    1164    1166    1168    1172  1174.5     1
              *  SL  1157    7.07    0.67     0.5
              *  SL  1164    4.91    0.67     0.5
              *  SS  1175.5       205     2.
3598          SV       0    1.73    6.08   14.84   30.50   50.78   71.58   92.90  114.74  137.11
3599          SV  160.02  183.46  207.45  231.99  257.08  282.74  310.25  338.42  366.89  395.64
3600          SE    1157    1158    1159    1160    1161    1162    1163    1164    1165    1166
3601          SE    1167    1168    1169    1170    1171    1172    1173    1174    1175    1176
              *  SQ     0    8.38   27.77   40.88   52.53   62.31   70.88   78.61   85.71    92
              *  SQ     0    8.38   27.77   40.88   52.53   62.31   70.88   78.61   85.71    92
3602          SQ       0   11.00   36.50   59.50   67.50   74.30   81.40   87.90   94.00   99.70
3603          SQ  105.00  110.10  125.35  158.64  204.98  260.15  531.19 1478.51 2805.34 5584.10
              *
              *
              *  ***************************************************************************************
```



```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

3604          KK    1LP4
3605          KM   COMBINE FLOW FROM BASIN BLEEDOFF PIPE AND FLOW FROM CHANNEL
3606          HC       2
              *

3607          KK  RLP3-2
3608          KM    ROUTE FLOW FROM BASIN  TO OLIVE AVE
3609          RS      0.9              -1.0     0.0
3610          RC   0.035   0.015   0.035   2685  0.0026
3611          RX       0       3       5      15      41      51      71      74
3612          RY    1174    1173    1173    1167    1167    1173    1173    1174
```



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Job No. 79902 | No.

Computation

Project: Loop 303 / White Tanks ADMPU AHA

Subject: Weir Flow Analysis

Task: Weir Calculations

Location: Railroad Tracks at Olive at Loop 303 (DL34)
Combined Rating Curve

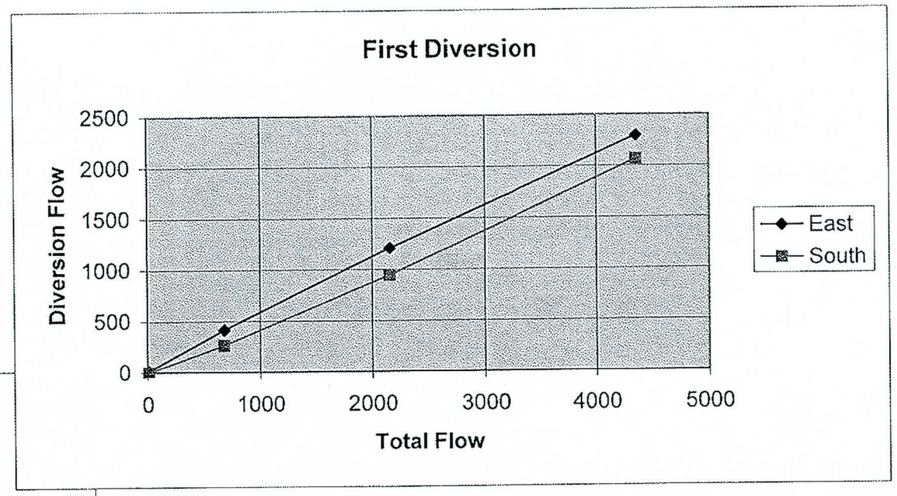
Computed AM | Date 10/27/08

Checked CP | Date 3/10/09

Sheet 1 | Of

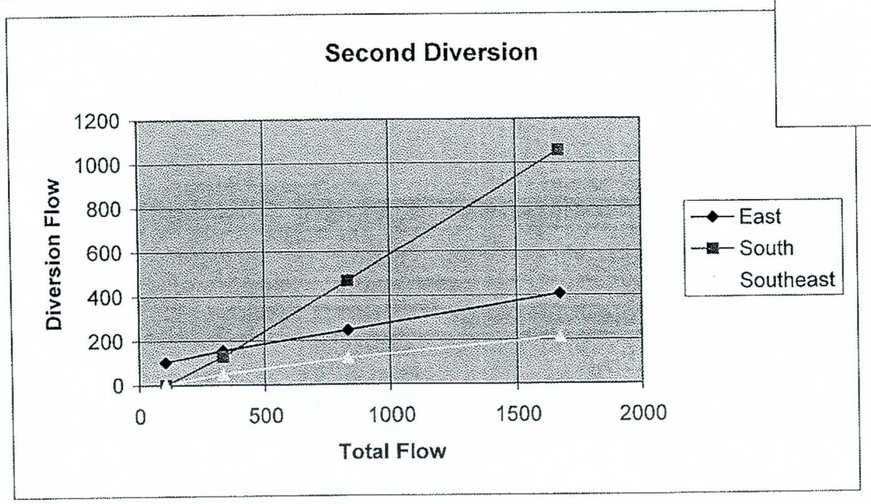
First Diversion

Total Flow	Flow East	Flow South
13.8	13.8	0
681.8	416.2	265.6
2156	1210.2	945.8
4356	2293.4	2062.6



Second Diversion

Total Flow	Flow East	Flow South	Flow Southeast
107.1	103.8	0	3.3
333.6	155.8	129	48.8
834.7	246	467.6	121.1
1674.8	406.6	1055.7	212.5



Overall Rating Curve:

At Flow in of:	East	South	Southeast
13.8	13.8	0	0
681.8	556.2	105.6	20
2156	1485.2	530.8	140
4356	2743.4	1362.6	250

First DI	East to South			
Inflow	13.80	681.80	2156.00	4356.00
Outflow	0.00	125.60	670.80	1612.60

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	0.00	125.60	670.80	1612.60
Outflow	0.00	20.00	140.00	250.00

Assumes diversion is to southeas

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Job No. 79902	No.
Subject	Weir Flow Analysis	Computed AM	Date 10/27/08
Task	Weir Calculations	Checked [illegible]	Date 3/10/09
		Sheet 1	Of x

Location: Railroad Tracks at Olive at Loop 303 (DL34)

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	70	69	120	69.5	68.7	0	0.00	69.2	0	0.00	69.7	0.2	32.20	CHECK	70.2	0.7	210.84	DONE
south	69	68.6	170	68.8	68.7	0	0.00	69.2	0.4	129.02	69.7	0.9	435.45		70.2	1.4	844.82	
southeast	68.6	68.6	35	68.6	68.7	0.1	3.32	69.2	0.6	48.80	69.7	1.1	121.14		70.2	1.6	212.51	
east	68.6	68.6	40	68.6	68.7	0.1	3.79	69.2	0.6	55.77	69.7	1.1	138.44		70.2	1.6	242.86	
east	68.6	70	10	69.3	68.7	0	0.00	69.2	0	0.00	69.7	0.4	7.59		70.2	0.9	25.61	
east	70	70	100	70	68.7	0	0.00	69.2	0	0.00	69.7	0	0.00		70.2	0.2	26.83	
east	70	70	1	70	68.7	0	0.00	69.2	0	0.00	69.7	0	0.00		70.2	0.2	0.27	
east	70	70	1	70	68.7	0	0.00	69.2	0	0.00	69.7	0	0.00		70.2	0.2	0.27	
east	70	70	40	70	68.7	0	0.00	69.2	0	0.00	69.7	0	0.00		70.2	0.2	10.73	
						TOTALS:	7.12			233.59			734.81				1574.74	

Graph Computations:

Station	Elevation
0	70
120	69
290	68.6
325	68.6
365	68.6
375	70
475	70
476	70
477	70
517	70

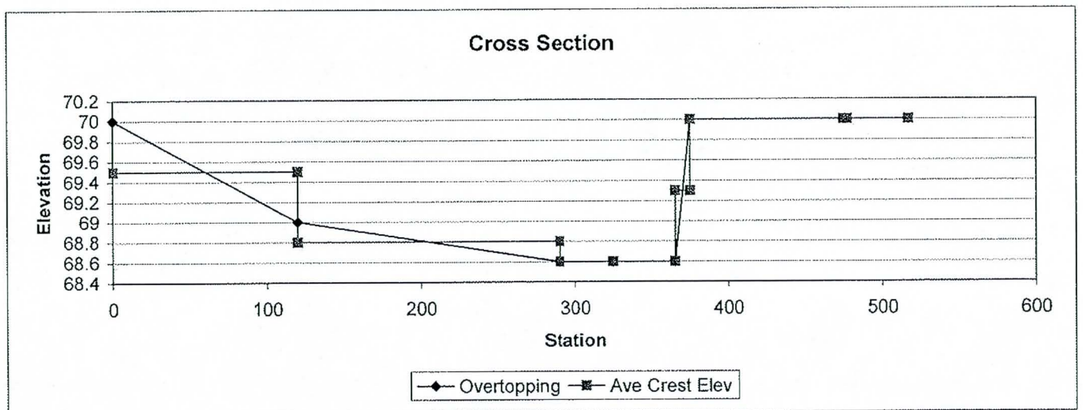
Weir Approximation:

Station	Elevation
0	69.5
120	69.5
120	68.8
290	68.8
290	68.6
325	68.6
325	68.6
365	68.6
365	69.3
375	69.3
375	70
475	70
475	70
476	70
476	70
477	70
477	70
517	70

Culvert Flows (cfs):

south	0
southeast	0
east	100

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	0.00	0%	Q(south)	129.02	39%	Q(south)	467.65	56%	Q(south)	1055.65	63%
Q(southeast)	3.32	3%	Q(southeast)	48.80	15%	Q(southeast)	121.14	15%	Q(southeast)	212.51	13%
Q(east)	103.79	97%	Q(east)	155.77	47%	Q(east)	246.03	29%	Q(east)	406.58	24%
	107.12			333.59			834.81			1674.74	

~~First DI~~	~~South to East~~			
~~Inflow~~	~~107.12~~	~~333.59~~	~~834.81~~	~~1674.74~~
~~Outflow~~	~~107.12~~	~~204.57~~	~~367.17~~	~~619.09~~

~~Assumes diversion is to east~~

~~Second DI~~	~~Southeast to East~~			
~~Inflow~~	~~107.12~~	~~204.57~~	~~367.17~~	~~619.09~~
~~Outflow~~	~~103.79~~	~~155.77~~	~~246.03~~	~~406.58~~

~~Assumes diversion is to southeast~~

SEE COMBINED FOR RATING CURVE

Computation

Job No.	79902	No.	
Project	Loop 303 / White Tanks ADMPU AHA	Computed	AM
Subject	Weir Flow Analysis	Checked	AP
Task	Weir Calculations	Sheet	1

Location: Railroad Tracks at Olive at Loop 303 (DL34)
1st Diversion at RR Tracks

Date 10/27/08
Date 3/10/09
Of x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	70	69	184	69.5	68.7	0	0.00	69.2	0	0.00	69.7	0.2	49.37	CHECK	70.2	0.7	323.29	DONE
south	69	68.6	350	68.8	68.7	0	0.00	69.2	0.4	265.63	69.7	0.9	896.51		70.2	1.4	1739.33	
east	68.6	68.6	110	68.6	68.7	0.1	10.44	69.2	0.6	153.37	69.7	1.1	380.72		70.2	1.6	667.87	
east	68.6	68.7	100	68.65	68.7	0.05	3.35	69.2	0.55	122.37	69.7	1.05	322.78		70.2	1.55	578.92	
east	68.7	68.8	100	68.75	68.7	0	0.00	69.2	0.45	90.56	69.7	0.95	277.78		70.2	1.45	523.81	
east	68.8	69	100	68.9	68.7	0	0.00	69.2	0.3	49.30	69.7	0.8	214.66		70.2	1.3	444.67	
east	69	69	1	69	68.7	0	0.00	69.2	0.2	0.27	69.7	0.7	1.76		70.2	1.2	3.94	
east	69	69	1	69	68.7	0	0.00	69.2	0.2	0.27	69.7	0.7	1.76		70.2	1.2	3.94	
east	69	70	40	69.5	68.7	0	0.00	69.2	0	0.00	69.7	0.2	10.73		70.2	0.7	70.28	
					TOTALS:		13.79			681.76			2156.07				4356.05	

Graph Computations:

Station	Elevation
0	70
184	69
534	68.6
644	68.6
744	68.7
844	68.8
944	69
945	69
946	69
986	70

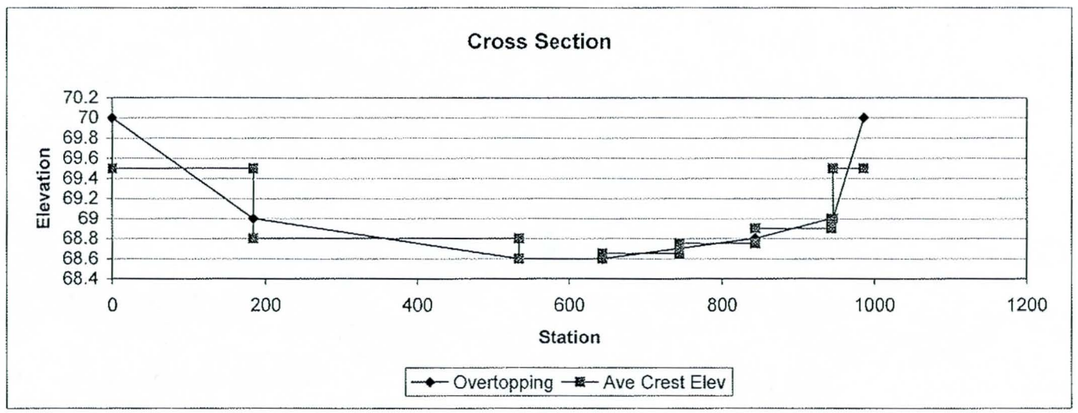
Weir Approximation:

Station	Elevation
0	69.5
184	69.5
184	68.8
534	68.8
534	68.6
644	68.6
644	68.65
744	68.65
744	68.75
844	68.75
844	68.9
944	68.9
944	69
945	69
945	69
946	69
946	69.5
986	69.5

Culvert Flows (cfs):

south	0
southeast	0
east	0

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	0.00	0%	Q(south)	265.63	39%	Q(south)	945.88	44%	Q(south)	2062.61	47%
Q(southeast)	0.00	0%	Q(southeast)	0.00	0%	Q(southeast)	0.00	0%	Q(southeast)	0.00	0%
Q(east)	13.79	100%	Q(east)	416.13	61%	Q(east)	1210.19	56%	Q(east)	2293.44	53%
	13.79			681.76			2156.07			4356.05	

~~First DI~~	~~East to South~~			
~~Inflow~~	~~13.79~~	~~681.76~~	~~2156.07~~	~~4356.05~~
~~Outflow~~	~~0.00~~	~~265.63~~	~~945.88~~	~~2062.61~~

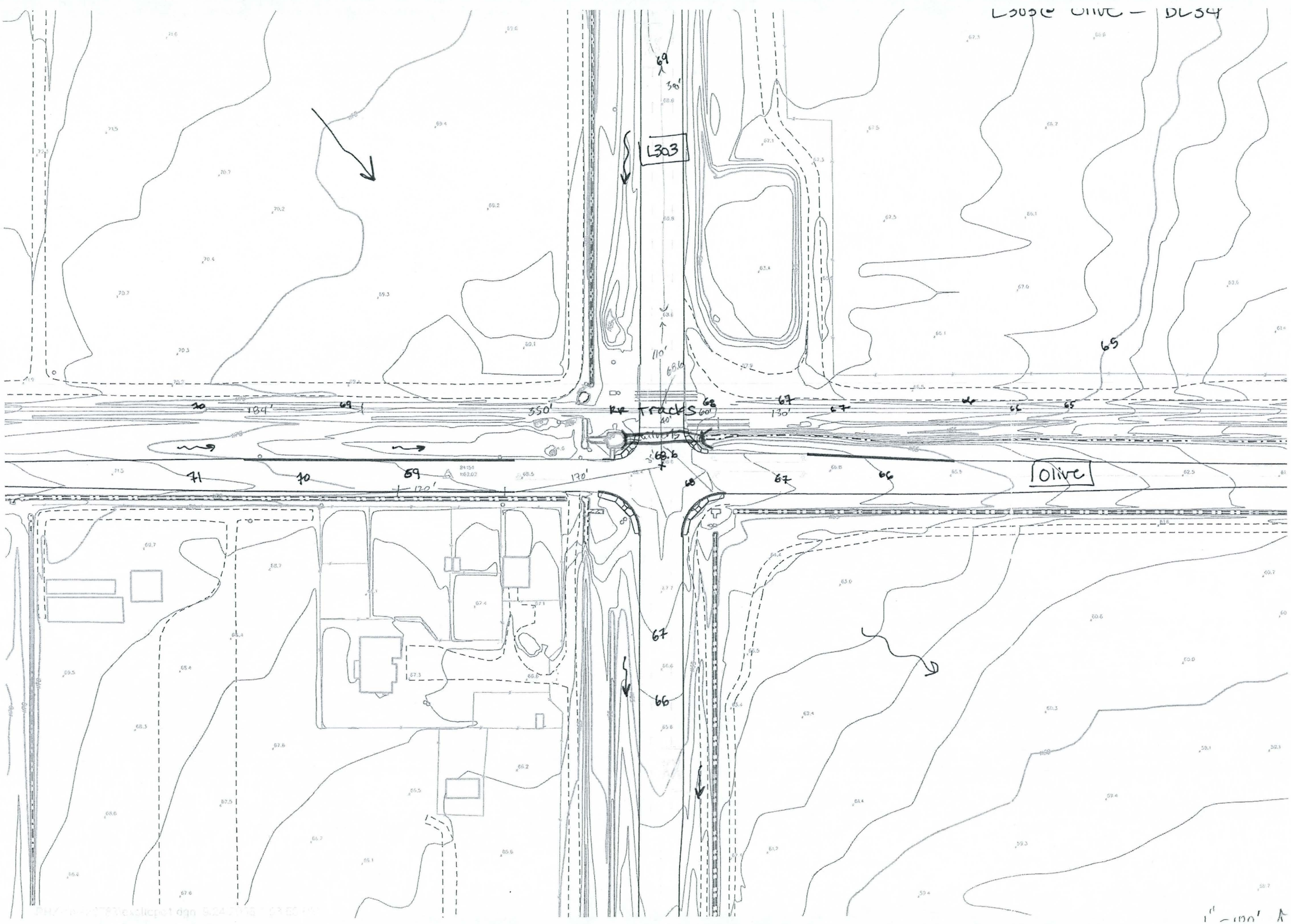
~~Assumes diversion is to south~~

SEE COMBINED FOR RATING CURVE

~~Second DI~~	~~East to Southeast~~			
~~Inflow~~	~~13.79~~	~~416.13~~	~~1210.19~~	~~2293.44~~
~~Outflow~~	~~0.00~~	~~0.00~~	~~0.00~~	~~0.00~~

~~Assumes diversion is to southeast~~

L303 E. Olive


L303@ Olive – BL34
L303
69
30'
110'
68.6
RR tracks
70
184'
69
350'
68
40'
60'
67
130'
67
66
66
65
65
Olive
71
70
69
120'
170'
68.6
68
67
66
67
66

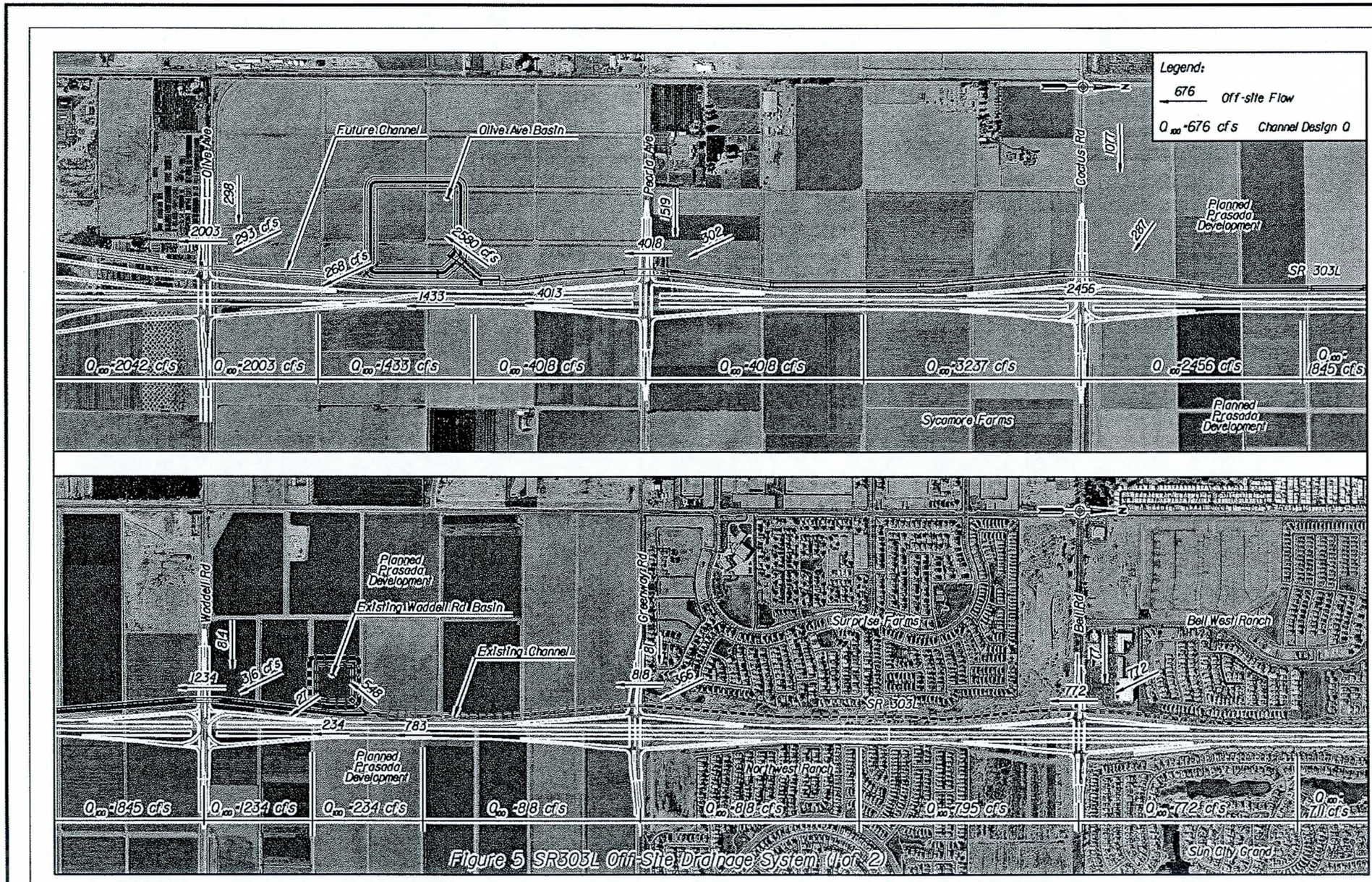
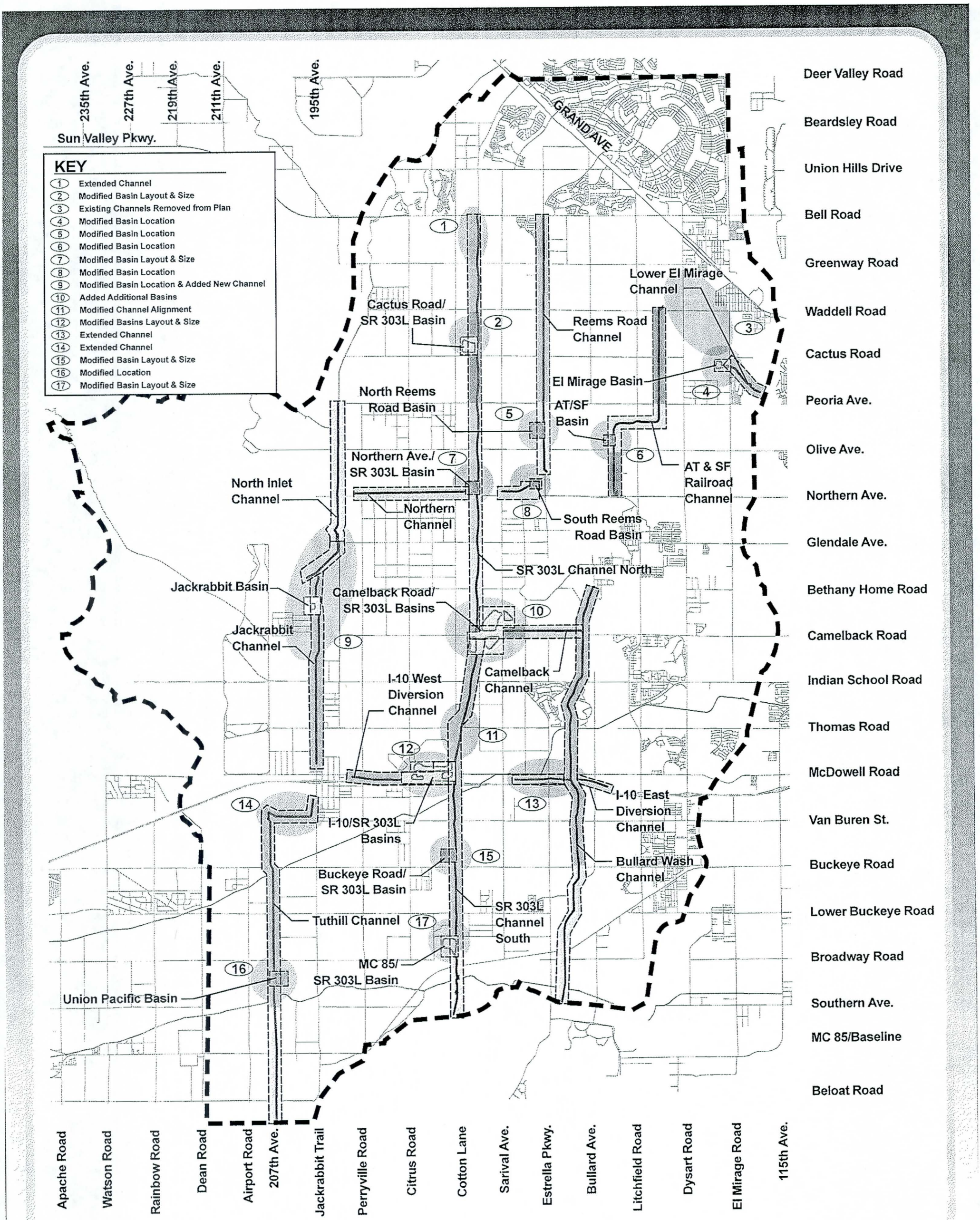


Figure 5 – SR303L Off-Site Drainage System
1 of 2

W28, S70, L72, B65, D69
L09, L13, L19, L27, L34

Table 2.4B
Proposed Basin Summary
Existing Condition Hydrology

Channel/ Location ID	Qin (cfs)	Qout (cfs)	Vin (ac-ft)	Peak Storage (ac-ft)	Max. Vol. Provided (ac-ft)	Peak Stage (ft)	on/off line	Combined Total Outflow (cfs)	Length Low-Flow Basin Drain (ft)	Prop. Bot. Elev. (ft)	Prop. Top Elev. (ft)	Design FB (ft)	Actual FB (ft)	Backwater
Jackrabbit Channel														
SRJR1 (N. of Camelback)	850	65	42	41.5	43.9	1185.5	off-line	151	8,323	1,173.5	1,186.0	0.0	0.5	-----
Tuthill Channel														
SRTC5 (@ RxR)	1,646	550	109	108.5	108.5	898.0	off-line	618	4,390	890.0	898.0	0.0	-0.6	-----
I-10 Channel West														
SR10W7	1593	741	282	85.2	85.2	1022.0	on-line	N/A	2,487	1,010.5	1,022.0	0.0	0.0	-----
L303 Channel														
SRLP2 (Cactus Road)	2311	311	543	440	440.0	1212.0	off-line	587	5,630	1,197.0	1,212.0	0.0	0.0	-----
SRLP5 (Northern)	4241	442	354	334	333.0	1141.0	off-line	1380	6,934	1,126.0	1,141.0	0.0	0.0	-----
SRLP8 (Camelback)	2102	340	1081	705.9	700.0	1065.0	on-line	N/A	14,062	1,059.0	1,065.0	0.0	0.0	-----
SRLP12 (I-10)	1781	701	1166	591.5	590.0	1016.0	on-line	N/A	4,961	1,001.0	1,016.0	0.0	0.0	-----
SRLP14 (Yuma/Buckeye)	695	523	823	189.0	190.0	968.0	on-line	N/A	4,092	959.0	968.0	0.0	0.0	-----
SRLP16 (MC85)	751	448	938	325.0	325.0	913.0	on-line	N/A	2,872	903.0	913.0	0.0	0.0	-----
Reems/Northern Channel														
SRRM5 (Olive)	1,752	198	189	165.0	165.0	1134.0	off-line	818	1,449	1,127.0	1,134.0	0.0	0.0	-----
BSNR6(Northern)	477	0	55	55.0	61.1	1107.5	in-line	0	1,413	1,095.0	1,108.5	0.0	1.2	-----
AT&SF Railroad Channel														
SRRR7 (@Olive)	1,770	1285	331	81.3	142.7	1105.6	off-line	1439	1,832	1,097.5	1,111.5	0.0	6.1	-----
Lower El Mirage Channel														
(SRLE4 SW corner of Cactus and El Mirage)	1,312	813	191	56.9	80.0	1111.4	off-line	852	2,069	1,104.5	1,114.0	0.0	2.1	-----
Bullard Wash														
SRBD1S (I-10 and Bullard Wash)	2682	2011	813	134.9	138.0	990.2	off-line	575 - ADOT	4,390	978.5	990.2	0.0	-0.2	-----
								2239 - BLRD						



Basin & Channel Locations

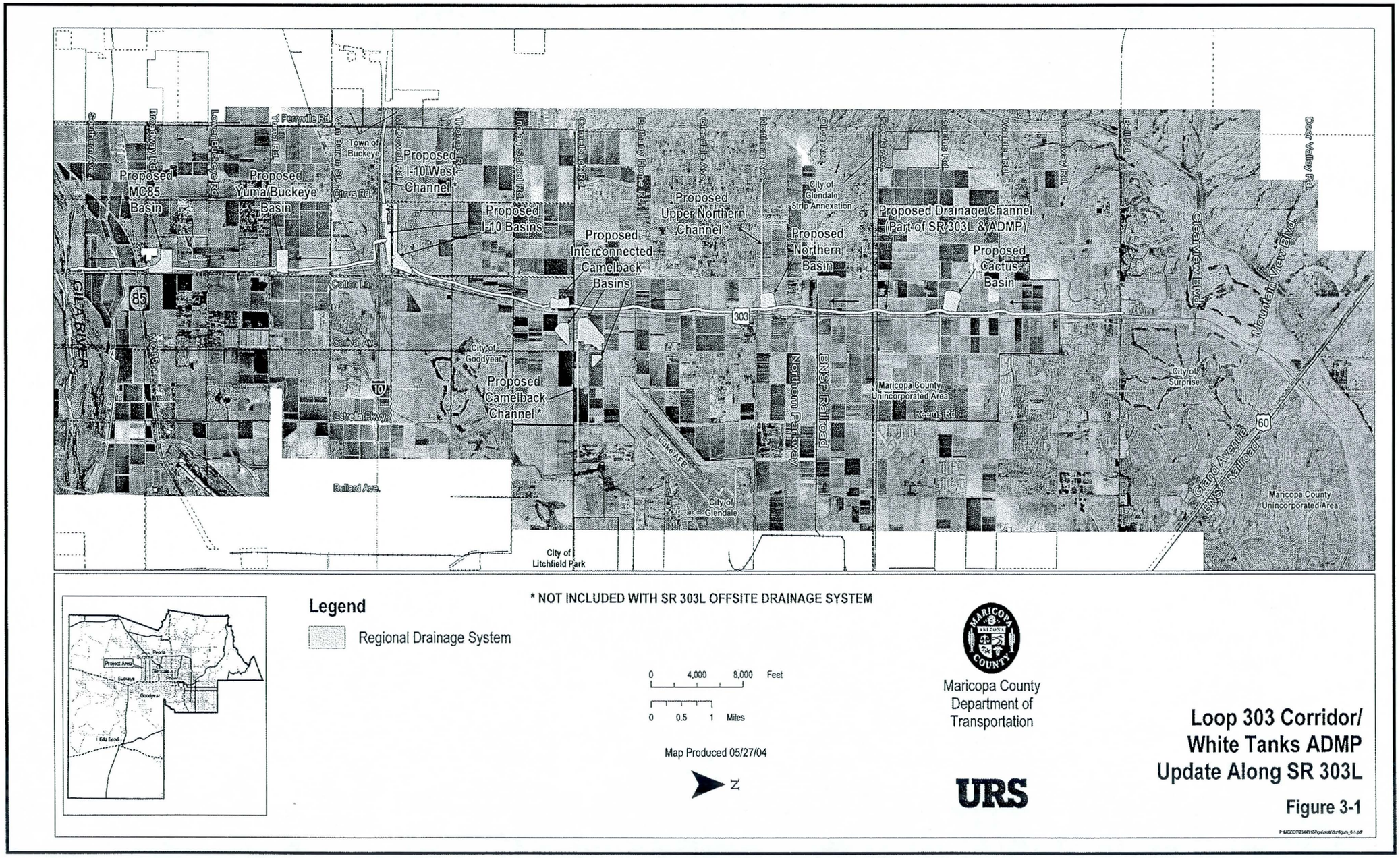


Figure 3 - Loop 303 Corridor/White Tanks ADMP Update Along SR303L

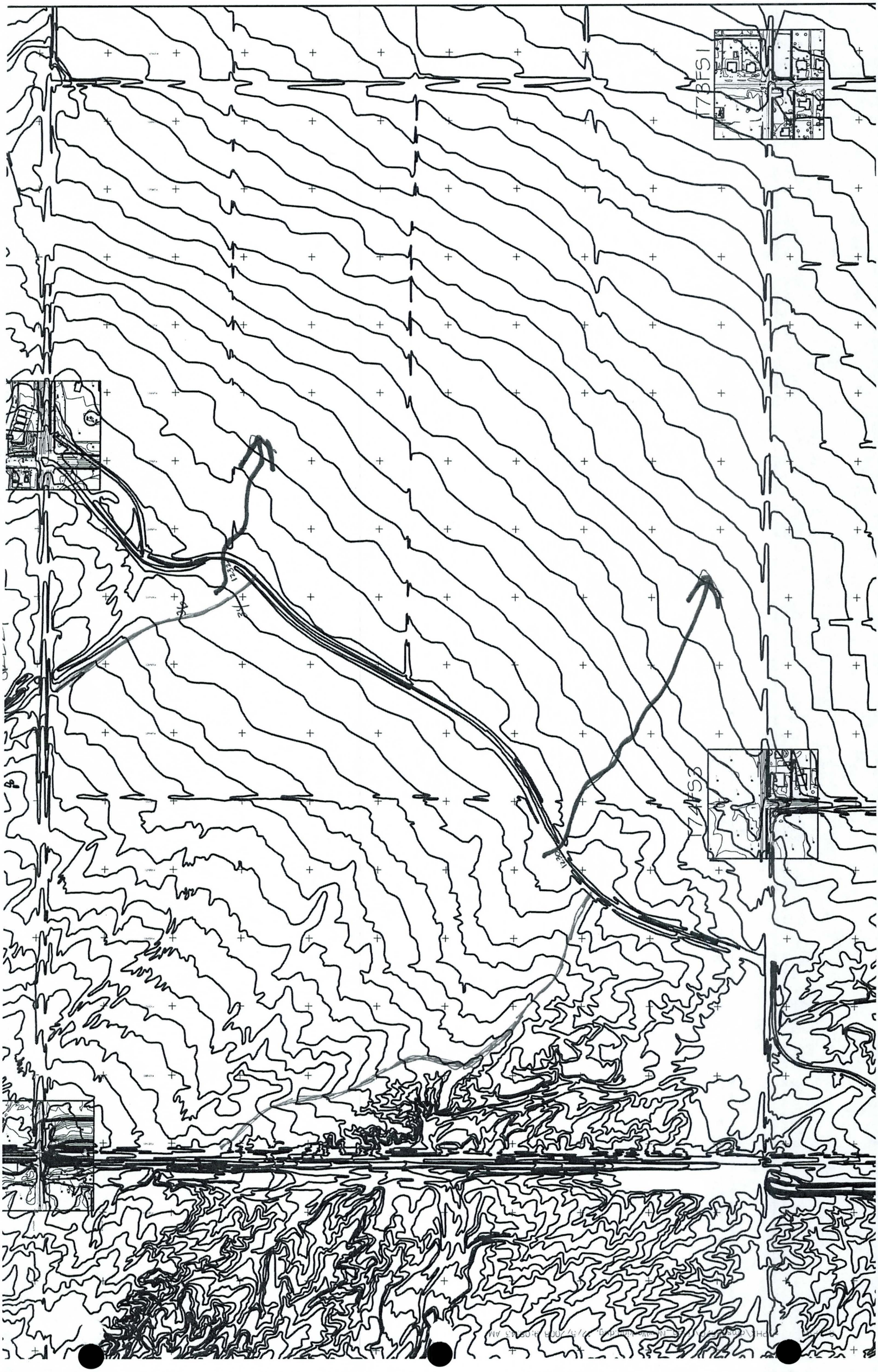
Table 2.2A
Proposed Channel Summary
Existing Condition Hydrology

Channel Name	Concentration Point	Qexist	[1]Approximate Qcap (cfs)	DS Invert (ft)	WSEL (ft)	Flow Depth (ft)	Channel Depth (ft)	Bottom Width (ft)	Side Slope (H:V)	Design s (ft/ft)	(Q/A) V ft/s	Froude Number F_N	Channel [3]Tw (ft)	(WSEL) [3]Tw (ft)
Camelback Channel														
	!CM2	372	372	1052.7	1056.5	3.8	4.7	5	(6:1)	*0.0020*	3.6	0.44	132	51
	!CM3	485	485	1047.5	1051.8	4.2	5.4	5	(6:1)	*0.0020*	3.8	0.45	143	57
	!CM4	783	783	1040.7	1044.8	4.1	6.3	26	(4:1)	*0.0020*	4.5	0.46	152	59
Jackrabbit Channel														
	!JR1	953	953	1177.1	1182.6	5.5	6.9	5	(6:1)	*0.0021*	4.6	0.47	167	71
	!JR2	813	813	1165.0	1169.3	4.3	5.3	15	(6:1)	*0.0025*	4.7	0.51	154	67
	!JR3	933	933	1147.4	1150.4	4.0	4.4	15	(6:1)	*0.0046*	6.1	0.61	140	51
	!JR4	1,324	1,324	1109.9	1114.3	4.4	4.4	25	(6:1)	*0.0035*	5.9	0.61	153	78
	!JR5	1,683	1,683	1080.3	1084.6	4.3	4.3	40	(6:1)	*0.0033*	6.0	0.60	171	92
SR303L URS DCR - Channel														
	!LP0	772	772	1275.6	1279.0	3.4	5.5	10	(2:1)	*0.0049*	13.7	1.57	62	24
	!LP	854	854	1247.9	1251.5	3.5	5.4	10	(2:1)	*0.0050*	14.3	1.61	62	24
	!LP1	1,612	1,612	1227.3	1232.5	5.1	5.9	12	(2:1)	*0.0031*	14.1	1.33	66	33
Cactus Road Basin	!LP2	2,898	2,898	1209.8	1215.9	6.0	6.1	20	(2:1)	*0.0026*	15.0	1.26	74	44
offline low flow/bypass channel	2LP2	587	587	1200.0	1202.6	2.5	4.8	20	(2:1)	*0.0026*	9.3	1.14	69	30
	!LP3	2,140	2,140	1180.8	1185.9	5.0	5.1	21	(2:1)	*0.0027*	13.8	1.26	71	41
	!LP4	2,636	2,636	1160.7	1165.9	5.2	5.2	26	(2:1)	*0.0025*	14.1	1.24	77	47
	!LP5	2,624	2,636	1136.3	1141.5	5.2	5.2	26	(2:1)	*0.0025*	14.0	1.23	77	47
offline low flow/bypass channel	2LP5	1,380	1,380	1130.4	1133.8	3.4	3.7	26	(2:1)	*0.0032*	12.5	1.32	71	40
	!LP6	1,539	1,539	1110.0	1115.1	5.1	6.4	16	(2:1)	*0.0020*	11.6	1.07	72	36
	!LP7	1,770	1,770	1087.1	1092.2	5.0	6.2	19	(2:1)	*0.0021*	12.1	1.10	74	39
	!LP8	2,097	2,097	1065.8	1070.7	4.9	6.1	26	(2:1)	*0.0020*	12.1	1.09	80	46
	!LP9	557	557	1047.9	1052.2	4.2	4.3	5	(2:1)	*0.0023*	9.8	1.08	52	22
	!LP10	624	624	1032.4	1036.1	3.7	3.7	5	(2:1)	*0.0052*	13.7	1.58	50	20
	!LP11	988	988	1014.5	1019.2	4.7	5.7	5	(2:1)	*0.0047*	14.8	1.56	58	24
	!LP13	697	701	984.8	988.5	3.6	3.8	8	(2:1)	*0.0041*	12.7	1.45	53	23
	!LP14	695	701	966.2	969.7	3.5	3.7	8	(2:1)	*0.0048*	13.5	1.54	53	22
	!LP15	676	676	934.2	937.7	3.4	4.2	8	(2:1)	*0.0048*	13.3	1.54	55	22
	!LP16	751	751	914.8	918.3	3.5	4.2	8	(2:1)	*0.0056*	14.5	1.67	55	22
	!LP17	447	448	884.3	888.7	4.3	5.5	5	(2:1)	*0.0013*	7.6	0.82	57	23
Upper Northern Channel														
	!NR1	256	256	1219.0	0.0	2.7	3.6	5	(6:1)	*0.0050*	4.6	0.66	115	37
	!NR2	1,309	1,309	1182.2	1186.3	4.0	4.1	30	(6:1)	*0.0039*	6.1	0.65	155	79
	!NR3	2,246	2,246	1143.5	1148.5	5.0	5.0	45	(6:1)	*0.0028*	6.0	0.56	189	105
	!NR4	2,308	2,308	1136.0	1141.0	5.0	5.0	50	(6:1)	*0.0025*	5.8	0.54	195	110
Lower Northern Channel	!NR5	262	262	1122.6	1125.9	3.3	4.3	5	(6:1)	*0.0020*	3.3	0.43	126	45
	!NR6	477	477	1096.7	1100.2	3.4	4.5	5	(6:1)	*0.0053*	5.5	0.71	129	47
Reems Road Channel														
	[2]RM1	709	516	1222.1	1226.6	4.5	5.7	6.5	(3:1)	*0.0040*	5.8	0.63	105	34
	[2]RM2	957	1,382	1208.2	1214.3	6.0	7.7	11.5	(4:1)	*0.0032*	6.5	0.60	147	60
	!RM3	1,366	1,366	1167.8	1172.0	4.1	4.2	30	(6:1)	*0.0037*	6.0	0.63	157	80
	!RM4	1,640	1,640	1142.7	1147.7	5.0	5.0	30	(6:1)	*0.0025*	5.5	0.53	169	90
	!RM5	2,179	2,179	1119.4	1124.6	5.1	5.2	40	(6:1)	*0.0027*	6.0	0.57	185	102
	!RM6	826	826	1100.6	1105.0	4.3	5.3	10	(6:1)	*0.0034*	5.3	0.59	148	63

Table 2.2A (continued)
Proposed Channel Summary
Existing Condition Hydrology

Channel Name	Concentration Point	Qexist	[1]Approximate Qcap (cfs)	DS Invert (ft)	WSEL (ft)	Flow Depth (ft)	Channel Depth (ft)	Bottom Width (ft)	Side Slope (H:V)	Design s (ft/ft)	(Q/A) V ft/s	Froude Number F_N	Channel [3]Tw (ft)	(WSEL) [3]Tw (ft)
AT&SF Railroad Channel														
	!RR1	425	425	1150.8	1154.5	3.6	3.9	10	(6:1)	*0.0020*	3.7	0.44	126	54
	!RR2	492	492	1146.2	1149.7	3.4	3.5	10	(6:1)	*0.0035*	4.7	0.58	120	52
	!RR3	785	785	1127.9	1131.9	4.0	4.0	10	(6:1)	*0.0046*	5.9	0.68	127	58
	!RR4	936	936	1110.1	1114.4	4.3	4.3	15	(6:1)	*0.0034*	5.4	0.59	139	67
	!RR5	970	970	1103.3	1108.5	5.2	5.2	15	(6:1)	*0.0015*	4.0	0.41	153	77
	!RR6	1,733	1,733	1098.8	1105.5	6.7	6.7	15	(6:1)	*0.0015*	4.7	0.42	176	95
	!RR7	1,770	1,770	1095.1	1101.9	6.8	6.8	15	(6:1)	*0.0015*	4.7	0.42	178	97
	!RR8	1,585	1,585	1081.1	1086.9	5.8	5.8	15	(6:1)	*0.0025*	5.5	0.53	162	85
Lower El Mirage Channel														
	!LE4	1,356	1,356	1107.2	1111.9	4.7	6.8	35	(3:1)	*0.0026*	5.9	0.54	151	63
	!LE5	865	865	1086.6	1090.6	4.0	5.1	15	(6:1)	*0.0038*	5.6	0.63	152	63
Bullard Wash Channel														
	!BD1N	2,103	2,103	1057.0	1047.3	5.2	7.0	45	(6:1)	*0.0020*	5.3	0.49	219	109
	!BD2N	3,244	3,244	1044.1	1049.8	5.7	7.8	65	(6:1)	*0.0020*	5.8	0.49	258	133
	!BD3N	3,410	3,410	1015.6	1020.7	5.0	6.7	65	(10:1)	*0.0027*	5.9	0.56	312	167
	!BD4N	3,248	3,410	1006.0	1010.8	4.7	6.4	102	(9:1)	*0.0018*	5.0	0.47	335	188
	!BD1S	3,556	3,556	985.5	990.4	4.9	6.4	90	(6:1)	*0.0025*	6.1	0.55	269	149
	!BD2S	2,321	2,321	980.9	984.4	3.5	3.8	95	(6:1)	*0.0033*	5.8	0.60	235	137
I-10 West Diversion Channel														
	!10W1	970	970	1045.8	N/A	3.8	4.5	25	(6:1)	*0.0035*	5.4	0.60	155	71
	!10W2	1,010	1,010	1039.7	1043.4	3.7	4.2	25	(6:1)	*0.0042*	5.9	0.66	150	69
	!10W3	1,046	1,046	1032.7	1036.5	3.7	4.1	25	(6:1)	*0.0042*	5.9	0.66	148	71
	!10W4	1,175	1,175	1028.5	1032.4	3.8	4.3	30	(6:1)	*0.0038*	5.8	0.63	158	77
	!10W5	1,588	1,588	1014.6	1018.9	4.3	5.0	35	(6:1)	*0.0036*	6.1	0.62	175	87
	!10W7	1,593	1,593	1014.6	1019.6	5.0	5.7	35	(6:1)	*0.0020*	5.0	0.48	186	95
	!10W8	743	743	1005.8	1010.5	4.6	5.5	10	(6:1)	*0.0020*	4.2	0.46	151	66
Tuthill Channel														
	!TC1	1,417	1,417	998.7	1003.5	4.7	5.8	20	(6:1)	*0.0037*	6.2	0.63	168	78
	!TC2	1,553	1,553	991.8	997.1	5.2	6.1	25	(6:1)	*0.0023*	5.3	0.51	180	89
	!TC3	1,491	1,491	957.0	961.9	4.8	5.1	25	(6:1)	*0.0029*	5.7	0.57	163	84
	!TC4	1,546	1,546	914.7	919.3	4.6	4.6	30	(6:1)	*0.0032*	5.9	0.59	163	85
	!TC5	1,926	1,926	886.8	891.4	4.6	4.6	40	(6:1)	*0.0033*	6.3	0.61	176	95
	!TC6	646	646	882.3	885.9	3.6	3.6	15	(6:1)	*0.0035*	5.0	0.59	128	58
	!TC7	1,323	1,323	863.6	867.8	4.1	4.2	45	(6:1)	*0.0020*	4.6	0.47	176	95
	!TC8	1,506	1,506	859.4	864.6	5.2	5.2	45	(6:1)	*0.0011*	3.8	0.35	192	107
	!TC9	1,503	1,506	854.8	860.1	5.3	5.3	45	(6:1)	*0.0010*	3.7	0.34	193	109
I-10 East Diversion Channel														
	10CE-US	575	575	984.5	988.6	4.1	4.5	12	(6:1)	*0.0019*	3.9	0.44	138	61
	10CE1	556	575	978.5	985.2	4.1	4.5	12	(6:1)	*0.0018*	3.8	0.43	138	62
I-10 Central Channel														
	!10C1	79	79	1005.4	1007.7	2.2	2.3	2	(6:1)	*0.0020*	2.4	0.40	90	29
	!10C2	131	131	1002.6	1005.3	2.7	2.7	2	(6:1)	*0.0020*	2.8	0.41	96	34
	!10C3	170	170	995.9	998.9	3.0	3.0	2	(6:1)	*0.0020*	2.9	0.42	101	38
	!10C4	243	243	982.2	985.5	3.2	3.3	2	(6:1)	*0.0026*	3.6	0.49	105	41

1. By normal depth computation.
2. Channel reach exists.
3. Top width.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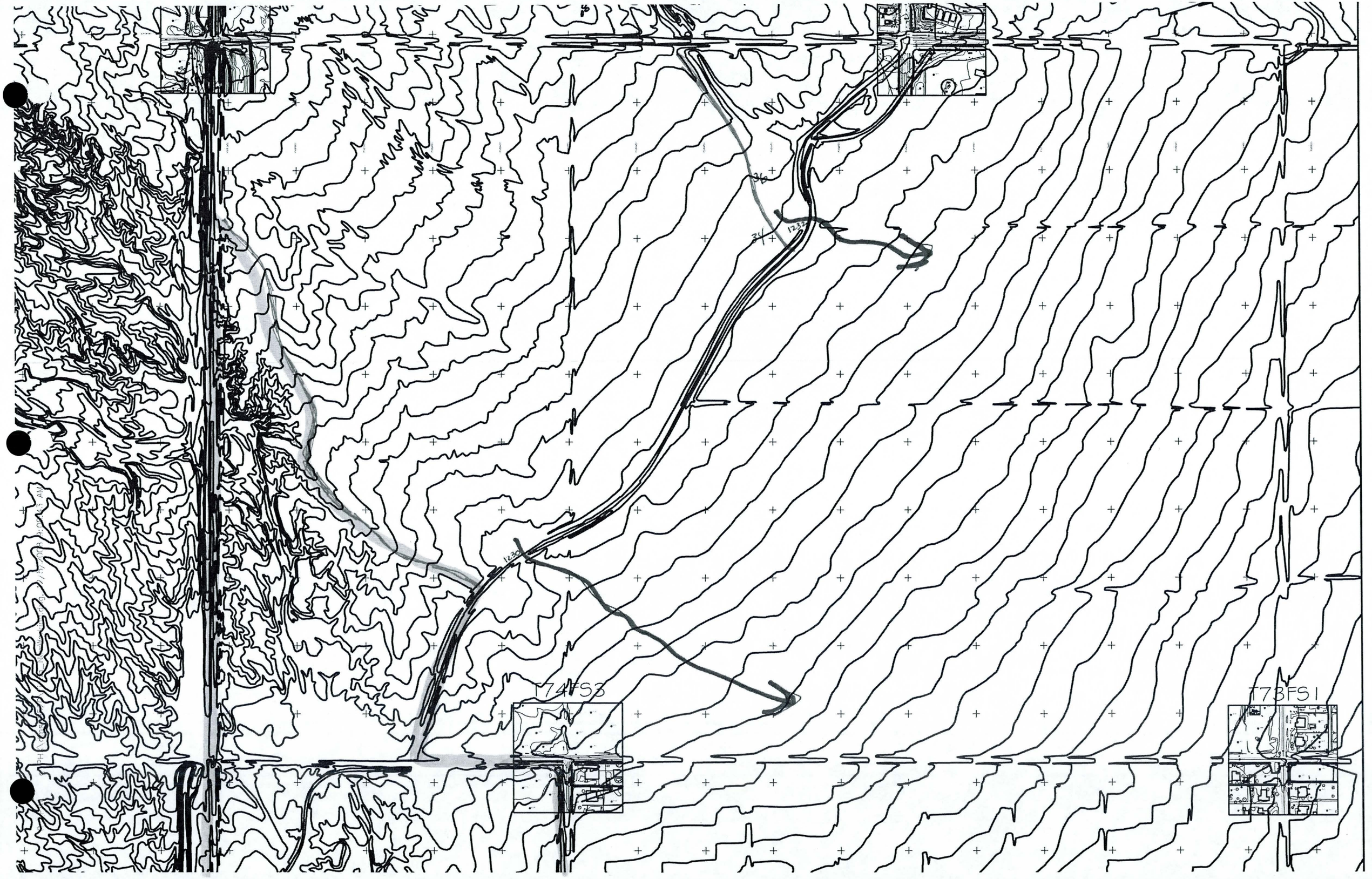
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Traffic
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Map
Satellite
Show labels
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W Townley Ave
W Golden Ln
W Ruth Ave
W Diana Ave
W Orchid Ln
W Seldon Ave
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W El Caminito Dr
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N 179th Dr
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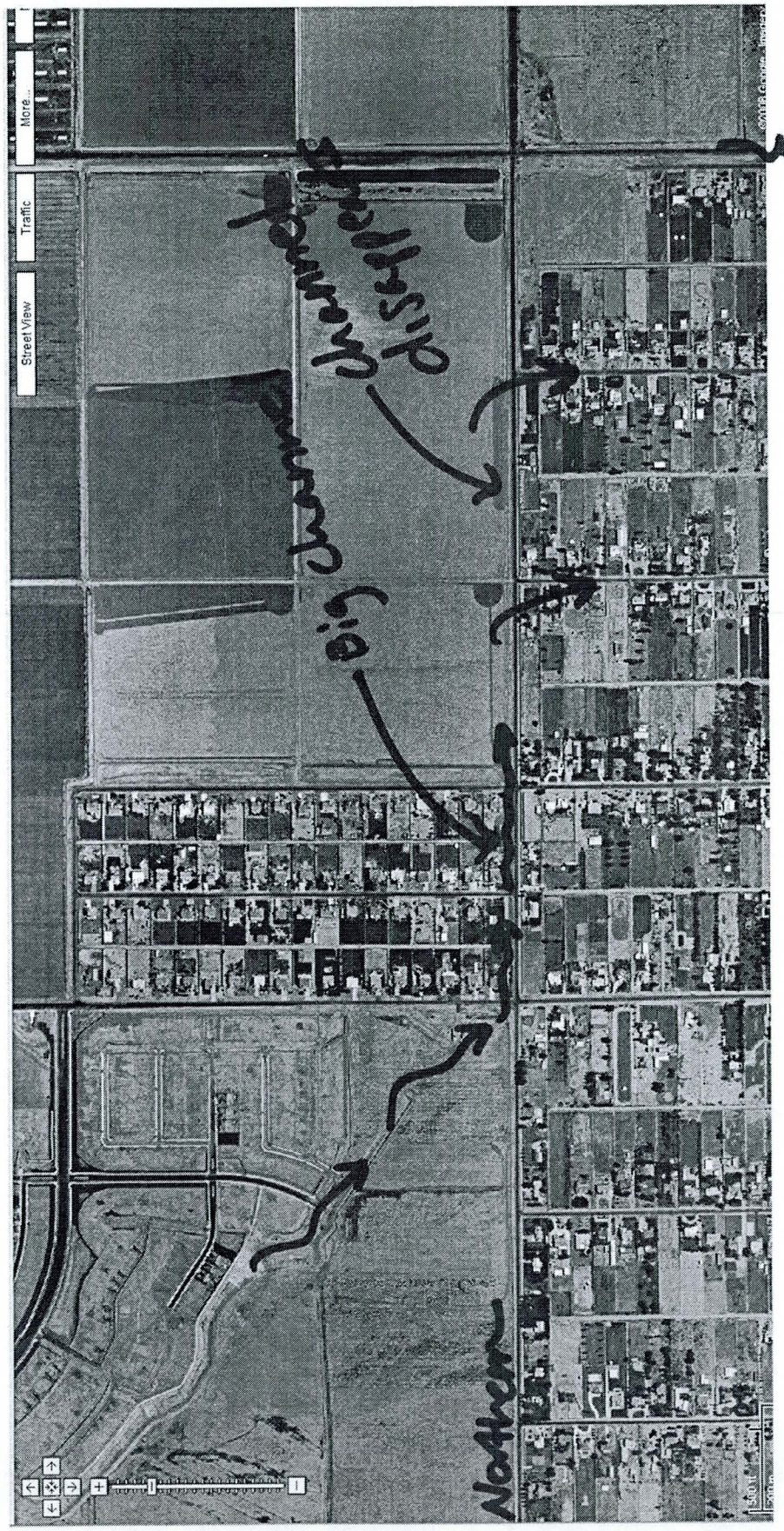
CPL36
CPL38

Northern @ Cotton



Potential for overtopping?

L36 | L37 | L38

CITRUS

Big Culvert & channel

Northern & Citrus

Northern @ Citrus

all stays north

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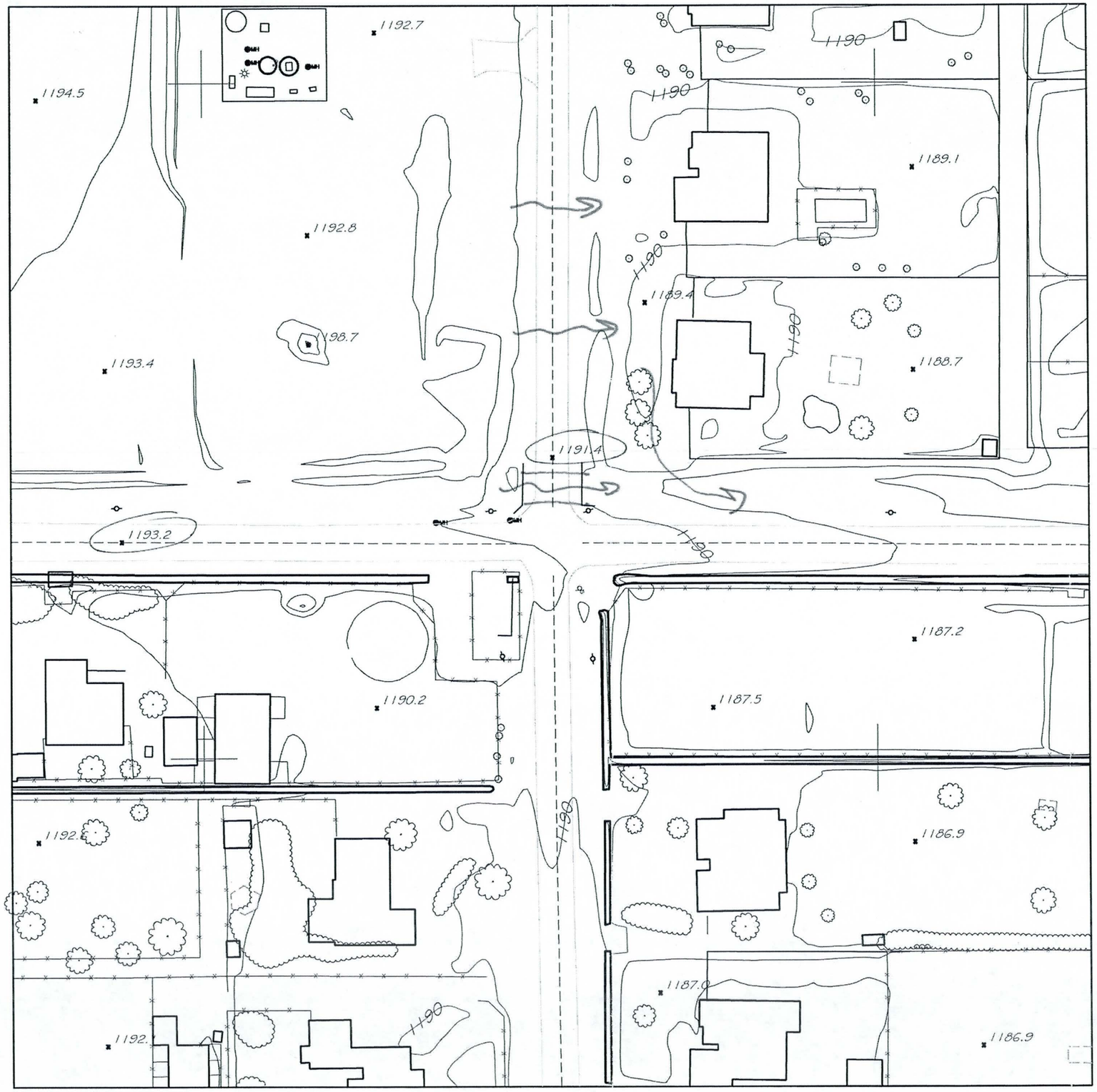
Northern @ Citrus



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For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

CIP model

Source

L38

1**********
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* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* JUN 1998 *
* VERSION 4.1 *
* *
* DATE 07MAY09 TIME 08:05:50 *
* *
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* *
* U.S. ARMY CORPS OF ENGINEERS *
* HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET *
* DAVIS, CALIFORNIA 95616 *
* (916) 756-1104 *
* *
****

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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

    1         ID        LOOP 303 OFF-SITE HYDROLOGY
    2         ID        MODIFIED BASED ON FCDMC'S WHITE TANKS/LOOP 303 CORRIDOR ADMP
    3         ID        THE MODIFICATIONS ARE DESCRIBED AS FOLLOWS:
    4         ID        1. THE CACTUS RD BASIN WAS REMOVED AND TWO RELATIVELY SMALL BASINS
    5         ID           LOCATED AT NORTH OF WADDELL ROAD AND NORTH OF OLIVE AVENUE WERE
    6         ID           ADDED TO THE MODEL BASED ON CMX'S HEC-1 MODEL PROVIDED IN DEC,2006.
    7         ID        2. FLOW DIVERSION TO THE OFF-LINE BASINS, SUCH AS WADDELL ROAD
    8         ID           BASIN, OLIVE AVENUE BASIN, NORTHERN AVENUE BASIN WERE ESTIMATED
    9         ID           USING HEC-RAS LATERAL WEIR ROUTINE.
   10         ID        3. DETENTION BASIN ELEVATION AND VOLUME RELATIONSHIPS WERE ESTIMATED
   11         ID           BASED ON 30% DESIGN OF THE BASIN.
   12         ID        4. ELEVATION AND OUTFLOW RELATIONSHIP WERE ESTIMATED BASED ON 30% DESIG
   13         ID           USING CULVERTMASTER. THE OUTFLOW INCLUDES FLOW FROM BLEED-OFF PIPE
   14         ID           AND FLOW FROM OUTFLOW PIPE.
   15         ID        5. CHANNEL ROUTING WERE MODIFIED BASED ON 30% DESIGN.
   16         ID        6. FLOW FROM THE PROPOSED FCDMC CHANNEL ALONG NORTHEN AVENUE  WILL
   17         ID           NOT BE COMBINED WITH FLOW FROM LOOP 303 OFF-SITE CHANNEL.
   18         ID           INSTEAD THE FLOW FROM THE CHANNEL ALONG NORTHERN AVENUE WILL GO
   19         ID           TO THE NORTHERN AVENUE BASIN DIRECTLY.  SO THE FLOW FROM THE
   20         ID           NORTHERN AVENUE CHANNEL WILL BE COMBINED WITH THE DIVERTED FLOW
   21         ID           FROM LOOP 303 CHANNEL AT NORTHERN AVENUE BASIN.
   22         ID        7. IN THE ADMP MODEL, SOME OF THE OUTFLOW FROM CAMELBACK ROAD BASINS
   23         ID           WERE DIVERTED TO EAST ALONG CAMELBACK ROAD (THE PEAK FLOW IS
   24         ID           180 CFS).  NO STRUCTURE WAS RECOMMENDED IN THE ADMP UPDATE. PB
   25         ID           DESIGNED 3-30" PIPES TO DIVERT SOME FLOW TO THE EXISTING CAMELBACK
   26         ID           ROAD CHANNEL LOCATED AT SOUTH SIDE OF CAMELBACK ROAD.
   27         ID        9. PEBBLE CREEK AND PALM VALLEY 8 DEVELOPMENTS WERE INCLUDED IN THE
   28         ID           MODEL BASED ON HEC-1 MODEL PROVIDED BY DEL RIO ENGINEERING.
   29         ID       10. MCDOWELL ROAD DETENTION BASIN WERE DIVIDED INTO TWO DETENTION BASINS
   30         ID           ONE IS CALLED MCDOWELL ROAD UPPER BASIN AND THE OTHER ONE IS CALLED
   31         ID           MCDOWELL ROAD LOWER BASIN
   32         ID       11  PROPOSED I-10/303L TI (ULTIMATED CONDITION) ON-SITE DRAINAGE SYSTEM
   33         ID           WAS REFLECTED IN THE MODEL.  THERE ARE TOTAL 11 ON-SITE BASINS.
   34         ID
   35         ID        EXISTING CONDITION WITH PROJECTS IN PLACE SCENARIO
   36         ID        REVISED BY PARSONS BRINCKERHOFF     DATE: Aug 2008
   37         ID                                            FILE NAME: EX_SPLT.DAT
   38         ID        ************************************************************************
   39         ID        DRAFT PREFERRED ALTERNATIVE LEVEL III
   40         ID
   41         ID        INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
   42         ID        SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
   43         ID        BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
   44         ID        LUKE AIR FORCE BASE CRASH ZONE AREA
   45         ID
   46         ID        **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
   47         ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
   48         ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
   49         ID        TANKS/AGUA FRIA ADMS, Date: October 1991
   50         ID
   51         ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
   52         ID        100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
   53         ID
   54         ID                                        REVISED BY URS     DATE: 01-14-04
   55         ID                                                           FILE: L33PE4H.DAT
```

HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   56         ID
   57         ID        NOTES:
   58         ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
   59         ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
   60         ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
```

```
3375          KK     CP3
3376          KM       RETURN DIVERTED HYDROGRAPH AT CP3 (FROM  HEC-1 MODEL)
3377          DR   DI189

3378          KK      R3
3379          KM        ROUTE FLOW AT CP3 TO CP189
3380          RS       5              -1       0
3381          RC     .05    .035     .05    4500   .0038
3382          RX    1000    1040    1175    1250    1275    1350    1430    1750
3383          RY    1261    1260  1260.5    1258    1258  1260.5    1258    1261

3384          KK   1I189
3385          KM        ADD HYDROGRAPHS AT CP189
3386          HC        2    5.81
              *

3387          KK     189
3388          KM       RUNOFF HYDROGRAPH FROM SUB-BASIN 189
3389          BA     .51
3390          LG     .35     .35    4.44     .34     .00
3391          UI     52.    110.    229.    298.    372.    516.    631.    471.    376.    293.
3392          UI    219.    118.     88.     59.     43.     16.     16.     16.     16.      0.
3393          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
3394          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3395          KK   CP189
3396          KM        ADD HYDROGRAPHS AT CP189
3397          HC        2    6.32

3398          KK    R189
3399          KM        ROUTE FLOW FROM CP189 TO CP190
3400          RS       8              -1       0
3401          RC     .08    .035    .035    6900   .0057
3402          RX    1000    1270    1700    2040    2090    2118    2119    2120
3403          RY    1212    1210    1208    1206    1206    1207    1207    1207
              * KK   188

3404          KK    !NR1
3405          KM       RUNOFFF HYDROGRAPH FROM SUB-BASIN 188
3406          BA     .19
3407          LG     .35     .33    4.44     .34     .00
3408          UI     29.    120.    179.    274.    326.    221.    152.     76.     44.     24.
3409          UI      9.      9.      0.      0.      0.      0.      0.      0.      0.      0.
3410          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * KK188OUT
              * KK188RET
              * KM       DIVERSION-RETENTION
              * DT188RET     8.8
              * DI      0   10000
              * DQ      0   10000
              * DESIGN ROUTE
              * PER LEVEL III PRELIMINARY-DRAFT PREFERRED ALTERNATIVE

3411          KK     RNR1
3412          KM    ROUTE NR1 TO NR2
3413          RS      3.4              -1.0     0.0
3414          RC    0.030   0.030   0.030    6260  0.0039
3415          RX        0    36.6    42.6    48.6    54.6    60.6    66.6   103.2
3416          RY   1190.6  1184.5  1184.5  1184.5  1184.5  1184.5  1184.5  1190.6
              * RS      1              -1       0
              * RC   0.03    0.03    0.03    6200  0.0056
              * RX   1000    1018  1042.6  1067.2  1091.8  1116.4    1141    1159
              * RY   1100    1097    1097    1097    1097    1097    1097    1100
              *

3417          KK      190
3418          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 190
3419          BA      .86
3420          LG      .50     .00    4.44     .74     .00
3421          UI      44.     44.     44.    141.    176.    209.    238.    261.    292.    331.
3422          UI     381.    482.    570.    492.    422.    374.    339.    297.    264.    232.
3423          UI     207.    167.    124.     77.     76.     72.     59.     44.     44.     31.
3424          UI      13.     13.     13.     13.     13.     13.     13.     13.     13.      0.
3425          UI       0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
3426          UI       0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * KK190OUT
              * KM       DIVERSION-RETENTION
              * DT190RET     42.4
              * DI      0   10000
              * DQ      0   10000
              * KK CP190
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3427          KK     !NR2
3428          KM        ADD HYDROGRAPHS AT CP190
3429          HC        3    2.12
              * KK   R190

3430          KK    RNR2
3431          KM        ROUTE FLOW FROM CP190 TO CP191
3432          RS      3.4              -1.0     0.0
3433          RC    0.030   0.030   0.030    5292  0.0028
3434          RX        0    36.6    42.6    48.6    54.6    60.6    66.6   103.2
3435          RY   1190.6  1184.5  1184.5  1184.5  1184.5  1184.5  1184.5  1190.6
```

L36L38

Job No. 79902 | No.

Computation

Project: Loop 303 / White Tanks ADMPU AHA | **Location: Northern at Cotton (DL38)** | Computed AM | Date 10/27/08

Subject: Weir Flow Analysis | Checked [illegible] | Date 3/10/09

Task: Weir Calculations | Sheet 1 | Of x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	54	53.3	164	53.65	52.1	0	0.00	52.6	0	0.00	53.1	0	0.00	CHECK	53.6	0	0.00	DONE
south	53.3	53	65	53.15	52.1	0	0.00	52.6	0	0.00	53.1	0	0.00		53.6	0.45	58.86	
south	53	52	215	52.5	52.1	0	0.00	52.6	0.1	20.40	53.1	0.6	299.77		53.6	1.1	744.13	
south	52	51.7	5	51.85	52.1	0.25	1.88	52.6	0.75	9.74	53.1	1.25	20.96		53.6	1.75	34.73	
southeast	51.7	51.7	30	51.7	52.1	0.4	22.77	52.6	0.9	76.84	53.1	1.4	149.09		53.6	1.9	235.71	
east	51.7	52	134	51.85	52.1	0.25	50.25	52.6	0.75	261.11	53.1	1.25	561.81		53.6	1.75	930.64	
east	52	53	120	52.5	52.1	0	0.00	52.6	0.1	11.38	53.1	0.6	167.31		53.6	1.1	415.33	
east	53	54	120	53.5	52.1	0	0.00	52.6	0	0.00	53.1	0	0.00		53.6	0.1	11.38	
east	54	54	1	54	52.1	0	0.00	52.6	0	0.00	53.1	0	0.00		53.6	0	0.00	
					TOTALS:		74.89			379.47			1198.94				2430.78	

Graph Computations:

Station	Elevation
0	54
164	53.3
229	53
444	52
449	51.7
479	51.7
613	52
733	53
853	54
854	54

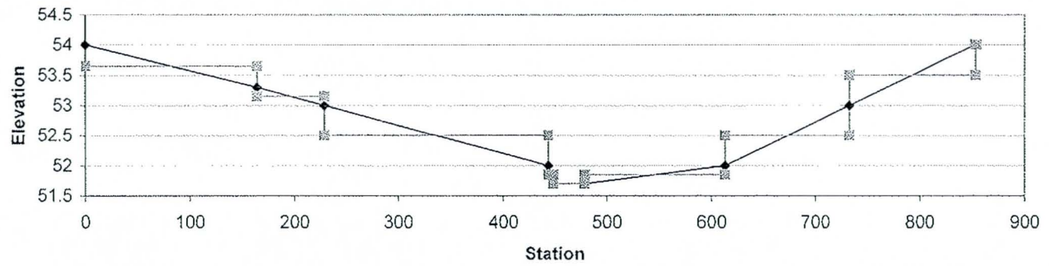
Weir Approximation:

Station	Elevation
0	53.65
164	53.65
164	53.15
229	53.15
229	52.5
444	52.5
444	51.85
449	51.85
449	51.7
479	51.7
479	51.85
613	51.85
613	52.5
733	52.5
733	53.5
853	53.5
853	54
854	54

Culvert Flows (cfs):

south	0
southeast	0
east	0

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	1.88	3%	Q(south)	30.14	8%	Q(south)	320.73	27%	Q(south)	837.72	34%
Q(southeast)	22.77	30%	Q(southeast)	76.84	20%	Q(southeast)	149.09	12%	Q(southeast)	235.71	10%
Q(east)	50.25	67%	Q(east)	272.49	72%	Q(east)	729.12	61%	Q(east)	1357.36	56%
	74.89			379.47			1198.94			2430.78	

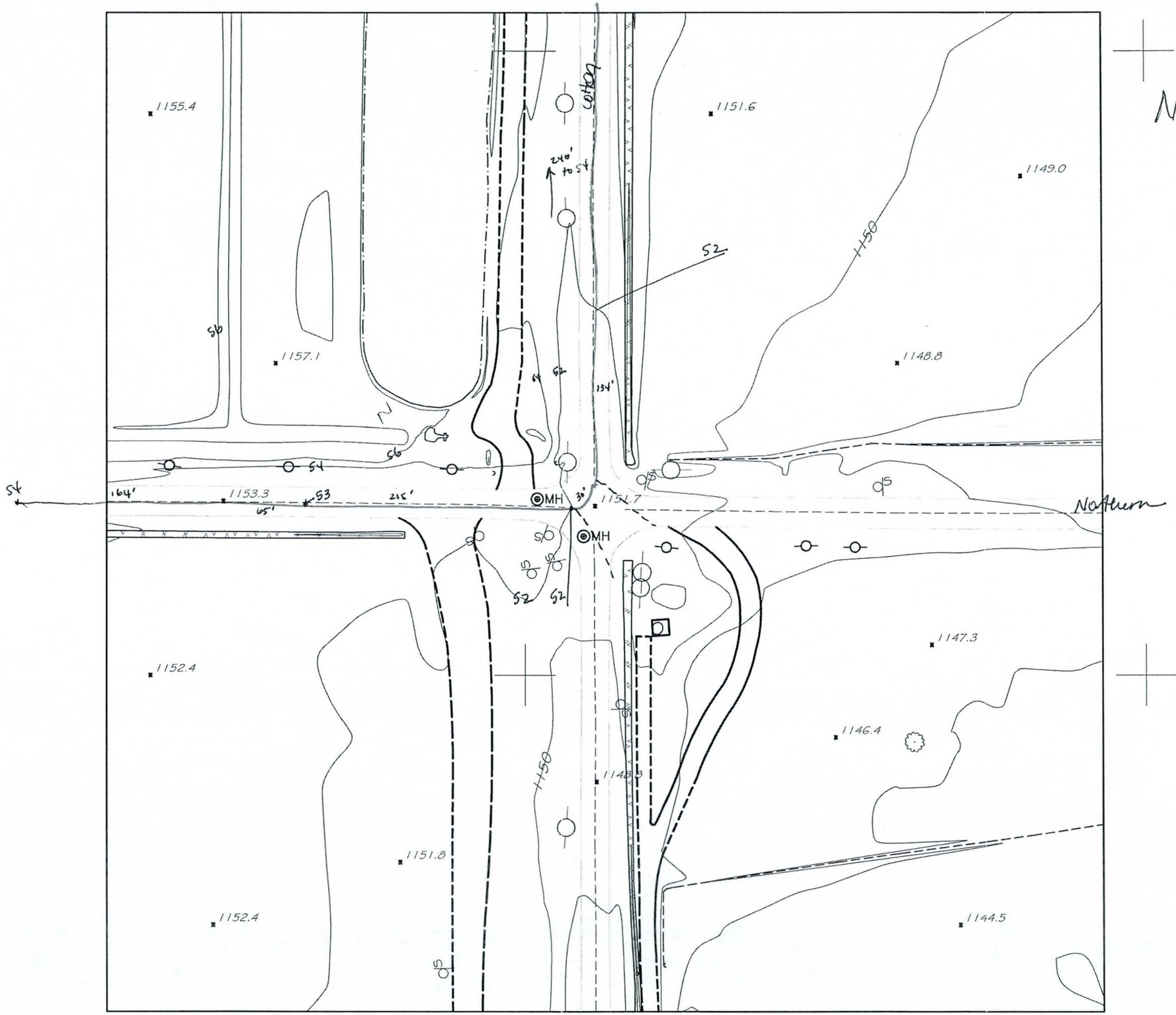
First DI	East to South			
Inflow	74.89	379.47	1198.94	2430.78
Outflow	1.88	30.14	320.73	837.72

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	73.02	349.33	878.21	1593.06
Outflow	22.77	76.84	149.09	235.71

Assumes diversion is to southeast

Northern @
Cotton
DL38



C:\PW\g:\PHX\dms69520\linda_NewWorking.dwg, 10/27/2008 10:45:12 AM

N Cotton Ln
N Cotton Ln
W Northern Ave
W Northern Ave
W Northern Ave
7999
8006

CIP model

Source

L39

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN  1998                 *
*           VERSION 4.1                 *
*                                       *
*  N DATE   07MAY09  TIME  08:05:50     *
*                                       *
*****************************************
```

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

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X              X         X
XXXXXXX  XXXX           X   XXXXX  X
X     X  X              X         X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

    1         ID        LOOP 303 OFF-SITE HYDROLOGY
    2         ID        MODIFIED BASED ON FCDMC'S WHITE TANKS/LOOP 303 CORRIDOR ADMP
    3         ID        THE MODIFICATIONS ARE DESCRIBED AS FOLLOWS:
    4         ID        1. THE CACTUS RD BASIN WAS REMOVED AND TWO RELATIVELY SMALL BASINS
    5         ID           LOCATED AT NORTH OF WADDELL ROAD AND NORTH OF OLIVE AVENUE WERE
    6         ID           ADDED TO THE MODEL BASED ON CMX'S HEC-1 MODEL PROVIDED IN DEC,2006.
    7         ID        2. FLOW DIVERSION TO THE OFF-LINE BASINS, SUCH AS WADDELL ROAD
    8         ID           BASIN, OLIVE AVENUE BASIN, NORTHERN AVENUE BASIN WERE ESTIMATED
    9         ID           USING HEC-RAS LATERAL WEIR ROUTINE.
   10         ID        3. DETENTION BASIN ELEVATION AND VOLUME RELATIONSHIPS WERE ESTIMATED
   11         ID           BASED ON 30% DESIGN OF THE BASIN.
   12         ID        4. ELEVATION AND OUTFLOW RELATIONSHIP WERE ESTIMATED BASED ON 30% DESIG
   13         ID           USING CULVERTMASTER. THE OUTFLOW INCLUDES FLOW FROM BLEED-OFF PIPE
   14         ID           AND FLOW FROM OUTFLOW PIPE.
   15         ID        5. CHANNEL ROUTING WERE MODIFIED BASED ON 30% DESIGN.
   16         ID        6. FLOW FROM THE PROPOSED FCDMC CHANNEL ALONG NORTHEN AVENUE  WILL
   17         ID           NOT BE COMBINED WITH FLOW FROM LOOP 303 OFF-SITE CHANNEL.
   18         ID           INSTEAD THE FLOW FROM THE CHANNEL ALONG NORTHERN AVENUE WILL GO
   19         ID           TO THE NORTHERN AVENUE BASIN DIRECTLY.  SO THE FLOW FROM THE
   20         ID           NORTHERN AVENUE CHANNEL WILL BE COMBINED WITH THE DIVERTED FLOW
   21         ID           FROM LOOP 303 CHANNEL AT NORTHERN AVENUE BASIN.
   22         ID        7. IN THE ADMP MODEL, SOME OF THE OUTFLOW FROM CAMELBACK ROAD BASINS
   23         ID           WERE DIVERTED TO EAST ALONG CAMELBACK ROAD (THE PEAK FLOW IS
   24         ID           180 CFS).  NO STRUCTURE WAS RECOMMENDED IN THE ADMP UPDATE. PB
   25         ID           DESIGNED 3-30" PIPES TO DIVERT SOME FLOW TO THE EXISTING CAMELBACK
   26         ID           ROAD CHANNEL LOCATED AT SOUTH SIDE OF CAMELBACK ROAD.
   27         ID        9. PEBBLE CREEK AND PALM VALLEY 8 DEVELOPMENTS WERE INCLUDED IN THE
   28         ID           MODEL BASED ON HEC-1 MODEL PROVIDED BY DEL RIO ENGINEERING.
   29         ID       10. MCDOWELL ROAD DETENTION BASIN WERE DIVIDED INTO TWO DETENTION BASINS
   30         ID           ONE IS CALLED MCDOWELL ROAD UPPER BASIN AND THE OTHER ONE IS CALLED
   31         ID           MCDOWELL ROAD LOWER BASIN
   32         ID       11  PROPOSED I-10/303L TI (ULTIMATED CONDITION) ON-SITE DRAINAGE SYSTEM
   33         ID           WAS REFLECTED IN THE MODEL.  THERE ARE TOTAL 11 ON-SITE BASINS.
   34         ID
   35         ID        EXISTING CONDITION WITH PROJECTS IN PLACE SCENARIO
   36         ID        REVISED BY PARSONS BRINCKERHOFF    DATE: Aug 2008
   37         ID                                           FILE NAME: EX_SPLT.DAT
   38         ID        ************************************************************************
   39         ID        DRAFT PREFERRED ALTERNATIVE LEVEL III
   40         ID
   41         ID        INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
   42         ID        SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
   43         ID        BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
   44         ID        LUKE AIR FORCE BASE CRASH ZONE AREA
   45         ID
   46         ID        **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
   47         ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
   48         ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
   49         ID        TANKS/AGUA FRIA ADMS, Date: October 1991
   50         ID
   51         ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
   52         ID        100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
   53         ID
   54         ID                                  REVISED BY URS     DATE: 01-14-04
   55         ID                                                     FILE: L33PE4H.DAT
```

HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   56         ID
   57         ID        NOTES:
   58         ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
   59         ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
   60         ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
```

```
                *
3613            KK  DC177A
3614            KM   RETURN DIVERT AT LP4
3615            DR  DI192A
                *  COMBINE PER LEVEL III

3616            KK    !LP4
3617            KM   COMBINE HYDROGRAPHS AT LP4
3618            HC       2    3.58
                * HC      2    4.07
                * PER LEVEL III PRELIMINARY-DRAFT PREFERRED ALTERNATIVE
                *  ***************************************************************************
                *   PB MODIFIED
                *   CHANNEL ROUTING WERE MODIFIED BASED ON REVISED CHANNEL DIMENSION
                *  ***************************************************************************
                *  KK  RLP4
                *  RS   1.0              -1.0     0.0
                *  RC 0.013   0.013   0.013    4196  0.0028
                *  RX     0    14.0    19.2    24.4    29.6    34.8    40.0    54.0
                *  RY1167.7  1160.7  1160.7  1160.7  1160.7  1160.7  1160.7  1167.7

3619            KK  RLP4-1
3620            KM   ROUTE FLOW FROM OLIVE AVE TO DROP STRUCTURE #11
3621            RS     0.5              -1.0     0.0
3622            RC   0.035   0.015   0.035    1942  0.0046
3623            RX       0       3       5      16      42      53      73      76
3624            RY  1161.5  1160.5  1160.5    1155    1155  1160.5  1160.5  1161.5

3625            KK  RLP4-2
3626            KM   ROUTE FLOW FROM  SOUTH OF NORTHERN PARKWAY TO DROP STRUCTURE #12
3627            RS     0.3              -1.0     0.0
3628            RC   0.035   0.015   0.035    1075  0.0032
3629            RX       0       3       5      17      53      65      75      78
3630            RY    1150    1149    1149    1143    1143    1149    1149    1150

3631            KK   D192A
3632            KM   RETURN DIVERT
3633            DR    DLP5
                *  COMBINE PER LEVEL III
1                                       HEC-1 INPUT                                    PAGE 98

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3634            KK    !LP5
                * KO     1                                    21
3635            KM   COMBINE HYDROGRAPHS
3636            HC       2   12.68
                *
3637            KK   DLP5
                * KO     1                                    21
3638            KM   DIVERT ALL OF FLOW TO OFF-LINE BASIN AT NORTHERN AVENUE
3639            DT   DILP5
3640            DI       0     520    1040    1560    2080    2600    2800    3000
3641            DQ       0     520    1040    1560    2080    2600    2800    3000
                * KKCP192A

3642            KK   1NRLP
                * KO     1                                    21
3643            KM        ADD HYDROGRAPHS AT CP192A
3644            HC       2   21.07
                *  ***************************************************************
                *  PB MODIFICATION!
                *  FLOW FROM THE PROPOSED FCD CHANNEL ALONG NORTHERN AVENUE  WILL
                *  NOT BE COMBINED WITH FLOW FROM LOOP 303 OFF-SITE CHANNEL.
                *  INSTEAD THE FLOW FROM THE CHANNEL ALONG NORTHERN AVENUE WILL GO
                *  TO THE NORTHERN AVENUE BASIN DIRECTLY.  SO THE FLOW FROM THE
                *  NORTHERN AVENUE CHANNEL WILL BE COMBINED WITH THE DIVERTED FLOW
                *  FROM LOOP 303 CHANNEL AT BORTHERN AVENUE BASIN.
                *  ***************************************************************
                *  KK DRNR4
                *  KM RETURN DIVERT AT PROPSED OFF-LINE BASIN
                *  DR DINR4

3645            KK   DRLP5
3646            KM   RETURN DIVERT AT PROPSED OFF-LINE BASIN
3647            DR   DILP5
                *  KK 2NRLP
                *  KO     1                                    21
                *  KM COMBINE ROUTED FLOW FROM OFFLINE BASIN WITH MAIN-CHANNEL FLOW AT !NR4
                *  HC     2   21.07
                * ENABLE PER CHANGE ORDER #13-#14 PART II
                * STORAGE ROUTE THROUGH PROPOSED BASIN AT SRLP5

3648            KK   2DLP5
                * KO     1                                    21
3649            KM   DIVERT TO OFF-LINE BASIN
                *  ***************************************************************
                *  P8 MODIFICATION!
                *  THE FLOW DIVERSION CURVE WERE REVISED BASED ON LATERAL WEIR
                *  DESIGN.  HEC-RAS LATERAL WEIR ROUTINE WAS USED TO ESTIMATE
                *  THE RATING CURVE.
                *  ***************************************************************
                *  DT2DILP5
                *  DI     0     523    1046    1569    2092    2616    2816    3016
                *  DQ     0     245     700    1121    1513    1884    2020    2155
3650            DT  2DILP5
1                                       HEC-1 INPUT                                    PAGE 99

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
```

34DS11

DS1139

DL39BN

```
DI       0     407    1000    1500    2000    2500    3000
* DQ     0       0     273     525     880    1250    1661
DQ       0       0     263     508     778    1115    1452
```

```
KK  2DRLP5
* KO     1                                  21
KM   RETURN DIVERT AT PROPSED OFF-LINE BASIN NORTHERN AND SR303L
DR  2DILP5

KK   DRNR4
KM   RETURN DIVERT AT PROPSED OFF-LINE BASIN
DR   DINR4

KK   2NRLP
*  KO     1                                  21
KM    COMBINE ROUTED FLOW FROM OFFLINE BASIN WITH MAIN-CHANNEL FLOW AT !NR4
HC       2   21.07
* STORAGE ROUTE THROUGH PROPOSED BASIN AT LP5 - NORTHERN
*  ***********************************************************************
*  PB MODIFICATION!
*  THE ELEVATION-STORAGE RELATIONSHIP AND OUTFLOW ELEVATION
*  RELATIONSHIP WERE DETERMINED BASED ON PB'S DETENTION BASIN DESIGN
*  AND SELECTED BLEED-OFF-PIPE SIZE AND OUTFLOW PIPE SIZE.
*  ***********************************************************************
* KO     1                                  21
*  KK SRLP5
*  KO     1       2                          21
*  KM PROPOSED BASIN AT NORTHERN
*  RS     1    STOR       0       0
*  SV     0      21    31.5      42    52.5      63      84     168     252
*  SQ     0       0       0       0       0       0       0      40     306
*  SE  1126    1127  1127.5    1128  1128.5    1129    1130    1134    1138    1
```

```
KK   SRLP5
*  KO     1       2                          21
KM   PROPOSED BASIN AT NORTHERN
RS       1    STOR       0       0
SV       0    1.55    5.79   14.58   29.76   51.34   75.57  101.24  127.03  153.39
SV  180.31  207.82  235.91  264.58  293.85  323.72  355.57
SQ       0    16.2    56.5    35.3    78.2    83.5    88.4    93.1    97.6   102.0
SQ   113.0   123.8   176.2   235.3   301.7   369.4  1007.6
SE    1124    1125    1126    1127    1128    1129    1130    1131    1132    1133
SE    1134    1135    1136    1137    1138    1139    1140
```

SRL39B

```
KK    2LP5
KM   COMBINE ROUTED FLOW FROM OFFLINE BASIN WITH MAIN-CHANNEL FLOW AT !LP5
HC       2   21.07
* DIVERT 'FLOW BY' PER CO#13-#14 PART II SOUTH IN SR303L

KK  DC192A
KM   DIVERT CP192A (LP5) FOR RETRIEVAL LATER
* PER SR303L DCR CONCEPT, ALL FLOW GOES SOUTH
DT  4D209A
DI       0     100    1000    3000    6000   12000
DQ       0     100    1000    3000    6000   12000
* DQ     0      25     250     750    1500    3000
```



```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

KK    2NR4
KM   COMBINE ROUTED FLOW FROM OFFLINE BASIN WITH MAIN-CHANNEL FLOW AT !NR4
HC       2   21.07
*
* PER LEVEL III PRELIMINARY-DRAFT PREFERRED ALTERNATIVE-CHANNEL WILL NOT
* START HERE SINCE FLOW IS NOT HIGH ENOUGH - THEREFORE, TURN ON ORIGINAL
* 'EXISTING CONDITION' ROUTE

KK    RNR4
KM   ROUTE REMAINDER FROM NR4 TO NR5 (CP192A TO CP192)
RS       1              -1       0
RC    0.03    0.03    0.03    2640  0.0042
RX    1000    1018    1027    1036    1045    1054    1063    1081
RY    1100    1097    1097    1097    1097    1097    1097    1100
* DESIGN ROUTE
* RS   1.7             -1.0     0.0
* RC 0.030   0.030   0.030    2640  0.0020
* RX     0    42.6    49.6    56.6    63.6    70.6    77.6   120.2
* RY1137.2  1130.1  1130.1  1130.1  1130.1  1130.1  1130.1  1137.2
*

KK     192
KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 192
BA     .50
LG     .50     .00    4.05     .72     .00
UI    22.     22.     22.     51.     80.     96.    110.    123.    134.    147.
UI   165.    182.    219.    270.    290.    245.    215.    193.    178.    159.
UI   142.    129.    114.    104.     83.     64.     41.     40.     37.     37.
UI    24.     22.     22.     16.      7.      7.      7.      7.      7.      7.
UI     7.      7.      7.      7.      0.      0.      0.      0.      0.      0.
UI     0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
*
* MODIFY PER LEVEL III
*
* KK CP192

KK    !NR5
KM   ADD HYDROGRAPHS AT NR5 (CP192)
HC       2   21.57
*
```

1**********
* *
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* JUN 1998 *
* VERSION 4.1 *
* *
* DATE 07MAY09 TIME 08:05:50 *
* *
****

CIP
model
Source

L39

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

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

    1         ID        LOOP 303 OFF-SITE HYDROLOGY
    2         ID        MODIFIED BASED ON FCDMC'S WHITE TANKS/LOOP 303 CORRIDOR ADMP
    3         ID        THE MODIFICATIONS ARE DESCRIBED AS FOLLOWS:
    4         ID        1. THE CACTUS RD BASIN WAS REMOVED AND TWO RELATIVELY SMALL BASINS
    5         ID           LOCATED AT NORTH OF WADDELL ROAD AND NORTH OF OLIVE AVENUE WERE
    6         ID           ADDED TO THE MODEL BASED ON CMX'S HEC-1 MODEL PROVIDED IN DEC,2006.
    7         ID        2. FLOW DIVERSION TO THE OFF-LINE BASINS, SUCH AS WADDELL ROAD
    8         ID           BASIN, OLIVE AVENUE BASIN, NORTHERN AVENUE BASIN WERE ESTIMATED
    9         ID           USING HEC-RAS LATERAL WEIR ROUTINE.
   10         ID        3. DETENTION BASIN ELEVATION AND VOLUME RELATIONSHIPS WERE ESTIMATED
   11         ID           BASED ON 30% DESIGN OF THE BASIN.
   12         ID        4. ELEVATION AND OUTFLOW RELATIONSHIP WERE ESTIMATED BASED ON 30% DESIG
   13         ID           USING CULVERTMASTER. THE OUTFLOW INCLUDES FLOW FROM BLEED-OFF PIPE
   14         ID           AND FLOW FROM OUTFLOW PIPE.
   15         ID        5. CHANNEL ROUTING WERE MODIFIED BASED ON 30% DESIGN.
   16         ID        6. FLOW FROM THE PROPOSED FCDMC CHANNEL ALONG NORTHEN AVENUE  WILL
   17         ID           NOT BE COMBINED WITH FLOW FROM LOOP 303 OFF-SITE CHANNEL.
   18         ID           INSTEAD THE FLOW FROM THE CHANNEL ALONG NORTHERN AVENUE WILL GO
   19         ID           TO THE NORTHERN AVENUE BASIN DIRECTLY.  SO THE FLOW FROM THE
   20         ID           NORTHERN AVENUE CHANNEL WILL BE COMBINED WITH THE DIVERTED FLOW
   21         ID           FROM LOOP 303 CHANNEL AT NORTHERN AVENUE BASIN.
   22         ID        7. IN THE ADMP MODEL, SOME OF THE OUTFLOW FROM CAMELBACK ROAD BASINS
   23         ID           WERE DIVERTED TO EAST ALONG CAMELBACK ROAD (THE PEAK FLOW IS
   24         ID           180 CFS).  NO STRUCTURE WAS RECOMMENDED IN THE ADMP UPDATE. PB
   25         ID           DESIGNED 3-30" PIPES TO DIVERT SOME FLOW TO THE EXISTING CAMELBACK
   26         ID           ROAD CHANNEL LOCATED AT SOUTH SIDE OF CAMELBACK ROAD.
   27         ID        9. PEBBLE CREEK AND PALM VALLEY 8 DEVELOPMENTS WERE INCLUDED IN THE
   28         ID           MODEL BASED ON HEC-1 MODEL PROVIDED BY DEL RIO ENGINEERING.
   29         ID       10. MCDOWELL ROAD DETENTION BASIN WERE DIVIDED INTO TWO DETENTION BASINS
   30         ID           ONE IS CALLED MCDOWELL ROAD UPPER BASIN AND THE OTHER ONE IS CALLED
   31         ID           MCDOWELL ROAD LOWER BASIN
   32         ID       11  PROPOSED I-10/303L TI (ULTIMATED CONDITION) ON-SITE DRAINAGE SYSTEM
   33         ID           WAS REFLECTED IN THE MODEL.  THERE ARE TOTAL 11 ON-SITE BASINS.
   34         ID
   35         ID        EXISTING CONDITION WITH PROJECTS IN PLACE SCENARIO
   36         ID        REVISED BY PARSONS BRINCKERHOFF     DATE: Aug 2008
   37         ID                                            FILE NAME: EX_SPLT.DAT
   38         ID        ************************************************************************
   39         ID        DRAFT PREFERRED ALTERNATIVE LEVEL III
   40         ID
   41         ID        INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
   42         ID        SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
   43         ID        BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
   44         ID        LUKE AIR FORCE BASE CRASH ZONE AREA
   45         ID
   46         ID        **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
   47         ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
   48         ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
   49         ID        TANKS/AGUA FRIA ADMS, Date: October 1991
   50         ID
   51         ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
   52         ID        100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
   53         ID
   54         ID                                        REVISED BY URS     DATE: 01-14-04
   55         ID                                                           FILE: L33PE4H.DAT
```

HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   56         ID
   57         ID        NOTES:
   58         ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
   59         ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
   60         ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
```

```
                * RS     5              -1
                * RC  0.03    0.03    0.03    5280  0.0040
                * RX  1000    1024  1050.4  1076.8  1103.2  1129.6    1156    1180
                * RY  1182    1173    1173    1173    1173    1173    1173    1177

3436            KK   D176A
3437            KM        RETURN DIVERT AT CP176A
3438            DR   DI191

3439            KK   R176A
3440            KM        ROUTE FLOW FROM CP176A TO CP191
3441            RS       4              -1       0
3442            RC    .035    .035     .08    5280   .0062
3443            RX    1000    1001    1002    1025    1100    1400    1720    2050
3444            RY    1163    1163    1163    1162    1162    1164    1166    1168

3445            KK   1I191
3446            KM        ADD HYDROGRAPHS AT CP191
3447            HC       3   11.58
                *

3448            KK     191
3449            KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 191
3450            BA     .99
3451            LG     .50     .00    4.66     .53     .00
3452            UI     39.     39.     39.     40.    127.    144.    170.    189.    210.    223.
3453            UI    243.    267.    293.    322.    381.    459.    509.    443.    389.    353.
3454            UI    324.    301.    272.    247.    227.    204.    186.    166.    135.    111.
3455            UI     70.     68.     65.     63.     56.     39.     39.     39.     30.     12.
3456            UI     12.     12.     12.     12.     12.     12.     12.     12.     12.     12.
3457            UI     12.      0.      0.      0.      0.      0.      0.      0.      0.      0.
3458            UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
                * KK191OUT
                * KM      DIVERSION-RETENTION
                * DT191RET    56.8
                * DI      0   10000
                * DQ      0   10000
                * KK CP191
```



```
LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3459            KK    !NR3
3460            KM   ADD HYDROGRAPHS AT CP191
3461            HC       2    5.28
                *
                * TURN DIVERT OFF PER LEVEL III
                *

3462            KK    D191
3463            KM        DIVERT TO CP208 FROM CP191
3464            DT   1D208
3465            DI       0      80     468    1339    2000    3000    4000    5000    6000
3466            DQ       0       0       0       0       0       0       0       0       0
                * KK  R191
                * PER LEVEL III PRELIMINARY-DRAFT PREFERRED ALTERNATIVE

3467            KK    RNR3
3468            KM    ROUTE REMAINDER FROM CP191 TO CP192A
3469            RS     2.9             -1.0      0.0
3470            RC   0.030   0.030   0.030    1396  0.0025
3471            RX       0      42      51      60      69      78      87     129
3472            RY  1152.8  1145.8  1145.8  1145.8  1145.8  1145.8  1145.8  1152.8
                * RS     5              -1       0
                * RC   .03     .03     .03    2640   .0030
                * RX  1000    1024  1052.4  1080.8  1109.2  1137.6    1166    1190
                * RY  1148    1139    1139    1139    1139    1139    1139    1143
                *

3473            KK    192A
3474            KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 192A
3475            KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
3476            KM    L=      1.1  Lca=       .6   S=   31.3  Kn= .098  LAG=  61.4
3477            KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
3478            BA     .50
3479            LG     .45     .07    4.30     .60    5.00
3480            UI     27.     27.     38.     94.    116.    137.    153.    171.    197.    224.
3481            UI    289.    345.    306.    259.    229.    205.    177.    157.    136.    116.
3482            UI     86.     57.     48.     44.     38.     27.     27.     17.      8.      8.
3483            UI      8.      8.      8.      8.      8.      8.      0.      0.      0.      0.
3484            UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

3485            KK  192AOT
3486            KM        DIVERSION-RETENTION
3487            DT  192ART    5.33
3488            DI       0   10000
3489            DQ       0   10000
                * DIVERT PER LEVEL III

3490            KK   D192A
3491            KM   DIVERT XX (XX) FOR RETRIEVAL LATER
3492            DT    DLP5
3493            DI       0     520    1040    1560    2080    2600    2800    3000
3494            DQ       0     350     784    1175    1539    1884    2013    2139
                *  COMBINE PER LEVEL III
```



```
LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

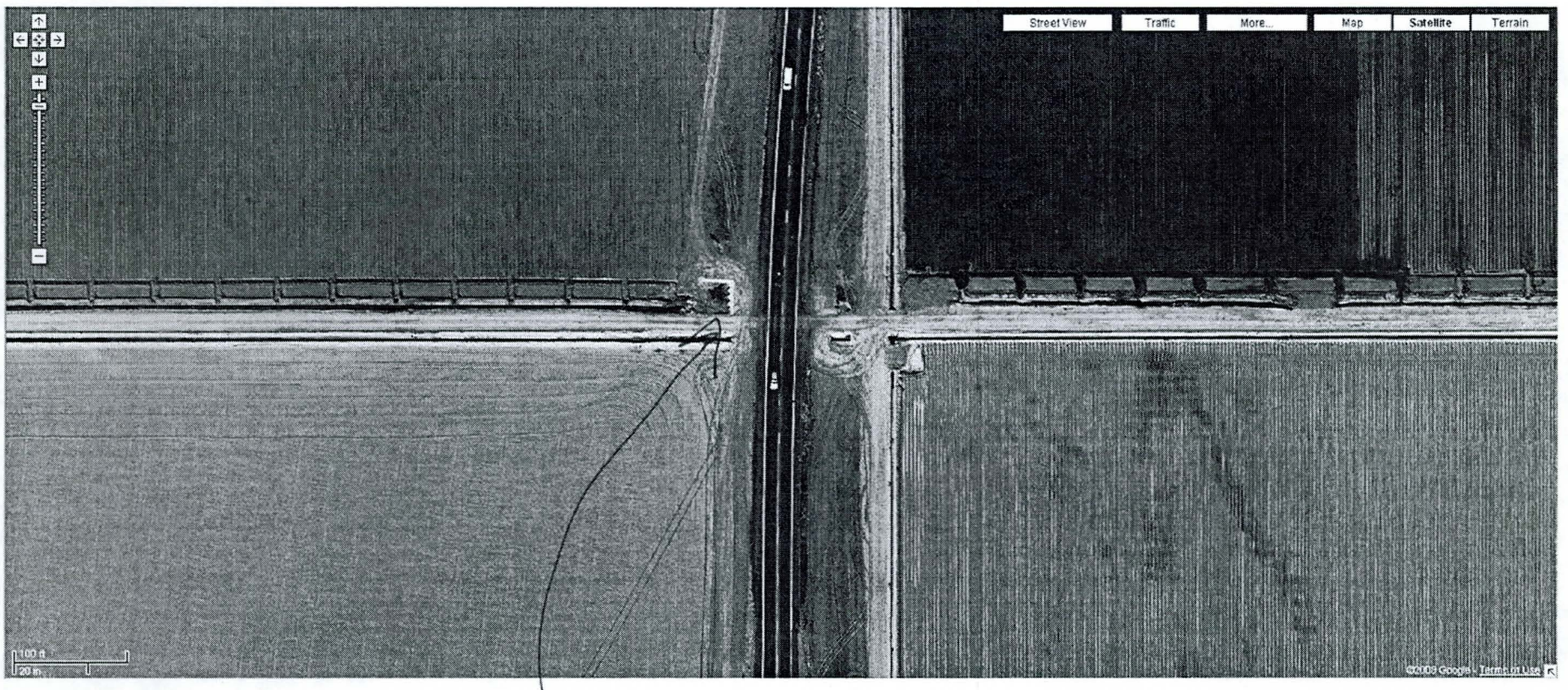
3495            KK    !NR4
```

SRL39
(From URS Model)

```
4048      KK  2DRLP5
4049      KM  RETURN DIVERT AT PROPSED OFF-LINE BASIN NORTHERN AND SR303L
4050      DR  2DILP5
        * STORAGE ROUTE THROUGH PROPOSED BASIN AT LP5 - NORTHERN
        * KO   1                    21

4051      KK  SRLP5
        * KO   1                    21
4052      KM  PROPOSED BASIN AT NORTHERN
4053      RS    1  STOR     0     0
4054      SV    0   21   31.5    42   52.5    63    84   168   252   315
4055      SQ    0    0     0     0     0     0     0     0   250   500
4056      SE  1126  1127 1127.5  1128 1128.5  1129  1130  1134  1138  1141
```

L 303, 1/4 mile
north of northern



4- CMP's
appear silted | plugged

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Location: Northern at Loop 303 (DL39)	Job No. 79902
Subject	Weir Flow Analysis	Computed AM	Date 10/27/08
Task	Weir Calculations	Checked LP	Date 3/10/09
		Sheet 1	Of x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	41.9	40.4	265	41.15	40	0	0.00	40.5	0	0.00	41	0	0.00	CHECK	41.5	0.35	164.61	DONE
south	40.4	39.5	200	39.95	40	0.05	6.71	40.5	0.55	244.73	41	1.05	645.56		41.5	1.55	1157.84	
south	39.5	39	102	39.25	40	0.75	198.75	40.5	1.25	427.65	41	1.75	708.40		41.5	2.25	1032.75	
south	39	39.8	111	39.4	40	0.6	154.76	40.5	1.1	384.18	41	1.6	673.94		41.5	2.1	1013.38	
southeast	39.8	39.8	22	39.8	40	0.2	5.90	40.5	0.7	38.65	41	1.2	86.76		41.5	1.7	146.29	
east	39.8	40.5	80	40.15	40	0	0.00	40.5	0.35	49.70	41	0.85	188.08		41.5	1.35	376.45	
east	40.5	40.9	195	40.7	40	0	0.00	40.5	0	0.00	41	0.3	96.13		41.5	0.8	418.59	
east	40.9	40.6	193	40.75	40	0	0.00	40.5	0	0.00	41	0.25	72.38		41.5	0.75	376.07	
east	40.6	40.9	100	40.75	40	0	0.00	40.5	0	0.00	41	0.25	37.50		41.5	0.75	194.86	
					TOTALS:		366.13			1144.91			2508.74				4880.85	

Graph Computations:

Station	Elevation
0	41.9
265	40.4
465	39.5
567	39
678	39.8
700	39.8
780	40.5
975	40.9
1168	40.6
1268	40.9

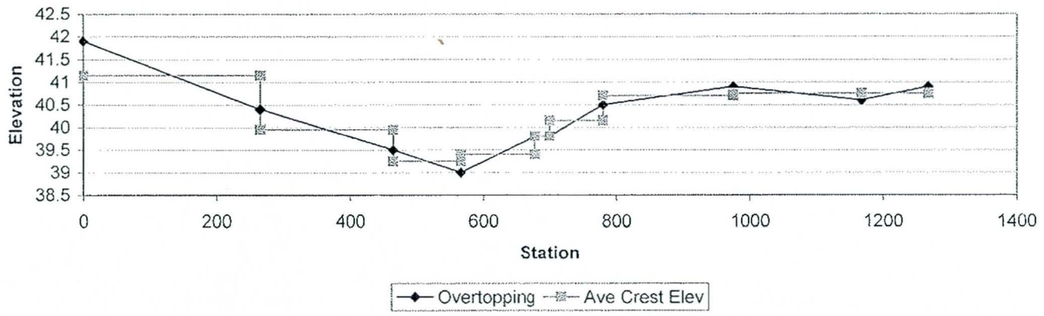
Weir Approximation:

Station	Elevation
0	41.15
265	41.15
265	39.95
465	39.95
465	39.25
567	39.25
567	39.4
678	39.4
678	39.8
700	39.8
700	40.15
780	40.15
780	40.7
975	40.7
975	40.75
1168	40.75
1168	40.75
1268	40.75

Culvert Flows (cfs):

south	0
southeast	22
east	21.5

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	360.23	88%	Q(south)	1056.56	89%	Q(south)	2027.90	79%	Q(south)	3368.59	68%
Q(southeast)	27.90	7%	Q(southeast)	60.65	5%	Q(southeast)	108.76	4%	Q(southeast)	168.29	3%
Q(east)	21.50	5%	Q(east)	71.20	6%	Q(east)	415.58	16%	Q(east)	1387.47	28%
	409.63			1188.41			2552.24			4924.35	

First DI	East to South			
Inflow	409.63	1188.41	2552.24	4924.35
Outflow	360.23	1056.56	2027.90	3368.59

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	49.40	131.85	524.34	1555.76
Outflow	27.90	60.65	108.76	168.29

Assumes diversion is to southeast

Northern @ L303 DL-51

L303

175'

195'

Double or triple, irrigation tailwater, assume 1/2 Capacity (21.5 cfs)

60'

Double Amp (22 cfs)

299.8

265'

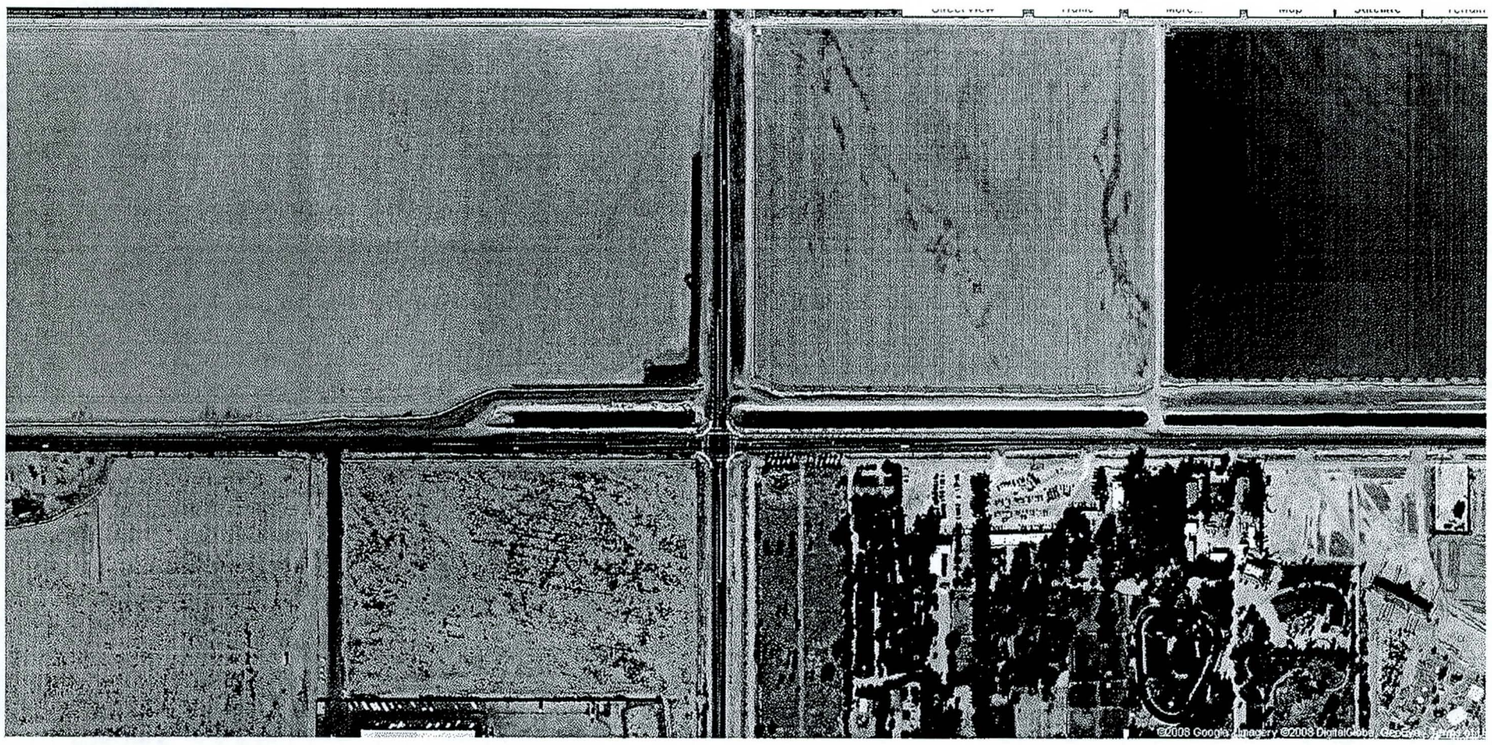
200'

102'

111'

Northern

Outlet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Culvert Calculator Report
L303NorthernDouble

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	4.00	ft	Headwater Depth/Height	1.50	
Computed Headwater Elev	4.00	ft	Discharge	22.13	cfs
Inlet Control HW Elev.	2.84	ft	Tailwater Elevation	2.00	ft
Outlet Control HW Elev.	4.00	ft	Control Type	Outlet Control	

Grades					
Upstream Invert	1.00	ft	Downstream Invert	0.00	ft
Length	205.00	ft	Constructed Slope	0.004878	ft/ft

Hydraulic Profile					
Profile	PressureProfile		Depth, Downstream	2.00	ft
Slope Type	N/A		Normal Depth	N/A	ft
Flow Regime	N/A		Critical Depth	1.19	ft
Velocity Downstream	3.52	ft/s	Critical Slope	0.018390	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.024	
Section Material	CMP		Span	2.00	ft
Section Size	24 inch		Rise	2.00	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	4.00	ft	Upstream Velocity Head	0.19	ft
Ke	0.70		Entrance Loss	0.13	ft

Inlet Control Properties					
Inlet Control HW Elev.	2.84	ft	Flow Control	Unsubmerged	
Inlet Type	Mitered to slope		Area Full	6.3	ft²
K	0.02100		HDS 5 Chart	2	
M	1.33000		HDS 5 Scale	2	
C	0.04630		Equation Form	1	
Y	0.75000				

Culvert Calculator Report
L303NorthernTriple

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	4.00	ft	Headwater Depth/Height	1.50	
Computed Headwater Elev	4.00	ft	Discharge	43.09	cfs
Inlet Control HW Elev.	3.19	ft	Tailwater Elevation	2.00	ft
Outlet Control HW Elev.	4.00	ft	Control Type	Outlet Control	

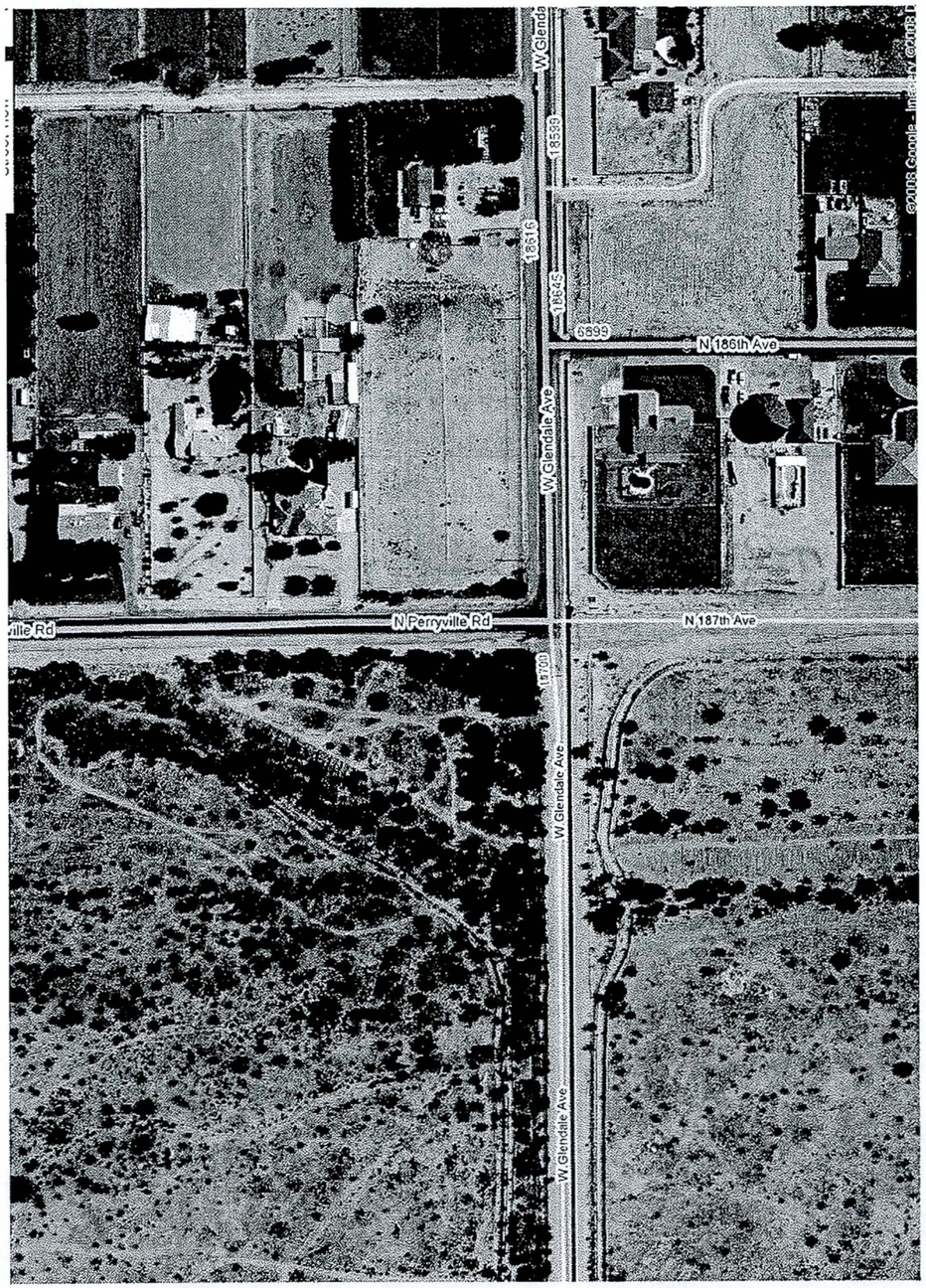
Grades					
Upstream Invert	1.00	ft	Downstream Invert	0.50	ft
Length	95.00	ft	Constructed Slope	0.005263	ft/ft

Hydraulic Profile					
Profile	CompositeM2PressureProfile		Depth, Downstream	1.50	ft
Slope Type	Mild		Normal Depth	N/A	ft
Flow Regime	Subcritical		Critical Depth	1.37	ft
Velocity Downstream	5.68	ft/s	Critical Slope	0.020939	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.024	
Section Material	CMP		Span	2.00	ft
Section Size	24 inch		Rise	2.00	ft
Number Sections	3				

Outlet Control Properties					
Outlet Control HW Elev.	4.00	ft	Upstream Velocity Head	0.32	ft
Ke	0.70		Entrance Loss	0.23	ft

Inlet Control Properties					
Inlet Control HW Elev.	3.19	ft	Flow Control	Unsubmerged	
Inlet Type	Mitered to slope		Area Full	9.4	ft²
K	0.02100		HDS 5 Chart	2	
M	1.33000		HDS 5 Scale	2	
C	0.04630		Equation Form	1	
Y	0.75000				


W Glenda
18539
18616
18645
6899
N 186th Ave
W Glendale Ave
N Perryville Rd
N 187th Ave
18700
W Glendale Ave

L40

All stays South

1" = 200'

N

DL40

Glendale @ Pennville

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Job No. 79902	No.
Subject	Weir Flow Analysis	Computed AM	Date 10/27/08
Task	Weir Calculations	Checked [illegible]	Date 3/20/09
	Location: Glendale at 185th (DL41)	Sheet 1	Of X

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	12	11	175	11.5	9.4	0	0.00	9.9	0	0.00	10.4	0	0.00	CHECK	10.9	0	0.00	DONE
south	11	10	175	10.5	9.4	0	0.00	9.9	0	0.00	10.4	0	0.00		10.9	0.4	132.82	
south	10	9	200	9.5	9.4	0	0.00	9.9	0.4	151.79	10.4	0.9	512.29		10.9	1.4	993.90	
south	9	9	20	9	9.4	0.4	15.18	9.9	0.9	51.23	10.4	1.4	99.39		10.9	1.9	157.14	
east	9	10	160	9.5	9.4	0	0.00	9.9	0.4	121.43	10.4	0.9	409.83		10.9	1.4	795.12	
east	10	11	175	10.5	9.4	0	0.00	9.9	0	0.00	10.4	0	0.00		10.9	0.4	132.82	
east	11	12	173	11.5	9.4	0	0.00	9.9	0	0.00	10.4	0	0.00		10.9	0	0.00	
east	12	12	1	12	9.4	0	0.00	9.9	0	0.00	10.4	0	0.00		10.9	0	0.00	
east	12	12	1	12	9.4	0	0.00	9.9	0	0.00	10.4	0	0.00		10.9	0	0.00	
						TOTALS:	15.18			324.45			1021.51				2211.79	

Graph Computations:

Station	Elevation
0	12
175	11
350	10
550	9
570	9
730	10
905	11
1078	12
1079	12
1080	12

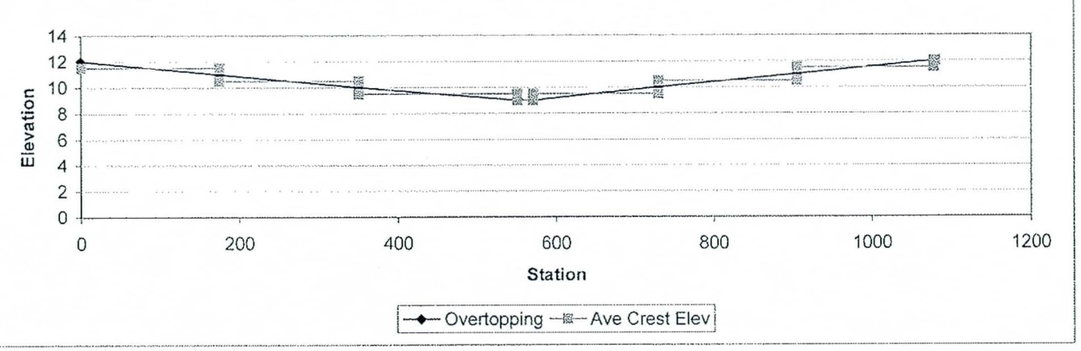
Weir Approximation:

Station	Elevation
0	11.5
175	11.5
175	10.5
350	10.5
350	9.5
550	9.5
550	9
570	9
570	9.5
730	9.5
730	10.5
905	10.5
905	11.5
1078	11.5
1078	12
1079	12
1079	12
1080	12

Culvert Flows (cfs):

south	0
southeast	0
east	0

Cross Section



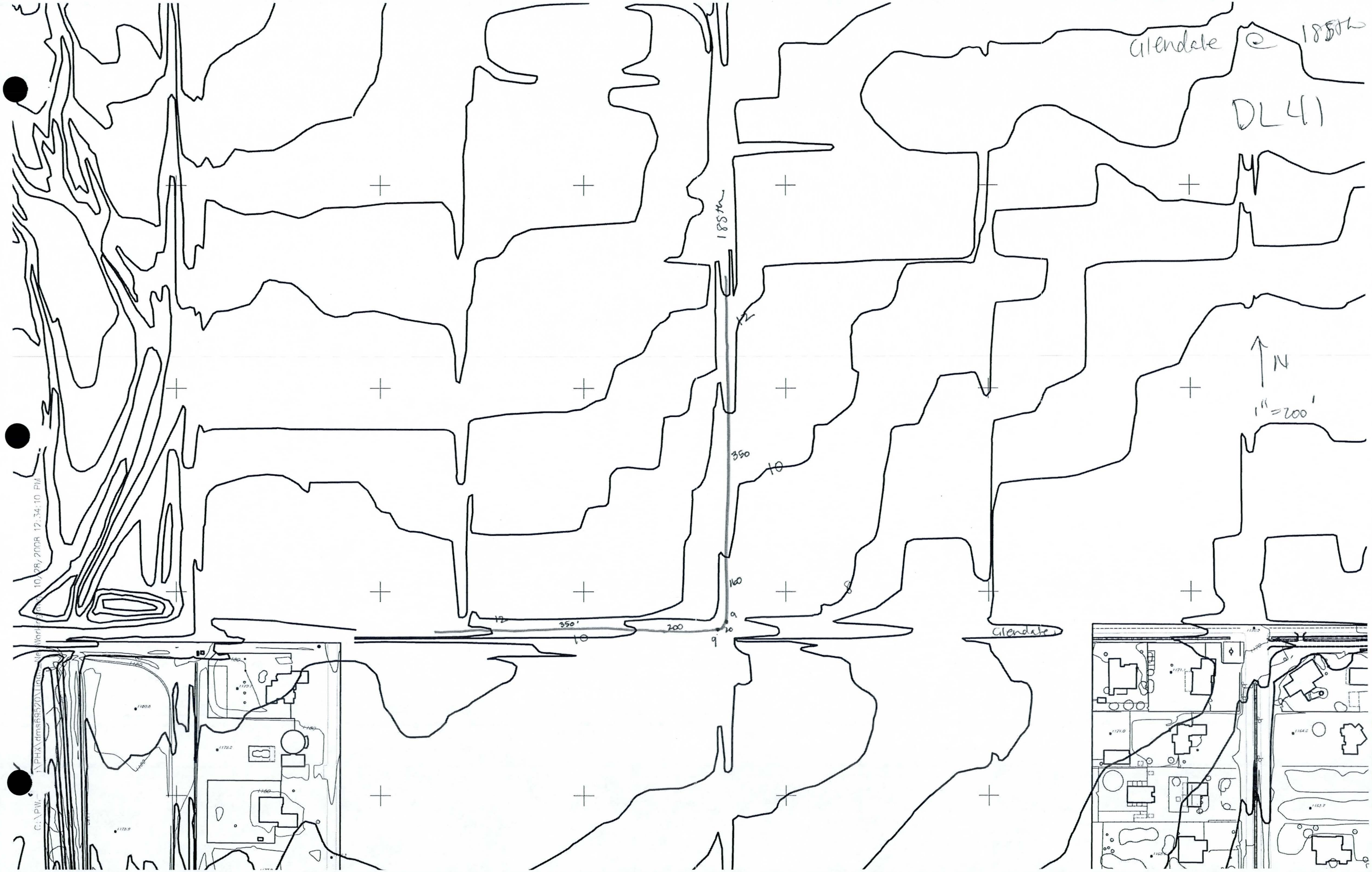
Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	15.18	100%	Q(south)	203.02	63%	Q(south)	611.68	60%	Q(south)	1283.86	58%
Q(southeast)	0.00	0%	Q(southeast)	0.00	0%	Q(southeast)	0.00	0%	Q(southeast)	0.00	0%
Q(east)	0.00	0%	Q(east)	121.43	37%	Q(east)	409.83	40%	Q(east)	927.94	42%
	15.18			324.45			1021.51			2211.79	

First DI	East to South			
Inflow	15.18	324.45	1021.51	2211.79
Outflow	15.18	203.02	611.68	1283.86

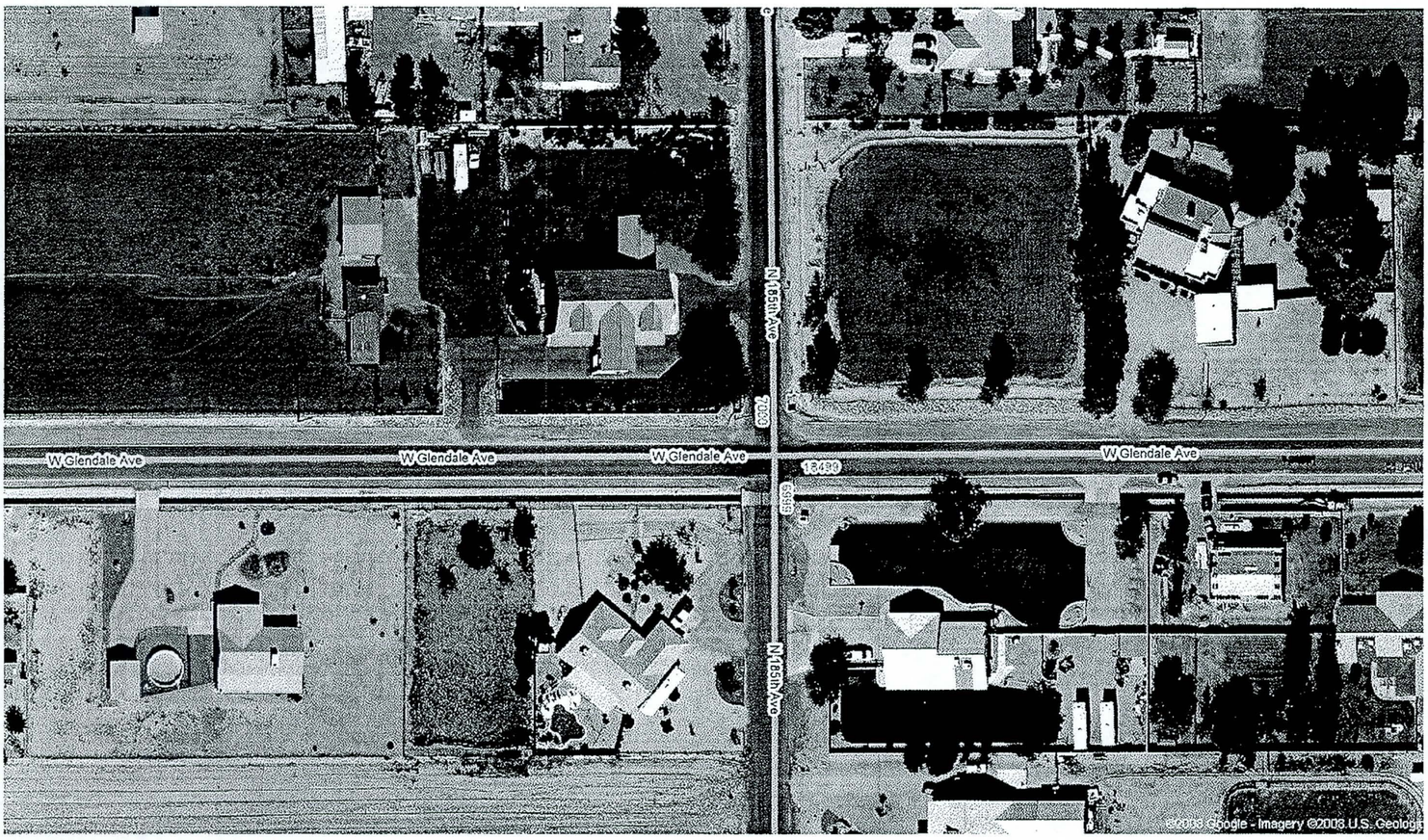
Assumes diversion is to south

Second DI	East to Southeast			
Inflow	0.00	121.43	409.83	927.94
Outflow	0.00	0.00	0.00	0.00

Assumes diversion is to southeast



Glendale @ 188th
DL41
185th
12
350
10
160
9
20
9
12
350'
10
200
8
Glendale
N
1" = 200'


W Glendale Ave
W Glendale Ave
W Glendale Ave
N 16th Ave
13430
W Glendale Ave
13430
N 16th Ave
©2008 Google - Imagery ©2008 U.S. Geologi

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Job No. 79902	No.
Subject	Weir Flow Analysis	Computed AM	Date 10/27/08
Task	Weir Calculations	Checked [illegible]	Date 3/10/09
	Location: Glendale at Citrus (DL42)	Sheet 1	Of x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	12	11	397	11.5	9.2	0	0.00	9.7	0	0.00	10.2	0	0.00	CHECK	10.7	0	0.00	DONE
south	11	10	398	10.5	9.2	0	0.00	9.7	0	0.00	10.2	0	0.00		10.7	0.2	106.79	
south	10	9	300	9.5	9.2	0	0.00	9.7	0.2	80.50	10.2	0.7	527.10		10.7	1.2	1183.08	
south	9	8.6	120	8.8	9.2	0.4	91.07	9.7	0.9	307.37	10.2	1.4	596.34		10.7	1.9	942.83	
southeast	8.6	8.6	22	8.6	9.2	0.6	30.67	9.7	1.1	76.14	10.2	1.6	133.57		10.7	2.1	200.85	
east	8.6	9	89	8.8	9.2	0.4	67.55	9.7	0.9	227.97	10.2	1.4	442.29		10.7	1.9	699.26	
east	9	10	221	9.5	9.2	0	0.00	9.7	0.2	59.30	10.2	0.7	388.29		10.7	1.2	871.54	
east	10	11	183	10.5	9.2	0	0.00	9.7	0	0.00	10.2	0	0.00		10.7	0.2	49.10	
east	11	12	182	11.5	9.2	0	0.00	9.7	0	0.00	10.2	0	0.00		10.7	0	0.00	
						TOTALS:	189.29			751.28			2087.59				4053.46	

Graph Computations:

Station	Elevation
0	12
397	11
795	10
1095	9
1215	8.6
1237	8.6
1326	9
1547	10
1730	11
1912	12

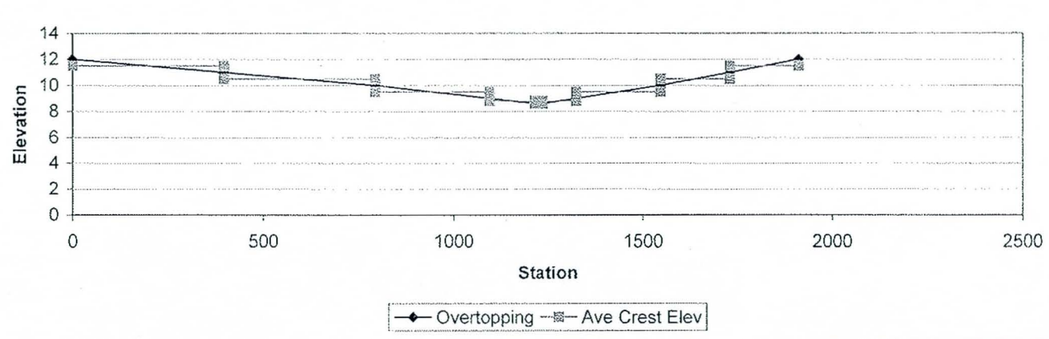
Weir Approximation:

Station	Elevation
0	11.5
397	11.5
397	10.5
795	10.5
795	9.5
1095	9.5
1095	8.8
1215	8.8
1215	8.6
1237	8.6
1237	8.8
1326	8.8
1326	9.5
1547	9.5
1547	10.5
1730	10.5
1730	11.5
1912	11.5

Culvert Flows (cfs):

south	0
southeast	0
east	0

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	91.07	48%	Q(south)	387.87	52%	Q(south)	1123.44	54%	Q(south)	2232.70	55%
Q(southeast)	30.67	16%	Q(southeast)	76.14	10%	Q(southeast)	133.57	6%	Q(southeast)	200.85	5%
Q(east)	67.55	36%	Q(east)	287.27	38%	Q(east)	830.58	40%	Q(east)	1619.90	40%
	189.29			751.28			2087.59			4053.46	

First DI	East to South			
Inflow	189.29	751.28	2087.59	4053.46
Outflow	91.07	387.87	1123.44	2232.70

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	98.22	363.41	964.15	1820.76
Outflow	30.67	76.14	133.57	200.85

Assumes diversion is to southeast

Glendale @
Citrus

DL 42

Citrus

365'

12

10

8

221' to 9

310'

8.6

796'

12

10

420'

9

300'

22'

8.6

Glendale

N

1" = 200'

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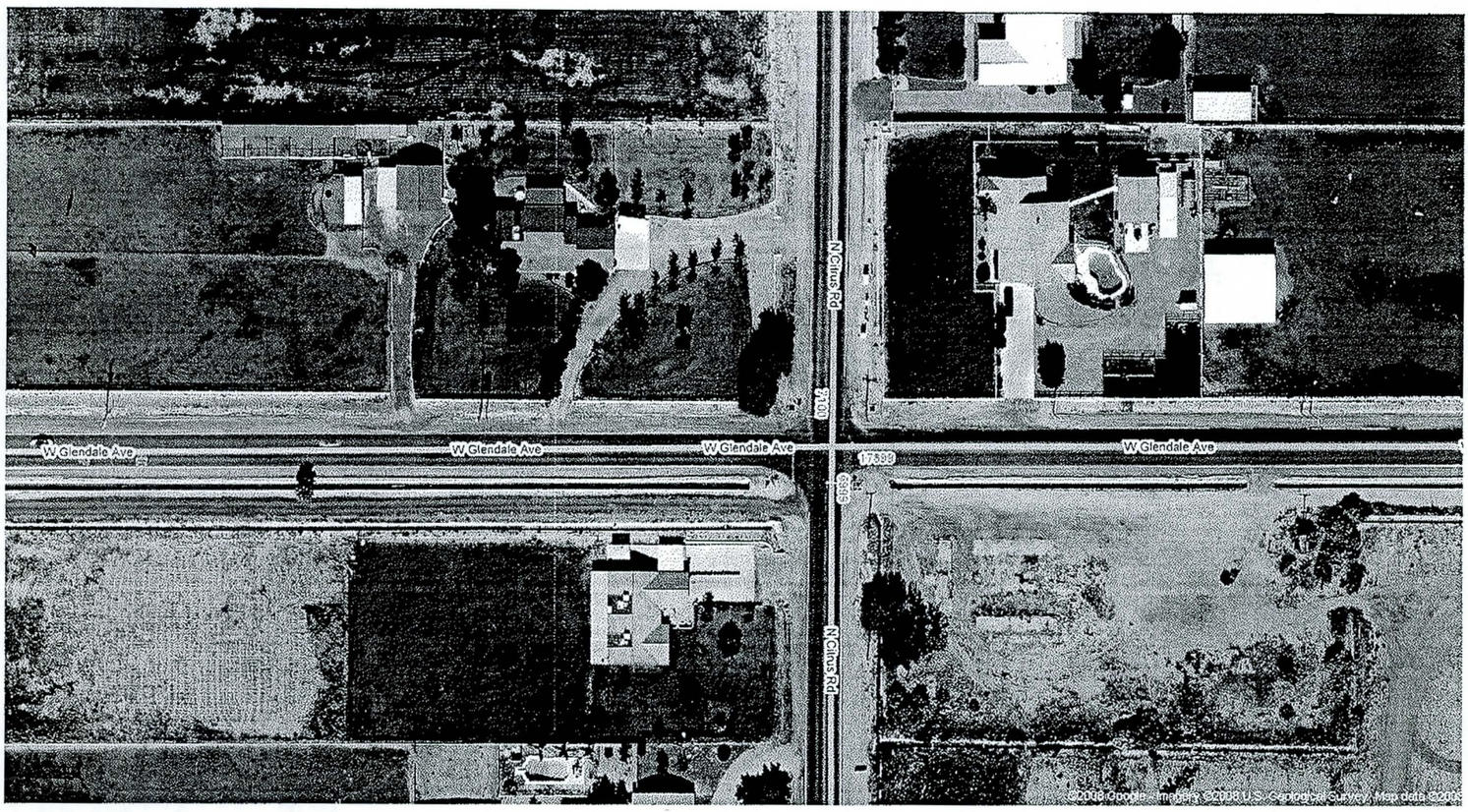

W Glendale Ave
W Glendale Ave
W Glendale Ave
W Glendale Ave
N Citrus Rd
N Citrus Rd
17600
17888
©2008 Google - Imagery ©2008 U.S. Geological Survey, Map data ©200

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Job No.	79902
Subject	Weir Flow Analysis	Computed	AM
Task	Weir Calculations	Checked	
Location: Glendale at Cotton (DL43)		Sheet	1

No. | Date 10/27/08 | Date 3/10/09 | Of x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	33.7	32	302	32.85	30.5	0	0.00	31	0	0.00	31.5	0	0.00	CHECK	32	0	0.00	DONE
south	32	31	16	31.5	30.5	0	0.00	31	0	0.00	31.5	0	0.00		32	0.5	16.97	
south	31	30.5	10	30.75	30.5	0	0.00	31	0.25	3.75	31.5	0.75	19.49		32	1.25	41.93	
southeast	30.5	30.4	6	30.45	30.5	0.05	0.20	31	0.55	7.34	31.5	1.05	19.37		32	1.55	34.74	
southeast	30.4	30.5	11	30.45	30.5	0.05	0.37	31	0.55	13.46	31.5	1.05	35.51		32	1.55	63.68	
east	30.5	30	62	30.25	30.5	0.25	23.25	31	0.75	120.81	31.5	1.25	259.94		32	1.75	430.60	
east	30	30	142	30	30.5	0.5	150.61	31	1	426.00	31.5	1.5	782.61		32	2	1204.91	
east	30	31	406	30.5	30.5	0	0.00	31	0.5	430.63	31.5	1	1218.00		32	1.5	2237.61	
east	31	32	405	31.5	30.5	0	0.00	31	0	0.00	31.5	0	0.00		32	0.5	429.57	
						TOTALS:	174.43			1001.99			2334.91				4460.00	

Graph Computations:

Station	Elevation
0	33.7
302	32
318	31
328	30.5
334	30.4
345	30.5
407	30
549	30
955	31
1360	32

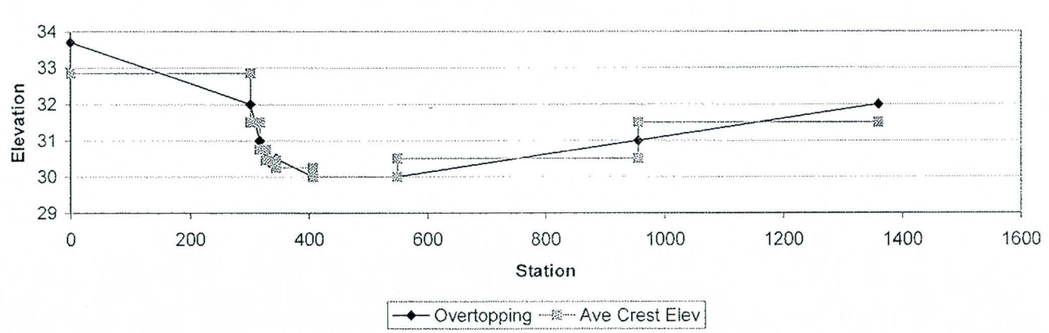
Weir Approximation:

Station	Elevation
0	32.85
302	32.85
302	31.5
318	31.5
318	30.75
328	30.75
328	30.45
334	30.45
334	30.45
345	30.45
345	30.25
407	30.25
407	30
549	30
549	30.5
955	30.5
955	31.5
1360	31.5

Culvert Flows (cfs):

south	0
southeast	0
east	0

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	0.00	0%	Q(south)	3.75	0%	Q(south)	19.49	1%	Q(south)	58.90	1%
Q(southeast)	0.57	0%	Q(southeast)	20.80	2%	Q(southeast)	54.87	2%	Q(southeast)	98.42	2%
Q(east)	173.86	100%	Q(east)	977.44	98%	Q(east)	2260.55	97%	Q(east)	4302.68	96%
	174.43			1001.99			2334.91			4460.00	

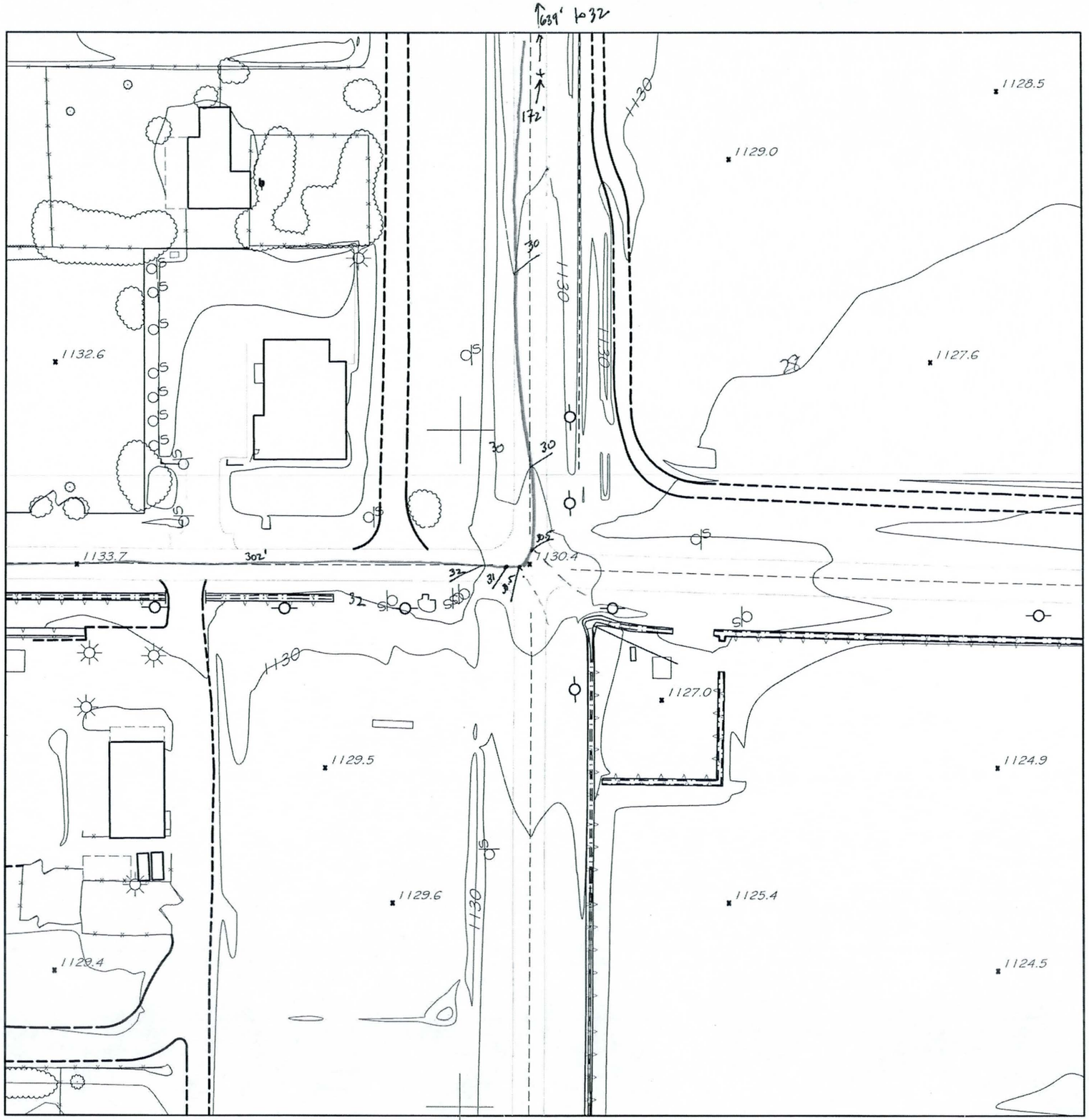
First DI	East to South			
Inflow	174.43	1001.99	2334.91	4460.00
Outflow	0.00	3.75	19.49	58.90

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	174.43	998.24	2315.43	4401.10
Outflow	0.57	20.80	54.87	98.42

Assumes diversion is to southeast

Glendale at Cotton (DL43)



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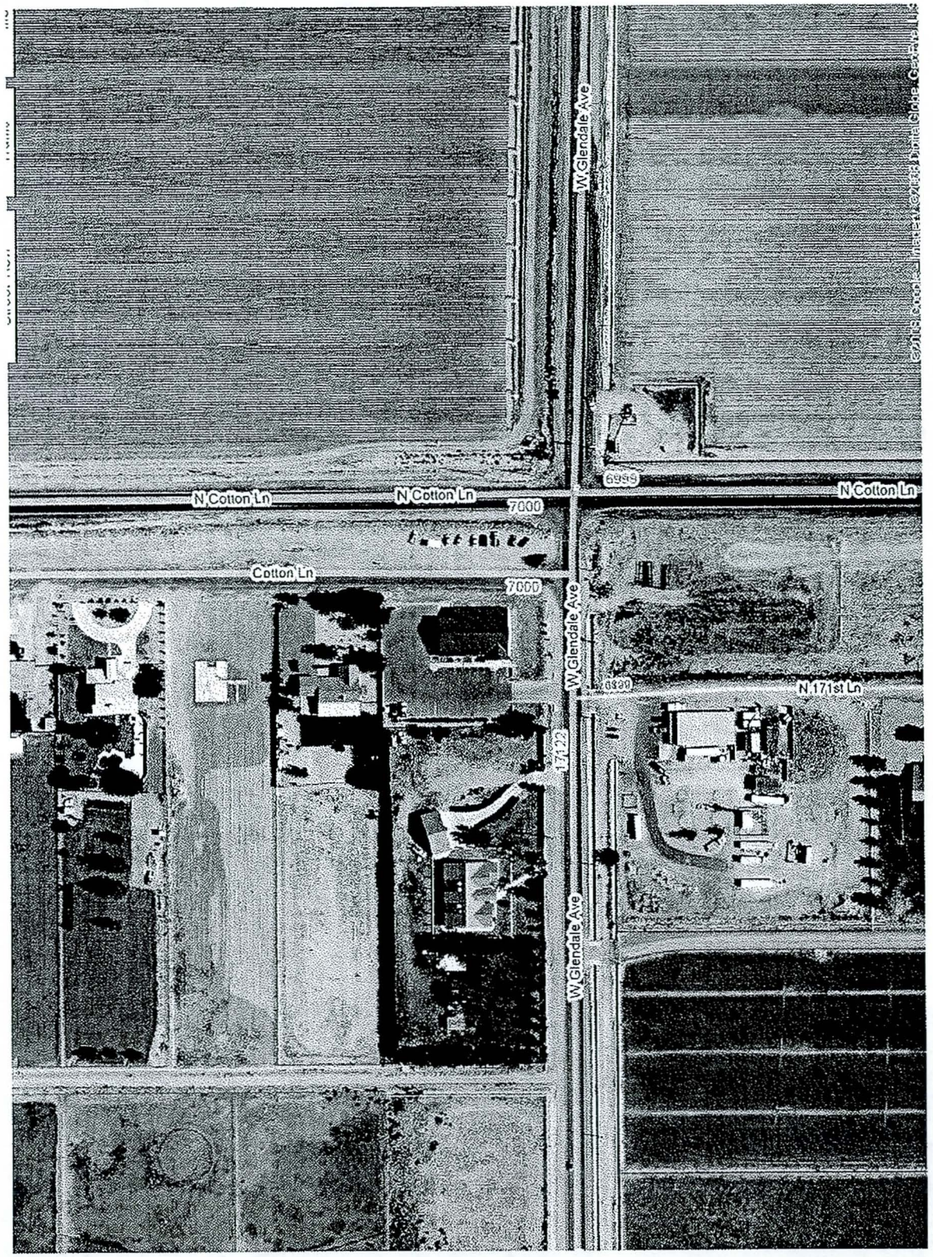
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N Cotton Ln
7000
N Cotton Ln
6999
W Glendale Ave
Cotton Ln
7000
W Glendale Ave
6939
N 171st Ln
W Glendale Ave

CIP model Source

L14

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN  1998                 *
*           VERSION 4.1                 *
*                                       *
*     DATE   07MAY09  TIME  08:05:50    *
*                                       *
*****************************************
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*         609 SECOND STREET             *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
    1     ID        LOOP 303 OFF-SITE HYDROLOGY
    2     ID        MODIFIED BASED ON FCDMC'S WHITE TANKS/LOOP 303 CORRIDOR ADMP
    3     ID        THE MODIFICATIONS ARE DESCRIBED AS FOLLOWS:
    4     ID        1. THE CACTUS RD BASIN WAS REMOVED AND TWO RELATIVELY SMALL BASINS
    5     ID           LOCATED AT NORTH OF WADDELL ROAD AND NORTH OF OLIVE AVENUE WERE
    6     ID           ADDED TO THE MODEL BASED ON CMX'S HEC-1 MODEL PROVIDED IN DEC,2006.
    7     ID        2. FLOW DIVERSION TO THE OFF-LINE BASINS, SUCH AS WADDELL ROAD
    8     ID           BASIN, OLIVE AVENUE BASIN, NORTHERN AVENUE BASIN WERE ESTIMATED
    9     ID           USING HEC-RAS LATERAL WEIR ROUTINE.
   10     ID        3. DETENTION BASIN ELEVATION AND VOLUME RELATIONSHIPS WERE ESTIMATED
   11     ID           BASED ON 30% DESIGN OF THE BASIN.
   12     ID        4. ELEVATION AND OUTFLOW RELATIONSHIP WERE ESTIMATED BASED ON 30% DESIG
   13     ID           USING CULVERTMASTER. THE OUTFLOW INCLUDES FLOW FROM BLEED-OFF PIPE
   14     ID           AND FLOW FROM OUTFLOW PIPE.
   15     ID        5. CHANNEL ROUTING WERE MODIFIED BASED ON 30% DESIGN.
   16     ID        6. FLOW FROM THE PROPOSED FCDMC CHANNEL ALONG NORTHEN AVENUE  WILL
   17     ID           NOT BE COMBINED WITH FLOW FROM LOOP 303 OFF-SITE CHANNEL.
   18     ID           INSTEAD THE FLOW FROM THE CHANNEL ALONG NORTHERN AVENUE WILL GO
   19     ID           TO THE NORTHERN AVENUE BASIN DIRECTLY.  SO THE FLOW FROM THE
   20     ID           NORTHERN AVENUE CHANNEL WILL BE COMBINED WITH THE DIVERTED FLOW
   21     ID           FROM LOOP 303 CHANNEL AT NORTHERN AVENUE BASIN.
   22     ID        7. IN THE ADMP MODEL, SOME OF THE OUTFLOW FROM CAMELBACK ROAD BASINS
   23     ID           WERE DIVERTED TO EAST ALONG CAMELBACK ROAD (THE PEAK FLOW IS
   24     ID           180 CFS).  NO STRUCTURE WAS RECOMMENDED IN THE ADMP UPDATE. PB
   25     ID           DESIGNED 3-30" PIPES TO DIVERT SOME FLOW TO THE EXISTING CAMELBACK
   26     ID           ROAD CHANNEL LOCATED AT SOUTH SIDE OF CAMELBACK ROAD.
   27     ID        9. PEBBLE CREEK AND PALM VALLEY 8 DEVELOPMENTS WERE INCLUDED IN THE
   28     ID           MODEL BASED ON HEC-1 MODEL PROVIDED BY DEL RIO ENGINEERING.
   29     ID       10. MCDOWELL ROAD DETENTION BASIN WERE DIVIDED INTO TWO DETENTION BASINS
   30     ID           ONE IS CALLED MCDOWELL ROAD UPPER BASIN AND THE OTHER ONE IS CALLED
   31     ID           MCDOWELL ROAD LOWER BASIN
   32     ID       11  PROPOSED I-10/303L TI (ULTIMATED CONDITION) ON-SITE DRAINAGE SYSTEM
   33     ID           WAS REFLECTED IN THE MODEL.  THERE ARE TOTAL 11 ON-SITE BASINS.
   34     ID
   35     ID        EXISTING CONDITION WITH PROJECTS IN PLACE SCENARIO
   36     ID        REVISED BY PARSONS BRINCKERHOFF    DATE: Aug 2008
   37     ID                                           FILE NAME: EX_SPLT.DAT
   38     ID        ************************************************************************
   39     ID        DRAFT PREFERRED ALTERNATIVE LEVEL III
   40     ID
   41     ID        INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
   42     ID        SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
   43     ID        BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
   44     ID        LUKE AIR FORCE BASE CRASH ZONE AREA
   45     ID
   46     ID        **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
   47     ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
   48     ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
   49     ID        TANKS/AGUA FRIA ADMS, Date: October 1991
   50     ID
   51     ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
   52     ID        100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
   53     ID
   54     ID                                      REVISED BY URS     DATE: 01-14-04
   55     ID                                                         FILE: L33PE4H.DAT
```

HEC-1 INPUT PAGE 2

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
   56     ID
   57     ID        NOTES:
   58     ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
   59     ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
   60     ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
```

```
KK  DC192A
KM   RETURN 'ROUTED' DIVERT AT LP5
DR  4D209A
* KK  2LP5
* KM COMBINE ROUTED FLOW FROM OFFLINE BASIN WITH MAIN-CHANNEL FLOW AT !NR4
* HC    2   21.07
* PER LEVEL III PRELIMINARY-DRAFT PREFERRED ALTERNATIVE
* ************************************************************************************
*  PB MODIFICATION:
*  CHANNEL ROUTING WAS CHANGED BASED ON THE PROPOSED CHANNEL DIMENSION
* ************************************************************************************
*  KK  RLP5
*  KM
*  RS   1.4              -1.0     0.0
*  RC 0.013   0.013   0.013    4196  0.0022
*  RX     0    15.8    19.0    22.2    25.4    28.6    31.8    47.6
*  RY1118.5  1110.6  1110.6  1110.6  1110.6  1110.6  1110.6  1118.5
```



```
LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9.....10

KK  RLP5-1
KM   CHANNELE ROUTING FROM NORTHERN AVE TO DROP STRUCTURE #13
RS     0.7              -1.0     0.0
RC   0.035   0.015   0.035    2427  0.0034
RX       0      10      13      23      43      53      73    74.8
RY    1130    1130    1129    1124    1124    1129  1129.4    1130

KK  RLP5-2
KM   CHANNELE ROUTING FROM DROP STRUCTURE #13 TO GLENDALE AVE
RS     0.7              -1.0     0.0
RC   0.035   0.015   0.035    2700  0.0028
RX       0      10      13      25      47      59      79    80.8
RY    1121    1121    1120    1114    1114    1120  1120.4    1130

KK    209A
KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 209A
BA     .50
LG     .50     .00    4.10     .70     .00
UI    22.     22.     22.     42.     75.     89.    103.    115.    124.    137.
UI   152.    166.    191.    238.    275.    260.    224.    199.    181.    167.
UI   149.    134.    121.    108.     99.     80.     62.     40.     38.     36.
UI    35.     26.     22.     22.     20.      7.      7.      7.      7.      7.
UI     7.      7.      7.      7.      7.      7.      0.      0.      0.      0.
UI     0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
* KK209AOT
* KM      DIVERSION-RETENTION
* DT209ART   22.18
* DI     0   10000
* DQ     0   10000

KK   1D208
KM        RETURN DIVERT AT CP208
DR  DI209A

KK    R208
KM        ROUTE FLOW FROM CP208 TO CP209A
RS       2              -1
RC     .75     .03     .03    2640   .0045
RX    1000    1490    1890    1950    1970    1998    1999    2000
RY    1130    1128    1126    1124    1124    1125    1125    1125
*
* MODIFY PER LEVEL III
*
* KKCP209A

KK    !LP6
KM        ADD HYDROGRAPHS AT CP209A
HC       3   14.68
* HC      3    2.87
*
* TURN DIVERT OFF PER LEVEL III
*
```



```
LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9.....10

KK  1D209A
KM        DIVERT FROM CP209A TO CP220
DT   3D220
DI       0      57    5215   28650
DQ       0       0       0       0
*
* TURN DIVERT OFF PER LEVEL III
*

KK  2D209A
KM        DIVERT FROM CP209A TO CP209
DT   4D209
DI       0      18    3308   24875
DQ       0       0       0       0
* KK R209A
* PER LEVEL III PRELIMINARY-DRAFT PREFERRED ALTERNATIVE
* ************************************************************************************
*  PB MODIFICATION:
*  CHANNEL ROUTING WAS CHANGED BASED ON THE PROPOSED CHANNEL DIMENSION
* ************************************************************************************
*  KK  RLP6
*  KM
```

Computation

Job No.	79902	No.	
Project	Loop 303 / White Tanks ADMPU AHA	Computed	AM
Location: Glendale at Loop 303 (DL44)		Date	10/27/08
Subject	Weir Flow Analysis	Checked	GP
		Date	3/10/09
Task	Weir Calculations	Sheet	1
		Of	x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q2	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q2	Another iteration?
south	21	20	200	20.5	18.7	0	0.00	19.2	0	0.00	19.7	0	0.00	CHECK	20.2	0	0.00	DONE
south	20	19	195	19.5	18.7	0	0.00	19.2	0	0.00	19.7	0.2	52.32		20.2	0.7	342.61	
south	19	18.5	77	18.75	18.7	0	0.00	19.2	0.45	69.73	19.7	0.95	213.89		20.2	1.45	403.33	
south	18.5	18.7	60	18.6	18.7	0.1	5.69	19.2	0.6	83.66	19.7	1.1	207.66		20.2	1.6	364.29	
southeast	18.7	18.7	25	18.7	18.7	0	0.00	19.2	0.5	26.52	19.7	1	75.00		20.2	1.5	137.78	
east	18.7	18.7	115	18.7	18.7	0	0.00	19.2	0.5	121.98	19.7	1	345.00		20.2	1.5	633.81	
east	18.7	19.8	158	19.25	18.7	0	0.00	19.2	0	0.00	19.7	0.45	143.09		20.2	0.95	438.90	
east	19.8	20.3	150	20.05	18.7	0	0.00	19.2	0	0.00	19.7	0	0.00		20.2	0.15	26.14	
east	20.3	21	1	20.65	18.7	0	0.00	19.2	0	0.00	19.7	0	0.00		20.2	0	0.00	
						TOTALS:	5.69			301.88			1036.97				2346.87	

Graph Computations:

Station	Elevation
0	21
200	20
395	19
472	18.5
532	18.7
557	18.7
672	18.7
830	19.8
980	20.3
981	21

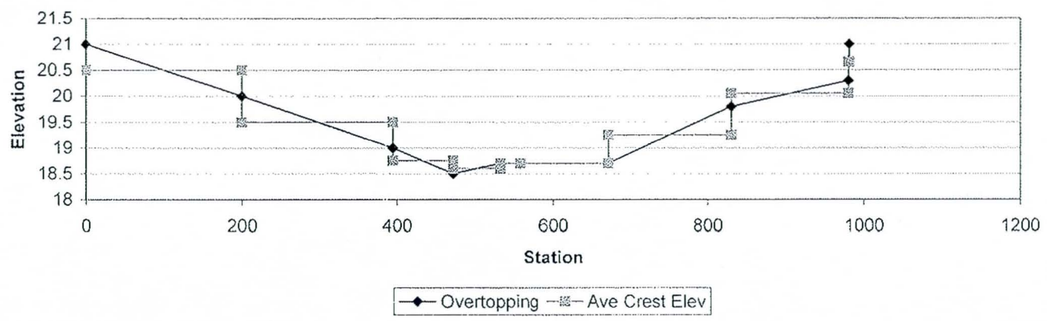
Weir Approximation:

Station	Elevation
0	20.5
200	20.5
200	19.5
395	19.5
395	18.75
472	18.75
472	18.6
532	18.6
532	18.7
557	18.7
557	18.7
672	18.7
672	19.25
830	19.25
830	20.05
980	20.05
980	20.65
981	20.65

Culvert Flows (cfs):

south	0
southeast	0
east	29

Cross Section



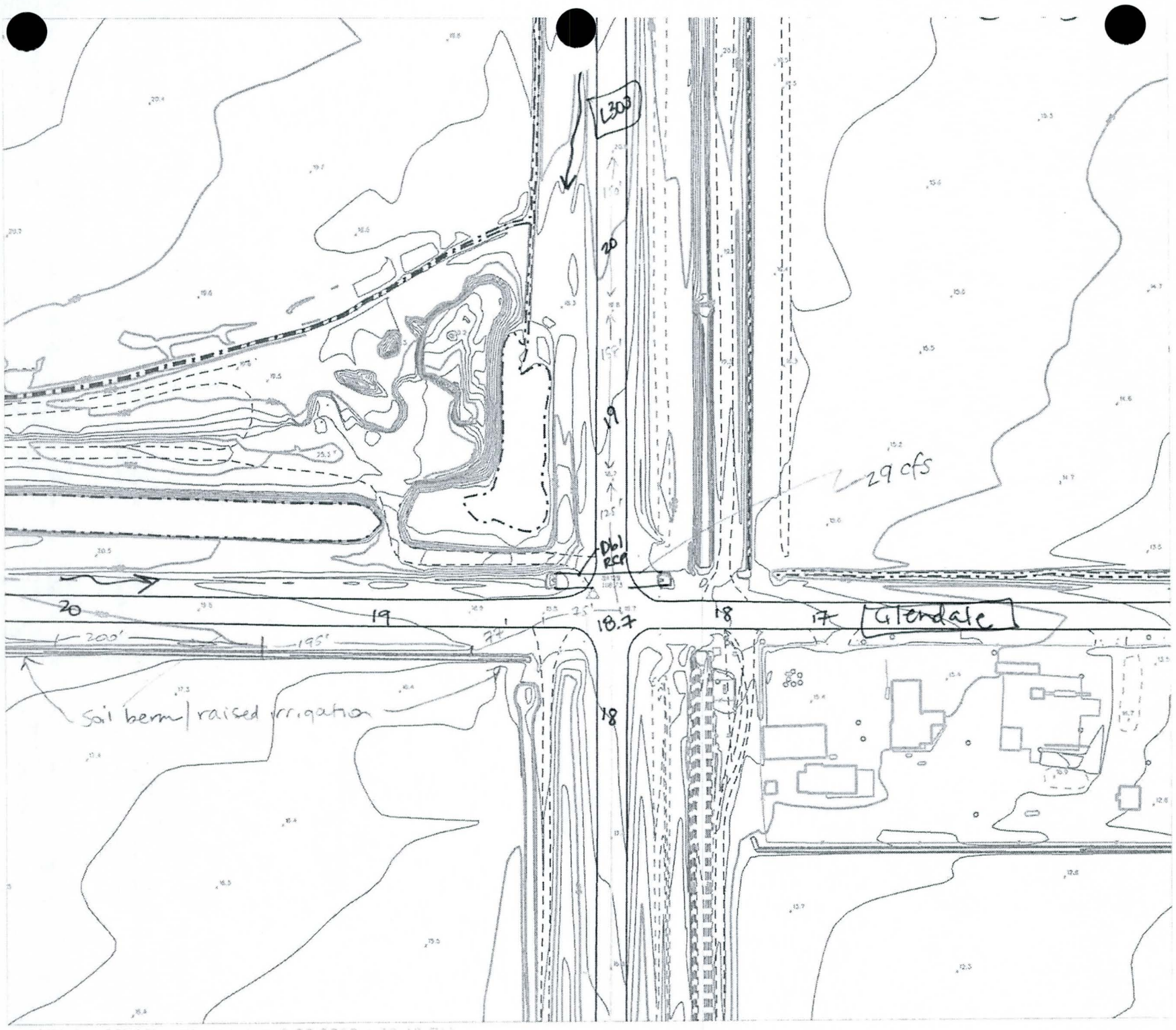
Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	5.69	16%	Q(south)	153.39	46%	Q(south)	473.88	44%	Q(south)	1110.24	47%
Q(southeast)	0.00	0%	Q(southeast)	26.52	8%	Q(southeast)	75.00	7%	Q(southeast)	137.78	6%
Q(east)	29.00	84%	Q(east)	150.98	46%	Q(east)	517.09	49%	Q(east)	1127.85	47%
	34.69			330.88			1065.97			2375.87	

First DI	East to South			
Inflow	34.69	330.88	1065.97	2375.87
Outflow	5.69	153.39	473.88	1110.24

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	29.00	177.49	592.09	1265.63
Outflow	0.00	26.52	75.00	137.78

Assumes diversion is to southeast



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Street View
Traffic
More...
Map
Satellite
Terrain
303
7000
W Glendale Ave
16799
6999
©2008 Google - Imagery ©2008 DigitalGlobe, GeoEye, Map data ©2008 Tele Atlas - Terms of Use

Culvert Calculator Report
L303atGlendale

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	4.00	ft	Headwater Depth/Height	1.50	
Computed Headwater Elev	4.00	ft	Discharge	29.23	cfs
Inlet Control HW Elev.	3.21	ft	Tailwater Elevation	2.00	ft
Outlet Control HW Elev.	4.00	ft	Control Type	Outlet Control	

Grades					
Upstream Invert	1.00	ft	Downstream Invert	0.50	ft
Length	90.00	ft	Constructed Slope	0.005556	ft/ft

Hydraulic Profile					
Profile	CompositeM2PressureProfile		Depth, Downstream	1.50	ft
Slope Type	Mild		Normal Depth	N/A	ft
Flow Regime	Subcritical		Critical Depth	1.38	ft
Velocity Downstream	5.78	ft/s	Critical Slope	0.021177	ft/ft

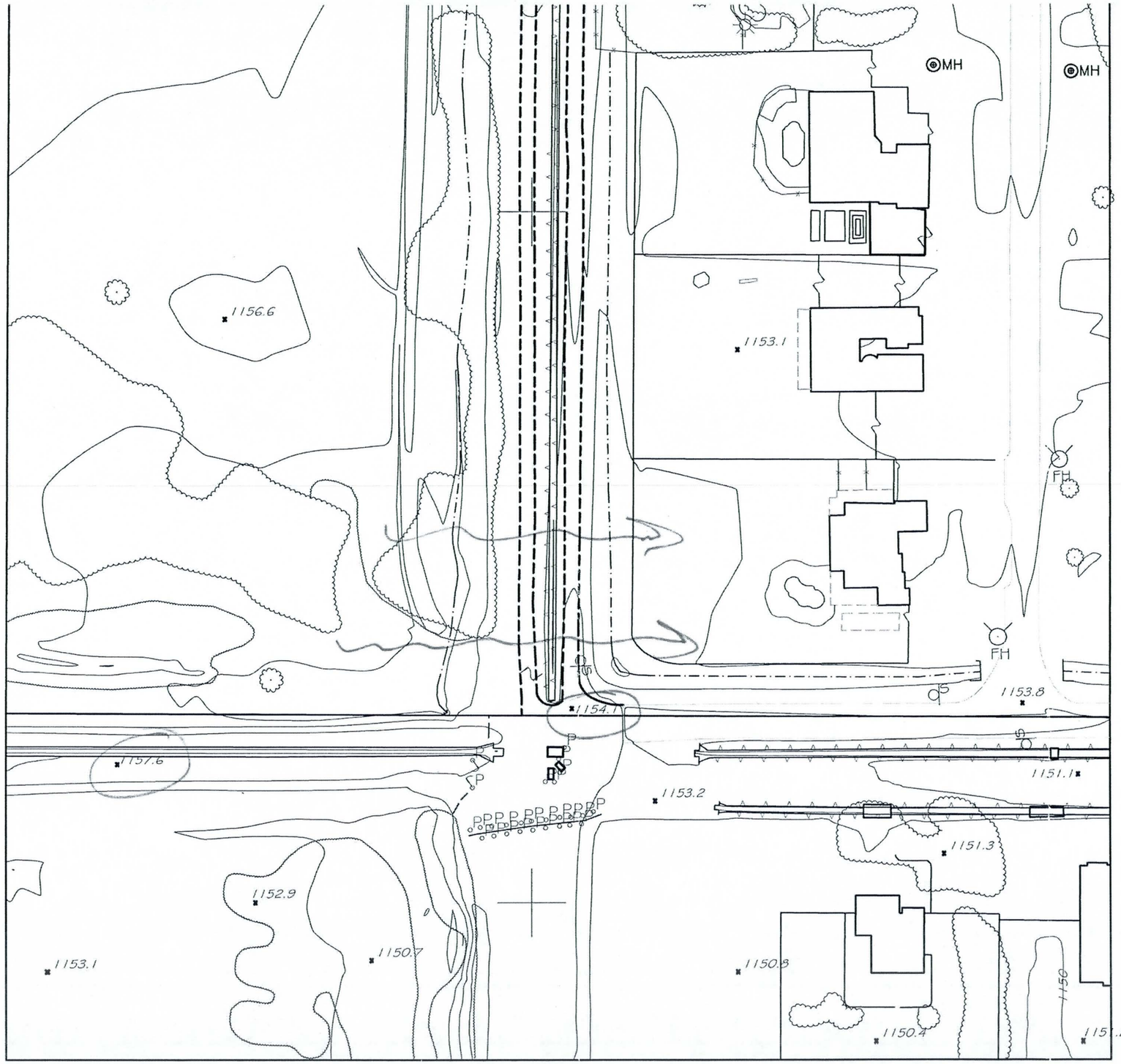
Section					
Section Shape	Circular		Mannings Coefficient	0.024	
Section Material	CMP		Span	2.00	ft
Section Size	24 inch		Rise	2.00	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	4.00	ft	Upstream Velocity Head	0.34	ft
Ke	0.70		Entrance Loss	0.24	ft

Inlet Control Properties					
Inlet Control HW Elev.	3.21	ft	Flow Control	Unsubmerged	
Inlet Type	Mitered to slope		Area Full	6.3	ft²
K	0.02100		HDS 5 Chart	2	
M	1.33000		HDS 5 Scale	2	
C	0.04630		Equation Form	1	
Y	0.75000				

Bethany Home @ Perryville

CPL45



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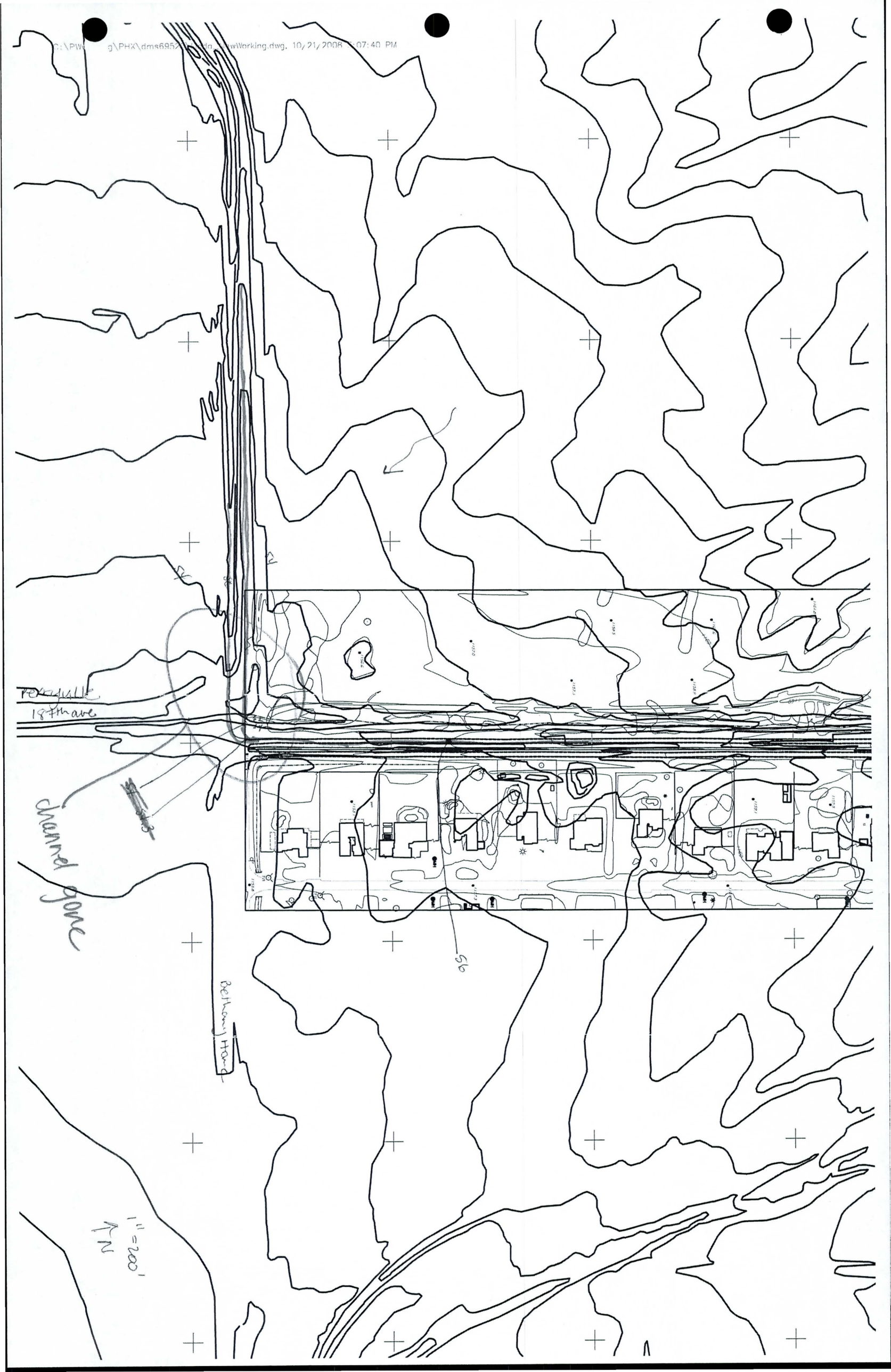
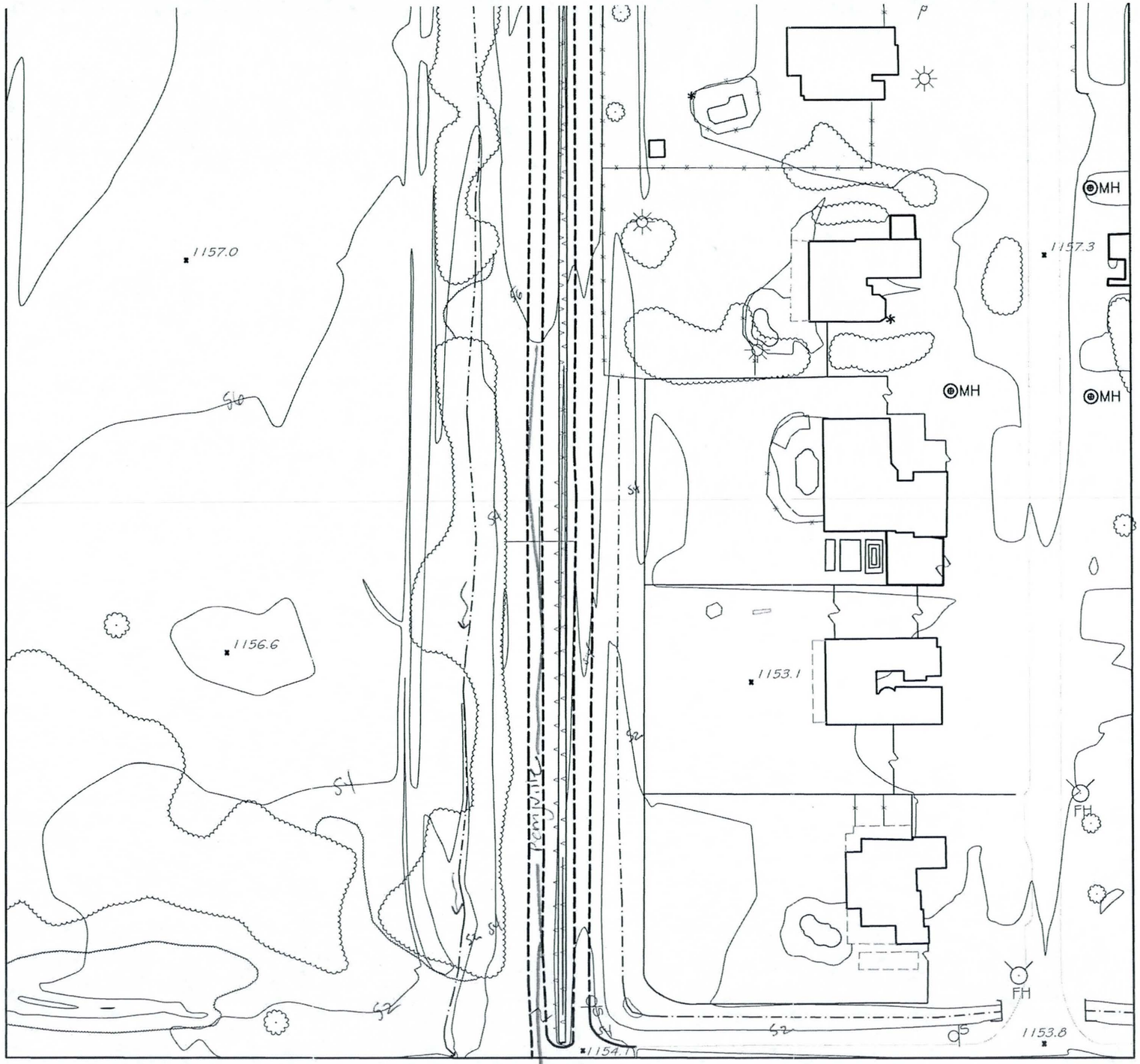

18th ave
channel zone
Bethany Home
1" = 200'
N



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Bethany Home

1" = 200'

N

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Computation

Project	Loop 303 / White Tanks ADMPU AHA	Job No. 79902	No.
Subject	Weir Flow Analysis	Computed AM	Date 10/27/08
Task	Weir Calculations	Checked LA	Date 3/10/09
	Location: Bethany Home at 183rd (DL46)	Sheet 1	Of x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	46.1	46	170	46.05	44.2	0	0.00	44.7	0	0.00	45.2	0	0.00	CHECK	45.7	0	0.00	DONE
south	46	45.8	196	45.9	44.2	0	0.00	44.7	0	0.00	45.2	0	0.00		45.7	0	0.00	
south	45.8	44	5	44.9	44.2	0	0.00	44.7	0	0.00	45.2	0.3	2.46		45.7	0.8	10.73	
south	44	43.8	5	43.9	44.2	0.3	2.46	44.7	0.8	10.73	45.2	1.3	22.23		45.7	1.8	36.22	
southeast	43.8	43.8	20	43.8	44.2	0.4	15.18	44.7	0.9	51.23	45.2	1.4	99.39		45.7	1.9	157.14	
east	43.8	44	172	43.9	44.2	0.3	84.79	44.7	0.8	369.22	45.2	1.3	764.83		45.7	1.8	1246.12	
east	44	45	184	44.5	44.2	0	0.00	44.7	0.2	49.37	45.2	0.7	323.29		45.7	1.2	725.62	
east	45	46	183	45.5	44.2	0	0.00	44.7	0	0.00	45.2	0	0.00		45.7	0.2	49.10	
east	46	46	1	46	44.2	0	0.00	44.7	0	0.00	45.2	0	0.00		45.7	0	0.00	
						TOTALS:	102.43			480.55			1212.20				2224.94	

Graph Computations:

Station	Elevation
0	46.1
170	46
366	45.8
371	44
376	43.8
396	43.8
568	44
752	45
935	46
936	46

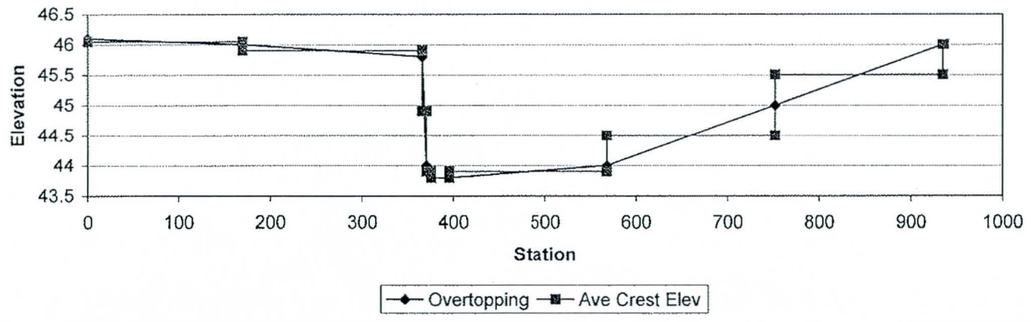
Weir Approximation:

Station	Elevation
0	46.05
170	46.05
170	45.9
366	45.9
366	44.9
371	44.9
371	43.9
376	43.9
376	43.8
396	43.8
396	43.9
568	43.9
568	44.5
752	44.5
752	45.5
935	45.5
935	46
936	46

Culvert Flows (cfs):

south	100
southeast	0
east	0

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	102.46	51%	Q(south)	110.73	19%	Q(south)	124.70	10%	Q(south)	146.96	6%
Q(southeast)	15.18	7%	Q(southeast)	51.23	9%	Q(southeast)	99.39	8%	Q(southeast)	157.14	7%
Q(east)	84.79	42%	Q(east)	418.59	72%	Q(east)	1088.12	83%	Q(east)	2020.84	87%
	202.43			580.55			1312.20			2324.94	

First DI	East to South			
Inflow	202.43	580.55	1312.20	2324.94
Outflow	102.46	110.73	124.70	146.96

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	99.97	469.82	1187.51	2177.98
Outflow	15.18	51.23	99.39	157.14

Assumes diversion is to southeast

Bethany Home @ 183rd

DL46

1146.7

1143.1

1144.9

1144.6

1142.8

1146.3

1140.9

1140.8

1144.1

1144.9

1143.3

1139.6

Bethany Home

1141.8

Culvert (24" - ignore)

1143.3

1141.8

1141.2

1137.4

1139.5

N

1" = 80'

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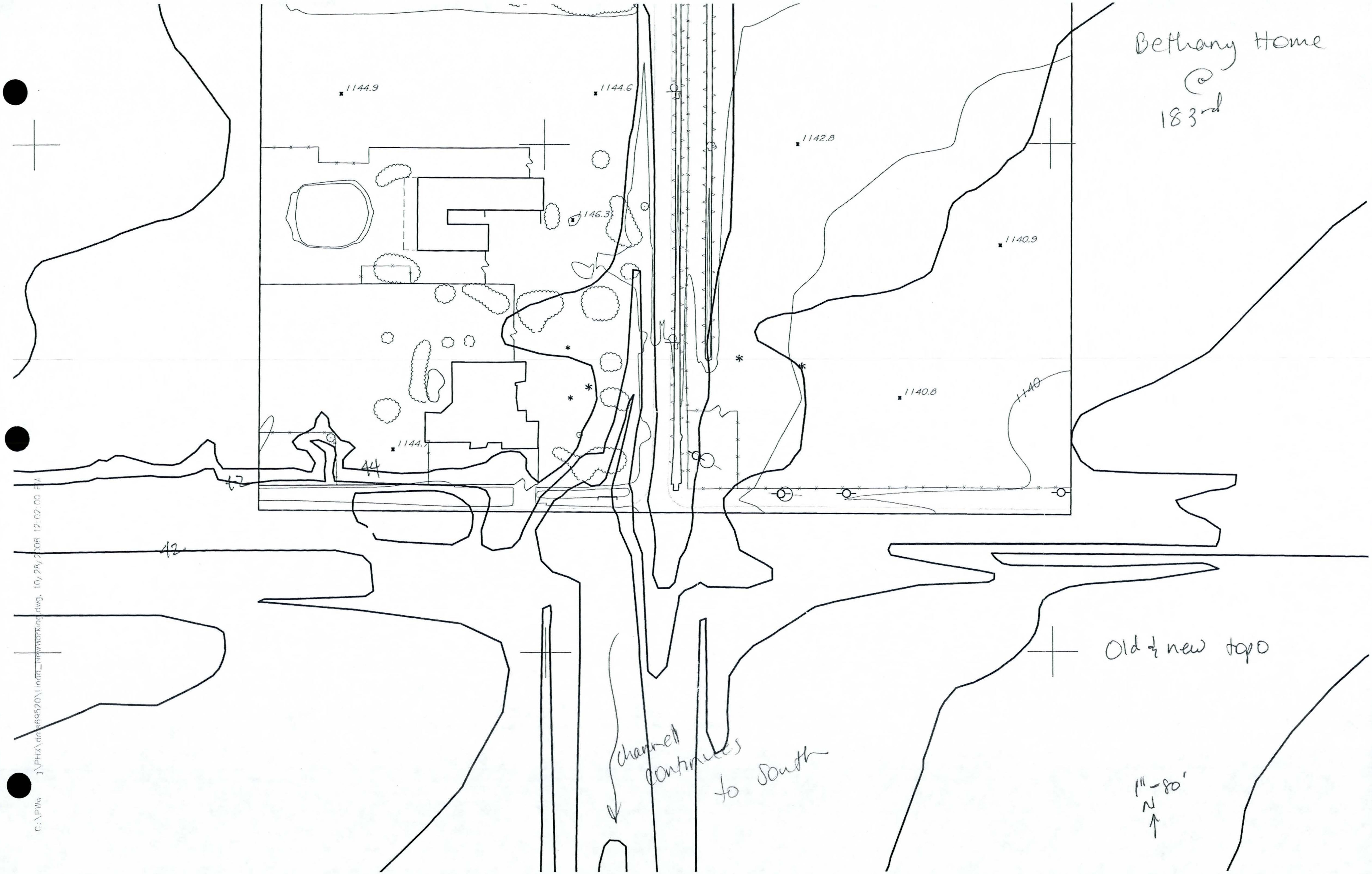
Comment from
M. Duncan / FCDMC

(5) At Bethany Home Road and 183rd Avenue, near CP L46, there is a double barrel cuvert that takes flows to the south. The ends of the culvert are highlighted with 2 red rectangles below:

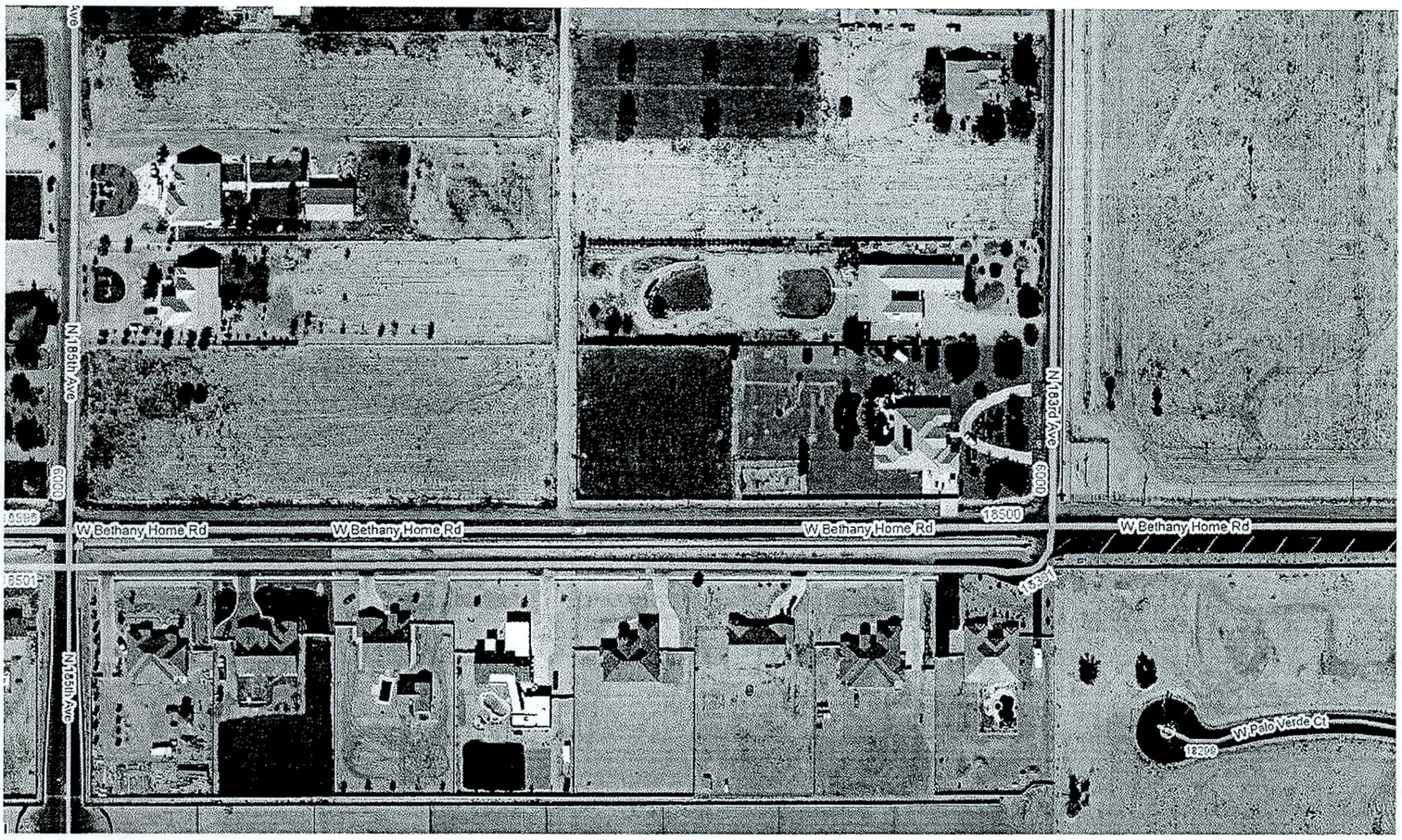
When this house was built (in 2003), the existing culvert was extended to the south. The resulting culvert is 2 CMP pipes, 33 inches high by 49 inches wide by 370 feet long.

The pipe slope from the grading plan is 0.0076 ft/ft
The pipe can convey about 100 cfs to the large north-south channel
(based on a Tailwater of 2 ft., Ke of 0.5, n=0.024, and a Headwater of 51 inches, which is 18 inches above the top of pipe)

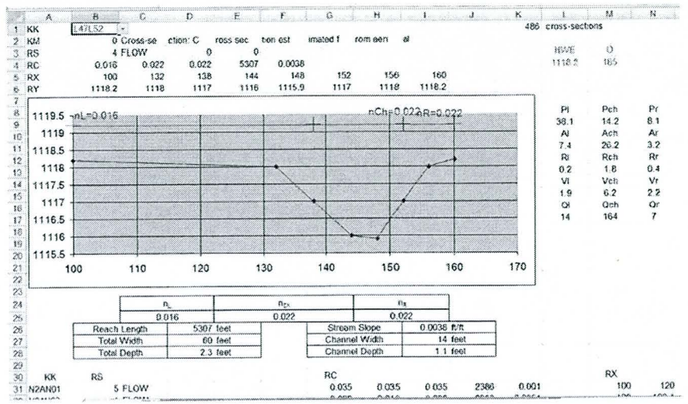
However, the split flow spreadsheet shows zero culvert flows (at the lower left of the sheet) for this location, and the schematic only shows 27 cfs going to the south:



Bethany Home @ 183rd
1144.9
1144.6
1142.8
1146.3
1140.9
1140.8
1140
1144.7
44
42
42
Old & new topo
channel continues to south
1" = 80'
N


N 186th Ave
N 183rd Ave
W Bethany Home Rd
W Bethany Home Rd
W Bethany Home Rd
W Bethany Home Rd
18500
18290
W Palo Verde Ct
N 183rd Ave

Route L47L52



— Route L47L52 will only handle 185 cfs before overtopping roadway.

— Therefore, the Diversion @ DL47 is modified so that only 185 cfs will go South. Rest will travel to CPLS3 in route L47L53.

Job No. 79902 | No.

Computation

Project: Loop 303 / White Tanks ADMPU AHA

Location: Bethany Home at Citrus (DL47)

Computed: AM | Date: 10/27/08

Subject: Weir Flow Analysis

Checked: [illegible] | Date: 3/10/09

Task: Weir Calculations

Sheet: 1 | Of: x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	34	33	183	33.5	32	0	0.00	32.5	0	0.00	33	0	0.00	CHECK	33.5	0	0.00	DONE
south	33	32	183	32.5	32	0	0.00	32.5	0	0.00	33	0.5	194.10		33.5	1	549.00	
south	32	31.4	272	31.7	32	0.3	134.08	32.5	0.8	583.88	33	1.3	1209.50		33.5	1.8	1970.60	
south	31.4	31.8	296	31.6	32	0.4	224.65	32.5	0.9	758.19	33	1.4	1470.97		33.5	1.9	2325.64	
southeast	31.8	31.8	22	31.8	32	0.2	5.90	32.5	0.7	38.65	33	1.2	86.76		33.5	1.7	146.29	
east	31.8	32	160	31.9	32	0.1	15.18	32.5	0.6	223.08	33	1.1	553.77		33.5	1.6	971.45	
east	32	33	285	32.5	32	0	0.00	32.5	0	0.00	33	0.5	302.29		33.5	1	855.00	
east	33	34	284	33.5	32	0	0.00	32.5	0	0.00	33	0	0.00		33.5	0	0.00	
east	34	34	1	34	32	0	0.00	32.5	0	0.00	33	0	0.00		33.5	0	0.00	
						TOTALS:	379.81			1603.81			3817.39				6817.99	

Graph Computations:

Station	Elevation
0	34
183	33
366	32
638	31.4
934	31.8
956	31.8
1116	32
1401	33
1685	34
1686	34

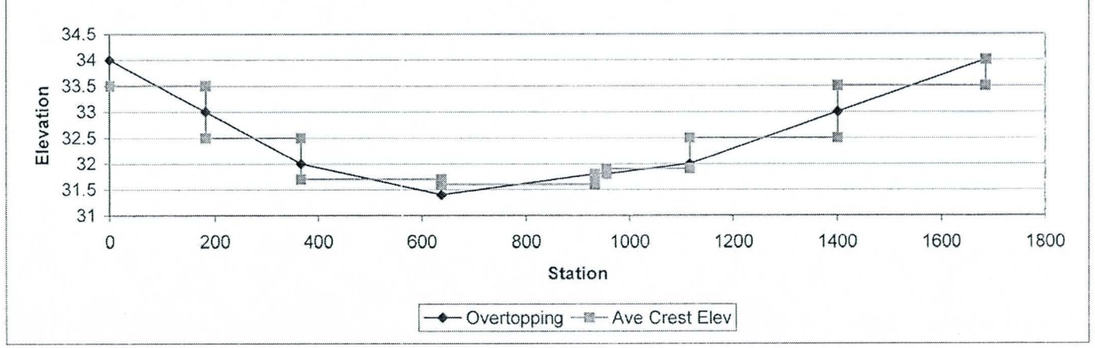
Weir Approximation:

Station	Elevation
0	33.5
183	33.5
183	32.5
366	32.5
366	31.7
638	31.7
638	31.6
934	31.6
934	31.8
956	31.8
956	31.9
1116	31.9
1116	32.5
1401	32.5
1401	33.5
1685	33.5
1685	34
1686	34

Culvert Flows (cfs):

south	0
southeast	0
east	0

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	358.73	94%	Q(south)	1342.07	84%	Q(south)	2874.57	75%	Q(south)	4845.25	71%
Q(southeast)	5.90	2%	Q(southeast)	38.65	2%	Q(southeast)	86.76	2%	Q(southeast)	146.29	2%
Q(east)	15.18	4%	Q(east)	223.08	14%	Q(east)	856.06	22%	Q(east)	1826.45	27%
	379.81			1603.81			3817.39			6817.99	

First DI	East to South			
Inflow	379.81	1603.81	3817.39	6817.99
Outflow	~~358.73~~	~~1342.07~~	~~2874.57~~	~~4845.25~~
	185	185	185	185

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	194.81 ~~21.08~~	~~261.74~~ 1418.81	~~942.82~~ 3632.39	~~1972.74~~ 6637.99
Outflow	~~5.90~~	~~38.65~~	~~86.76~~	~~146.29~~
	179.63	1195.72	2776.33	4806.54

Assumes diversion is to southeast

} Modified per route L47L52 limitation (see attached)

Bethany Home @
Citrus
DL47

331' to 34 (285' to 33, 284' to 34)

1131.8
1131.4
1131.4
1130.5
1128.9
1127.1
1126.4
1130.5
1130.5
1126.4
1131.4
1131.8
1130
1130
1130
1130
1130
230'
160'
32'
22'
40'
296'
366' to 34
182' to 32
272'

1" = 80'
N

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N Citrus Rd
6000
W Bethany Home Rd
W Bethany Home Rd
W Bethany Home Rd
W Bethany Home Rd
17699
6685
W Palo Verde Ct
N Citrus Rd

Job No. 79902 | No.

Computation

Project: Loop 303 / White Tanks ADMPU AHA

Location: Bethany Home at Cotton (DL48)

Computed: AM | Date: 10/27/08

Subject: Weir Flow Analysis | Checked: AP | Date: 3/10/09

Task: Weir Calculations | Sheet: 1 | Of: x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	10	9	187	9.5	7.4	0	0.00	7.9	0	0.00	8.4	0	0.00	CHECK	8.9	0	0.00	DONE
south	9	8	179	8.5	7.4	0	0.00	7.9	0	0.00	8.4	0	0.00		8.9	0.4	135.85	
south	8	7.2	34	7.6	7.4	0	0.00	7.9	0.3	16.76	8.4	0.8	72.99		8.9	1.3	151.19	
southeast	7.2	7.2	12	7.2	7.4	0.2	3.22	7.9	0.7	21.08	8.4	1.2	47.32		8.9	1.7	79.80	
east	7.2	6.6	284	6.9	7.4	0.5	301.23	7.9	1	852.00	8.4	1.5	1565.22		8.9	2	2409.82	
east	6.6	7.6	191	7.1	7.4	0.3	94.15	7.9	0.8	410.01	8.4	1.3	849.32		8.9	1.8	1383.77	
east	7.6	8	76	7.8	7.4	0	0.00	7.9	0.1	7.21	8.4	0.6	105.96		8.9	1.1	263.04	
east	8	9	175	8.5	7.4	0	0.00	7.9	0	0.00	8.4	0	0.00		8.9	0.4	132.82	
east	9	10	175	9.5	7.4	0	0.00	7.9	0	0.00	8.4	0	0.00		8.9	0	0.00	
						TOTALS:	398.60			1307.06			2640.81				4556.28	

Graph Computations:

Station	Elevation
0	10
187	9
366	8
400	7.2
412	7.2
696	6.6
887	7.6
963	8
1138	9
1313	10

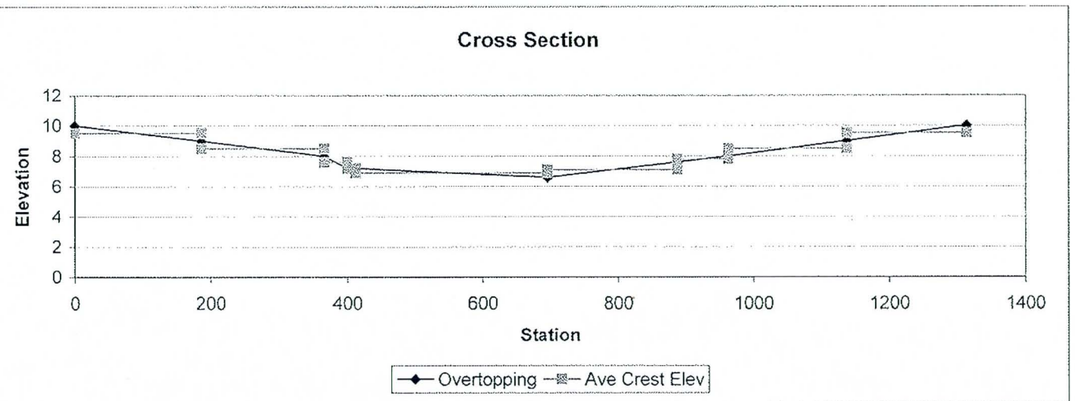
Weir Approximation:

Station	Elevation
0	9.5
187	9.5
187	8.5
366	8.5
366	7.6
400	7.6
400	7.2
412	7.2
412	6.9
696	6.9
696	7.1
887	7.1
887	7.8
963	7.8
963	8.5
1138	8.5
1138	9.5
1313	9.5

Culvert Flows (cfs):

south	0
southeast	0
east	0

Cross Section



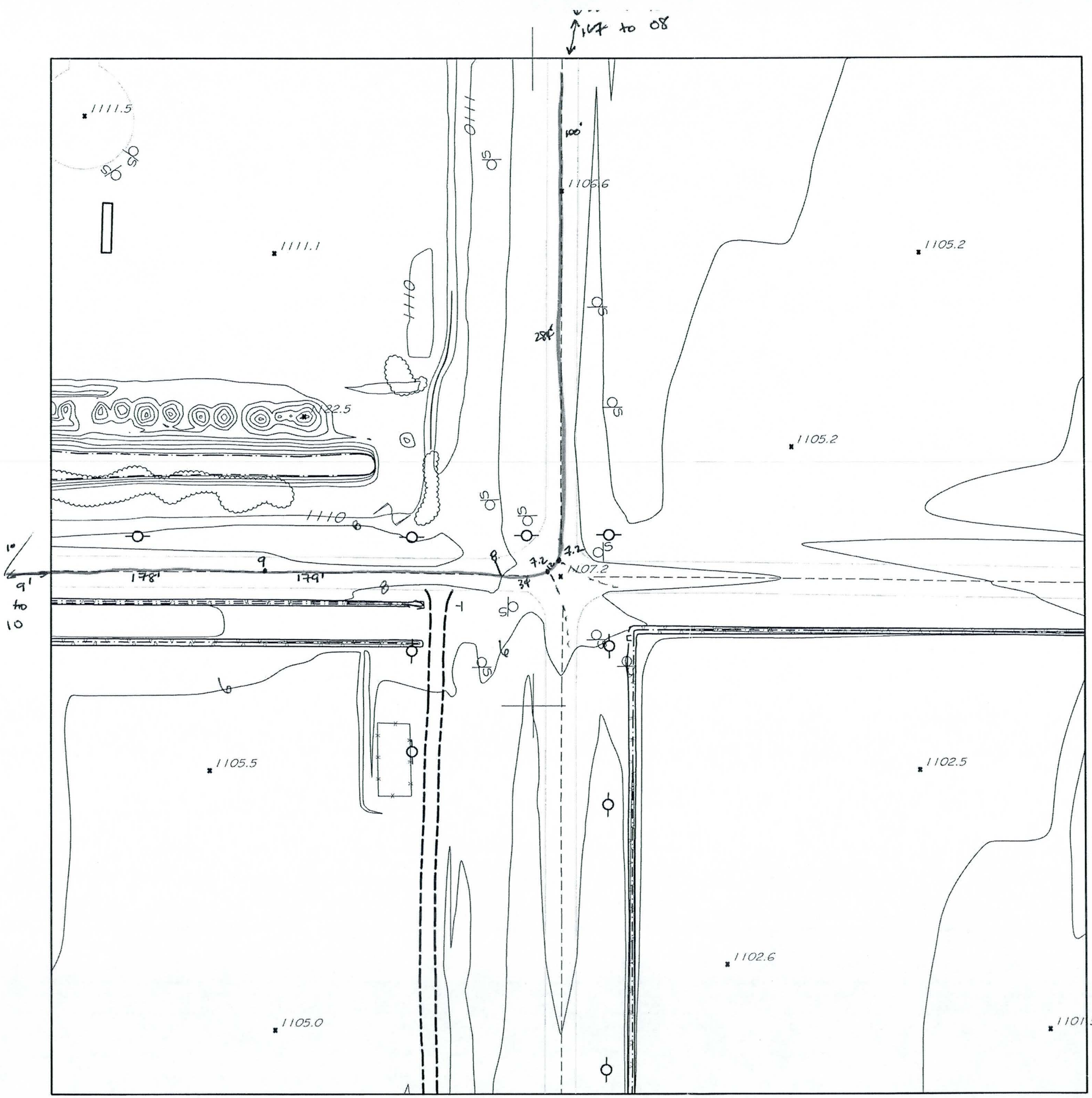
Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	0.00	0%	Q(south)	16.76	1%	Q(south)	72.99	3%	Q(south)	287.04	6%
Q(southeast)	3.22	1%	Q(southeast)	21.08	2%	Q(southeast)	47.32	2%	Q(southeast)	79.80	2%
Q(east)	395.38	99%	Q(east)	1269.22	97%	Q(east)	2520.51	95%	Q(east)	4189.45	92%
	398.60			1307.06			2640.81			4556.28	

First DI	East to South			
Inflow	398.60	1307.06	2640.81	4556.28
Outflow	0.00	16.76	72.99	287.04

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	398.60	1290.30	2567.83	4269.24
Outflow	3.22	21.08	47.32	79.80

Assumes diversion is to southeast



Bethany Home
@
Cotton

DL48

N
↑
1" = 80'

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CIP model
Source

L49

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN  1998                 *
*           VERSION 4.1                 *
*                                       *
*    DATE   07MAY09  TIME  08:05:50     *
*                                       *
*****************************************
```

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

```
X    X  XXXXXXX   XXXXX          X
X    X  X       X     X        XX
X    X  X       X              X
XXXXXX  XXXX    X        XXXXX  X
X    X  X       X              X
X    X  X       X     X        X
X    X  XXXXXXX  XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
    1         ID        LOOP 303 OFF-SITE HYDROLOGY
    2         ID        MODIFIED BASED ON FCDMC'S WHITE TANKS/LOOP 303 CORRIDOR ADMP
    3         ID        THE MODIFICATIONS ARE DESCRIBED AS FOLLOWS:
    4         ID        1. THE CACTUS RD BASIN WAS REMOVED AND TWO RELATIVELY SMALL BASINS
    5         ID           LOCATED AT NORTH OF WADDELL ROAD AND NORTH OF OLIVE AVENUE WERE
    6         ID           ADDED TO THE MODEL BASED ON CMX'S HEC-1 MODEL PROVIDED IN DEC,2006.
    7         ID        2. FLOW DIVERSION TO THE OFF-LINE BASINS, SUCH AS WADDELL ROAD
    8         ID           BASIN, OLIVE AVENUE BASIN, NORTHERN AVENUE BASIN WERE ESTIMATED
    9         ID           USING HEC-RAS LATERAL WEIR ROUTINE.
   10         ID        3. DETENTION BASIN ELEVATION AND VOLUME RELATIONSHIPS WERE ESTIMATED
   11         ID           BASED ON 30% DESIGN OF THE BASIN.
   12         ID        4. ELEVATION AND OUTFLOW RELATIONSHIP WERE ESTIMATED BASED ON 30% DESIG
   13         ID           USING CULVERTMASTER. THE OUTFLOW INCLUDES FLOW FROM BLEED-OFF PIPE
   14         ID           AND FLOW FROM OUTFLOW PIPE.
   15         ID        5. CHANNEL ROUTING WERE MODIFIED BASED ON 30% DESIGN.
   16         ID        6. FLOW FROM THE PROPOSED FCDMC CHANNEL ALONG NORTHEN AVENUE  WILL
   17         ID           NOT BE COMBINED WITH FLOW FROM LOOP 303 OFF-SITE CHANNEL.
   18         ID           INSTEAD THE FLOW FROM THE CHANNEL ALONG NORTHERN AVENUE WILL GO
   19         ID           TO THE NORTHERN AVENUE BASIN DIRECTLY.  SO THE FLOW FROM THE
   20         ID           NORTHERN AVENUE CHANNEL WILL BE COMBINED WITH THE DIVERTED FLOW
   21         ID           FROM LOOP 303 CHANNEL AT NORTHERN AVENUE BASIN.
   22         ID        7. IN THE ADMP MODEL, SOME OF THE OUTFLOW FROM CAMELBACK ROAD BASINS
   23         ID           WERE DIVERTED TO EAST ALONG CAMELBACK ROAD (THE PEAK FLOW IS
   24         ID           180 CFS).  NO STRUCTURE WAS RECOMMENDED IN THE ADMP UPDATE. PB
   25         ID           DESIGNED 3-30" PIPES TO DIVERT SOME FLOW TO THE EXISTING CAMELBACK
   26         ID           ROAD CHANNEL LOCATED AT SOUTH SIDE OF CAMELBACK ROAD.
   27         ID        9. PEBBLE CREEK AND PALM VALLEY 8 DEVELOPMENTS WERE INCLUDED IN THE
   28         ID           MODEL BASED ON HEC-1 MODEL PROVIDED BY DEL RIO ENGINEERING.
   29         ID       10. MCDOWELL ROAD DETENTION BASIN WERE DIVIDED INTO TWO DETENTION BASINS
   30         ID           ONE IS CALLED MCDOWELL ROAD UPPER BASIN AND THE OTHER ONE IS CALLED
   31         ID           MCDOWELL ROAD LOWER BASIN
   32         ID       11  PROPOSED I-10/303L TI (ULTIMATED CONDITION) ON-SITE DRAINAGE SYSTEM
   33         ID           WAS REFLECTED IN THE MODEL.  THERE ARE TOTAL 11 ON-SITE BASINS.
   34         ID
   35         ID        EXISTING CONDITION WITH PROJECTS IN PLACE SCENARIO
   36         ID        REVISED BY PARSONS BRINCKERHOFF     DATE: Aug 2008
   37         ID                                            FILE NAME: EX_SPLT.DAT
   38         ID        ************************************************************************
   39         ID        DRAFT PREFERRED ALTERNATIVE LEVEL III
   40         ID
   41         ID        INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
   42         ID        SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
   43         ID        BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
   44         ID        LUKE AIR FORCE BASE CRASH ZONE AREA
   45         ID
   46         ID        **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
   47         ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
   48         ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
   49         ID        TANKS/AGUA FRIA ADMS, Date: October 1991
   50         ID
   51         ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
   52         ID        100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
   53         ID
   54         ID                                      REVISED BY URS     DATE: 01-14-04
   55         ID                                                         FILE: L33PE4H.DAT
```

HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
   56         ID
   57         ID        NOTES:
   58         ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
   59         ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
   60         ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
```

```
*  RS   1.4              -1.0     0.0
*  RC 0.013   0.013   0.013    5298  0.0021
*  RX     0    15.6    19.4    23.2    27.0    30.8    34.6    50.2
*  RY1095.5  1087.7  1087.7  1087.7  1087.7  1087.7  1087.7  1095.5
```

```
4627  KK  RLP6-1
4628  KM   ROUTE FLOW FROM GLENDALE AVE TO DROP STRUCTURE #14
4629  RS     0.7              -1.0     0.0
4630  RC   0.035   0.015   0.035    2567  0.0038
4631  RX       0      10      13      25      50      62      82    83.8
4632  RY    1109    1109    1108    1102    1102    1108  1108.4    1109

4633  KK  RLP6-2
4634  KM   ROUTE FLOW FROM DROP STRUCTURE #14 TO BETHANY HOME ROAD
4635  RS     0.7              -1.0     0.0
4636  RC   0.035   0.015   0.035    2480  0.0041
4637  RX       0      10      13      25      50      62      82    83.8
4638  RY    1097    1097    1096    1090    1090    1096  1096.4    1097
```

44DS14

DS1449

```
4639  KK   2D208
4640  KM         RETURN DIVERT AT CP208
4641  DR   1D219

4642  KK    R208
4643  KM        ROUTE FLOW FROM CP208 TO CP219
4644  RS      22              -1
4645  RC    .075    .075    .075    6070   .0059
4646  RX    1000    1001    1002    1270    2570    2698    2699    2700
4647  RY    1115    1115    1115    1114    1114    1115    1115    1115
      *
```



```
LINE  ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

4648  KK     219
4649  KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 219
4650  BA     .50
4651  LG     .50     .00    4.05     .72     .00
4652  UI    22.     22.     22.     45.     77.     92.    105.    119.    128.    140.
4653  UI   158.    173.    202.    247.    289.    253.    220.    196.    180.    164.
4654  UI   146.    132.    119.    106.     93.     72.     55.     39.     38.     36.
4655  UI    33.     22.     22.     22.     12.      7.      7.      7.      7.      7.
4656  UI     7.      7.      7.      7.      7.      0.      0.      0.      0.      0.
4657  UI     0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
      * KK219OUT
      * KM      DIVERSION-RETENTION
      * DT219RET    41.6
      * DI     0   10000
      * DQ     0   10000

4658  KK   1I219
4659  KM        ADD HYDROGRAPHS AT CP219
4660  HC        2   14.68

4661  KK   2I219
4662  KM        ADD HYDROGRAPHS AT CP219
4663  HC        2   15.18

4664  KK   2D218
4665  KM        RETURN DIVERT AT CP218
4666  DR   2D219

4667  KK    R218
4668  KM        ROUTE FLOW FROM CP218 TO CP219
4669  RS      12              -1
4670  RC    .075     .04     .04    2640   .0045
4671  RX    1000    1110    1290    1600    2050    2108    2109    2110
4672  RY    1101    1100    1098    1096    1096    1097    1097    1097
      *
      * MODIFY PER LEVEL III
      *
      * KK CP219

4673  KK    !LP7
4674  KM        ADD HYDROGRAPHS AT CP219
4675  HC        2   16.67
      * HC      2    4.77
      *
      * TURN DIVERT OFF PER LEVEL III
      *

4676  KK   1D219
4677  KM        DIVERT FROM CP219 TO CP238
4678  DT   DI238
4679  DI        0      70    1410   16774
4680  DQ        0       0       0       0
      *
      * TURN DIVERT OFF PER LEVEL III
      *
```



```
LINE  ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

4681  KK   2D219
4682  KM        DIVERT FROM CP219 TO CP220
4683  DT   2D220
4684  DI        0       2     420    6322
4685  DQ        0       0       0       0
      * KK  R219
      * PER LEVEL III PRELIMINARY-DRAFT PREFERRED ALTERNATIVE
```

Job No.	79902	No.	

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Location: Bethany Home at Loop 303 (DL49)	Computed	AM	Date	10/27/08
Subject	Weir Flow Analysis		Checked	AP	Date	3/16/09
Task	Weir Calculations		Sheet	1	Of	x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	98	97	224	97.5	96.5	0	0.00	97	0	0.00	97.5	0	0.00	CHECK	98	0.5	237.59	DONE
south	97	96	220	96.5	96.5	0	0.00	97	0.5	233.35	97.5	1	660.00		98	1.5	1212.50	
south	96	95.4	30	95.7	96.5	0.8	64.40	97	1.3	133.40	97.5	1.8	217.35		98	2.3	313.93	
south	95.4	96	55	95.7	96.5	0.8	118.06	97	1.3	244.57	97.5	1.8	398.47		98	2.3	575.54	
southeast	96	96.3	15	96.15	96.5	0.35	9.32	97	0.85	35.26	97.5	1.35	70.59		98	1.85	113.23	
southeast	96.3	96.3	30	96.3	96.5	0.2	8.05	97	0.7	52.71	97.5	1.2	118.31		98	1.7	199.49	
east	96.3	97	100	96.65	96.5	0	0.00	97	0.35	62.12	97.5	0.85	235.10		98	1.35	470.57	
east	97	97.3	145	97.15	96.5	0	0.00	97	0	0.00	97.5	0.35	90.07		98	0.85	340.89	
east	97.3	98.2	145	97.75	96.5	0	0.00	97	0	0.00	97.5	0	0.00		98	0.25	54.38	
						TOTALS:	199.83			761.41			1789.88				3518.11	

Graph Computations:

Station	Elevation
0	98
224	97
444	96
474	95.4
529	96
544	96.3
574	96.3
674	97
819	97.3
964	98.2

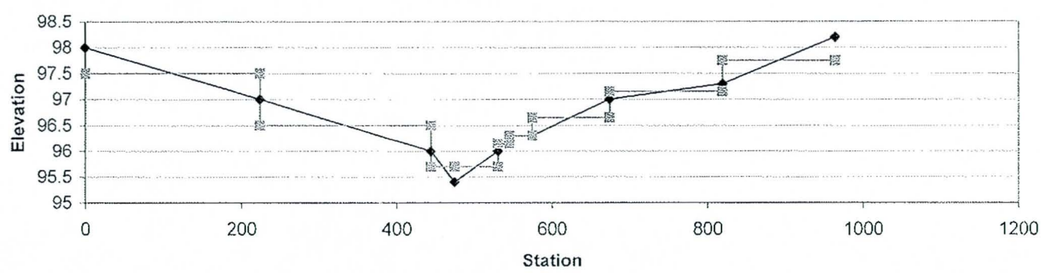
Weir Approximation:

Station	Elevation
0	97.5
224	97.5
224	96.5
444	96.5
444	95.7
474	95.7
474	95.7
529	95.7
529	96.15
544	96.15
544	96.3
574	96.3
574	96.65
674	96.65
674	97.15
819	97.15
819	97.75
964	97.75

Culvert Flows (cfs):

south	0
southeast	0
east	0

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	182.46	91%	Q(south)	611.31	80%	Q(south)	1275.81	71%	Q(south)	2339.56	67%
Q(southeast)	17.37	9%	Q(southeast)	87.97	12%	Q(southeast)	188.89	11%	Q(southeast)	312.72	9%
Q(east)	0.00	0%	Q(east)	62.12	8%	Q(east)	325.17	18%	Q(east)	865.84	25%
	199.83			761.41			1789.88			3518.11	

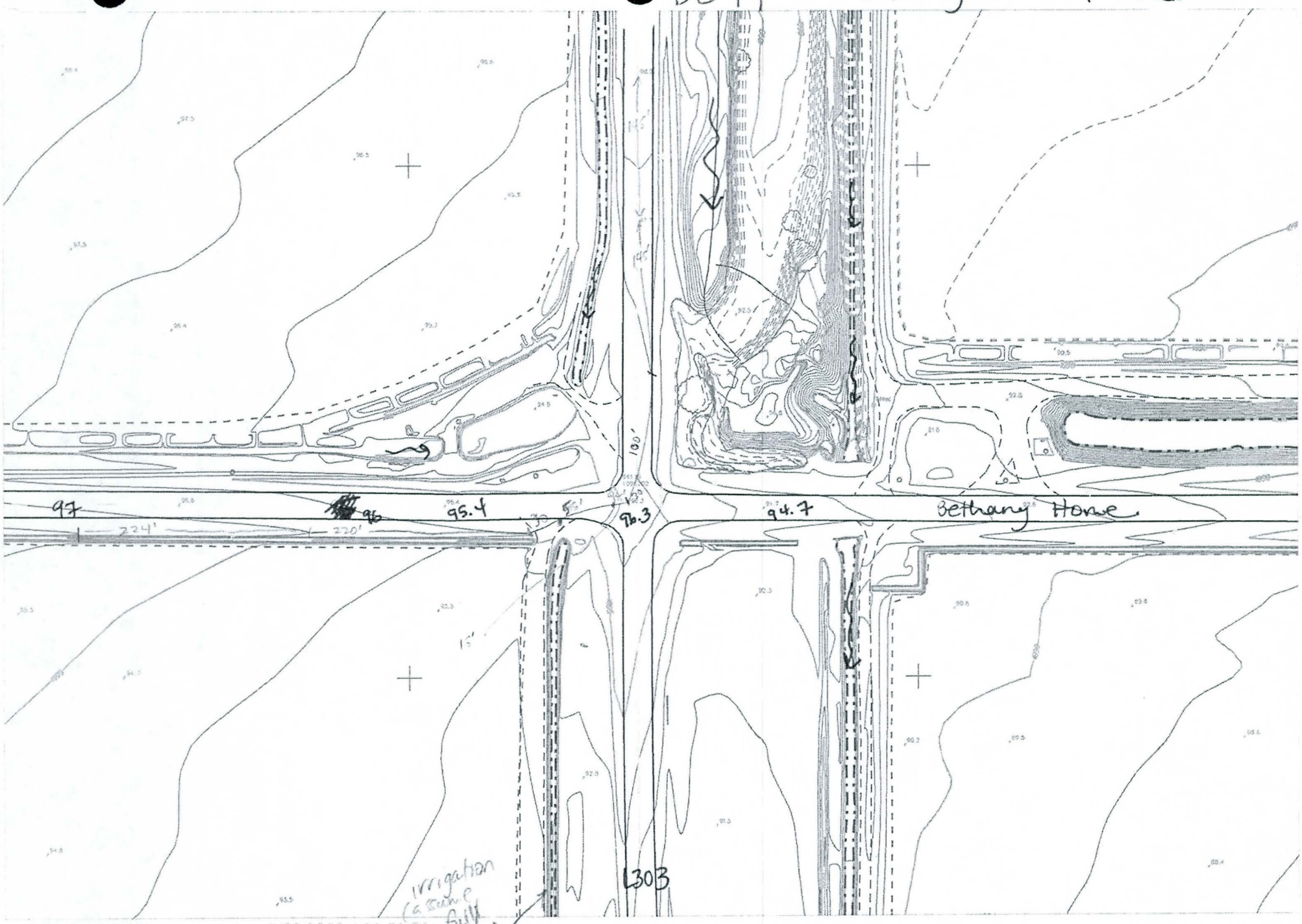
First DI	East to South			
Inflow	199.83	761.41	1789.88	3518.11
Outflow	182.46	611.31	1275.81	2339.56

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	17.37	150.09	514.06	1178.55
Outflow	17.37	87.97	188.89	312.72

Assumes diversion is to southeast

DL49 Bethany Home & L3



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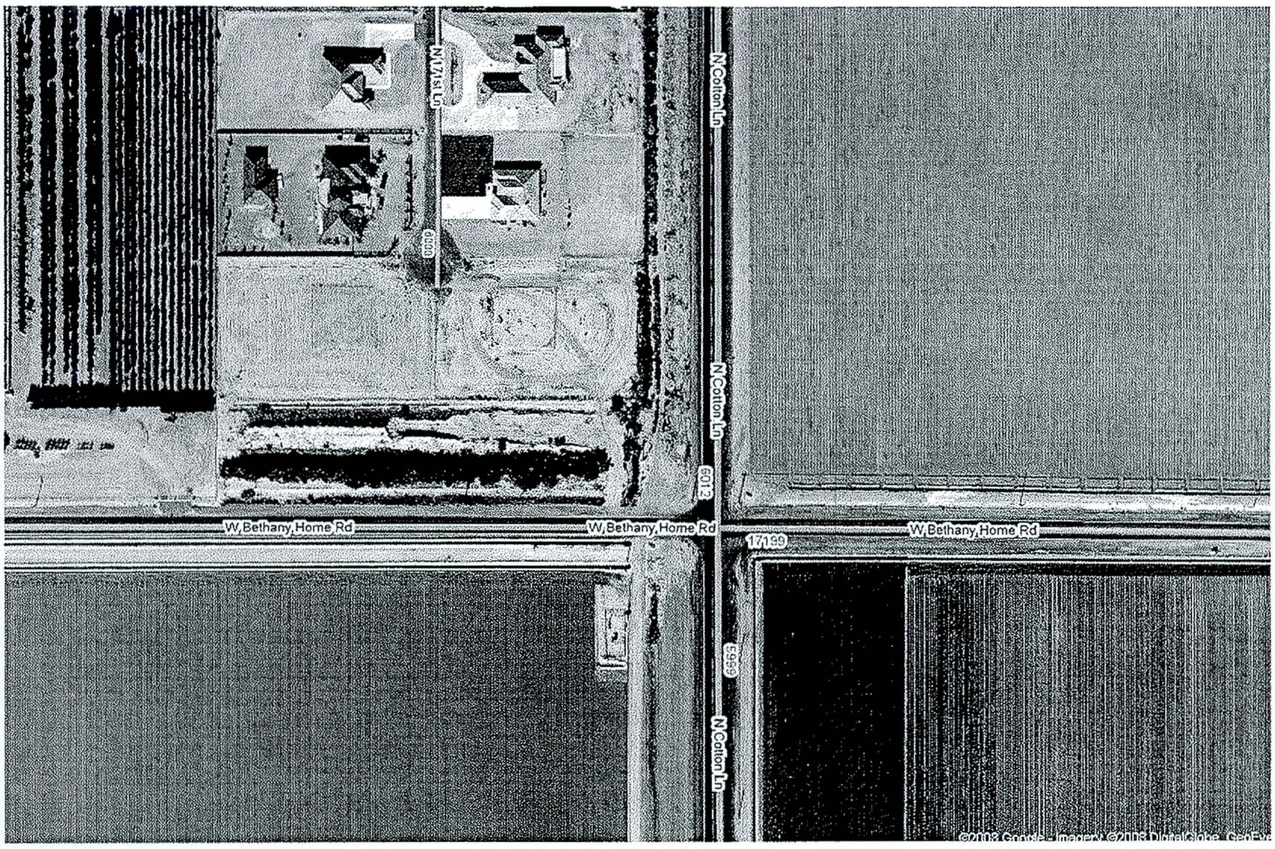
N 171st Ln
N Cotton Ln
N Cotton Ln
6013
W Bethany Home Rd
W Bethany Home Rd
W Bethany Home Rd
17199
5959
N Cotton Ln

Street View
Traffic
More...
Map
Satellite
Terrain
303
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For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

Camelback @
½ mile btwn
Perryville & Citrus

DLS1

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W Camelback Rd
W Camelback Rd
W Camelback Rd
W Camelback Rd

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Location: Camelback at Citrus (DL52)	Job No. 79902
Subject	Weir Flow Analysis	Computed AM	Date 10/27/08
Task	Weir Calculations	Checked LB	Date 3/10/09
		Sheet 1	Of x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	14	13	663.5	13.5	12.2	0	0.00	12.7	0	0.00	13.2	0	0.00	CHECK	13.7	0.2	178.04	DONE
south	13	12	663.5	12.5	12.2	0	0.00	12.7	0.2	178.04	13.2	0.7	1165.76		13.7	1.2	2616.58	
south	12	11.8	60	11.9	12.2	0.3	29.58	12.7	0.8	128.80	13.2	1.3	266.80		13.7	1.8	434.69	
southeast	11.8	11.8	20	11.8	12.2	0.4	15.18	12.7	0.9	51.23	13.2	1.4	99.39		13.7	1.9	157.14	
east	11.8	12	300	11.9	12.2	0.3	147.89	12.7	0.8	643.99	13.2	1.3	1334.01		13.7	1.8	2173.46	
east	12	13	454.5	12.5	12.2	0	0.00	12.7	0.2	121.96	13.2	0.7	798.55		13.7	1.2	1792.37	
east	13	14	454.5	13.5	12.2	0	0.00	12.7	0	0.00	13.2	0	0.00		13.7	0.2	121.96	
east	14	14	1	14	12.2	0	0.00	12.7	0	0.00	13.2	0	0.00		13.7	0	0.00	
east	14	14	1	14	12.2	0	0.00	12.7	0	0.00	13.2	0	0.00		13.7	0	0.00	
						TOTALS:	192.64			1124.00			3664.51				7474.23	

Graph Computations:

Station	Elevation
0	14
663.5	13
1327	12
1387	11.8
1407	11.8
1707	12
2161.5	13
2616	14
2617	14
2618	14

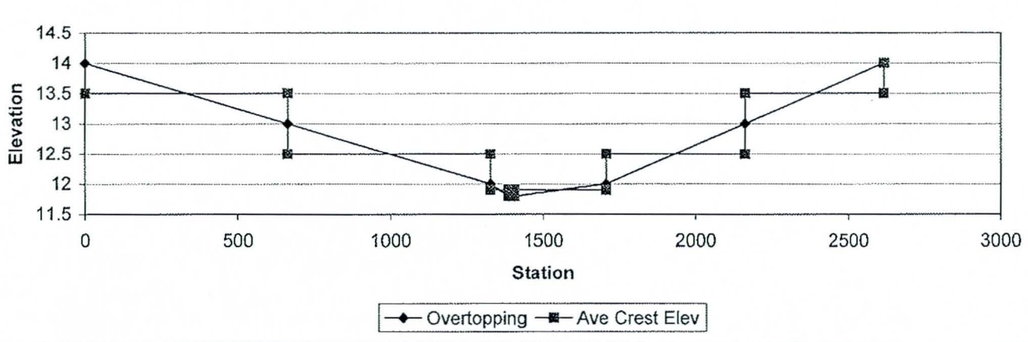
Weir Approximation:

Station	Elevation
0	13.5
663.5	13.5
663.5	12.5
1327	12.5
1327	11.9
1387	11.9
1387	11.8
1407	11.8
1407	11.9
1707	11.9
1707	12.5
2161.5	12.5
2161.5	13.5
2616	13.5
2616	14
2617	14
2617	14
2618	14

Culvert Flows (cfs):

south	0
southeast	0
east	157

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	29.58	8%	Q(south)	306.83	24%	Q(south)	1432.56	37%	Q(south)	3229.31	42%
Q(southeast)	15.18	4%	Q(southeast)	51.23	4%	Q(southeast)	99.39	3%	Q(southeast)	157.14	2%
Q(east)	304.89	87%	Q(east)	922.94	72%	Q(east)	2289.56	60%	Q(east)	4244.78	56%
	349.64			1281.00			3821.51			7631.23	

First DI	East to South			
Inflow	349.64	1281.00	3821.51	7631.23
Outflow	29.58	306.83	1432.56	3229.31

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	320.06	974.17	2388.95	4401.92
Outflow	15.18	51.23	99.39	157.14

Assumes diversion is to southeast

Culvert Calculator Report
CamelbackCitrus

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	12.50	ft	Headwater Depth/Height	1.83	
Computed Headwater Elev	12.50	ft	Discharge	156.65	cfs
Inlet Control HW Elev.	12.46	ft	Tailwater Elevation	9.00	ft
Outlet Control HW Elev.	12.50	ft	Control Type	Outlet Control	

Grades					
Upstream Invert	7.00	ft	Downstream Invert	6.50	ft
Length	60.00	ft	Constructed Slope	0.008333	ft/ft

Hydraulic Profile					
Profile	CompositeM2PressureProfile		Depth, Downstream	2.75	ft
Slope Type	Mild		Normal Depth	N/A	ft
Flow Regime	Subcritical		Critical Depth	2.75	ft
Velocity Downstream	11.53	ft/s	Critical Slope	0.011983	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	3.00	ft
Section Size	36 inch		Rise	3.00	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	12.50	ft	Upstream Velocity Head	1.91	ft
Ke	0.20		Entrance Loss	0.38	ft

Inlet Control Properties					
Inlet Control HW Elev.	12.46	ft	Flow Control	Submerged	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	14.1	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

02/06/2009

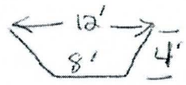
Field Notes

10 @Itrus @ Peoria - flow has a greater chance of going east, rather than south.

K. SRW05 - Olive @ Beardsley Canal - 3 structures - Westside
P 23 - Crossover - Check As-builts for WT#3 NIC
P 24 - 2 - 10'x5' cbc, 7' to overtop
P 25 - 2 - 4'x6' arch cmp's between cbc and Canal.

16 RR track along west side of Cotton Lane - track ends approx. 200' south of Olive Ave., then berm continues south approx ½ mile, then grade becomes level with ag field
P26 - site of house an elevated pad; used to be a FEMA Zone AH when RR track existed here.

15/6 Camelback Channel @ Cotton Lane -
P 27 - looking east along channel on north side of Camelback Rd.
2 - 8'x3½' cbc

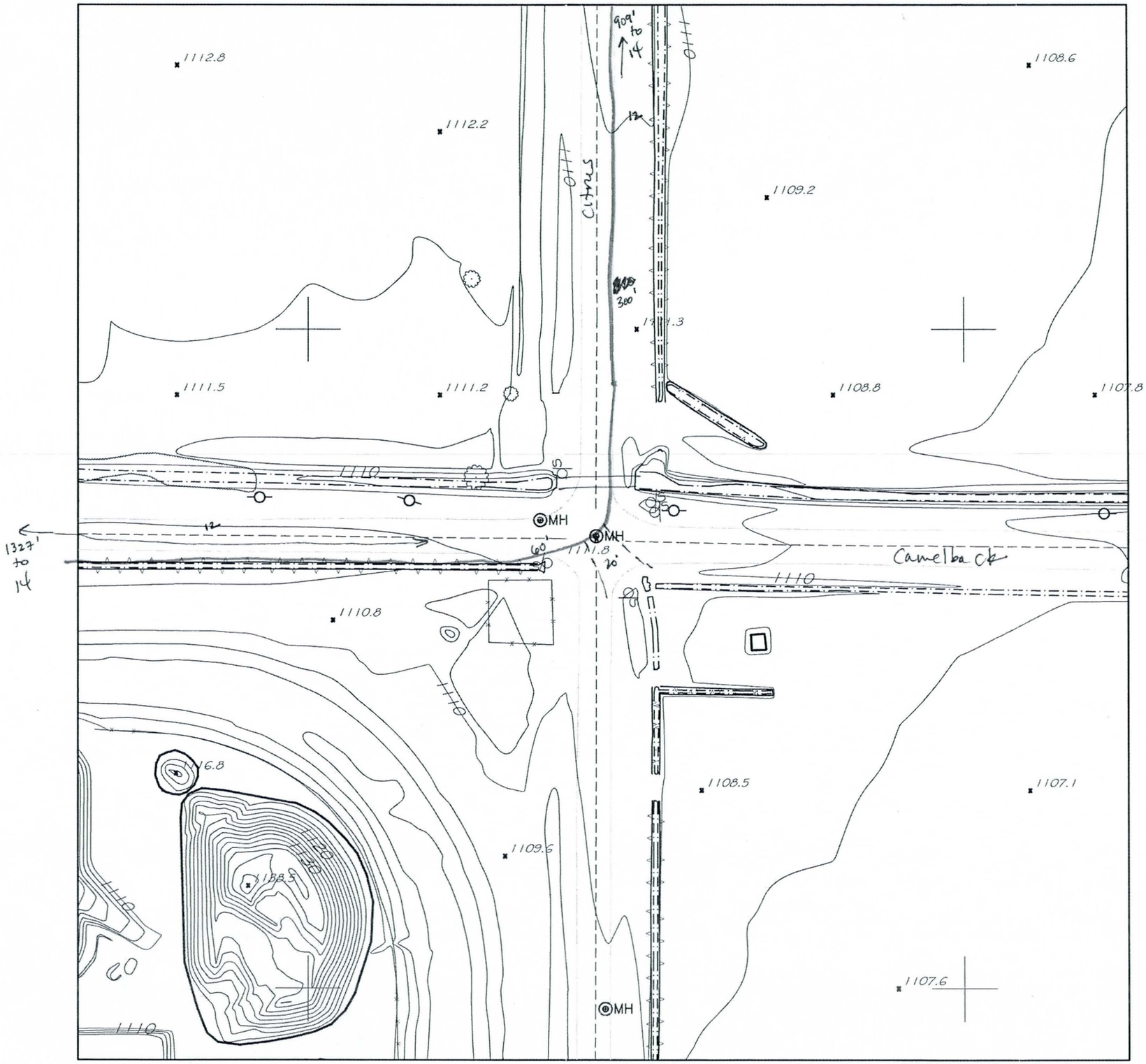


P28 - channel measurements

F. Citrus @ Camelback.
2 - 36" cmp

P29 - looking west to culvert.
- 1 way crown of road sloping north along Camelback Rd. - flow goes east into channel on north side of Camelback Rd. - Note: there is a wide channel on south side of Camelback between Citrus + Perryville Rd.

Camelback @
Citrus
PL52



culverts 2 - 36"

1" = 80'

N

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Computation

Project	Loop 303 / White Tanks ADMPU AHA	Job No. 79902	No.
Subject	Weir Flow Analysis	Computed AM	Date 10/27/08
Task	Weir Calculations	Checked [illegible]	Date 3/10/09
	Location: Camelback at Cotton (DL53)	Sheet 1	Of x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	88	86.6	124	87.3	86.6	0	0.00	87.1	0	0.00	87.6	0.3	61.13	CHECK	88.1	0.8	266.18	DONE
south	86.6	86.5	308	86.55	86.6	0.05	10.33	87.1	0.55	376.89	87.6	1.05	994.16		88.1	1.55	1783.07	
southeast	86.5	86.5	30	86.5	86.6	0.1	2.85	87.1	0.6	41.83	87.6	1.1	103.83		88.1	1.6	182.15	
east	86.5	86.2	190	86.35	86.6	0.25	71.25	87.1	0.75	370.23	87.6	1.25	796.60		88.1	1.75	1319.57	
east	86.2	87.2	283	86.7	86.6	0	0.00	87.1	0.4	214.78	87.6	0.9	724.89		88.1	1.4	1406.37	
east	87.2	88	225	87.6	86.6	0	0.00	87.1	0	0.00	87.6	0	0.00		88.1	0.5	238.65	
east	88	88	1	88	86.6	0	0.00	87.1	0	0.00	87.6	0	0.00		88.1	0.1	0.09	
east	88	88	1	88	86.6	0	0.00	87.1	0	0.00	87.6	0	0.00		88.1	0.1	0.09	
east	88	88	1	88	86.6	0	0.00	87.1	0	0.00	87.6	0	0.00		88.1	0.1	0.09	
						TOTALS:	84.43			1003.73			2680.61				5196.28	

Graph Computations:

Station	Elevation
0	88
124	86.6
432	86.5
462	86.5
652	86.2
935	87.2
1160	88
1161	88
1162	88
1163	88

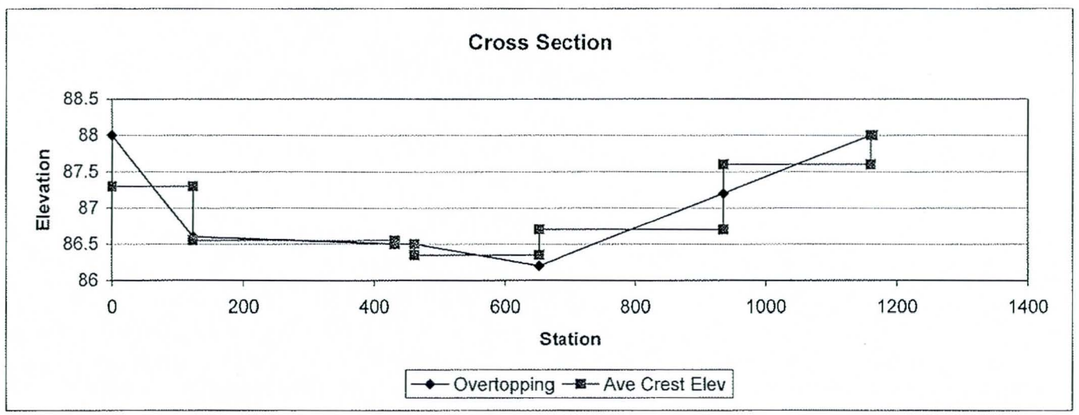
Weir Approximation:

Station	Elevation
0	87.3
124	87.3
124	86.55
432	86.55
432	86.5
462	86.5
462	86.35
652	86.35
652	86.7
935	86.7
935	87.6
1160	87.6
1160	88
1161	88
1161	88
1162	88
1162	88
1163	88

Culvert Flows (cfs):

south	0
southeast	0
east	267

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	10.33	3%	Q(south)	376.89	30%	Q(south)	1055.29	36%	Q(south)	2049.26	38%
Q(southeast)	2.85	1%	Q(southeast)	41.83	3%	Q(southeast)	103.83	4%	Q(southeast)	182.15	3%
Q(east)	338.25	96%	Q(east)	852.01	67%	Q(east)	1788.49	61%	Q(east)	3231.87	59%
	351.43			1270.73			2947.61			5463.28	

First DI	East to South			
Inflow	351.43	1270.73	2947.61	5463.28
Outflow	10.33	376.89	1055.29	2049.26

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	341.10	893.84	1892.32	3414.02
Outflow	2.85	41.83	103.83	182.15

Assumes diversion is to southeast

Culvert Calculator Report
CamelbackCotton

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	86.80	ft	Headwater Depth/Height	0.95	
Computed Headwater Elev	86.80	ft	Discharge	267.17	cfs
Inlet Control HW Elev.	86.49	ft	Tailwater Elevation	84.00	ft
Outlet Control HW Elev.	86.80	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	83.00	ft	Downstream Invert	82.50	ft
Length	75.00	ft	Constructed Slope	0.006667	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	1.70	ft
Slope Type	Steep		Normal Depth	1.62	ft
Flow Regime	Supercritical		Critical Depth	2.05	ft
Velocity Downstream	9.83	ft/s	Critical Slope	0.003367	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	8.00	ft
Section Size	8 x 4 ft		Rise	4.00	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	86.80	ft	Upstream Velocity Head	1.03	ft
Ke	0.70		Entrance Loss	0.72	ft

Inlet Control Properties					
Inlet Control HW Elev.	86.49	ft	Flow Control	Unsubmerged	
Inlet Type	0° wingwall flares		Area Full	64.0	ft²
K	0.06100		HDS 5 Chart	8	
M	0.75000		HDS 5 Scale	3	
C	0.04230		Equation Form	1	
Y	0.82000				

Field Notes

10 Citrus @ Peoria - flow has a greater chance of going east, rather than south.

K. SRW05 - Olive @ Beardsley Canal - 3 structures - Westside
P 23 - Crossover - Check As-builts for WT#3 NIC
P 24 - 2 - 10'x5' cbc, 7' to overtop
P 25 - 2 - 4'x6' arch cmp's between cbc and canal.

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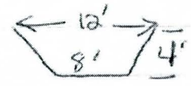
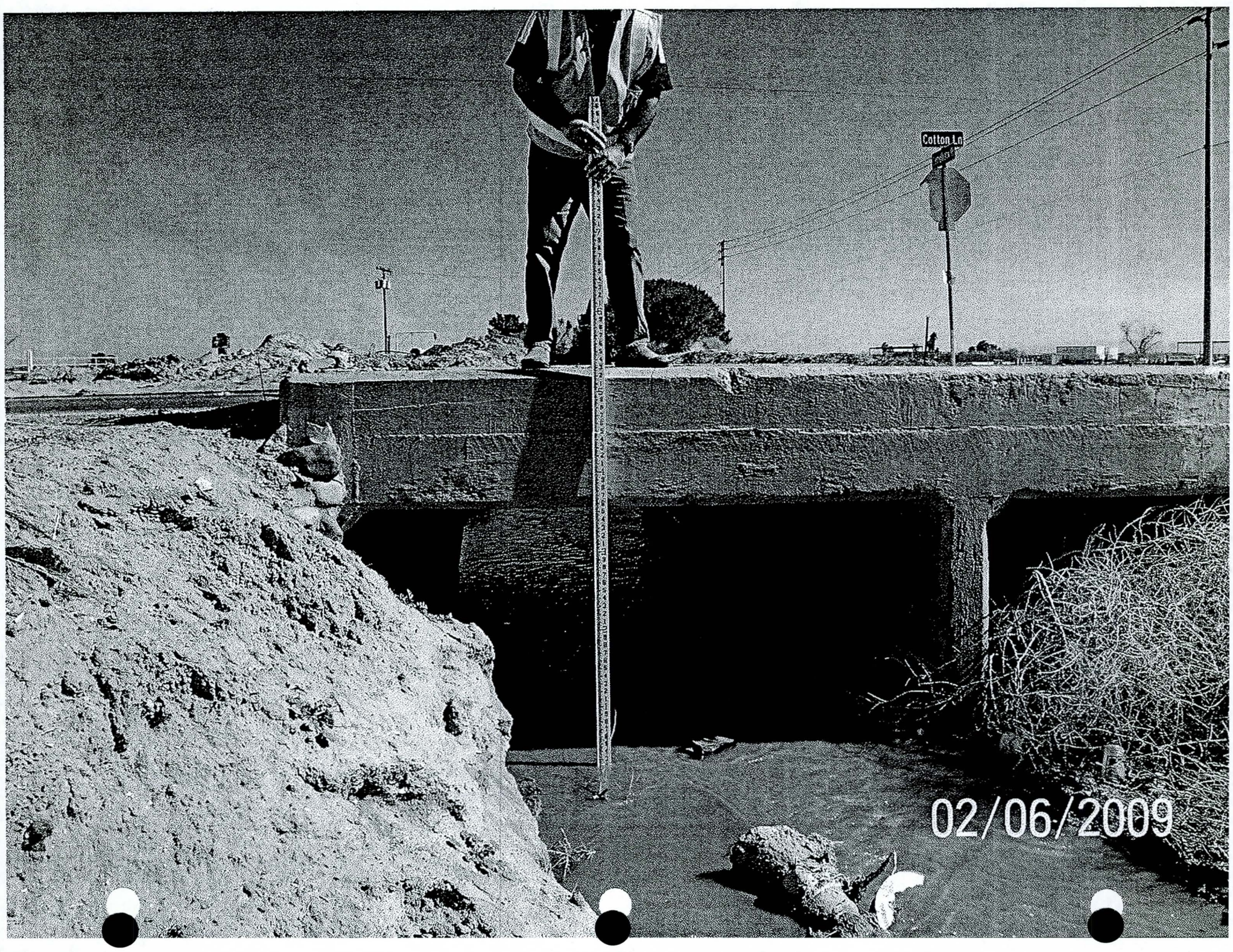
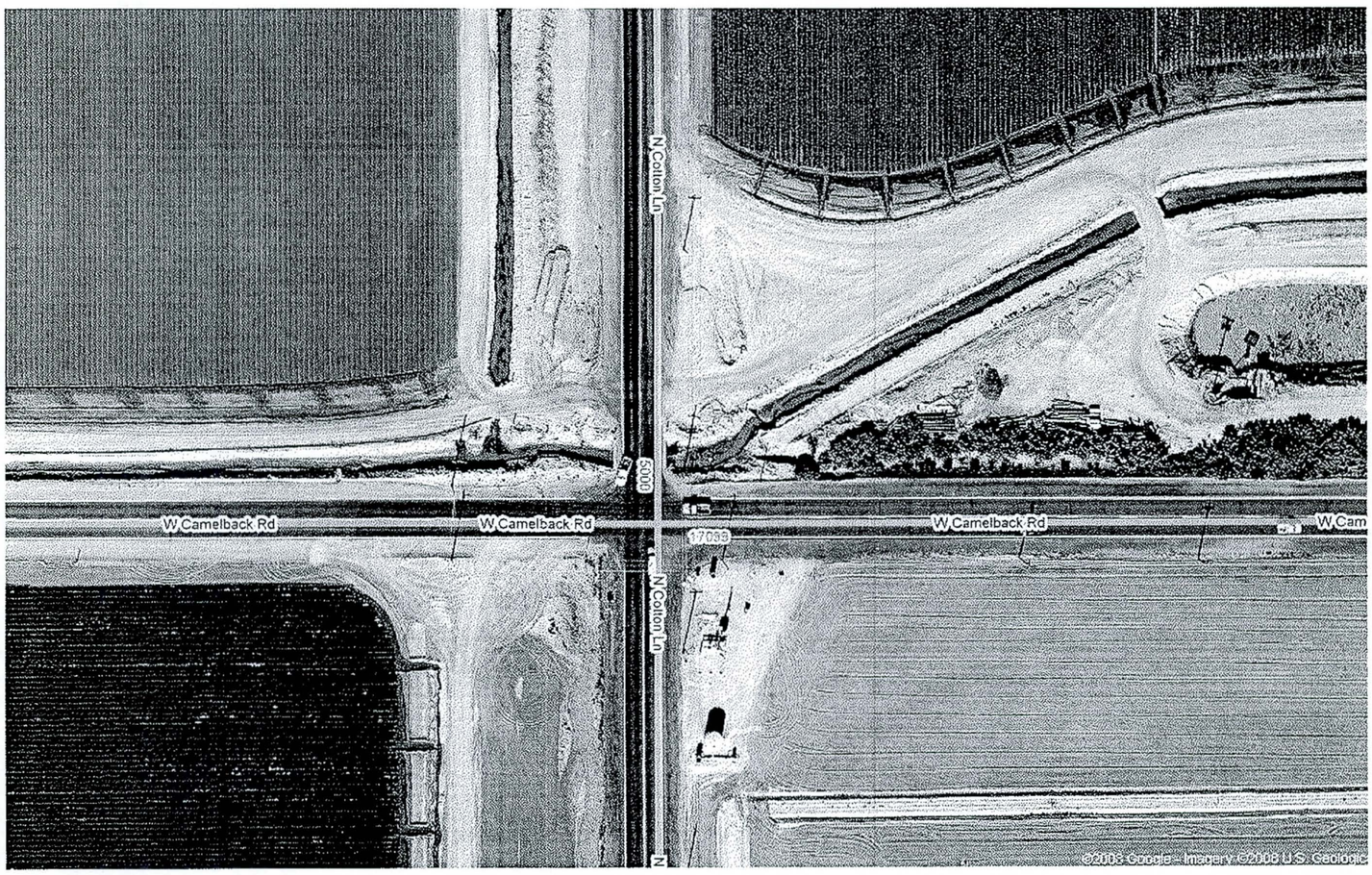
15/6 Camelback Channel @ Cotton Lane -
P 27 - looking east along channel on north side of Camelback Rd.
2 - 8'x3½' cbc



P28 - channel measurements

F. Citrus @ Camelback.
2 - 36" cmp Beveled
P29 - looking west to culvert.
- 1 way crown of road sloping north along Camelback Rd -- flow goes east into channel on north side of Camelback Rd. - Note: there is a wide channel on south side of Camelback between Citrus + Perryville Rd.


Cotton Ln
02/06/2009


W Camelback Rd
W Camelback Rd
N Cotton Ln
5000
17099
W Camelback Rd
W Cam
N Cotton Ln
©2008 Google - Imagery ©2008 U.S. Geologic

Camelback @ Cotter

DL53

313' to 88

283' to 87.2

198'

190'

124'

308'

1086.5

1086.5

1086.3

1084.6

1083.2

86.2

86

1084.6

1085.9

1085.5

1080

1084.1

86

86.5

86.5

30'

1086.6

MH

Camelback

84

84

MH

MH

MH

1085.0

1082.9

1081.4

1081.2

1082.2

1080

1082.8

Cotter

88

1" = 80'

N

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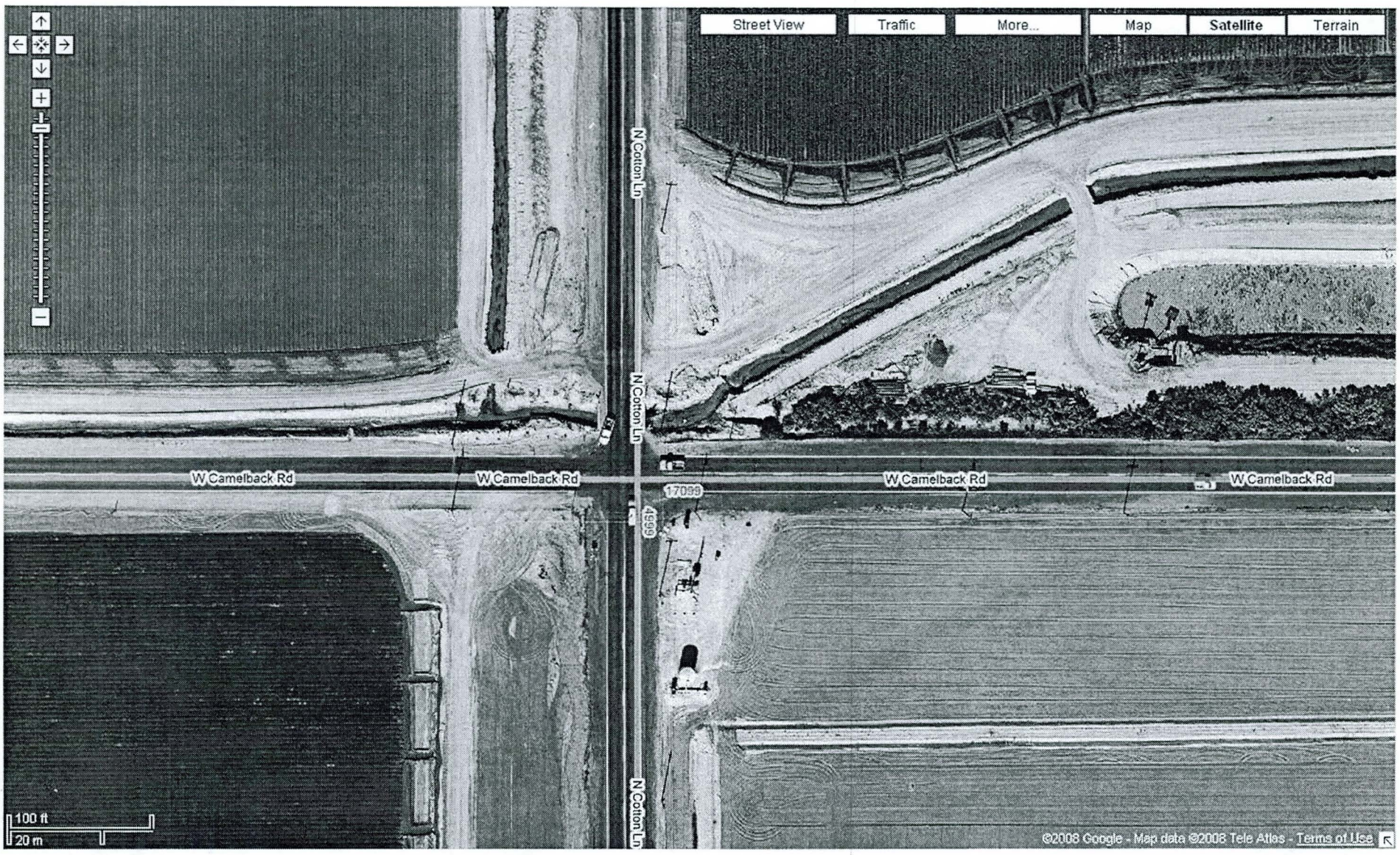
DL 53

Camelback @ Cotton Lane



CIP models

LS4

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN  1998                 *
*           VERSION 4.1                 *
*                                       *
*    . DATE   07MAY09  TIME  08:05:50   *
*                                       *
*****************************************
```

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

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
   1          ID        LOOP 303 OFF-SITE HYDROLOGY
   2          ID        MODIFIED BASED ON FCDMC'S WHITE TANKS/LOOP 303 CORRIDOR ADMP
   3          ID        THE MODIFICATIONS ARE DESCRIBED AS FOLLOWS:
   4          ID        1. THE CACTUS RD BASIN WAS REMOVED AND TWO RELATIVELY SMALL BASINS
   5          ID           LOCATED AT NORTH OF WADDELL ROAD AND NORTH OF OLIVE AVENUE WERE
   6          ID           ADDED TO THE MODEL BASED ON CMX'S HEC-1 MODEL PROVIDED IN DEC,2006.
   7          ID        2. FLOW DIVERSION TO THE OFF-LINE BASINS, SUCH AS WADDELL ROAD
   8          ID           BASIN, OLIVE AVENUE BASIN, NORTHERN AVENUE BASIN WERE ESTIMATED
   9          ID           USING HEC-RAS LATERAL WEIR ROUTINE.
  10          ID        3. DETENTION BASIN ELEVATION AND VOLUME RELATIONSHIPS WERE ESTIMATED
  11          ID           BASED ON 30% DESIGN OF THE BASIN.
  12          ID        4. ELEVATION AND OUTFLOW RELATIONSHIP WERE ESTIMATED BASED ON 30% DESIG
  13          ID           USING CULVERTMASTER. THE OUTFLOW INCLUDES FLOW FROM BLEED-OFF PIPE
  14          ID           AND FLOW FROM OUTFLOW PIPE.
  15          ID        5. CHANNEL ROUTING WERE MODIFIED BASED ON 30% DESIGN.
  16          ID        6. FLOW FROM THE PROPOSED FCDMC CHANNEL ALONG NORTHEN AVENUE  WILL
  17          ID           NOT BE COMBINED WITH FLOW FROM LOOP 303 OFF-SITE CHANNEL.
  18          ID           INSTEAD THE FLOW FROM THE CHANNEL ALONG NORTHERN AVENUE WILL GO
  19          ID           TO THE NORTHERN AVENUE BASIN DIRECTLY.  SO THE FLOW FROM THE
  20          ID           NORTHERN AVENUE CHANNEL WILL BE COMBINED WITH THE DIVERTED FLOW
  21          ID           FROM LOOP 303 CHANNEL AT NORTHERN AVENUE BASIN.
  22          ID        7. IN THE ADMP MODEL, SOME OF THE OUTFLOW FROM CAMELBACK ROAD BASINS
  23          ID           WERE DIVERTED TO EAST ALONG CAMELBACK ROAD (THE PEAK FLOW IS
  24          ID           180 CFS).  NO STRUCTURE WAS RECOMMENDED IN THE ADMP UPDATE. PB
  25          ID           DESIGNED 3-30" PIPES TO DIVERT SOME FLOW TO THE EXISTING CAMELBACK
  26          ID           ROAD CHANNEL LOCATED AT SOUTH SIDE OF CAMELBACK ROAD.
  27          ID        9. PEBBLE CREEK AND PALM VALLEY 8 DEVELOPMENTS WERE INCLUDED IN THE
  28          ID           MODEL BASED ON HEC-1 MODEL PROVIDED BY DEL RIO ENGINEERING.
  29          ID       10. MCDOWELL ROAD DETENTION BASIN WERE DIVIDED INTO TWO DETENTION BASINS
  30          ID           ONE IS CALLED MCDOWELL ROAD UPPER BASIN AND THE OTHER ONE IS CALLED
  31          ID           MCDOWELL ROAD LOWER BASIN
  32          ID       11  PROPOSED I-10/303L TI (ULTIMATED CONDITION) ON-SITE DRAINAGE SYSTEM
  33          ID           WAS REFLECTED IN THE MODEL.  THERE ARE TOTAL 11 ON-SITE BASINS.
  34          ID
  35          ID        EXISTING CONDITION WITH PROJECTS IN PLACE SCENARIO
  36          ID        REVISED BY PARSONS BRINCKERHOFF    DATE: Aug 2008
  37          ID                                           FILE NAME: EX_SPLT.DAT
  38          ID        ************************************************************************
  39          ID        DRAFT PREFERRED ALTERNATIVE LEVEL III
  40          ID
  41          ID        INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
  42          ID        SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
  43          ID        BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
  44          ID        LUKE AIR FORCE BASE CRASH ZONE AREA
  45          ID
  46          ID        **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
  47          ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
  48          ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
  49          ID        TANKS/AGUA FRIA ADMS, Date: October 1991
  50          ID
  51          ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
  52          ID        100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
  53          ID
  54          ID                                  REVISED BY URS     DATE: 01-14-04
  55          ID                                                     FILE: L33PE4H.DAT
```

HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
  56          ID
  57          ID        NOTES:
  58          ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
  59          ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
  60          ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
```

```
*  ************************************************************************************
*  PB MODIFICATION:
*  CHANNEL ROUTING WAS CHANGED BASED ON THE PROPOSED CHANNEL DIMENSION
*  ************************************************************************************
*  KK  RLP7
*  KM
*  RS   1.5              -1.0     0.0
*  RC 0.013   0.013   0.013    5841  0.0020
*  RX     0    15.4    20.6    25.8    31.0    36.2    41.4    56.8
*  RY1075.2  1067.5  1067.5  1067.5  1067.5  1067.5  1067.5  1075.2

4686    KK  RLP7-1
4687    KM   ROUTE FLOW FROM BETHANY HOME ROAD TO DROP STRUCTURE #15
4688    RS     0.5              -1.0     0.0
4689    RC   0.035   0.015   0.035    1899  0.0043
4690    RX       0      10      13      25      57      69      89    90.8
4691    RY    1087    1087    1086    1080    1080    1086  1086.4    1097

4692    KK  RLP7-2
4693    KM   ROUTE FLOW FROM DROP STRUCTURE #15 TO CAMELBACK ROAD
4694    RS     0.8              -1.0     0.0
4695    RC   0.035   0.015   0.035    3152  0.0033
4696    RX       0      10      13      25      57      69      89    90.8
4697    RY    1077    1077    1076    1070    1070    1076  1076.4    1077

4698    KK   1D218
4699    KM         RETURN DIVERT AT CP218
4700    DR   DI237

4701    KK    R218
4702    KM        ROUTE FLOW FROM CP218 TO CP237
4703    RS      14               -1
4704    RC    .035    .035    .075    6700   .0046
4705    RX    1000    1001    1002    1020    1300    1820    2099    2100
4706    RY    1087    1087    1087    1086    1086    1088    1089    1089
        *

4707    KK     237
4708    KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 237
4709    BA     .50
4710    LG     .50     .00    4.90     .51     .00
4711    UI    20.     20.     20.     23.     65.     74.     88.     98.    108.    115.
4712    UI   126.    139.    151.    169.    204.    241.    255.    219.    195.    176.
4713    UI   162.    150.    135.    123.    113.    100.     93.     80.     62.     49.
4714    UI    35.     35.     32.     32.     23.     20.     20.     20.      9.      6.
4715    UI     6.      6.      6.      6.      6.      6.      6.      6.      6.      6.
4716    UI     6.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1                                  HEC-1 INPUT                                PAGE129

LINE    ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

4717    UI     0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
        * KK237OUT
        * KM      DIVERSION-RETENTION
        * DT237RET    33.6
        * DI     0   10000
        * DQ     0   10000

4718    KK   1I237
4719    KM        ADD HYDROGRAPHS AT CP237
4720    HC       2   16.17

4721    KK   2I237
4722    KM        ADD HYDROGRAPHS AT CP237
4723    HC       2   17.17
        *
        * MODIFY PER LEVEL III
        *
        * KK CP237

4724    KK    !LP8
4725    KO      1                                  21
4726    KM     ADD HYDROGRAPHS AT CP237
4727    HC       2   27.84
        * TURN OFF DIVERT 2D250 PER CHANGE ORDER #13 - THIS WILL ALLOW FLOW TO
        * COMBINE WITH FLOW FROM SUB BASIN 238 AND WILL REFLECT THE RELOCATION OF
        * SRLP8 TO SRCM1 IN THE LAFB CRASH ZONE.  SINCE BASIN IS RELOCATED ON THE
        * EAST SIDE OF SR303L PER CRASH ZONES, THE RUNOFF CONCENTRATED AT !CM1
        * WILL NOW BE USED TO DESIGN THE BASIN.
        *

4728    KK   1D237
4729    KM   ASSUME ALL FLOW SOUTH
4730    KM        DIVERT FROM CP237 TO CP250
4731    DT   2D250
4732    DI       0     400     800    1200    1600   20000
4733    DQ       0       0       0       0       0       0
        *  DQ     0     400     800    1200    1600   20000
        *

4734    KK   2D237
4735    KM        DIVERT FROM CP237 TO CP250A
4736    DT  1D250A
4737    DI       0     292     346     526    1763   12160
4738    DQ       0       0       0       0       0       0

4739    KK    R237
4740    KM        ROUTE REMAINDER FROM CP237 TO CP238
4741    RS      1               -1
4742    RC     .04     .02     .02    2640   .0049
4743    RX    1000    1545    1560    1570    1585    1618    1619    1620
4744    RY    1069    1066    1067  1062.5  1062.5    1067    1067    1067
```

49DS15

DS15S4

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN  1998                 *
*          VERSION 4.1                  *
*                                       *
*  DATE   14JUL08  TIME  17:23:04       *
*                                       *
*****************************************
```

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

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
   1          ID      ASPEN CONSULTING ENGINEERS, JCS, 06-20-08, FILE: REC-EWP.DAT, 100-YR 24-HR
   2          ID      THIS IS THE EXISTING WITH RECOMMENDED PLAN MODEL.
   3          ID      NOTES:
   4          ID      THE PURPOSE OF THIS PROJECT IS TO UPDATE FOR LAND USE CHANGES FOR THE ENTIRE
   5          ID      MODEL AND TO REEVALUATE THE BASINS AT LOOP 303 AND CAMELBACK ROAD.
   6          ID
   7          ID      UPDATE LG CARD AND DEVELOPMENT RETENTION DIVERSIONS FOR EACH SUBBASIN.
   8          ID      CHANGE MODEL TO REFLECT THE NEW SUNCOR CHANNEL SOUTH OF CAMELBACK RD.
   9          ID      BETWEEN STATE ROUTE 303 AND BULLARD WASH.
  10          ID
  11          ID      THE RECOMMENDED PLAN IS A CHANNEL BEGINNING AT THE OUTLET FROM THE NORTHERN
  12          ID      AVENUE BASIN AT THE SW CORNER OF NORTHERN AND THE LOOP 303.  THE CHANNEL
  13          ID      GOES SOUTH ALONG THE WEST SIDE OF THE LOOP 303 TO CAMELBACK ROAD.  BEFORE
  14          ID      CAMELBACK ROAD THE CHANNEL TRANSITIONS INTO A LONG BOX CULVERT THAT
  15          ID      CROSSES DIAGONALLY UNDER THE LOOP 303 AND CAMELBACK ROAD WEHERE IT
  16          ID      DAYLIGHTS ON THE SOUTH SIDE OF CAMELBACK ROAD AT THE EXISTING SUNCOR
  17          ID      CHANNEL.  THE FLOW THEN CONTINUES ALONG THE SUNCOR CHANNEL ALIGNMENT TO A
  18          ID      BASIN NEAR REEMS ROAD WHICH THEN OUTLETS TO THE SUNCOR CHANNEL ALIGNMENT
  19          ID      AGAIN AND CONTINUES TO BULLARD WASH.  SEPARATELY, THERE IS A BASIN AT COTTON
  20          ID      LANE AND CAMELBACK ROAD.  A SHORT CHANNEL CONVEYS WATER COLLECTED AT THE
  21          ID      BASIN TO THE LOOP 303 AND THEN TRANSITIONS SOUTH IN A CULVERT UNDER
  22          ID      CAMELBACK ROAD.  THIS CHANNEL CONTINUES ALONG LOOP 303 TO A SMALL BASIN
  23          ID      SOUTH AT INDIAN SCHOOL ROAD AND THEN TO THE BASIN AT I-10 NEAR PERRYVILLE
  24          ID      PRISON.  THE I-10 AND PERRYVILLE PRISON BASIN IS AS PROPOSED IN THE ADMPU.
  25          ID
              * ************************************************************************
              * *  THE FOLLOWING IS THE MODEL RECIEVED BY ASPEN FROM FCDMC ON 06/08/07
              * ************************************************************************
  26          ID          DRAFT PREFERRED ALTERNATIVE LEVEL III
  27          ID
  28          ID          INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
  29          ID          SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
  30          ID          BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
  31          ID          LUKE AIR FORCE BASE CRASH ZONE AREA
  32          ID
  33          ID          **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
  34          ID          WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
  35          ID          Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
  36          ID          TANKS/AGUA FRIA ADMS, Date: October 1991
  37          ID
  38          ID          REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
  39          ID          100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
  40          ID
  41          ID                                        REVISED BY URS     DATE: 01-14-04
  42          ID                                                           FILE: L33PE4H.DAT
  43          ID
  44          ID        NOTES:
  45          ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
  46          ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
  47          ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
  48          ID        3. AVERAGE XKSAT VALUES FOR EACH SUBBASIN WAS RECEIVED FROM FCDMC
  49          ID           GIS DATA AND THEN ADJUSTED FOR VEGETATION, OR LEFT AS ORIGINALLY IN
  50          ID           THE WLB MODEL.
  51          ID        4. FOR NEW DEVELOPMENTS ONLY 80% OF REPORTED PROVIDED RETENTION
  52          ID           WAS INCLUDED IN THIS MODEL (AS A CONSERVATIVE ESTIMATE). RETENTION
```

HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
  53          ID           CAPACITIES WERE ESTIMATED BY EEC FOR DEVELOPMENTS WITH NO
  54          ID           DRAINAGE REPORTS.
  55          ID        5. REVISED DRAINAGE BOUNDARIES BASED UPON FIELD INSPECTION OF SUN CITY.
  56          ID           GRAND.  COMBINED SEVERAL BASINS TOGETHER TO MAKE NEW BASINS 114 &115.
  57          ID           ALSO REROUTED SUBBASINS 100A, 101, 102A AND 106 TO THE SOUTH TO 113A.
```

```
4688          UI    12.     12.     12.     12.     12.     12.     12.     12.     12.     12.
4689          UI    12.     12.     12.      0.      0.      0.      0.      0.      0.      0.
4690          UI     0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              *

4691          KK   1I236
4692          KM        ADD HYDROGRAPHS AT CP236
4693          HC        2   16.67

4694          KK   CP236
4695          KM        ADD HYDROGRAPHS AT CP236
4696          HC        2   26.34
              *

4697          KK   1D236
4698          KM         DIVERT FROM CP236 TO CP249
4699          DT   DI249
4700          DI        0     236     411    6597   30351
4701          DQ        0       0      38    2223    8777

4702          KK   2D236
4703          KM         DIVERT FROM CP236 TO CP250
4704          DT   1D250
4705          DI        0     236     373    4374   21574
4706          DQ        0       0     124    2251    8636

4707          KK    R236
4708          KM         ROUTE REMAINDER FROM CP236 TO CP237
4709          KM       ROUTE SHORTENED FROM 2640 FT TO 2000 FT DUE TO DB236
4710          RS        2              -1
4711          RC      .02     .02     .02    2000   .0038
4712          RX     1000    1070    1100    1120    1150    1178    1179    1180
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9.....10

4713          RY     1079    1075    1082    1076    1076    1077    1077    1077
              *

4714          KK   DB237
4715          KM         STORAGE ROUTE THROUGH DETENTION BASIN ON SOUTH SDIE OF SUBBASIN 237
4716          KM         NORTHWEST CORNER OF CAMELBACK AND LOOP 303
4717          KM         DISCHARGES TO RECOMMENDED PLAN CHANNEL ALONG CAMELBACK
4718          RS        1    STOR       0       0
4719          SV        0     4.8     9.8    15.1    20.6    26.5    32.6
4720          SQ        0      45      91     136     182     222     257
              *

4721          KK  DDB237
4722          KM        DIVERT ALL ROUTED DB237 FLOW TO AVOID COMBINING FLOWS AT LP8
4723          DT  DDB237
4724          DI        0     236     373    4374   21574
4725          DQ        0     236     373    4374   21574
              *

4726          KK  DC192A
4727          KM   RETURN 'ROUTED' DIVERT AT LP5
4728          DR  4D209A
              * KK  2LP5
              * KM COMBINE ROUTED FLOW FROM OFFLINE BASIN WITH MAIN-CHANNEL FLOW AT !NR4
              * HC     2   21.07
              * PER LEVEL III PRELIMINARY-DRAFT PREFERRED ALTERNATIVE
              *

4729          KK    RLP5
4730          KM      ROUTE LP5 TO LP6
4731          KM      RECOMMENDED PLAN CHANNEL WEST OF LOOP 303
4732          RS      3.0              -1.0     0.0
4733          RC    0.032   0.032   0.032    5158  0.0036
4734          RX    100.0   124.0   125.0   126.0   140.0   141.0   142.0   166.0
4735          RY    18.00   10.00   10.00   10.00   10.00   10.00   10.00   18.00
              *

4736          KK    209A
4737          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 209A
4738          BA     .50
4739          LG     .50     .00    4.10     .70     .00
4740          UI     22.     22.     22.     42.     75.     89.    103.    115.    124.    137.
4741          UI    152.    166.    191.    238.    275.    260.    224.    199.    181.    167.
4742          UI    149.    134.    121.    108.     99.     80.     62.     40.     38.     36.
4743          UI     35.     26.     22.     22.     20.      7.      7.      7.      7.      7.
4744          UI      7.      7.      7.      7.      7.      7.      0.      0.      0.      0.
4745          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

4746          KK   1D208
4747          KM         RETURN DIVERT AT CP208
4748          DR  DI209A
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9.....10

4749          KK    R208
4750          KM        ROUTE FLOW FROM CP208 TO CP209A
4751          RS        2              -1
4752          RC      .75     .03     .03    2640   .0045
4753          RX     1000    1490    1890    1950    1970    1998    1999    2000
4754          RY     1130    1128    1126    1124    1124    1125    1125    1125
              *
              * MODIFY PER LEVEL III
              *
              * KKCP209A
```

SRL54

SRL54
(From URS Model)

```
5333      KK  !CM1
        * KO  1                    21
5334      KM     ADD HYDROGRAPHS AT CP238
5335      HC    2  30.06
        * SRCM1 TAKES THE PLACE (COMBINES) BASINS SRLP2, SRLP5 AND SRLP8

5336      KK  SRCM1
        * KO  1                    21
5337      KM  PROPOSED BASIN AT SR303L AND CAMELBACK - PLACED ON EAST SIDE OF SR303L
5338      KM  TO MAXIMIZE THE USE OF THE LAFB CRASH ZONES.
5339      RS    1  STOR     0     0
5340      SV    0  113.5   227  340.5   454  567.5  624.3   681
5341      SQ    0    0     0    0     67   191    270    350
5342      SE  1059  1060  1061  1062  1063  1064  1064.5  1065
```

		Job No. 79902	No.

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Computed AM	Date 10/27/08
Subject	Weir Flow Analysis	Checked AP	Date 3/10/09
Task	Weir Calculations	Sheet 1	Of x

Location: Camelback at Loop 303 (DL54)

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	76	75	220	75.5	73.8	0	0.00	74.3	0	0.00	74.8	0	0.00	CHECK	75.3	0	0.00	DONE
south	75	74	150	74.5	73.8	0	0.00	74.3	0	0.00	74.8	0.3	73.94		75.3	0.8	321.99	
south	74	73	170	73.5	73.8	0.3	83.80	74.3	0.8	364.93	74.8	1.3	755.94		75.3	1.8	1231.63	
south	73	73.5	80	73.25	73.8	0.55	97.89	74.3	1.05	258.22	74.8	1.55	463.14		75.3	2.05	704.44	
south	73.5	73.5	10	73.5	73.8	0.3	4.93	74.3	0.8	21.47	74.8	1.3	44.47		75.3	1.8	72.45	
east	73.5	74	20	73.75	73.8	0.05	0.67	74.3	0.55	24.47	74.8	1.05	64.56		75.3	1.55	115.78	
east	74	75	95	74.5	73.8	0	0.00	74.3	0	0.00	74.8	0.3	46.83		75.3	0.8	203.93	
east	75	76	62	75.5	73.8	0	0.00	74.3	0	0.00	74.8	0	0.00		75.3	0	0.00	
east	76	77	110	76.5	73.8	0	0.00	74.3	0	0.00	74.8	0	0.00		75.3	0	0.00	
						TOTALS:	187.30			669.09			1448.87				2650.22	

Graph Computations:

Station	Elevation
0	76
220	75
370	74
540	73
620	73.5
630	73.5
650	74
745	75
807	76
917	77

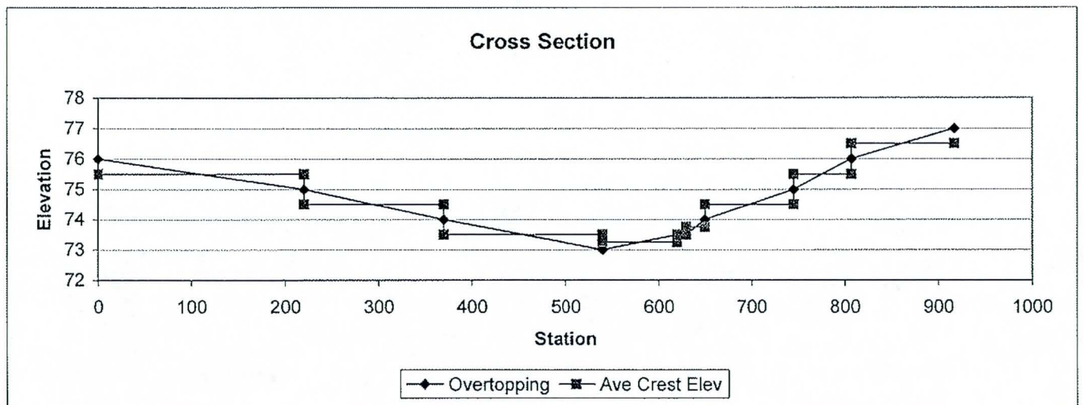
Weir Approximation:

Station	Elevation
0	75.5
220	75.5
220	74.5
370	74.5
370	73.5
540	73.5
540	73.25
620	73.25
620	73.5
630	73.5
630	73.75
650	73.75
650	74.5
745	74.5
745	75.5
807	75.5
807	76.5
917	76.5

Culvert Flows (cfs):

south	0	
southeast	0	
east	167	blocked w/ veg

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	186.62	53%	Q(south)	644.62	77%	Q(south)	1337.48	83%	Q(south)	2330.51	83%
Q(southeast)	0.00	0%	Q(southeast)	0.00	0%	Q(southeast)	0.00	0%	Q(southeast)	0.00	0%
Q(east)	167.67	47%	Q(east)	191.47	23%	Q(east)	278.39	17%	Q(east)	486.71	17%
	354.30			836.09			1615.87			2817.22	

First DI	East to South			
Inflow	354.30	836.09	1615.87	2817.22
Outflow	186.62	644.62	1337.48	2330.51

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	167.67	191.47	278.39	486.71
Outflow	0.00	0.00	0.00	0.00

Assumes diversion is to southeast

Culvert Calculator Report
CamelbackL303

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	73.80	ft	Headwater Depth/Height	1.27	
Computed Headwater Elev	73.80	ft	Discharge	166.98	cfs
Inlet Control HW Elev.	73.51	ft	Tailwater Elevation	72.00	ft
Outlet Control HW Elev.	73.80	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	70.00	ft	Downstream Invert	69.50	ft
Length	75.00	ft	Constructed Slope	0.006667	ft/ft

Hydraulic Profile					
Profile	CompositeS1S2		Depth, Downstream	2.50	ft
Slope Type	Steep		Normal Depth	1.75	ft
Flow Regime	N/A		Critical Depth	2.05	ft
Velocity Downstream	6.68	ft/s	Critical Slope	0.004310	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	5.00	ft
Section Size	5 x 3 ft		Rise	3.00	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	73.80	ft	Upstream Velocity Head	1.03	ft
Ke	0.70		Entrance Loss	0.72	ft

Inlet Control Properties					
Inlet Control HW Elev.	73.51	ft	Flow Control	Unsubmerged	
Inlet Type	0° wingwall flares		Area Full	30.0	ft²
K	0.06100		HDS 5 Chart	8	
M	0.75000		HDS 5 Scale	3	
C	0.04230		Equation Form	1	
Y	0.82000				

20 Perryville Rd @ Camelback - flows going east.
P30 - 3.5'x5' squashed cmp

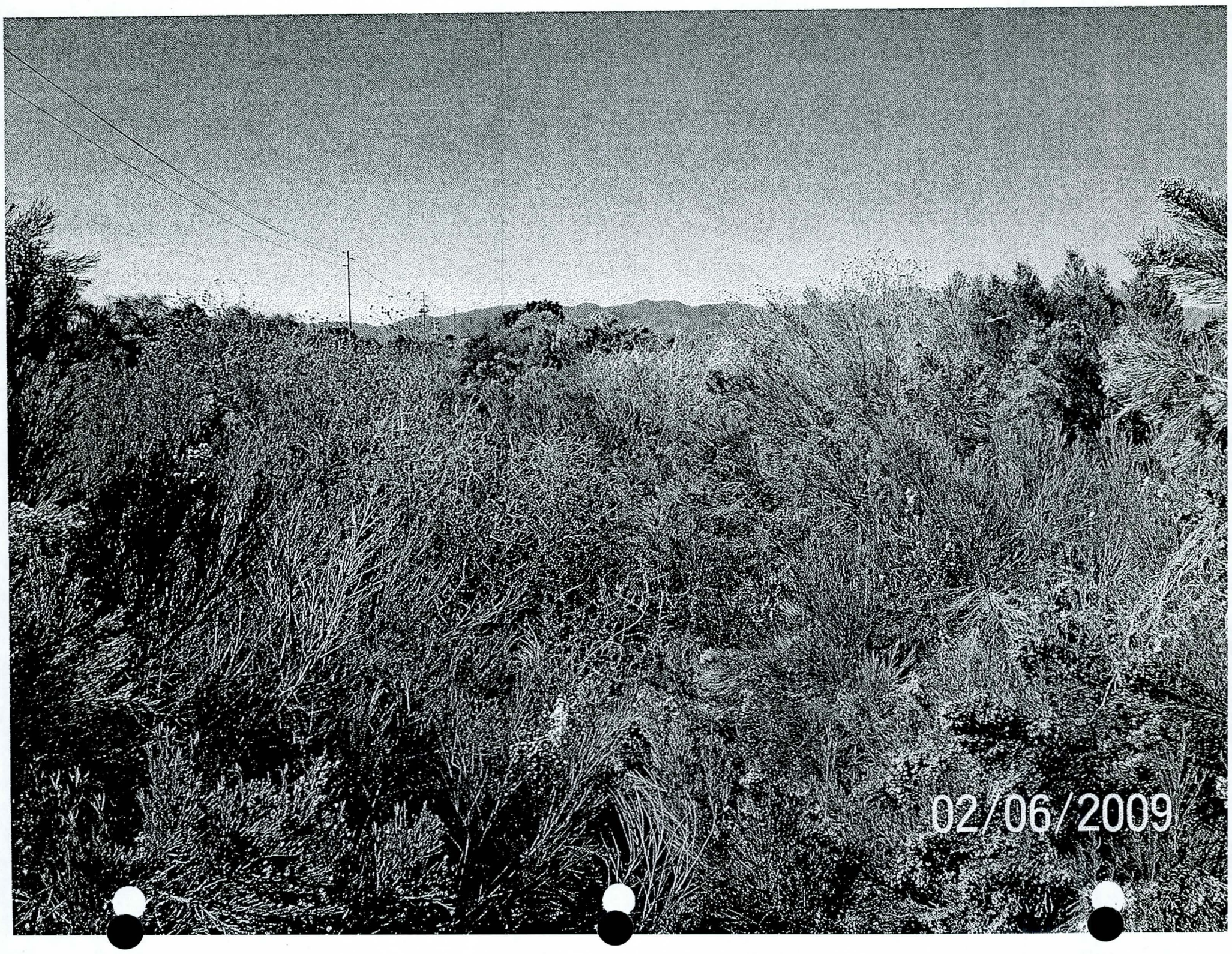
22. Perryville Wash @ Camelback Rd.
FP map shows flow conveyed east
✓ topo for south sloping contour

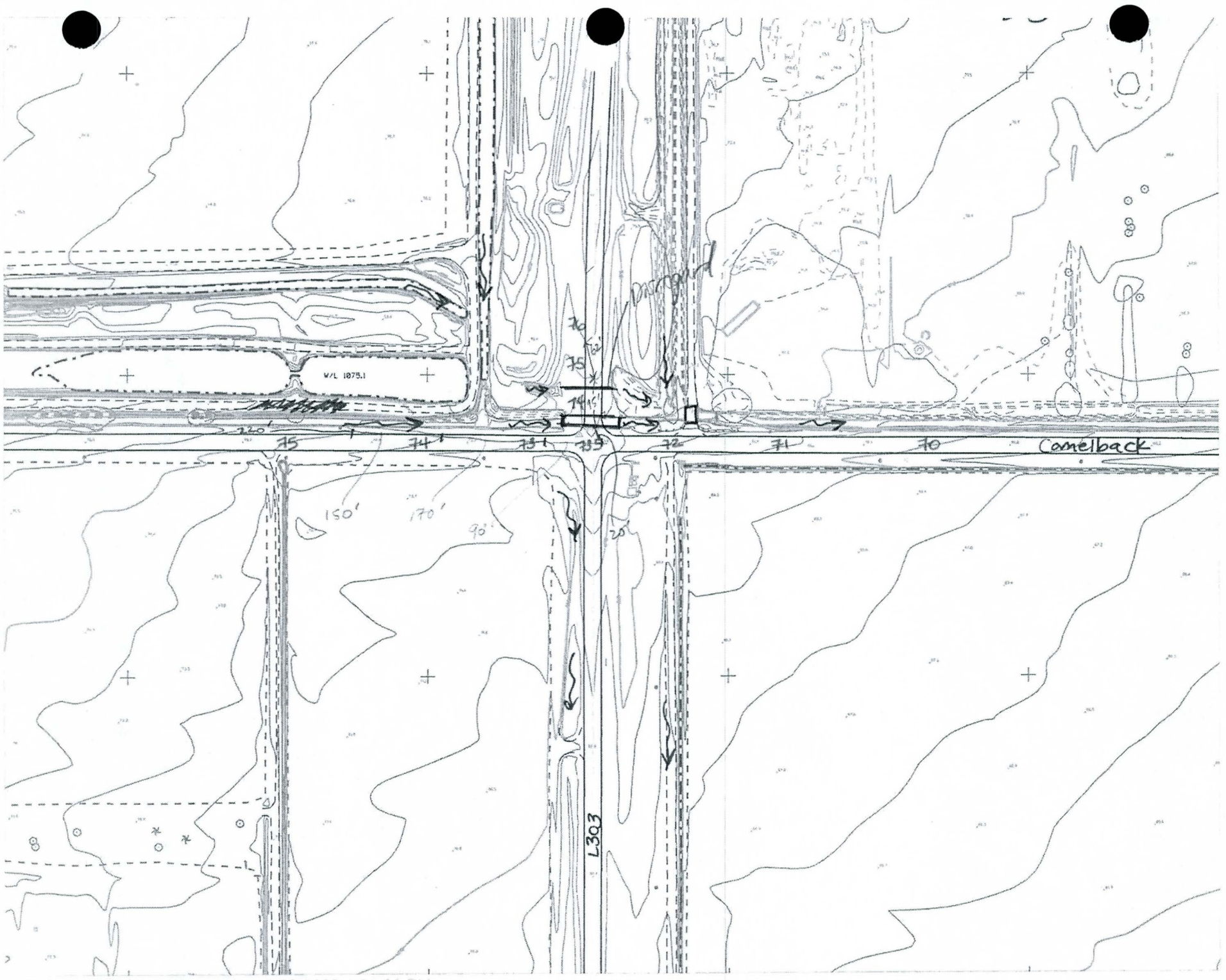
H. loop 303 @ Camelback - north side of Camelback Rd
1 - 16'x3½' cbc
P31 - see choked channel & box. / ⅓ useful.

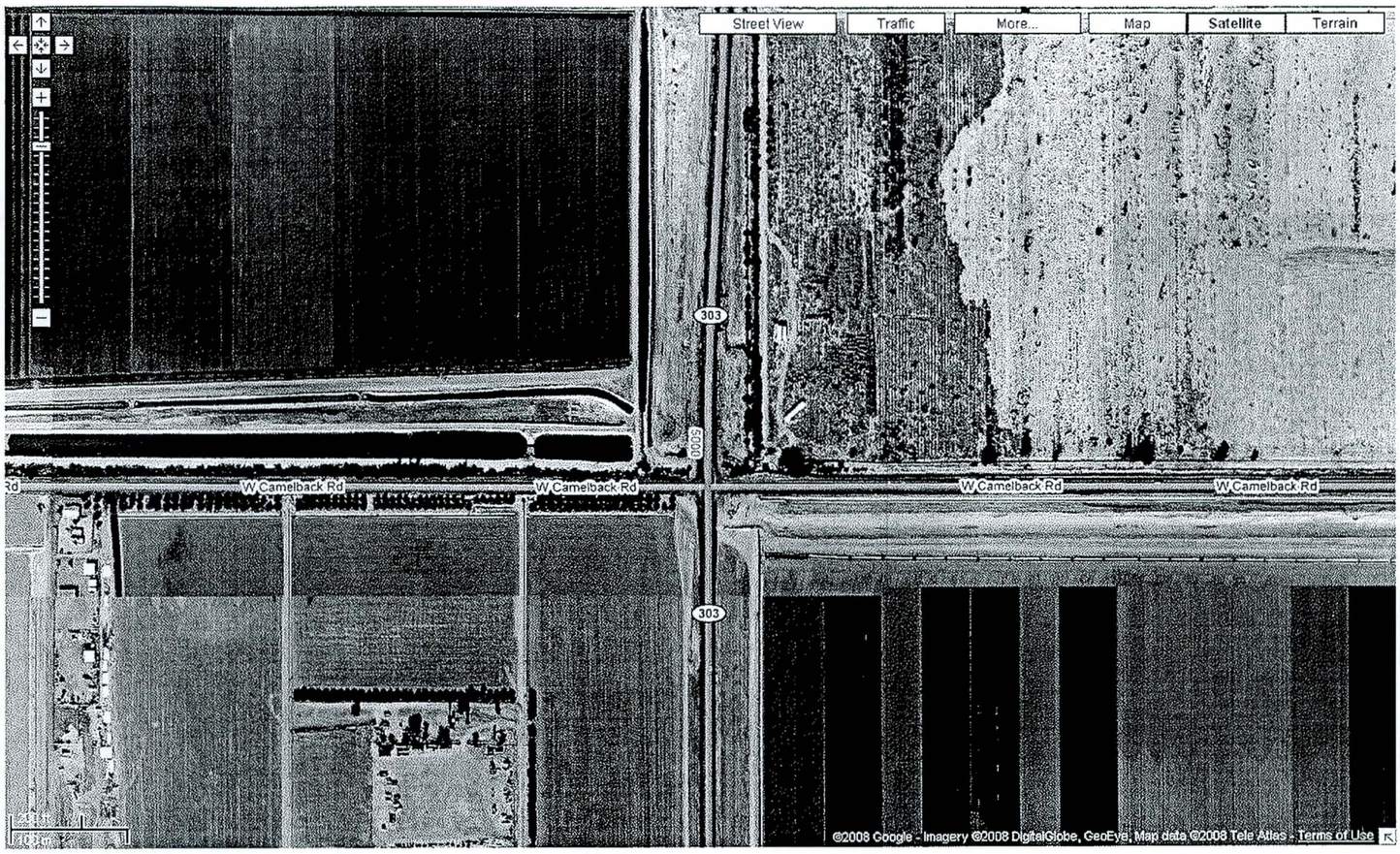
I. Bethany Home. east of Litchfield Rd.
SRB09 - Murphy Dam site / now Dreaming Summit Basin - 2 - 8'x4' cbc - overtop @ 9' P32 -

J. 500' east of (SRB09) - SRB 13 - outfall into basin
SRB 13 - 2 - 8'x4' cbc - overtop @ 9' P33 -

A or C - could not find A or C - but located. one set
3 - 5'x8' cbc 6' to overtop
P34 - cbc located 1,180' west of Litchfield Rd.
draining driving range to north


02/06/2009


W/L 1875.1
Camelback
L393
150'
170'
90°
20'
240'


Street View
Traffic
More...
Map
Satellite
Terrain
303
W Camelback Rd
W Camelback Rd
W Camelback Rd
W Camelback Rd
303
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Computation

Project	Loop 303 / White Tanks ADMPU AHA	Job No.	79902
Subject	Weir Flow Analysis	Computed	AM
Task	Weir Calculations	Checked	AP
Location: Indian School at Perryville (DL55)		Sheet	1

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	16	15	442.5	15.5	12.6	0	0.00	13.1	0	0.00	13.6	0	0.00	CHECK	14.1	0	0.00	DONE
south	15	14	442.5	14.5	12.6	0	0.00	13.1	0	0.00	13.6	0	0.00		14.1	0	0.00	
south	14	13	155	13.5	12.6	0	0.00	13.1	0	0.00	13.6	0.1	14.70		14.1	0.6	216.11	
south	13	12.3	108	12.65	12.6	0	0.00	13.1	0.45	97.81	13.6	0.95	300.01		14.1	1.45	565.71	
southeast	12.3	12.3	16	12.3	12.6	0.3	7.89	13.1	0.8	34.35	13.6	1.3	71.15		14.1	1.8	115.92	
east	12.3	12	120	12.15	12.6	0.45	108.67	13.1	0.95	333.34	13.6	1.45	628.57		14.1	1.95	980.29	
east	12	13	407.5	12.5	12.6	0.1	38.66	13.1	0.6	568.17	13.6	1.1	1410.39		14.1	1.6	2474.17	
east	13	14	407.5	13.5	12.6	0	0.00	13.1	0	0.00	13.6	0.1	38.66		14.1	0.6	568.17	
east	14	16	660	15	12.6	0	0.00	13.1	0	0.00	13.6	0	0.00		14.1	0	0.00	
					TOTALS:		155.22			1033.66			2463.47				4920.37	

Graph Computations:

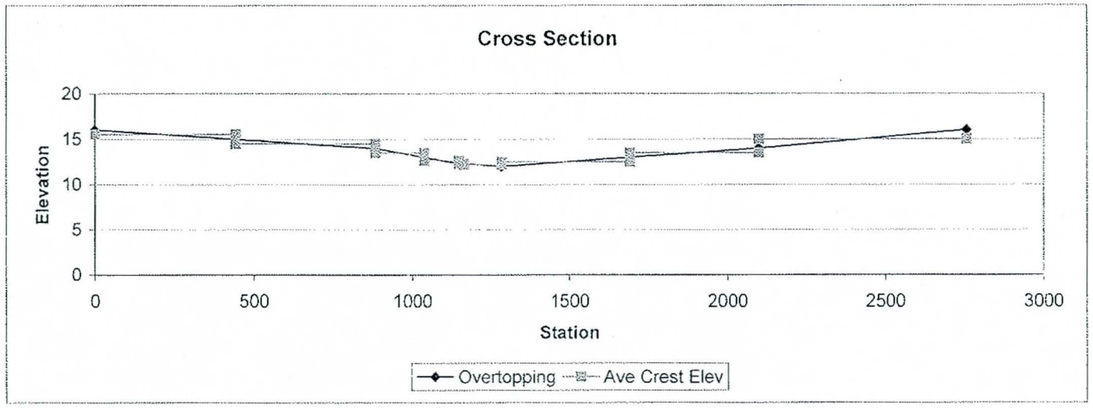
Station	Elevation
0	16
442.5	15
885	14
1040	13
1148	12.3
1164	12.3
1284	12
1691.5	13
2099	14
2759	16

Weir Approximation:

Station	Elevation
0	15.5
442.5	15.5
442.5	14.5
885	14.5
885	13.5
1040	13.5
1040	12.65
1148	12.65
1148	12.3
1164	12.3
1164	12.15
1284	12.15
1284	12.5
1691.5	12.5
1691.5	13.5
2099	13.5
2099	15
2759	15

Culvert Flows (cfs):

south	0
southeast	0
east	0



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	0.00	0%	Q(south)	97.81	9%	Q(south)	314.71	13%	Q(south)	781.83	16%
Q(southeast)	7.89	5%	Q(southeast)	34.35	3%	Q(southeast)	71.15	3%	Q(southeast)	115.92	2%
Q(east)	147.33	95%	Q(east)	901.51	87%	Q(east)	2077.62	84%	Q(east)	4022.62	82%
	155.22			1033.66			2463.47			4920.37	

First DI	East to South			
Inflow	155.22	1033.66	2463.47	4920.37
Outflow	0.00	97.81	314.71	781.83

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	155.22	935.85	2148.76	4138.54
Outflow	7.89	34.35	71.15	115.92

Assumes diversion is to southeast

Indian School
@
Peryville
DL55

660' to 16

815' to 14

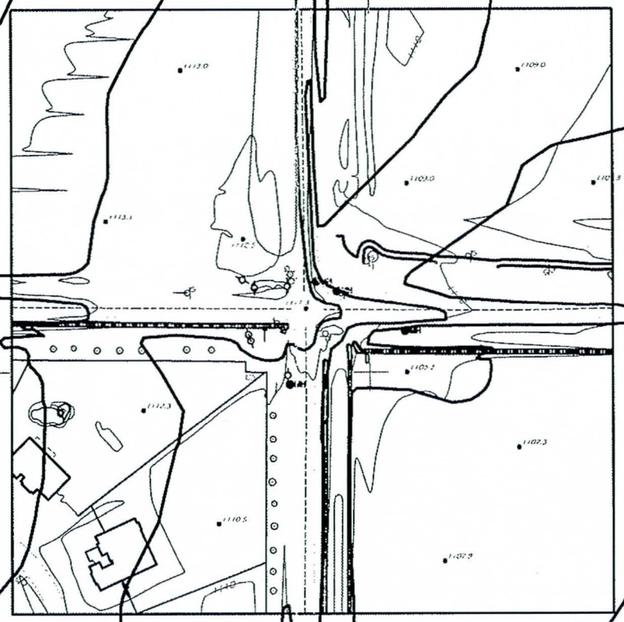
1113.0
1109.0
1113.1
1109.0
1107.3
1112.5
1112
120'
MH
MH
MH
1112.3
264'
221' to 16
1108.3
1112.3
1107.3
1110.5
1107.9
1110

1" = 80'

N

C:\PWw JAPHX\dms69520\Linda_NewWorking.dwg, 10/23/2008 1:30:21 PM

T I I OFS I



C:\PW\PW\PHA\cms6952\0\Index_Map_Working.dwg, 10/25/2008 1:36:57 PM

N Perryville Rd
W Indian School Rd
Wigwam Blvd
W Indian School Rd
N Perryville Rd

Job No.	79902	No.	

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Location: Indian School & Citrus (L56)	Computed	AHM	Date	10/27/2008
Subject	Weir Flow Analysis		Checked	AP	Date	3/10/09
Task	Weir Calculations		Sheet	1	Of	x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	1088	1087.1	260	1087.55	1086.25	0	0.00	1086.75	0	0.00	1087.25	0	0.00	CHECK	1087.75	0.2	69.77	DONE
south	1087.1	1086	420	1086.55	1086.25	0	0.00	1086.75	0.2	112.70	1087.25	0.7	737.93		1087.75	1.2	1656.31	
south	1086	1087	490	1086.5	1086.25	0	0.00	1086.75	0.25	183.75	1087.25	0.75	954.79		1087.75	1.25	2054.39	
south	1087	1086	70	1086.5	1086.25	0	0.00	1086.75	0.25	26.25	1087.25	0.75	136.40		1087.75	1.25	293.48	
southeast	1086	1086.2	10	1086.1	1086.25	0.15	1.74	1086.75	0.65	15.72	1087.25	1.15	37.00		1087.75	1.65	63.58	
east	1086.2	1086	60	1086.1	1086.25	0.15	10.46	1086.75	0.65	94.33	1087.25	1.15	221.98		1087.75	1.65	381.50	
east	1086	1086	165	1086	1086.25	0.25	61.88	1086.75	0.75	321.51	1087.25	1.25	691.78		1087.75	1.75	1145.94	
east	1086	1087.1	870	1086.55	1086.25	0	0.00	1086.75	0.2	233.45	1087.25	0.7	1528.58		1087.75	1.2	3430.93	
east	1087.1	1088	280	1087.55	1086.25	0	0.00	1086.75	0	0.00	1087.25	0	0.00		1087.75	0.2	75.13	
					TOTALS:		74.07			987.71			4308.47				9171.04	

Graph Computations:

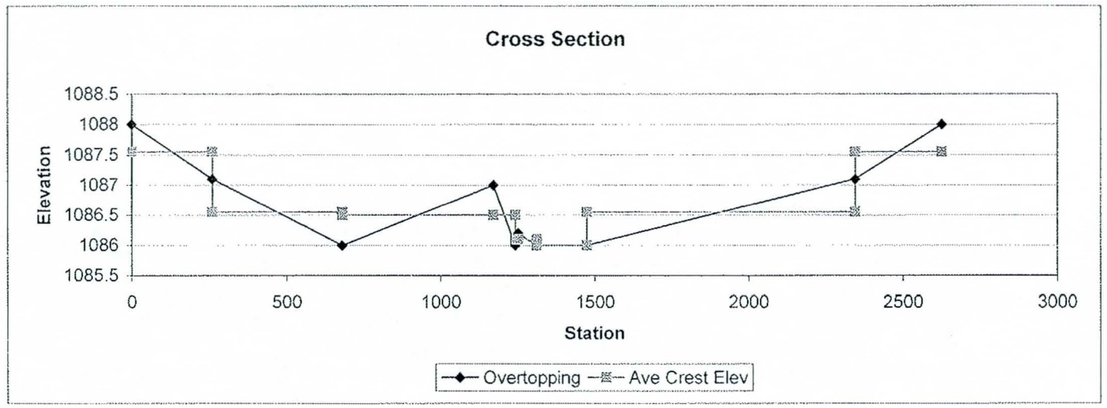
Station	Elevation
0	1088
260	1087.1
680	1086
1170	1087
1240	1086
1250	1086.2
1310	1086
1475	1086
2345	1087.1
2625	1088

Weir Approximation:

Station	Elevation
0	1087.55
260	1087.55
260	1086.55
680	1086.55
680	1086.5
1170	1086.5
1170	1086.5
1240	1086.5
1240	1086.1
1250	1086.1
1250	1086.1
1310	1086.1
1310	1086
1475	1086
1475	1086.55
2345	1086.55
2345	1087.55
2625	1087.55

Culvert Flows (cfs):

south	0
southeast	0
east	0



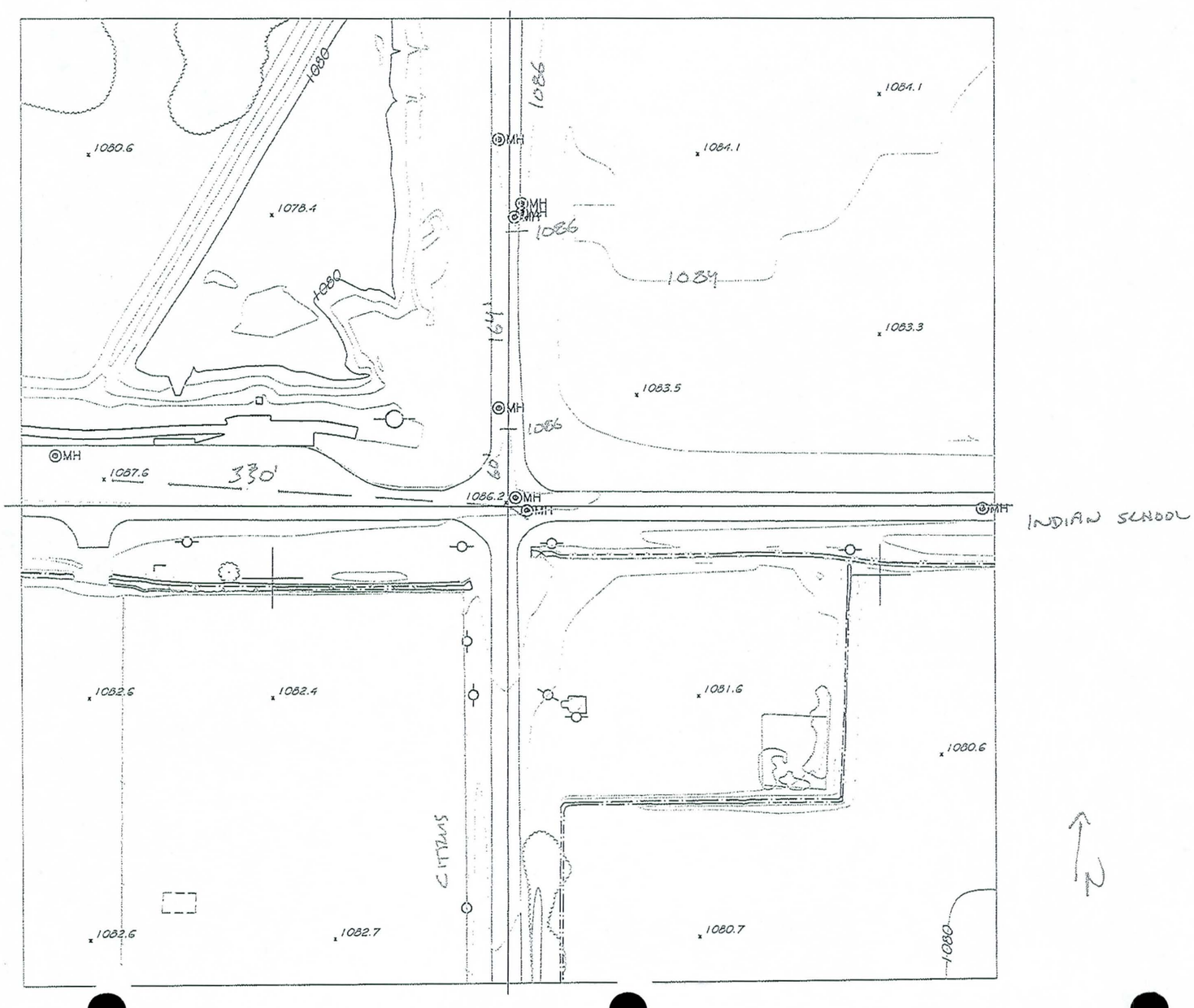
Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	0.00	0%	Q(south)	322.70	33%	Q(south)	1829.13	42%	Q(south)	4073.95	44%
Q(southeast)	1.74	2%	Q(southeast)	15.72	2%	Q(southeast)	37.00	1%	Q(southeast)	63.58	1%
Q(east)	72.33	98%	Q(east)	649.29	66%	Q(east)	2442.34	57%	Q(east)	5033.51	55%
	74.07			987.71			4308.47			9171.04	

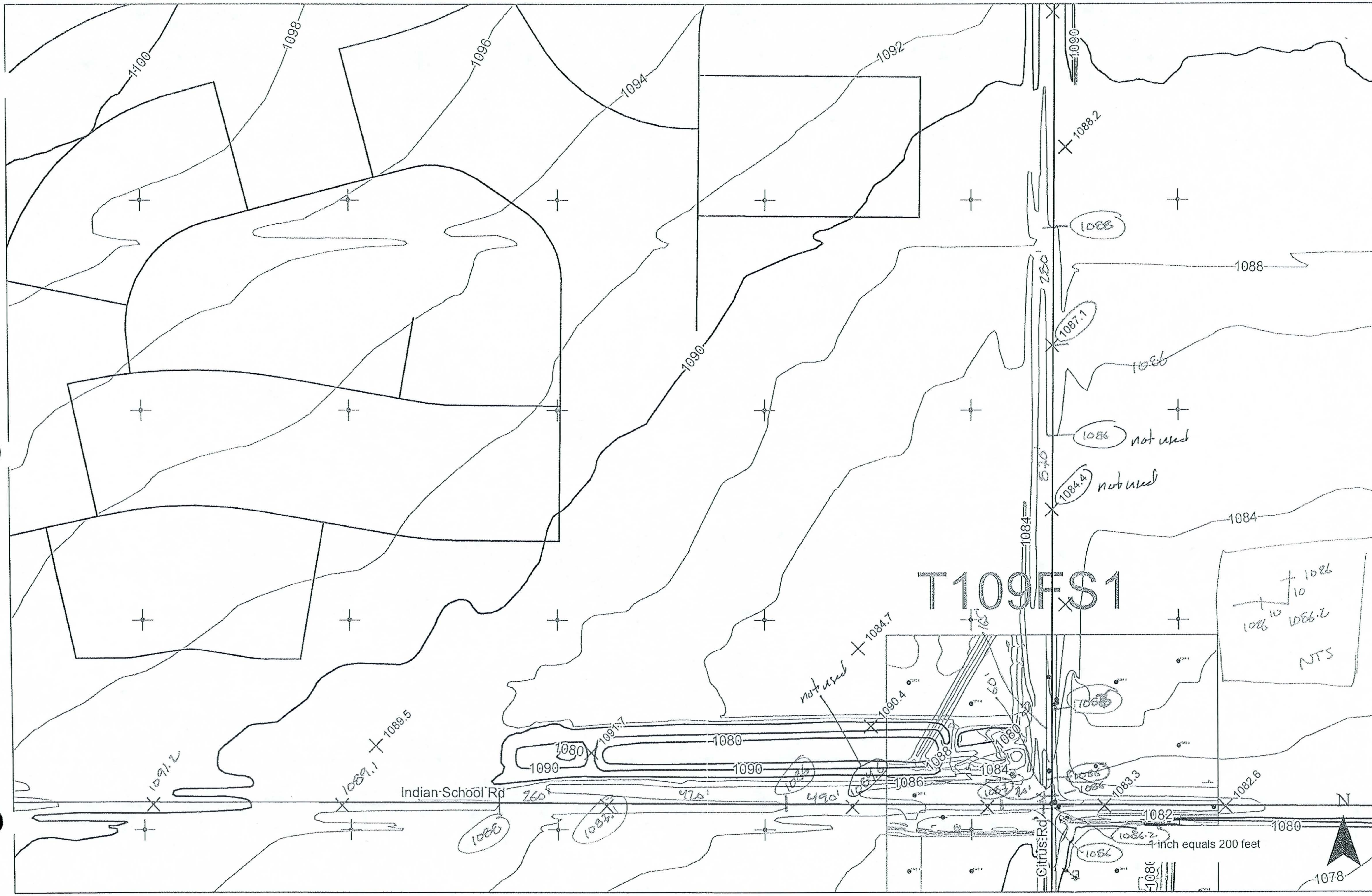
First DI	East to South			
Inflow	74.07	987.71	4308.47	9171.04
Outflow	0.00	322.70	1829.13	4073.95

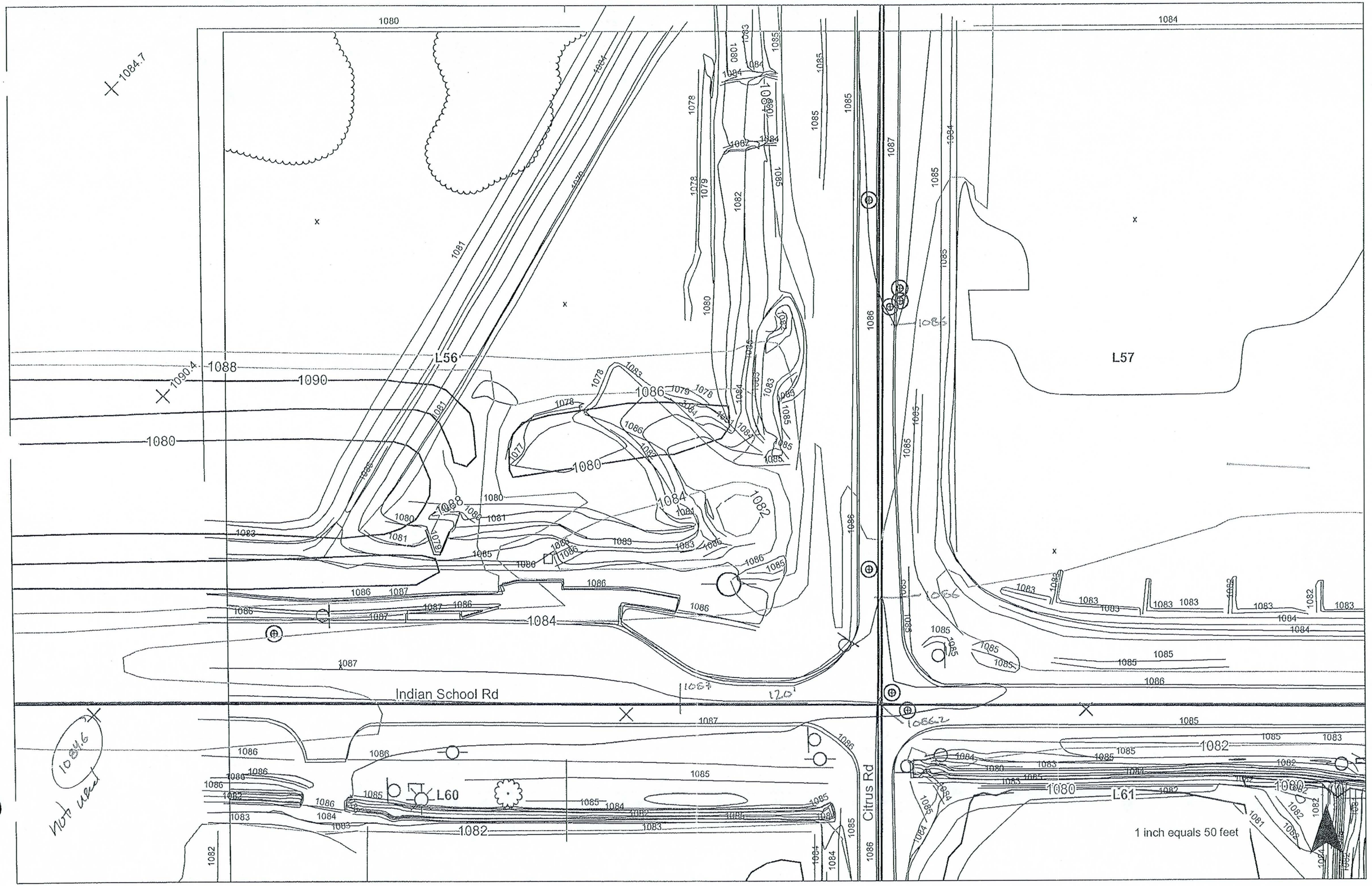
Assumes diversion is to south

Second DI	East to Southeast			
Inflow	74.07	665.01	2479.34	5097.09
Outflow	1.74	15.72	37.00	63.58

Assumes diversion is to southeast


1080
1086
1080.6
1078.4
MH
1084.1
1086
1084
1083.3
1083.5
1080
1086
1087.6
330'
60'
1086.2
INDIAN SCHOOL
1082.6
1082.4
1081.6
1080.6
CITRUS
1082.6
1082.7
1080.7
1080
N


T109FS1
Indian School Rd
Citrus Rd
1 inch equals 200 feet
N
1100
1098
1096
1094
1092
1090
1088
1086
1084
1082
1080
1078
1088.2
1087.1
1084.4
1084.7
1090.4
1089.5
1083.3
1082.6
not used
not used
not used
NTS


1080
1084
1084.7
1090.4
1088
1090
1080
L56
L57
1086
1084
1082
1080
1084
1086
1084
1087
Indian School Rd
L60
1082
L61
1080
Citrus Rd
1084.6
not used
1 inch equals 50 feet

Job No. 79902 | No.

Computation

Project: Loop 303 / White Tanks ADMPU AHA

Location: Indian School at Cotton Ln (DL57)

Computed: AM | Date: 10/27/08

Subject: Weir Flow Analysis

Checked: AP | Date: 3/10/09

Task: Weir Calculations

Sheet: 1 | Of: x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	69	68	237	68.5	67	0	0.00	67.5	0	0.00	68	0	0.00	CHECK	68.5	0	0.00	DONE
south	68	67	133	67.5	67	0	0.00	67.5	0	0.00	68	0.5	141.07		68.5	1	399.00	
south	67	66.8	28	66.9	67	0.1	2.66	67.5	0.6	39.04	68	1.1	96.91		68.5	1.6	170.00	
southeast	66.8	66.8	10	66.8	67	0.2	2.68	67.5	0.7	17.57	68	1.2	39.44		68.5	1.7	66.50	
east	66.8	66.7	106	66.75	67	0.25	39.75	67.5	0.75	206.55	68	1.25	444.42		68.5	1.75	736.18	
east	66.7	67	90	66.85	67	0.15	15.69	67.5	0.65	141.49	68	1.15	332.97		68.5	1.65	572.26	
east	67	68.08	395	67.54	67	0	0.00	67.5	0	0.00	68	0.46	369.70		68.5	0.96	1114.62	
east	68.08	68.5	150	68.29	67	0	0.00	67.5	0	0.00	68	0	0.00		68.5	0.21	43.31	
east	68.5	68.5	1	68.5	67	0	0.00	67.5	0	0.00	68	0	0.00		68.5	0	0.00	
					TOTALS:		60.78			404.65			1424.51				3101.86	

Graph Computations:

Station	Elevation
0	69
237	68
370	67
398	66.8
408	66.8
514	66.7
604	67
999	68.08
1149	68.5
1150	68.5

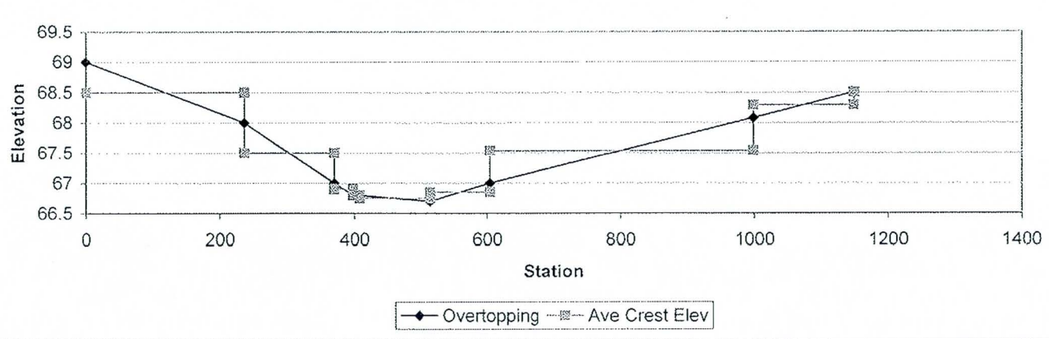
Weir Approximation:

Station	Elevation
0	68.5
237	68.5
237	67.5
370	67.5
370	66.9
398	66.9
398	66.8
408	66.8
408	66.75
514	66.75
514	66.85
604	66.85
604	67.54
999	67.54
999	68.29
1149	68.29
1149	68.5
1150	68.5

Culvert Flows (cfs):

south	0
southeast	0
east	0

Cross Section



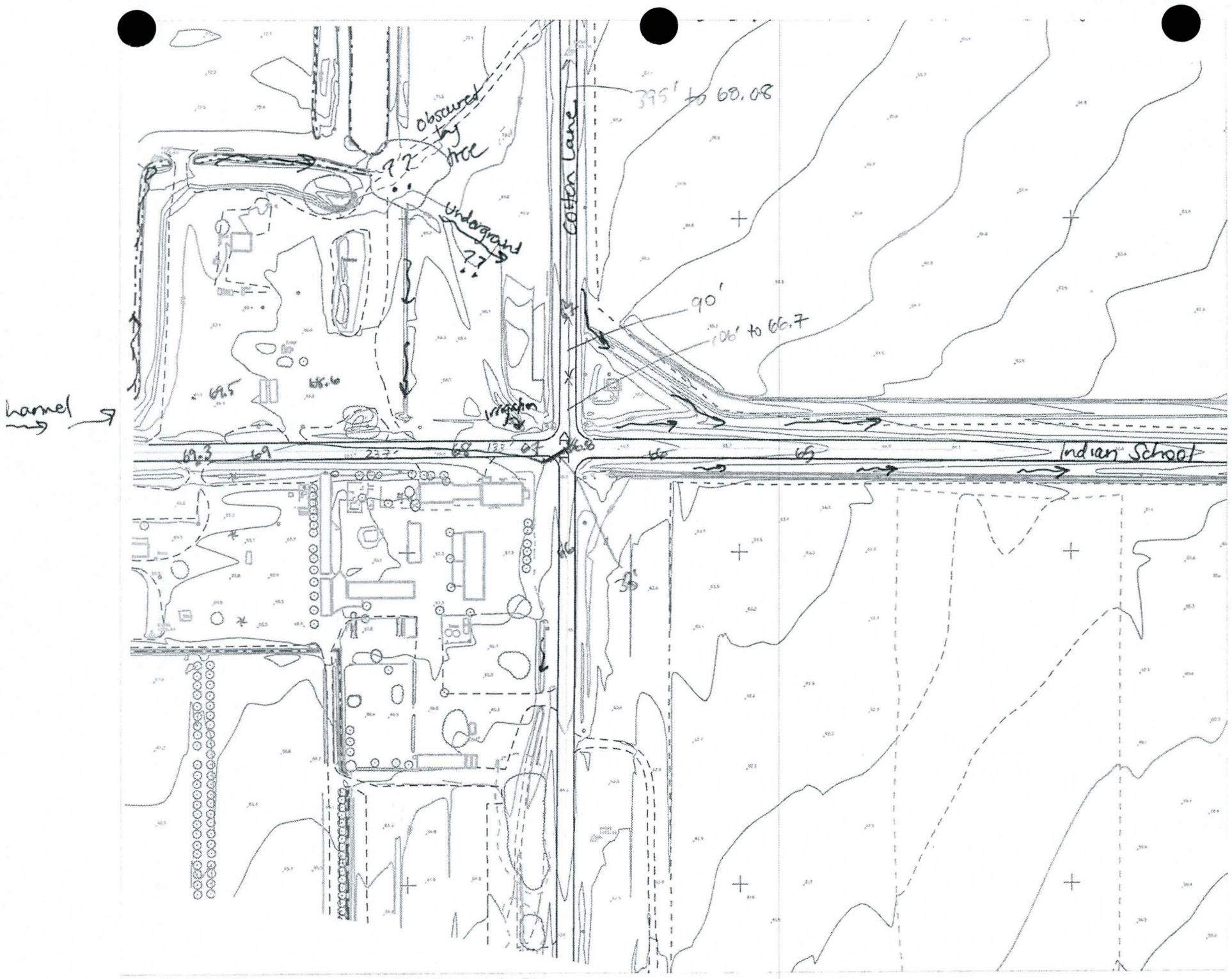
Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	2.66	4%	Q(south)	39.04	10%	Q(south)	237.98	17%	Q(south)	569.00	18%
Q(southeast)	2.68	4%	Q(southeast)	17.57	4%	Q(southeast)	39.44	3%	Q(southeast)	66.50	2%
Q(east)	55.44	91%	Q(east)	348.04	86%	Q(east)	1147.10	81%	Q(east)	2466.36	80%
	60.78			404.65			1424.51			3101.86	

First DI	East to South			
Inflow	60.78	404.65	1424.51	3101.86
Outflow	2.66	39.04	237.98	569.00

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	58.12	365.61	1186.53	2532.85
Outflow	2.68	17.57	39.44	66.50

Assumes diversion is to southeast



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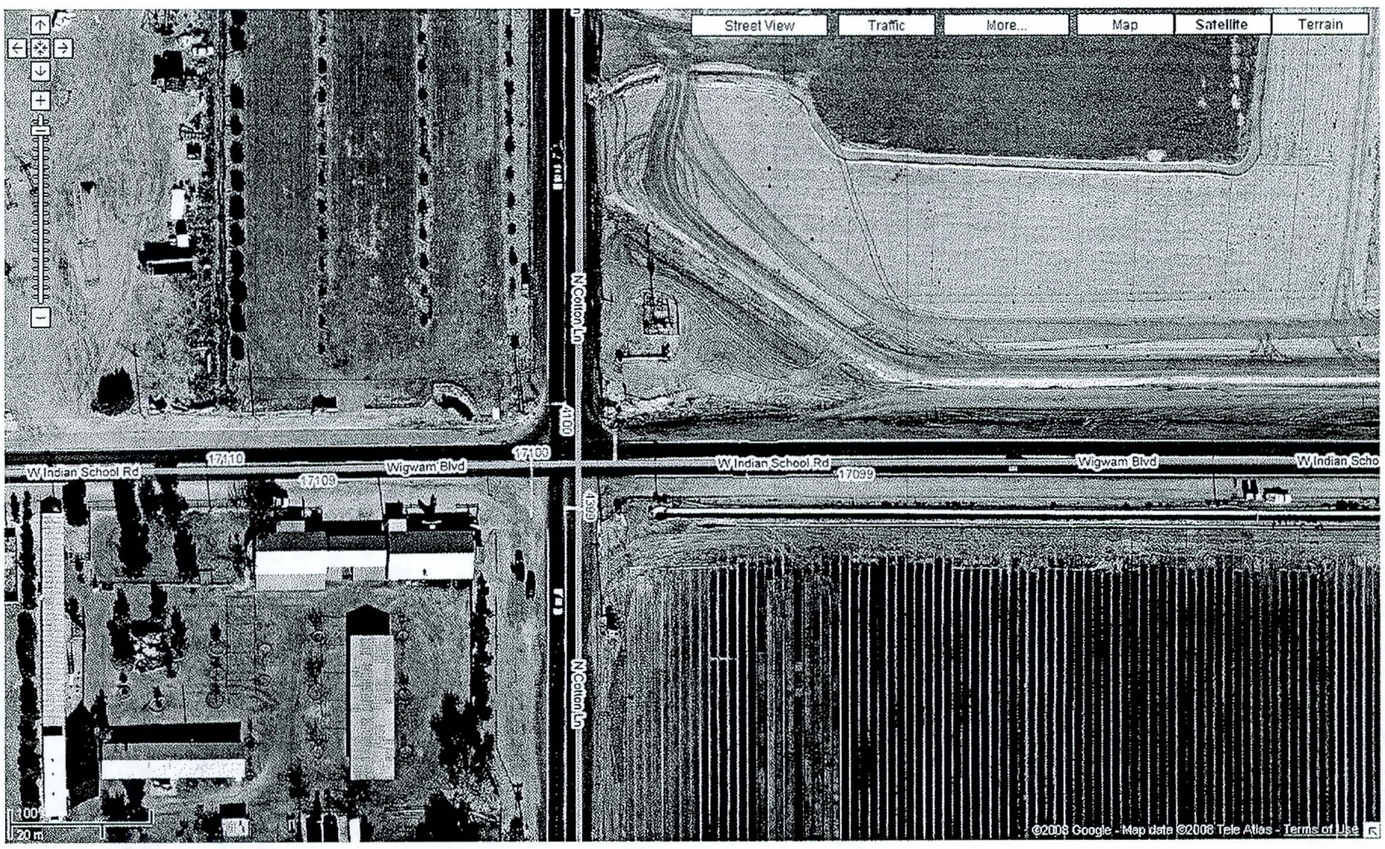

Street View
Traffic
More...
Map
Satellite
Terrain
N Cotton Ln
W Indian School Rd
17110
Wigwam Blvd
17100
17109
17099
20 m
©2008 Google - Map data ©2008 Tele Atlas - Terms of Use

CIP models

L58

```
*****************************************
*                                       *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *
*            JUN  1998                  *
*          VERSION 4.1                  *
*                                       *
*  DATE   14JUL08  TIME  17:23:04       *
*                                       *
*****************************************
```

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

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
    1         ID      ASPEN CONSULTING ENGINEERS, JCS, 06-20-08, FILE: REC-EWP.DAT, 100-YR 24-HR
    2         ID      THIS IS THE EXISTING WITH RECOMMENDED PLAN MODEL.
    3         ID      NOTES:
    4         ID      THE PURPOSE OF THIS PROJECT IS TO UPDATE FOR LAND USE CHANGES FOR THE ENTIRE
    5         ID      MODEL AND TO REEVALUATE THE BASINS AT LOOP 303 AND CAMELBACK ROAD.
    6         ID
    7         ID      UPDATE LG CARD AND DEVELOPMENT RETENTION DIVERSIONS FOR EACH SUBBASIN.
    8         ID      CHANGE MODEL TO REFLECT THE NEW SUNCOR CHANNEL SOUTH OF CAMELBACK RD.
    9         ID      BETWEEN STATE ROUTE 303 AND BULLARD WASH.
   10         ID
   11         ID      THE RECOMMENDED PLAN IS A CHANNEL BEGINNING AT THE OUTLET FROM THE NORTHERN
   12         ID      AVENUE BASIN AT THE SW CORNER OF NORTHERN AND THE LOOP 303.  THE CHANNEL
   13         ID      GOES SOUTH ALONG THE WEST SIDE OF THE LOOP 303 TO CAMELBACK ROAD.  BEFORE
   14         ID      CAMELBACK ROAD THE CHANNEL TRANSITIONS INTO A LONG BOX CULVERT THAT
   15         ID      CROSSES DIAGONALLY UNDER THE LOOP 303 AND CAMELBACK ROAD WEHERE IT
   16         ID      DAYLIGHTS ON THE SOUTH SIDE OF CAMELBACK ROAD AT THE EXISTING SUNCOR
   17         ID      CHANNEL.  THE FLOW THEN CONTINUES ALONG THE SUNCOR CHANNEL ALIGNMENT TO A
   18         ID      BASIN NEAR REEMS ROAD WHICH THEN OUTLETS TO THE SUNCOR CHANNEL ALIGNMENT
   19         ID      AGAIN AND CONTINUES TO BULLARD WASH.  SEPARATELY, THERE IS A BASIN AT COTTON
   20         ID      LANE AND CAMELBACK ROAD.  A SHORT CHANNEL CONVEYS WATER COLLECTED AT THE
   21         ID      BASIN TO THE LOOP 303 AND THEN TRANSITIONS SOUTH IN A CULVERT UNDER
   22         ID      CAMELBACK ROAD.  THIS CHANNEL CONTINUES ALONG LOOP 303 TO A SMALL BASIN
   23         ID      SOUTH AT INDIAN SCHOOL ROAD AND THEN TO THE BASIN AT I-10 NEAR PERRYVILLE
   24         ID      PRISON.  THE I-10 AND PERRYVILLE PRISON BASIN IS AS PROPOSED IN THE ADMPU.
   25         ID
              * ************************************************************************
              * *  THE FOLLOWING IS THE MODEL RECIEVED BY ASPEN FROM FCDMC ON 06/08/07
              * ************************************************************************
   26         ID          DRAFT PREFERRED ALTERNATIVE LEVEL III
   27         ID
   28         ID          INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
   29         ID          SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
   30         ID          BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
   31         ID          LUKE AIR FORCE BASE CRASH ZONE AREA
   32         ID
   33         ID          **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
   34         ID          WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
   35         ID          Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
   36         ID          TANKS/AGUA FRIA ADMS, Date: October 1991
   37         ID
   38         ID          REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
   39         ID          100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
   40         ID
   41         ID                                        REVISED BY URS     DATE: 01-14-04
   42         ID                                                           FILE: L33PE4H.DAT
   43         ID
   44         ID        NOTES:
   45         ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
   46         ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
   47         ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
   48         ID        3. AVERAGE XKSAT VALUES FOR EACH SUBBASIN WAS RECEIVED FROM FCDMC
   49         ID           GIS DATA AND THEN ADJUSTED FOR VEGETATION, OR LEFT AS ORIGINALLY IN
   50         ID           THE WLB MODEL.
   51         ID        4. FOR NEW DEVELOPMENTS ONLY 80% OF REPORTED PROVIDED RETENTION
   52         ID           WAS INCLUDED IN THIS MODEL (AS A CONSERVATIVE ESTIMATE). RETENTION
```

HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
   53         ID           CAPACITIES WERE ESTIMATED BY EEC FOR DEVELOPMENTS WITH NO
   54         ID           DRAINAGE REPORTS.
   55         ID        5. REVISED DRAINAGE BOUNDARIES BASED UPON FIELD INSPECTION OF SUN CITY.
   56         ID           GRAND.  COMBINED SEVERAL BASINS TOGETHER TO MAKE NEW BASINS 114 &115.
   57         ID           ALSO REROUTED SUBBASINS 100A, 101, 102A AND 106 TO THE SOUTH TO 113A.
```

```
5590          KK    R249
5591          KM        ROUTE REMAINDER FROM CP249 TO CP250
5592          RS      6              -1
5593          RC     .05     .03     .03    5280   .0040
5594          RX    1000    1580    1660    1670    1705    1728    1729    1730
5595          RY    1100    1058    1059    1058    1058    1059    1059    1100

5596          KK   2D236
5597          KM        RETURN DIVERT AT CP236
5598          DR   1D250
              *

5599          KK    R236
5600          KM        ROUTE FLOW FROM CP236 TO CP250
5601          RS      39             -1
5602          RC    .075    .075    .075    7540   .0047
5603          RX    1000    1001    1002    1140    2330    2718    2719    2720
5604          RY    1071    1071    1071    1070    1070    1071    1071    1071
              *

5605          KK     250
5606          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 250
5607          BA     .49
5608          LG     .50     .00    4.66    0.53     .00
5609          UI     21.     21.     21.     40.     72.     86.    100.    112.    121.    132.
5610          UI    147.    161.    183.    230.    263.    258.    221.    196.    178.    165.
5611          UI    147.    132.    121.    107.     98.     82.     60.     43.     37.     35.
5612          UI     35.     28.     21.     21.     21.      8.      6.      6.      6.      6.
5613          UI      6.      6.      6.      6.      6.      6.      0.      0.      0.      0.
5614          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

5615          KK   1I250
5616          KM        ADD HYDROGRAPHS AT CP250
5617          HC       2   26.83

5618          KK  RDB237
5619          KM   RETURN DIVERT FROM DB237 FLOWS
5620          DR  DDB237
              *
```

1 HEC-1 INPUT PAGE148

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

```
5621          KK    RLP8
5622          KM       ROUTE FLOW FROM LP8 TO LP9
5623          KM       RECOMMENDED PLAN CHANNEL CAMELBACK TO INDIAN SCHOOL
5624          RS     6.0             -1.0     0.0
5625          RC   0.020   0.020   0.020    5200  0.0034
5626          RX     100     108     109     110     116     117     118     126
5627          RY   18.00   10.00   10.00   10.00   10.00   10.00   10.00   18.00
              *

5628          KK   2I250
5629          KM        ADD HYDROGRAPHS AT CP250
5630          HC       2   28.33
              *
              * MODIFY PER LEVEL III
              *
              * KK CP250

5631          KK    !LP9
5632          KM   ADD HYDROGRAPHS AT CP250
5633          HC       2   31.55
              *

5634          KK    D250
5635          KM        DIVERT FROM CP250 TO CP265
5636          KM        LOOP 303 AND INDIAN SCHOOL ROAD
5637          DT   DI265
5638          DI       0      64     200     400     500    1000
5639          DQ       0      64     200     400     500    1000

5640          KK    R250
5641          KM        ROUTE FLOW FROM CP250 TO CP250A
5642          RS       5             -1
5643          RC     .05     .03     .03    3050   .0036
5644          RX    1000    1580    1660    1670    1705    1728    1729    1730
5645          RY    1100    1050    1051    1050    1050    1051    1051    1100
              *

5646          KK    250A
5647          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 250A
5648          BA     .51
5649          LG     .50     .00    4.90     .47     .00
5650          UI     20.     20.     20.     25.     67.     77.     92.    102.    111.    120.
5651          UI    130.    145.    157.    178.    220.    251.    257.    221.    196.    179.
5652          UI    165.    152.    136.    125.    113.    102.     94.     78.     59.     44.
5653          UI     36.     35.     33.     33.     20.     20.     20.     18.      6.      6.
5654          UI      6.      6.      6.      6.      6.      6.      6.      6.      6.      6.
5655          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
5656          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              *
```

LS4L58

HEC-1 INPUT PAGE149

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

```
5657          KK  !!250A
              * KKCP250A
5658          KM        ADD HYDROGRAPHS AT CP250A
```

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Job No. 79902	No.
Subject	Weir Flow Analysis	Computed AM	Date 10/27/08
Task	Weir Calculations	Checked [illegible]	Date 3/10/09
	Location: Indian School at Loop 303 (DL58)	Sheet 1	Of x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	61	60	240	60.5	59.8	0	0.00	60.3	0	0.00	60.8	0.3	118.31	CHECK	61.3	0.8	515.19	DONE
south	60	59.2	120	59.6	59.8	0.2	32.20	60.3	0.7	210.84	60.8	1.2	473.23		61.3	1.7	797.95	
south	59.2	59.3	125	59.25	59.8	0.55	152.96	60.3	1.05	403.47	60.8	1.55	723.65		61.3	2.05	1100.68	
southeast	59.3	59.3	15	59.3	59.8	0.5	15.91	60.3	1	45.00	60.8	1.5	82.67		61.3	2	127.28	
east	59.3	60	63	59.65	59.8	0.15	10.98	60.3	0.65	99.04	60.8	1.15	233.08		61.3	1.65	400.58	
east	60	60	95	60	59.8	0	0.00	60.3	0.3	46.83	60.8	0.8	203.93		61.3	1.3	422.43	
east	60	60	445	60	59.8	0	0.00	60.3	0.3	219.36	60.8	0.8	955.25		61.3	1.3	1978.77	
east	60	61	400	60.5	59.8	0	0.00	60.3	0	0.00	60.8	0.3	197.18		61.3	0.8	858.65	
east	61	61	1	61	59.8	0	0.00	60.3	0	0.00	60.8	0	0.00		61.3	0.3	0.49	
						TOTALS:	212.05			1024.55			2987.30				6202.03	

Graph Computations:

Station	Elevation
0	61
240	60
360	59.2
485	59.3
500	59.3
563	60
658	60
1103	60
1503	61
1504	61

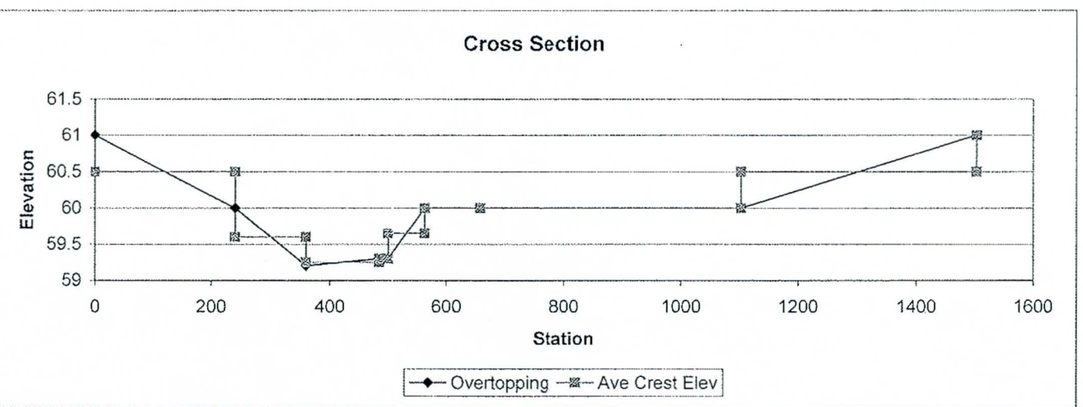
Weir Approximation:

Station	Elevation
0	60.5
240	60.5
240	59.6
360	59.6
360	59.25
485	59.25
485	59.3
500	59.3
500	59.65
563	59.65
563	60
658	60
658	60
1103	60
1103	60.5
1503	60.5
1503	61
1504	61

Culvert Flows (cfs):

south	0
southeast	0
east	72

Cross Section



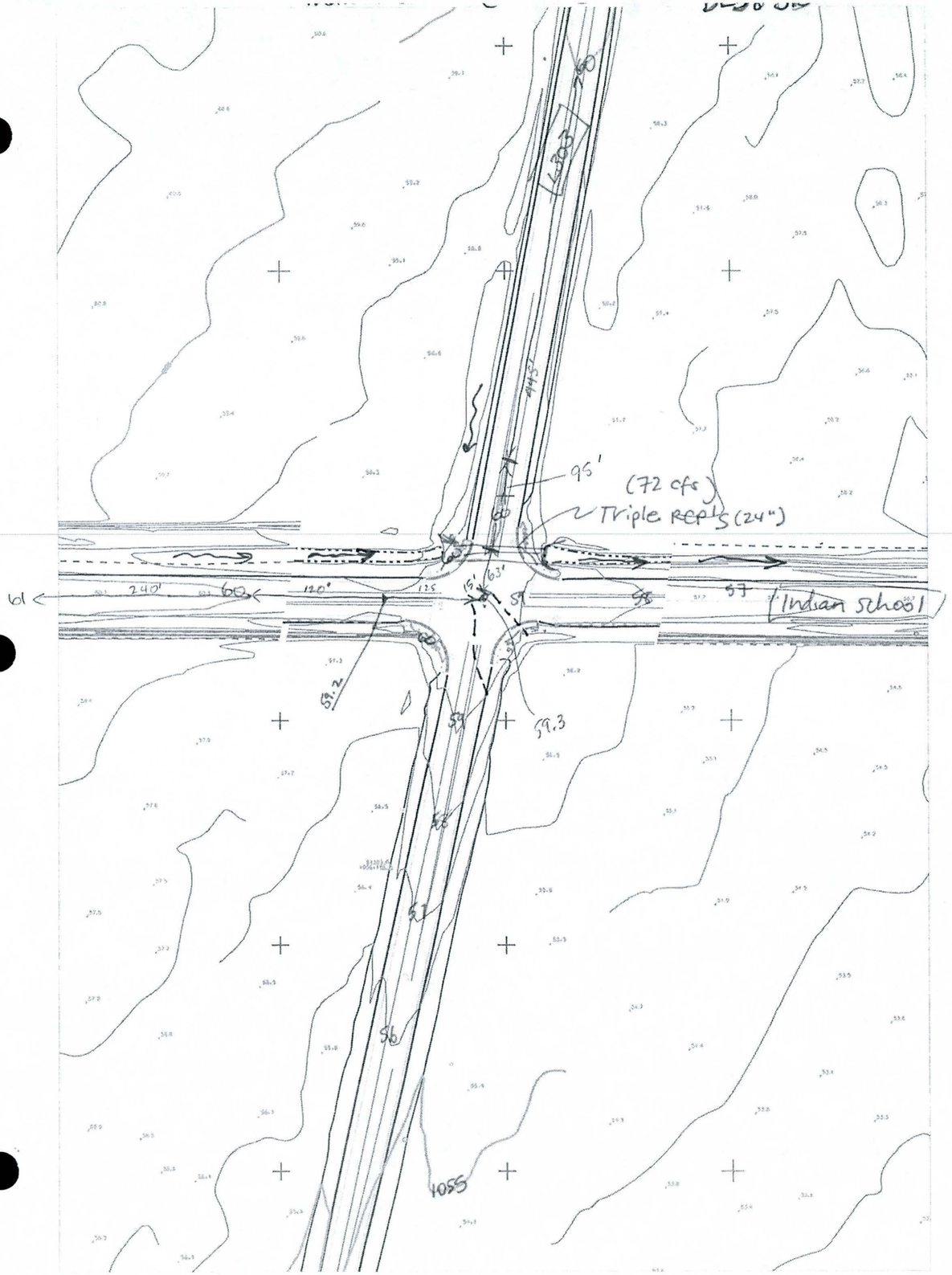
Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	185.16	65%	Q(south)	614.31	56%	Q(south)	1315.19	43%	Q(south)	2413.82	38%
Q(southeast)	15.91	6%	Q(southeast)	45.00	4%	Q(southeast)	82.67	3%	Q(southeast)	127.28	2%
Q(east)	82.98	29%	Q(east)	437.24	40%	Q(east)	1661.44	54%	Q(east)	3732.93	59%
	284.05			1096.55			3059.30			6274.03	

First DI	East to South			
Inflow	284.05	1096.55	3059.30	6274.03
Outflow	185.16	614.31	1315.19	2413.82

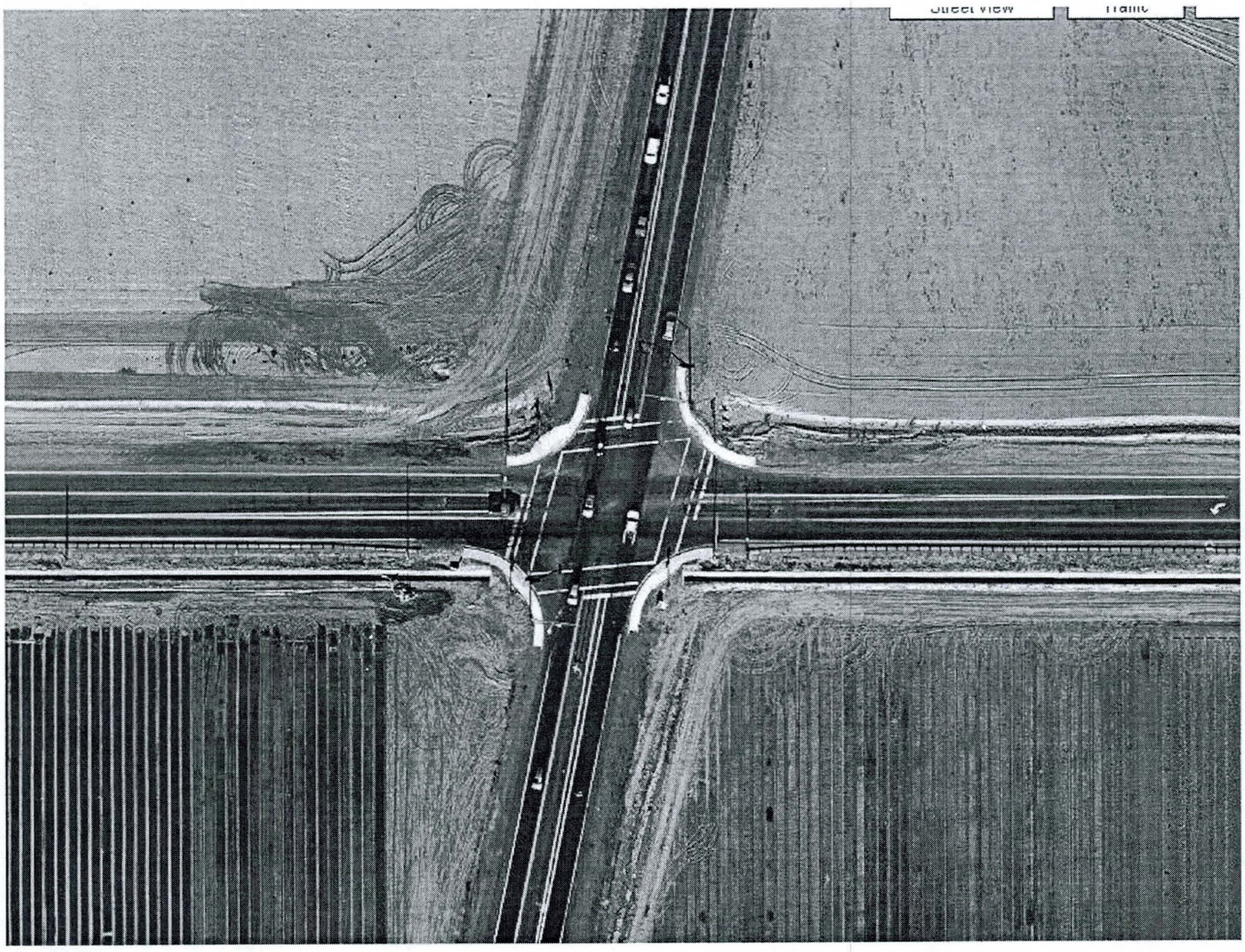
Assumes diversion is to south

Second DI	East to Southeast			
Inflow	98.89	482.24	1744.11	3860.21
Outflow	15.91	45.00	82.67	127.28

Assumes diversion is to southeast


760
4303
4475
95'
(72 cfs)
Triple Reps (24")
60
240'
120'
125
63'
57
Indian School
59.2
59.3
55
56
1055

L303



Indian School

Culvert Calculator Report
L303IndianSchoolTriple

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	61.30	ft	Headwater Depth/Height	2.15	
Computed Headwater Elev	61.30	ft	Discharge	72.42	cfs
Inlet Control HW Elev.	60.69	ft	Tailwater Elevation	58.50	ft
Outlet Control HW Elev.	61.30	ft	Control Type	Outlet Control	

Grades					
Upstream Invert	57.00	ft	Downstream Invert	56.50	ft
Length	125.00	ft	Constructed Slope	0.004000	ft/ft

Hydraulic Profile					
Profile	PressureProfile		Depth, Downstream	2.00	ft
Slope Type	N/A		Normal Depth	N/A	ft
Flow Regime	N/A		Critical Depth	1.74	ft
Velocity Downstream	7.68	ft/s	Critical Slope	0.010396	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	2.00	ft
Section Size	24 inch		Rise	2.00	ft
Number Sections	3				

Outlet Control Properties					
Outlet Control HW Elev.	61.30	ft	Upstream Velocity Head	0.92	ft
Ke	0.50		Entrance Loss	0.46	ft

Inlet Control Properties					
Inlet Control HW Elev.	60.69	ft	Flow Control	Submerged	
Inlet Type	Square edge w/headwall		Area Full	9.4	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

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For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

Computation

Job No.	79902	No.	
Project	Loop 303 / White Tanks ADMPU AHA	Computed	AM
Subject	Weir Flow Analysis	Checked	CP
Task	Weir Calculations	Sheet	1

Location: Thomas at Citrus (DL60)

Date 10/27/08

Date 3/10/09

Of x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	61	60	350	60.5	58.6	0	0.00	59.1	0	0.00	59.6	0	0.00	CHECK	60.1	0	0.00	DONE
south	60	59	55	59.5	58.6	0	0.00	59.1	0	0.00	59.6	0.1	5.22		60.1	0.6	76.69	
south	59	58.5	82	58.75	58.6	0	0.00	59.1	0.35	50.94	59.6	0.85	192.78		60.1	1.35	385.87	
south	58.5	58.4	211	58.45	58.6	0.15	36.77	59.1	0.65	331.72	59.6	1.15	780.64		60.1	1.65	1341.62	
southeast	58.4	58.4	30	58.4	58.6	0.2	8.05	59.1	0.7	52.71	59.6	1.2	118.31		60.1	1.7	199.49	
east	58.4	58.6	234	58.5	58.6	0.1	22.20	59.1	0.6	326.26	59.6	1.1	809.89		60.1	1.6	1420.75	
east	58.6	59	61	58.8	58.6	0	0.00	59.1	0.3	30.07	59.6	0.8	130.94		60.1	1.3	271.25	
east	59	60	303	59.5	58.6	0	0.00	59.1	0	0.00	59.6	0.1	28.75		60.1	0.6	422.47	
east	60	61	250	60.5	58.6	0	0.00	59.1	0	0.00	59.6	0	0.00		60.1	0	0.00	
					TOTALS:		67.02			791.70			2066.53				4118.12	

Graph Computations:

Station	Elevation
0	61
350	60
405	59
487	58.5
698	58.4
728	58.4
962	58.6
1023	59
1326	60
1576	61

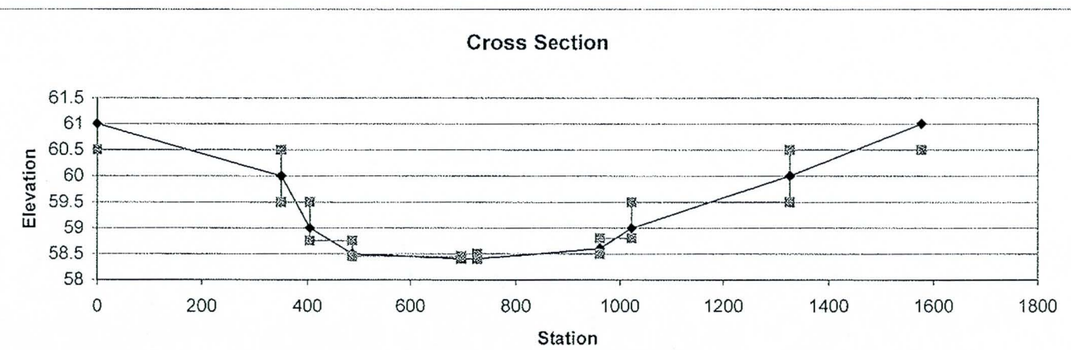
Weir Approximation:

Station	Elevation
0	60.5
350	60.5
350	59.5
405	59.5
405	58.75
487	58.75
487	58.45
698	58.45
698	58.4
728	58.4
728	58.5
962	58.5
962	58.8
1023	58.8
1023	59.5
1326	59.5
1326	60.5
1576	60.5

Culvert Flows (cfs):

south	0
southeast	0
east	0

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	36.77	55%	Q(south)	382.66	48%	Q(south)	978.64	47%	Q(south)	1804.17	44%
Q(southeast)	8.05	12%	Q(southeast)	52.71	7%	Q(southeast)	118.31	6%	Q(southeast)	199.49	5%
Q(east)	22.20	33%	Q(east)	356.33	45%	Q(east)	969.58	47%	Q(east)	2114.46	51%
	67.02			791.70			2066.53			4118.12	

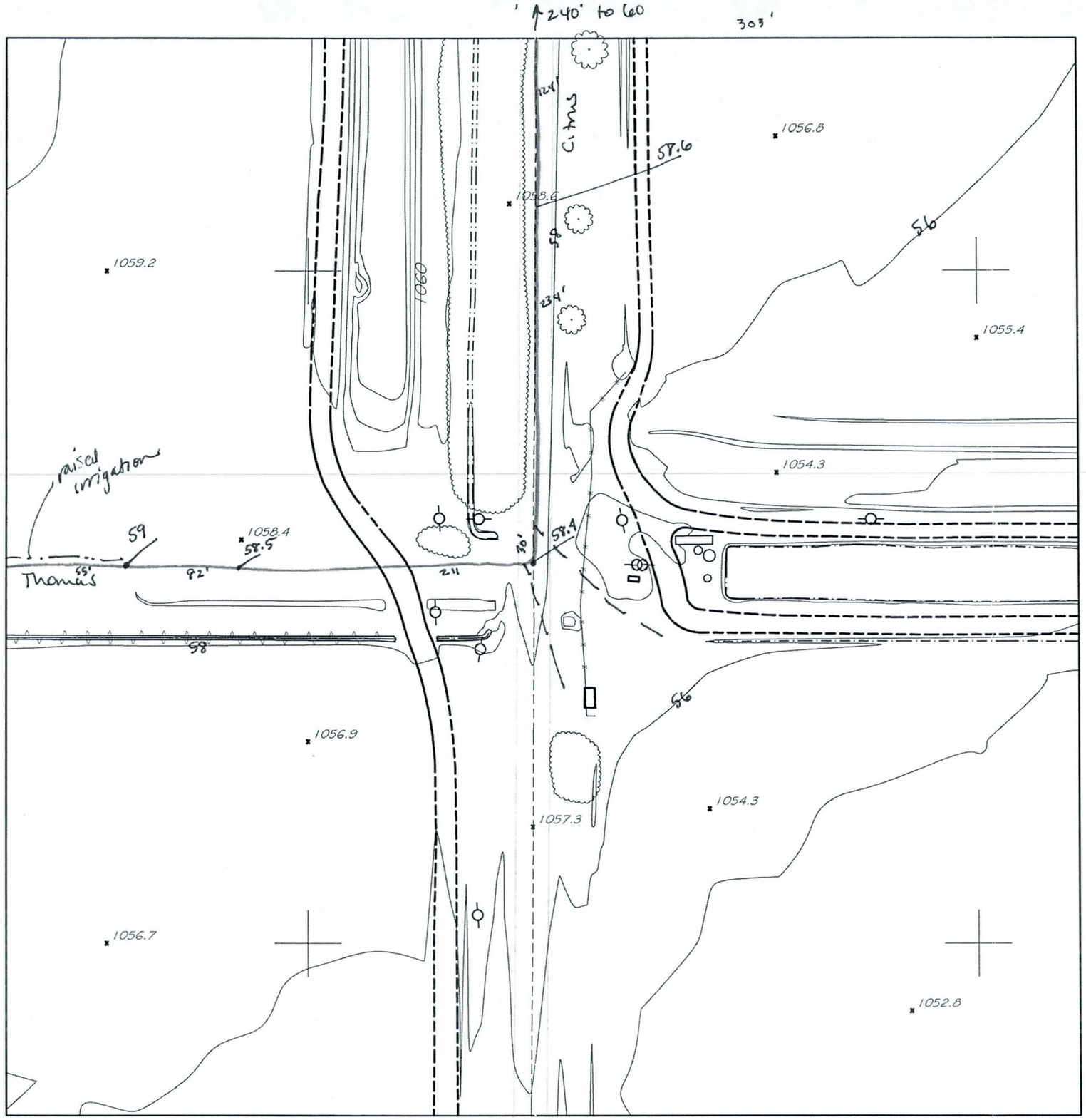
First DI	East to South			
Inflow	67.02	791.70	2066.53	4118.12
Outflow	36.77	382.66	978.64	1804.17

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	30.25	409.04	1087.89	2313.95
Outflow	8.05	52.71	118.31	199.49

Assumes diversion is to southeast

Thomas @ Citrus
DL60



1" = 80'
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T118FS1

Thomas @
Citrus
DL60

1"=200'

N

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N Citrus Rd
N Citrus Rd
N Citrus Rd
W Thomas Rd
W Thomas Rd
W Thomas Rd

Job No. 79902 | No.

Computation

Project: Loop 303 / White Tanks ADMPU AHA

Location: Thomas at agricultural road (DL61)

Computed: AM | Date: 10/27/08

Subject: Weir Flow Analysis | Checked: [illegible] | Date: 3/10/09

Task: Weir Calculations | Sheet: 1 | Of: x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	54	53	442.5	53.5	52.1	0	0.00	52.6	0	0.00	53.1	0	0.00	CHECK	53.6	0.1	41.98	DONE
south	53	52	442.5	52.5	52.1	0	0.00	52.6	0.1	41.98	53.1	0.6	616.97		53.6	1.1	1531.52	
south	52	51.5	340	51.75	52.1	0.35	211.20	52.6	0.85	799.33	53.1	1.35	1599.93		53.6	1.85	2566.60	
south	51.5	51.5	80	51.5	52.1	0.6	111.54	52.6	1.1	276.89	53.1	1.6	485.73		53.6	2.1	730.37	
east	51.5	52	280	51.75	52.1	0.35	173.93	52.6	0.85	658.28	53.1	1.35	1317.59		53.6	1.85	2113.67	
east	52	53	225	52.5	52.1	0	0.00	52.6	0.1	21.35	53.1	0.6	313.71		53.6	1.1	778.74	
east	53	54	225	53.5	52.1	0	0.00	52.6	0	0.00	53.1	0	0.00		53.6	0.1	21.35	
east	54	54	1	54	52.1	0	0.00	52.6	0	0.00	53.1	0	0.00		53.6	0	0.00	
east	54	54	1	54	52.1	0	0.00	52.6	0	0.00	53.1	0	0.00		53.6	0	0.00	
						TOTALS:	496.68			1797.82			4333.92				7784.22	

Graph Computations:

Station	Elevation
0	54
442.5	53
885	52
1225	51.5
1305	51.5
1585	52
1810	53
2035	54
2036	54
2037	54

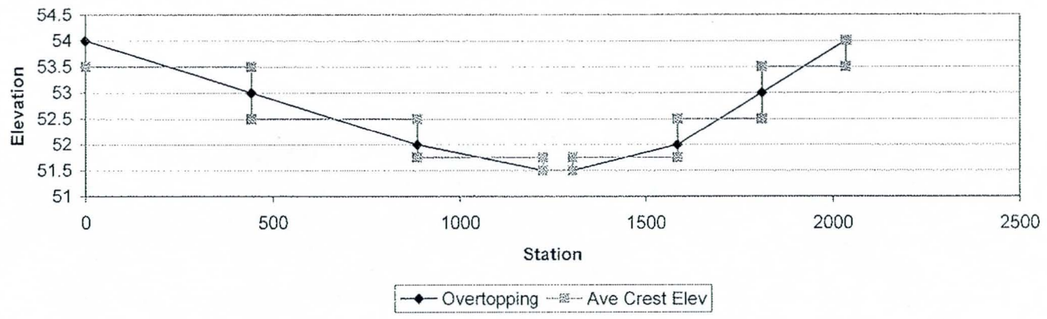
Weir Approximation:

Station	Elevation
0	53.5
442.5	53.5
442.5	52.5
885	52.5
885	51.75
1225	51.75
1225	51.5
1305	51.5
1305	51.75
1585	51.75
1585	52.5
1810	52.5
1810	53.5
2035	53.5
2035	54
2036	54
2036	54
2037	54

Culvert Flows (cfs):

south	0
southeast	0
east	0

Cross Section



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	322.75	65%	Q(south)	1118.20	62%	Q(south)	2702.62	62%	Q(south)	4870.47	63%
Q(southeast)	0.00	0%	Q(southeast)	0.00	0%	Q(southeast)	0.00	0%	Q(southeast)	0.00	0%
Q(east)	173.93	35%	Q(east)	679.62	38%	Q(east)	1631.30	38%	Q(east)	2913.75	37%
	496.68			1797.82			4333.92			7784.22	

First DI	East to South			
Inflow	496.68	1797.82	4333.92	7784.22
Outflow	322.75	1118.20	2702.62	4870.47

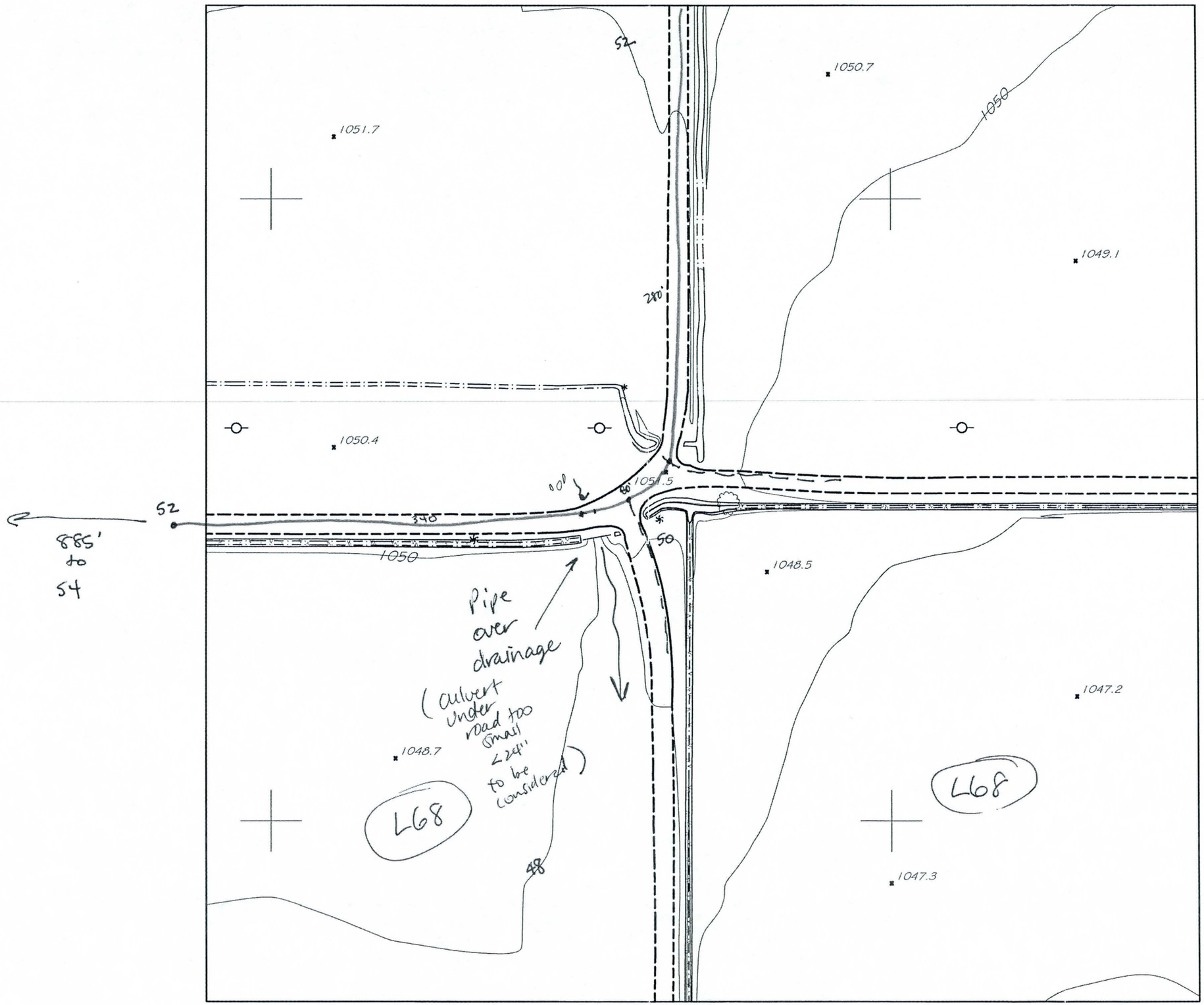
Assumes diversion is to south

Second DI	East to Southeast			
Inflow	173.93	679.62	1631.30	2913.75
Outflow	0.00	0.00	0.00	0.00

Assumes diversion is to southeast

↑450' to 54

Thomas @
Ag Berm
DL61



1" = 80'

N

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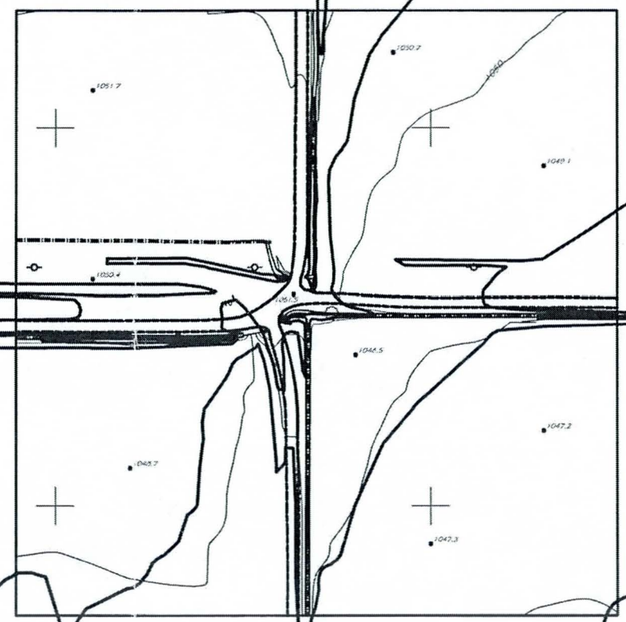
Small culvert

Thomas @
Ag bern
(DL61)

TH18FS2



Higher

N
↑
1" = 200'

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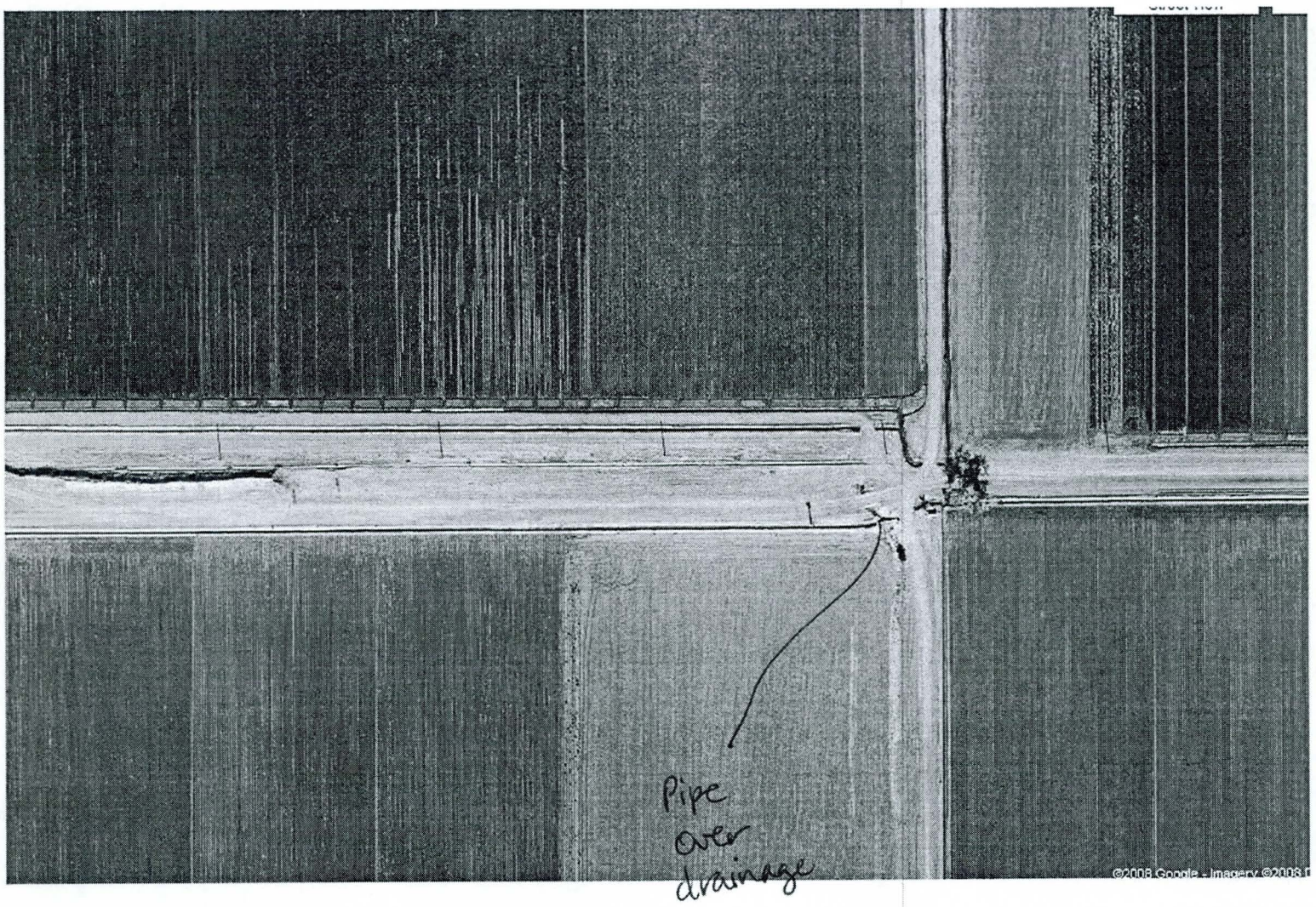

Thomas @ Ag
Berm
DL61

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For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

```
UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
*
KK  348T
KM    Divert Retention in Subbasin 348
DT  348R      16.4
DI       0   10000
DQ       0   10000
*

KK   SR348
KM        STORAGE ROUTE BEHIND SOUTHERN PACIFIC RAILROAD
RS       1    STOR       0       0
SV       0       0     .72    2.12   15.51   22.03
SQ       0      .5       5       9    3101    5661
SE   906.6   907.6     908   908.3   909.6     910

KK    D348
KM        DIVERT FROM CP348 TO CP347
DT   DI347
DI       0    3083    5640
DQ       0       0     165

KK    R348
KM        ROUTE REMAINDER FROM CP348 TO CP363
RS       8              -1
RC    .075     .06    .075    1600   .0025
RX    1000    1001    1040    1200    2040    2180    2239    2240
RY     907     907     906     905     905     906     907     907
```

1 HEC-1 INPUT PAGE174

```
LINE  ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

KK   CP363
KM        ADD HYDROGRAPHS AT CP363
HC       2    2.58
*
*  END OF SB 7
*

KK    R363
KM        ROUTE FLOW FROM CP363 TO CP362
RS      10              -1
RC    .075    .075    .075    3350   .0015
RX    1000    1001    1002    1300    2040    2628    2629    2630
RY     950     903     903     902     902     904     904     950
*

KK     362
KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 362
BA     .42
LG     .50     .00    5.20     .42     .00
UI     23.     23.     31.     79.     98.    115.    130.    144.    166.    188.
UI    242.    290.    263.    222.    195.    175.    152.    135.    116.    101.
UI     76.     51.     41.     38.     34.     23.     23.     17.      7.      7.
UI      7.      7.      7.      7.      7.      7.      0.      0.      0.      0.
UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

KK   1I362
KM        ADD HYDROGRAPHS AT CP362
HC       2    3.14
*
* ***************************************************************************
* ***THE FOLLOWING SECTION TAKEN FROM NEW SUPER BASIN 8  WITH NEW SOILS*****
* ***************************************************************************
*

KK     265
KM   BASIN 265
KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
KM    L=     1.2  Lca=      .8    S=   18.6  Kn= .120  LAG=  95.6
KM    AGRICULTURAL S-GRAPH WAS USED FOR THIS BASIN
BA     .25
LG     .50     .00    4.50     .57     .00
UI     10.     10.     10.     10.     20.     21.     34.     50.     58.     54.
UI     56.     73.     71.     81.     81.     81.     81.     81.     81.     69.
UI     68.     68.     74.     66.     51.     52.     58.     44.     37.     37.
UI     31.     28.     27.     31.     21.     18.     17.     16.     15.     12.
UI     12.     12.      9.      9.      9.      9.      7.      5.      5.      5.
UI      5.      5.      5.      4.      1.      1.      1.      1.      1.      1.
UI      1.      1.      1.      1.      1.      1.      1.      1.      1.      1.
UI      1.      1.      1.      1.      1.      0.      0.      0.      0.      0.
UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
```

1 HEC-1 INPUT PAGE175

```
LINE  ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

KK    D250
KM        RETURN DIVERT AT CP250
DR    DI265
*

KK    RLP9
KM        ROUTE LP9 TO LP10 (CP250 TO CP265) INDIAN SCHOOL TO THOMAS
KM      RECOMMENDED PLAN CHANNEL WEST OF LOOP 303
RS      9.0             -1.0     0.0
RC    0.020   0.020   0.020    5390  0.0038
RX    100.0   108.0   109.0   110.0   116.0   117.0   118.0   126.0
RY    18.00   10.00   10.00   10.00   10.00   10.00   10.00   18.00
```

158463

DL 3

L303 south of Indian Sch.

L303

	DI	0	260	1000	2000
(to ~~east~~ South)	DQ	0	~~260~~ 0	~~268~~ 740	~~268~~ 1740

(Diversion is to South)

N 906500
N 906250
63.8
64.3
64.4
63.4
62.9
63.4
62.9
63.3
64.8
63.5
62.8
64.8
62.8
62.7
62.4
64.3

CIP models

L63

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN  1998                 *
*           VERSION 4.1                 *
*                                       *
*     DATE   14JUL08  TIME  17:23:04    *
*                                       *
*****************************************
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```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   1          ID      ASPEN CONSULTING ENGINEERS, JCS, 06-20-08, FILE: REC-EWP.DAT, 100-YR 24-HR
   2          ID      THIS IS THE EXISTING WITH RECOMMENDED PLAN MODEL.
   3          ID      NOTES:
   4          ID      THE PURPOSE OF THIS PROJECT IS TO UPDATE FOR LAND USE CHANGES FOR THE ENTIRE
   5          ID      MODEL AND TO REEVALUATE THE BASINS AT LOOP 303 AND CAMELBACK ROAD.
   6          ID
   7          ID      UPDATE LG CARD AND DEVELOPMENT RETENTION DIVERSIONS FOR EACH SUBBASIN.
   8          ID      CHANGE MODEL TO REFLECT THE NEW SUNCOR CHANNEL SOUTH OF CAMELBACK RD.
   9          ID      BETWEEN STATE ROUTE 303 AND BULLARD WASH.
  10          ID
  11          ID      THE RECOMMENDED PLAN IS A CHANNEL BEGINNING AT THE OUTLET FROM THE NORTHERN
  12          ID      AVENUE BASIN AT THE SW CORNER OF NORTHERN AND THE LOOP 303.  THE CHANNEL
  13          ID      GOES SOUTH ALONG THE WEST SIDE OF THE LOOP 303 TO CAMELBACK ROAD.  BEFORE
  14          ID      CAMELBACK ROAD THE CHANNEL TRANSITIONS INTO A LONG BOX CULVERT THAT
  15          ID      CROSSES DIAGONALLY UNDER THE LOOP 303 AND CAMELBACK ROAD WEHERE IT
  16          ID      DAYLIGHTS ON THE SOUTH SIDE OF CAMELBACK ROAD AT THE EXISTING SUNCOR
  17          ID      CHANNEL.  THE FLOW THEN CONTINUES ALONG THE SUNCOR CHANNEL ALIGNMENT TO A
  18          ID      BASIN NEAR REEMS ROAD WHICH THEN OUTLETS TO THE SUNCOR CHANNEL ALIGNMENT
  19          ID      AGAIN AND CONTINUES TO BULLARD WASH.  SEPARATELY, THERE IS A BASIN AT COTTON
  20          ID      LANE AND CAMELBACK ROAD.  A SHORT CHANNEL CONVEYS WATER COLLECTED AT THE
  21          ID      BASIN TO THE LOOP 303 AND THEN TRANSITIONS SOUTH IN A CULVERT UNDER
  22          ID      CAMELBACK ROAD.  THIS CHANNEL CONTINUES ALONG LOOP 303 TO A SMALL BASIN
  23          ID      SOUTH AT INDIAN SCHOOL ROAD AND THEN TO THE BASIN AT I-10 NEAR PERRYVILLE
  24          ID      PRISON.  THE I-10 AND PERRYVILLE PRISON BASIN IS AS PROPOSED IN THE ADMPU.
  25          ID
              * ************************************************************************
              * *  THE FOLLOWING IS THE MODEL RECIEVED BY ASPEN FROM FCDMC ON 06/08/07
              * ************************************************************************
  26          ID          DRAFT PREFERRED ALTERNATIVE LEVEL III
  27          ID
  28          ID          INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
  29          ID          SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
  30          ID          BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
  31          ID          LUKE AIR FORCE BASE CRASH ZONE AREA
  32          ID
  33          ID          **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
  34          ID          WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
  35          ID          Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
  36          ID          TANKS/AGUA FRIA ADMS, Date: October 1991
  37          ID
  38          ID          REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
  39          ID          100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
  40          ID
  41          ID                                        REVISED BY URS     DATE: 01-14-04
  42          ID                                                           FILE: L33PE4H.DAT
  43          ID
  44          ID        NOTES:
  45          ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
  46          ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
  47          ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
  48          ID        3. AVERAGE XKSAT VALUES FOR EACH SUBBASIN WAS RECEIVED FROM FCDMC
  49          ID           GIS DATA AND THEN ADJUSTED FOR VEGETATION, OR LEFT AS ORIGINALLY IN
  50          ID           THE WLB MODEL.
  51          ID        4. FOR NEW DEVELOPMENTS ONLY 80% OF REPORTED PROVIDED RETENTION
  52          ID           WAS INCLUDED IN THIS MODEL (AS A CONSERVATIVE ESTIMATE). RETENTION
```

HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  53          ID           CAPACITIES WERE ESTIMATED BY EEC FOR DEVELOPMENTS WITH NO
  54          ID           DRAINAGE REPORTS.
  55          ID        5. REVISED DRAINAGE BOUNDARIES BASED UPON FIELD INSPECTION OF SUN CITY.
  56          ID           GRAND.  COMBINED SEVERAL BASINS TOGETHER TO MAKE NEW BASINS 114 &115.
  57          ID           ALSO REROUTED SUBBASINS 100A, 101, 102A AND 106 TO THE SOUTH TO 113A.
```

Culvert Calculator Report
DL63_L303nearIndianSchool

Solve For: Discharge

Culvert Summary			
Allowable HW Elevation	57.00 ft	Headwater Depth/Height	1.13
Computed Headwater Elev	57.00 ft	Discharge	268.51 cfs
Inlet Control HW Elev.	56.94 ft	Tailwater Elevation	53.60 ft
Outlet Control HW Elev.	57.00 ft	Control Type	Outlet Control

Grades			
Upstream Invert	52.50 ft	Downstream Invert	52.20 ft
Length	132.00 ft	Constructed Slope	0.002273 ft/ft

Hydraulic Profile			
Profile	M2	Depth, Downstream	2.82 ft
Slope Type	Mild	Normal Depth	3.17 ft
Flow Regime	Subcritical	Critical Depth	2.82 ft
Velocity Downstream	9.52 ft/s	Critical Slope	0.003164 ft/ft

Section			
Section Shape	Box	Mannings Coefficient	0.013
Section Material	Concrete	Span	10.00 ft
Section Size	10 x 4 ft	Rise	4.00 ft
Number Sections	1		

Outlet Control Properties			
Outlet Control HW Elev.	57.00 ft	Upstream Velocity Head	1.16 ft
Ke	0.20	Entrance Loss	0.23 ft

Inlet Control Properties			
Inlet Control HW Elev.	56.94 ft	Flow Control	Unsubmerged
Inlet Type	90° headwall w 45° bevels	Area Full	40.0 ft²
K	0.49500	HDS 5 Chart	10
M	0.66700	HDS 5 Scale	2
C	0.03140	Equation Form	2
Y	0.82000		

CIP models

L64

1**********
* *
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* JUN 1998 *
* VERSION 4.1 *
* *
* DATE 14JUL08 TIME 17:23:04 *
* *
****

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* *
* U.S. ARMY CORPS OF ENGINEERS *
* HYDROLOGIC ENGINEERING CENTER *
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* DAVIS, CALIFORNIA 95616 *
* (916) 756-1104 *
* *
****


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X    X  XXXXXXX   XXXXX          X
X    X  X        X     X        XX
X    X  X        X              X
XXXXXXX  XXXX    X        XXXXX  X
X    X  X        X              X
X    X  X        X     X        X
X    X  XXXXXXX   XXXXX         XXX
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KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

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   25         ID
              * ************************************************************************
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   41         ID                                   REVISED BY URS     DATE: 01-14-04
   42         ID                                                      FILE: L33PE4H.DAT
   43         ID
   44         ID        NOTES:
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   51         ID        4. FOR NEW DEVELOPMENTS ONLY 80% OF REPORTED PROVIDED RETENTION
   52         ID           WAS INCLUDED IN THIS MODEL (AS A CONSERVATIVE ESTIMATE). RETENTION
```

HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
   53         ID           CAPACITIES WERE ESTIMATED BY EEC FOR DEVELOPMENTS WITH NO
   54         ID           DRAINAGE REPORTS.
   55         ID        5. REVISED DRAINAGE BOUNDARIES BASED UPON FIELD INSPECTION OF SUN CITY.
   56         ID           GRAND.  COMBINED SEVERAL BASINS TOGETHER TO MAKE NEW BASINS 114 &115.
   57         ID           ALSO REROUTED SUBBASINS 100A, 101, 102A AND 106 TO THE SOUTH TO 113A.
```

```
6605          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              *

6606          KK  348T
6607          KM    Divert Retention in Subbasin 348
6608          DT  348R      16.4
6609          DI        0   10000
6610          DQ        0   10000
              *

6611          KK   SR348
6612          KM        STORAGE ROUTE BEHIND SOUTHERN PACIFIC RAILROAD
6613          RS        1    STOR       0       0
6614          SV        0       0     .72    2.12   15.51   22.03
6615          SQ        0      .5       5       9    3101    5661
6616          SE    906.6   907.6     908   908.3   909.6     910

6617          KK    D348
6618          KM        DIVERT FROM CP348 TO CP347
6619          DT   DI347
6620          DI        0    3083    5640
6621          DQ        0       0     165

6622          KK    R348
6623          KM        ROUTE REMAINDER FROM CP348 TO CP363
6624          RS        8              -1
6625          RC     .075     .06    .075    1600   .0025
6626          RX     1000    1001    1040    1200    2040    2180    2239    2240
6627          RY      907     907     906     905     905     906     907     907
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6628          KK   CP363
6629          KM        ADD HYDROGRAPHS AT CP363
6630          HC        2    2.58
              *
              *  END OF SB 7
              *

6631          KK    R363
6632          KM        ROUTE FLOW FROM CP363 TO CP362
6633          RS       10              -1
6634          RC     .075    .075    .075    3350   .0015
6635          RX     1000    1001    1002    1300    2040    2628    2629    2630
6636          RY      950     903     903     902     902     904     904     950
              *

6637          KK     362
6638          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 362
6639          BA     .42
6640          LG     .50     .00    5.20     .42     .00
6641          UI     23.     23.     31.     79.     98.    115.    130.    144.    166.    188.
6642          UI    242.    290.    263.    222.    195.    175.    152.    135.    116.    101.
6643          UI     76.     51.     41.     38.     34.     23.     23.     17.      7.      7.
6644          UI      7.      7.      7.      7.      7.      7.      0.      0.      0.      0.
6645          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

6646          KK   1I362
6647          KM        ADD HYDROGRAPHS AT CP362
6648          HC        2    3.14
              *
              * ********************************************************************************
              * ***THE FOLLOWING SECTION TAKEN FROM NEW SUPER BASIN 8  WITH NEW SOILS*****
              * ********************************************************************************
              *

6649          KK     265
6650          KM    BASIN 265
6651          KM     THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
6652          KM     L=     1.2  Lca=      .8    S=   18.6  Kn= .120  LAG=  95.6
6653          KM     AGRICULTURAL S-GRAPH WAS USED FOR THIS BASIN
6654          BA     .25
6655          LG     .50     .00    4.50     .57     .00
6656          UI     10.     10.     10.     10.     20.     21.     34.     50.     58.     54.
6657          UI     56.     73.     71.     81.     81.     81.     81.     81.     81.     69.
6658          UI     68.     68.     74.     66.     51.     52.     58.     44.     37.     37.
6659          UI     31.     28.     27.     31.     21.     18.     17.     16.     15.     12.
6660          UI     12.     12.      9.      9.      9.      9.      7.      5.      5.      5.
6661          UI      5.      5.      5.      4.      1.      1.      1.      1.      1.      1.
6662          UI      1.      1.      1.      1.      1.      1.      1.      1.      1.      1.
6663          UI      1.      1.      1.      1.      1.      1.      1.      1.      1.      1.
6664          UI      1.      1.      1.      1.      1.      0.      0.      0.      0.      0.
6665          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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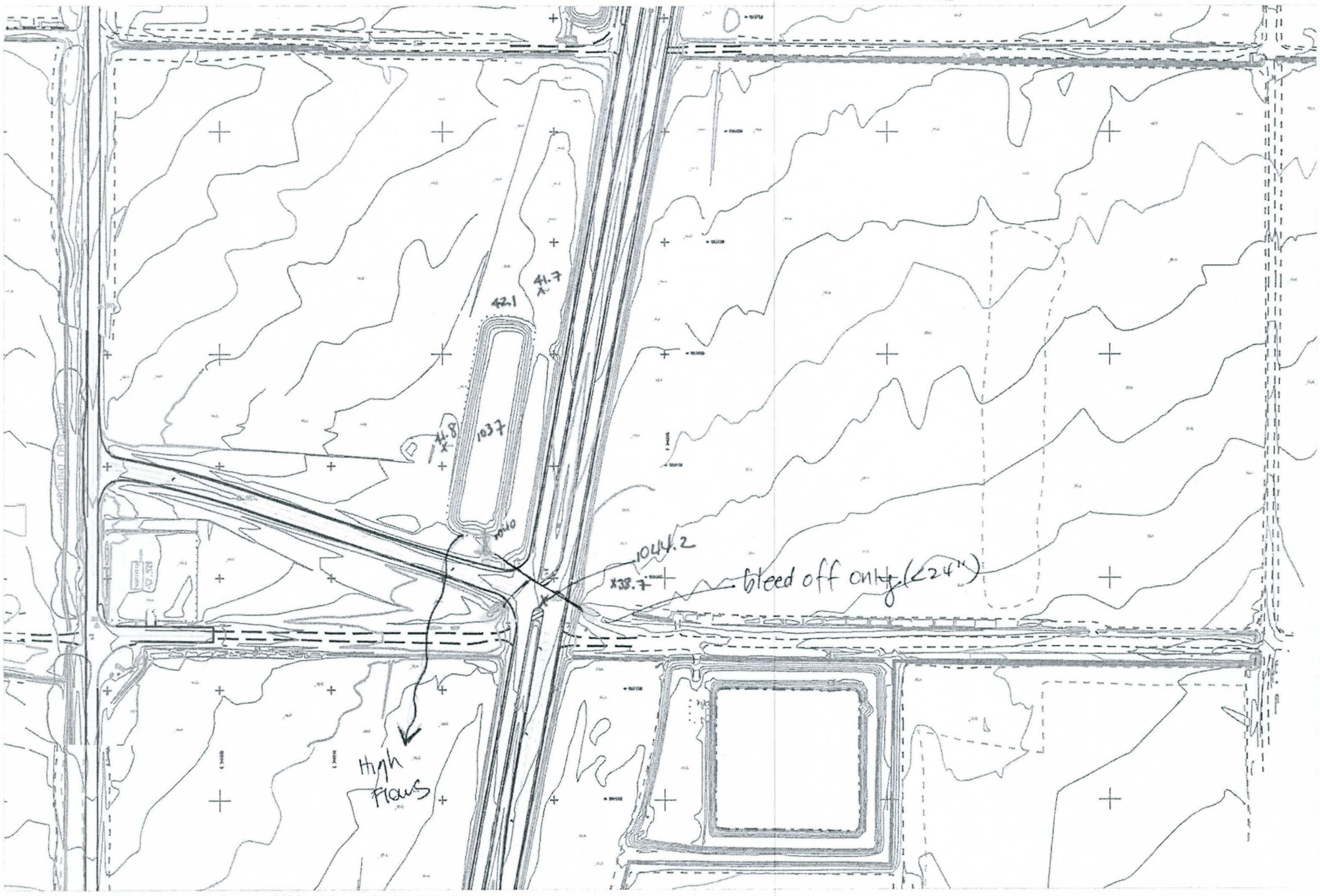
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6666          KK    D250
6667          KM        RETURN DIVERT AT CP250
6668          DR   DI265
              *

6669          KK    RLP9
6670          KM        ROUTE LP9 TO LP10 (CP250 TO CP265) INDIAN SCHOOL TO THOMAS
6671          KM      RECOMMENDED PLAN CHANNEL WEST OF LOOP 303
6672          RS      9.0              -1.0     0.0
6673          RC    0.020   0.020   0.020    5390  0.0038
6674          RX    100.0   108.0   109.0   110.0   116.0   117.0   118.0   126.0
6675          RY    18.00   10.00   10.00   10.00   10.00   10.00   10.00   18.00
```

LG3L64

L303 @ Thomas



P:\Drams20180\exist.dgn 9/23/2008 1:54:38 PM

Street View
Traffic
More...
Map
Satellite
Terrain
303
W Thomas Rd
N Cotton Ln
W Thomas Rd
303
2900
2901
303
200 ft
50 m
©2008 Google - Imagery ©2008 DigitalGlobe, GeoEye, Map data ©2008 Tele Atlas - Terms of Use

CIP models

L65

```
1*****************************************
*                                       *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *
*            JUN  1998                  *
*          VERSION 4.1                  *
*                                       *
*    DATE   07MAY09  TIME  08:05:50     *
*                                       *
*****************************************
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```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
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*       DAVIS, CALIFORNIA 95616         *
*          (916) 756-1104               *
*                                       *
*****************************************
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X    X  XXXXXXX   XXXXX          X
X    X  X        X     X        XX
X    X  X        X              X
XXXXXX  XXXX     X        XXXXX  X
X    X  X        X              X
X    X  X        X     X        X
X    X  XXXXXXX   XXXXX          XXX
```

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DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
    1         ID        LOOP 303 OFF-SITE HYDROLOGY
    2         ID        MODIFIED BASED ON FCDMC'S WHITE TANKS/LOOP 303 CORRIDOR ADMP
    3         ID        THE MODIFICATIONS ARE DESCRIBED AS FOLLOWS:
    4         ID        1. THE CACTUS RD BASIN WAS REMOVED AND TWO RELATIVELY SMALL BASINS
    5         ID           LOCATED AT NORTH OF WADDELL ROAD AND NORTH OF OLIVE AVENUE WERE
    6         ID           ADDED TO THE MODEL BASED ON CMX'S HEC-1 MODEL PROVIDED IN DEC,2006.
    7         ID        2. FLOW DIVERSION TO THE OFF-LINE BASINS, SUCH AS WADDELL ROAD
    8         ID           BASIN, OLIVE AVENUE BASIN, NORTHERN AVENUE BASIN WERE ESTIMATED
    9         ID           USING HEC-RAS LATERAL WEIR ROUTINE.
   10         ID        3. DETENTION BASIN ELEVATION AND VOLUME RELATIONSHIPS WERE ESTIMATED
   11         ID           BASED ON 30% DESIGN OF THE BASIN.
   12         ID        4. ELEVATION AND OUTFLOW RELATIONSHIP WERE ESTIMATED BASED ON 30% DESIG
   13         ID           USING CULVERTMASTER. THE OUTFLOW INCLUDES FLOW FROM BLEED-OFF PIPE
   14         ID           AND FLOW FROM OUTFLOW PIPE.
   15         ID        5. CHANNEL ROUTING WERE MODIFIED BASED ON 30% DESIGN.
   16         ID        6. FLOW FROM THE PROPOSED FCDMC CHANNEL ALONG NORTHEN AVENUE  WILL
   17         ID           NOT BE COMBINED WITH FLOW FROM LOOP 303 OFF-SITE CHANNEL.
   18         ID           INSTEAD THE FLOW FROM THE CHANNEL ALONG NORTHERN AVENUE WILL GO
   19         ID           TO THE NORTHERN AVENUE BASIN DIRECTLY.  SO THE FLOW FROM THE
   20         ID           NORTHERN AVENUE CHANNEL WILL BE COMBINED WITH THE DIVERTED FLOW
   21         ID           FROM LOOP 303 CHANNEL AT NORTHERN AVENUE BASIN.
   22         ID        7. IN THE ADMP MODEL, SOME OF THE OUTFLOW FROM CAMELBACK ROAD BASINS
   23         ID           WERE DIVERTED TO EAST ALONG CAMELBACK ROAD (THE PEAK FLOW IS
   24         ID           180 CFS).  NO STRUCTURE WAS RECOMMENDED IN THE ADMP UPDATE. PB
   25         ID           DESIGNED 3-30" PIPES TO DIVERT SOME FLOW TO THE EXISTING CAMELBACK
   26         ID           ROAD CHANNEL LOCATED AT SOUTH SIDE OF CAMELBACK ROAD.
   27         ID        9. PEBBLE CREEK AND PALM VALLEY 8 DEVELOPMENTS WERE INCLUDED IN THE
   28         ID           MODEL BASED ON HEC-1 MODEL PROVIDED BY DEL RIO ENGINEERING.
   29         ID       10. MCDOWELL ROAD DETENTION BASIN WERE DIVIDED INTO TWO DETENTION BASINS
   30         ID           ONE IS CALLED MCDOWELL ROAD UPPER BASIN AND THE OTHER ONE IS CALLED
   31         ID           MCDOWELL ROAD LOWER BASIN
   32         ID       11  PROPOSED I-10/303L TI (ULTIMATED CONDITION) ON-SITE DRAINAGE SYSTEM
   33         ID           WAS REFLECTED IN THE MODEL.  THERE ARE TOTAL 11 ON-SITE BASINS.
   34         ID
   35         ID        EXISTING CONDITION WITH PROJECTS IN PLACE SCENARIO
   36         ID        REVISED BY PARSONS BRINCKERHOFF     DATE: Aug 2008
   37         ID                                            FILE NAME: EX_SPLT.DAT
   38         ID        ************************************************************************
   39         ID        DRAFT PREFERRED ALTERNATIVE LEVEL III
   40         ID
   41         ID        INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
   42         ID        SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
   43         ID        BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
   44         ID        LUKE AIR FORCE BASE CRASH ZONE AREA
   45         ID
   46         ID        **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
   47         ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
   48         ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
   49         ID        TANKS/AGUA FRIA ADMS, Date: October 1991
   50         ID
   51         ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
   52         ID        100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
   53         ID
   54         ID                                        REVISED BY URS     DATE: 01-14-04
   55         ID                                                           FILE: L33PE4H.DAT
```

HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
   56         ID
   57         ID        NOTES:
   58         ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
   59         ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
   60         ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
```

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

6695          KK    R246
6696          KM        ROUTE FLOW FROM CP246 TO CP260
6697          RS       3                -1
6698          RC    .022    .022    .025    5280   .0053
6699          RX   1000    1001    1002    1025    1060    1120    1300    1480
6700          RY   1113    1113    1113    1112    1112    1114    1116    1118
              *
6701          KK     260
6702          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 260
6703          BA     .50
6704          LG     .30      .33    4.00    0.46    4.00
6705          UI     57.     146.    273.    352.    467.    689.    552.    426.    323.    230.
6706          UI    119.      90.     57.     27.     17.     17.      0.      0.      0.      0.
6707          UI      0.       0.      0.      0.      0.      0.      0.      0.      0.      0.
              *
6708          KK   CP260
6709          KM        ADD HYDROGRAPHS AT CP260
6710          HC       2    2.18
              *
6711          KK    R260
6712          KM        ROUTE FLOW FROM CP260 TO CP273
6713          RS       4                -1
6714          RC    .022    .022    .025    6100   .0072
6715          RX   1000    1001    1002    1030    1090    1130    1210    1450
6716          RY   1093    1093    1093    1092    1092    1093    1092    1096
              *
6717          KK     273
6718          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 273
6719          BA     .65
6720          LG     .33      .34    4.05    0.43    2.00
6721          UI     66.     137.    288.    373.    466.    643.    800.    605.    484.    378.
6722          UI    289.     156.    112.     80.     60.     20.     20.     20.     20.      0.
6723          UI      0.       0.      0.      0.      0.      0.      0.      0.      0.      0.
6724          UI      0.       0.      0.      0.      0.      0.      0.      0.      0.      0.
              * KK CP273
6725          KK   !10W1
6726          KM        ADD HYDROGRAPHS AT CP273
6727          HC       2    2.83
              * KK SR273
              * KM       STORAGE ROUTE THROUGH CP273
              * RS     1    STOR       0       0
              * SV     0    .022     1.6    3.82    7.92   11.72
              * SQ     0      40     525     850    1700    2560
              * SE1053.6    1054    1056    1057    1058  1058.5
6728          KK    D273
6729          KM        DIVERT FROM CP273 TO CP292
6730          DT   1D292
6731          DI       0      40     525     850    1700
6732          DQ       0       0       0       0       0
```



```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

6733          KK   R10W1
6734          KM   ROUTE REMAINDER FROM 10W1 TO 10W2 (CP273 TO CP274)
6735          RS     1.0              -1.0     0.0
6736          RC   0.030   0.030   0.030    1364  0.0042
6737          RX       0    34.2    39.2    44.2    49.2    54.2    59.2    93.4
6738          RY  1045.4  1039.7  1039.7  1039.7  1039.7  1039.7  1039.7  1045.4
              *
```

W32LG5

```
6739          KK     261
6740          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 261
6741          BA     .41
6742          LG     .50      .00    4.00    0.74     .00
6743          UI     17.      17.     17.     24.     55.     65.     78.     85.     93.    101.
6744          UI    110.     122.    133.    155.    188.    218.    199.    173.    155.    142.
6745          UI    131.     118.    107.     98.     87.     80.     69.     54.     43.     30.
6746          UI     29.      27.     27.     19.     17.     17.     17.      5.      5.      5.
6747          UI      5.       5.      5.      5.      5.      5.      5.      5.      5.      0.
6748          UI      0.       0.      0.      0.      0.      0.      0.      0.      0.      0.
6749          UI      0.       0.      0.      0.      0.      0.      0.      0.      0.      0.
              *
6750          KK    D247
6751          KM        RETURN DIVERT AT CP247
6752          DR   DI261
              *
6753          KK    R247
6754          KM        ROUTE FLOW FROM CP247 TO CP261
6755          RS       6                -1
6756          RC     .03      .03     .075            .0051
6757          RX    1000    1001    1002    1020    1090    1220    1460    1760
6758          RY    1101    1101    1101    1100    1100    1102    1104    1106
              *
6759          KK   CP261
6760          KM        ADD HYDROGRAPHS AT CP261
6761          HC       2     .91
              *
6762          KK    D261
6763          KM        DIVERT FROM CP261 TO CP277
6764          DT   DI277
6765          DI       0       7     271    3982
6766          DQ       0       0     101    2114
```

Culvert Information from I-10 Plans

ID	# of Culverts	Size	Material/Type	Length (ft)	US Inv.	DS Inv.	Inv.	Slope (%)	Notes
28	1	30"	CMP	240			1131.95 @ WB CL	1.125	
29	1	30"	CMP	260			1127.92 @ WB CL	1.154	
30	1	36"	CMP	287			1123.34 @ WB CL	1.436	
31	2	36"	CMP	216			1111.72 @ WB CL	1.62	
32	2	42"	CMP	200			1098.70 @ WB CL	0.75	
33	2	36"	CMP	234	1097.35	1095	1094.32 @ WB CL	1.004	The elevations of the old plans don't match the elevations from the new plans from Verrado
34	1	48"	CMP	234			1092.43 @ WB CL	0.978	
35	1	48"	CMP	214			1090.88 @ WB CL	1.122	
36	1	48"	CMP	218			1091.30 @WB CL	0.78	
37	2	48"	CMP	230	1093.76	1089.79		1.726	
38	1	36"	CMP	250	1095.17	1092.36		1.124	
39	1	36"	CMP	342	1095.7	1092.58		0.912	
40	1	36"	CMP	72	1097.88	1097.33		0.764	
	1	36"	CMP	208			1091.55 @ WB CL	0.961	
	1	36"	CMP	146	1092.98	1091.56		0.973	
1	1	36"	CMP?	226	1098.33	1096.2		0.942	Where there is a ? in the material, the callout only says "pipe culvert"
	1	36"	CMP?	200			1092.43 @ WB CL	0.810	
	1	36"	CMP?	235	1092.51	1089.67		1.209	
2	1	36"	CMP?	152	1098.56	1095.8		1.816	
	1	36"	CMP?	210			1092.38 @ WB CL	1.200	
	1	36"	CMP?	182	1091.26	1089.05		1.214	
3	1	36"	CMP?	486	1093.39	1087.52		1.208	
4	1	36"	CMP?	314	1092.36	1086.91		1.736	
5	1	36"	CMP?	284	1090.22	1089.53		0.243	
6	1	36"	CMP?	280	1087.13	1085.86		0.454	
7	4	10'x8'	Concrete Box Culvert	227			1077.44 @ EB CL	1.11	
8	1	12'x12'	Concrete Box Culvert	193.5			1081.7 EB CL	1.9	**DISREGARD- THIS IS FOR EQUIPMENT TO PASS UNDER HIGHWAY**
9	2	42"	CMP	260			1083.64 EB CL	0.885	
10	2	36"	CMP	253			1082.89 EB CL	0.315	
11	1	36"	CMP	253			1083.8 EB CL	0.827	
12	2	36"	CMP	259			1082.7 EB CL	1.038	
13	1	36"	CMP	255			1082.63 EB CL	1.117	
14	2	36"	CMP	260			1081.02 EB CL	0.675	
15	2	36"	CMP	239			1080.74 EB CL	0.708	
16	2	36"	CMP	224			1081.49 EB CL	0.893	
17	2	36"	CMP	225			1079.16 EB CL	0.885	
18	3	36"	CMP	216			1077.94 EB CL	0.833	
19	5	10'x4'	Concrete Box Culvert	52			1065.28 @ RD CL	0.55	
	5	10'x4'	Concrete Box Culvert	51			1062.7 @ RD CL	0.55	
20	1	30"	CMP	544			**NA**	**NA**	**DISREGARD- THIS IS FOR STREET DRAINAGE**
21	5	10'x3'	Concrete Box Culvert	223			1052.7 @ HWY CL	0.8	
22	4	36"	RCP or CMP (smooth bore)	256			1036.77 @ HWY CL	0.675	
23	3	36"	RCP or CMP (smooth bore)	205			1032.45 @ HWY CL	0.49	
24	4	36"	RCP or CMP (smooth bore)	246			1019.75 @ HWY CL	0.195	
25	5	29"x45"	HERCP	269			1014.39 @ HWY CL	0.4032	
26	5	29"x45"	HERCP	228			1006.28 @ HWY CL	0.5405	Locations for 26 and 27 were taken from base files from I-10 Plans from Sarival to Dysart
27	1	30"	RGRCP						**DISREGARD- This was for irrigation purposes and has been abandoned**

INVERT AND SLOPES TAKEN FROM ADOT ASBUILT PLANS-- (I-10-2 [31])

INVERT AND SLOPES TAKEN FROM ADOT ASBUILT PLANS FOR VERRADO WAY TI

INVERT AND SLOPES TAKEN FROM ADOT ASBUILT PLANS-- (I-10-2 [34])

This Section Intentionally Left Blank

For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

CIP models

L67

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1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN  1998                 *
*           VERSION 4.1                 *
*                                       *
*     DATE   14JUL08  TIME  17:23:04    *
*                                       *
*****************************************
```

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

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
    1         ID      ASPEN CONSULTING ENGINEERS, JCS, 06-20-08, FILE: REC-EWP.DAT, 100-YR 24-HR
    2         ID      THIS IS THE EXISTING WITH RECOMMENDED PLAN MODEL.
    3         ID      NOTES:
    4         ID      THE PURPOSE OF THIS PROJECT IS TO UPDATE FOR LAND USE CHANGES FOR THE ENTIRE
    5         ID      MODEL AND TO REEVALUATE THE BASINS AT LOOP 303 AND CAMELBACK ROAD.
    6         ID
    7         ID      UPDATE LG CARD AND DEVELOPMENT RETENTION DIVERSIONS FOR EACH SUBBASIN.
    8         ID      CHANGE MODEL TO REFLECT THE NEW SUNCOR CHANNEL SOUTH OF CAMELBACK RD.
    9         ID      BETWEEN STATE ROUTE 303 AND BULLARD WASH.
   10         ID
   11         ID      THE RECOMMENDED PLAN IS A CHANNEL BEGINNING AT THE OUTLET FROM THE NORTHERN
   12         ID      AVENUE BASIN AT THE SW CORNER OF NORTHERN AND THE LOOP 303.  THE CHANNEL
   13         ID      GOES SOUTH ALONG THE WEST SIDE OF THE LOOP 303 TO CAMELBACK ROAD.  BEFORE
   14         ID      CAMELBACK ROAD THE CHANNEL TRANSITIONS INTO A LONG BOX CULVERT THAT
   15         ID      CROSSES DIAGONALLY UNDER THE LOOP 303 AND CAMELBACK ROAD WEHERE IT
   16         ID      DAYLIGHTS ON THE SOUTH SIDE OF CAMELBACK ROAD AT THE EXISTING SUNCOR
   17         ID      CHANNEL.  THE FLOW THEN CONTINUES ALONG THE SUNCOR CHANNEL ALIGNMENT TO A
   18         ID      BASIN NEAR REEMS ROAD WHICH THEN OUTLETS TO THE SUNCOR CHANNEL ALIGNMENT
   19         ID      AGAIN AND CONTINUES TO BULLARD WASH.  SEPARATELY, THERE IS A BASIN AT COTTON
   20         ID      LANE AND CAMELBACK ROAD.  A SHORT CHANNEL CONVEYS WATER COLLECTED AT THE
   21         ID      BASIN TO THE LOOP 303 AND THEN TRANSITIONS SOUTH IN A CULVERT UNDER
   22         ID      CAMELBACK ROAD.  THIS CHANNEL CONTINUES ALONG LOOP 303 TO A SMALL BASIN
   23         ID      SOUTH AT INDIAN SCHOOL ROAD AND THEN TO THE BASIN AT I-10 NEAR PERRYVILLE
   24         ID      PRISON.  THE I-10 AND PERRYVILLE PRISON BASIN IS AS PROPOSED IN THE ADMPU.
   25         ID
              * ************************************************************************
              * *  THE FOLLOWING IS THE MODEL RECIEVED BY ASPEN FROM FCDMC ON 06/08/07
              * ************************************************************************
   26         ID          DRAFT PREFERRED ALTERNATIVE LEVEL III
   27         ID
   28         ID          INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
   29         ID          SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
   30         ID          BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
   31         ID          LUKE AIR FORCE BASE CRASH ZONE AREA
   32         ID
   33         ID          **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
   34         ID          WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
   35         ID          Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
   36         ID          TANKS/AGUA FRIA ADMS, Date: October 1991
   37         ID
   38         ID          REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
   39         ID          100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
   40         ID
   41         ID                                        REVISED BY URS     DATE: 01-14-04
   42         ID                                                           FILE: L33PE4H.DAT
   43         ID
   44         ID        NOTES:
   45         ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
   46         ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
   47         ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
   48         ID        3. AVERAGE XKSAT VALUES FOR EACH SUBBASIN WAS RECEIVED FROM FCDMC
   49         ID           GIS DATA AND THEN ADJUSTED FOR VEGETATION, OR LEFT AS ORIGINALLY IN
   50         ID           THE WLB MODEL.
   51         ID        4. FOR NEW DEVELOPMENTS ONLY 80% OF REPORTED PROVIDED RETENTION
   52         ID           WAS INCLUDED IN THIS MODEL (AS A CONSERVATIVE ESTIMATE). RETENTION
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HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
   53         ID           CAPACITIES WERE ESTIMATED BY EEC FOR DEVELOPMENTS WITH NO
   54         ID           DRAINAGE REPORTS.
   55         ID        5. REVISED DRAINAGE BOUNDARIES BASED UPON FIELD INSPECTION OF SUN CITY.
   56         ID           GRAND.  COMBINED SEVERAL BASINS TOGETHER TO MAKE NEW BASINS 114 &115.
   57         ID           ALSO REROUTED SUBBASINS 100A, 101, 102A AND 106 TO THE SOUTH TO 113A.
```

```
7227          LG     .50     .00    4.58    0.55     .00
7228          UI     23.     23.     23.     58.     84.    103.    117.    130.    141.    158.
7229          UI    177.    200.    254.    296.    275.    235.    209.    190.    172.    152.
7230          UI    137.    121.    110.     92.     67.     46.     41.     38.     38.     25.
7231          UI     23.     23.     14.      7.      7.      7.      7.      7.      7.      7.
7232          UI      7.      7.      7.      0.      0.      0.      0.      0.      0.      0.
7233          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

7234          KK   1I264
7235          KM        ADD HYDROGRAPHS AT CP264
7236          HC      2   29.34

7237          KK   CP264
7238          KM        ADD HYDROGRAPHS AT CP264
7239          HC      2   30.87

7240          KK    R264
7241          KM        ROUTE REMAINDER FROM CP264 TO CP278
7242          RS      18              -1
7243          RC     .05    .075    .075    5280   .0047
7244          RX    1000    1045    1120    1200    1580    1630    1649    1650
7245          RY    1027    1026    1027    1026    1026    1028    1029    1029
```

1 HEC-1 INPUT PAGE190

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7246          KK   1D262
7247          KM        RETURN DIVERT AT CP262
7248          DR   1D278

7249          KK    R262
7250          KM        ROUTE FLOW FROM CP262 TO CP278
7251          RS      28              -1
7252          RC    .075    .075    .075   10140   .0038
7253          RX    1000    1001    1002    1030    1500    1528    1529    1530
7254          RY    1050    1039    1039    1038    1038    1039    1039    1050

7255          KK    D263
7256          KM        RETURN DIVERT AT CP263
7257          DR   2D278

7258          KK    R263
7259          KM        ROUTE FLOW FROM CP263 TO CP278
7260          RS      19              -1
7261          RC     .05    .075    .075    7300   .0044
7262          RX    1000    1045    1120    1200    1580    1630    1649    1650
7263          RY    1027    1026    1027    1026    1026    1028    1029    1029

7264          KK   1I278
7265          KM        ADD HYDROGRAPHS AT CP278
7266          HC      2   19.07

7267          KK   2I278
7268          KM        ADD HYDROGRAPHS AT CP278
7269          HC      2   30.87
              *

7270          KK     278
7271          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 278
7272          BA    1.00
7273          LG     .42     .13    4.38    0.52    2.00
7274          UI     36.     36.     36.     36.    100.    129.    150.    173.    188.    203.
7275          UI    219.    235.    260.    280.    309.    362.    433.    483.    429.    379.
7276          UI    342.    315.    294.    272.    245.    226.    208.    187.    174.    153.
7277          UI    124.    105.     66.     65.     62.     60.     60.     37.     36.     36.
7278          UI     36.     18.     11.     11.     11.     11.     11.     11.     11.     11.
7279          UI     11.     11.     11.     11.     11.      0.      0.      0.      0.      0.
7280          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

7281          KK  DCP265
7282          KM   RETURN DIVERT AT LP11
7283          DR   3D278
              * PER LEVEL III PRELIMINARY-DRAFT PREFERRED ALTERNATIVE
              *
```

1 HEC-1 INPUT PAGE191

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7284          KK   RLP10
7285          KM      ROUTE LP10 TO LP11 (THOMAS TO TO MCDOWELL)
7286          KM      RECOMMENDED PLAN CHANNEL WEST OF LOOP 303
7287          RS      18              -1.0     0.0
7288          RC   0.020   0.020   0.020    5207  0.0032
7289          RX   100.0   108.0   109.0   110.0   118.0   119.0   120.0   128.0
7290          RY   18.00   10.00   10.00   10.00   10.00   10.00   10.00   18.00
              *

7291          KK   !LP11
7292          KM        ADD HYDROGRAPHS AT CP278
7293          HC      2   35.83

7294          KK   RLP11
              * PER LEVEL III PRELIMINARY-DRAFT PREFERRED ALTERNATIVE
7295          KM        ROUTE REMAINDER FROM CP278 TO CP279
7296          RS     1.0              -1.0     0.0
7297          RC   0.013   0.013   0.013     129  0.1049
7298          RX       0    10.6    10.6    10.6    10.6    10.6    10.6    21.2
7299          RY  1019.8  1014.5  1014.5  1014.5  1014.5  1014.5  1014.5  1019.8

7300          KK   !LP12
```

L64L67

L67 bleed o-
to east

CIP models

L68

```
1*****************************************
*                                       *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *
*            JUN  1998                  *
*          VERSION 4.1                  *
*                                       *
*  DATE   14JUL08  TIME  17:23:04       *
*                                       *
*****************************************
```

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

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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

    1         ID      ASPEN CONSULTING ENGINEERS, JCS, 06-20-08, FILE: REC-EWP.DAT, 100-YR 24-HR
    2         ID      THIS IS THE EXISTING WITH RECOMMENDED PLAN MODEL.
    3         ID      NOTES:
    4         ID      THE PURPOSE OF THIS PROJECT IS TO UPDATE FOR LAND USE CHANGES FOR THE ENTIRE
    5         ID      MODEL AND TO REEVALUATE THE BASINS AT LOOP 303 AND CAMELBACK ROAD.
    6         ID
    7         ID      UPDATE LG CARD AND DEVELOPMENT RETENTION DIVERSIONS FOR EACH SUBBASIN.
    8         ID      CHANGE MODEL TO REFLECT THE NEW SUNCOR CHANNEL SOUTH OF CAMELBACK RD.
    9         ID      BETWEEN STATE ROUTE 303 AND BULLARD WASH.
   10         ID
   11         ID      THE RECOMMENDED PLAN IS A CHANNEL BEGINNING AT THE OUTLET FROM THE NORTHERN
   12         ID      AVENUE BASIN AT THE SW CORNER OF NORTHERN AND THE LOOP 303.  THE CHANNEL
   13         ID      GOES SOUTH ALONG THE WEST SIDE OF THE LOOP 303 TO CAMELBACK ROAD.  BEFORE
   14         ID      CAMELBACK ROAD THE CHANNEL TRANSITIONS INTO A LONG BOX CULVERT THAT
   15         ID      CROSSES DIAGONALLY UNDER THE LOOP 303 AND CAMELBACK ROAD WEHERE IT
   16         ID      DAYLIGHTS ON THE SOUTH SIDE OF CAMELBACK ROAD AT THE EXISTING SUNCOR
   17         ID      CHANNEL.  THE FLOW THEN CONTINUES ALONG THE SUNCOR CHANNEL ALIGNMENT TO A
   18         ID      BASIN NEAR REEMS ROAD WHICH THEN OUTLETS TO THE SUNCOR CHANNEL ALIGNMENT
   19         ID      AGAIN AND CONTINUES TO BULLARD WASH.  SEPARATELY, THERE IS A BASIN AT COTTON
   20         ID      LANE AND CAMELBACK ROAD.  A SHORT CHANNEL CONVEYS WATER COLLECTED AT THE
   21         ID      BASIN TO THE LOOP 303 AND THEN TRANSITIONS SOUTH IN A CULVERT UNDER
   22         ID      CAMELBACK ROAD.  THIS CHANNEL CONTINUES ALONG LOOP 303 TO A SMALL BASIN
   23         ID      SOUTH AT INDIAN SCHOOL ROAD AND THEN TO THE BASIN AT I-10 NEAR PERRYVILLE
   24         ID      PRISON.  THE I-10 AND PERRYVILLE PRISON BASIN IS AS PROPOSED IN THE ADMPU.
   25         ID
              * ************************************************************************
              * *  THE FOLLOWING IS THE MODEL RECIEVED BY ASPEN FROM FCDMC ON 06/08/07
              * ************************************************************************
   26         ID          DRAFT PREFERRED ALTERNATIVE LEVEL III
   27         ID
   28         ID          INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
   29         ID          SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
   30         ID          BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
   31         ID          LUKE AIR FORCE BASE CRASH ZONE AREA
   32         ID
   33         ID          **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
   34         ID          WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
   35         ID          Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
   36         ID          TANKS/AGUA FRIA ADMS, Date: October 1991
   37         ID
   38         ID          REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
   39         ID          100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
   40         ID
   41         ID                                        REVISED BY URS     DATE: 01-14-04
   42         ID                                                           FILE: L33PE4H.DAT
   43         ID
   44         ID        NOTES:
   45         ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
   46         ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
   47         ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
   48         ID        3. AVERAGE XKSAT VALUES FOR EACH SUBBASIN WAS RECEIVED FROM FCDMC
   49         ID           GIS DATA AND THEN ADJUSTED FOR VEGETATION, OR LEFT AS ORIGINALLY IN
   50         ID           THE WLB MODEL.
   51         ID        4. FOR NEW DEVELOPMENTS ONLY 80% OF REPORTED PROVIDED RETENTION
   52         ID           WAS INCLUDED IN THIS MODEL (AS A CONSERVATIVE ESTIMATE). RETENTION
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HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   53         ID           CAPACITIES WERE ESTIMATED BY EEC FOR DEVELOPMENTS WITH NO
   54         ID           DRAINAGE REPORTS.
   55         ID        5. REVISED DRAINAGE BOUNDARIES BASED UPON FIELD INSPECTION OF SUN CITY.
   56         ID           GRAND.  COMBINED SEVERAL BASINS TOGETHER TO MAKE NEW BASINS 114 &115.
   57         ID           ALSO REROUTED SUBBASINS 100A, 101, 102A AND 106 TO THE SOUTH TO 113A.
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7227          LG     .50     .00    4.58    0.55     .00
7228          UI     23.     23.     23.     58.     84.    103.    117.    130.    141.    158.
7229          UI    177.    200.    254.    296.    275.    235.    209.    190.    172.    152.
7230          UI    137.    121.    110.     92.     67.     46.     41.     38.     38.     25.
7231          UI     23.     23.     14.      7.      7.      7.      7.      7.      7.      7.
7232          UI      7.      7.      7.      0.      0.      0.      0.      0.      0.      0.
7233          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

7234          KK   1I264
7235          KM        ADD HYDROGRAPHS AT CP264
7236          HC       2   29.34

7237          KK   CP264
7238          KM        ADD HYDROGRAPHS AT CP264
7239          HC       2   30.87

7240          KK    R264
7241          KM        ROUTE REMAINDER FROM CP264 TO CP278
7242          RS      18              -1
7243          RC     .05     .075    .075    5280   .0047
7244          RX    1000    1045    1120    1200    1580    1630    1649    1650
7245          RY    1027    1026    1027    1026    1026    1028    1029    1029
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7246          KK   1D262
7247          KM        RETURN DIVERT AT CP262
7248          DR   1D278

7249          KK    R262
7250          KM        ROUTE FLOW FROM CP262 TO CP278
7251          RS      28              -1
7252          RC    .075    .075    .075   10140   .0038
7253          RX    1000    1001    1002    1030    1500    1528    1529    1530
7254          RY    1050    1039    1039    1038    1038    1039    1039    1050

7255          KK    D263
7256          KM        RETURN DIVERT AT CP263
7257          DR   2D278

7258          KK    R263
7259          KM        ROUTE FLOW FROM CP263 TO CP278
7260          RS      19              -1
7261          RC     .05    .075    .075    7300   .0044
7262          RX    1000    1045    1120    1200    1580    1630    1649    1650
7263          RY    1027    1026    1027    1026    1026    1028    1029    1029

7264          KK   1I278
7265          KM        ADD HYDROGRAPHS AT CP278
7266          HC       2   19.07

7267          KK   2I278
7268          KM        ADD HYDROGRAPHS AT CP278
7269          HC       2   30.87
              *

7270          KK     278
7271          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 278
7272          BA    1.00
7273          LG     .42     .13    4.38    0.52    2.00
7274          UI     36.     36.     36.     36.    100.    129.    150.    173.    188.    203.
7275          UI    219.    235.    260.    280.    309.    362.    433.    483.    429.    379.
7276          UI    342.    315.    294.    272.    245.    226.    208.    187.    174.    153.
7277          UI    124.    105.     66.     65.     62.     60.     60.     37.     36.     36.
7278          UI     36.     18.     11.     11.     11.     11.     11.     11.     11.     11.
7279          UI     11.     11.     11.     11.     11.      0.      0.      0.      0.      0.
7280          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

7281          KK  DCP265
7282          KM   RETURN DIVERT AT LP11
7283          DR   3D278
              * PER LEVEL III PRELIMINARY-DRAFT PREFERRED ALTERNATIVE
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7284          KK   RLP10
7285          KM       ROUTE LP10 TO LP11 (THOMAS TO TO MCDOWELL)
7286          KM       RECOMMENDED PLAN CHANNEL WEST OF LOOP 303
7287          RS      18              -1.0     0.0
7288          RC   0.020   0.020   0.020    5207  0.0032
7289          RX   100.0   108.0   109.0   110.0   118.0   119.0   120.0   128.0
7290          RY   18.00   10.00   10.00   10.00   10.00   10.00   10.00   18.00
              *

7291          KK   !LP11
7292          KM        ADD HYDROGRAPHS AT CP278
7293          HC       2   35.83

7294          KK   RLP11
              * PER LEVEL III PRELIMINARY-DRAFT PREFERRED ALTERNATIVE
7295          KM        ROUTE REMAINDER FROM CP278 TO CP279
7296          RS     1.0              -1.0     0.0
7297          RC   0.013   0.013   0.013     129  0.1049
7298          RX       0    10.6    10.6    10.6    10.6    10.6    10.6    21.2
7299          RY  1019.8  1014.5  1014.5  1014.5  1014.5  1014.5  1014.5  1019.8

7300          KK   !LP12
```

LC7L68

SRL68
(From URS Model)

```
7840        KK  SRLP12
          * KO   1                    21
7841        KM  PROPOSED BASIN AT I-10
7842        RS    1   STOR     0      0
7843        SV    0    160    320    480    520    600
7844        SQ    0      0      0    147    371    742
7845        SE  1001   1005   1009   1013   1014   1016
```

CIP models

L69

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*         JUN  1998                     *
*        VERSION 4.1                    *
*                                       *
*  DATE   07MAY09  TIME  08:05:50       *
*                                       *
*****************************************
```

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

```
X    X  XXXXXXX   XXXXX          X
X    X  X        X     X        XX
X    X  X        X              X
XXXXXX  XXXX     X        XXXXX  X
X    X  X        X              X
X    X  X        X     X        X
X    X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
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NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
   1          ID        LOOP 303 OFF-SITE HYDROLOGY
   2          ID        MODIFIED BASED ON FCDMC'S WHITE TANKS/LOOP 303 CORRIDOR ADMP
   3          ID        THE MODIFICATIONS ARE DESCRIBED AS FOLLOWS:
   4          ID        1. THE CACTUS RD BASIN WAS REMOVED AND TWO RELATIVELY SMALL BASINS
   5          ID           LOCATED AT NORTH OF WADDELL ROAD AND NORTH OF OLIVE AVENUE WERE
   6          ID           ADDED TO THE MODEL BASED ON CMX'S HEC-1 MODEL PROVIDED IN DEC,2006.
   7          ID        2. FLOW DIVERSION TO THE OFF-LINE BASINS, SUCH AS WADDELL ROAD
   8          ID           BASIN, OLIVE AVENUE BASIN, NORTHERN AVENUE BASIN WERE ESTIMATED
   9          ID           USING HEC-RAS LATERAL WEIR ROUTINE.
  10          ID        3. DETENTION BASIN ELEVATION AND VOLUME RELATIONSHIPS WERE ESTIMATED
  11          ID           BASED ON 30% DESIGN OF THE BASIN.
  12          ID        4. ELEVATION AND OUTFLOW RELATIONSHIP WERE ESTIMATED BASED ON 30% DESIG
  13          ID           USING CULVERTMASTER. THE OUTFLOW INCLUDES FLOW FROM BLEED-OFF PIPE
  14          ID           AND FLOW FROM OUTFLOW PIPE.
  15          ID        5. CHANNEL ROUTING WERE MODIFIED BASED ON 30% DESIGN.
  16          ID        6. FLOW FROM THE PROPOSED FCDMC CHANNEL ALONG NORTHEN AVENUE  WILL
  17          ID           NOT BE COMBINED WITH FLOW FROM LOOP 303 OFF-SITE CHANNEL.
  18          ID           INSTEAD THE FLOW FROM THE CHANNEL ALONG NORTHERN AVENUE WILL GO
  19          ID           TO THE NORTHERN AVENUE BASIN DIRECTLY.  SO THE FLOW FROM THE
  20          ID           NORTHERN AVENUE CHANNEL WILL BE COMBINED WITH THE DIVERTED FLOW
  21          ID           FROM LOOP 303 CHANNEL AT NORTHERN AVENUE BASIN.
  22          ID        7. IN THE ADMP MODEL, SOME OF THE OUTFLOW FROM CAMELBACK ROAD BASINS
  23          ID           WERE DIVERTED TO EAST ALONG CAMELBACK ROAD (THE PEAK FLOW IS
  24          ID           180 CFS).  NO STRUCTURE WAS RECOMMENDED IN THE ADMP UPDATE. PB
  25          ID           DESIGNED 3-30" PIPES TO DIVERT SOME FLOW TO THE EXISTING CAMELBACK
  26          ID           ROAD CHANNEL LOCATED AT SOUTH SIDE OF CAMELBACK ROAD.
  27          ID        9. PEBBLE CREEK AND PALM VALLEY 8 DEVELOPMENTS WERE INCLUDED IN THE
  28          ID           MODEL BASED ON HEC-1 MODEL PROVIDED BY DEL RIO ENGINEERING.
  29          ID       10. MCDOWELL ROAD DETENTION BASIN WERE DIVIDED INTO TWO DETENTION BASINS
  30          ID           ONE IS CALLED MCDOWELL ROAD UPPER BASIN AND THE OTHER ONE IS CALLED
  31          ID           MCDOWELL ROAD LOWER BASIN
  32          ID       11  PROPOSED I-10/303L TI (ULTIMATED CONDITION) ON-SITE DRAINAGE SYSTEM
  33          ID           WAS REFLECTED IN THE MODEL.  THERE ARE TOTAL 11 ON-SITE BASINS.
  34          ID
  35          ID        EXISTING CONDITION WITH PROJECTS IN PLACE SCENARIO
  36          ID        REVISED BY PARSONS BRINCKERHOFF     DATE: Aug 2008
  37          ID                                            FILE NAME: EX_SPLT.DAT
  38          ID        ************************************************************************
  39          ID        DRAFT PREFERRED ALTERNATIVE LEVEL III
  40          ID
  41          ID        INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
  42          ID        SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
  43          ID        BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
  44          ID        LUKE AIR FORCE BASE CRASH ZONE AREA
  45          ID
  46          ID        **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
  47          ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
  48          ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
  49          ID        TANKS/AGUA FRIA ADMS, Date: October 1991
  50          ID
  51          ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
  52          ID        100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
  53          ID
  54          ID                                        REVISED BY URS     DATE: 01-14-04
  55          ID                                                           FILE: L33PE4H.DAT
```

HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
  56          ID
  57          ID        NOTES:
  58          ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
  59          ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
  60          ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
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```
6767          KK    R261
6768          KM        ROUTE REMAINDER FROM CP261 TO CP274
6769          RS       9          -1
6770          RC    .030    .030    .075    6200    .0065
6771          RX    1000    1001    1002    1015    1035    1370    1650    1970
6772          RY    1071    1071    1071    1070    1070    1072    1074    1076
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6773          KK     274
6774          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 274
6775          BA     .66
6776          LG     .50     .00    4.10    0.70     .00
6777          UI     21.     21.     21.     21.     30.     70.     78.     89.    100.    108.
6778          UI    116.    123.    131.    142.    154.    164.    180.    208.    244.    275.
6779          UI    268.    235.    213.    196.    182.    171.    160.    147.    136.    126.
6780          UI    117.    107.    100.     89.     76.     61.     47.     37.     37.     35.
6781          UI     35.     35.     22.     21.     21.     21.     20.      6.      6.      6.
6782          UI      6.      6.      6.      6.      6.      6.      6.      6.      6.      6.
6783          UI      6.      6.      0.      0.      0.      0.      0.      0.      0.      0.
6784          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

6785          KK   1I274
6786          KM       ADD HYDROGRAPHS AT CP274
6787          HC       2    1.57
              * KK CP274

6788          KK   !10W2
6789          KM       ADD HYDROGRAPHS AT CP274
6790          HC       2   18.76
              * KK SR274
              * KM       STORAGE ROUTE THROUGH CP274
              * RS      1    STOR       0       0
              * SV      0     .08    1.55    3.21    5.54
              * SQ      0      40     665    1100    1490
              * SE1043.5    1044    1046    1047    1048

6791          KK    D274
6792          KM       DIVERT FROM CP274 TO CP292
6793          DT   2D292
6794          DI       0      40     665    1100    1490
6795          DQ       0       0       0       0       0

6796          KK   R10W2
6797          KM   ROUTE REMAINDER FROM 10W2 TO 10W3 (CP274 TO CP275)
6798          RS     1.0          -1.0     0.0
6799          RC   0.030   0.030   0.030    1658  0.0042
6800          RX       0    34.8    39.8    44.8    49.8    54.8    59.8    94.6
6801          RY  1045.5  1039.7  1039.7  1039.7  1039.7  1039.7  1039.7  1045.5
              *
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L65L69

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6802          KK     275
6803          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 275
6804          BA     .11
6805          LG     .50     .00    4.20    0.66     .00
6806          UI     10.     19.     43.     57.     69.     89.    128.    109.     86.     69.
6807          UI     55.     40.     22.     17.     12.      9.      3.      3.      3.      3.
6808          UI      3.      0.      0.      0.      0.      0.      0.      0.      0.      0.
6809          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * KK CP275
```

1


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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6810          KK   !10W3
6811          KM       ADD HYDROGRAPHS AT CP275
6812          HC       2   19.01
              * KK SR275
              * KM       STORAGE ROUTE THROUGH CP275
              * RS      1    STOR       0       0
              * SV      0    3.47   10.56   14.12   23.26
              * SQ      0     100     188     244    1303
              * SE1037.6    1040  1041.5    1042    1043

6813          KK    D275
6814          KM       DIVERT FROM CP275 TO CP293
6815          DT   1D293
6816          DI       0     100     188     244    1303
6817          DQ       0       0       0       0       0

6818          KK   R10W3
6819          KM   ROUTE REMAINDER FROM 10W3 TO 10W4 (CP275 TO CP276)
6820          RS     1.4          -1.0     0.0
6821          RC   0.030   0.030   0.030    2568  0.0036
6822          RX       0    37.8    44.8    51.8    58.8    65.8    72.8   110.6
6823          RY  1021.2  1014.9  1014.9  1014.9  1014.9  1014.9  1014.9  1021.2
              *

6824          KK     276
6825          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 276
6826          BA     .26
6827          LG     .50     .00    4.38    0.60     .00
6828          UI     13.     13.     13.     36.     47.     59.     66.     73.     80.     91.
6829          UI    101.    122.    153.    160.    134.    117.    105.     96.     84.     75.
6830          UI     66.     60.     49.     36.     23.     22.     21.     19.     13.     13.
6831          UI     13.      4.      4.      4.      4.      4.      4.      4.      4.      4.
6832          UI      4.      0.      0.      0.      0.      0.      0.      0.      0.      0.
6833          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
```

Culvert Information from I-10 Plans

ID	# of Culverts	Size	Material/Type	Length (ft)	US Inv.	DS Inv.	Inv.	Slope (%)	Notes
28	1	30"	CMP	240			1131.95 @ WB CL	1.125	
29	1	30"	CMP	260			1127.92 @ WB CL	1.154	
30	1	36"	CMP	287			1123.34 @ WB CL	1.436	
31	2	36"	CMP	216			1111.72 @ WB CL	1.62	
32	2	42"	CMP	200			1098.70 @ WB CL	0.75	
33	2	36"	CMP	234	1097.35	1095	1094.32 @ WB CL	1.004	The elevations of the old plans don't match the elevations from the new plans from Verrado
34	1	48"	CMP	234			1092.43 @ WB CL	0.978	
35	1	48"	CMP	214			1090.88 @ WB CL	1.122	
36	1	48"	CMP	218			1091.30 @WB CL	0.78	
37	2	48"	CMP	230	1093.76	1089.79		1.726	
38	1	36"	CMP	250	1095.17	1092.36		1.124	
39	1	36"	CMP	342	1095.7	1092.58		0.912	
40	1	36"	CMP	72	1097.88	1097.33		0.764	
	1	36"	CMP	208			1091.55 @ WB CL	0.961	
	1	36"	CMP	146	1092.98	1091.56		0.973	
1	1	36"	CMP?	226	1098.33	1096.2		0.942	Where there is a ? in the material, the callout only says "pipe culvert"
	1	36"	CMP?	200			1092.43 @ WB CL	0.810	
	1	36"	CMP?	235	1092.51	1089.67		1.209	
2	1	36"	CMP?	152	1098.56	1095.8		1.816	
	1	36"	CMP?	210			1092.38 @ WB CL	1.200	
	1	36"	CMP?	182	1091.26	1089.05		1.214	
3	1	36"	CMP?	486	1093.39	1087.52		1.208	
4	1	36"	CMP?	314	1092.36	1086.91		1.736	
5	1	36"	CMP?	284	1090.22	1089.53		0.243	
6	1	36"	CMP?	280	1087.13	1085.86		0.454	
7	4	10'x8'	Concrete Box Culvert	227			1077.44 @ EB CL	1.11	
8	1	12'x12'	Concrete Box Culvert	193.5			1081.7 EB CL	1.9	**DISREGARD- THIS IS FOR EQUIPMENT TO PASS UNDER HIGHWAY**
9	2	42"	CMP	260			1083.64 EB CL	0.885	
10	2	36"	CMP	253			1082.89 EB CL	0.315	
11	1	36"	CMP	253			1083.8 EB CL	0.827	
12	2	36"	CMP	259			1082.7 EB CL	1.038	
13	1	36"	CMP	255			1082.63 EB CL	1.117	
14	2	36"	CMP	260			1081.02 EB CL	0.675	
15	2	36"	CMP	239			1080.74 EB CL	0.708	
16	2	36"	CMP	224			1081.49 EB CL	0.893	
17	2	36"	CMP	225			1079.16 EB CL	0.885	
18	3	36"	CMP	216			1077.94 EB CL	0.833	
19	5	10'x4'	Concrete Box Culvert	52			1065.28 @ RD CL	0.55	
	5	10'x4'	Concrete Box Culvert	51			1062.7 @ RD CL	0.55	
20	1	30"	CMP	544			**NA**	**NA**	**DISREGARD- THIS IS FOR STREET DRAINAGE**
21	5	10'x3'	Concrete Box Culvert	223			1052.7 @ HWY CL	0.8	
22	4	36"	RCP or CMP (smooth bore)	256			1036.77 @ HWY CL	0.675	
23	3	36"	RCP or CMP (smooth bore)	205			1032.45 @ HWY CL	0.49	
24	4	36"	RCP or CMP (smooth bore)	246			1019.75 @ HWY CL	0.195	
25	5	29"x45"	HERCP	269			1014.39 @ HWY CL	0.4032	
26	5	29"x45"	HERCP	228			1006.28 @ HWY CL	0.5405	Locations for 26 and 27 were taken from base files from I-10 Plans from Sarival to Dysart
27	1	30"	RGRCP						**DISREGARD- This was for irrigation purposes and has been abandoned**

INVERT AND SLOPES TAKEN FROM ADOT ASBUILT PLANS-- (I-10-2 [31])

INVERT AND SLOPES TAKEN FROM ADOT ASBUILT PLANS FOR VERRADO WAY TI

INVERT AND SLOPES TAKEN FROM ADOT ASBUILT PLANS-- (I-10-2 [34])

CIP models

L70

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1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN  1998                 *
*           VERSION 4.1                 *
*                                       *
*  RUN DATE   07MAY09  TIME  08:05:50   *
*                                       *
*****************************************
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
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X    X  XXXXXXX   XXXXX          X
X    X  X       X     X        XX
X    X  X       X              X
XXXXXX  XXXX    X       XXXXX  X
X    X  X       X              X
X    X  X       X     X        X
X    X  XXXXXXX  XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
   1          ID        LOOP 303 OFF-SITE HYDROLOGY
   2          ID        MODIFIED BASED ON FCDMC'S WHITE TANKS/LOOP 303 CORRIDOR ADMP
   3          ID        THE MODIFICATIONS ARE DESCRIBED AS FOLLOWS:
   4          ID        1. THE CACTUS RD BASIN WAS REMOVED AND TWO RELATIVELY SMALL BASINS
   5          ID           LOCATED AT NORTH OF WADDELL ROAD AND NORTH OF OLIVE AVENUE WERE
   6          ID           ADDED TO THE MODEL BASED ON CMX'S HEC-1 MODEL PROVIDED IN DEC,2006.
   7          ID        2. FLOW DIVERSION TO THE OFF-LINE BASINS, SUCH AS WADDELL ROAD
   8          ID           BASIN, OLIVE AVENUE BASIN, NORTHERN AVENUE BASIN WERE ESTIMATED
   9          ID           USING HEC-RAS LATERAL WEIR ROUTINE.
  10          ID        3. DETENTION BASIN ELEVATION AND VOLUME RELATIONSHIPS WERE ESTIMATED
  11          ID           BASED ON 30% DESIGN OF THE BASIN.
  12          ID        4. ELEVATION AND OUTFLOW RELATIONSHIP WERE ESTIMATED BASED ON 30% DESIG
  13          ID           USING CULVERTMASTER. THE OUTFLOW INCLUDES FLOW FROM BLEED-OFF PIPE
  14          ID           AND FLOW FROM OUTFLOW PIPE.
  15          ID        5. CHANNEL ROUTING WERE MODIFIED BASED ON 30% DESIGN.
  16          ID        6. FLOW FROM THE PROPOSED FCDMC CHANNEL ALONG NORTHEN AVENUE  WILL
  17          ID           NOT BE COMBINED WITH FLOW FROM LOOP 303 OFF-SITE CHANNEL.
  18          ID           INSTEAD THE FLOW FROM THE CHANNEL ALONG NORTHERN AVENUE WILL GO
  19          ID           TO THE NORTHERN AVENUE BASIN DIRECTLY.  SO THE FLOW FROM THE
  20          ID           NORTHERN AVENUE CHANNEL WILL BE COMBINED WITH THE DIVERTED FLOW
  21          ID           FROM LOOP 303 CHANNEL AT NORTHERN AVENUE BASIN.
  22          ID        7. IN THE ADMP MODEL, SOME OF THE OUTFLOW FROM CAMELBACK ROAD BASINS
  23          ID           WERE DIVERTED TO EAST ALONG CAMELBACK ROAD (THE PEAK FLOW IS
  24          ID           180 CFS).  NO STRUCTURE WAS RECOMMENDED IN THE ADMP UPDATE. PB
  25          ID           DESIGNED 3-30" PIPES TO DIVERT SOME FLOW TO THE EXISTING CAMELBACK
  26          ID           ROAD CHANNEL LOCATED AT SOUTH SIDE OF CAMELBACK ROAD.
  27          ID        9. PEBBLE CREEK AND PALM VALLEY 8 DEVELOPMENTS WERE INCLUDED IN THE
  28          ID           MODEL BASED ON HEC-1 MODEL PROVIDED BY DEL RIO ENGINEERING.
  29          ID       10. MCDOWELL ROAD DETENTION BASIN WERE DIVIDED INTO TWO DETENTION BASINS
  30          ID           ONE IS CALLED MCDOWELL ROAD UPPER BASIN AND THE OTHER ONE IS CALLED
  31          ID           MCDOWELL ROAD LOWER BASIN
  32          ID       11  PROPOSED I-10/303L TI (ULTIMATED CONDITION) ON-SITE DRAINAGE SYSTEM
  33          ID           WAS REFLECTED IN THE MODEL.  THERE ARE TOTAL 11 ON-SITE BASINS.
  34          ID
  35          ID        EXISTING CONDITION WITH PROJECTS IN PLACE SCENARIO
  36          ID        REVISED BY PARSONS BRINCKERHOFF    DATE: Aug 2008
  37          ID                                           FILE NAME: EX_SPLT.DAT
  38          ID        ************************************************************************
  39          ID        DRAFT PREFERRED ALTERNATIVE LEVEL III
  40          ID
  41          ID        INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
  42          ID        SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
  43          ID        BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
  44          ID        LUKE AIR FORCE BASE CRASH ZONE AREA
  45          ID
  46          ID        **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
  47          ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
  48          ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
  49          ID        TANKS/AGUA FRIA ADMS, Date: October 1991
  50          ID
  51          ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
  52          ID        100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
  53          ID
  54          ID                                  REVISED BY URS     DATE: 01-14-04
  55          ID                                                     FILE: L33PE4H.DAT
```

HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
  56          ID
  57          ID        NOTES:
  58          ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
  59          ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
  60          ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
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6767          KK    R261
6768          KM        ROUTE REMAINDER FROM CP261 TO CP274
6769          RS       9                -1
6770          RC    .030    .030    .075    6200    .0065
6771          RX    1000    1001    1002    1015    1035    1370    1650    1970
6772          RY    1071    1071    1071    1070    1070    1072    1074    1076
              *
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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

6773          KK     274
6774          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 274
6775          BA     .66
6776          LG     .50     .00    4.10    0.70     .00
6777          UI     21.     21.     21.     21.     30.     70.     78.     89.    100.    108.
6778          UI    116.    123.    131.    142.    154.    164.    180.    208.    244.    275.
6779          UI    268.    235.    213.    196.    182.    171.    160.    147.    136.    126.
6780          UI    117.    107.    100.     89.     76.     61.     47.     37.     37.     35.
6781          UI     35.     35.     22.     21.     21.     21.     20.      6.      6.      6.
6782          UI      6.      6.      6.      6.      6.      6.      6.      6.      6.      6.
6783          UI      6.      6.      0.      0.      0.      0.      0.      0.      0.      0.
6784          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

6785          KK   1I274
6786          KM        ADD HYDROGRAPHS AT CP274
6787          HC       2    1.57
              * KK CP274

6788          KK   !10W2
6789          KM        ADD HYDROGRAPHS AT CP274
6790          HC       2   18.76
              * KK SR274
              * KM       STORAGE ROUTE THROUGH CP274
              * RS      1     STOR       0       0
              * SV      0      .08    1.55    3.21    5.54
              * SQ      0       40     665    1100    1490
              * SE1043.5    1044    1046    1047    1048

6791          KK    D274
6792          KM        DIVERT FROM CP274 TO CP292
6793          DT   2D292
6794          DI       0      40     665    1100    1490
6795          DQ       0       0       0       0       0

6796          KK   R10W2
6797          KM   ROUTE REMAINDER FROM 10W2 TO 10W3 (CP274 TO CP275)
6798          RS     1.0            -1.0     0.0
6799          RC   0.030   0.030   0.030    1658  0.0042
6800          RX       0    34.8    39.8    44.8    49.8    54.8    59.8    94.6
6801          RY  1045.5  1039.7  1039.7  1039.7  1039.7  1039.7  1039.7  1045.5
              *

6802          KK     275
6803          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 275
6804          BA     .11
6805          LG     .50     .00    4.20    0.66     .00
6806          UI     10.     19.     43.     57.     69.     89.    128.    109.     86.     69.
6807          UI     55.     40.     22.     17.     12.      9.      3.      3.      3.      3.
6808          UI      3.      0.      0.      0.      0.      0.      0.      0.      0.      0.
6809          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * KK CP275
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```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

6810          KK   !10W3
6811          KM        ADD HYDROGRAPHS AT CP275
6812          HC       2   19.01
              * KK SR275
              * KM       STORAGE ROUTE THROUGH CP275
              * RS      1     STOR       0       0
              * SV      0     3.47   10.56   14.12   23.26
              * SQ      0      100     188     244    1303
              * SE1037.6    1040  1041.5    1042    1043

6813          KK    D275
6814          KM        DIVERT FROM CP275 TO CP293
6815          DT   1D293
6816          DI       0      100     188     244    1303
6817          DQ       0       0       0       0       0

6818          KK   R10W3
6819          KM   ROUTE REMAINDER FROM 10W3 TO 10W4 (CP275 TO CP276)
6820          RS     1.4            -1.0     0.0
6821          RC   0.030   0.030   0.030    2568  0.0036
6822          RX       0    37.8    44.8    51.8    58.8    65.8    72.8   110.6
6823          RY  1021.2  1014.9  1014.9  1014.9  1014.9  1014.9  1014.9  1021.2
              *

6824          KK     276
6825          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 276
6826          BA     .26
6827          LG     .50     .00    4.38    0.60     .00
6828          UI     13.     13.     13.     36.     47.     59.     66.     73.     80.     91.
6829          UI    101.    122.    153.    160.    134.    117.    105.     96.     84.     75.
6830          UI     66.     60.     49.     36.     23.     22.     21.     19.     13.     13.
6831          UI     13.      4.      4.      4.      4.      4.      4.      4.      4.      4.
6832          UI      4.      0.      0.      0.      0.      0.      0.      0.      0.      0.
6833          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
```

L69L70

Culvert Information from I-10 Plans

ID	# of Culverts	Size	Material/Type	Length (ft)	US Inv.	DS Inv.	Inv.	Slope (%)	Notes
28	1	30"	CMP	240			1131.95 @ WB CL	1.125	
29	1	30"	CMP	260			1127.92 @ WB CL	1.154	
30	1	36"	CMP	287			1123.34 @ WB CL	1.436	
31	2	36"	CMP	216			1111.72 @ WB CL	1.62	
32	2	42"	CMP	200			1098.70 @ WB CL	0.75	
33	2	36"	CMP	234	1097.35	1095	~~1094.32 @ WB CL~~	1.004	The elevations of the old plans don't match the elevations from the new plans from Verrado
34	1	48"	CMP	234			1092.43 @ WB CL	0.978	
35	1	48"	CMP	214			1090.88 @ WB CL	1.122	
36	1	48"	CMP	218			1091.30 @WB CL	0.78	
37	2	48"	CMP	230	1093.76	1089.79		1.726	
38	1	36"	CMP	250	1095.17	1092.36		1.124	
39	1	36"	CMP	342	1095.7	1092.58		0.912	
40	1	36"	CMP	72	1097.88	1097.33		0.764	
	1	36"	CMP	208			1091.55 @ WB CL	0.961	
	1	36"	CMP	146	1092.98	1091.56		0.973	
1	1	36"	CMP?	226	1098.33	1096.2		0.942	Where there is a ? in the material, the callout only says "pipe culvert"
	1	36"	CMP?	200			1092.43 @ WB CL	0.810	
	1	36"	CMP?	235	1092.51	1089.67		1.209	
2	1	36"	CMP?	152	1098.56	1095.8		1.816	
	1	36"	CMP?	210			1092.38 @ WB CL	1.200	
	1	36"	CMP?	182	1091.26	1089.05		1.214	
3	1	36"	CMP?	486	1093.39	1087.52		1.208	
4	1	36"	CMP?	314	1092.36	1086.91		1.736	
5	1	36"	CMP?	284	1090.22	1089.53		0.243	
6	1	36"	CMP?	280	1087.13	1085.86		0.454	
7	4	10'x8'	Concrete Box Culvert	227			1077.44 @ EB CL	1.11	
8	1	12'x12'	Concrete Box Culvert	193.5			1081.7 EB CL	1.9	**DISREGARD- THIS IS FOR EQUIPMENT TO PASS UNDER HIGHWAY**
9	2	42"	CMP	260			1083.64 EB CL	0.885	
10	2	36"	CMP	253			1082.89 EB CL	0.315	
11	1	36"	CMP	253			1083.8 EB CL	0.827	
12	2	36"	CMP	259			1082.7 EB CL	1.038	
13	1	36"	CMP	255			1082.63 EB CL	1.117	
14	2	36"	CMP	260			1081.02 EB CL	0.675	
15	2	36"	CMP	239			1080.74 EB CL	0.708	
16	2	36"	CMP	224			1081.49 EB CL	0.893	
17	2	36"	CMP	225			1079.16 EB CL	0.885	
18	3	36"	CMP	216			1077.94 EB CL	0.833	
19	5	10'x4'	Concrete Box Culvert	52			1065.28 @ RD CL	0.55	
	5	10'x4'	Concrete Box Culvert	51			1062.7 @ RD CL	0.55	
20	1	30"	CMP	544			**NA**	**NA**	**DISREGARD- THIS IS FOR STREET DRAINAGE**
21	5	10'x3'	Concrete Box Culvert	223			1052.7 @ HWY CL	0.8	
22	4	36"	RCP or CMP (smooth bore)	256			1036.77 @ HWY CL	0.675	
23	3	36"	RCP or CMP (smooth bore)	205			1032.45 @ HWY CL	0.49	
24	4	36"	RCP or CMP (smooth bore)	246			1019.75 @ HWY CL	0.195	
25	5	29"x45"	HERCP	269			1014.39 @ HWY CL	0.4032	
26	5	29"x45"	HERCP	228			1006.28 @ HWY CL	0.5405	Locations for 26 and 27 were taken from base files from I-10 Plans from Sarival to Dysart
27	1	30"	RGRCP						**DISREGARD- This was for irrigation purposes and has been abandoned**

INVERT AND SLOPES TAKEN FROM ADOT ASBUILT PLANS-- (I-10-2 [31])

INVERT AND SLOPES TAKEN FROM ADOT ASBUILT PLANS FOR VERRADO WAY TI

INVERT AND SLOPES TAKEN FROM ADOT ASBUILT PLANS-- (I-10-2 [34])

CIP models

171

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**********************************************
*                                            *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)         *
*            JUN  1998                       *
*          VERSION 4.1                       *
*                                            *
*  DATE   07MAY09  TIME  08:05:50            *
*                                            *
**********************************************
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**********************************************
*                                            *
*  U.S. ARMY CORPS OF ENGINEERS              *
*  HYDROLOGIC ENGINEERING CENTER             *
*       609 SECOND STREET                    *
*     DAVIS, CALIFORNIA 95616                *
*       (916) 756-1104                       *
*                                            *
**********************************************
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1

HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
    1         ID        LOOP 303 OFF-SITE HYDROLOGY
    2         ID        MODIFIED BASED ON FCDMC'S WHITE TANKS/LOOP 303 CORRIDOR ADMP
    3         ID        THE MODIFICATIONS ARE DESCRIBED AS FOLLOWS:
    4         ID        1. THE CACTUS RD BASIN WAS REMOVED AND TWO RELATIVELY SMALL BASINS
    5         ID           LOCATED AT NORTH OF WADDELL ROAD AND NORTH OF OLIVE AVENUE WERE
    6         ID           ADDED TO THE MODEL BASED ON CMX'S HEC-1 MODEL PROVIDED IN DEC,2006.
    7         ID        2. FLOW DIVERSION TO THE OFF-LINE BASINS, SUCH AS WADDELL ROAD
    8         ID           BASIN, OLIVE AVENUE BASIN, NORTHERN AVENUE BASIN WERE ESTIMATED
    9         ID           USING HEC-RAS LATERAL WEIR ROUTINE.
   10         ID        3. DETENTION BASIN ELEVATION AND VOLUME RELATIONSHIPS WERE ESTIMATED
   11         ID           BASED ON 30% DESIGN OF THE BASIN.
   12         ID        4. ELEVATION AND OUTFLOW RELATIONSHIP WERE ESTIMATED BASED ON 30% DESIG
   13         ID           USING CULVERTMASTER. THE OUTFLOW INCLUDES FLOW FROM BLEED-OFF PIPE
   14         ID           AND FLOW FROM OUTFLOW PIPE.
   15         ID        5. CHANNEL ROUTING WERE MODIFIED BASED ON 30% DESIGN.
   16         ID        6. FLOW FROM THE PROPOSED FCDMC CHANNEL ALONG NORTHEN AVENUE  WILL
   17         ID           NOT BE COMBINED WITH FLOW FROM LOOP 303 OFF-SITE CHANNEL.
   18         ID           INSTEAD THE FLOW FROM THE CHANNEL ALONG NORTHERN AVENUE WILL GO
   19         ID           TO THE NORTHERN AVENUE BASIN DIRECTLY.  SO THE FLOW FROM THE
   20         ID           NORTHERN AVENUE CHANNEL WILL BE COMBINED WITH THE DIVERTED FLOW
   21         ID           FROM LOOP 303 CHANNEL AT NORTHERN AVENUE BASIN.
   22         ID        7. IN THE ADMP MODEL, SOME OF THE OUTFLOW FROM CAMELBACK ROAD BASINS
   23         ID           WERE DIVERTED TO EAST ALONG CAMELBACK ROAD (THE PEAK FLOW IS
   24         ID           180 CFS).  NO STRUCTURE WAS RECOMMENDED IN THE ADMP UPDATE. PB
   25         ID           DESIGNED 3-30" PIPES TO DIVERT SOME FLOW TO THE EXISTING CAMELBACK
   26         ID           ROAD CHANNEL LOCATED AT SOUTH SIDE OF CAMELBACK ROAD.
   27         ID        9. PEBBLE CREEK AND PALM VALLEY 8 DEVELOPMENTS WERE INCLUDED IN THE
   28         ID           MODEL BASED ON HEC-1 MODEL PROVIDED BY DEL RIO ENGINEERING.
   29         ID       10. MCDOWELL ROAD DETENTION BASIN WERE DIVIDED INTO TWO DETENTION BASINS
   30         ID           ONE IS CALLED MCDOWELL ROAD UPPER BASIN AND THE OTHER ONE IS CALLED
   31         ID           MCDOWELL ROAD LOWER BASIN
   32         ID       11  PROPOSED I-10/303L TI (ULTIMATED CONDITION) ON-SITE DRAINAGE SYSTEM
   33         ID           WAS REFLECTED IN THE MODEL.  THERE ARE TOTAL 11 ON-SITE BASINS.
   34         ID
   35         ID        EXISTING CONDITION WITH PROJECTS IN PLACE SCENARIO
   36         ID        REVISED BY PARSONS BRINCKERHOFF     DATE: Aug 2008
   37         ID                                            FILE NAME: EX_SPLT.DAT
   38         ID        **************************************************************************
   39         ID        DRAFT PREFERRED ALTERNATIVE LEVEL III
   40         ID
   41         ID        INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
   42         ID        SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
   43         ID        BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
   44         ID        LUKE AIR FORCE BASE CRASH ZONE AREA
   45         ID
   46         ID        **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
   47         ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
   48         ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
   49         ID        TANKS/AGUA FRIA ADMS, Date: October 1991
   50         ID
   51         ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
   52         ID        100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
   53         ID
   54         ID                                        REVISED BY URS     DATE: 01-14-04
   55         ID                                                           FILE: L33PE4H.DAT
```

HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
   56         ID
   57         ID        NOTES:
   58         ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
   59         ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
   60         ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
```

```
                * KK CP276
6834            KK   !10W4
6835            KM       ADD HYDROGRAPHS AT CP276
6836            HC       2   19.26
                * KK SR276
                * KM       STORAGE ROUTE THROUGH CP276
                * RS     1     STOR      0       0
                * SV     0      .23    1.37    1.97    4.62
                * SQ     0       18      75     115    1063
                * SE1032.9    1034  1035.5    1036    1037

6837            KK    D276
6838            KM       DIVERT FROM CP276 TO CP293
6839            DT   2D293
6840            DI       0      18      75     115    1063
6841            DQ       0       0       0       0       0
                *  ********************************************************************************
                *  PB modifications:  Flow routing from 10W4 to 10W5 was revised based on
                *                     proposed concrete lined channel.
                *  ********************************************************************************
1                                          HEC-1 INPUT                                          PAGE189

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6842            KK   R10W4
6843            KM   ROUTE REMAINDER FROM 10W4 TO 10W5 (CP276 TO CP277)
                *  RS   1.4        -1.0     0.0
                *  RC 0.030   0.030   0.030    2568  0.0036
                *  RX     0    37.8    44.8    51.8    58.8    65.8    72.8   110.6
                *  RY1021.2  1014.9  1014.9  1014.9  1014.9  1014.9  1014.9  1021.2
6844            RS     0.7        -1.0     0.0
6845            RC   0.015   0.015   0.015    2568  0.0036
6846            RX       0      10      20      32      44      56      66      76
6847            RY    1021    1021    1021    1015    1015    1021    1021    1021

6848            KK    D248
6849            KM       RETURN DIVERT AT CP248
6850            DR   DI262

6851            KK    R248
6852            KM       ROUTE FLOW FROM CP248 TO CP262
6853            RS       5              -1
6854            RC     .03     .03    .075    5280   .0053
6855            RX    1000    1001    1002    1060    1150    1520    1889    1890
6856            RY    1071    1071    1071    1070    1070    1072    1074    1074
                *

6857            KK     262
6858            KM       RUNOFF HYDROGRAPH FROM SUB-BASIN 262
6859            BA    1.03
6860            LG     .50     .00    4.00    0.74     .00
6861            UI     40.     40.     40.     42.    132.    149.    177.    197.    218.    232.
6862            UI    253.    277.    304.    335.    396.    477.    529.    461.    405.    367.
6863            UI    337.    314.    283.    257.    236.    212.    193.    173.    141.    115.
6864            UI     73.     71.     67.     66.     59.     40.     40.     40.     32.     12.
6865            UI     12.     12.     12.     12.     12.     12.     12.     12.     12.     12.
6866            UI     12.      0.      0.      0.      0.      0.      0.      0.      0.      0.
6867            UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

6868            KK   CP262
6869            KM       ADD HYDROGRAPHS AT CP262
6870            HC       2   18.57

6871            KK   1D262
6872            KM       DIVERT FROM CP262 TO CP278
6873            DT   1D278
6874            DI       0       8      12    1885   12547
6875            DQ       0       0       4     644    1672

6876            KK   2D262
6877            KM       DIVERT FROM CP262 TO CP263
6878            DT   DI263
6879            DI       0       8       8    1241   10875
6880            DQ       0       8       8     867    5869
1                                          HEC-1 INPUT                                          PAGE190

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6881            KK    R262
6882            KM       ROUTE REMAINDER FROM CP262 TO CP277
6883            RS      13              -1
6884            RC     .04     .04    .075    6300   .0049
6885            RX    1000    1001    1002    1020    1270    1820    2189    2190
6886            RY    1047    1047    1047    1046    1046    1048    1050    1050

6887            KK    D261
6888            KM       RETURN DIVERT AT CP261
6889            DR   DI277

6890            KK    R261
6891            KM       ROUTE FLOW FROM CP261 TO CP277
6892            RS      66              -1       0
6893            RC    .075    .075    .075    8450   .0070
6894            RX    1000    1001    1002    1150    2300    2598    2599    2600
6895            RY  1067.5    1067    1067    1066    1066    1067    1067  1067.5
                *

6896            KK     277
6897            KM       RUNOFF HYDROGRAPH FROM SUB-BASIN 277
```

L70L71

Culvert Information from I-10 Plans

ID	# of Culverts	Size	Material/Type	Length (ft)	US Inv.	DS Inv.	Inv.	Slope (%)	Notes
28	1	30"	CMP	240			1131.95 @ WB CL	1.125	
29	1	30"	CMP	260			1127.92 @ WB CL	1.154	
30	1	36"	CMP	287			1123.34 @ WB CL	1.436	
31	2	36"	CMP	216			1111.72 @ WB CL	1.62	
32	2	42"	CMP	200			1098.70 @ WB CL	0.75	
33	2	36"	CMP	234	1097.35	1095	~~1094.32 @ WB CL~~	1.004	The elevations of the old plans don't match the elevations from the new plans from Verrado
34	1	48"	CMP	234			1092.43 @ WB CL	0.978	
35	1	48"	CMP	214			1090.88 @ WB CL	1.122	
36	1	48"	CMP	218			1091.30 @WB CL	0.78	
37	2	48"	CMP	230	1093.76	1089.79		1.726	
38	1	36"	CMP	250	1095.17	1092.36		1.124	
39	1	36"	CMP	342	1095.7	1092.58		0.912	
40	1	36"	CMP	72	1097.88	1097.33		0.764	
	1	36"	CMP	208			1091.55 @ WB CL	0.961	
	1	36"	CMP	146	1092.98	1091.56		0.973	
1	1	36"	CMP?	226	1098.33	1096.2		0.942	Where there is a ? in the material, the callout only says "pipe culvert"
	1	36"	CMP?	200			1092.43 @ WB CL	0.810	
	1	36"	CMP?	235	1092.51	1089.67		1.209	
2	1	36"	CMP?	152	1098.56	1095.8		1.816	
	1	36"	CMP?	210			1092.38 @ WB CL	1.200	
	1	36"	CMP?	182	1091.26	1089.05		1.214	
3	1	36"	CMP?	486	1093.39	1087.52		1.208	
4	1	36"	CMP?	314	1092.36	1086.91		1.736	
5	1	36"	CMP?	284	1090.22	1089.53		0.243	
6	1	36"	CMP?	280	1087.13	1085.86		0.454	
7	4	10'x8'	Concrete Box Culvert	227			1077.44 @ EB CL	1.11	
8	1	12'x12'	Concrete Box Culvert	193.5			1081.7 EB CL	1.9	**DISREGARD- THIS IS FOR EQUIPMENT TO PASS UNDER HIGHWAY**
9	2	42"	CMP	260			1083.64 EB CL	0.885	
10	2	36"	CMP	253			1082.89 EB CL	0.315	
11	1	36"	CMP	253			1083.8 EB CL	0.827	
12	2	36"	CMP	259			1082.7 EB CL	1.038	
13	1	36"	CMP	255			1082.63 EB CL	1.117	
14	2	36"	CMP	260			1081.02 EB CL	0.675	
15	2	36"	CMP	239			1080.74 EB CL	0.708	
16	2	36"	CMP	224			1081.49 EB CL	0.893	
17	2	36"	CMP	225			1079.16 EB CL	0.885	
18	3	36"	CMP	216			1077.94 EB CL	0.833	
19	5	10'x4'	Concrete Box Culvert	52			1065.28 @ RD CL	0.55	
	5	10'x4'	Concrete Box Culvert	51			1062.7 @ RD CL	0.55	
20	1	30"	CMP	544			**NA**	**NA**	**DISREGARD- THIS IS FOR STREET DRAINAGE**
21	5	10'x3'	Concrete Box Culvert	223			1052.7 @ HWY CL	0.8	
22	4	36"	RCP or CMP (smooth bore)	256			1036.77 @ HWY CL	0.675	
23	3	36"	RCP or CMP (smooth bore)	205			1032.45 @ HWY CL	0.49	
24	4	36"	RCP or CMP (smooth bore)	246			1019.75 @ HWY CL	0.195	
25	5	29"x45"	HERCP	269			1014.39 @ HWY CL	0.4032	
26	5	29"x45"	HERCP	228			1006.28 @ HWY CL	0.5405	Locations for 26 and 27 were taken from base files from I-10 Plans from Sarival to Dysart
27	1	30"	RGRCP						**DISREGARD- This was for irrigation purposes and has been abandoned**

INVERT AND SLOPES TAKEN FROM ADOT ASBUILT PLANS-- (I-10-2 [31])

INVERT AND SLOPES TAKEN FROM ADOT ASBUILT PLANS FOR VERRADO WAY TI

INVERT AND SLOPES TAKEN FROM ADOT ASBUILT PLANS-- (I-10-2 [34])

CIP models

L72

```
1*****************************************
*                                       *
*    FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              JUN  1998                *
*            VERSION 4.1                *
*                                       *
*      DATE   07MAY09  TIME  08:05:50   *
*                                       *
*****************************************
```

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

```
X    X  XXXXXXX   XXXXX          X
X    X  X        X     X        XX
X    X  X        X              X
XXXXXX  XXXX     X        XXXXX  X
X    X  X        X              X
X    X  X        X     X        X
X    X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

    1         ID        LOOP 303 OFF-SITE HYDROLOGY
    2         ID        MODIFIED BASED ON FCDMC'S WHITE TANKS/LOOP 303 CORRIDOR ADMP
    3         ID        THE MODIFICATIONS ARE DESCRIBED AS FOLLOWS:
    4         ID        1. THE CACTUS RD BASIN WAS REMOVED AND TWO RELATIVELY SMALL BASINS
    5         ID           LOCATED AT NORTH OF WADDELL ROAD AND NORTH OF OLIVE AVENUE WERE
    6         ID           ADDED TO THE MODEL BASED ON CMX'S HEC-1 MODEL PROVIDED IN DEC,2006.
    7         ID        2. FLOW DIVERSION TO THE OFF-LINE BASINS, SUCH AS WADDELL ROAD
    8         ID           BASIN, OLIVE AVENUE BASIN, NORTHERN AVENUE BASIN WERE ESTIMATED
    9         ID           USING HEC-RAS LATERAL WEIR ROUTINE.
   10         ID        3. DETENTION BASIN ELEVATION AND VOLUME RELATIONSHIPS WERE ESTIMATED
   11         ID           BASED ON 30% DESIGN OF THE BASIN.
   12         ID        4. ELEVATION AND OUTFLOW RELATIONSHIP WERE ESTIMATED BASED ON 30% DESIG
   13         ID           USING CULVERTMASTER. THE OUTFLOW INCLUDES FLOW FROM BLEED-OFF PIPE
   14         ID           AND FLOW FROM OUTFLOW PIPE.
   15         ID        5. CHANNEL ROUTING WERE MODIFIED BASED ON 30% DESIGN.
   16         ID        6. FLOW FROM THE PROPOSED FCDMC CHANNEL ALONG NORTHEN AVENUE  WILL
   17         ID           NOT BE COMBINED WITH FLOW FROM LOOP 303 OFF-SITE CHANNEL.
   18         ID           INSTEAD THE FLOW FROM THE CHANNEL ALONG NORTHERN AVENUE WILL GO
   19         ID           TO THE NORTHERN AVENUE BASIN DIRECTLY.  SO THE FLOW FROM THE
   20         ID           NORTHERN AVENUE CHANNEL WILL BE COMBINED WITH THE DIVERTED FLOW
   21         ID           FROM LOOP 303 CHANNEL AT NORTHERN AVENUE BASIN.
   22         ID        7. IN THE ADMP MODEL, SOME OF THE OUTFLOW FROM CAMELBACK ROAD BASINS
   23         ID           WERE DIVERTED TO EAST ALONG CAMELBACK ROAD (THE PEAK FLOW IS
   24         ID           180 CFS).  NO STRUCTURE WAS RECOMMENDED IN THE ADMP UPDATE. PB
   25         ID           DESIGNED 3-30" PIPES TO DIVERT SOME FLOW TO THE EXISTING CAMELBACK
   26         ID           ROAD CHANNEL LOCATED AT SOUTH SIDE OF CAMELBACK ROAD.
   27         ID        9. PEBBLE CREEK AND PALM VALLEY 8 DEVELOPMENTS WERE INCLUDED IN THE
   28         ID           MODEL BASED ON HEC-1 MODEL PROVIDED BY DEL RIO ENGINEERING.
   29         ID       10. MCDOWELL ROAD DETENTION BASIN WERE DIVIDED INTO TWO DETENTION BASINS
   30         ID           ONE IS CALLED MCDOWELL ROAD UPPER BASIN AND THE OTHER ONE IS CALLED
   31         ID           MCDOWELL ROAD LOWER BASIN
   32         ID       11  PROPOSED I-10/303L TI (ULTIMATED CONDITION) ON-SITE DRAINAGE SYSTEM
   33         ID           WAS REFLECTED IN THE MODEL.  THERE ARE TOTAL 11 ON-SITE BASINS.
   34         ID
   35         ID        EXISTING CONDITION WITH PROJECTS IN PLACE SCENARIO
   36         ID        REVISED BY PARSONS BRINCKERHOFF     DATE: Aug 2008
   37         ID                                            FILE NAME: EX_SPLT.DAT
   38         ID        ********************************************************************************
   39         ID        DRAFT PREFERRED ALTERNATIVE LEVEL III
   40         ID
   41         ID        INCORPORATE ALTERNATIVE #3 FROM CHANGE ORDER #14 INTO
   42         ID        SR 303L OFFSITE FLOOD CONTROL FACILITY - NORTHERN AND CACTUS
   43         ID        BASINS ARE NOW OFFLINE WITH MULTIPLE BASINS LOCATED WITHIN
   44         ID        LUKE AIR FORCE BASE CRASH ZONE AREA
   45         ID
   46         ID        **ADOT BASIN GEOMETRY REPRESENTS MOST RECENT 2' CONTOURS**
   47         ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
   48         ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
   49         ID        TANKS/AGUA FRIA ADMS, Date: October 1991
   50         ID
   51         ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
   52         ID        100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
   53         ID
   54         ID                                        REVISED BY URS     DATE: 01-14-04
   55         ID                                                           FILE: L33PE4H.DAT
```

HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   56         ID
   57         ID        NOTES:
   58         ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
   59         ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
   60         ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
```

```
                * KK CP276
6834            KK   !10W4
6835            KM       ADD HYDROGRAPHS AT CP276
6836            HC       2   19.26
                * KK SR276
                * KM       STORAGE ROUTE THROUGH CP276
                * RS      1    STOR       0       0
                * SV      0     .23    1.37    1.97    4.62
                * SQ      0     18      75     115    1063
                * SE1032.9    1034  1035.5    1036    1037

6837            KK    D276
6838            KM       DIVERT FROM CP276 TO CP293
6839            DT   2D293
6840            DI       0      18      75     115    1063
6841            DQ       0       0       0       0       0
                *   ***************************************************************************
                *   PB modifications:  Flow routing from 10W4 to 10W5 was revised based on
                *                      proposed concrete lined channel.
                *   ***************************************************************************
1                                       HEC-1 INPUT                                          PAGE189

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6842            KK   R10W4
6843            KM   ROUTE REMAINDER FROM 10W4 TO 10W5 (CP276 TO CP277)
                *  RS   1.4          -1.0     0.0
                *  RC 0.030   0.030   0.030    2568  0.0036
                *  RX     0    37.8    44.8    51.8    58.8    65.8    72.8   110.6
                *  RY1021.2  1014.9  1014.9  1014.9  1014.9  1014.9  1014.9  1021.2
6844            RS     0.7          -1.0     0.0
6845            RC   0.015   0.015   0.015    2568  0.0036
6846            RX       0      10      20      32      44      56      66      76
6847            RY    1021    1021    1021    1015    1015    1021    1021    1021

6848            KK    D248
6849            KM       RETURN DIVERT AT CP248
6850            DR   DI262

6851            KK    R248
6852            KM       ROUTE FLOW FROM CP248 TO CP262
6853            RS       5              -1
6854            RC     .03     .03    .075    5280   .0053
6855            RX    1000    1001    1002    1060    1150    1520    1889    1890
6856            RY    1071    1071    1071    1070    1070    1072    1074    1074
                *

6857            KK     262
6858            KM       RUNOFF HYDROGRAPH FROM SUB-BASIN 262
6859            BA    1.03
6860            LG     .50     .00    4.00    0.74     .00
6861            UI    40.     40.     40.     42.    132.    149.    177.    197.    218.    232.
6862            UI   253.    277.    304.    335.    396.    477.    529.    461.    405.    367.
6863            UI   337.    314.    283.    257.    236.    212.    193.    173.    141.    115.
6864            UI    73.     71.     67.     66.     59.     40.     40.     40.     32.     12.
6865            UI    12.     12.     12.     12.     12.     12.     12.     12.     12.     12.
6866            UI    12.      0.      0.      0.      0.      0.      0.      0.      0.      0.
6867            UI     0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

6868            KK   CP262
6869            KM       ADD HYDROGRAPHS AT CP262
6870            HC       2   18.57

6871            KK   1D262
6872            KM       DIVERT FROM CP262 TO CP278
6873            DT   1D278
6874            DI       0       8      12    1885   12547
6875            DQ       0       0       4     644    1672

6876            KK   2D262
6877            KM       DIVERT FROM CP262 TO CP263
6878            DT   DI263
6879            DI       0       8       8    1241   10875
6880            DQ       0       8       8     867    5869
1                                       HEC-1 INPUT                                          PAGE190

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6881            KK    R262
6882            KM       ROUTE REMAINDER FROM CP262 TO CP277
6883            RS      13              -1
6884            RC     .04     .04    .075    6300   .0049
6885            RX    1000    1001    1002    1020    1270    1820    2189    2190
6886            RY    1047    1047    1047    1046    1046    1048    1050    1050

6887            KK    D261
6888            KM       RETURN DIVERT AT CP261
6889            DR   DI277

6890            KK    R261
6891            KM       ROUTE FLOW FROM CP261 TO CP277
6892            RS      66              -1       0
6893            RC    .075    .075    .075    8450   .0070
6894            RX    1000    1001    1002    1150    2300    2598    2599    2600
6895            RY  1067.5    1067    1067    1066    1066    1067    1067  1067.5
                *

6896            KK     277
6897            KM       RUNOFF HYDROGRAPH FROM SUB-BASIN 277
```

L71L72

```
7054          RX       0    10.0    13.0    25.0    33.0    45.0    65.0    66.8
7055          RY    1032    1031    1031    1025    1025    1031  1031.4    1032

7056          KK   !LP11
7057          KO       1                                   21
7058          KM        ADD HYDROGRAPHS AT CP278
7059          HC       2   35.83
              * ***************************************************************************************
              *  PB MODIFITICATION: DELETE THE CHANNEL ROUTING, THE RX AND RY RECORDS ARE NOT
              *  CORRECT. ALSO THERE IS NO CHANLE BETWEEN MCDOWELL ROAD BASIN AND I-10 BASIN.
              *  ***************************************************************************************
              * KK RLP11
              * PER LEVEL III PRELIMINARY-DRAFT PREFERRED ALTERNATIVE
              * KM      ROUTE REMAINDER FROM CP278 TO CP279
              * RS   1.0              -1.0     0.0
              * RC 0.013   0.013   0.013     129  0.1049
              * RX     0    10.6    10.6    10.6    10.6    10.6    10.6    21.2
              * RY1019.8  1014.5  1014.5  1014.5  1014.5  1014.5  1014.5  1019.8

7060          KK     278
7061          KO       1                                   21
7062          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 278
              *  BA  1.00
7063          BA    1.07
              *  LG   .42     .13    4.38    0.52    2.00
7064          LG     .42     .13    4.38    0.52    7.00
7065          UI     36.     36.     36.     36.    100.    129.    150.    173.    188.    203.
7066          UI    219.    235.    260.    280.    309.    362.    433.    483.    429.    379.
7067          UI    342.    315.    294.    272.    245.    226.    208.    187.    174.    153.
7068          UI    124.    105.     66.     65.     62.     60.     60.     37.     36.     36.
7069          UI     36.     18.     11.     11.     11.     11.     11.     11.     11.     11.
7070          UI     11.     11.     11.     11.     11.      0.      0.      0.      0.      0.
7071          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

7072          KK   !LP12
7073          KO       1                                   21
7074          KM        ADD HYDROGRAPHS AT CP279
              *  HC     2     36
7075          HC       2   36.83

7076          KK   ILP12
7077          KO       1                                   21
7078          KM        ADD HYDROGRAPHS AT BASIN
7079          HC       2   38.55
              * ***************************************************************************************
              *  PB MODIFITICATION ON MCDOWELL ROAD BASINS AND I-10 BASIN ROUTING
              *  VOLUME ELEVATION RELATIONSHIP WAS ESTIMATED BASED ON 30% LEVEL DESIGN
              *  OUTFLOW RELATIONSHIP WAS ESTIMATED BASED ON BLEEDOFF PIPE AND OUTFLW
              *  PIPE DIMENSION.
              *  ***************************************************************************************
              * STORAGE ROUTE THROUGH PROPOSED BASIN AT LP12 - I-10
              * SIMULATE RETENTION BASIN CONCEPT USED BY DCR
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7080          KK  SRLP12
7081          KO       1                                   21
7082          KM   PROPOSED BASIN AT I-10
7083          RS       1    STOR       0       0
              *  SV     0     160     320     480     520     600
              *   SQ     0       0       0     147     371     742
              *  SQ     0       0       0     291     388     742
              *  SE  1001    1005    1009    1013    1014    1016
              *
7084          SV       0    3.55   11.54   24.30   45.12   76.37  119.28  171.99  230.67  295.08
7085          SV  364.38  439.60  521.85  614.90  716.37  820.28  927.24 1037.27
7086          SQ       0     9.5    34.7    63.7    74.0    82.8   138.6   202.1   272.9   340.1
7087          SQ   384.0   413.5   441.9   468.9   494.5   519.1   542.8   565.5
7088          SE    1003    1004    1005    1006    1007    1008    1009    1010    1011    1012
7089          SE    1013    1014    1015    1016    1017    1018    1019    1020
              * FOLLOWING BASED ON DISCARDED ALTERNATIVE
              * KKLP12OT
              * KO      1                                   21
              * KM       DIVERSION-RETENTION AT CACTUS BASIN
              * 50-YR VOLUME IS  388AF PER BASELINE
              * VOLUME WAS NOT SPECIFIED IN DCR
              * DTLP12RT
              * DI      0   20000
              * DQ      0   20000
              * KK 2LP12
              * KM COMBINE ROUTED FLOW FROM OFFLINE BASIN WITH MAIN-CHANNEL FLOW AT !LP12
              * HC      2   10.49
              * ***************************************************************************************
              * PB modification: Divert the flow at ILP12 and will be retrived later.
              * ***************************************************************************************
              *

7090          KK    D279
              *  KM  DIVERT FLOW FROM CP279 TO CP294A
              *  DT3D294A
              *  DI      0      36     131     457    1087    3812    5907
              *  DQ      0      36     131     457    1087    3812    5907
7091          KM     DIVERT ROUTED FLOW AND WILL RETRIVE IT LATER
7092          DT  DILP12
7093          DI       0    1000
7094          DQ       0    1000
              * ***************************************************************************************
              * PB modification: delete routing operation R279
              * ***************************************************************************************
              *  KK  R279
```

SRL72

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Location: I-10 at Cotton (DL72)	Job No. 79902 / No.
Subject	Weir Flow Analysis		Computed AM / Date 10/27/08
Task	Weir Calculations		Checked / Date 3/10/09
			Sheet 1 / Of x

Segment	Start Elevation (ft amsl)	End Elevation (ft amsl)	Length L(ft)	Crest Ave Elevation (ft)	Start Calc Elev Iter 1	Iter 1 H (ft)	Q1 (cfs)	Start Calc Elev Iter 2	Iter 2 H (ft)	Q2	Start Calc Elev Iter 3	Iter 3 H (ft)	Q3	Another iteration?	Start Calc Elev Iter 4	Iter 4 H (ft)	Q4	Another iteration?
south	1016	1015	20	1015.5	1014	0	0.00	1014.5	0	0.00	1015	0	0.00	CHECK	1015.5	0	0.00	DONE
south	1015	1014	20	1014.5	1014	0	0.00	1014.5	0	0.00	1015	0.5	21.21		1015.5	1	60.00	
south	1014	1013.4	9	1013.7	1014	0.3	4.44	1014.5	0.8	19.32	1015	1.3	40.02		1015.5	1.8	65.20	
south	1013.4	1013.5	15	1013.45	1014	0.55	18.36	1014.5	1.05	48.42	1015	1.55	86.84		1015.5	2.05	132.08	
east	1013.5	1014	70	1013.75	1014	0.25	26.25	1014.5	0.75	136.40	1015	1.25	293.48		1015.5	1.75	486.16	
east	1014	1015	110	1014.5	1014	0	0.00	1014.5	0	0.00	1015	0.5	116.67		1015.5	1	330.00	
east	1015	1016	110	1015.5	1014	0	0.00	1014.5	0	0.00	1015	0	0.00		1015.5	0	0.00	
east	1016	1016	1	1016	1014	0	0.00	1014.5	0	0.00	1015	0	0.00		1015.5	0	0.00	
east	1016	1016	1	1016	1014	0	0.00	1014.5	0	0.00	1015	0	0.00		1015.5	0	0.00	
					TOTALS:		49.04			204.14			558.23				1073.44	

Graph Computations:

Station	Elevation
0	1016
20	1015
40	1014
49	1013.4
64	1013.5
134	1014
244	1015
354	1016
355	1016
356	1016

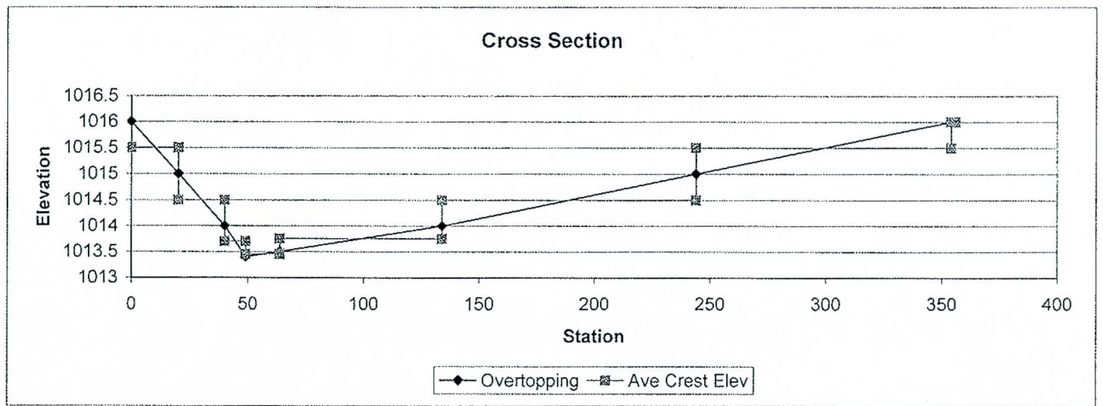
Weir Approximation:

Station	Elevation
0	1015.5
20	1015.5
20	1014.5
40	1014.5
40	1013.7
49	1013.7
49	1013.45
64	1013.45
64	1013.75
134	1013.75
134	1014.5
244	1014.5
244	1015.5
354	1015.5
354	1016
355	1016
355	1016
356	1016

Culvert Flows (cfs):

south	0
southeast	0
east	0

Cross Section



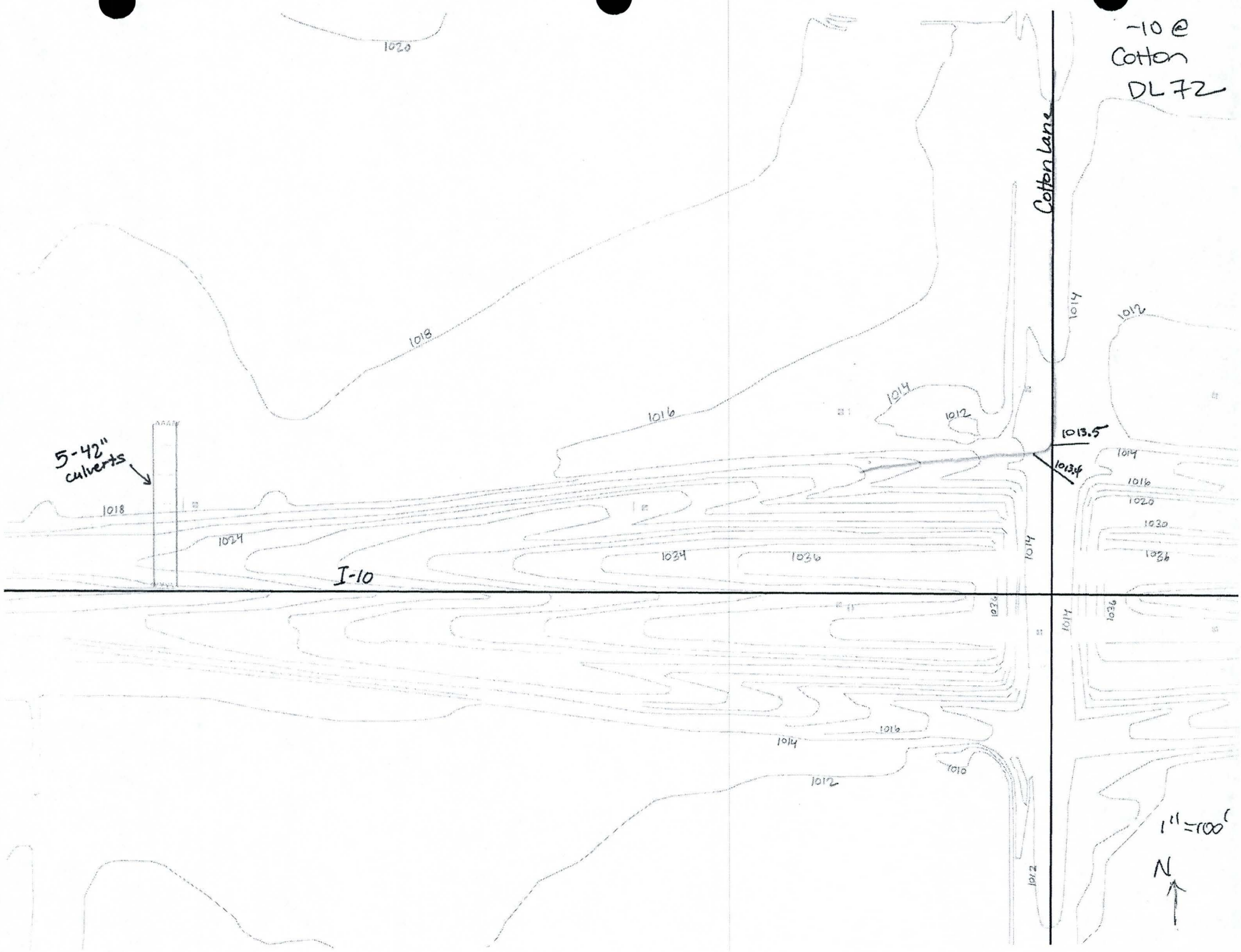
Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	22.79	46%	Q(south)	67.74	33%	Q(south)	148.07	27%	Q(south)	257.29	24%
Q(southeast)	0.00	0%	Q(southeast)	0.00	0%	Q(southeast)	0.00	0%	Q(southeast)	0.00	0%
Q(east)	26.25	54%	Q(east)	136.40	67%	Q(east)	410.16	73%	Q(east)	816.16	76%
	49.04			204.14			558.23			1073.44	

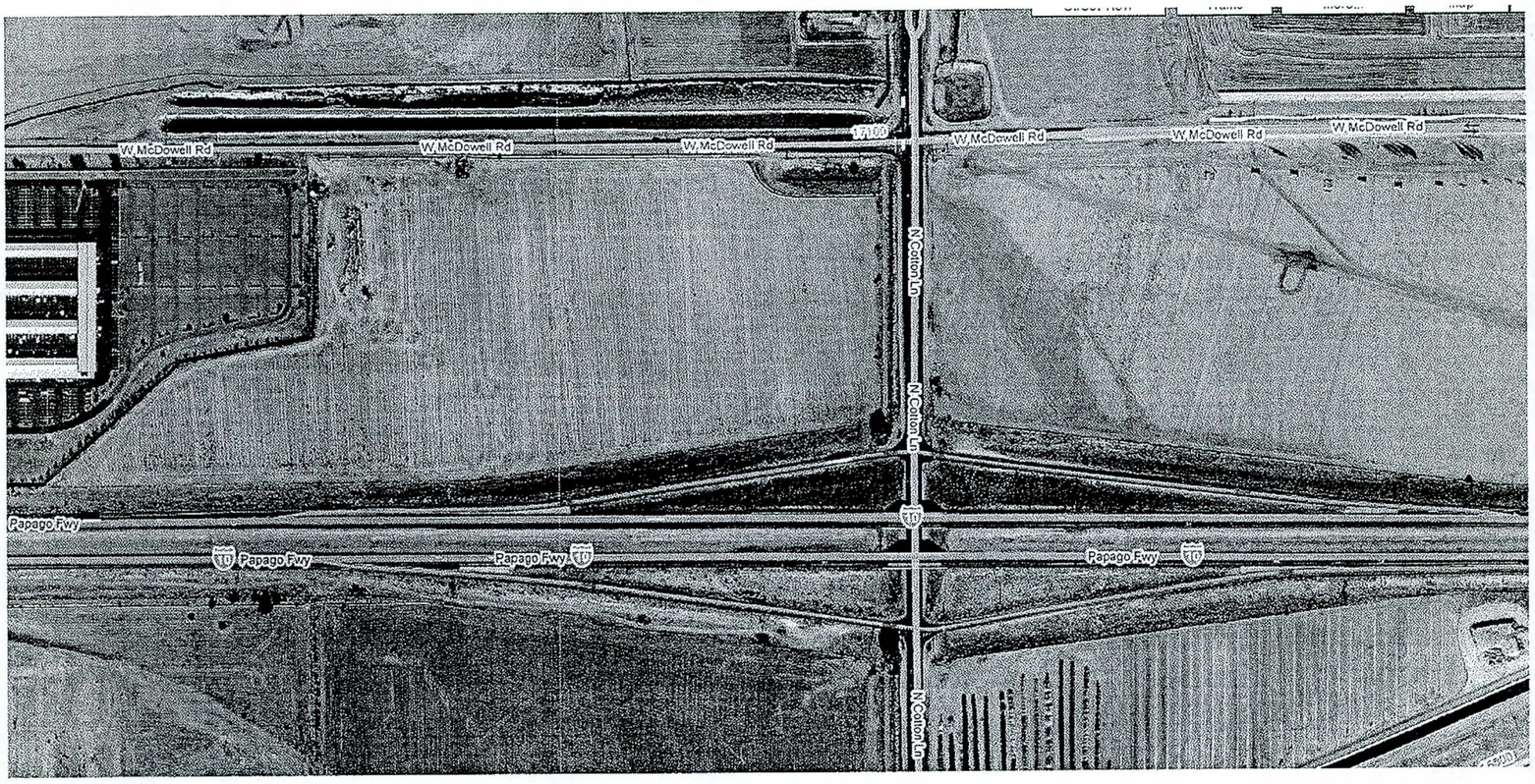
First DI	East to South			
Inflow	49.04	204.14	558.23	1073.44
Outflow	22.79	67.74	148.07	257.29

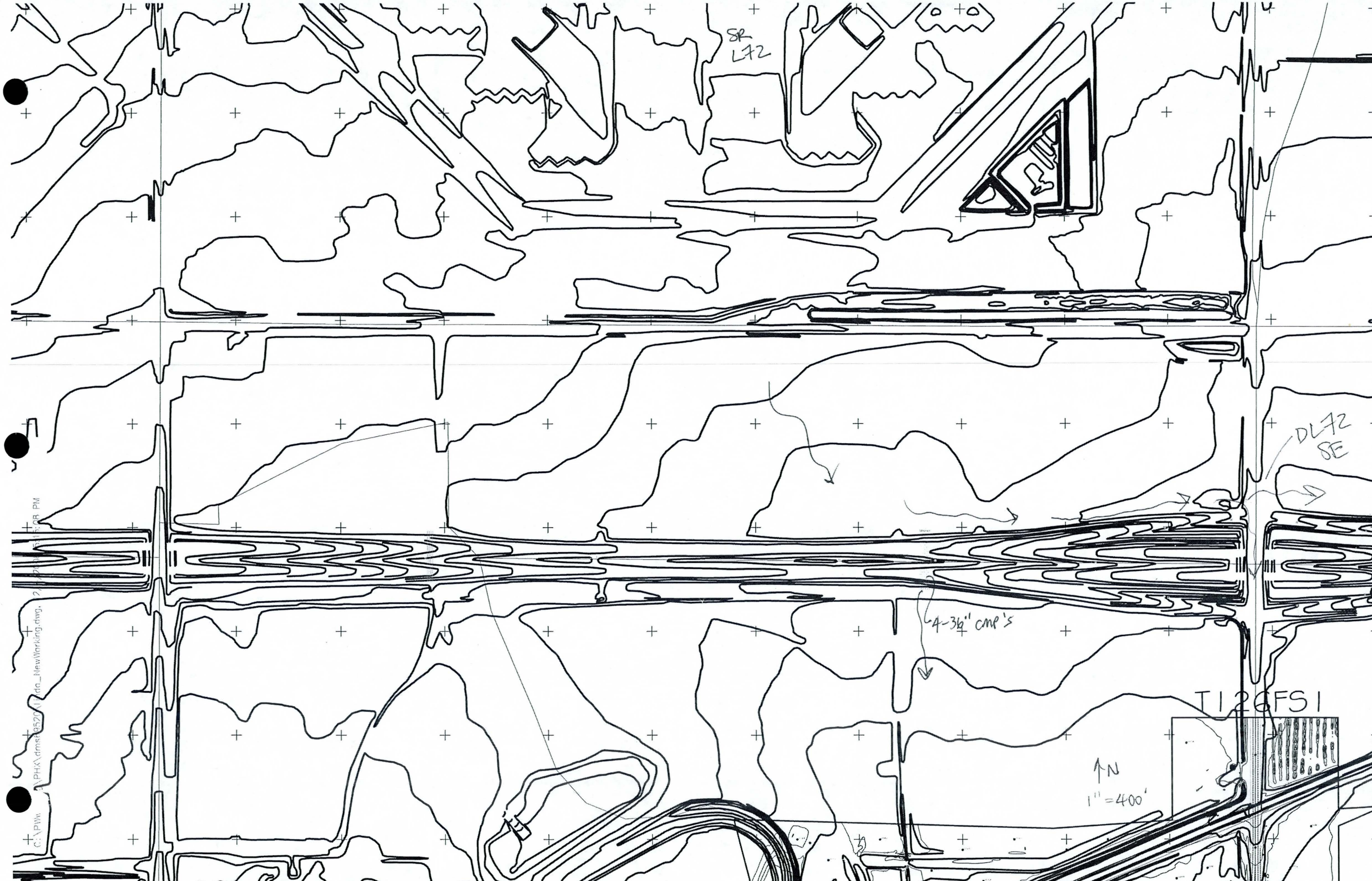
Assumes diversion is to south

Second DI	East to Southeast			
Inflow	22.79	67.74	148.07	257.29
Outflow	0.00	0.00	0.00	0.00

Assumes diversion is to southeast


-10 @
Cotton
DL72
Cotton Lane
5-42" culverts
I-10
1020
1018
1016
1014
1012
1013.5
1013.4
1024
1034
1036
1030
1" = 100'
N


W McDowell Rd
W McDowell Rd
W McDowell Rd
W McDowell Rd
W McDowell Rd
W McDowell Rd
N Cotton Ln
N Cotton Ln
N Cotton Ln
Papago Fwy
Papago Fwy
Papago Fwy
Papago Fwy
10
10
10
10



SR
L72
DL72
SE
4-36" cmp's
T126FS1
N
1"=400'

Culvert Information from I-10 Plans

ID	# of Culverts	Size	Material/Type	Length (ft)	US Inv.	DS Inv.	Inv.	Slope (%)	Notes
28	1	30"	CMP	240			1131.95 @ WB CL	1.125	
29	1	30"	CMP	260			1127.92 @ WB CL	1.154	
30	1	36"	CMP	287			1123.34 @ WB CL	1.436	
31	2	36"	CMP	216			1111.72 @ WB CL	1.62	
32	2	42"	CMP	200			1098.70 @ WB CL	0.75	
33	2	36"	CMP	234	1097.35	1095	1094.32 @ WB CL	1.004	The elevations of the old plans don't match the elevations from the new plans from Verrado
34	1	48"	CMP	234			1092.43 @ WB CL	0.978	
35	1	48"	CMP	214			1090.88 @ WB CL	1.122	
36	1	48"	CMP	218			1091.30 @WB CL	0.78	
37	2	48"	CMP	230	1093.76	1089.79		1.726	
38	1	36"	CMP	250	1095.17	1092.36		1.124	
39	1	36"	CMP	342	1095.7	1092.58		0.912	
40	1	36"	CMP	72	1097.88	1097.33		0.764	
	1	36"	CMP	208			1091.55 @ WB CL	0.961	
	1	36"	CMP	146	1092.98	1091.56		0.973	
1	1	36"	CMP?	226	1098.33	1096.2		0.942	Where there is a ? in the material, the callout only says "pipe culvert"
	1	36"	CMP?	200			1092.43 @ WB CL	0.810	
	1	36"	CMP?	235	1092.51	1089.67		1.209	
2	1	36"	CMP?	152	1098.56	1095.8		1.816	
	1	36"	CMP?	210			1092.38 @ WB CL	1.200	
	1	36"	CMP?	182	1091.26	1089.05		1.214	
3	1	36"	CMP?	486	1093.39	1087.52		1.208	
4	1	36"	CMP?	314	1092.36	1086.91		1.736	
5	1	36"	CMP?	284	1090.22	1089.53		0.243	
6	1	36"	CMP?	280	1087.13	1085.86		0.454	
7	4	10'x8'	Concrete Box Culvert	227			1077.44 @ EB CL	1.11	
8	1	12'x12'	Concrete Box Culvert	193.5			1081.7 EB CL	1.9	**DISREGARD- THIS IS FOR EQUIPMENT TO PASS UNDER HIGHWAY**
9	2	42"	CMP	260			1083.64 EB CL	0.885	
10	2	36"	CMP	253			1082.89 EB CL	0.315	
11	1	36"	CMP	253			1083.8 EB CL	0.827	
12	2	36"	CMP	259			1082.7 EB CL	1.038	
13	1	36"	CMP	255			1082.63 EB CL	1.117	
14	2	36"	CMP	260			1081.02 EB CL	0.675	
15	2	36"	CMP	239			1080.74 EB CL	0.708	
16	2	36"	CMP	224			1081.49 EB CL	0.893	
17	2	36"	CMP	225			1079.16 EB CL	0.885	
18	3	36"	CMP	216			1077.94 EB CL	0.833	
19	5	10'x4'	Concrete Box Culvert	52			1065.28 @ RD CL	0.55	
	5	10'x4'	Concrete Box Culvert	51			1062.7 @ RD CL	0.55	
20	1	30"	CMP	544			**NA**	**NA**	**DISREGARD- THIS IS FOR STREET DRAINAGE**
21	5	10'x3'	Concrete Box Culvert	223			1052.7 @ HWY CL	0.8	
22	4	36"	RCP or CMP (smooth bore)	256			1036.77 @ HWY CL	0.675	
23	3	36"	RCP or CMP (smooth bore)	205			1032.45 @ HWY CL	0.49	
24	4	36"	RCP or CMP (smooth bore)	246			1019.75 @ HWY CL	0.195	
25	5	29"x45"	HERCP	269			1014.39 @ HWY CL	0.4032	
26	5	29"x45"	HERCP	228			1006.28 @ HWY CL	0.5405	Locations for 26 and 27 were taken from base files from I-10 Plans from Sarival to Dysart
27	1	30"	RGRCP						**DISREGARD- This was for irrigation purposes and has been abandoned**

INVERT AND SLOPES TAKEN FROM ADOT ASBUILT PLANS-- (I-10-2 [31])

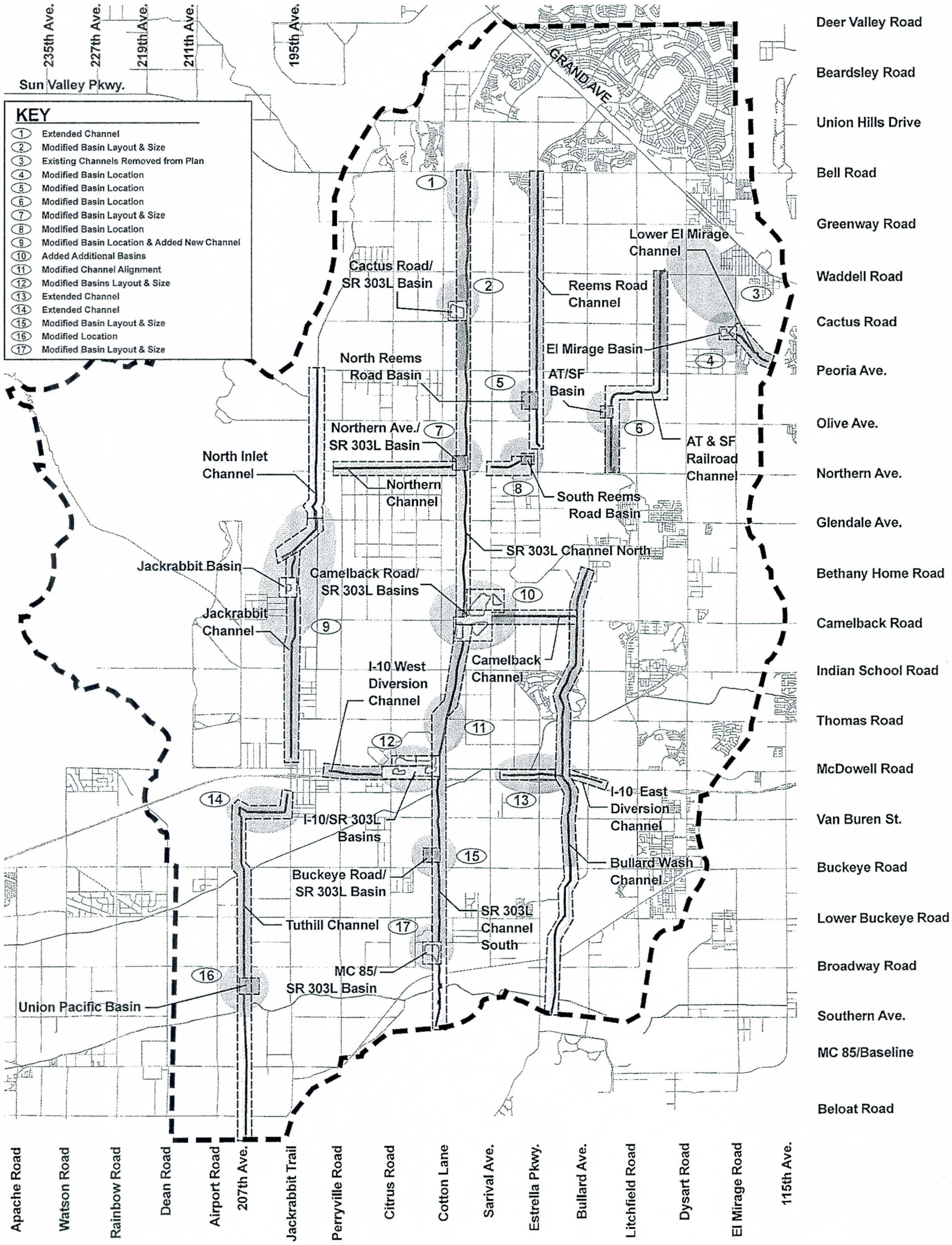
INVERT AND SLOPES TAKEN FROM ADOT ASBUILT PLANS FOR VERRADO WAY TI

INVERT AND SLOPES TAKEN FROM ADOT ASBUILT PLANS-- (I-10-2 [34])

W28, S70, L72, B65, D69
L09, L13, L19, L27, L34

Table 2.4B
Proposed Basin Summary
Existing Condition Hydrology

Channel/ Location ID	Qin (cfs)	Qout (cfs)	Vin (ac-ft)	Peak Storage (ac-ft)	Max. Vol. Provided (ac-ft)	Peak Stage (ft)	on/off line	Combined Total Outflow (cfs)	Length Low-Flow Basin Drain (ft)	Prop. Bot. Elev. (ft)	Prop. Top Elev. (ft)	Design FB (ft)	Actual FB (ft)	Backwater
Jackrabbit Channel														
SRJR1 (N. of Camelback)	850	65	42	41.5	43.9	1185.5	off-line	151	8,323	1,173.5	1,186.0	0.0	0.5	-----
Tuthill Channel														
SRTC5 (@ RxR)	1,646	550	109	108.5	108.5	898.0	off-line	618	4,390	890.0	898.0	0.0	-0.6	-----
I-10 Channel West														
SR10W7	1593	741	282	85.2	85.2	1022.0	on-line	N/A	2,487	1,010.5	1,022.0	0.0	0.0	-----
L303 Channel														
SRLP2 (Cactus Road)	2311	311	543	440	440.0	1212.0	off-line	587	5,630	1,197.0	1,212.0	0.0	0.0	-----
SRLP5 (Northern)	4241	442	354	334	333.0	1141.0	off-line	1380	6,934	1,126.0	1,141.0	0.0	0.0	-----
SRLP8 (Camelback)	2102	340	1081	705.9	700.0	1065.0	on-line	N/A	14,062	1,059.0	1,065.0	0.0	0.0	-----
SRLP12 (I-10)	1781	701	1166	591.5	590.0	1016.0	on-line	N/A	4,961	1,001.0	1,016.0	0.0	0.0	-----
SRLP14 (Yuma/Buckeye)	695	523	823	189.0	190.0	968.0	on-line	N/A	4,092	959.0	968.0	0.0	0.0	-----
SRLP16 (MC85)	751	448	938	325.0	325.0	913.0	on-line	N/A	2,872	903.0	913.0	0.0	0.0	-----
Reems/Northern Channel														
SRRM5 (Olive)	1,752	198	189	165.0	165.0	1134.0	off-line	818	1,449	1,127.0	1,134.0	0.0	0.0	-----
BSNR6(Northern)	477	0	55	55.0	61.1	1107.5	in-line	0	1,413	1,095.0	1,108.5	0.0	1.2	-----
AT&SF Railroad Channel														
SRRR7 (@Olive)	1,770	1285	331	81.3	142.7	1105.6	off-line	1439	1,832	1,097.5	1,111.5	0.0	6.1	-----
Lower El Mirage Channel														
(SRLE4 SW corner of Cactus and El Mirage)	1,312	813	191	56.9	80.0	1111.4	off-line	852	2,069	1,104.5	1,114.0	0.0	2.1	-----
Bullard Wash														
SRBD1S (I-10 and Bullard Wash)	2682	2011	813	134.9	138.0	990.2	off-line	575 - ADOT	4,390	978.5	990.2	0.0	-0.2	-----
								2239 - BLRD						



Basin & Channel Locations

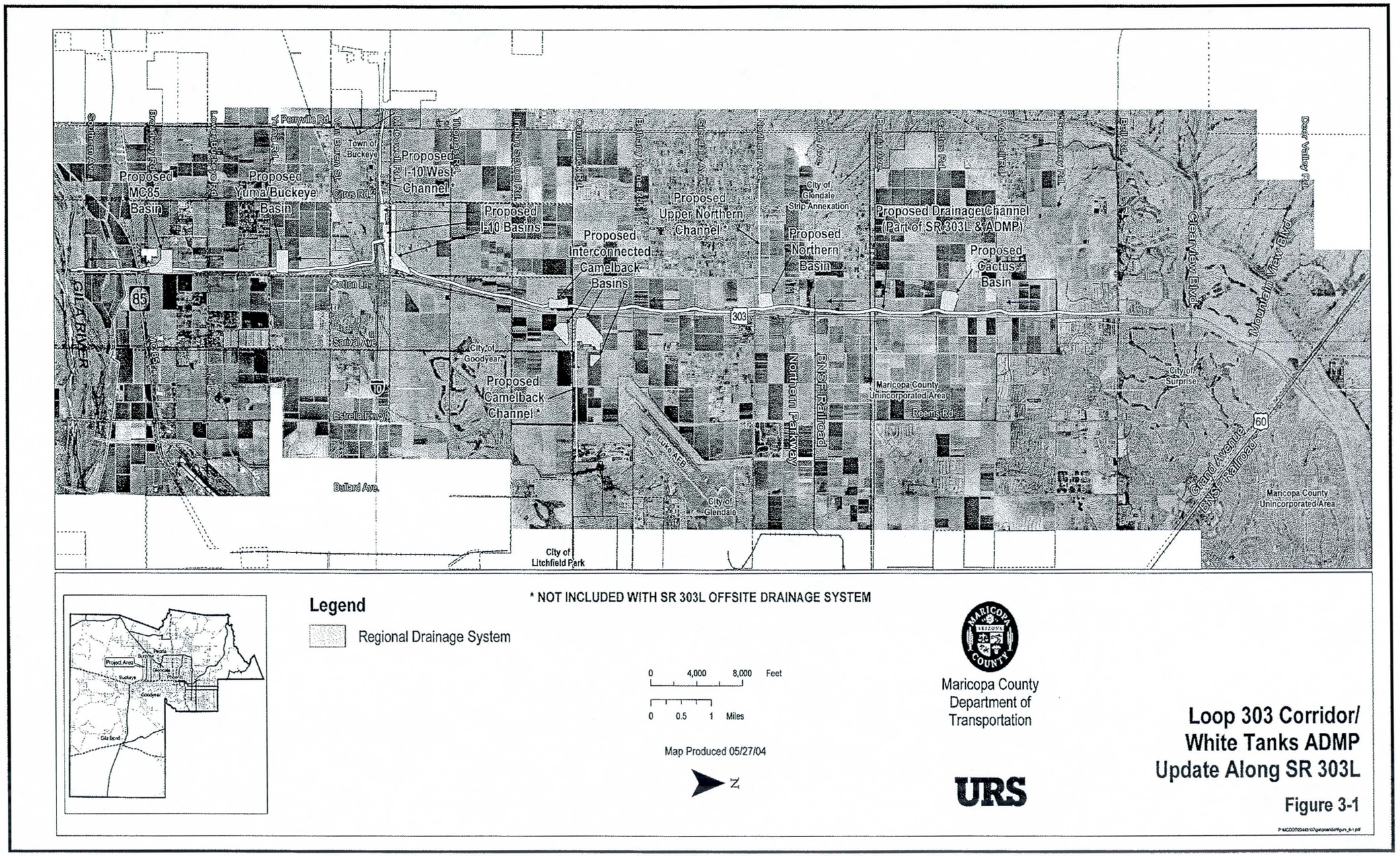


Figure 3 - Loop 303 Corridor/White Tanks ADMP Update Along SR303L

Table 2.2A
Proposed Channel Summary
Existing Condition Hydrology

Channel Name	Concentration Point	Qexist	[1]Approximate Qcap (cfs)	DS Invert (ft)	WSEL (ft)	Flow Depth (ft)	Channel Depth (ft)	Bottom Width (ft)	Side Slope (H:V)	Design s (ft/ft)	(Q/A) V ft/s	Froude Number F_N	Channel [3]Tw (ft)	(WSEL) [3]Tw (ft)
Camelback Channel														
	!CM2	372	372	1052.7	1056.5	3.8	4.7	5	(6:1)	*0.0020*	3.6	0.44	132	51
	!CM3	485	485	1047.5	1051.8	4.2	5.4	5	(6:1)	*0.0020*	3.8	0.45	143	57
	!CM4	783	783	1040.7	1044.8	4.1	6.3	26	(4:1)	*0.0020*	4.5	0.46	152	59
Jackrabbit Channel														
	!JR1	953	953	1177.1	1182.6	5.5	6.9	5	(6:1)	*0.0021*	4.6	0.47	167	71
	!JR2	813	813	1165.0	1169.3	4.3	5.3	15	(6:1)	*0.0025*	4.7	0.51	154	67
	!JR3	933	933	1147.4	1150.4	4.0	4.4	15	(6:1)	*0.0046*	6.1	0.61	140	51
	!JR4	1,324	1,324	1109.9	1114.3	4.4	4.4	25	(6:1)	*0.0035*	5.9	0.61	153	78
	!JR5	1,683	1,683	1080.3	1084.6	4.3	4.3	40	(6:1)	*0.0033*	6.0	0.60	171	92
SR303L URS DCR - Channel														
	!LP0	772	772	1275.6	1279.0	3.4	5.5	10	(2:1)	*0.0049*	13.7	1.57	62	24
	!LP	854	854	1247.9	1251.5	3.5	5.4	10	(2:1)	*0.0050*	14.3	1.61	62	24
	!LP1	1,612	1,612	1227.3	1232.5	5.1	5.9	12	(2:1)	*0.0031*	14.1	1.33	66	33
Cactus Road Basin	!LP2	2,898	2,898	1209.8	1215.9	6.0	6.1	20	(2:1)	*0.0026*	15.0	1.26	74	44
offline low flow/bypass channel	2LP2	587	587	1200.0	1202.6	2.5	4.8	20	(2:1)	*0.0026*	9.3	1.14	69	30
	!LP3	2,140	2,140	1180.8	1185.9	5.0	5.1	21	(2:1)	*0.0027*	13.8	1.26	71	41
	!LP4	2,636	2,636	1160.7	1165.9	5.2	5.2	26	(2:1)	*0.0025*	14.1	1.24	77	47
	!LP5	2,624	2,636	1136.3	1141.5	5.2	5.2	26	(2:1)	*0.0025*	14.0	1.23	77	47
offline low flow/bypass channel	2LP5	1,380	1,380	1130.4	1133.8	3.4	3.7	26	(2:1)	*0.0032*	12.5	1.32	71	40
	!LP6	1,539	1,539	1110.0	1115.1	5.1	6.4	16	(2:1)	*0.0020*	11.6	1.07	72	36
	!LP7	1,770	1,770	1087.1	1092.2	5.0	6.2	19	(2:1)	*0.0021*	12.1	1.10	74	39
	!LP8	2,097	2,097	1065.8	1070.7	4.9	6.1	26	(2:1)	*0.0020*	12.1	1.09	80	46
	!LP9	557	557	1047.9	1052.2	4.2	4.3	5	(2:1)	*0.0023*	9.8	1.08	52	22
	!LP10	624	624	1032.4	1036.1	3.7	3.7	5	(2:1)	*0.0052*	13.7	1.58	50	20
	!LP11	988	988	1014.5	1019.2	4.7	5.7	5	(2:1)	*0.0047*	14.8	1.56	58	24
	!LP13	697	701	984.8	988.5	3.6	3.8	8	(2:1)	*0.0041*	12.7	1.45	53	23
	!LP14	695	701	966.2	969.7	3.5	3.7	8	(2:1)	*0.0048*	13.5	1.54	53	22
	!LP15	676	676	934.2	937.7	3.4	4.2	8	(2:1)	*0.0048*	13.3	1.54	55	22
	!LP16	751	751	914.8	918.3	3.5	4.2	8	(2:1)	*0.0056*	14.5	1.67	55	22
	!LP17	447	448	884.3	888.7	4.3	5.5	5	(2:1)	*0.0013*	7.6	0.82	57	23
Upper Northern Channel														
	!NR1	256	256	1219.0	0.0	2.7	3.6	5	(6:1)	*0.0050*	4.6	0.66	115	37
	!NR2	1,309	1,309	1182.2	1186.3	4.0	4.1	30	(6:1)	*0.0039*	6.1	0.65	155	79
	!NR3	2,246	2,246	1143.5	1148.5	5.0	5.0	45	(6:1)	*0.0028*	6.0	0.56	189	105
	!NR4	2,308	2,308	1136.0	1141.0	5.0	5.0	50	(6:1)	*0.0025*	5.8	0.54	195	110
Lower Northern Channel	!NR5	262	262	1122.6	1125.9	3.3	4.3	5	(6:1)	*0.0020*	3.3	0.43	126	45
	!NR6	477	477	1096.7	1100.2	3.4	4.5	5	(6:1)	*0.0053*	5.5	0.71	129	47
Reems Road Channel														
	[2]RM1	709	516	1222.1	1226.6	4.5	5.7	6.5	(3:1)	*0.0040*	5.8	0.63	105	34
	[2]RM2	957	1,382	1208.2	1214.3	6.0	7.7	11.5	(4:1)	*0.0032*	6.5	0.60	147	60
	!RM3	1,366	1,366	1167.8	1172.0	4.1	4.2	30	(6:1)	*0.0037*	6.0	0.63	157	80
	!RM4	1,640	1,640	1142.7	1147.7	5.0	5.0	30	(6:1)	*0.0025*	5.5	0.53	169	90
	!RM5	2,179	2,179	1119.4	1124.6	5.1	5.2	40	(6:1)	*0.0027*	6.0	0.57	185	102
	!RM6	826	826	1100.6	1105.0	4.3	5.3	10	(6:1)	*0.0034*	5.3	0.59	148	63

Table 2.2A (continued)
Proposed Channel Summary
Existing Condition Hydrology

Channel Name	Concentration Point	Qexist	[1]Approximate Qcap (cfs)	DS Invert (ft)	WSEL (ft)	Flow Depth (ft)	Channel Depth (ft)	Bottom Width (ft)	Side Slope (H:V)	Design s (ft/ft)	(Q/A) V ft/s	Froude Number F_N	Channel [3]Tw (ft)	(WSEL) [3]Tw (ft)
AT&SF Railroad Channel														
	!RR1	425	425	1150.8	1154.5	3.6	3.9	10	(6:1)	*0.0020*	3.7	0.44	126	54
	!RR2	492	492	1146.2	1149.7	3.4	3.5	10	(6:1)	*0.0035*	4.7	0.58	120	52
	!RR3	785	785	1127.9	1131.9	4.0	4.0	10	(6:1)	*0.0046*	5.9	0.68	127	58
	!RR4	936	936	1110.1	1114.4	4.3	4.3	15	(6:1)	*0.0034*	5.4	0.59	139	67
	!RR5	970	970	1103.3	1108.5	5.2	5.2	15	(6:1)	*0.0015*	4.0	0.41	153	77
	!RR6	1,733	1,733	1098.8	1105.5	6.7	6.7	15	(6:1)	*0.0015*	4.7	0.42	176	95
	!RR7	1,770	1,770	1095.1	1101.9	6.8	6.8	15	(6:1)	*0.0015*	4.7	0.42	178	97
	!RR8	1,585	1,585	1081.1	1086.9	5.8	5.8	15	(6:1)	*0.0025*	5.5	0.53	162	85
Lower El Mirage Channel														
	!LE4	1,356	1,356	1107.2	1111.9	4.7	6.8	35	(3:1)	*0.0026*	5.9	0.54	151	63
	!LE5	865	865	1086.6	1090.6	4.0	5.1	15	(6:1)	*0.0038*	5.6	0.63	152	63
Bullard Wash Channel														
	!BD1N	2,103	2,103	1057.0	1047.3	5.2	7.0	45	(6:1)	*0.0020*	5.3	0.49	219	109
	!BD2N	3,244	3,244	1044.1	1049.8	5.7	7.8	65	(6:1)	*0.0020*	5.8	0.49	258	133
	!BD3N	3,410	3,410	1015.6	1020.7	5.0	6.7	65	(10:1)	*0.0027*	5.9	0.56	312	167
	!BD4N	3,248	3,410	1006.0	1010.8	4.7	6.4	102	(9:1)	*0.0018*	5.0	0.47	335	188
	!BD1S	3,556	3,556	985.5	990.4	4.9	6.4	90	(6:1)	*0.0025*	6.1	0.55	269	149
	!BD2S	2,321	2,321	980.9	984.4	3.5	3.8	95	(6:1)	*0.0033*	5.8	0.60	235	137
I-10 West Diversion Channel														
	!10W1	970	970	1045.8	N/A	3.8	4.5	25	(6:1)	*0.0035*	5.4	0.60	155	71
	!10W2	1,010	1,010	1039.7	1043.4	3.7	4.2	25	(6:1)	*0.0042*	5.9	0.66	150	69
	!10W3	1,046	1,046	1032.7	1036.5	3.7	4.1	25	(6:1)	*0.0042*	5.9	0.66	148	71
	!10W4	1,175	1,175	1028.5	1032.4	3.8	4.3	30	(6:1)	*0.0038*	5.8	0.63	158	77
	!10W5	1,588	1,588	1014.6	1018.9	4.3	5.0	35	(6:1)	*0.0036*	6.1	0.62	175	87
	!10W7	1,593	1,593	1014.6	1019.6	5.0	5.7	35	(6:1)	*0.0020*	5.0	0.48	186	95
	!10W8	743	743	1005.8	1010.5	4.6	5.5	10	(6:1)	*0.0020*	4.2	0.46	151	66
Tuthill Channel														
	!TC1	1,417	1,417	998.7	1003.5	4.7	5.8	20	(6:1)	*0.0037*	6.2	0.63	168	78
	!TC2	1,553	1,553	991.8	997.1	5.2	6.1	25	(6:1)	*0.0023*	5.3	0.51	180	89
	!TC3	1,491	1,491	957.0	961.9	4.8	5.1	25	(6:1)	*0.0029*	5.7	0.57	163	84
	!TC4	1,546	1,546	914.7	919.3	4.6	4.6	30	(6:1)	*0.0032*	5.9	0.59	163	85
	!TC5	1,926	1,926	886.8	891.4	4.6	4.6	40	(6:1)	*0.0033*	6.3	0.61	176	95
	!TC6	646	646	882.3	885.9	3.6	3.6	15	(6:1)	*0.0035*	5.0	0.59	128	58
	!TC7	1,323	1,323	863.6	867.8	4.1	4.2	45	(6:1)	*0.0020*	4.6	0.47	176	95
	!TC8	1,506	1,506	859.4	864.6	5.2	5.2	45	(6:1)	*0.0011*	3.8	0.35	192	107
	!TC9	1,503	1,506	854.8	860.1	5.3	5.3	45	(6:1)	*0.0010*	3.7	0.34	193	109
I-10 East Diversion Channel														
	10CE-US	575	575	984.5	988.6	4.1	4.5	12	(6:1)	*0.0019*	3.9	0.44	138	61
	10CE1	556	575	978.5	985.2	4.1	4.5	12	(6:1)	*0.0018*	3.8	0.43	138	62
I-10 Central Channel														
	!10C1	79	79	1005.4	1007.7	2.2	2.3	2	(6:1)	*0.0020*	2.4	0.40	90	29
	!10C2	131	131	1002.6	1005.3	2.7	2.7	2	(6:1)	*0.0020*	2.8	0.41	96	34
	!10C3	170	170	995.9	998.9	3.0	3.0	2	(6:1)	*0.0020*	2.9	0.42	101	38
	!10C4	243	243	982.2	985.5	3.2	3.3	2	(6:1)	*0.0026*	3.6	0.49	105	41

1. By normal depth computation.
2. Channel reach exists.
3. Top width.