Volume 9: Subbasin Data – "S" 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

Registered Professional Engineer (Civil)
CERTIFICATE NO.
35571
LINDA A.
POTTER
Date Signed 9/4/09
ARIZONA U.S.A.

S01

Computation

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

Location: Van Buren at Estrella (DS01)

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	96	95	184	95.5	94.2	0	0.00	94.7	0	0.00	95.2	0	0.00	CHECK	95.7	0.2	49.37	DONE
south	95	94.1	248	94.55	94.2	0	0.00	94.7	0.15	43.22	95.2	0.65	389.89		95.7	1.15	917.53	
south	94.1	93.8	2	93.95	94.2	0.25	0.75	94.7	0.75	3.90	95.2	1.25	8.39		95.7	1.75	13.89	
south	93.8	93.8	98	93.8	94.2	0.4	74.38	94.7	0.9	251.02	95.2	1.4	487.01		95.7	1.9	769.98	
southeast	93.8	93.8	24	93.8	94.2	0.4	18.21	94.7	0.9	61.47	95.2	1.4	119.27		95.7	1.9	188.57	
east	93.8	93.9	70	93.85	94.2	0.35	43.48	94.7	0.85	164.57	95.2	1.35	329.40		95.7	1.85	528.42	
east	93.9	94.2	2	94.05	94.2	0.15	0.35	94.7	0.65	3.14	95.2	1.15	7.40		95.7	1.65	12.72	
east	94.2	95	108	94.6	94.2	0	0.00	94.7	0.1	10.25	95.2	0.6	150.58		95.7	1.1	373.80	
east	95	96	180	95.5	94.2	0	0.00	94.7	0	0.00	95.2	0	0.00		95.7	0.2	48.30	
						TOTALS:	137.17			537.57			1491.93				2902.56	

Graph Computations:

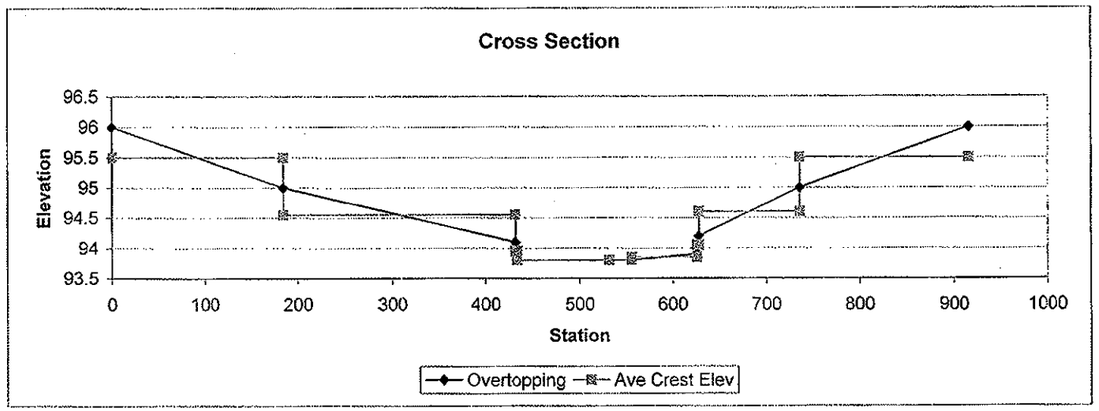
Station	Elevation
0	96
184	95
432	94.1
434	93.8
532	93.8
556	93.8
626	93.9
628	94.2
736	95
916	96

Weir Approximation:

Station	Elevation
0	95.5
184	95.5
184	94.55
432	94.55
432	93.95
434	93.95
434	93.8
532	93.8
532	93.8
556	93.8
556	93.85
626	93.85
626	94.05
628	94.05
628	94.6
736	94.6
736	95.5
916	95.5

Culvert Flows (cfs):

south	0
southeast	0
east	0



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	75.13	55%	Q(south)	298.14	55%	Q(south)	885.29	59%	Q(south)	1750.77	60%
Q(southeast)	18.21	13%	Q(southeast)	61.47	11%	Q(southeast)	119.27	8%	Q(southeast)	188.57	6%
Q(east)	43.83	32%	Q(east)	177.96	33%	Q(east)	487.38	33%	Q(east)	963.23	33%
	137.17			537.57			1491.93			2902.56	

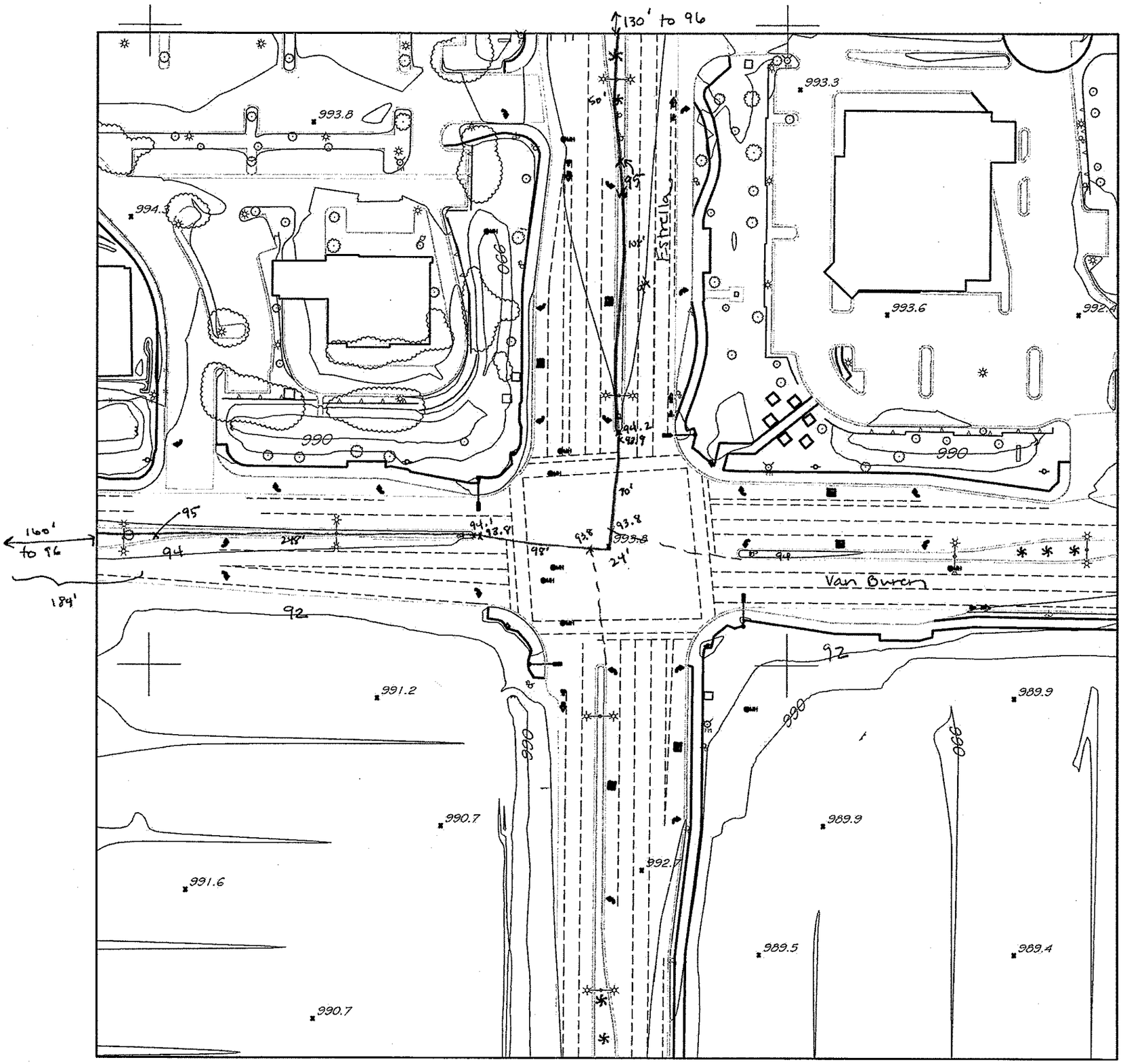
First DI	East to South			
Inflow	137.17	537.57	1491.93	2902.56
Outflow	75.13	298.14	885.29	1750.77

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	62.05	239.43	606.65	1151.79
Outflow	18.21	61.47	119.27	188.57

Assumes diversion is to southeast

Van Buren @
Estrella
(Reems) DS01



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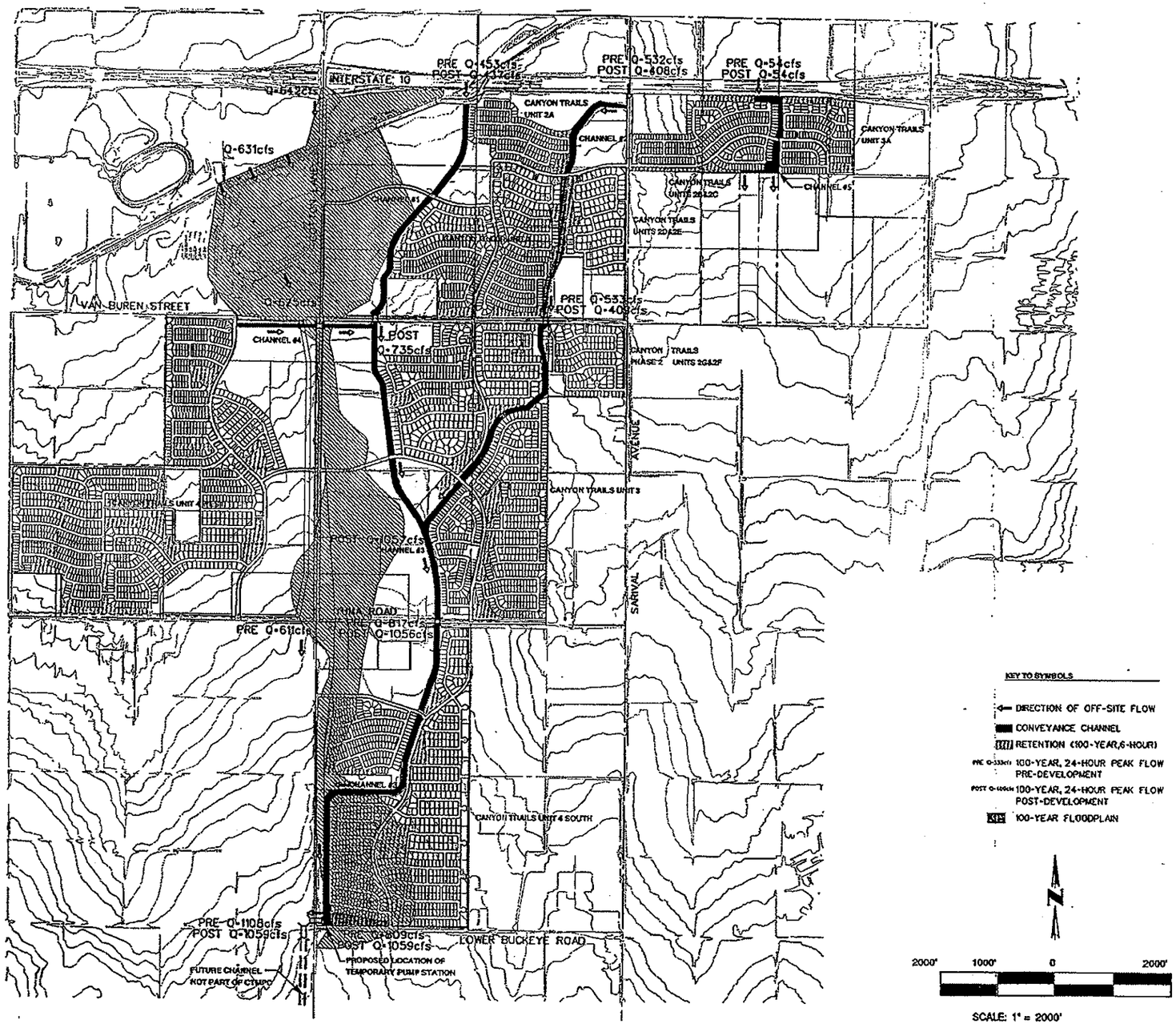

Jun. 19, 2004
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4/1/05

CANYON TRAILS

COE & VAN LOO
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DRAINAGE MAP

4550 NORTH 12TH STREET
PHOENIX, ARIZONA 85014
TELEPHONE (602) 264-6831

JOB NO
020026

PLATE 1

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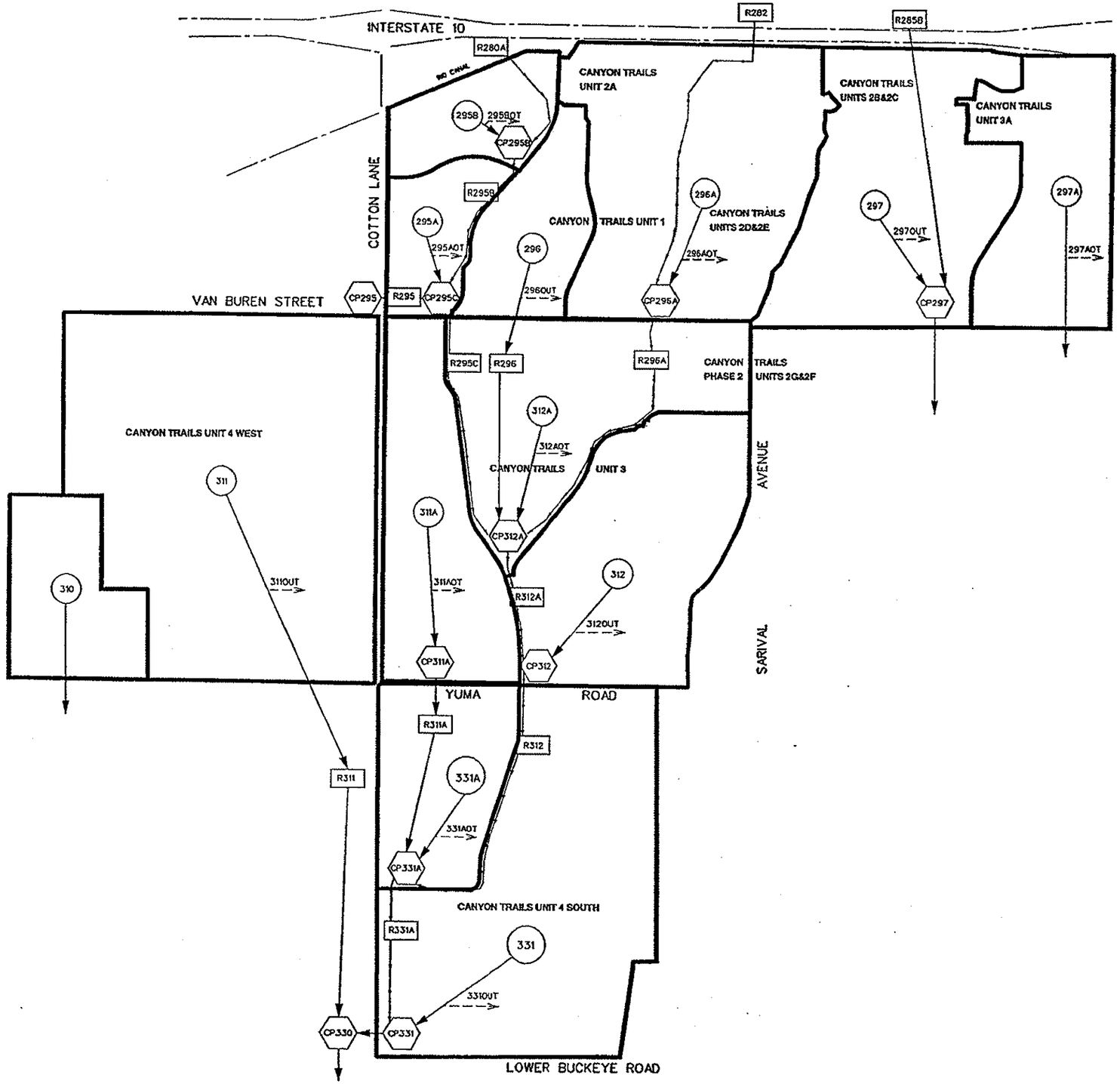

S01, S06
S15, S14
S19, S28
S17, S16
S18

4105

KEY TO SYMBOLS

- 297A — SUB-BASIN ID
- CP296A — CONCENTRATION POINT
- R296A — ROUTE ID
- SUB-BASIN BOUNDARY
- CHANNEL (GREENBELT) FLOWLINE
- RETENTION DIVERSION

N

1600' 800' 0 1600'

SCALE: 1" = 1600'

CANYON TRAILS

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HEC-1 ROUTING MAP

4550 NORTH 12TH STREET
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TELEPHONE (602) 264-6831

JOB NO
020026

PLATE 2

S02

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Job No.	79902
Subject	Weir Flow Analysis	No.	
Task	Weir Calculations	Computed	LP
		Date	10/27/2008
		Checked	
		Date	3/6/09
		Sheet	1
		Of	x

Location: Yuma & Estrella (DS02)

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	78.8	78	318	78.4	77.3	0	0.00	77.8	0	0.00	78.3	0	0.00	CHECK	78.8	0.4	241.35	DONE
south	78	77.9	30	77.95	77.3	0	0.00	77.8	0	0.00	78.3	0.35	18.64		78.8	0.85	70.53	
south	77.9	77.4	5	77.65	77.3	0	0.00	77.8	0.15	0.87	78.3	0.65	7.86		78.8	1.15	18.50	
south	77.4	77	56	77.2	77.3	0.1	5.31	77.8	0.6	78.08	78.3	1.1	193.82		78.8	1.6	340.01	
southeast	77	77	20	77	77.3	0.3	9.86	77.8	0.8	42.93	78.3	1.3	88.93		78.8	1.8	144.90	
east	77	77.1	30	77.05	77.3	0.25	11.25	77.8	0.75	58.46	78.3	1.25	125.78		78.8	1.75	208.35	
east	77.1	77.6	5	77.35	77.3	0	0.00	77.8	0.45	4.53	78.3	0.95	13.89		78.8	1.45	26.19	
east	77.6	78	86	77.8	77.3	0	0.00	77.8	0	0.00	78.3	0.5	91.22		78.8	1	258.00	
east	78	78.7	264	78.35	77.3	0	0.00	77.8	0	0.00	78.3	0	0.00		78.8	0.45	239.08	
						TOTALS:	26.42			184.87			540.13				1546.90	

Graph Computations:

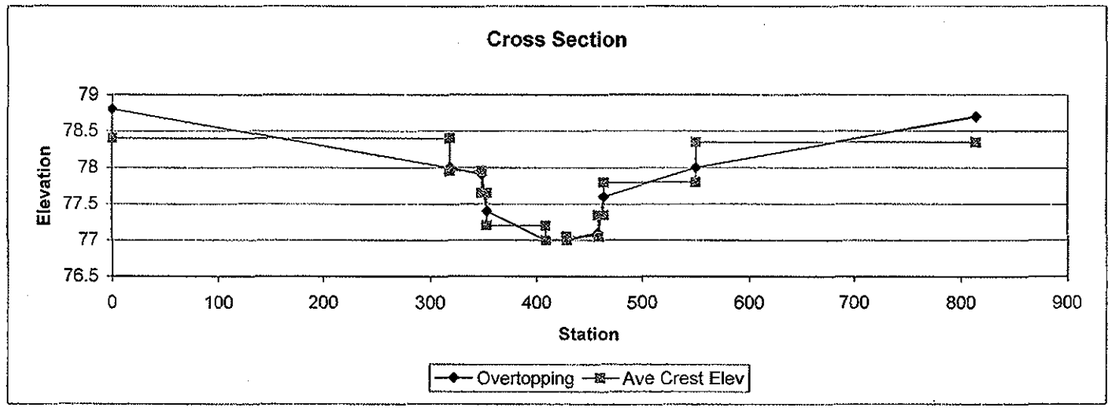
Station	Elevation
0	78.8
318	78
348	77.9
353	77.4
409	77
429	77
459	77.1
464	77.6
550	78
814	78.7

Weir Approximation:

Station	Elevation
0	78.4
318	78.4
318	77.95
348	77.95
348	77.65
353	77.65
353	77.2
409	77.2
409	77
429	77
429	77.05
459	77.05
459	77.35
464	77.35
464	77.8
550	77.8
550	78.35
814	78.35

Culvert Flows (cfs):

south	0
southeast	0
east	0



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	5.31	20%	Q(south)	78.95	43%	Q(south)	220.32	41%	Q(south)	670.38	43%
Q(southeast)	9.86	37%	Q(southeast)	42.93	23%	Q(southeast)	88.93	16%	Q(southeast)	144.90	9%
Q(east)	11.25	43%	Q(east)	62.98	34%	Q(east)	230.88	43%	Q(east)	731.62	47%
	26.42			184.87			540.13			1546.90	

First DI	East to South			
Inflow	26.42	184.87	540.13	1546.90
Outflow	5.31	78.95	220.32	670.38

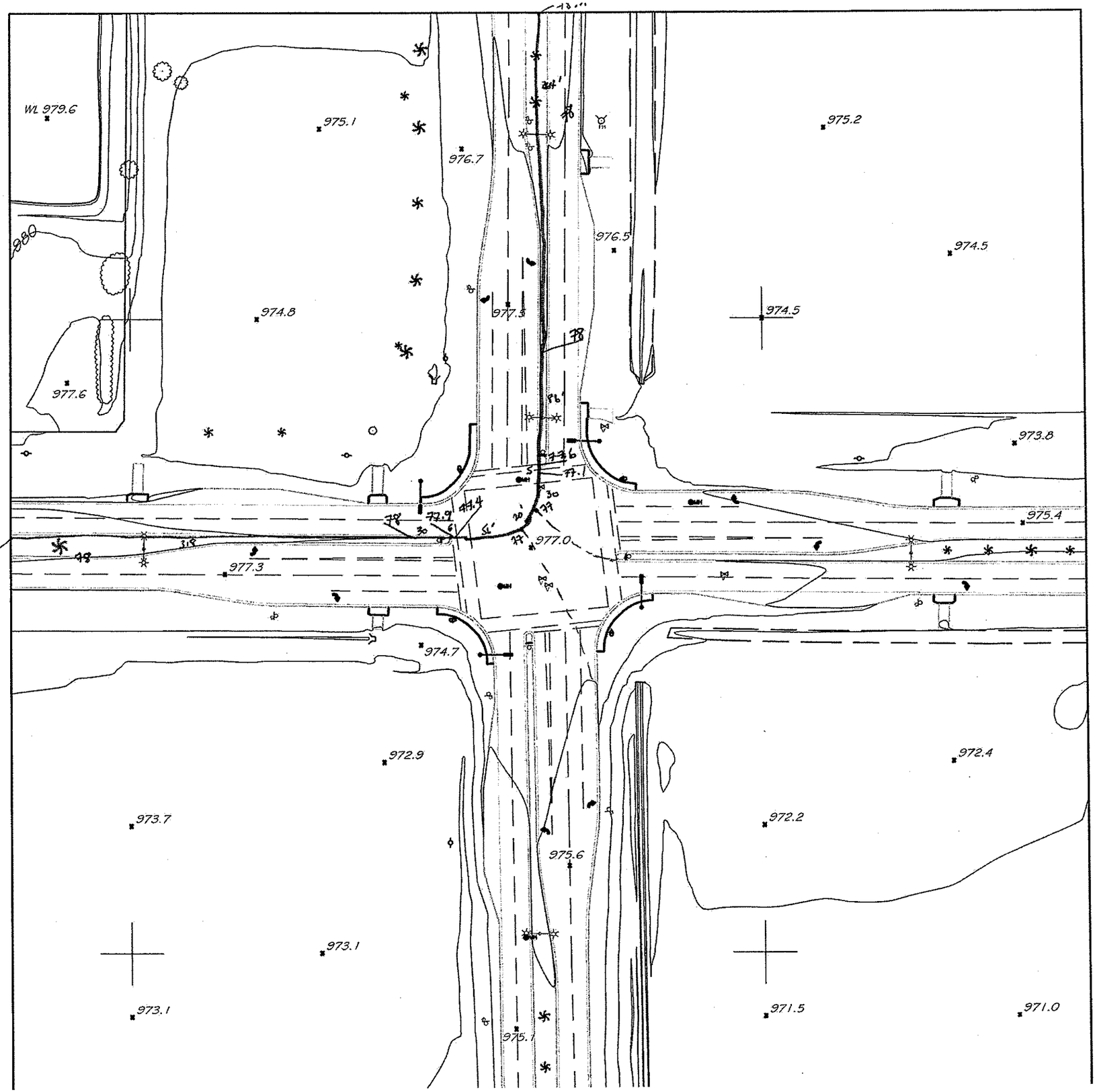
Assumes diversion is to south

Second DI	East to Southeast			
Inflow	21.11	105.92	319.82	876.52
Outflow	9.86	42.93	88.93	144.90

Assumes diversion is to southeast

Luna & Estrella

DS02



1" = 80'

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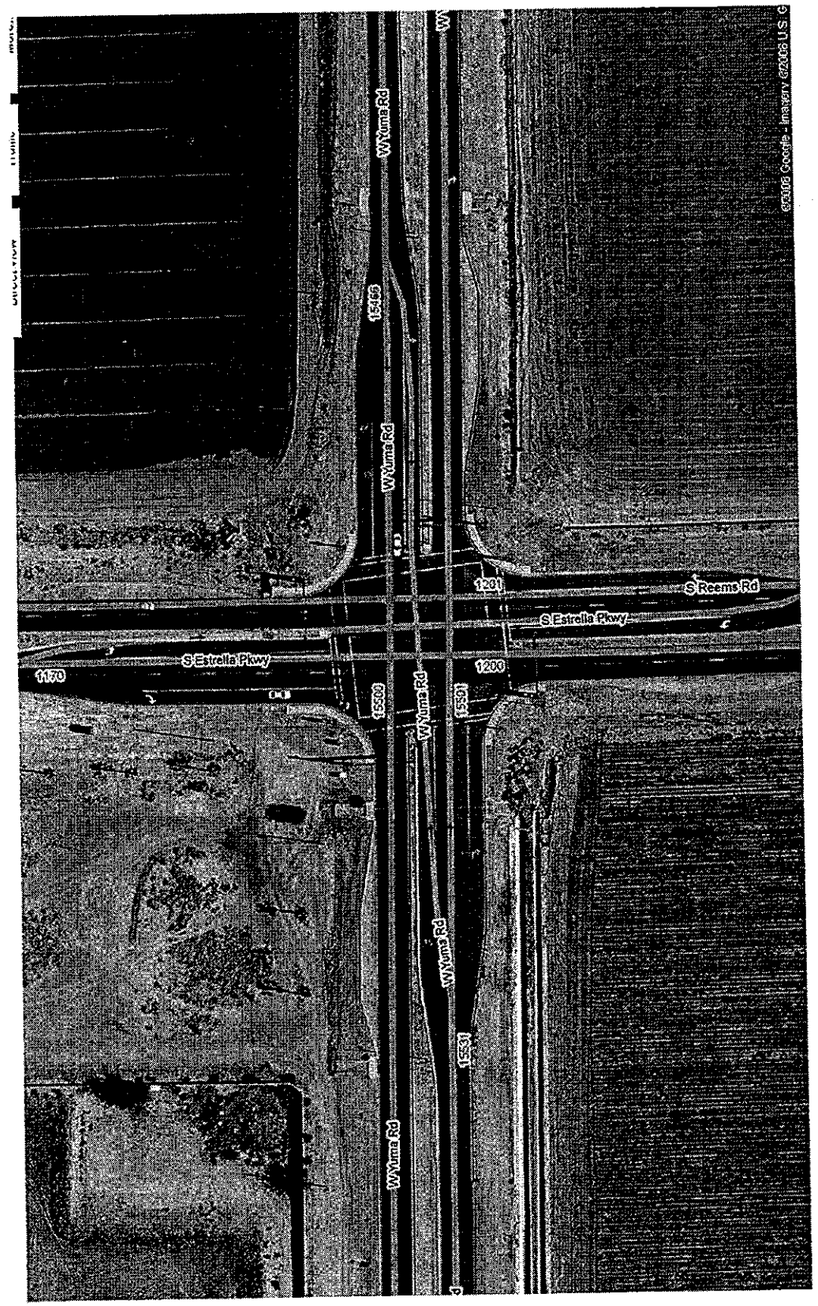
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15501
15531
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S Estrella Pkwy
S Estrella Pkwy
S Reems Rd
1170
1200
1201
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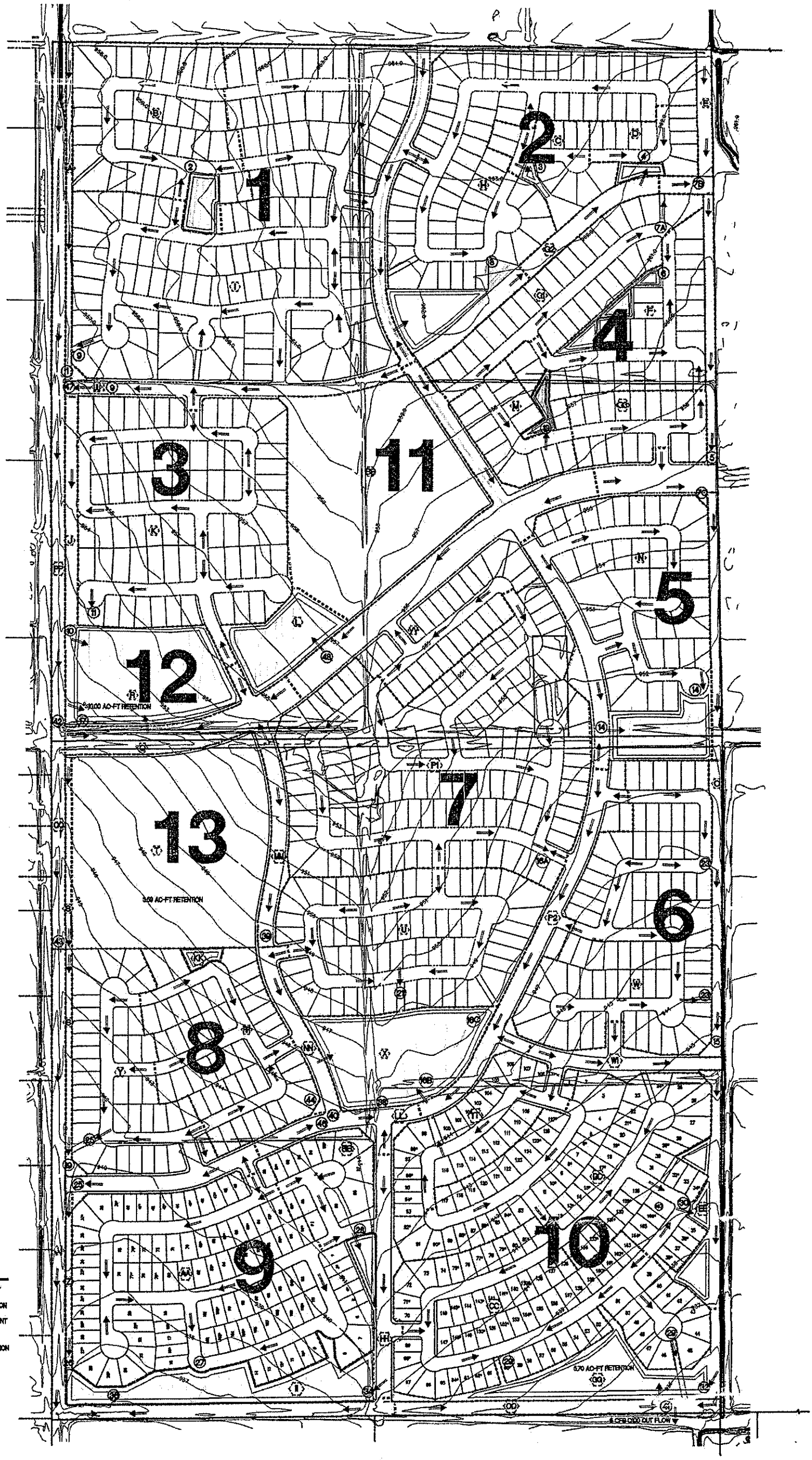


REVISED

DWG. NO. 1 OF 1	CMX JOB NO. 5905.01	DATE: 8/31/01	SCALE: 1"=180'
	DESIGNED: CMX	DRAWN: CMX	APPROVED: CMX
	REV.		

DRAINAGE EXHIBIT C

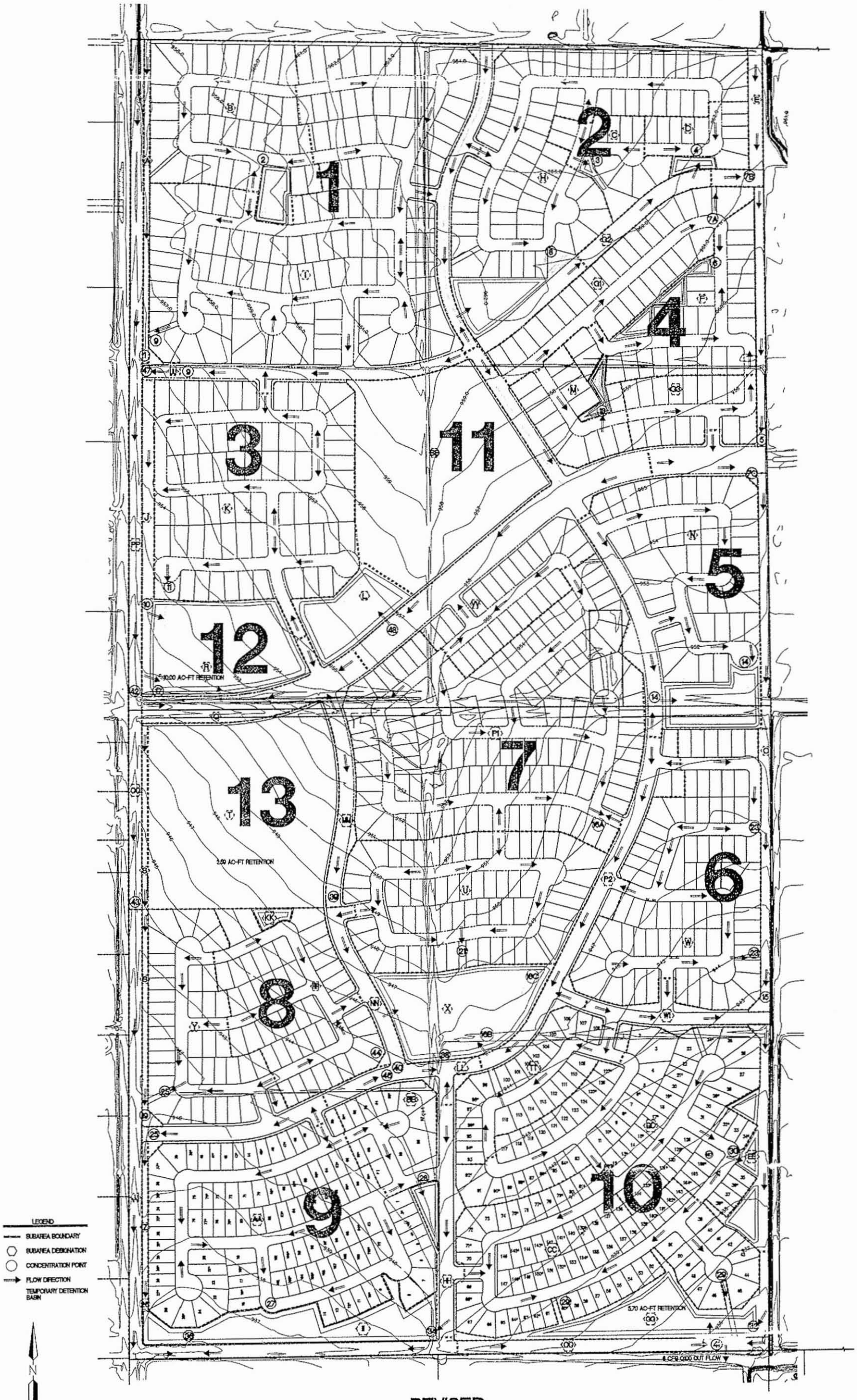
SARIVAL VILLAGE
SARIVAL AVENUE AND ELWOOD ROAD
GOODYEAR, AZ

CMX GROUP INC.
ENGINEERING
PROJECT ADMINISTRATION
CONSTRUCTION ANALYSIS

1515 E. MISSOURI
PHOENIX, AZ 85014
PH (602)279-8436
FAX (602)265-1191

S03, S04, S08, S09

S04



REVISED

DWG. NO.	CMX JOB NO. 5905.01	DATE: 8/31/01	SCALE: 1"=180'
1 OF 1	DESIGNED: CMX	DRAWN: CMX	APPROVED: CMX
	REV.		

DRAINAGE EXHIBIT C

SARIVAL VILLAGE

SARIVAL AVENUE AND ELWOOD ROAD
GOODYEAR, AZ

CMX GROUP INC.
ENGINEERING
PROJECT ADMINISTRATION
CONSTRUCTION ANALYSIS

1515 E. MISSOURI
PHOENIX, AZ 85014
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FAX (602)265-1191

SRS04

The WLB Group Inc. WLB

COMPUTATION DATA SHEET

Subject WHITE TANK/AGUA FRIA ADMS Prepared by JSE Date 2-11-91

STAGE - STORAGE - DISCHARGE TABLE

SUBBASIN (348B) = 1/4 MILE WEST OF REEMS ROADS BW=12 D=2.5 LC=3'
INVERT = 907.6' Top of RR = 914.0
SPRR Bridge

ELEV. (FT)	AREA (AC)	VOLUME (AC-FT)	DISCHARGE (CFS)
908.5 x Invert	0	0	0
	.08		
910.1	.10	.08	50
	8.25		
914 x Weir Flow Across RR	4.13	8.33	385
	5.83		
915	7.52	14.16	323 + 455 = 778
	9.21		
916	10.9	23.37	398 + 4228 = 4586

Weir Flow
$Q = CLH^{3/2}$

C = 2.6
L = 350/2
H = 1.0

Q at 915 = 455 cfs

L = 1150/2
H = 2.0

Q at 916 = 4228 cfs

Form 209

BOX CULVERT ANALYSIS
COMPUTATION OF CULVERT PERFORMANCE CURVE
February 11, 1991

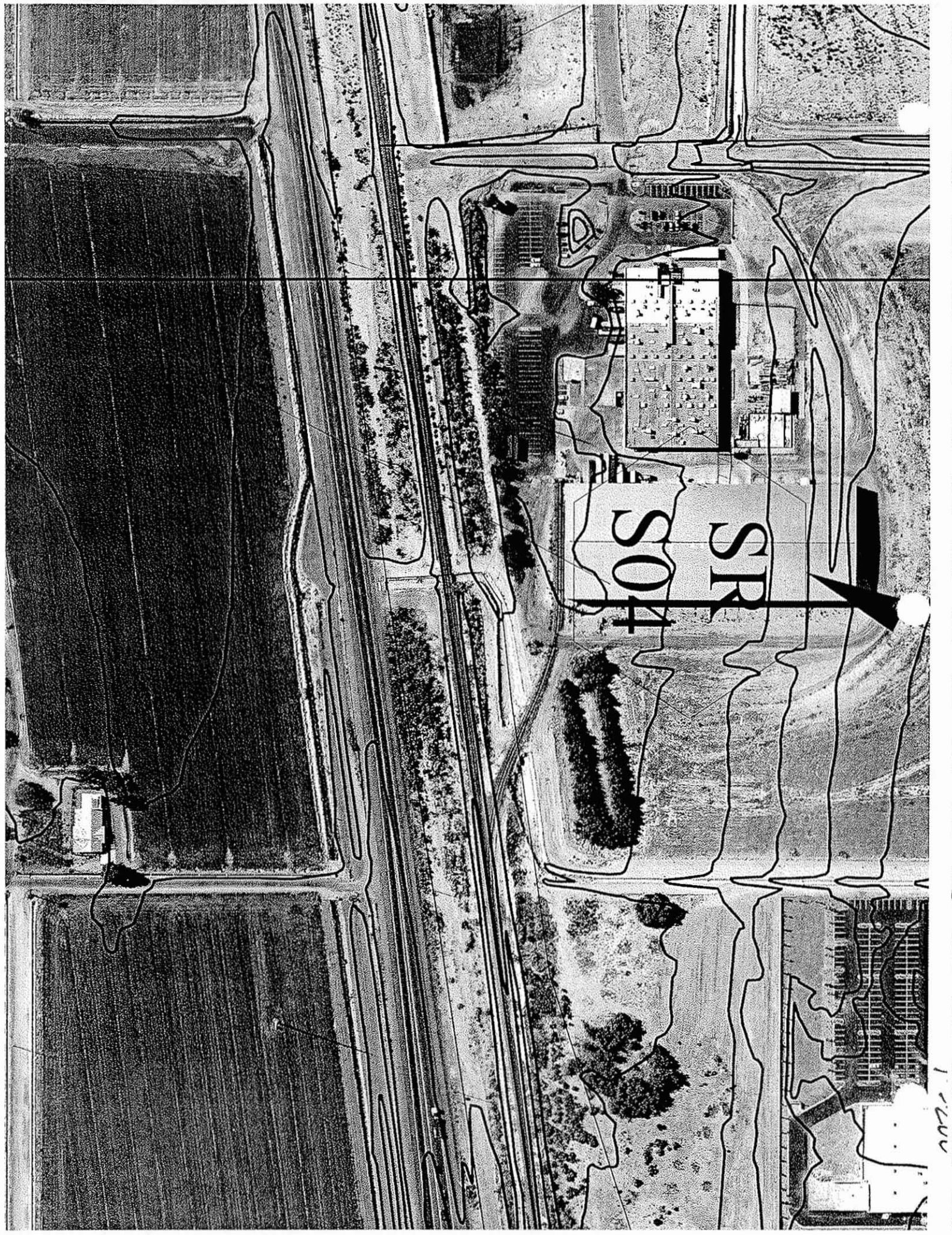
PROGRAM INPUT DATA:

DESCRIPTION	VALUE
Culvert Span (Width of Opening) (feet).....	12.00
Culvert Rise (Height of Opening) (feet).....	2.50
FHWA Chart Number (8,9,10,11,12 or 13).....	8
Scale Number on Chart (Type of Culvert Entrance).....	1
Manning's Roughness Coefficient (n-value).....	0.0300
Entrance Loss Coefficient of Culvert Opening.....	0.50
Culvert Length (feet).....	30.0
Culvert Slope (feet per foot).....	0.0050

PROGRAM RESULTS:

Flow Rate (cfs)	Tailwater Depth (ft)	Headwater (ft) Inlet Control	Headwater (ft) Outlet Control	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
50.0	1.19	1.29	1.60	1.19	0.81	1.19	3.50
285.0	2.50	5.50	5.50	2.50	2.50	2.50	9.50
323.0	2.50	6.49	6.40	2.50	2.50	2.50	10.77
358.0	2.50	7.51	7.32	2.50	2.50	2.50	11.93

BOX CULVERT ANALYSIS COMPUTER PROGRAM Version 1.4 Copyright (c) 1986
Dodson & Associates, Inc., 7015 W. Tidwell, #107, Houston, TX 77092
(713) 895-8322. All Rights Reserved.


SR 104

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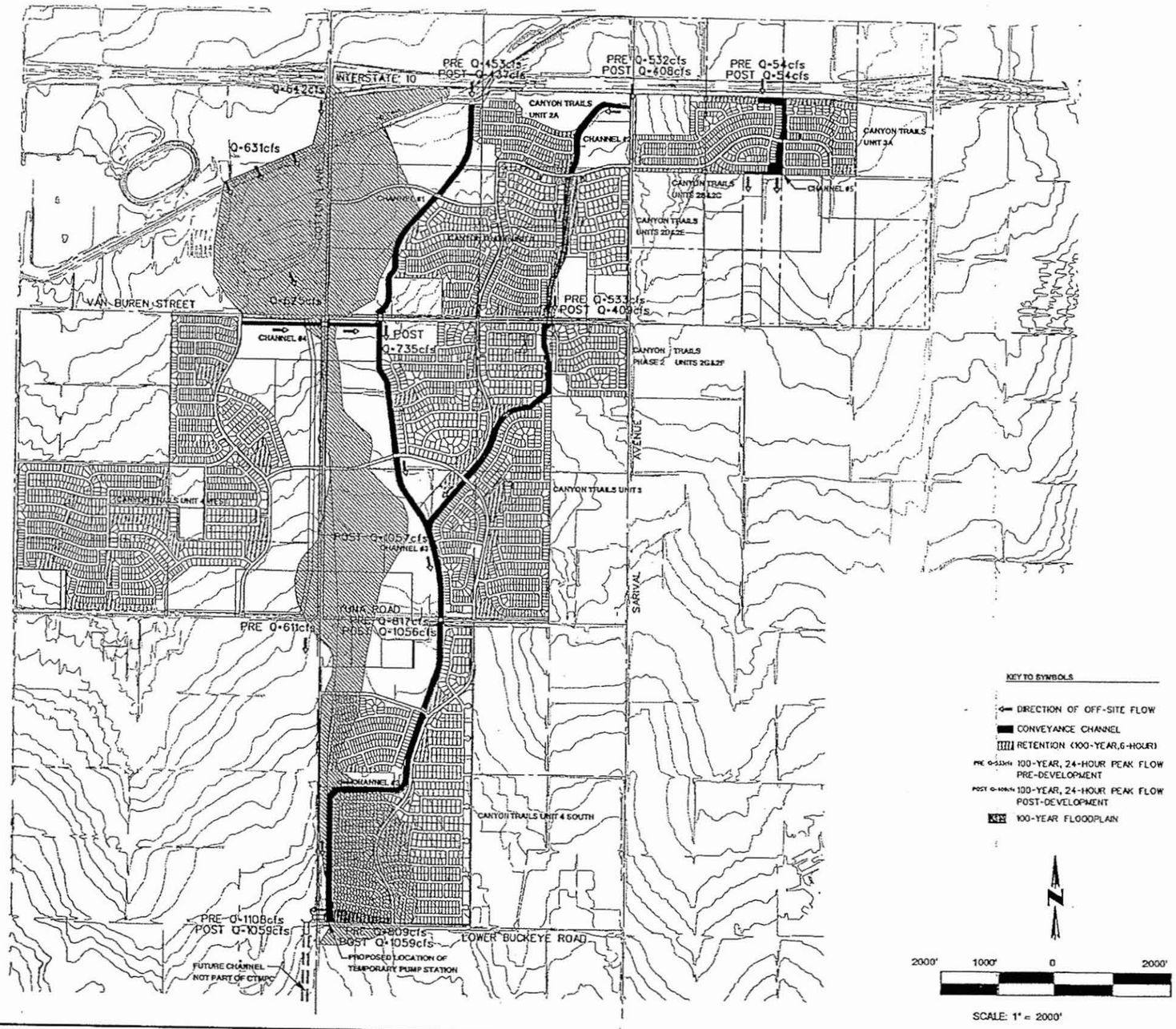
For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

S06



Jun. 19, 2004
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CANYON TRAILS

COE & VAN LOO
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DRAINAGE MAP

4550 NORTH 12TH STREET
PHOENIX, ARIZONA 85014
TELEPHONE (602) 264-6831

JOB NO
020026

PLATE 1

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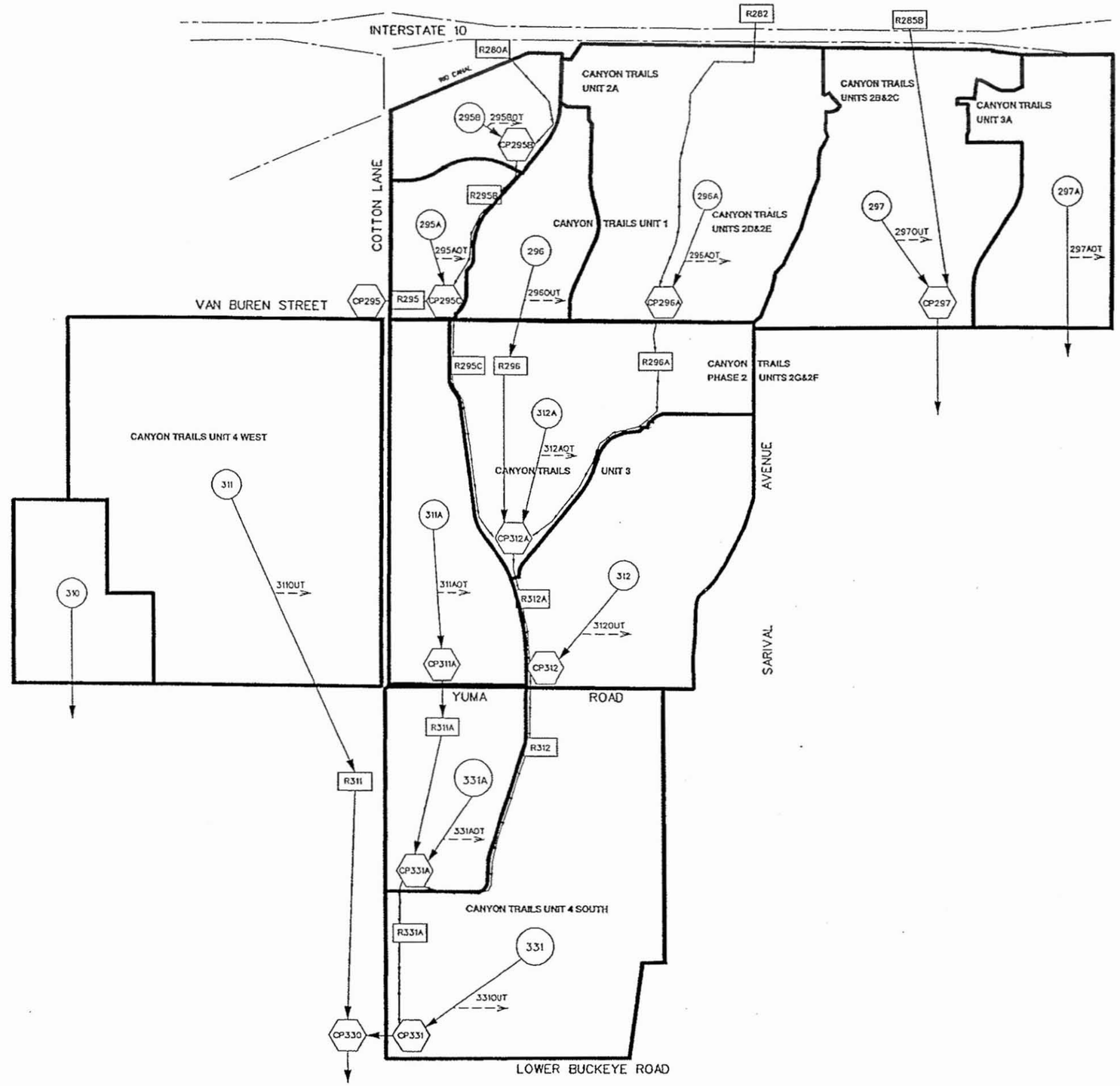

S01, S06
S15, S14
S19, S28
S17, S16
S18

4/05

KEY TO SYMBOLS

- 297A — SUB-BASIN ID
- CP296A — CONCENTRATION POINT
- R296A — ROUTE ID
- SUB-BASIN BOUNDARY
- CHANNEL (GREENBELT) FLOWLINE
- RETENTION DIVERSION

N

1600' 800' 0 1600'

SCALE: 1" = 1600'

CANYON TRAILS

COE & VAN LOO
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HEC-1 ROUTING MAP

4550 NORTH 12TH STREET
PHOENIX, ARIZONA 85014
TELEPHONE (602) 264-6831

JOB NO
020026

PLATE 2

S07

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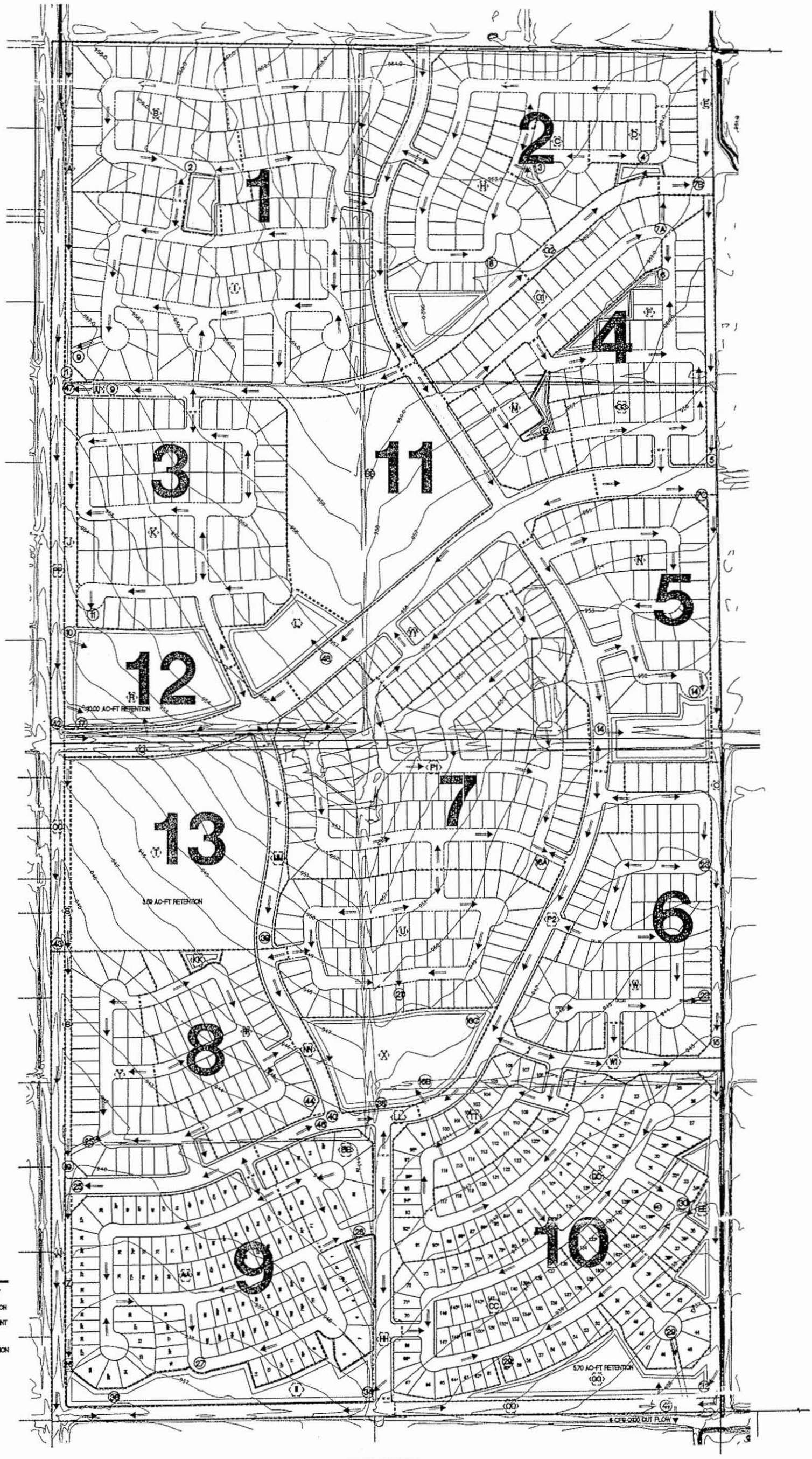
For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

S08



REVISED

DWG. NO.	CMX JOB NO. 5905.01	DATE: 8/31/01	SCALE: 1"=180'	DRAINAGE EXHIBIT C	CMX GROUP INC.	1515 E. MISSOURI
1 OF 1	DESIGNED: CMX	DRAWN: CMX	APPROVED: CMX	SARIVAL VILLAGE	ENGINEERING	PHOENIX, AZ 85014
	REV.			SARIVAL AVENUE AND ELWOOD ROAD	PROJECT ADMINISTRATION	PH (602)279-8436
				GOODYEAR, AZ	CONSTRUCTION ANALYSIS	FAX (602)265-1191

Sn3 Sn4 Sn8 Sn9

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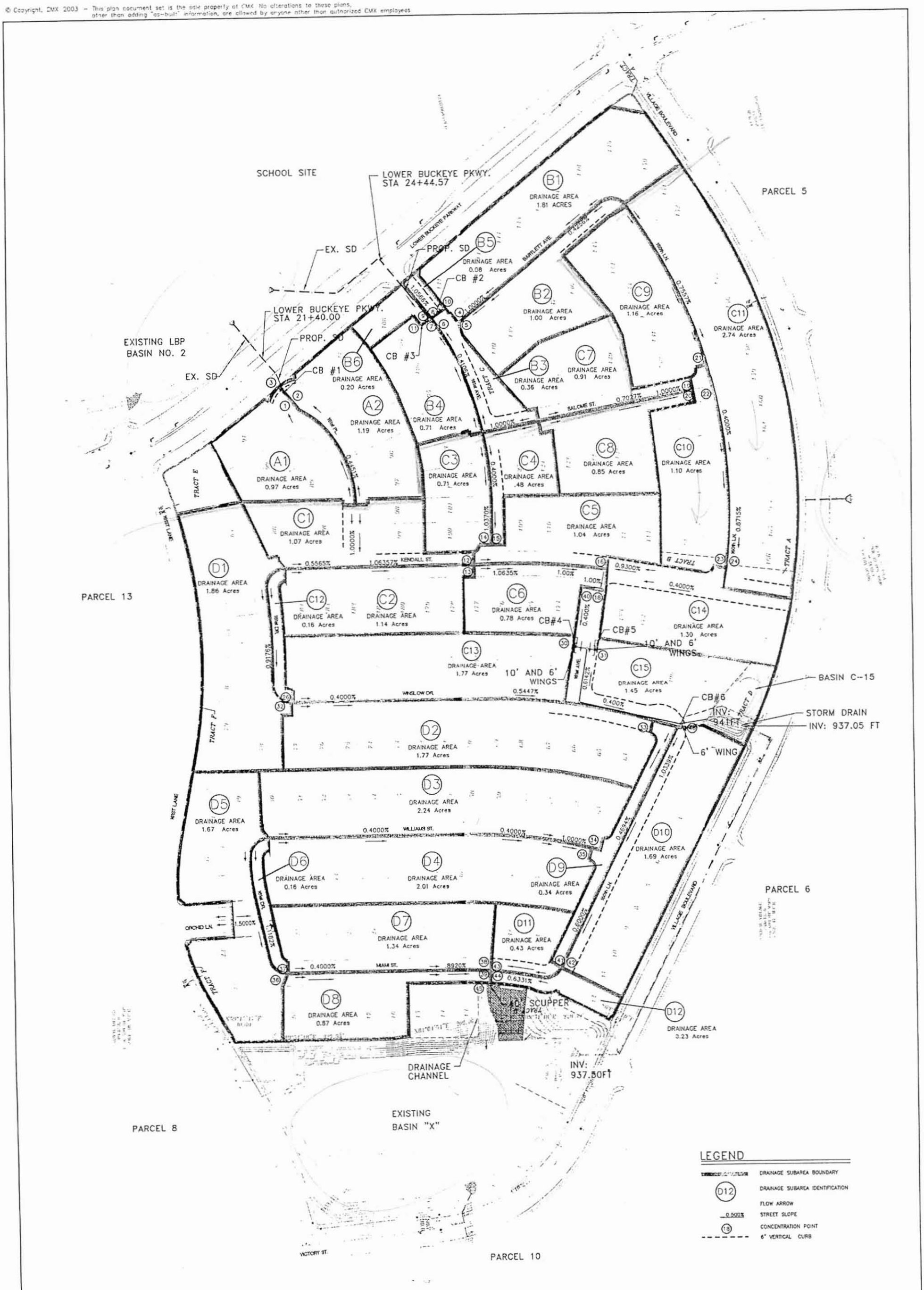

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1	DESIGNED: LW	DRAWN: CMX	APPROVED: DP
SHT. 1 OF 1	REV.		

PARCEL 7
SARIVAL VILLAGE
GOODYEAR, ARIZONA

DRAINAGE MAP– EXHIBIT 'C'

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508 509

S09

Job No.	79902	No.	

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Computed	ahm	Date	10/16/2008
Subject	Weir Flow Analysis	Checked	tP	Date	3/10/09
Task	Weir Calculations	Sheet	1	Of	x

Location: MC85/RR Tracks at Sarival (DS09)

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	914	912	917	913	912.6	0	0.00	913.1	0.1	86.99	913.6	0.6	1278.55	CHECK	914.1	1.1	3173.80	DONE
south	912	912.5	800	912.25	912.6	0.35	496.95	913.1	0.85	1880.79	913.6	1.35	3764.54		914.1	1.85	6039.05	
south	912.5	912.5	50	912.5	912.6	0.1	4.74	913.1	0.6	69.71	913.6	1.1	173.05		914.1	1.6	303.58	
southwest	912.5	912.50	20	912.5	912.6	0.1	1.90	913.1	0.6	27.89	913.6	1.1	69.22		914.1	1.6	121.43	
west	912.5	912.5	50	912.5	912.6	0.1	4.74	913.1	0.6	69.71	913.6	1.1	173.05		914.1	1.6	303.58	
west	912.5	912	390	912.25	912.6	0.35	242.26	913.1	0.85	916.88	913.6	1.35	1835.21		914.1	1.85	2944.04	
west	912	914	250	913	912.6	0	0.00	913.1	0.1	23.72	913.6	0.6	348.57		914.1	1.1	865.27	
west	914	916	180	915	912.6	0	0.00	913.1	0	0.00	913.6	0	0.00		914.1	0	0.00	
west	916	916	1	916	912.6	0	0.00	913.1	0	0.00	913.6	0	0.00		914.1	0	0.00	
				0														
						TOTALS:	750.60			3075.69			7642.20				13750.75	

Graph Computations:

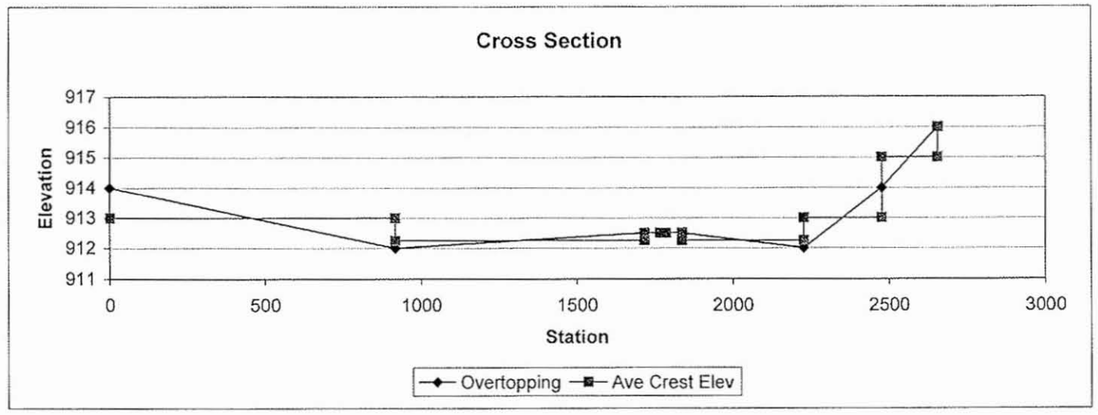
Station	Elevation
0	914
917	912
1717	912.5
1767	912.5
1787	912.5
1837	912.5
2227	912
2477	914
2657	916
2658	916

Weir Approximation:

Station	Elevation
0	913
917	913
917	912.25
1717	912.25
1717	912.5
1767	912.5
1767	912.5
1787	912.5
1787	912.5
1837	912.5
1837	912.25
2227	912.25
2227	913
2477	913
2477	915
2657	915
2657	916
2658	916

Culvert Flows (cfs):

south	0	(note: culverts
southwest	0	disregarded,
west	0	small, irr, plugged)



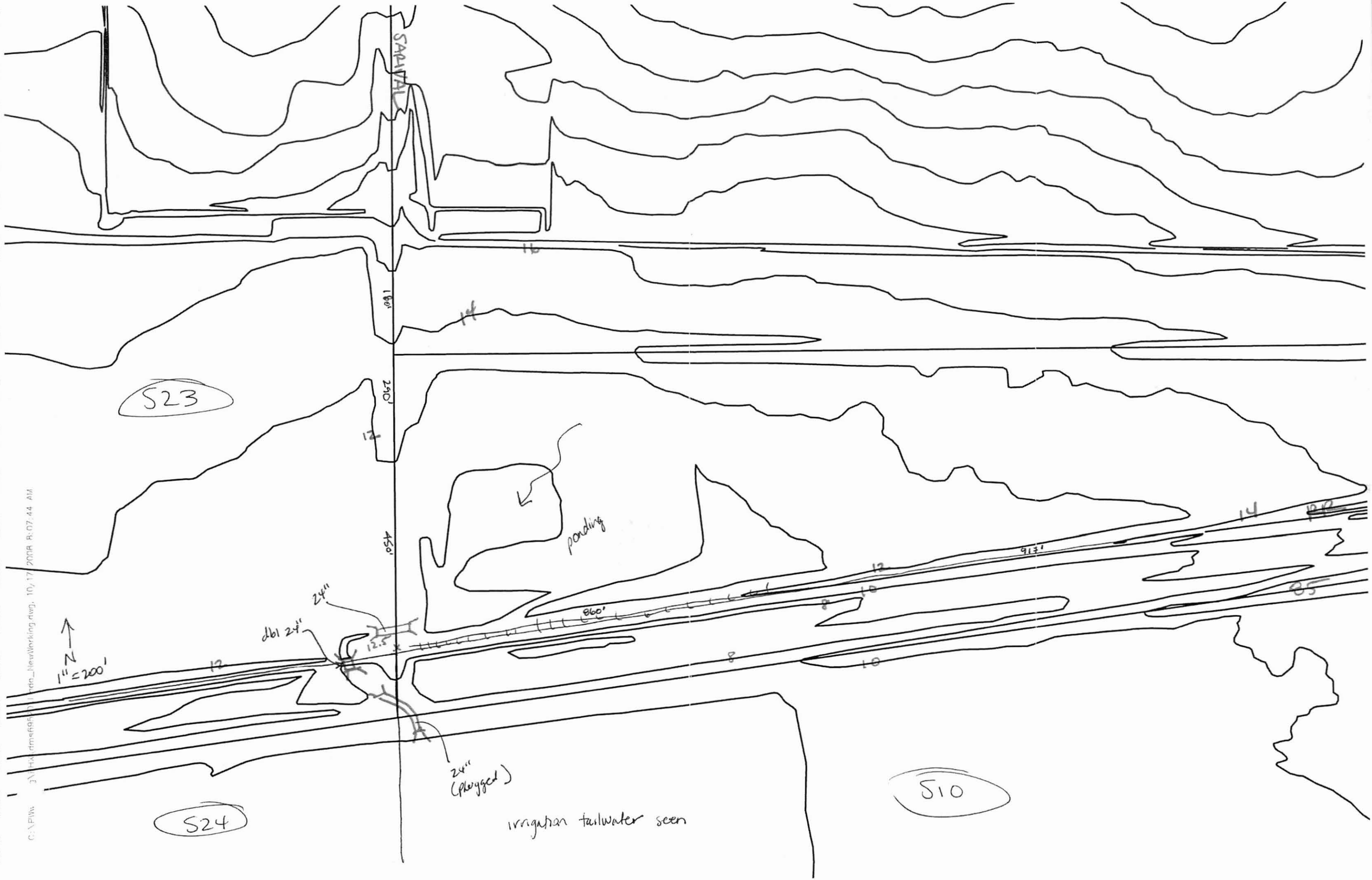
Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	501.69	67%	Q(south)	2037.50	66%	Q(south)	5216.14	68%	Q(south)	9516.43	69%
Q(southwest)	1.90	0%	Q(southwest)	27.89	1%	Q(southwest)	69.22	1%	Q(southwest)	121.43	1%
Q(west)	247.01	33%	Q(west)	1010.31	33%	Q(west)	2356.84	31%	Q(west)	4112.88	30%
	750.60			3075.69			7642.20			13750.75	

First DI	West to South			
Inflow	750.60	3075.69	7642.20	13750.75
Outflow	501.69	2037.50	5216.14	9516.43

Assumes diversion is to south

Second DI	West to Southwest			
Inflow	248.90	1038.20	2426.06	4234.32
Outflow	1.90	27.89	69.22	121.43

Assumes diversion is to southwest


SAMPLE
1860'
250'
450'
917'
860'
ponding
24"
dbl 24"
12.5
24"
(plugged)
irrigation tailwater seen
S23
S24
S10
N
1" = 200'
12
14
10
8
85

HDR | ONE COMPANY *Many Solutions*™

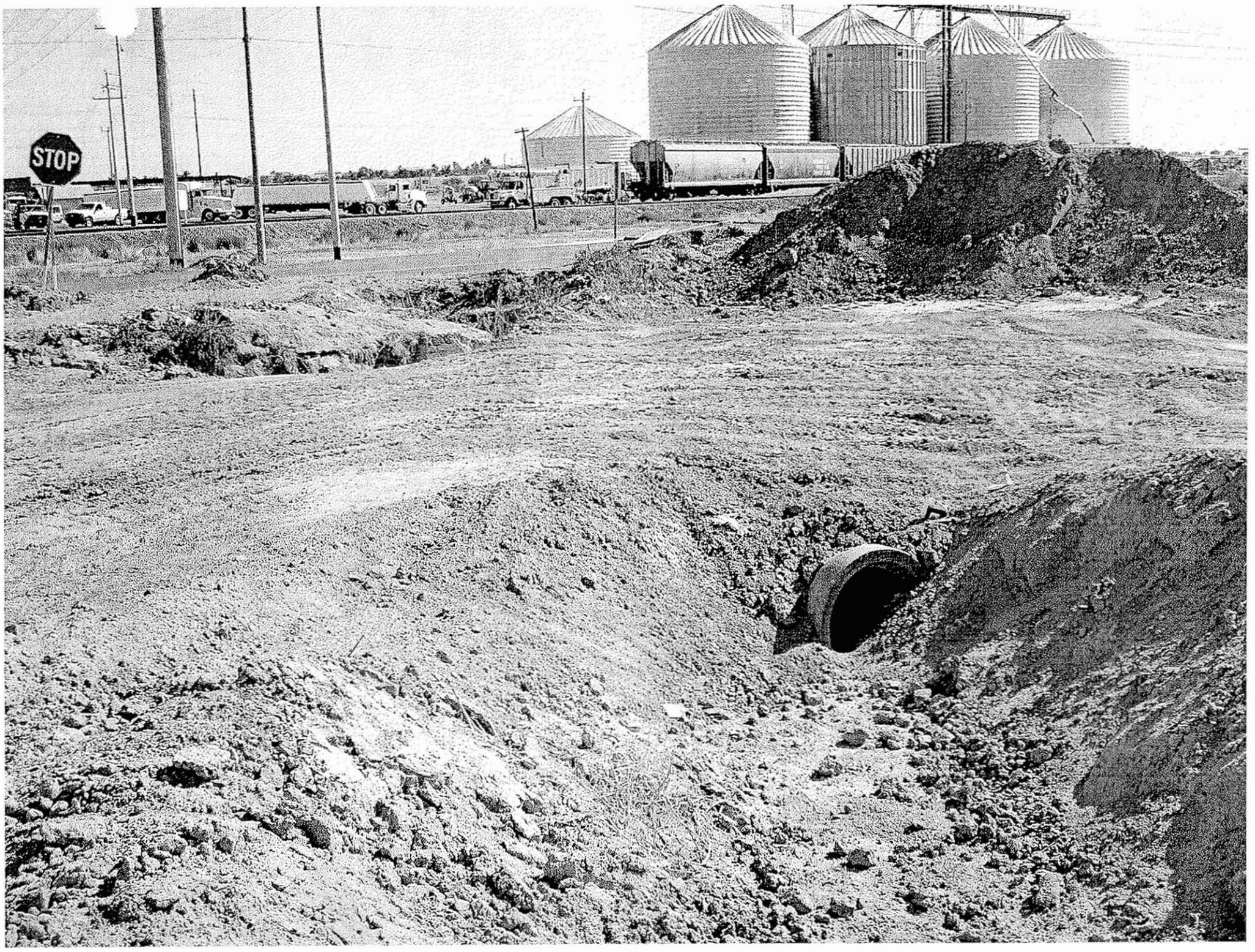
Project: L303/WT ADMPU AHA	Computed: LP	Date: 2/19/09	
Subject:	Checked:	Date: 3/10/09	
Task: S09 Storage	Page:	of:	
Job #:	No:		

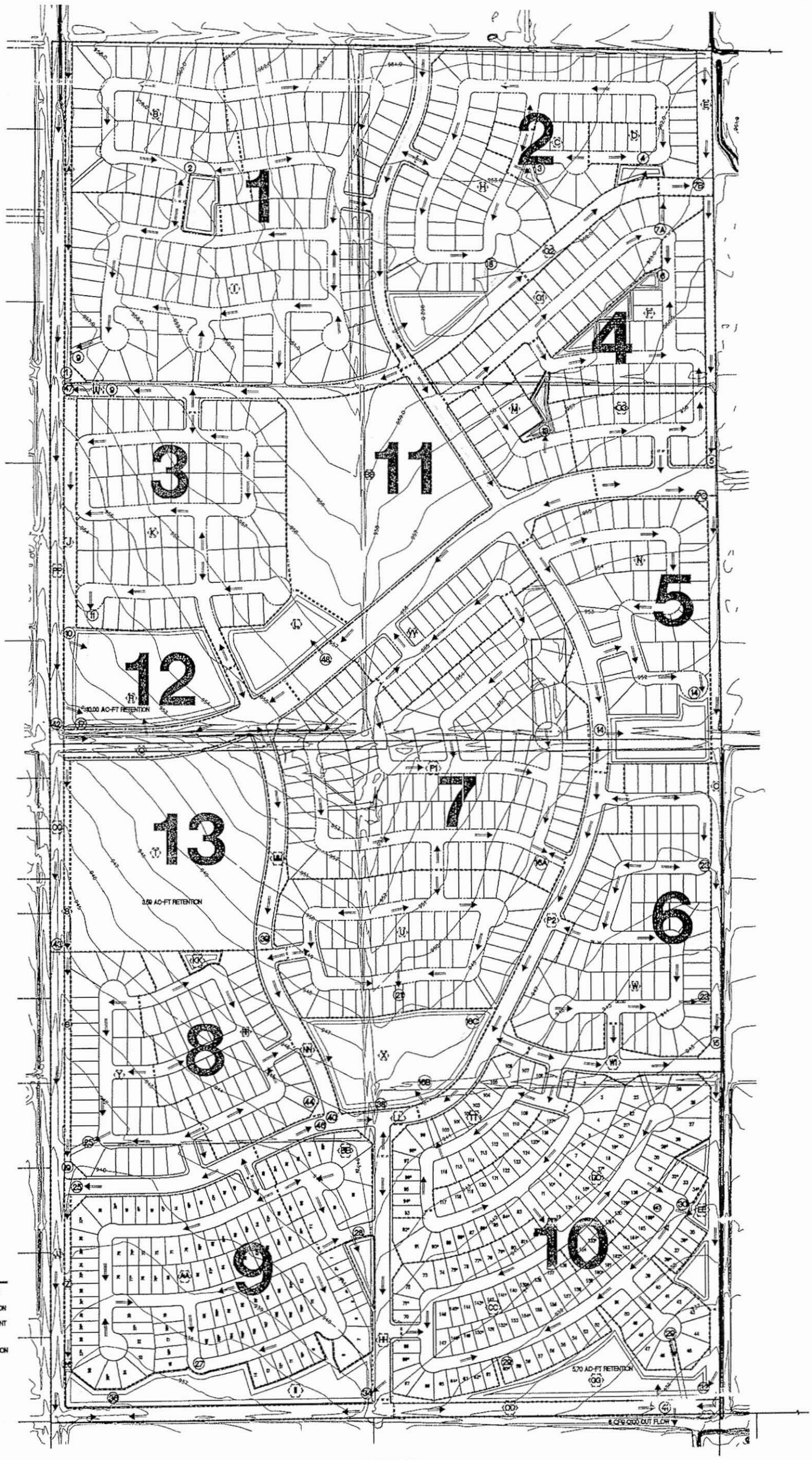
S09 – Storage behind RR tracks
– culverts plugged, not used in discharge calc's

Stage (ft)	Storage (ac-ft)		Discharge (cfs)
909.0	0		0
910.0	6.0	(1' deep av.)	0
911.0	20.9	(2' deep av.)	0
912.6	43.8	(3.6' deep av.)	750
913.1	78.6	(4.1' deep av.)	3076

↑ topo area @ av. depth

↑ Discharge from weir diversion calc's (see spreadsheet)


STOP



REVISED

DWG. NO.	CMX JOB NO. 5905.01	DATE: 8/31/01	SCALE: 1"=180'
1 OF 1	DESIGNED: CMX	DRAWN: CMX	APPROVED: CMX
	REV.		

DRAINAGE EXHIBIT C

SARIVAL VILLAGE

SARIVAL AVENUE AND ELWOOD ROAD
GOODYEAR, AZ

CMX GROUP INC.
ENGINEERING
PROJECT ADMINISTRATION
CONSTRUCTION ANALYSIS

1515 E. MISSOURI
PHOENIX, AZ 85014
PH (602)279-8436
FAX (602)265-1191

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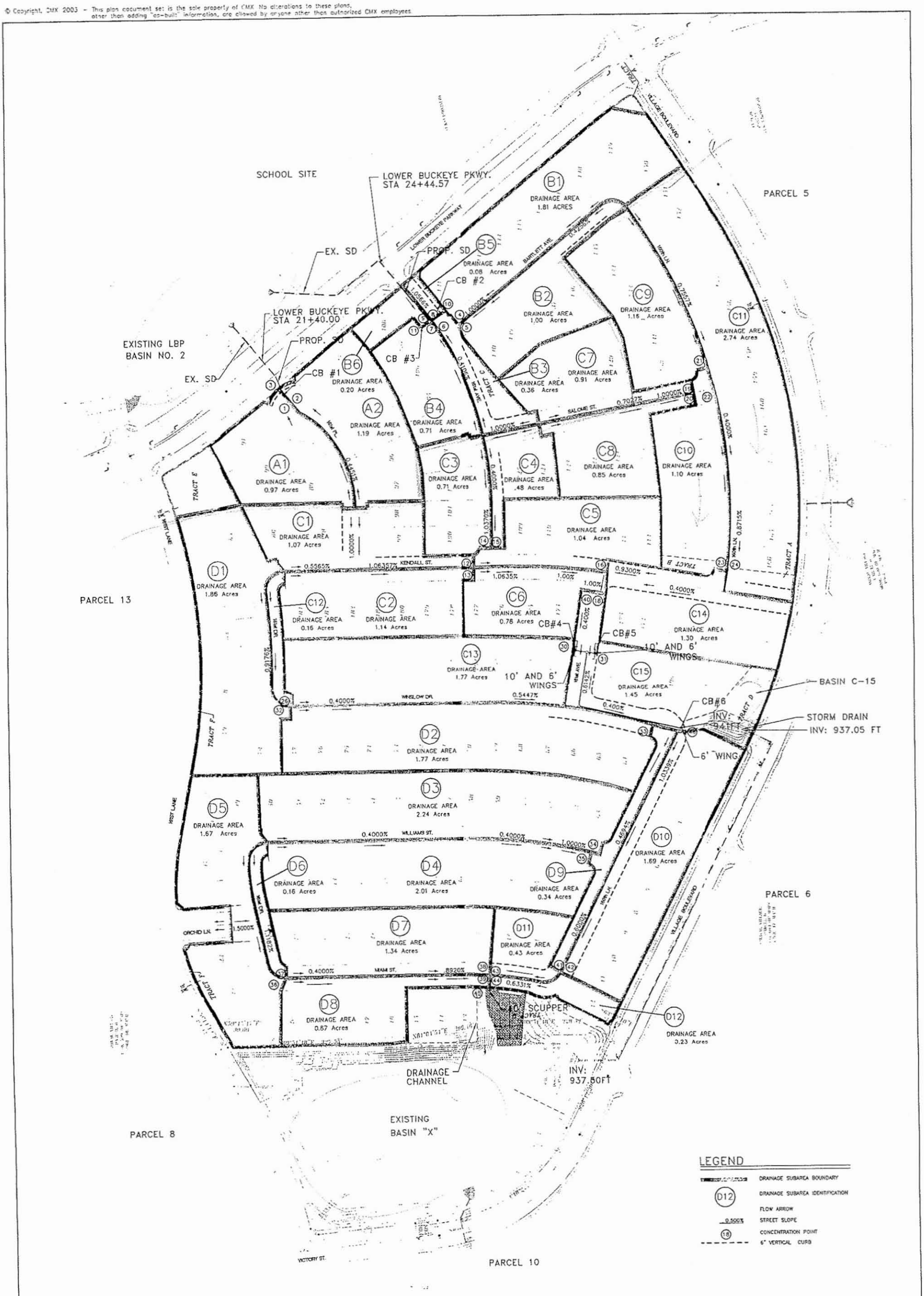
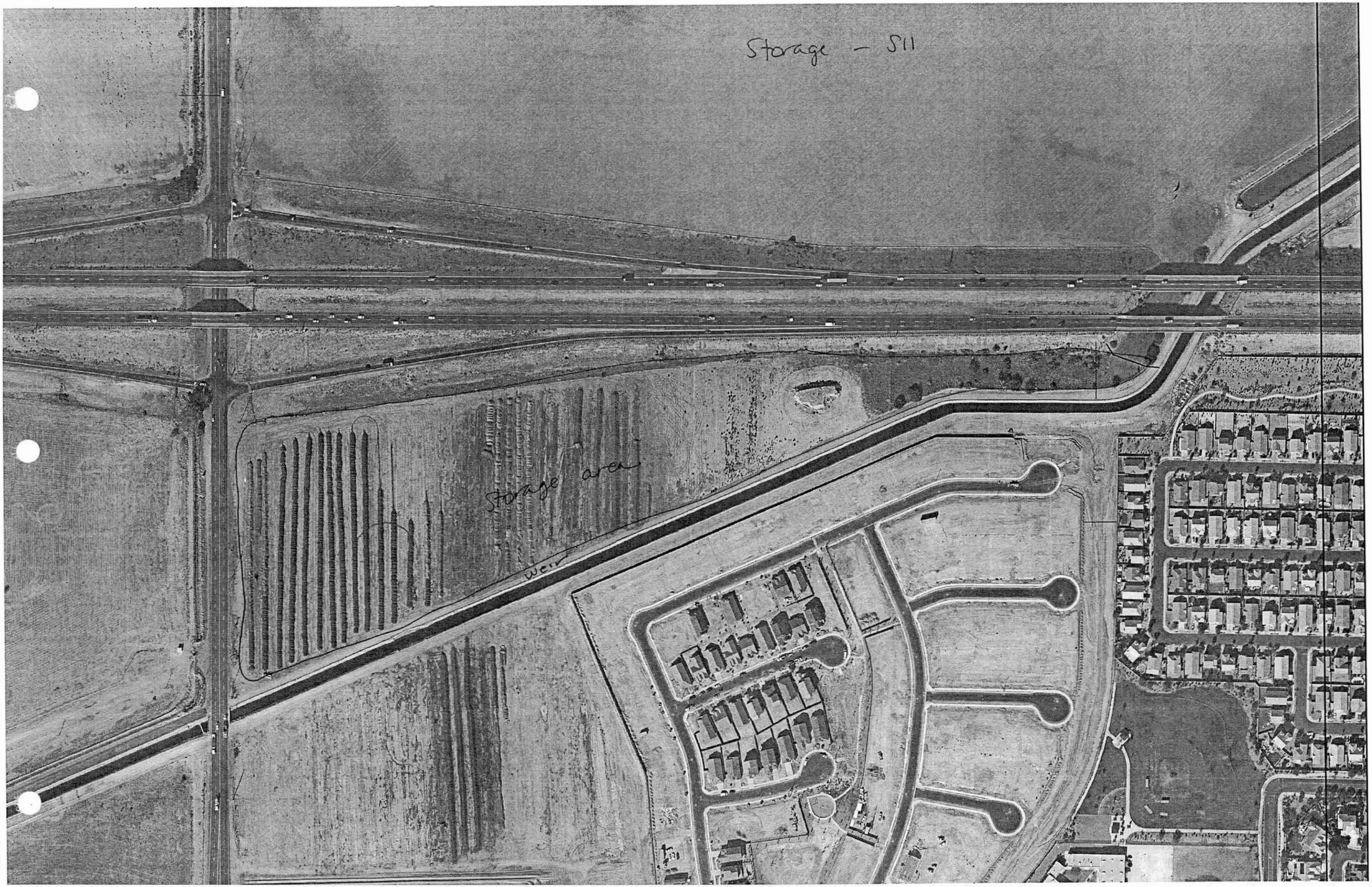


DWG. NO.	CMX PROJ: 5905.07	DATE: 9/2003	SCALE: N.T.S.
1	DESIGNED: LW	DRAWN: CMX	APPROVED: DP
SHT. 1 OF 1	REV.		

PARCEL 7
SARIVAL VILLAGE
GOODYEAR, ARIZONA

DRAINAGE MAP– EXHIBIT 'C'

CMX
7740 N. 16TH ST. STE. 100
PHOENIX, AZ 85020
PHONE: (602) 567-1900
FAX: (602) 567-1901
www.cmxinc.com
ENGINEERS • PLANNERS • LANDSCAPE ARCHITECTS • SURVEYORS • CONSTRUCTION MANAGERS


Storage - S11
storage area
weir

S12

CIP models

512

```
1**************************************
 *                                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)*
 *             JUN  1998              *
 *           VERSION 4.1              *
 *                                    *
 *  RUN DATE   18JAN08  TIME  09:37:36 *
 *                                    *
 *   ***********************************
```

```
*************************************
*                                   *
*    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  This is the selected alternative (Railroad Basin Alternative).
   2          ID  Details of the changes to the model are documented in Appendix D
   3          ID  of the Loop 303 Drainage Improvements CAR I-10 to Gila River
   4          ID  Phase 2 Report.  Updated Jan 18, 2008 by PK
   5          ID  Project Engineering Consultants, Ltd
   6          ID
   7          ID        FUTURE CONDITION HDYROLOGY MODEL WITH PROJECTS - LEVEL III
   8          ID
   9          ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
  10          ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
  11          ID        TANKS/AGUA FRIA ADMS, Date: October 1991
  12          ID
  13          ID        ***REMOVED RETENTION AT SUPER BASIN #5 SUB BASINS 297, 315, ***
  14          ID        ***334, 335A, 335, 316 TO REFLECT RELAXED RETENTION REQUIRE-***
  15          ID        ***MENTS ADJACENT TO THE BULLARD CHANNEL S. OF I-10.        ***
  16          ID
  17          ID       * URS REVISED RTIMP PERCENT IMPERVIOUS VALUES *
  18          ID       * AS PER FCDMC GIS DATA - 6-27-01 *
  19          ID
  20          ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
  21          ID        100-YEAR, 24-HOUR STORM                 original file: WTADMS.24
  22          ID
  23          ID        FUTURE CASE WITH RETENTION VOLUME DIVERTS
  24          ID
  25          ID                                   REVISED BY URS     DATE: 01-14-04
  26          ID                                                      FILE: L33PF6D.DAT
  27          ID
  28          ID  NOTES:
  29          ID  1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3
  30          ID  2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
  31          ID  2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
  32          ID  3. AVERAGE XKSAT VALUES FOR EACH SUBBASIN WAS RECEIVED FROM FCDMC
  33          ID  GIS DATA AND THEN ADJUSTED FOR VEGETATION, OR LEFT AS ORIGINALLY IN
  34          ID  THE WLB MODEL.
  35          ID  4. FOR NEW DEVELOPMENTS ONLY 80% OF REPORTED PROVIDED RETENTION
  36          ID  WAS INCLUDED IN THIS MODEL (AS A CONSERVATIVE ESTIMATE). RETENTION
  37          ID  CAPACITIES WERE ESTIMATED BY EEC FOR DEVELOPMENTS WITH NO
  38          ID  DRAINAGE REPORTS.
  39          ID  5. REVISED DRAINAGE BOUNDARIES BASED UPON FIELD INSPECTION OF SUN CITY.
  40          ID  GRAND.  COMBINED SEVERAL BASINS TOGETHER TO MAKE NEW BASINS 114 &115.
  41          ID  ALSO REROUTED SUBBASINS 100A, 101, 102A AND 106 TO THE SOUTH TO 113A.
  42          ID  6. CHANNEL ROUTE ALONG REEMS ROAD UPDATED TO REFLECT NEW CONSTRUCTION.
  43          ID  7. REVISED SCS TYPE II RAINFALL DISTRIBUTION FOR THE 24-HOUR GENERAL
  44          ID  STORM.
  45          ID  8. REVISED RAINFALL DEPTH-AREA REDUCTION FACTORS.
  46          ID  9. PSIF WERE ADJUSTED BASED ON THE VALUES OF XKSAT AND WERE EDITED INTO
  47          ID  THE DATA FILE BY THE FCDMC.
  48          ID  10. AVERAGE XKSAT VALUES FOR SUBBASINS WITH BORROW PITS (WHITE TANKS
  49          ID  AREAS #3 & #4) WERE ESTIMATED BY EEC.
  50          ID
              *DIAGRAM
  51          IT       5 03MAR03    1200    1000
  52          IO       5
  53          IN      15
  54          JD    4.03    .001
```



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

  55          PC    .000    .002    .005    .008    .011    .014    .017    .020    .023    .026
  56          PC    .029    .032    .035    .038    .041    .044    .048    .052    .056    .060
  57          PC    .064    .068    .072    .076    .080    .085    .090    .095    .100    .105
  58          PC    .110    .115    .120    .126    .133    .140    .147    .155    .163    .172
  59          PC    .181    .191    .203    .218    .236    .257    .283    .387    .663    .707
```

```
8034          KK   R311A
8035          KM  ROUTE FLOW FROM CP311A TO CP331
8036          RS      12              -1
8037          RC    .075     .035     .035    5280   .0051
8038          RX    1000     1001     1002    1130    1710    1720    1749    1750
8039          RY     955      955      955     954     954     956     957     957

8040          KK   CP331
8041          KM  ADD HYDROGRAPHS AT CP331
8042          HC       2   48.52

8043          KK    D279
8044          KM  RETURN DIVERT AT CP279
8045          DR  3D294A

8046          KK   RLP12
8047          KM  ROUTE FLOW FROM CP279 TO CP294A
8048          RS     1.9              -1.0     0.0
8049          RC   0.013    0.013    0.013    4955  0.0043
8050          RX       0     10.8     12.4    14.0    15.6    17.2    18.8    29.6
8051          RY   990.3    984.9    984.9   984.9   984.9   984.9   984.9   990.3
              *
```

L72RID

```
8052          KK  DILP13
8053          KM  DIVERT TO !LP13
8054          DT  DILP13
8055          DI       0   10000
8056          DQ       0   10000
              *
```



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

8057          KK    294A
8058          KM  RUNOFF HYDROGRAPH FROM SUB-BASIN 294A
8059          BA     .26
8060          LG     .35      .35     4.90     .28    42.8
8061          UI     36.     126.     200.    275.    425.    331.    242.    169.     83.     54.
8062          UI     33.      11.      11.     11.      0.      0.      0.      0.      0.      0.
8063          UI      0.       0.       0.      0.      0.      0.      0.      0.      0.      0.

8064          KK  294AOT
8065          KM  DIVERSION-RETENTION
8066          DT  294ART   20.64
8067          DI       0   10000
8068          DQ       0   10000
              * REMOVE PER VE RECOMMENDATIONS 07-09-02
              * KK D294A
              * KM DIVERT TO RID FOR RETRIEVAL LATER
              * DT3DI294
              * DI     0   10000
              * DQ     0   10000

8069          KK  1I294A
8070          KM  ADD HYDROGRAPHS AT CP294A
8071          HC       2    36.4

8072          KK   D279B
8073          KM  RETURN DIVERT AT CP279B
8074          DR  1D294A

8075          KK   R279B
8076          KM  ROUTE FLOW FROM CP279B TO CP294A
8077          RS      15              -1       0
8078          RC     .03      .03      .03    2340   .0047
8079          RX    1000     1001     1002    1090    1400    1620    1870    1970
8080          RY    1012   1011.5     1011    1010    1010    1012    1014    1015

8081          KK  2I294A
8082          KM  ADD HYDROGRAPHS AT CP294A
8083          HC       2    36.4

8084          KK   D279A
8085          KM  RETURN DIVERT AT CP279A
8086          DR  2D294A

8087          KK   R279A
8088          KM  ROUTE FLOW FROM CP279A TO CP294A
8089          RS       6              -1       0
8090          RC     .03      .03      .03    1700   .0035
8091          RX    1000     1001     1002    1090    1400    1620    1870    1970
8092          RY    1012   1011.5     1011    1010    1010    1012    1014    1015
```



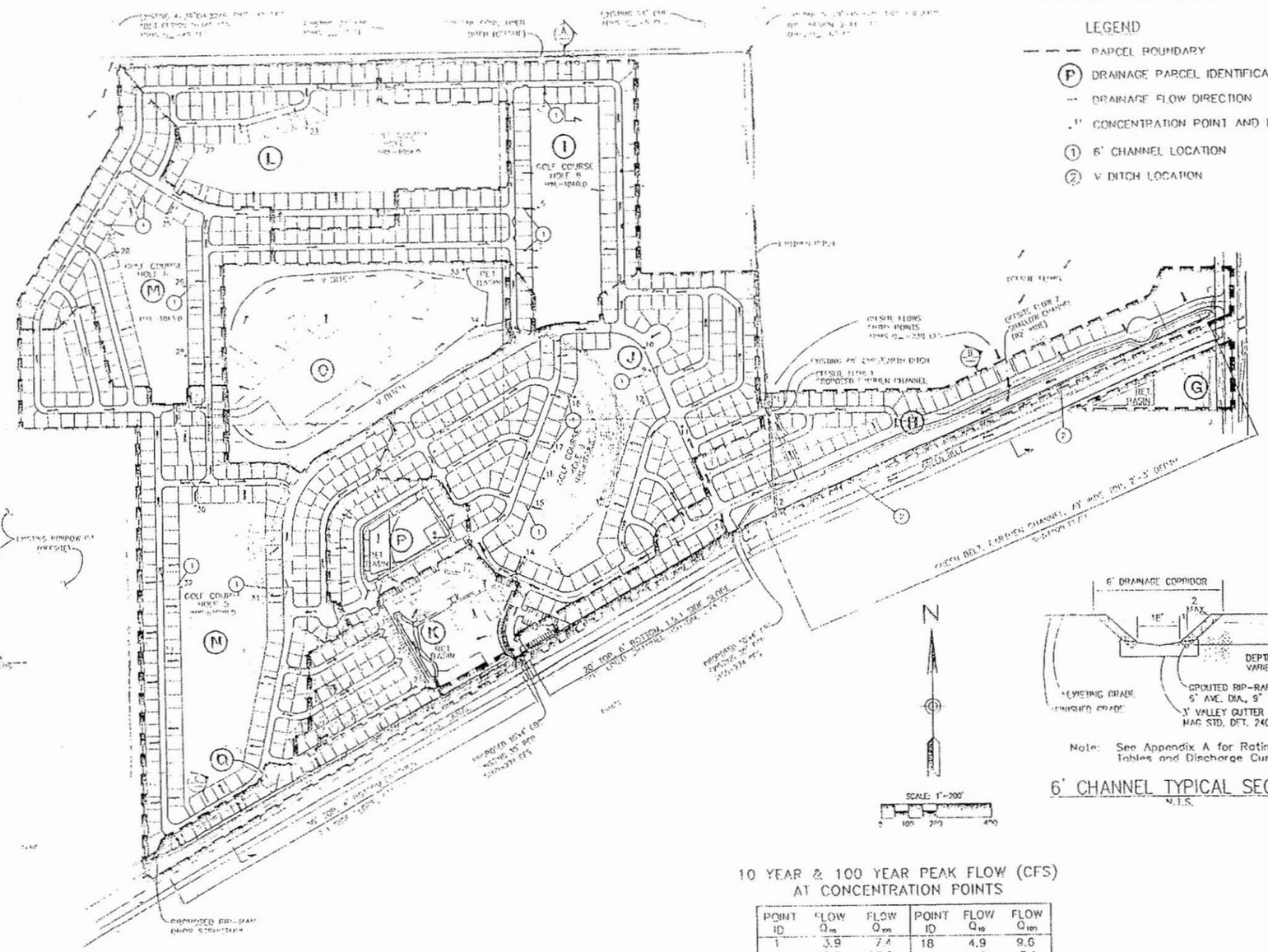
```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8093          KK   R279A
8094          KM  ADD HYDROGRAPHS AT CP294A
8095          HC       2    36.4

8096          KK  SR294A
8097          KM  STORAGE ROUTE BEHIND ROOSEVELT AT CP294A
8098          RS       1    STOR       0       0
8099          SV       0    3.78    5.29    57.3
8100          SQ       0       0      46   16968
8101          SE  1006.7  1007.8    1008    1010
```

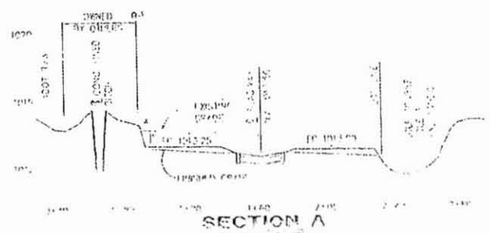
SRS12

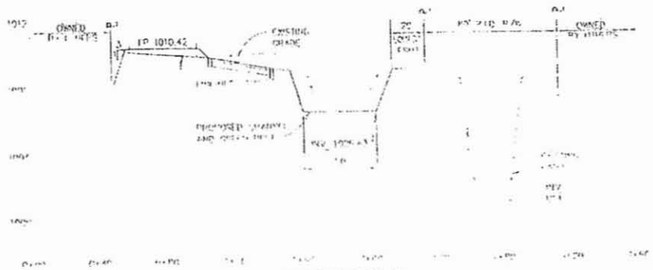
```
8102          KK   R294A
8103          KM  ROUTE FLOW FROM CP294A TO CP295
```

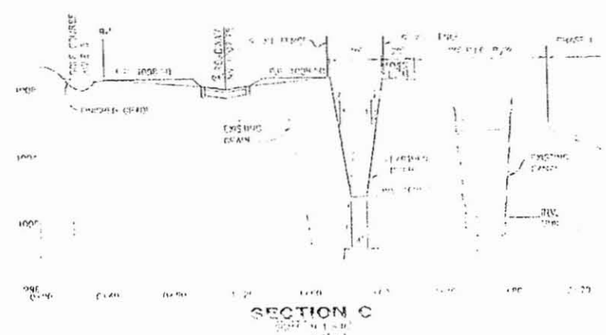
S12 & S36

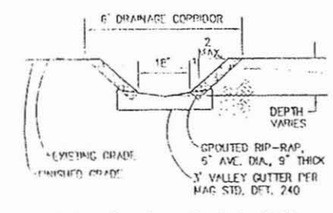
KAMINSKI HUBBARD engineering, inc.











Note: See Appendix A for Rating Tables and Discharge Curves.

6' CHANNEL TYPICAL SECTION

N.T.S.

INVERTED CROWN ROADWAY CAPACITY FROM B/C TO B/C

ROAD WIDTH	CURB TYPE	DEPTH	CROWN SLOPE	LONGITUDINAL SLOPE	CAPACITY CFS
28'	RIBBON	0.28'	2%	0.5%	7.40
28'	RIBBON	0.42'	3%	0.5%	14.55
28'	ROLLED	0.61'	2%	0.5%	51.13
40'	RIBBON	0.40'	2%	0.5%	18.13
40'	RIBBON	0.60'	3%	0.5%	37.63
40'	ROLLED	0.73'	2%	0.5%	81.12

Note: See Appendix A for Rating Tables and Plotted Curves.

PHASE II SUMMARY

SUBAREA IDENT.	TOTAL ACRES	VOL. REQD.	MIN. VOL. PROVIDED
G	2.31	0.47	0.47
H	13.35	2.19	2.19
I	15.00	2.30	2.30
J	24.42	3.98	3.98
K	6.78	0.79	0.79
L	13.50	1.77	1.77
M	11.98	1.84	1.84
N	24.37	3.81	3.81
O	13.84	1.61	1.61
P	4.21	0.59	0.59
Q	3.46	0.42	0.42
TOTAL	133.22	19.79	19.79

* = TO BE PROVIDED AT TIME OF DEVELOPMENT

10 YEAR & 100 YEAR PEAK FLOW (CFS) AT CONCENTRATION POINTS

POINT ID	FLOW Q_{10}	FLOW Q_{100}	POINT ID	FLOW Q_{10}	FLOW Q_{100}
1	3.9	7.4	18	4.9	9.6
2	15.0	28.6	19	1.6	3.1
3	4.3	8.11	20	1.2	2.3
4	4.7	8.9	21	2.2	4.1
5	7.1	13.6	22	3.0	5.7
6	3.8	7.2	23	9.4	12.7
7	7.0	13.5	24	3.0	5.8
8	6.6	13.0	25	3.8	7.4
9	9.7	19.2	26	3.2	6.2
10	2.2	4.4	27	5.0	9.7
11	2.8	5.5	28	4.7	3.2
12	1.2	2.4	29	1.9	3.6
13	6.7	13.1	30	12.7	24.4
14	5.9	11.5	31	11.7	22.4
15	4.8	9.5	32	5.3	10.0
16	0.9	1.8	33	10.7	20.5
17	3.9	7.6	34	11.3	21.6

COTTON LANE RV & GOLF RESORT
MASTER DRAINAGE REPORT

PHASE II DRAINAGE PLAN
EXHIBIT III

DSN BY: DAB 6/97	SCALE: 1"=200'	JOB NO: 0376	SHEET 3 of 4
DES BY: DAB 6/97			
CK BY: DAB 6/97			

SRS12

The WLB Group Inc. WLB

COMPUTATION DATA SHEET

Subject WHITE TANK/AGUA FRIA ADMS Prepared by JSE Date 2-12-91

STAGE - STORAGE - DISCHARGE TABLE

SUBBASIN 294A

ELEV. (FT)	AREA (AC)	VOLUME (AC-FT)	DISCHARGE (CFS)
1006.7	0	0	0
	3.78		
1007.8 x Weir Flow	6.89	3.78	0
	1.51		
1008	8.19	5.29	46
	52.01		
1010	43.82	57.30	169.68

Weir Flow
$Q = CLH^{3/2}$

C = 2.6
L = 200
H = .2

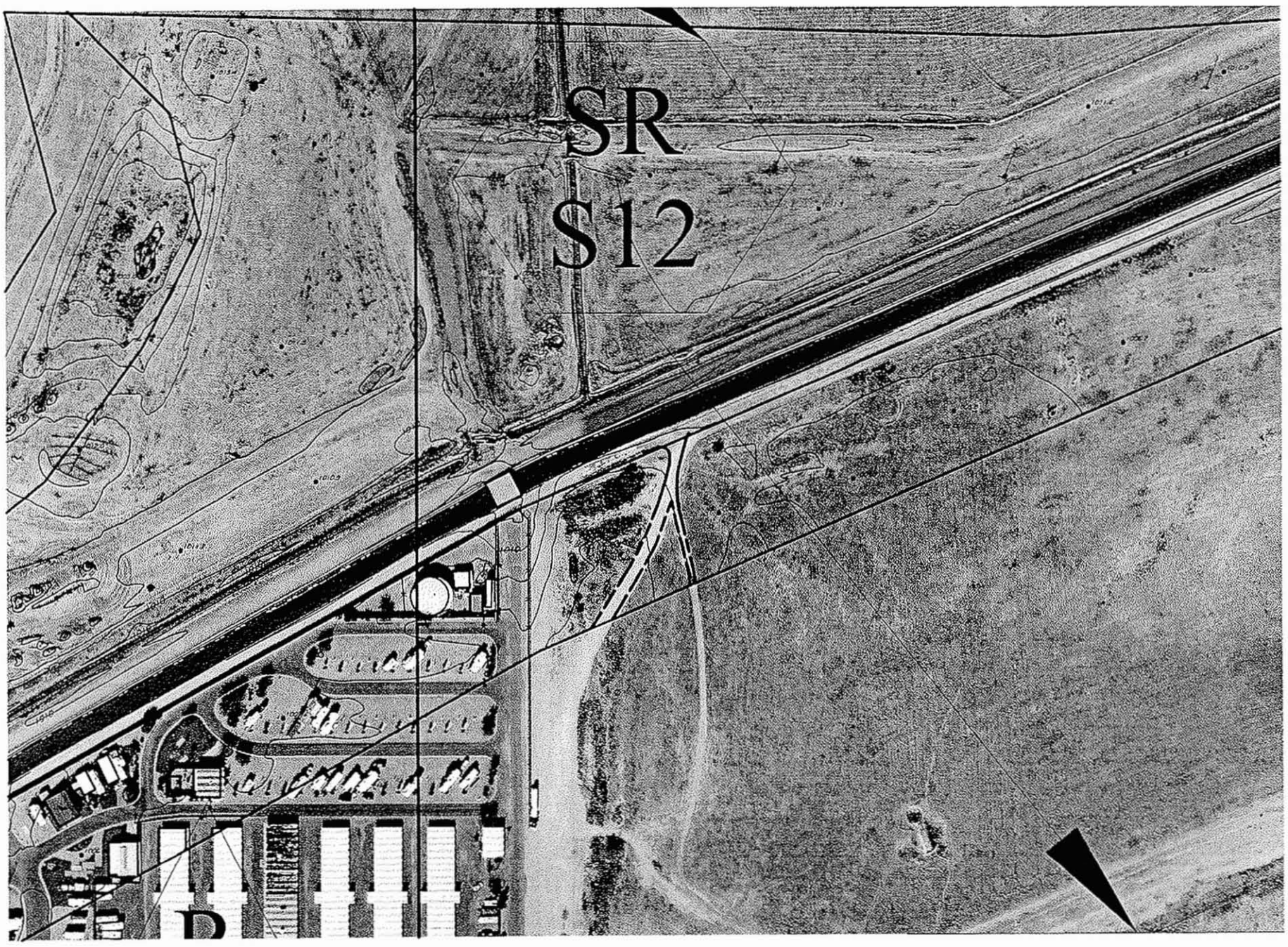
Q at 1008 = 46 cfs

Q at 1010 = 169.68

L = 2000
H = 2.2

Form 209

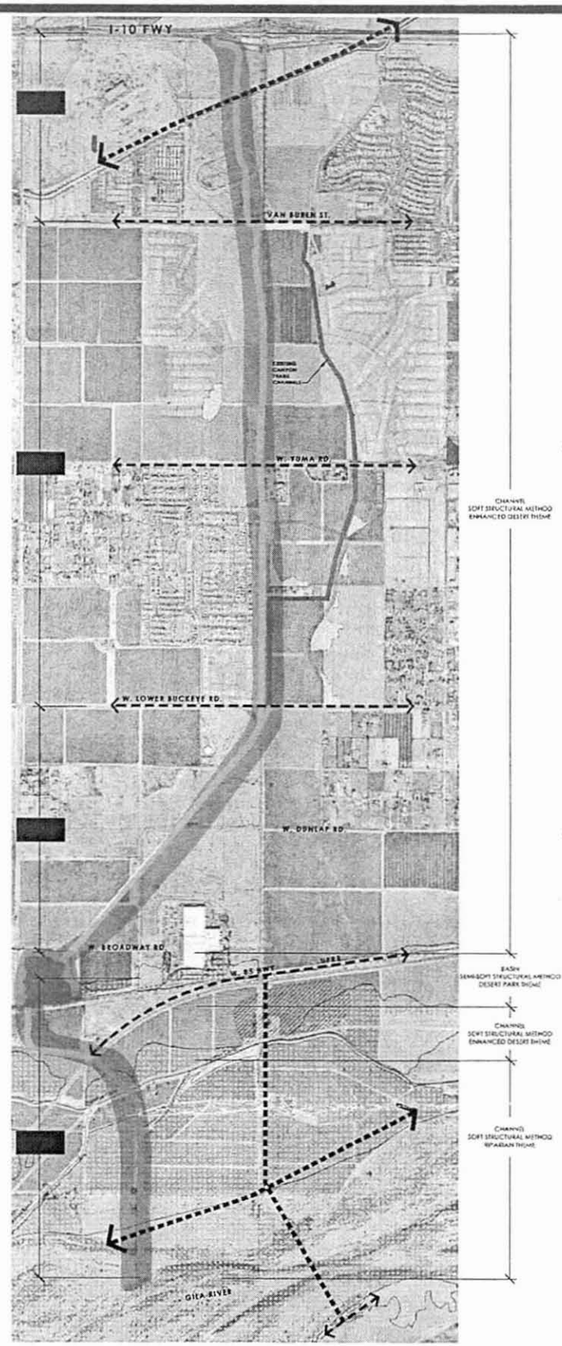
1"=200'



S26, S20, S19, S13, S12

RECOMMENDED ALTERNATIVE DUAL SYSTEM

LOOP 303 DRAINAGE IMPROVEMENTS



Legend

Enhanced Desert Theme:
The design character for the Enhanced Desert Theme shall represent a natural appearance with near native species, enhanced visual drama and focal points including visual and spatial experiences.

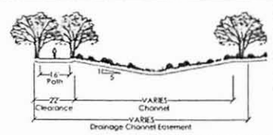
Riparian Theme:
Areas within The Gila River are a Riparian Theme with dense stream vegetation consisting of Mesquite, Palo Verde, Ironwood and lush ground planting. The edges shall blend into the existing character with 100% riparian species and dense vegetation matching in form, color and texture.

Desert Park Theme:
The vegetation is 30% enhanced near natives with ornamental grasses and 70% turf grass. The basins remain natural with native vegetation and pockets of oasis planting for shade and screening of visible structures that blend to native planting and existing landscape. The large areas of turf may be used for open play /recreation for the surrounding neighborhoods.

Maricopa County Regional Trail

Goodyear Trails

CHANNEL



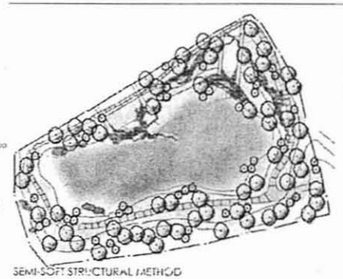
CHANNEL SECTION

SOFT STRUCTURAL METHOD

ENHANCED DESERT THEME

RIPARIAN THEME

BASINS



SEMI-SOFT STRUCTURAL METHOD
Scale: 1"=60'-0"

DESERT PARK THEME

Scale: 1"=30'-0"

CIP models

S13

```
1**************************************
*                                    *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)*
*             JUN  1998              *
*           VERSION 4.1              *
*                                    *
*  RUN DATE   18JAN08  TIME  10:25:42*
*                                    *
*     ***********************************
```

```
*************************************
*                                   *
*   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  This is the Railroad Basin Alternative (selected) for existing conditions.
   2          ID  Details of the changes to the model are documented in Appendix D
   3          ID  of the Loop 303 Drainage Improvements CAR I-10 to Gila River
   4          ID  Phase 2 Report.  Updated Jan 18, 2008 by PK
   5          ID  Project Engineering Consultants, Ltd
   6          ID
   7          ID
   8          ID
   9          ID
  10          ID
  11          ID
  12          ID
  13          ID
  14          ID
  15          ID                                                    DATE: 08-20-2007
  16          ID                                                    FILE: Existing13.DAT
  17          ID
  18          ID        NOTES:
  19          ID        1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3,
  20          ID           2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
  21          ID        2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
  22          ID        3. AVERAGE XKSAT VALUES FOR EACH SUBBASIN WAS RECEIVED FROM FCDMC
  23          ID           GIS DATA AND THEN ADJUSTED FOR VEGETATION, OR LEFT AS ORIGINALLY IN
  24          ID           THE WLB MODEL.
  25          ID        4. FOR NEW DEVELOPMENTS ONLY 80% OF REPORTED PROVIDED RETENTION
  26          ID           WAS INCLUDED IN THIS MODEL (AS A CONSERVATIVE ESTIMATE). RETENTION
  27          ID           CAPACITIES WERE ESTIMATED BY EEC FOR DEVELOPMENTS WITH NO
  28          ID           DRAINAGE REPORTS.
  29          ID        5. REVISED DRAINAGE BOUNDARIES BASED UPON FIELD INSPECTION OF SUN CITY.
  30          ID           GRAND.  COMBINED SEVERAL BASINS TOGETHER TO MAKE NEW BASINS 114 &115.
  31          ID           ALSO REROUTED SUBBASINS 100A, 101, 102A AND 106 TO THE SOUTH TO 113A.
  32          ID        6. CHANNEL ROUTE ALONG REEMS ROAD UPDATED TO REFLECT NEW CONSTRUCTION.
  33          ID        7. REVISED SCS TYPE II RAINFALL DISTRIBUTION FOR THE 24-HOUR GENERAL
  34          ID           STORM.
  35          ID        8. REVISED RAINFALL DEPTH-AREA REDUCTION FACTORS.
  36          ID        9. PSIF WERE ADJUSTED BASED ON THE VALUES OF XKSAT AND WERE EDITED INTO
  37          ID           THE DATA FILE BY THE FCDMC.
  38          ID       10. AVERAGE XKSAT VALUES FOR SUBBASINS WITH BORROW PITS (WHITE TANKS
  39          ID           AREAS #3 & #4) WERE ESTIMATED BY EEC.
  40          ID
              ^DIAGRAM
  41          IT       5                    600
  42          IO       5
  43          IN      15
  44          JD    4.03    .001
  45          PC    .000    .002    .005    .008    .011    .014    .017    .020    .023    .026
  46          PC    .029    .032    .035    .038    .041    .044    .048    .052    .056    .060
  47          PC    .064    .068    .072    .076    .080    .085    .090    .095    .100    .105
  48          PC    .110    .115    .120    .126    .133    .140    .147    .155    .163    .172
  49          PC    .181    .191    .203    .218    .236    .257    .283    .387    .663    .707
  50          PC    .735    .758    .776    .791    .804    .815    .825    .834    .842    .849
  51          PC    .856    .863    .869    .875    .881    .887    .893    .898    .903    .908
  52          PC    .913    .918    .922    .926    .930    .934    .938    .942    .946    .950
  53          PC    .953    .956    .959    .962    .965    .968    .971    .974    .977    .980
  54          PC    .983    .986    .989    .992    .995    .998    1.00   1.000   1.000   1.000
```

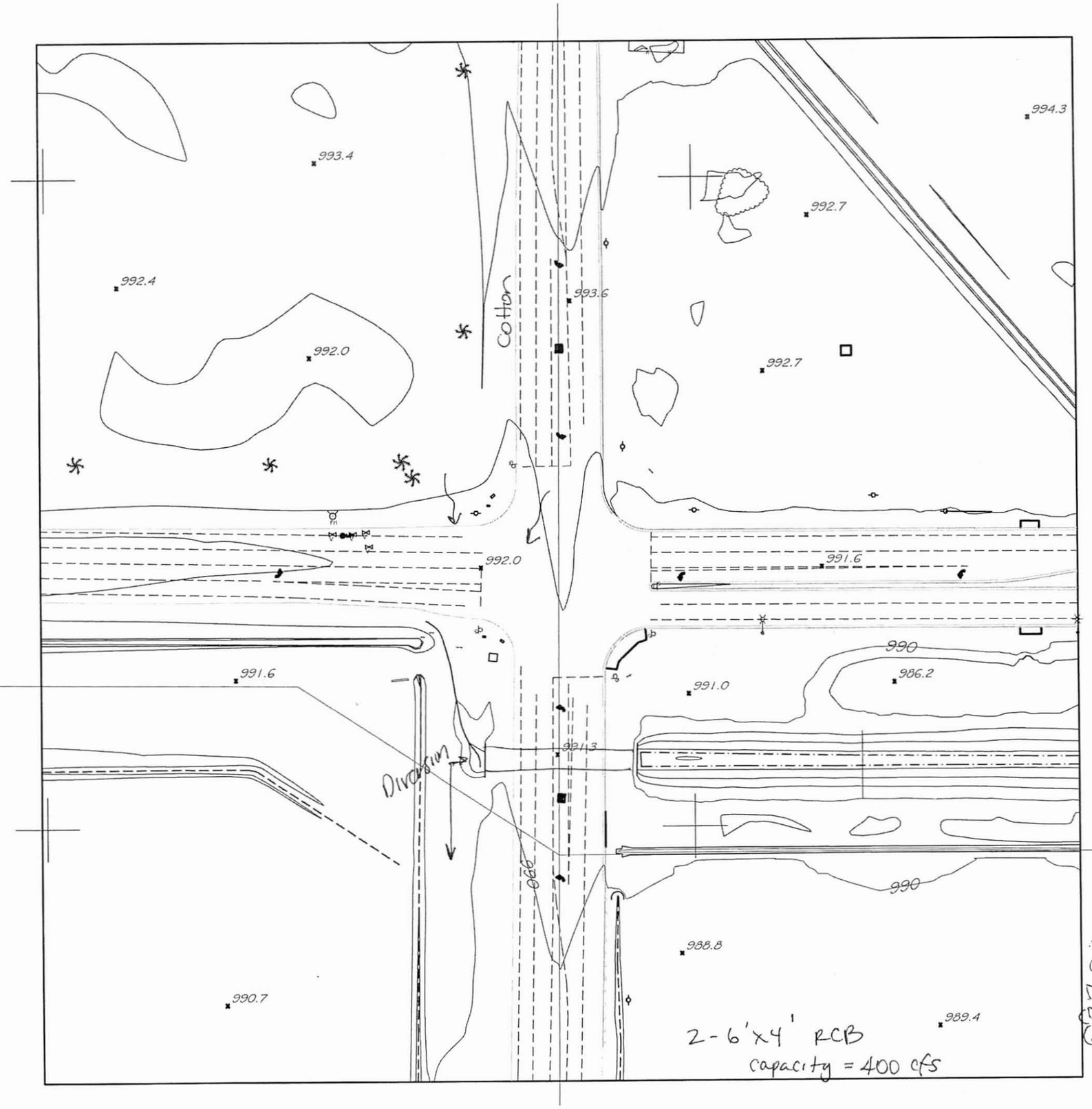


```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  55          JD    3.79      10
  56          JD    3.51      50
  57          JD    3.39     100
  58          JD    3.29     200
              * ***********************************************************************************
```

```
                    * KK CP295
1                                          HEC-1 INPUT                                                PAGE193

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

                    KK   !LP13
                    KM        ADD HYDROGRAPHS AT CP295
                    HC       3   39.62
                    * KK  R295
                    * KK 13OUT
                    * DT 13RET 81.2
                    * DI 0 10000
                    * DQ 0 10000

                    KK    DIV1
                    DT    DIV2
                    DI       0   10000
                    DQ       0    4000

                    KK   RLP13
                    * PER LEVEL III PRELIMINARY-DRAFT PREFERRED ALTERNATIVE
                    KM        ROUTE FLOW FROM CP295 TO CP311
                    RS     1.0            -1.0     0.0
                    RC   0.013   0.013   0.013    4020  0.0048
                    RX       0    10.6    12.2    13.8    15.4    17.0    18.6    29.2
                    RY   990.2   984.9   984.9   984.9   984.9   984.9   984.9   990.2
                    *

                    KK     311
                    KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 311
                    BA     .73
                    LG     .50       0    4.58    0.44     .00
                    UI     27.      27.     27.     27.     77.     97.    113.    128.    140.    152.
                    UI    163.     177.    195.    210.    236.    283.    328.    353.    307.    272.
                    UI    247.     228.    213.    194.    177.    162.    148.    135.    125.    105.
                    UI     81.      66.     48.     48.     44.     44.     36.     27.     27.     27.
                    UI     22.       8.      8.      8.      8.      8.      8.      8.      8.      8.
                    UI      8.       8.      8.      8.      0.      0.      0.      0.      0.      0.
                    UI      0.       0.      0.      0.      0.      0.      0.      0.      0.      0.
                    * KK311OUT
                    * KM      DIVERSION-RETENTION
                    * DT311RET   64.06
                    * DI     0   10000
                    * DQ     0   10000
                    * KK CP311

                    KK   !LP14
                    * KO     1                                  21
                    KM   ADD HYDROGRAPHS AT CP311
                    HC       2   40.35
                    * STORAGE ROUTE THROUGH PROPOSED BASIN AT LP14 - YUMA
                    * SRLP14
                    * KO     1                                  21
                    * STORAGE ROUTE
                    * 1 STOR 0 0
                    * 0 40.6 81.2 121.7 162.3 185
                    * 0 0 0 137 387 549
                    * 959 961 963 965 967 968
1                                          HEC-1 INPUT                                                PAGE194

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

                    KK   RLP14
                    KM        ROUTE FLOW FROM CP311 TO CP330
                    RS     1.3            -1.0     0.0
                    RC   0.013   0.013   0.013    5251  0.0048
                    RX       0    11.0    12.6    14.2    15.8    17.4    19.0    30.0
                    RY   939.7   934.2   934.2   934.2   934.2   934.2   934.2   939.7
                    *

                    KK     330
                    KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 330
                    BA     .59
                    LG     .33     .11    4.65     .46    9.00
                    UI     39.      39.    100.    161.    198.    228.    263.    308.    404.    496.
                    UI    425.     354.    308.    261.    223.    190.    144.     93.     69.     65.
                    UI     46.      39.     28.     12.     12.     12.     12.     12.     12.     12.
                    UI      0.       0.      0.      0.      0.      0.      0.      0.      0.      0.
                    UI      0.       0.      0.      0.      0.      0.      0.      0.      0.      0.

                    KK  330OUT
                    KM        Storage Divert at Subbasin 330
                    DT  330RET   21.25
                    DI       0   10000
                    DQ       0   10000

                    KK   1I330
                    KM        ADD HYDROGRAPHS AT CP330
                    HC       2   38.03
                    * KK CP330

                    KK   RDIV2
                    DR    DIV2

                    KK    ROUT
                    RS       2              -1       0
                    RC    0.04    0.04    0.04    7000  0.0048
                    RX       0      10      15      20      25      30      35      40
                    RY       4       2       1       0       0       1       2       4
```

DS13SE

DS13
Van Buren @
Cotton



N

1" = 80'

Rating curve

DF (in)	216	1302	2400
DQ (Div04) (South)	0	1000	2000

C:\PWwe: .PHX\dms69520\Linda_New\Working.dwg, 2/17/2009 5:44:39 PM

Culvert Calculator Report
VanBurenatCottonDS13

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	90.00	ft	Headwater Depth/Height	1.00	
Computed Headwater Elev	90.00	ft	Discharge	216.40	cfs
Inlet Control HW Elev.	89.66	ft	Tailwater Elevation	87.00	ft
Outlet Control HW Elev.	90.00	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	86.00	ft	Downstream Invert	84.00	ft
Length	120.00	ft	Constructed Slope	0.016667	ft/ft

Hydraulic Profile					
Profile	CompositeS1S2		Depth, Downstream	3.00	ft
Slope Type	Steep		Normal Depth	1.30	ft
Flow Regime	N/A		Critical Depth	2.16	ft
Velocity Downstream	6.01	ft/s	Critical Slope	0.003927	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	6.00	ft
Section Size	6 x 4 ft		Rise	4.00	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	90.00	ft	Upstream Velocity Head	1.08	ft
Ke	0.70		Entrance Loss	0.76	ft

Inlet Control Properties					
Inlet Control HW Elev.	89.66	ft	Flow Control	Unsubmerged	
Inlet Type	0° wingwall flares		Area Full	48.0	ft²
K	0.06100		HDS 5 Chart	8	
M	0.75000		HDS 5 Scale	3	
C	0.04230		Equation Form	1	
Y	0.82000				

Culvert Calculator Report
VanBurenatCottonDS13

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	91.00	ft	Headwater Depth/Height	1.25	
Computed Headwater Elev	91.00	ft	Discharge	302.43	cfs
Inlet Control HW Elev.	90.60	ft	Tailwater Elevation	87.00	ft
Outlet Control HW Elev.	91.00	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	86.00	ft	Downstream Invert	84.00	ft
Length	120.00	ft	Constructed Slope	0.016667	ft/ft

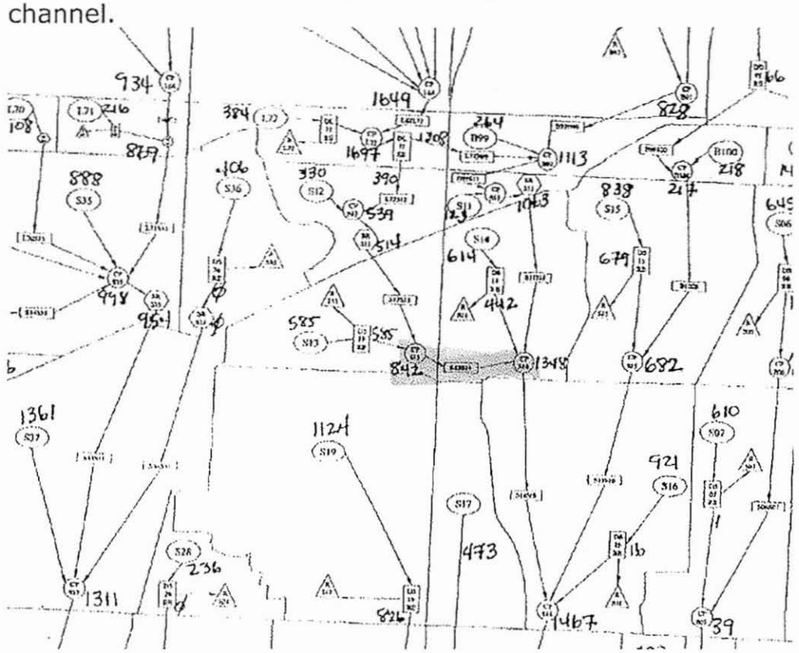
Hydraulic Profile					
Profile	CompositeS1S2		Depth, Downstream	3.00	ft
Slope Type	Steep		Normal Depth	1.64	ft
Flow Regime	N/A		Critical Depth	2.70	ft
Velocity Downstream	8.40	ft/s	Critical Slope	0.004163	ft/ft

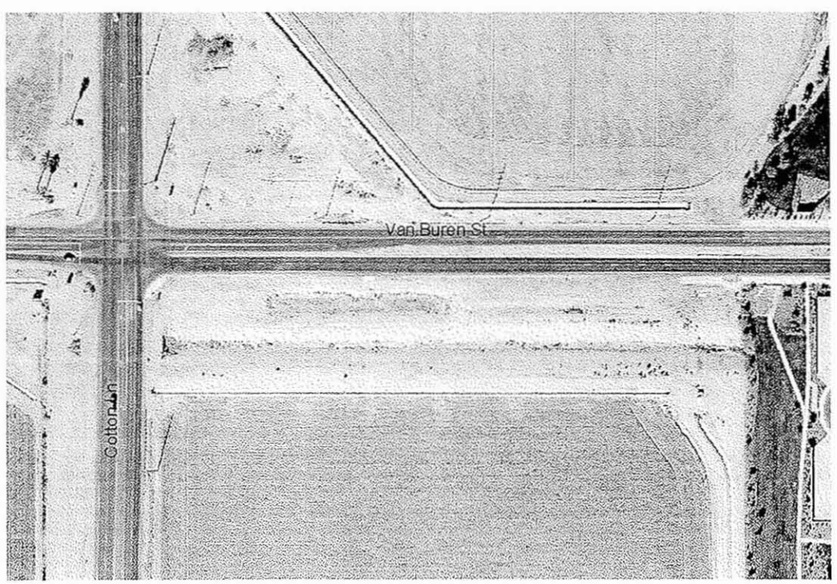
Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	6.00	ft
Section Size	6 x 4 ft		Rise	4.00	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	91.00	ft	Upstream Velocity Head	1.35	ft
Ke	0.70		Entrance Loss	0.95	ft

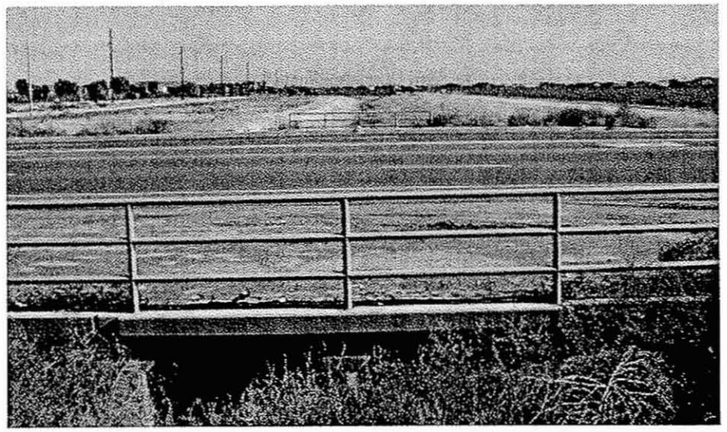
Inlet Control Properties					
Inlet Control HW Elev.	90.60	ft	Flow Control	Unsubmerged	
Inlet Type	0° wingwall flares		Area Full	48.0	ft^2
K	0.06100		HDS 5 Chart	8	
M	0.75000		HDS 5 Scale	3	
C	0.04230		Equation Form	1	
Y	0.82000				

(3) The S13S14 Routing, at just south of the intersection of Van Buren Street and Cotton Lane, routes 842 cfs in a channel in an eastwardly direction; but the upstream end is restricted by a 2 at 6 ft. by 4 ft. by 120 ft. long box culvert. Assuming a headwater depth of about 6 ft., the box culvert can only convey approx. 400 cfs. It looks like some flows will go southward rather than getting into the channel.

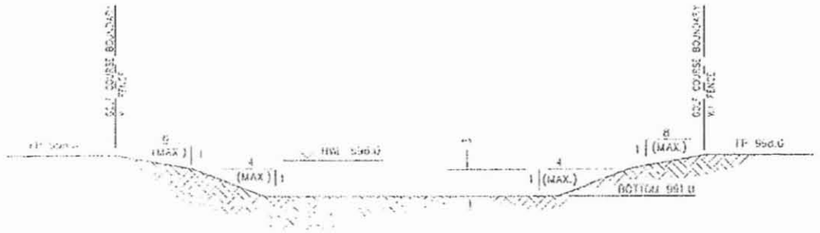




AT BOX CULVERT INLET (WEST END):



KAMINSKI HUBBARD engineering,inc.



NOTES:

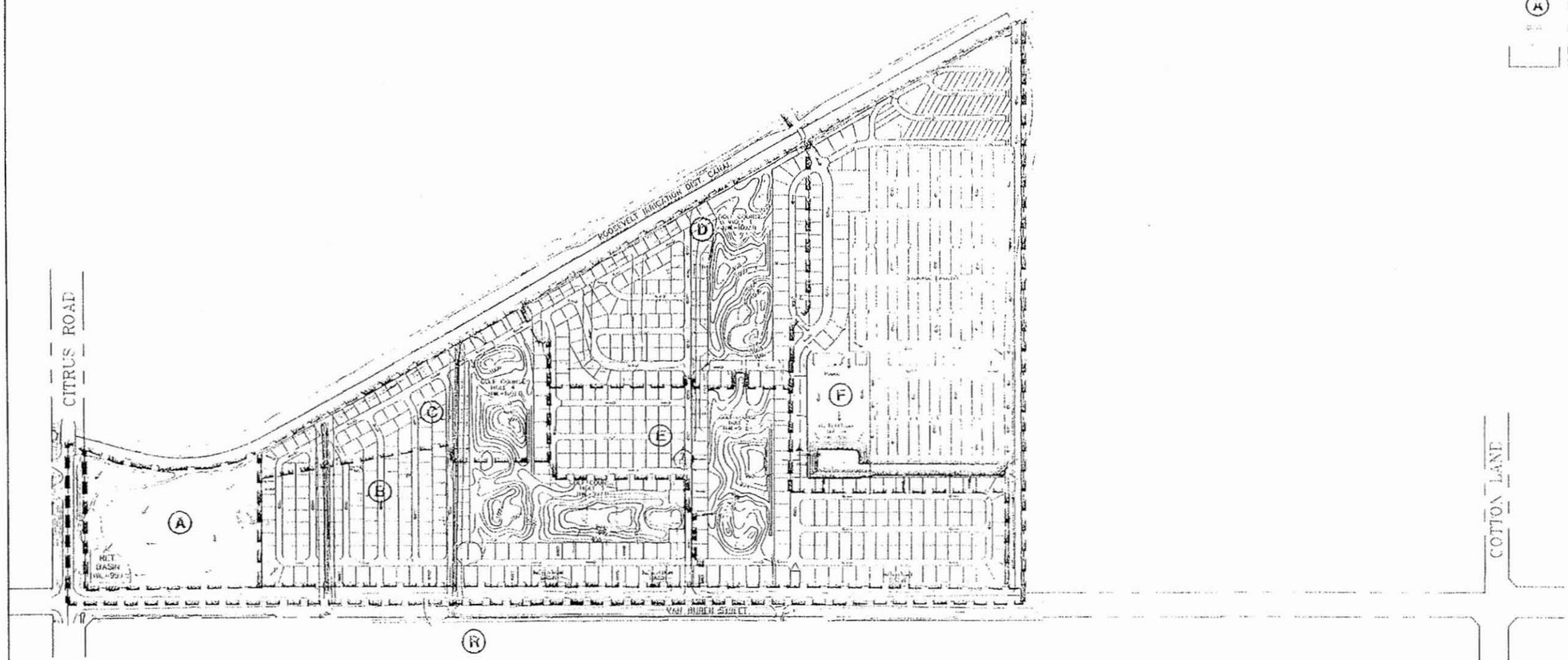
1. SIDE SLOPES SHALL NOT EXCEED THOSE SHOWN
2. THE HIGH WATER SURFACE ELEVATION SHALL NOT BE CLOSER THAN 10' FROM PROPERTY LINE

TYPICAL GOLF COURSE SECTION (A)

N.T.S.

LEGEND

- PARCEL BOUNDARY
- (A) DRAINAGE PARCEL IDENTIFICATION
- DRAINAGE FLOW DIRECTION
- LIMITS OF HIGH WATER LEVEL FOR STORAGE CALCULATED CAPACITY



N

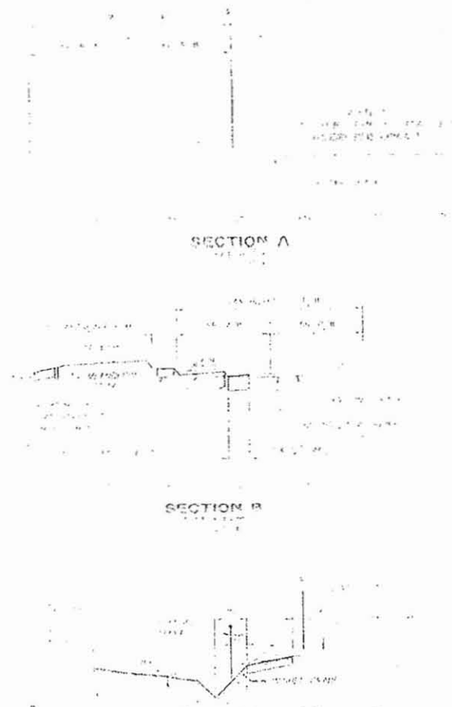
SCALE 1"=200'

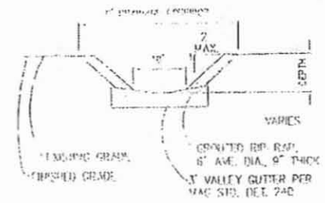
0 100 200 400

COTTON LANE RV & GOLF RESORT
MASTER DRAINAGE REPORT

PHASE I DRAINAGE PLAN
PROPOSED RETENTION BASINS
EXHIBIT II

	SCALE 1" = 200'	JOB NO 0376	SHEET 2 of 4

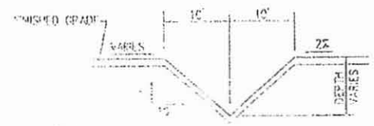




Note: See Appendix A for Rating Tables and Discharge Curves

6' CHANNEL TYPICAL SECTION

N.T.S.



Notes:

1. See Appendix A for Rating Tables and Discharge Curves
2. Ditch dimensions may vary, provided that 100 year discharge is exceeded.

TYPICAL AC V-DITCH CHANNEL SECTION

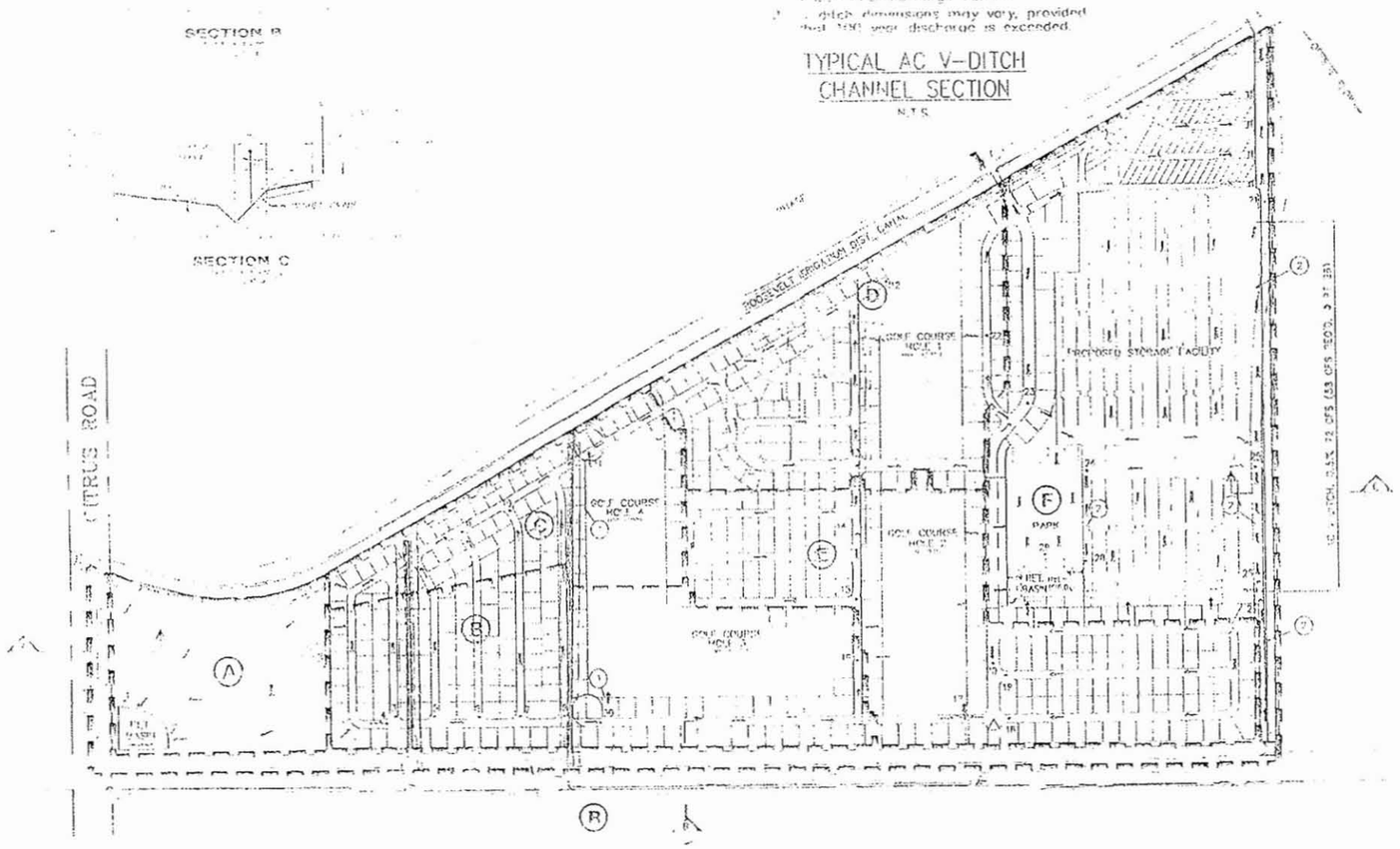
N.T.S.

10 YEAR & 100 YEAR PEAK FLOW (CFS) AT CONCENTRATION POINTS

POINT ID	FLOW Q_{10}	FLOW Q_{100}	POINT ID	FLOW Q_{10}	FLOW Q_{100}
1	11.26	21.58	16	3.93	7.35
2	7.34	14.08	17	17.11	33.25
3	2.15	4.90	18	5.13	9.99
4	2.85	6.48	19	5.81	11.32
5	2.47	5.62	20	3.71	7.23
6	2.56	5.82	21	18.42	39.59
7	2.74	6.23	22	2.62	5.02
8	2.82	6.43	23	8.7	16.62
9	5.40	10.35	24	16.52	31.57
10	1.67	3.21	25	27.77	52.59
11	10.80	20.63	26	30.52	57.79
12	2.75	5.28	27	1.92	3.67
13	8.80	16.87	28	25.23	48.19
14	3.71	7.23	29	5.46	10.44
15	7.15	13.92	30	19.57	37.50

INVERTED CROWN ROADWAY CAPACITY FROM B/C TO B/C

ROAD WIDTH	CURB TYPE	DEPTH	CROWN SLOPE	LONGITUDINAL SLOPE	CAPACITY CFS
28'	RIBBON	0.28'	2%	0.5%	7.40
28'	RIBBON	0.42'	3%	0.5%	14.55
28'	ROLLED	0.61'	2%	0.5%	51.13
40'	RIBBON	0.40'	2%	0.5%	19.16
40'	RIBBON	0.60'	3%	0.5%	37.66
40'	ROLLED	0.73'	2%	0.5%	81.12



LEGEND

- PARCEL BOUNDARY
- FLOODPLAIN BOUNDARY
- (P) DRAINAGE PARCEL IDENTIFICATION
- DRAINAGE FLOW DIRECTION
- CONCENTRATION POINT AND ID
- (1) 6' CHANNEL LOCATION
- (2) V DITCH LOCATION

SCALE 1"=200'

0 100 200 400

PHASE I SUMMARY

SUBAREA ID.	TOTAL ACRES AC. FT.	VOL. REQ'D. AC. FT.	VOL. PROVIDED AC. FT.
A	7.00	1.31	1.31*
B	16.29	2.52	2.74
C	7.97	1.23	1.69
D	13.65	2.18	3.12
E	16.74	2.78	2.80
F	29.94	5.72	5.65
R	5.21	0.91	0.91*
TOTAL	95.80	16.65	18.42

* = TO BE PROVIDED AT TIME OF DEVELOPMENT

KAMINSKI HUBBARD engineering, inc.

COTTON LANE RV & GOLF RESORT
MASTER DRAINAGE REPORT

PHASE I DRAINAGE PLAN
EXHIBIT 1

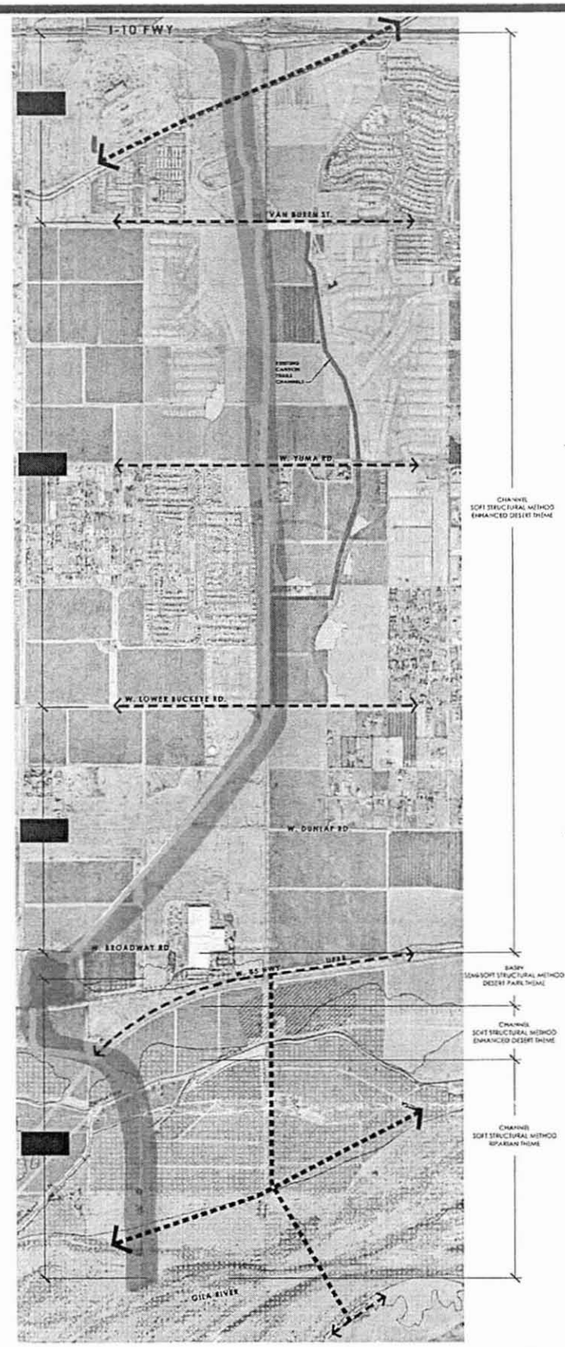
JOB NO. 0376

SHEET 1 of 4

S26, S20, S19, S13, S12

RECOMMENDED ALTERNATIVE
DUAL SYSTEM

LOOP 303 DRAINAGE IMPROVEMENTS



Legend

Enhanced Desert Theme:
The design character for the Enhanced Desert Theme shall represent a natural appearance with near native species, enhanced visual drama and focal points including visual and spatial experiences.

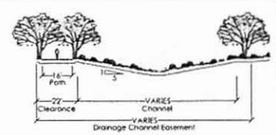
Riparian Theme:
Areas within the Gila River are a Riparian Theme with dense stream vegetation consisting of Mesquite, Palo Verde, Ironwood and lush ground planting. The edges shall blend into the existing character with 100% riparian species and dense vegetation matching in form, color and texture.

Desert Park Theme:
The vegetation is 30% enhanced near natives with ornamental grasses and 70% turf grass. The basins remain natural with native vegetation and pockets of oasis planting for shade and screening of visible structures that blend to native planting and existing landscape. The large areas of turf may be used for open play /recreation for the surrounding neighborhoods.

Maricopa County Regional Trail

Goodyear Trails

CHANNEL



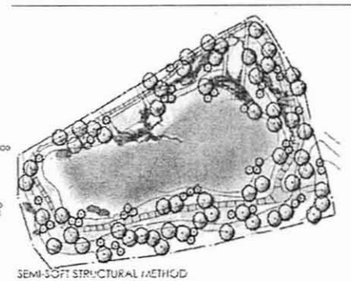
CHANNEL SECTION

SOFT STRUCTURAL METHOD

ENHANCED DESERT THEME

RIPARIAN THEME

BASINS



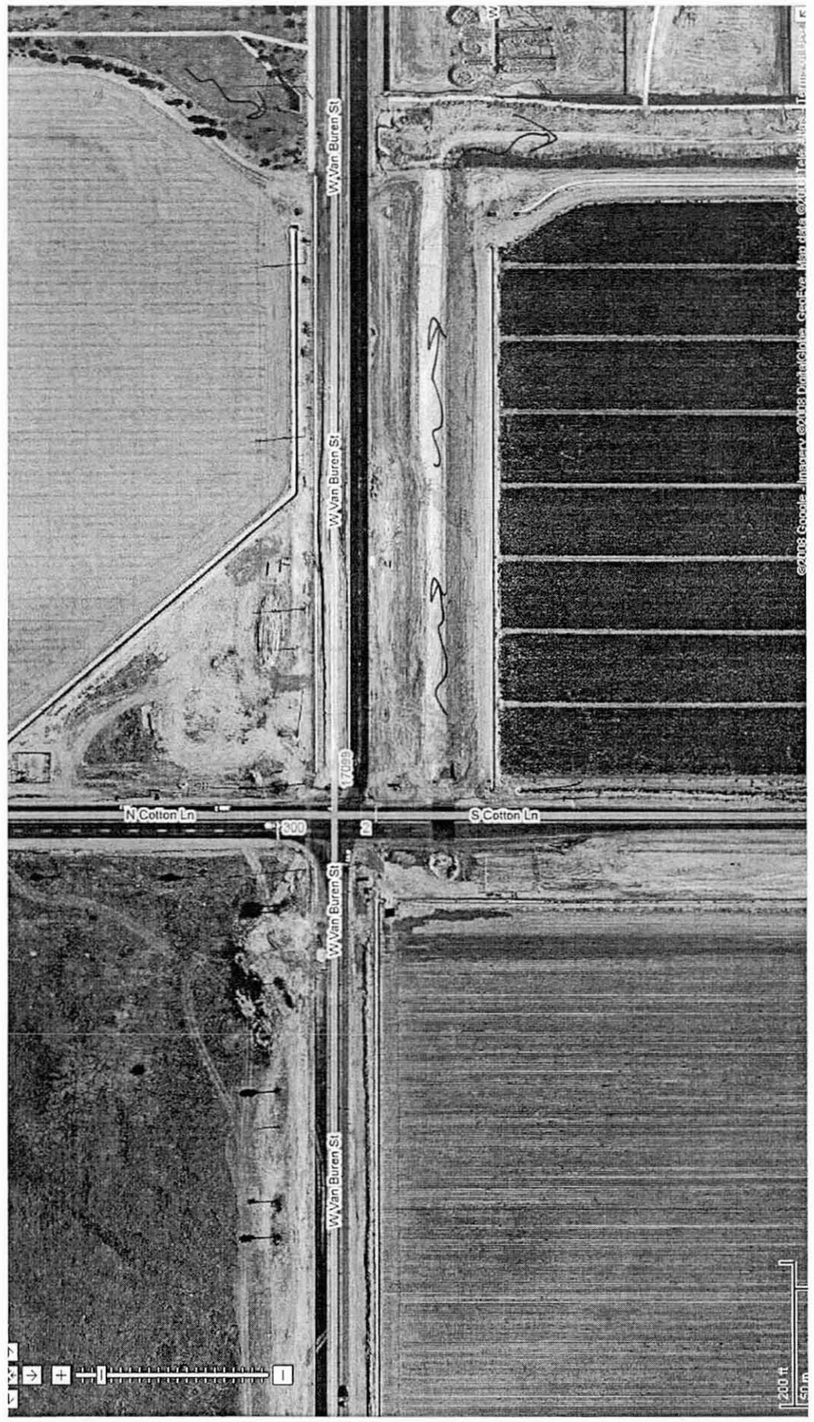
SEMI-SOFT STRUCTURAL METHOD
Scale: 1"=60'-0"

DESERT PARK THEME

Scale: 1"=30'-0"

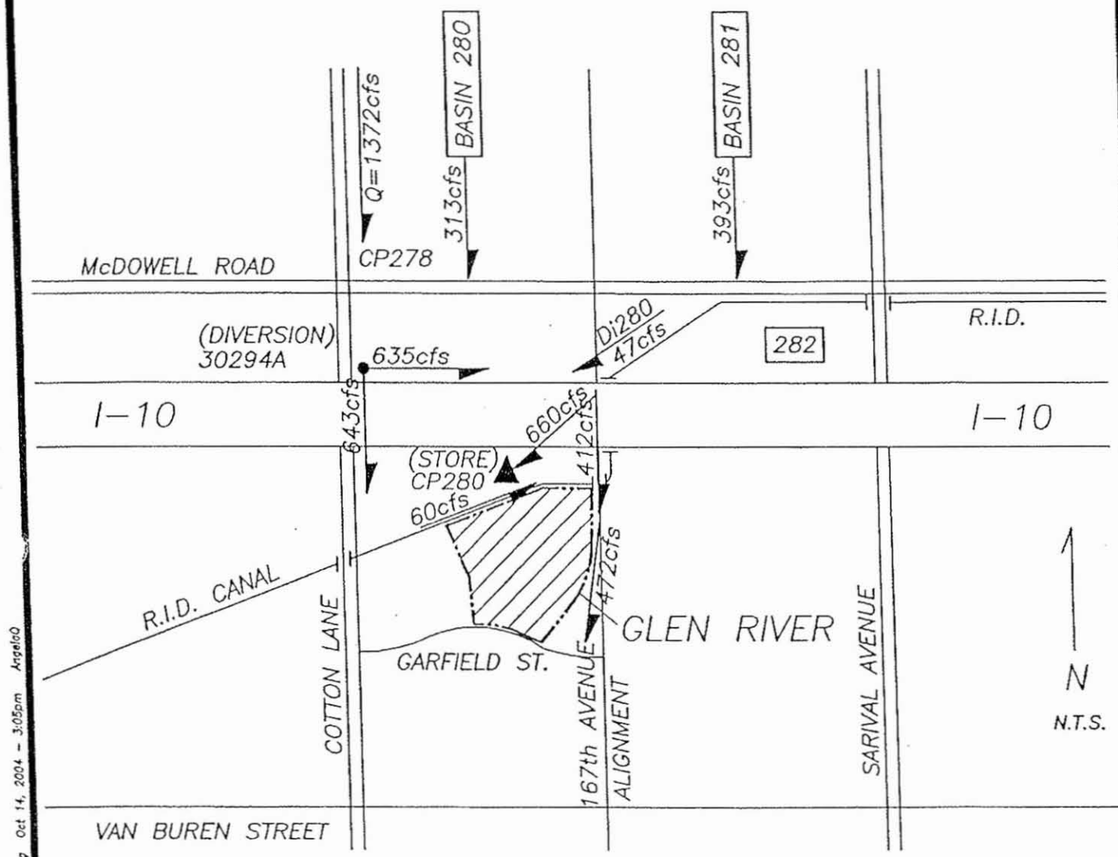
L303(Cotton) & Van Buren

← 2



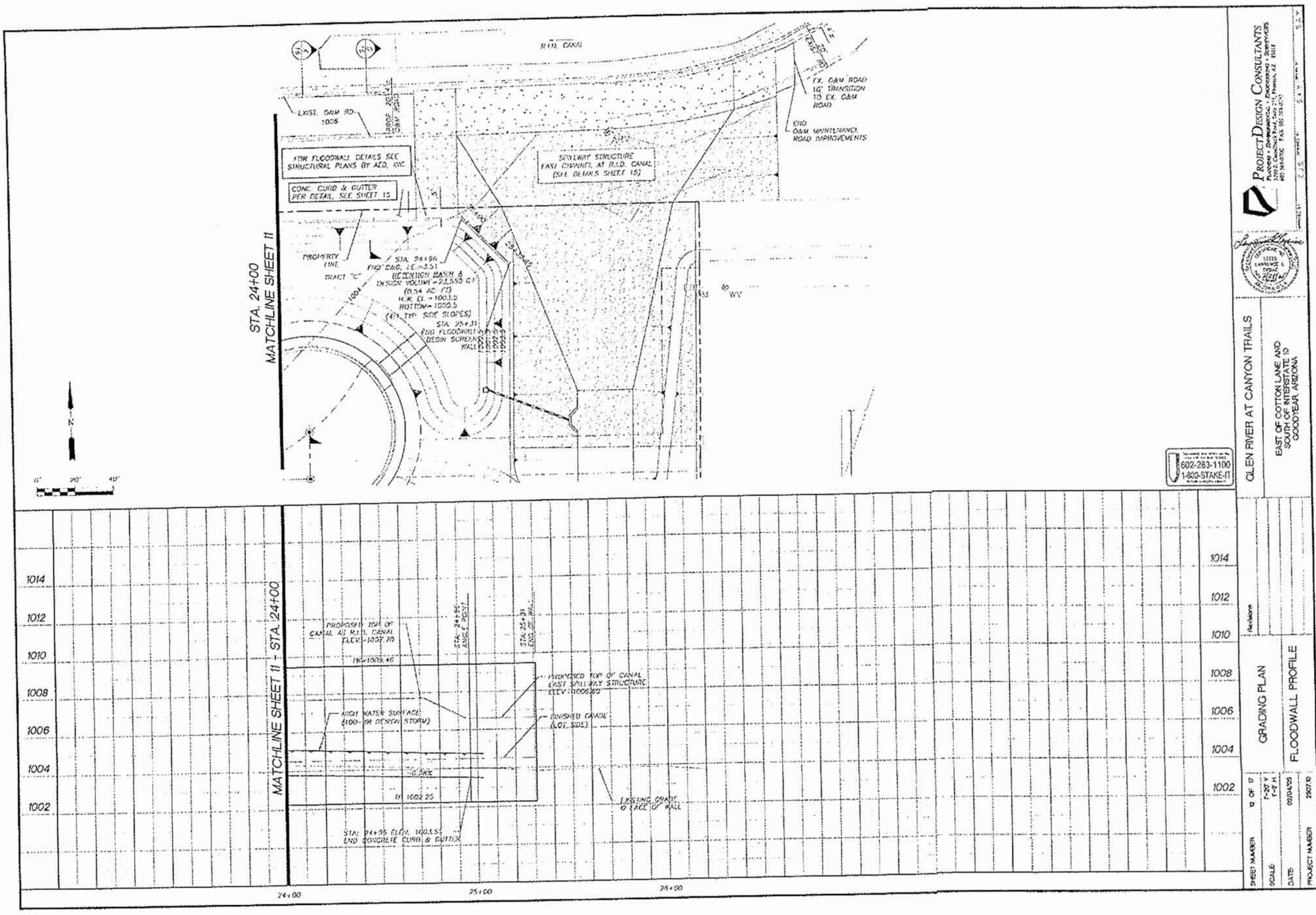
L303
1' L303 topo
(2-3 yrs old)
N
Van Buren
roadway re-alignment
culvert
channel Built
channel
Built

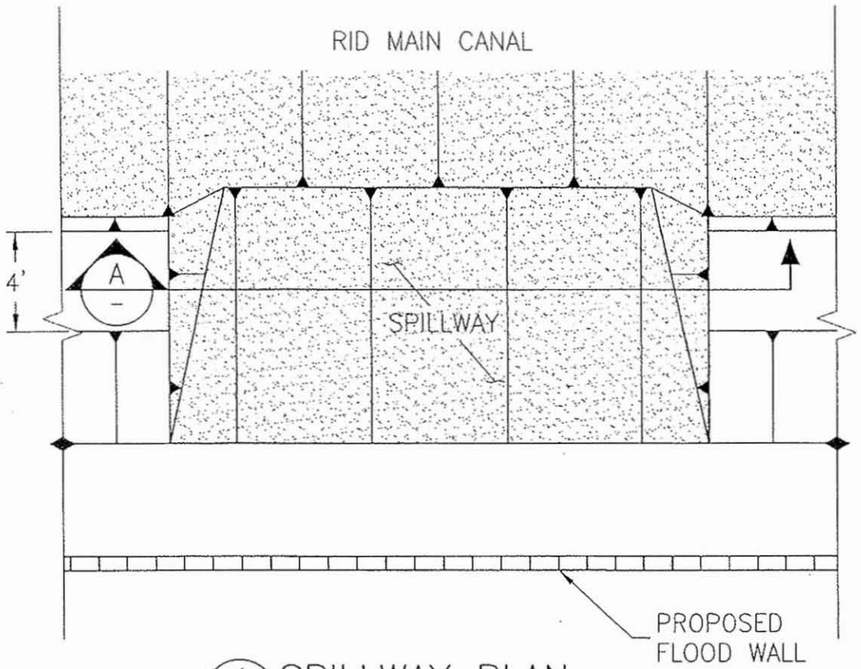
514



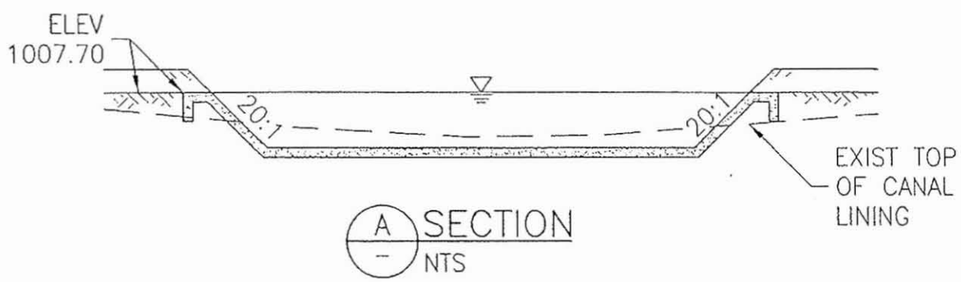
SHEET NUMBER:	1 OF 1	GLEN RIVER	PROJECT DESIGN CONSULTANTS PLANNING • ENVIRONMENTAL • ENGINEERING • SURVEY/GPS 2525 East Arizona Biltmore Circle, Suite 236, Phoenix, AZ 85016 602-508-0700 FAX 602-508-0745
SCALE:	N.T.S.		
DATE:	10/14/04	FIGURE 1 VICINITY MAP AND HEC-1 ROUTING MAP	
PROJECT NUMBER:	2507.00		APPROVED BY: TPB DESIGNED BY: DSR DRAWN BY: AD

T:\Engr\2507.00\Hydro\FIG.1-VIC AND ROUTING MAP (10-14-04).dwg Oct 14, 2004 - 3:05pm Angelo0


R.I.D. CANAL
EXIST. O&M RD. 1006
PROP. 20' O&M ROAD
FOR FLOODWALL DETAILS SEE STRUCTURAL PLANS BY AED, INC.
CONC. CURB & GUTTER PER DETAIL, SEE SHEET 15
SPILLWAY STRUCTURE EAST CHANNEL AT R.I.D. CANAL (SEE DETAILS SHEET 15)
EX. O&M ROAD 10' TRANSITION TO EX. O&M ROAD
END O&M MAINTENANCE ROAD IMPROVEMENTS
PROPERTY LINE
TRACT "C"
STA. 24+96 END C&G, I.E.=3.51
RETENTION BASIN A DESIGN VOLUME=23,550 CF (0.54 AC-FT) H.W. EL.=1003.5 BOTTOM=1000.5 (4:1 TYP. SIDE SLOPES)
STA. 25+31 END FLOODWALL BEGIN SCREEN WALL
STA. 24+00 MATCHLINE SHEET 11
0' 20' 40'
N
602-263-1100
1-800-STAKE-IT
MATCHLINE SHEET 11 - STA. 24+00
PROPOSED TOP OF CANAL AT R.I.D. CANAL ELEV.=1007.70
TW=1009.46
STA. 24+95 ANGLE POINT
STA. 25+31 END OF WALL
PROPOSED TOP OF CANAL EAST SPILLWAY STRUCTURE ELEV.=1006.50
HIGH WATER SURFACE (100-YR DESIGN STORM)
FINISHED GRADE (LOT SIDE)
-0.28%
TF 1002.25
EXISTING GRADE @ FACE OF WALL
STA. 24+95 ELEV. 1003.51 END CONCRETE CURB & GUTTER
1014
1012
1010
1008
1006
1004
1002
24+00
25+00
25+00
PROJECT DESIGN CONSULTANTS
GLEN RIVER AT CANYON TRAILS
EAST OF COTTON LANE AND SOUTH OF INTERSTATE 10 GOODYEAR ARIZONA
Revisions
GRADING PLAN
FLOODWALL PROFILE
SHEET NUMBER 12 OF 17
SCALE 1"=20' V 1"=2' H
DATE 02/04/05
PROJECT NUMBER 2507.10
HTE #04-5094



1 SPILLWAY PLAN
NTS CONCEPTUAL LAYOUT



A SECTION
NTS

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2004-07-16 10:59AM By: mzyburt

JULY 2004
182000311

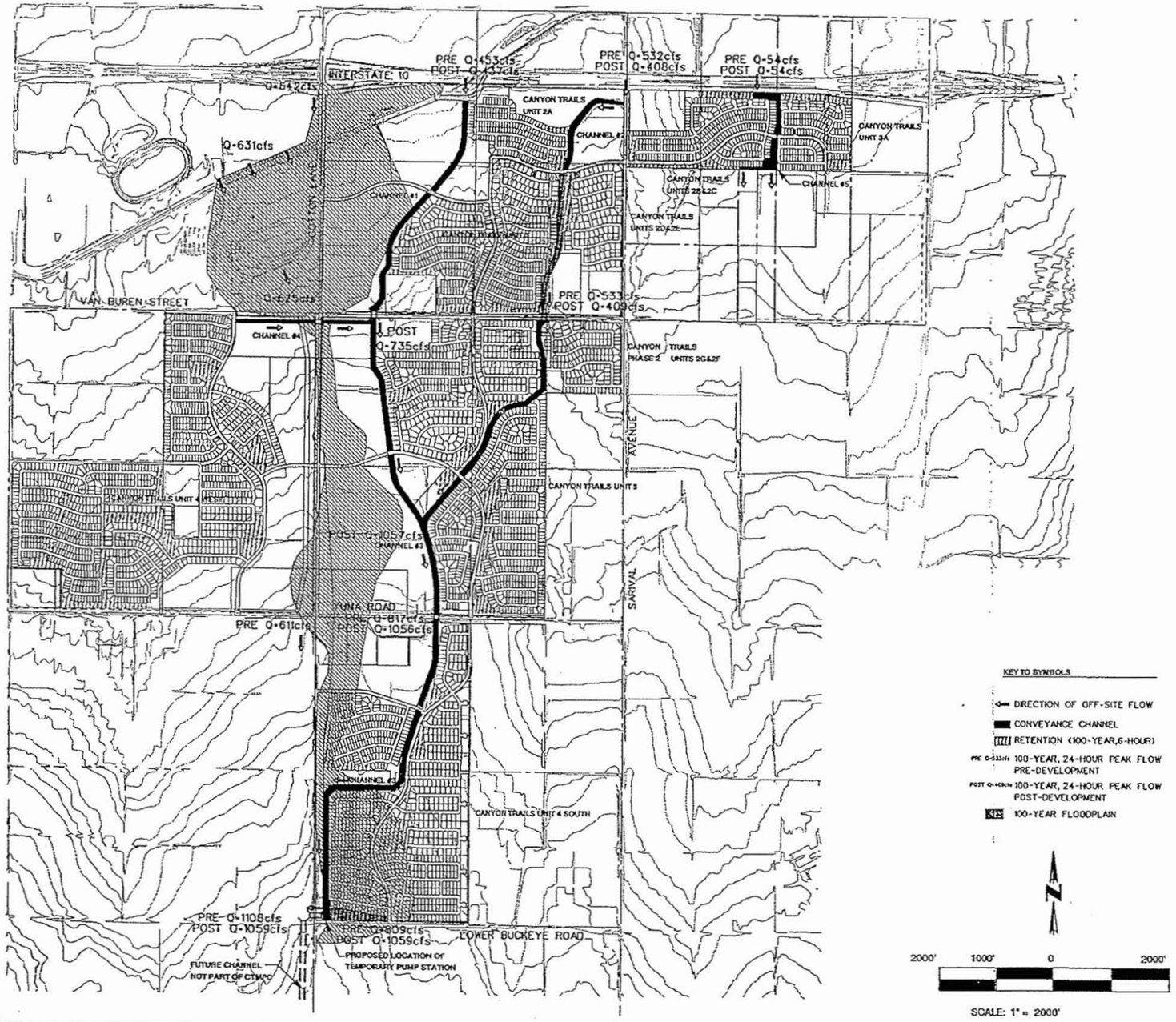
Stantec Consulting
8211 South 48th Street
Phoenix AZ U.S.A.
85044
Tel. 602.438.2200
Fax. 602.431.9562
www.stantec.com

Client/Project
ROOSEVELT IRRIGATION DISTRICT
RID MAIN CANAL

Figure No.
2.0

Title
BROWN FAMILY COMMUNITIES
GLEN RIVER - SPILLWAY PLAN

ORIGIN. - SHEET - ANSI A



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CANYON TRAILS

COE & VAN LOO
PLANNING • ENGINEERING • LANDSCAPE ARCHITECTURE

DRAINAGE MAP

4550 NORTH 12TH STREET
PHOENIX, ARIZONA 85014
TELEPHONE (602) 264-6831

JOB NO
020026

PLATE 1

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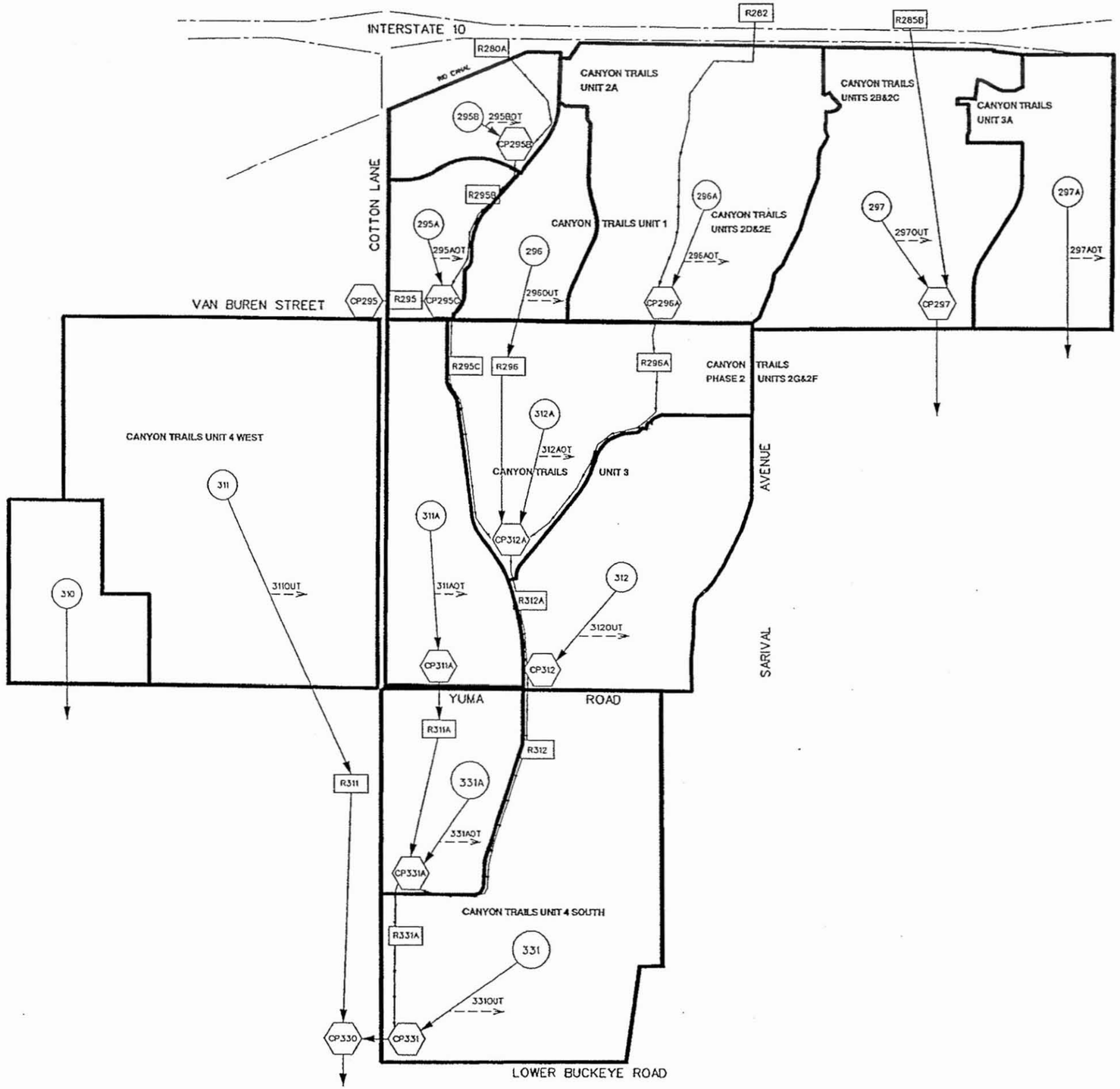


S01, S06
S15, S14
S19, S28
S17, S16
S18

4/05

KEY TO SYMBOLS

- 297A — SUB-BASIN ID
- CP296A — CONCENTRATION POINT
- R296A — ROUTE ID
- SUB-BASIN BOUNDARY
- CHANNEL (GREENBELT) FLOWLINE
- RETENTION DIVERSION

N

1600' 800' 0 1600'

SCALE: 1" = 1600'

CANYON TRAILS

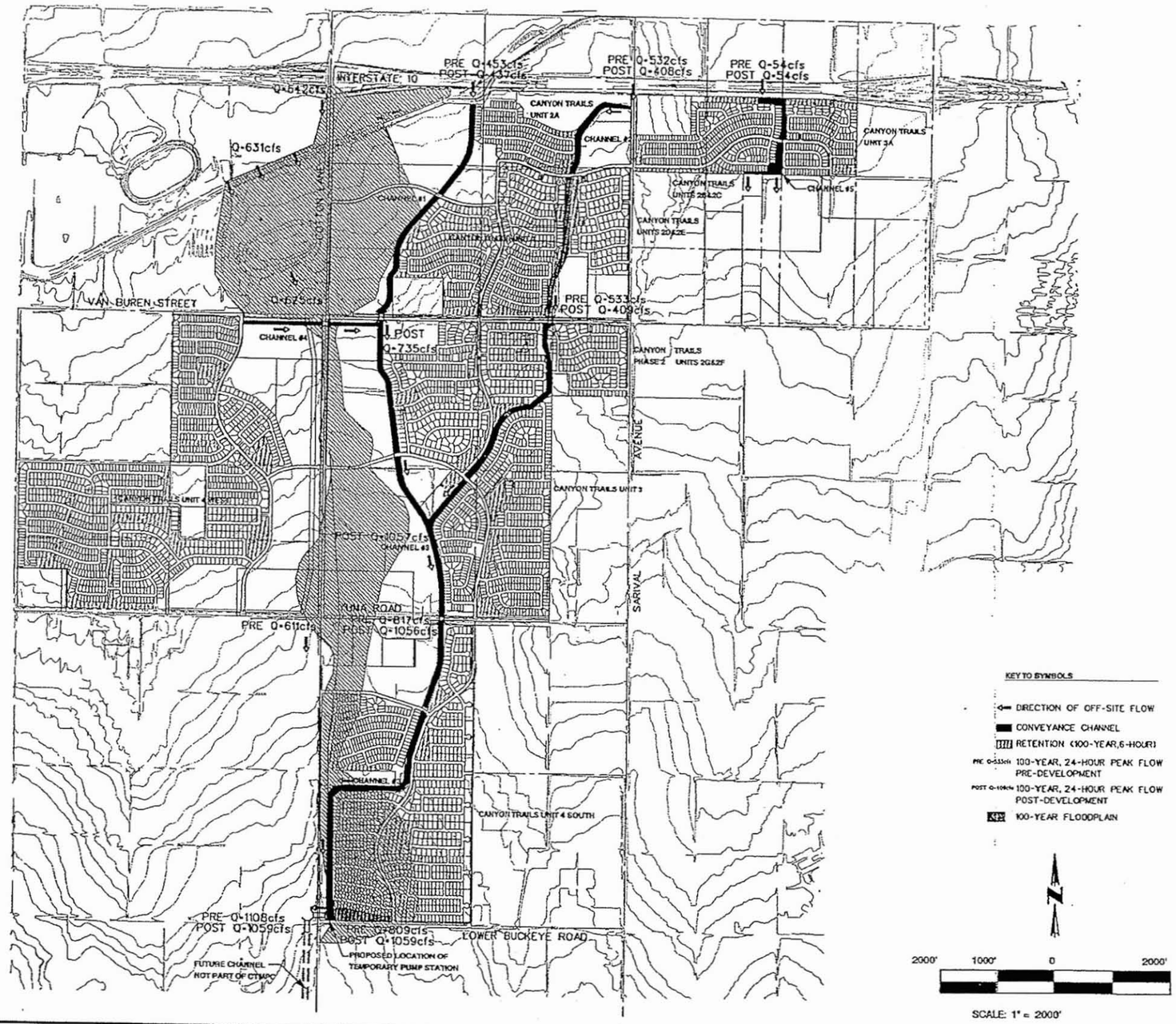
COE & VAN LOO
PLANNING • ENGINEERING • LANDSCAPE ARCHITECTURE

HEC-1 ROUTING MAP

4550 NORTH 12TH STREET
PHOENIX, ARIZONA 85014
TELEPHONE (602) 264-6831

JOB NO
020026

PLATE 2



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CANYON TRAILS

COE & VAN LOO
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DRAINAGE MAP

4550 NORTH 12TH STREET
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TELEPHONE (602) 264-6831

JOB NO
020026

PLATE 1

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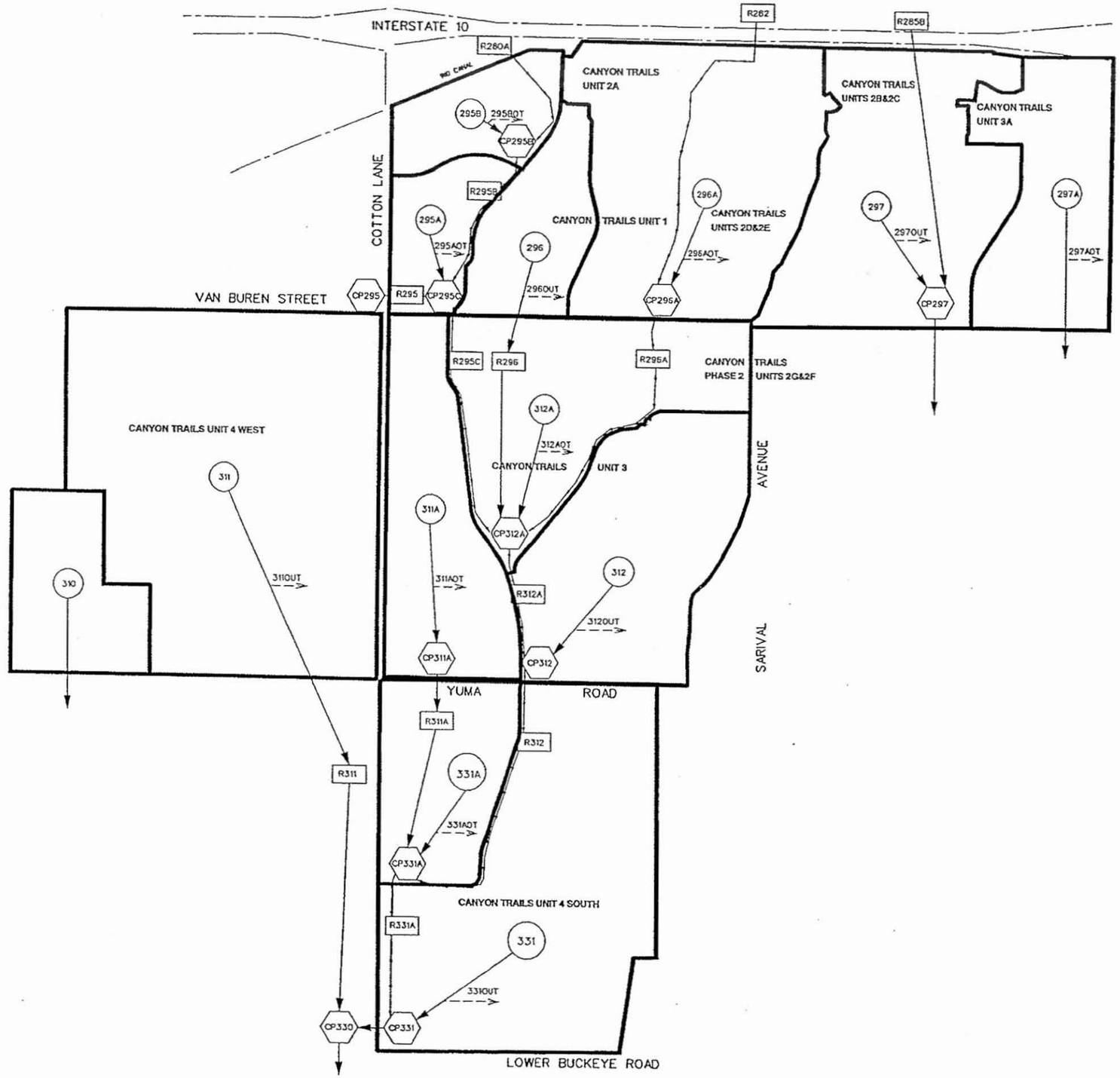

S01, S06
S15, S14
S19, S28
S17, S16
S18

4105

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1600' 800' 0 1600'

SCALE: 1" = 1600'

CANYON TRAILS

COE & VAN LOO
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HEC-1 ROUTING MAP

4550 NORTH 12TH STREET
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JOB NO
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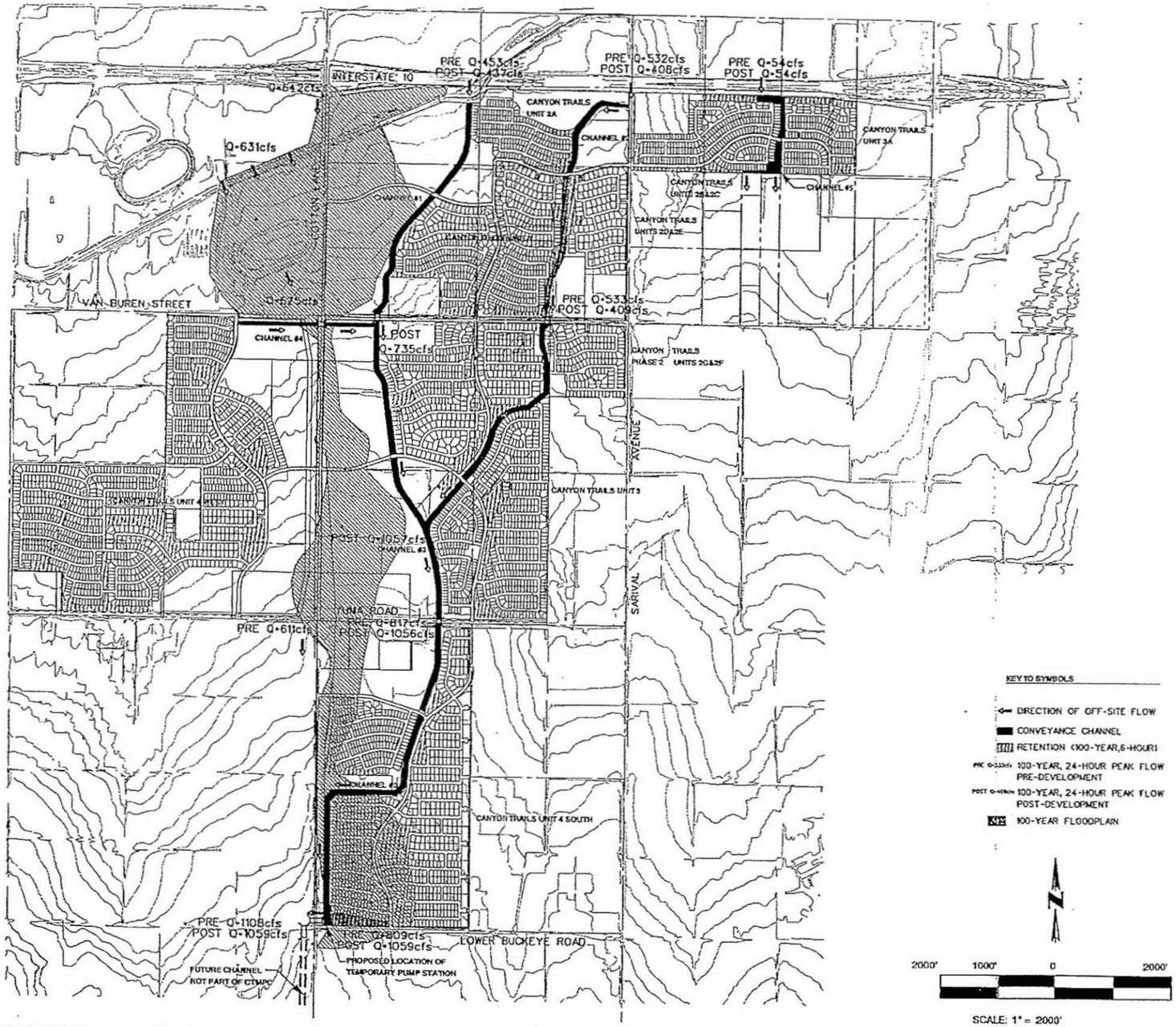
PLATE 2



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CANYON TRAILS

DRAINAGE MAP

COE & VAN LOO
PLANNING • ENGINEERING • LANDSCAPE ARCHITECTURE

4550 NORTH 12TH STREET
PHOENIX, ARIZONA 85014
TELEPHONE (602) 264-6831

JOB NO
020026

PLATE 1

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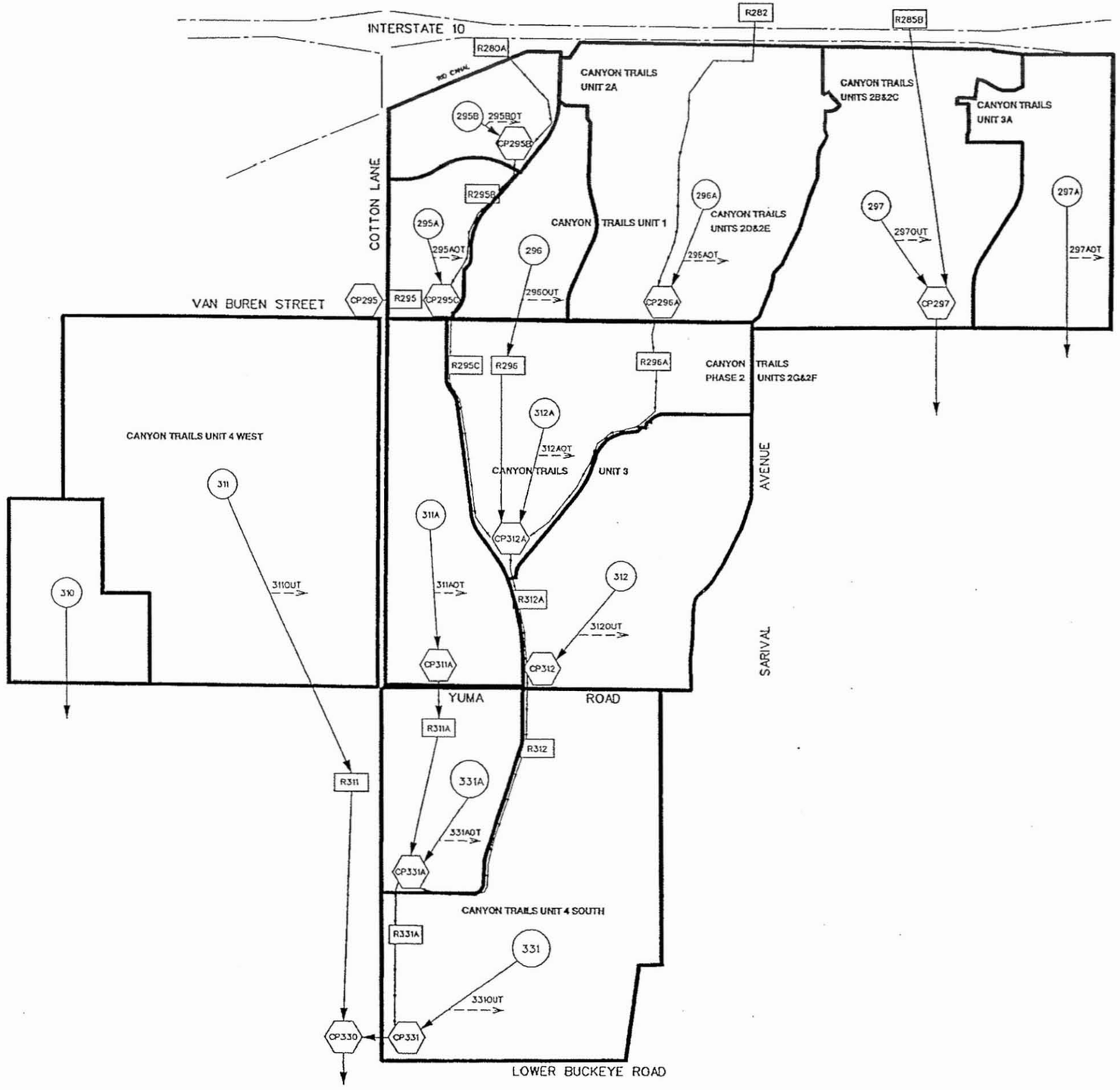

501, 506
515, 514
519, 528
517, 516
518

4/05

KEY TO SYMBOLS

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- R296A — ROUTE ID
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- RETENTION DIVERSION

N

1600' 800' 0 1600'

SCALE: 1" = 1600'

CANYON TRAILS

COE & VAN LOO
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HEC-1 ROUTING MAP

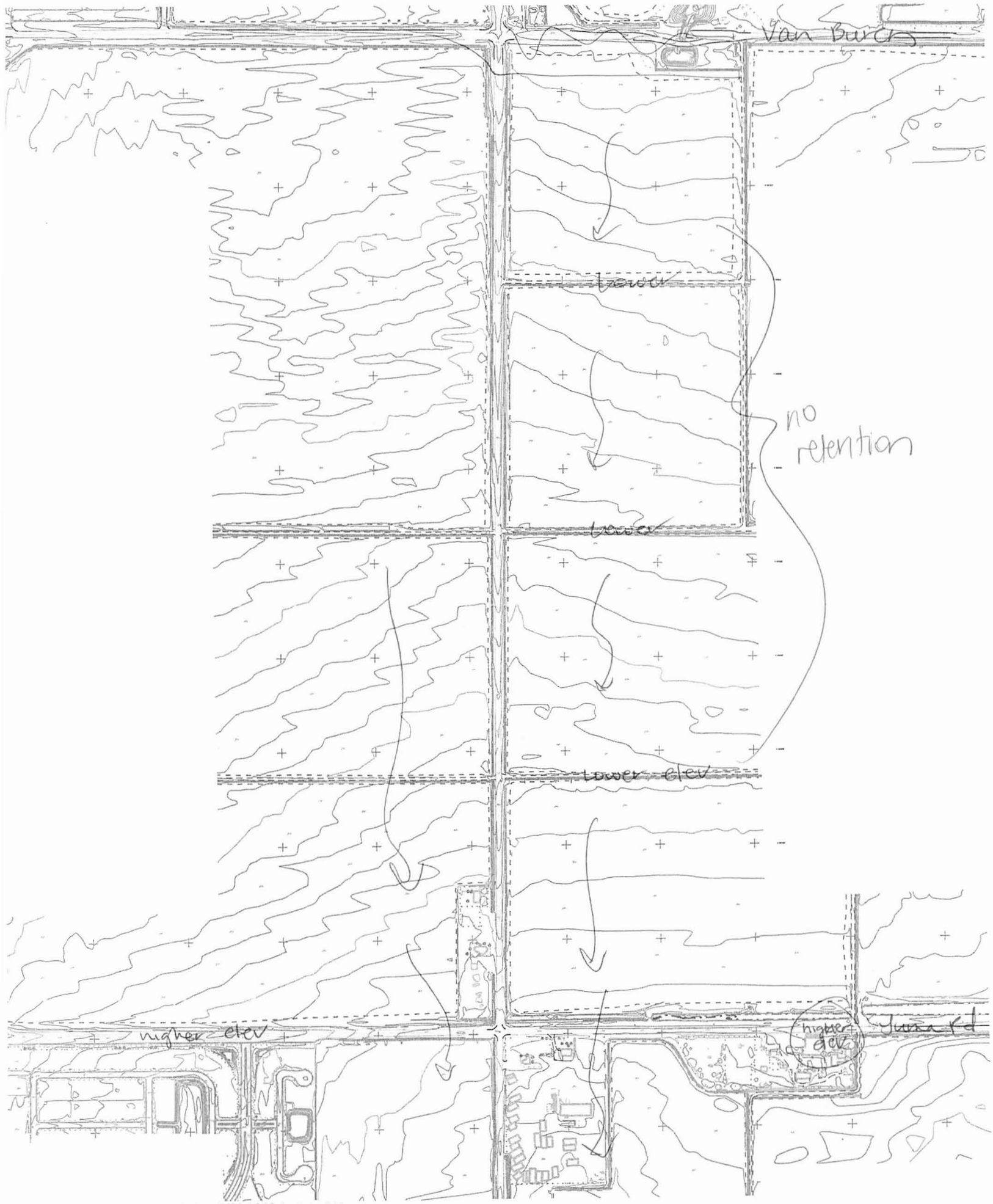
4550 NORTH 12TH STREET
PHOENIX, ARIZONA 85014
TELEPHONE (602) 264-6831

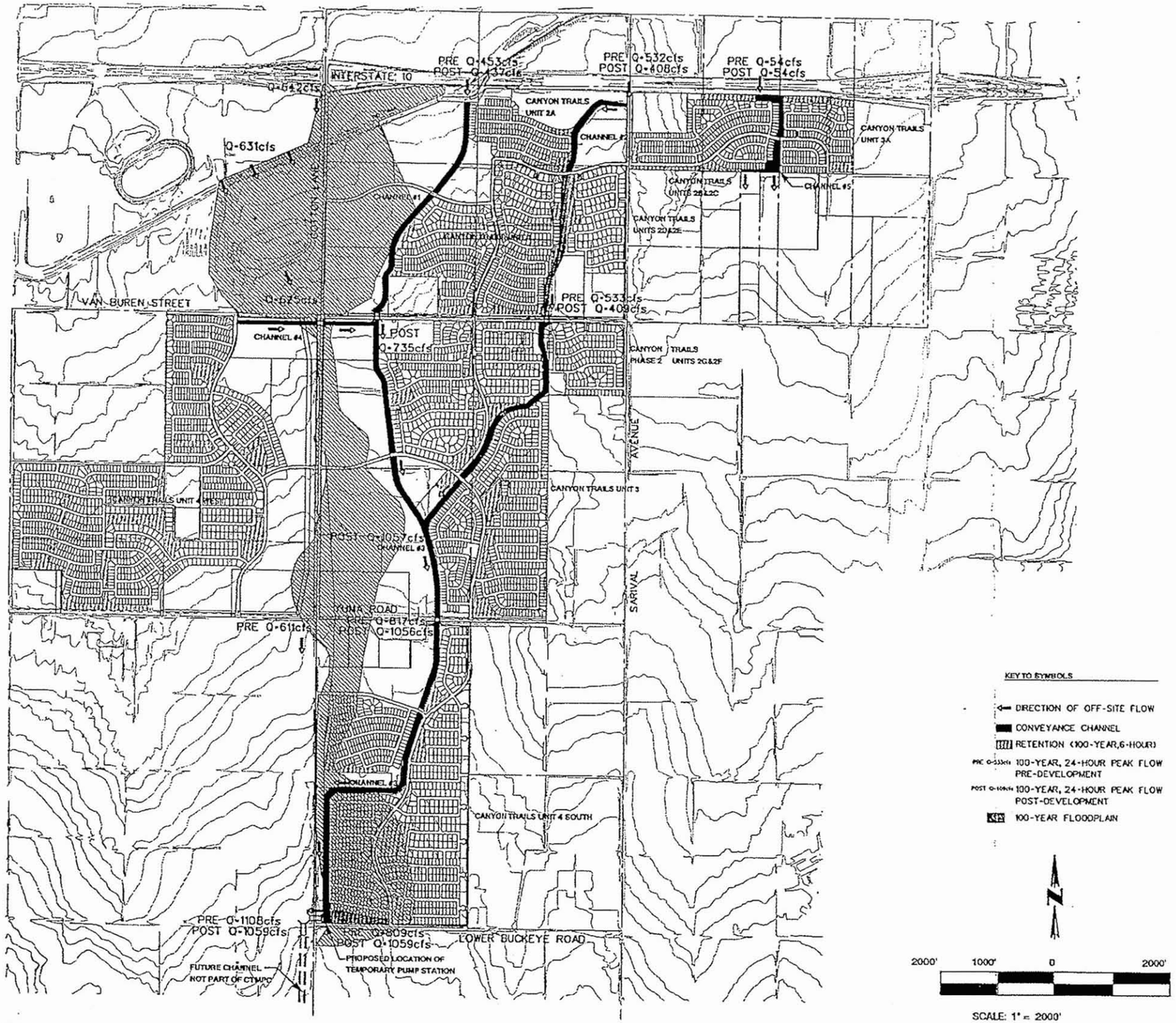
JOB NO
020026

PLATE 2

Subbasins 519 & 517

L303 Strip topo mapping ≈ 2001





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CANYON TRAILS

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DRAINAGE MAP

4550 NORTH 12TH STREET
PHOENIX, ARIZONA 85014
TELEPHONE (602) 264-6831

JOB NO
020026

PLATE 1

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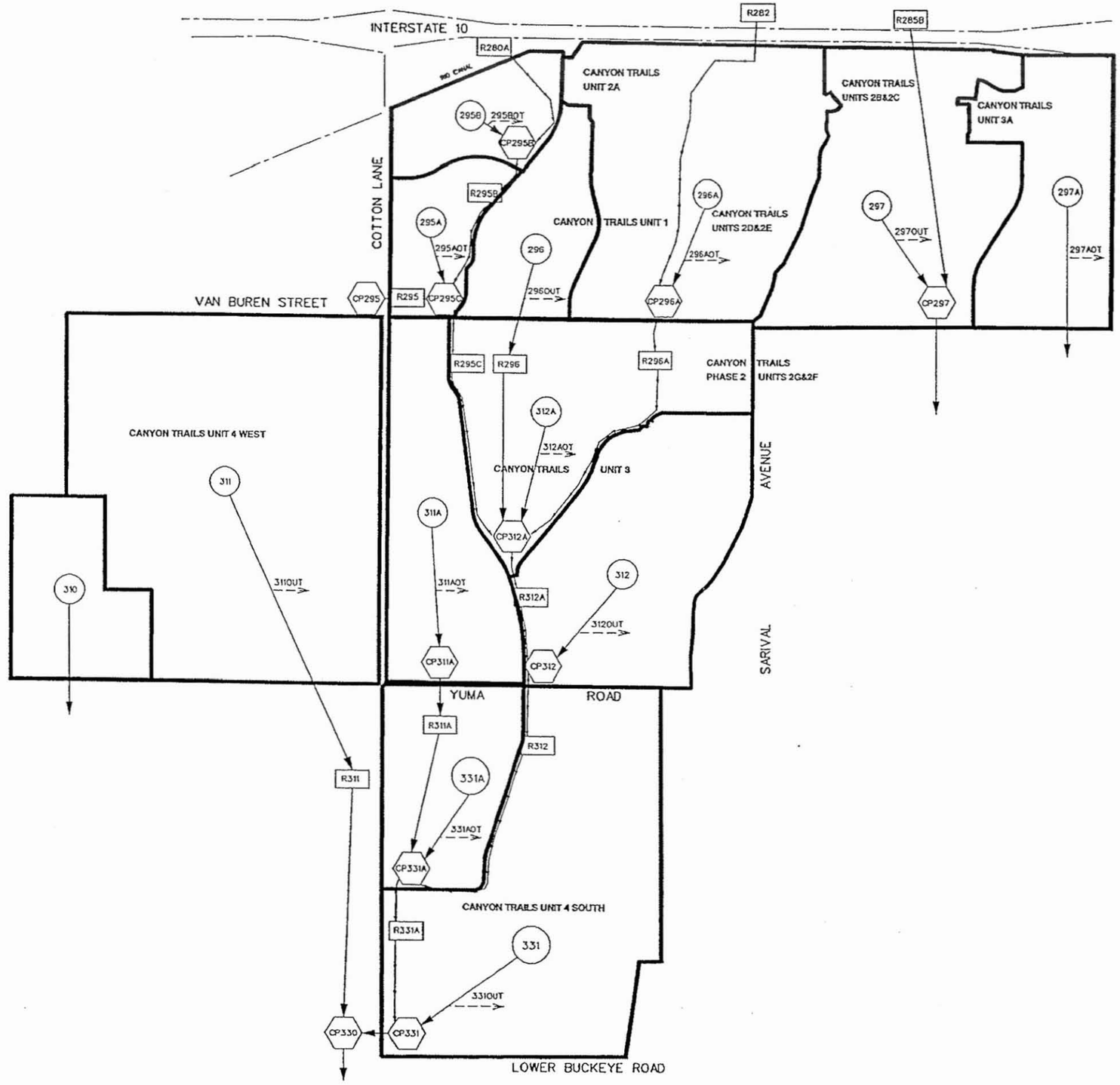

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4/05

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1600' 800' 0 1600'

SCALE: 1" = 1600'

CANYON TRAILS

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HEC-1 ROUTING MAP

4550 NORTH 12TH STREET
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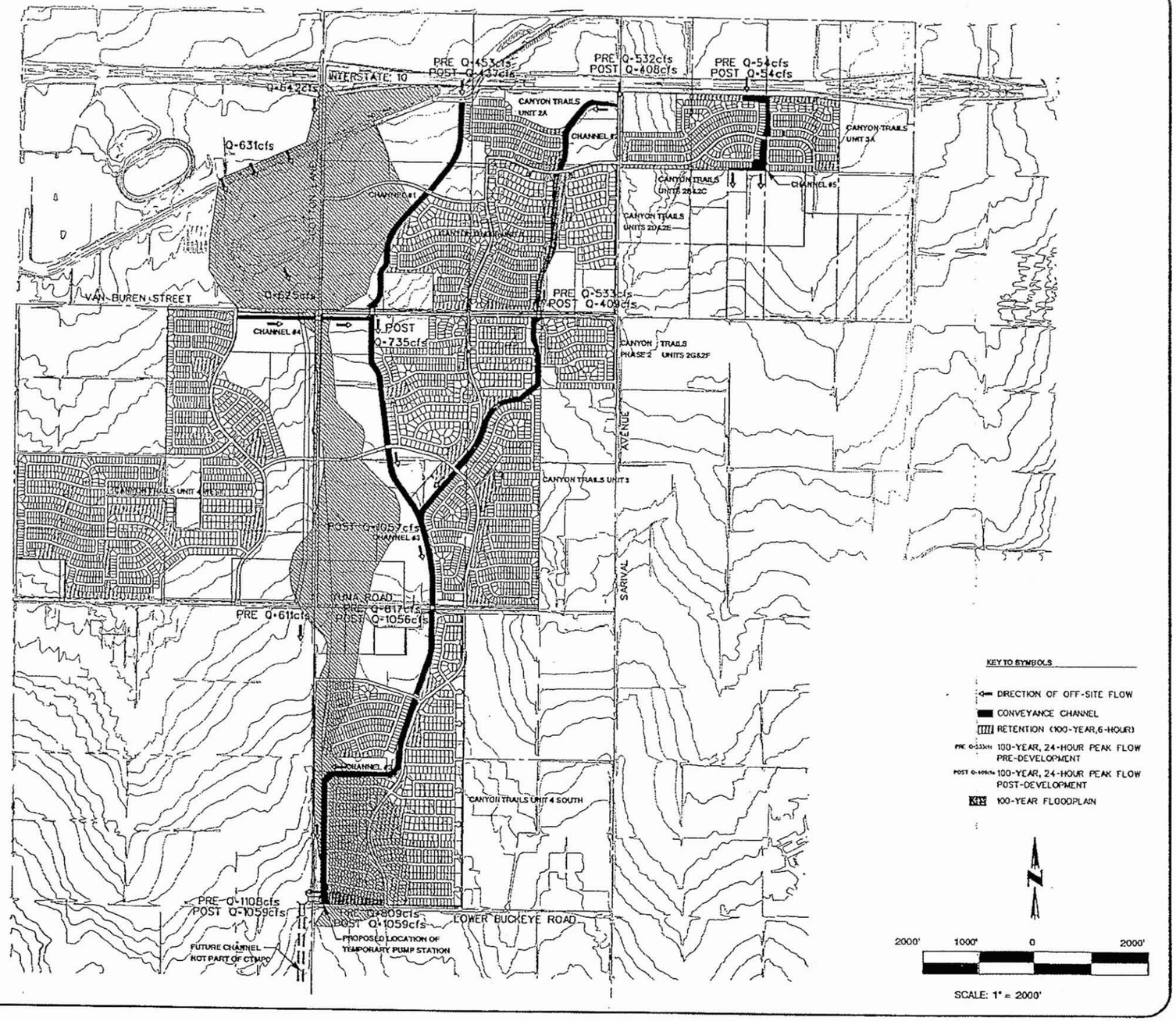
TELEPHONE (602) 264-6831

JOB NO
020026

PLATE 2



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CANYON TRAILS

COE & VAN LOO
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DRAINAGE MAP

4550 NORTH 12TH STREET
PHOENIX, ARIZONA 85014
TELEPHONE (602) 264-6831

JOB NO
020026

PLATE 1

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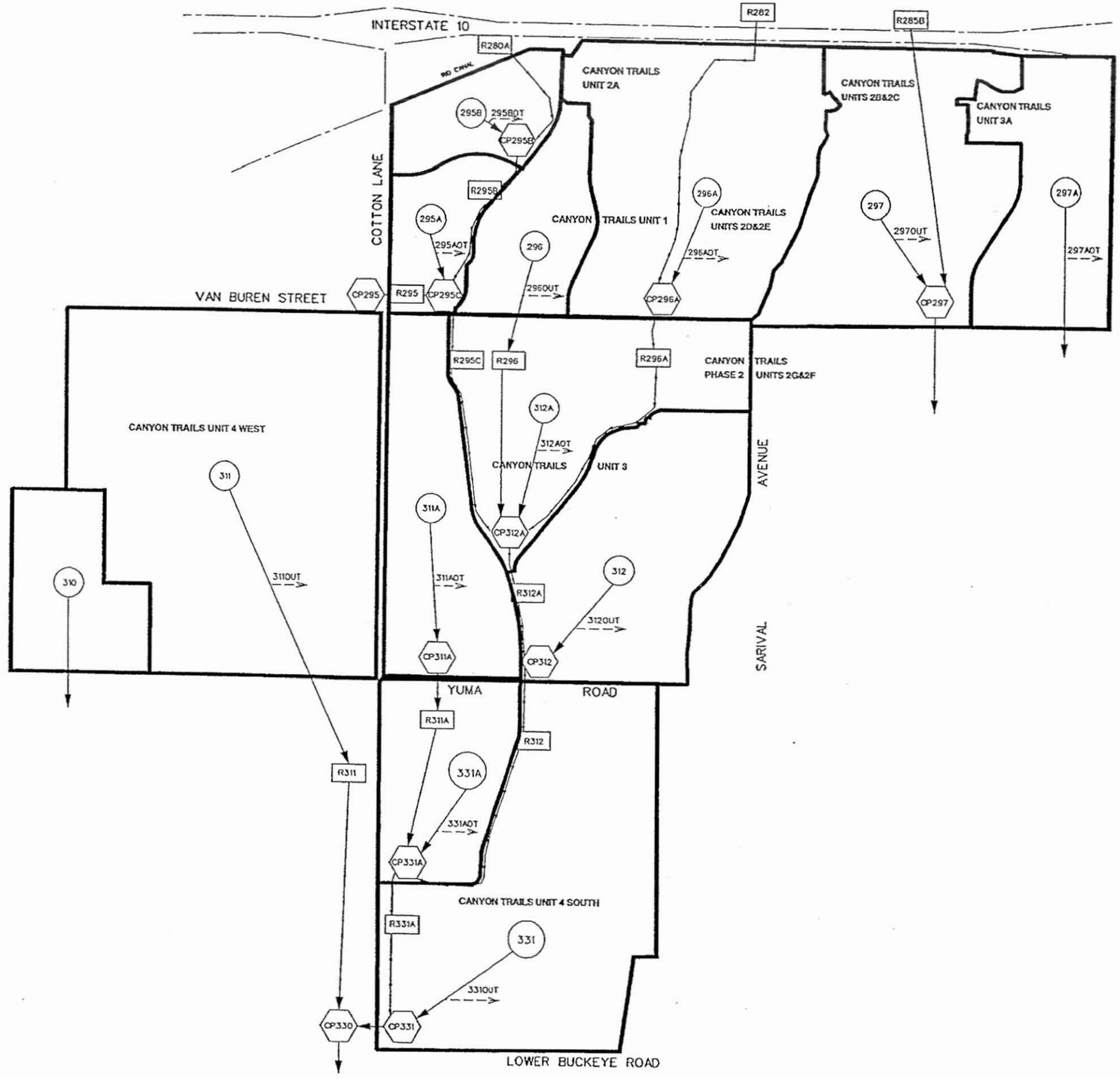

501, 506
515, 514
519, 528
517, 516
518

4105

KEY TO SYMBOLS

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- RETENTION DIVERSION

N

1600' 800' 0 1600'

SCALE: 1" = 1600'

CANYON TRAILS

COE & VAN LOO
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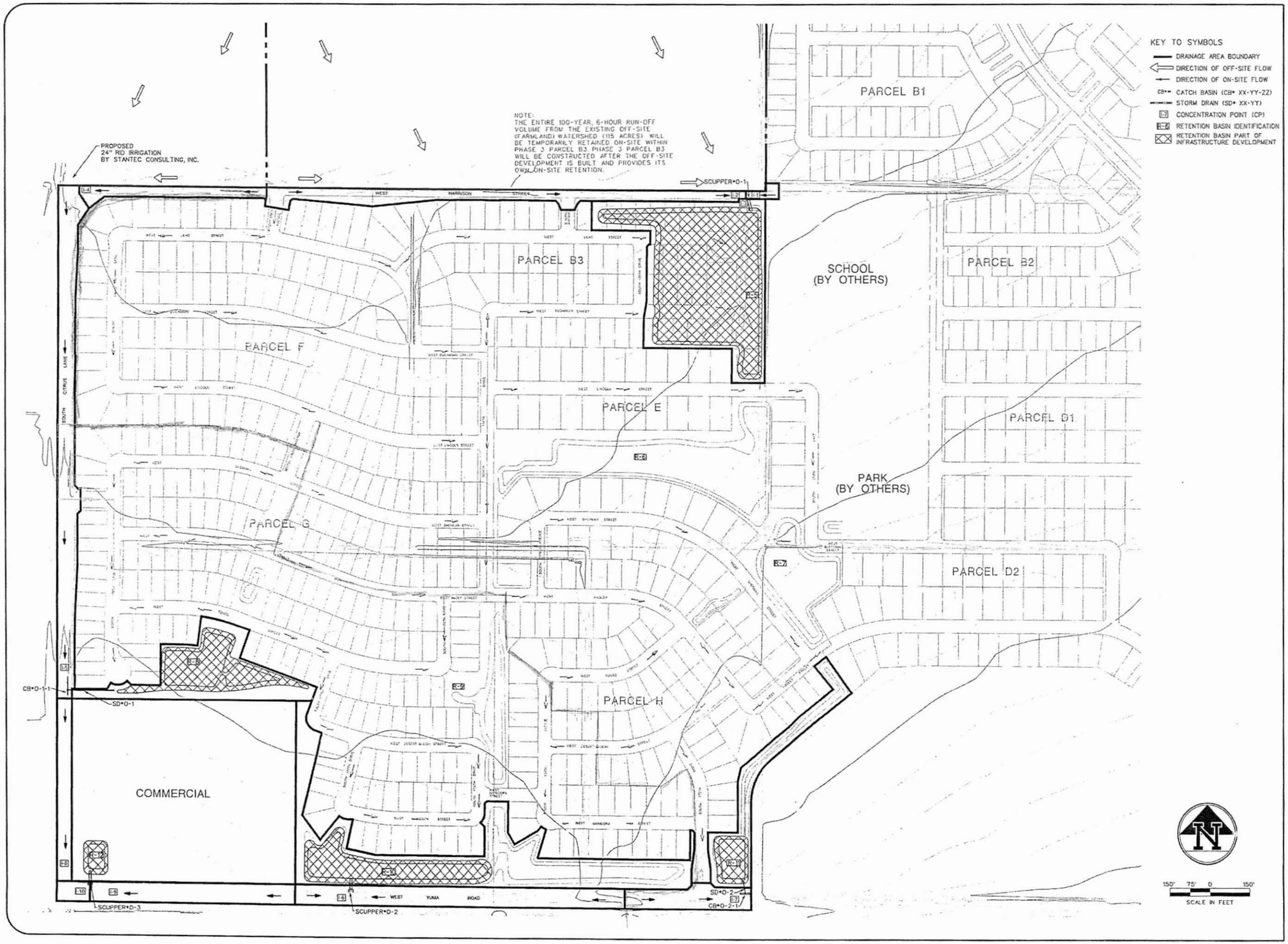
HEC-1 ROUTING MAP

4550 NORTH 12TH STREET
PHOENIX, ARIZONA 85014
TELEPHONE (602) 264-6831

JOB NO
020026

PLATE 2



CANYON TRAILS UNIT 4 WEST
PHASE 3&4 INFRASTRUCTURE

COE & VAN LOO
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DRAINAGE MAP

4550 NORTH 12TH STREET
PHOENIX, ARIZONA 85014
TELEPHONE (602) 264-6831

JOB NO.
037005-45

PLATE
1

Heidi
16 MAR 2007
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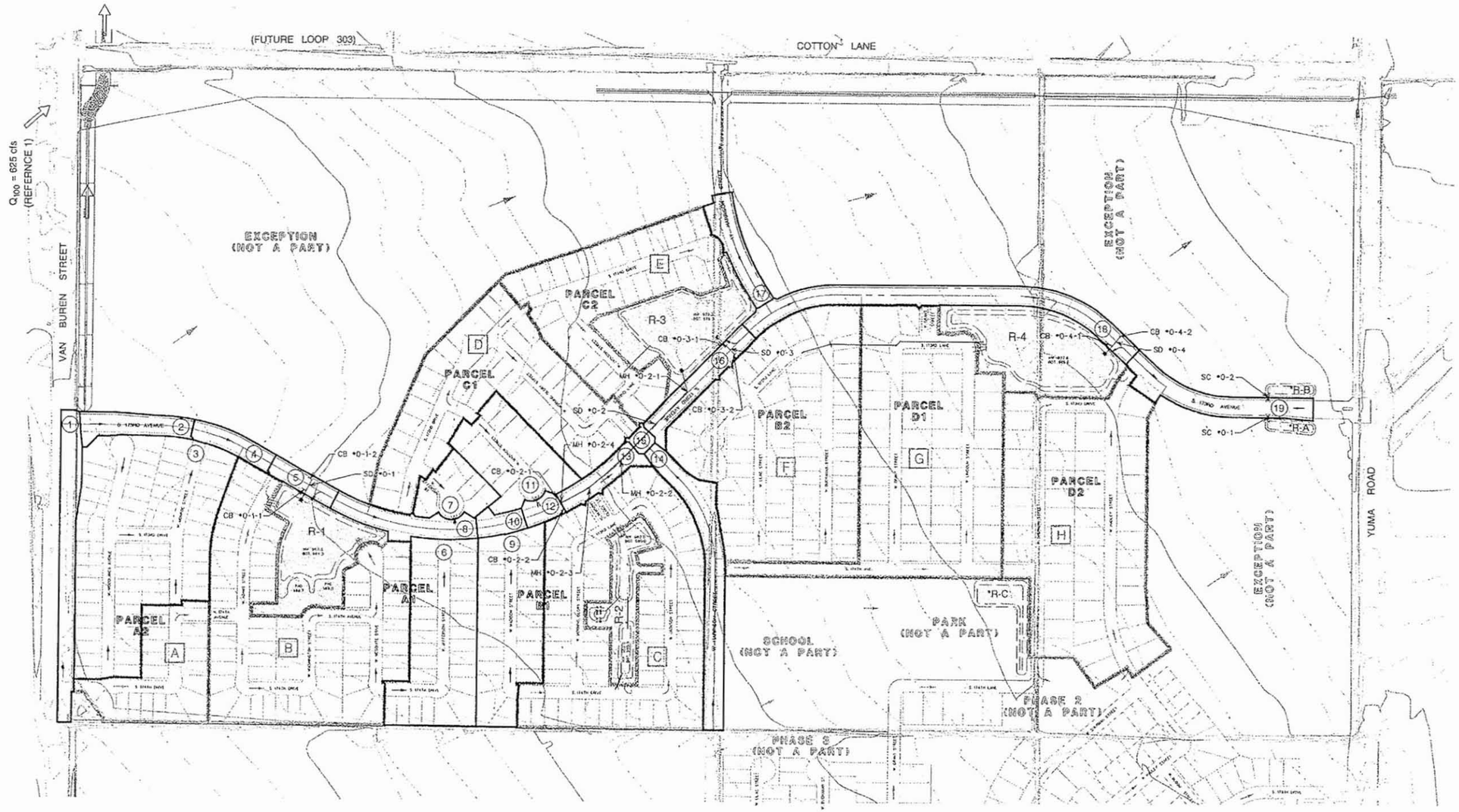
528 519



DESIGNATION OF HYDRAULIC STRUCTURES (XX-YY-ZZ)

XX - PARCEL NUMBER
YY - STORM DRAIN SYSTEM NUMBER
ZZ - FACILITY NUMBER
(NUMBERED SEQUENTIALLY FROM DOWNSTREAM END)
(PARCEL 0 REFER TO INFRASTRUCTURE PHASE)

NOTES:

1. ALL ARTERIAL AND COLLECTOR STREETS ARE 6" VERTICAL CURB.
2. EXCEPTION, SCHOOL AND PARK SITES SHALL BE RESPONSIBLE FOR THE FULL 100-YEAR, 6-HOUR ON-SITE RETENTION REQUIREMENT WHEN DEVELOPED. SEPARATE DRAINAGE REPORT REQUIRED PER CITY OF GOODYEAR.
3. TEMPORARY RETENTION BASINS AND GRADER DITCH CAN BE RELOCATED AND RECONFIGURED WITH FUTURE DEVELOPMENTS.

KEY TO SYMBOLS

- DRAINAGE AREA BOUNDARY
- A — DRAINAGE AREA IDENTIFICATION (DA)
- RETENTION BASIN LOCATION
- R-1 — RETENTION BASIN IDENTIFICATION
- DIRECTION OF OFF-SITE FLOW (REFERENCE 1 - APPENDIX B)
- DIRECTION OF ON-SITE FLOW
- PARCEL BOUNDARY
- SUB-BASIN AREA BOUNDARY
- 1 — SUB-BASIN CONCENTRATION POINT (CP)
- CB * — CATCH BASIN (CB *XX-YY-ZZ)
- SC * — SCUPPER (SC* XX-YY)
- STORM DRAIN/BLEED-OFF/EQUALIZER PIPE (SD *XX-YY)
- EXISTING CONTOUR (1' INTERVAL)

200' 100' 0 200'
SCALE IN FEET

CANYON TRAILS UNIT 4 WEST
PHASE 1 INFRASTRUCTURE

COE & VAN LOO
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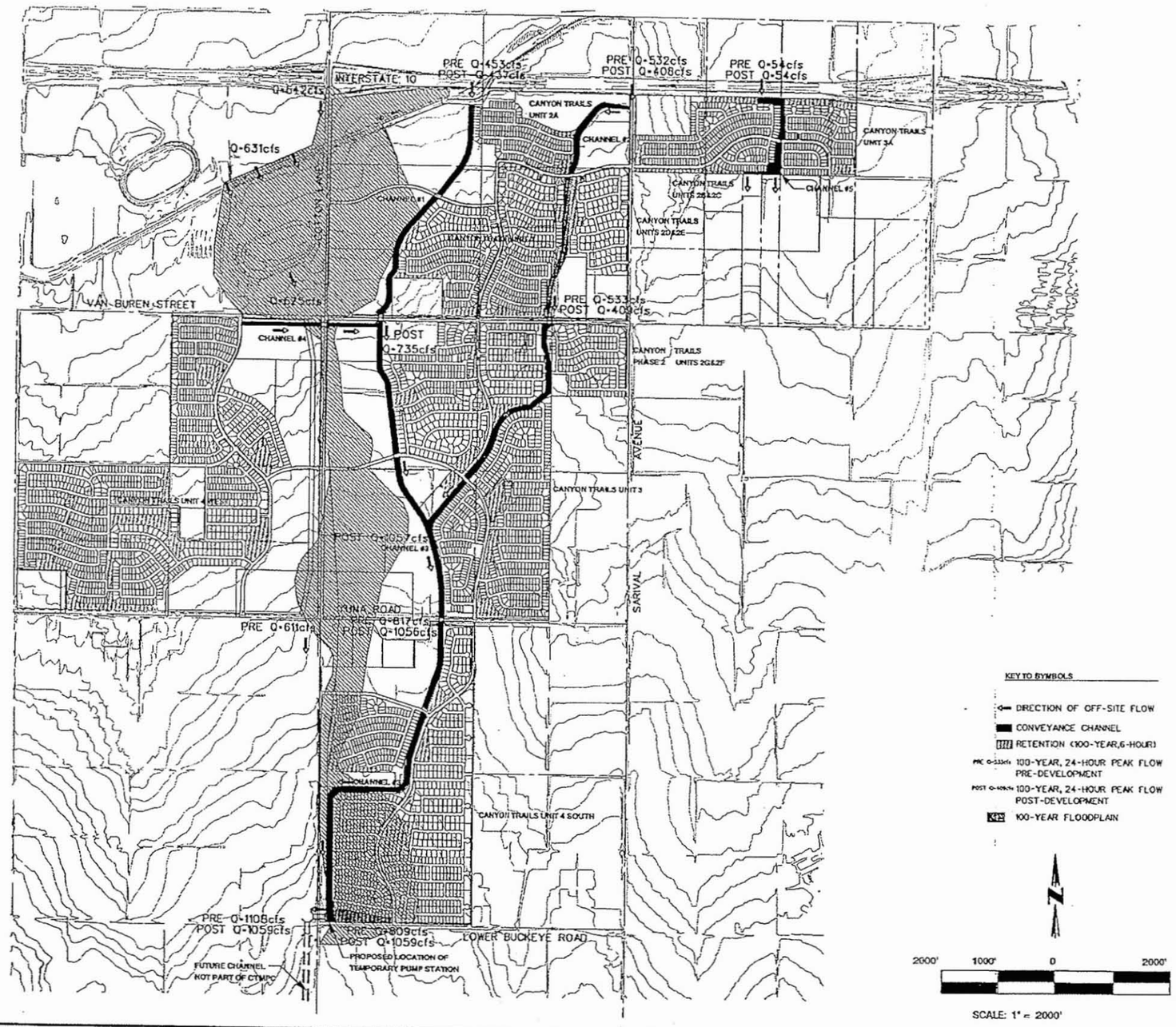
DRAINAGE MAP

4550 NORTH 12TH STREET
PHOENIX, ARIZONA 85014
TELEPHONE (602) 264-6831

JOB NO.
03-7005-13

PLATE
1



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CANYON TRAILS

DRAINAGE MAP

COE & VAN LOO
PLANNING • ENGINEERING • LANDSCAPE ARCHITECTURE

4550 NORTH 12TH STREET
PHOENIX, ARIZONA 85014
TELEPHONE (602) 264-6831

JOB NO
020026

PLATE 1

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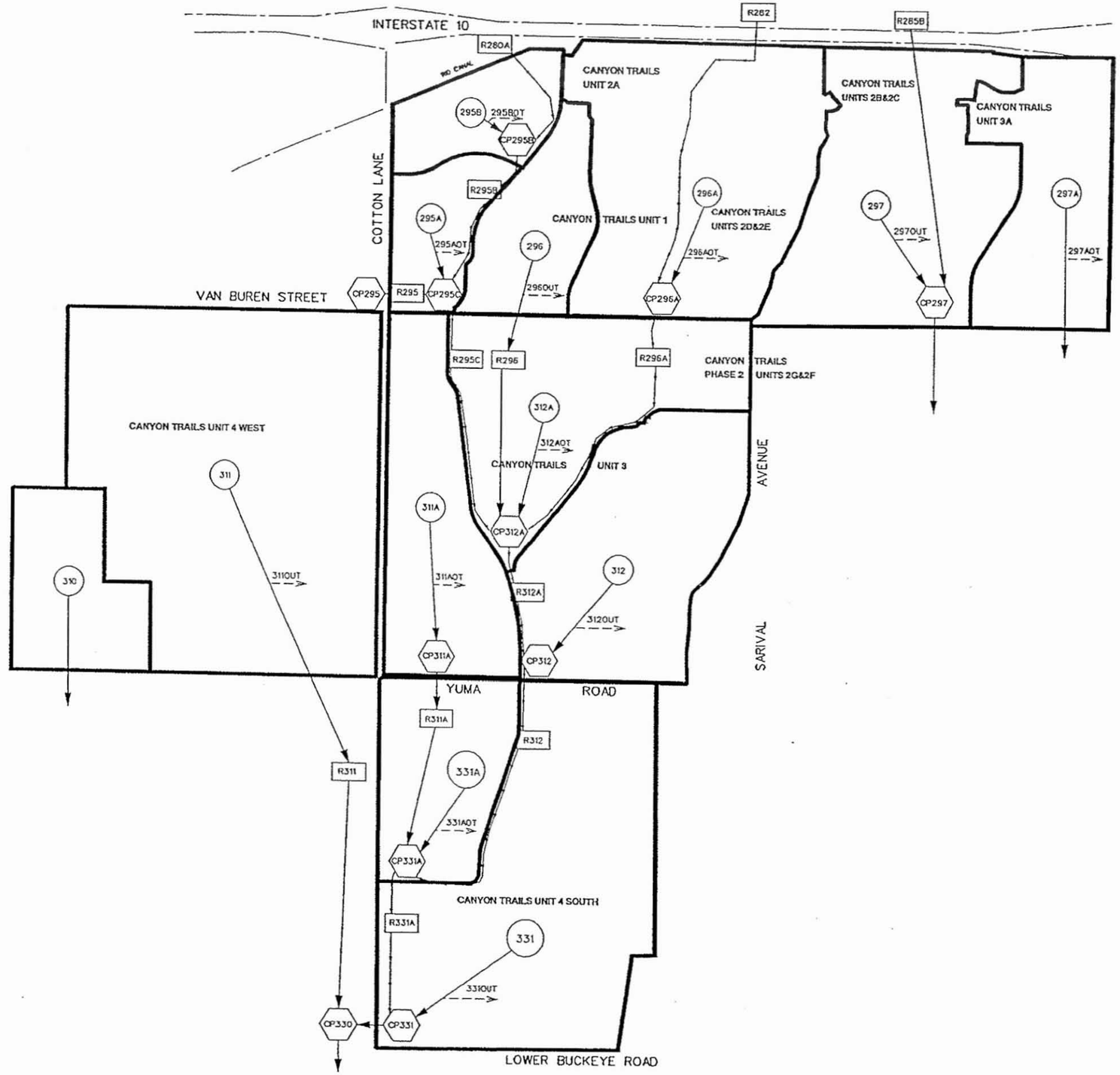

501, 506
515, 514
519, 528
517, 516
518

4105

KEY TO SYMBOLS

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- SUB-BASIN BOUNDARY
- CHANNEL (GREENBELT) FLOWLINE
- RETENTION DIVERSION

N

1600' 800' 0 1600'

SCALE: 1" = 1600'

CANYON TRAILS

COE & VAN LOO
PLANNING • ENGINEERING • LANDSCAPE ARCHITECTURE

HEC-1 ROUTING MAP

4550 NORTH 12TH STREET
PHOENIX, ARIZONA 85014
TELEPHONE (602) 264-6831

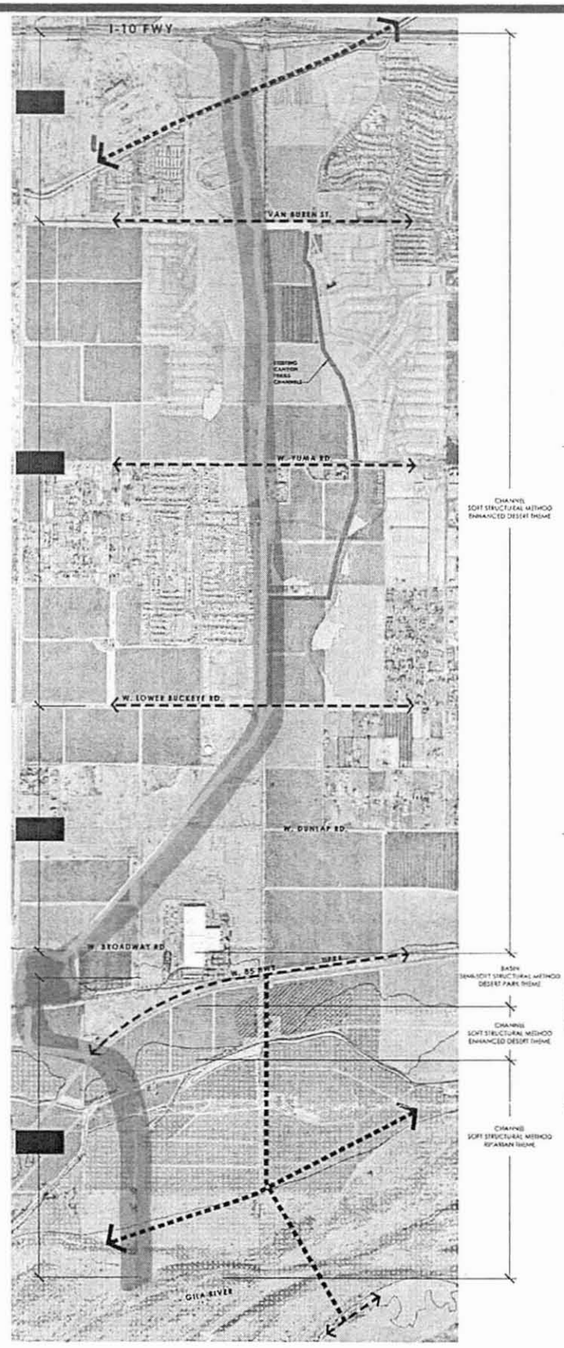
JOB NO
020026

PLATE 2

S26, S20, S19, S13, S12

RECOMMENDED ALTERNATIVE DUAL SYSTEM

LOOP 303 DRAINAGE IMPROVEMENTS



Legend

Enhanced Desert Theme:
The design character for the Enhanced Desert Theme shall represent a natural appearance with near native species, enhanced visual drama and focal points including visual and spatial experiences.

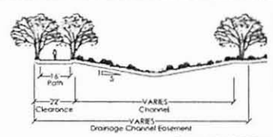
Riparian Theme:
Areas within the Gila River are a Riparian Theme with dense stream vegetation consisting of Mesquite, Palo Verde, Ironwood and lush ground planting. The edges shall blend into the existing character with 100% riparian species and dense vegetation matching in form, color and texture.

Desert Park Theme:
The vegetation is 30% enhanced near natives with ornamental grasses and 70% turf grass. The basins remain natural with native vegetation and pockets of oasis planting for shade and screening of visible structures that blend to native planting and existing landscape. The large areas of turf may be used for open play /recreation for the surrounding neighborhoods.

Maricopa County Regional Trail

Goodyear Trails

CHANNEL



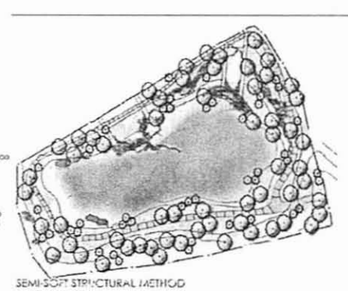
CHANNEL SECTION

SOFT STRUCTURAL METHOD

ENHANCED DESERT THEME

RIPARIAN THEME

BASINS



SEMI-SOFT STRUCTURAL METHOD
Scale: 1"=60'-0"

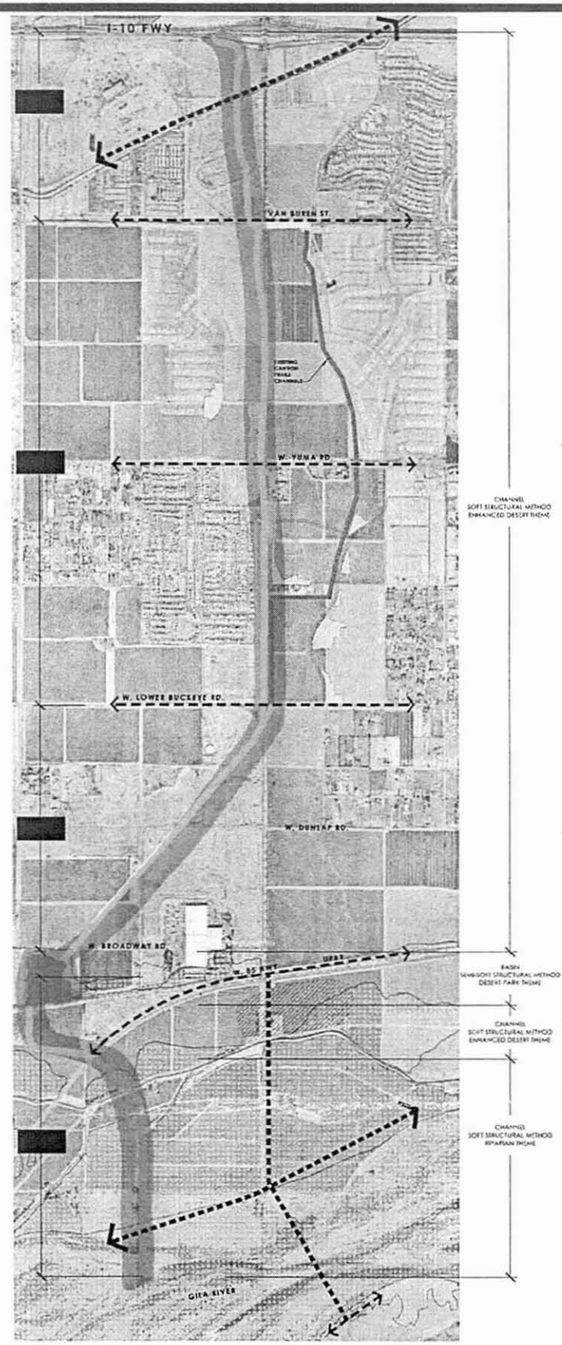
DESERT PARK THEME

Scale: 1"=30'-0"

S26, S20, S19, S13, S12

RECOMMENDED ALTERNATIVE DUAL SYSTEM

LOOP 303 DRAINAGE IMPROVEMENTS



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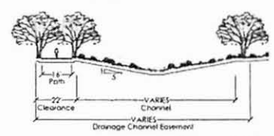
Maricopa County Regional Trail

Goodyear Trails

CHANNEL



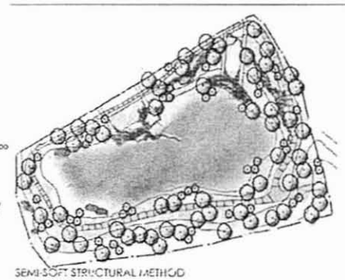
CHANNEL SECTION

SOFT STRUCTURAL METHOD

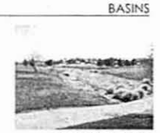
ENHANCED DESERT THEME

RIPARIAN THEME

BASINS



SEMI-SOFT STRUCTURAL METHOD
Scale: 1"=60'-0"



DESERT PARK THEME

Scale: 1"=30'-0"

S20

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*                                   *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)*
*         JUN  1998                 *
*        VERSION 4.1                *
*                                   *
*  RUN DATE   18JAN08  TIME  09:37:36 *
*                                   *
*************************************
```

```
*************************************
*                                   *
*   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  This is the selected alternative (Railroad Basin Alternative).
   2          ID  Details of the changes to the model are documented in Appendix D
   3          ID  of the Loop 303 Drainage Improvements CAR I-10 to Gila River
   4          ID  Phase 2 Report.  Updated Jan 18, 2008 by PK
   5          ID  Project Engineering Consultants, Ltd
   6          ID
   7          ID        FUTURE CONDITION HDYROLOGY MODEL WITH PROJECTS - LEVEL III
   8          ID
   9          ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
  10          ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
  11          ID        TANKS/AGUA FRIA ADMS, Date: October 1991
  12          ID
  13          ID        ***REMOVED RETENTION AT SUPER BASIN #5 SUB BASINS 297, 315, ***
  14          ID        ***334, 335A, 335, 316 TO REFLECT RELAXED RETENTION REQUIRE-***
  15          ID        ***MENTS ADJACENT TO THE BULLARD CHANNEL S. OF I-10.        ***
  16          ID
  17          ID       * URS REVISED RTIMP PERCENT IMPERVIOUS VALUES *
  18          ID       * AS PER FCDMC GIS DATA - 6-27-01 *
  19          ID
  20          ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
  21          ID        100-YEAR, 24-HOUR STORM                 original file: WTADMS.24
  22          ID
  23          ID        FUTURE CASE WITH RETENTION VOLUME DIVERTS
  24          ID
  25          ID                                      REVISED BY URS     DATE: 01-14-04
  26          ID                                                         FILE: L33PF6D.DAT
  27          ID
  28          ID  NOTES:
  29          ID  1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3
  30          ID  2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
  31          ID  2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
  32          ID  3. AVERAGE XKSAT VALUES FOR EACH SUBBASIN WAS RECEIVED FROM FCDMC
  33          ID  GIS DATA AND THEN ADJUSTED FOR VEGETATION, OR LEFT AS ORIGINALLY IN
  34          ID  THE WLB MODEL.
  35          ID  4. FOR NEW DEVELOPMENTS ONLY 80% OF REPORTED PROVIDED RETENTION
  36          ID  WAS INCLUDED IN THIS MODEL (AS A CONSERVATIVE ESTIMATE). RETENTION
  37          ID  CAPACITIES WERE ESTIMATED BY EEC FOR DEVELOPMENTS WITH NO
  38          ID  DRAINAGE REPORTS.
  39          ID  5. REVISED DRAINAGE BOUNDARIES BASED UPON FIELD INSPECTION OF SUN CITY.
  40          ID  GRAND.  COMBINED SEVERAL BASINS TOGETHER TO MAKE NEW BASINS 114 &115.
  41          ID  ALSO REROUTED SUBBASINS 100A, 101, 102A AND 106 TO THE SOUTH TO 113A.
  42          ID  6. CHANNEL ROUTE ALONG REEMS ROAD UPDATED TO REFLECT NEW CONSTRUCTION.
  43          ID  7. REVISED SCS TYPE II RAINFALL DISTRIBUTION FOR THE 24-HOUR GENERAL
  44          ID  STORM.
  45          ID  8. REVISED RAINFALL DEPTH-AREA REDUCTION FACTORS.
  46          ID  9. PSIF WERE ADJUSTED BASED ON THE VALUES OF XKSAT AND WERE EDITED INTO
  47          ID  THE DATA FILE BY THE FCDMC.
  48          ID  10. AVERAGE XKSAT VALUES FOR SUBBASINS WITH BORROW PITS (WHITE TANKS
  49          ID  AREAS #3 & #4) WERE ESTIMATED BY EEC.
  50          ID
              *DIAGRAM
  51          IT       5 03MAR03    1200    1000
  52          IO       5
  53          IN      15
  54          JD    4.03    .001
```



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

  55          PC    .000    .002    .005    .008    .011    .014    .017    .020    .023    .026
  56          PC    .029    .032    .035    .038    .041    .044    .048    .052    .056    .060
  57          PC    .064    .068    .072    .076    .080    .085    .090    .095    .100    .105
  58          PC    .110    .115    .120    .126    .133    .140    .147    .155    .163    .172
  59          PC    .181    .191    .203    .218    .236    .257    .283    .387    .663    .707
```

```
8104        RS       2              -1       0
8105        RC    .025    .022    .025    3430   .0047
8106        RX    1000    1001    1060    1120    1190    1220    1240    1270
8107        RY    1104    1103    1102    1101    1101    1102    1104    1106
            *

8108        KK     295
8109        KM  RUNOFF HYDROGRAPH FROM SUB-BASIN 295
8110        BA     .31
8111        LG     .29     .33    5.10     .26    37.8
8112        UI     44.    159.    248.    346.    521.    388.    280.    190.     90.     59.
8113        UI     33.     13.     13.     13.      0.      0.      0.      0.      0.      0.
8114        UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

8115        KK  295OUT
8116        KM  Storage divert at Subbasin 295
8117        KO       0       0       0       0       0
8118        DT  295RET   24.64
8119        DI       0   10000
8120        DQ       0   10000

8121        KK  2DLP12
8122        KM  RETURN DIVERT AT CP151
8123        DR  DILP13
            * KK CP295

8124        KK   !LP13
8125        KM  ADD HYDROGRAPHS AT CP295
8126        KO       0       0       0       0       0
8127        HC       3   39.62
8128        ZW   A=303  B=LP13  C=FLOW  E=5MIN
            * SLBA state land basin
            * 1 STOR 0 0
            * 0 13 26.5 40.8 55.88 71.61 88.08
            * 0 0 15 35 50 64 78
            * 993 994 995 996 997 998 999
            * KK  R295
            * HIGH ELEV'S FROM ORIGINAL ROUTE
            * DUMMY ROUTE
```



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

8129        KK   RLP13
8130        KM  ROUTE FLOW FROM CP295 TO CP311
8131        KO       0       0       0       0       0
8132        RS     1.8              -1.0     0.0
8133        RC   0.013   0.013   0.013    4020  0.0048
8134        RX       0    10.6    12.2    13.8    15.4    17.0    18.6    29.2
8135        RY   990.2   984.9   984.9   984.9   984.9   984.9   984.9   990.2
8136        ZW   A=303  B=RL13  C=FLOW  E=5MIN
            *

8137        KK     311
8138        KM  RUNOFF HYDROGRAPH FROM SUB-BASIN 311
8139        BA     .73
8140        LG     .50       0    4.58    0.44    35.1
8141        UI     27.     27.     27.     27.     77.     97.    113.    128.    140.    152.
8142        UI    163.    177.    195.    210.    236.    283.    328.    353.    307.    272.
8143        UI    247.    228.    213.    194.    177.    162.    148.    135.    125.    105.
8144        UI     81.     66.     48.     48.     44.     44.     36.     27.     27.     27.
8145        UI     22.      8.      8.      8.      8.      8.      8.      8.      8.      8.
8146        UI      8.      8.      8.      8.      0.      0.      0.      0.      0.      0.
8147        UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

8148        KK  311OUT
8149        KM  DIVERSION-RETENTION
8150        DT  311RET   64.06
8151        DI       0   10000
8152        DQ       0   10000
8153        ZW   A=303  B=311O  C=FLOW  E=5MIN
            * KK CP311

8154        KK   !LP14
            * KO     1                                  21
8155        KM  ADD HYDROGRAPHS AT CP311
8156        HC       2   40.35
8157        ZW   A=303  B=LP14  C=FLOW  E=5MIN
            * STORAGE ROUTE THROUGH PROPOSED BASIN AT LP14 - YUMA (AREA HAS BEEN DEVELOPED W
            * SRLP14
            * KO     1                                  21
            * STORAGE ROUTE
            * RS 1 STOR 0 0
            * SV 0 40.6 81.2 121.7 162.3 185
            * SQ 0 0 0 137 387 549
            * SE 959 961 963 965 967 968
            *

8158        KK   RLP14
8159        KM  ROUTE FLOW FROM CP311 TO CP330
8160        RS     1.7              -1       0
8161        RC   0.013   0.013   0.013    4196  0.0022
8162        RX       0    15.8    19.0    22.2    25.4    28.6    31.8    47.6
8163        RY  1118.5  1110.6  1110.6  1110.6  1110.6  1110.6  1110.6  1118.5
8164        ZW   A=303  B=RL14  C=FLOW  E=5MIN
            *
```

519520


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

S20

```
1**********************************
*                                *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN  1998          *
*           VERSION 4.1          *
*                                *
*  RUN DATE   18JAN08  TIME  09:37:36   *
*                                *
**********************************
```

```
**********************************
*                                *
*   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  This is the selected alternative (Railroad Basin Alternative).
   2          ID  Details of the changes to the model are documented in Appendix D
   3          ID  of the Loop 303 Drainage Improvements CAR I-10 to Gila River
   4          ID  Phase 2 Report.  Updated Jan 18, 2008 by PK
   5          ID  Project Engineering Consultants, Ltd
   6          ID
   7          ID        FUTURE CONDITION HDYROLOGY MODEL WITH PROJECTS - LEVEL III
   8          ID
   9          ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
  10          ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
  11          ID        TANKS/AGUA FRIA ADMS, Date: October 1991
  12          ID
  13          ID        ***REMOVED RETENTION AT SUPER BASIN #5 SUB BASINS 297, 315, ***
  14          ID        ***334, 335A, 335, 316 TO REFLECT RELAXED RETENTION REQUIRE-***
  15          ID        ***MENTS ADJACENT TO THE BULLARD CHANNEL S. OF I-10.        ***
  16          ID
  17          ID       * URS REVISED RTIMP PERCENT IMPERVIOUS VALUES *
  18          ID       * AS PER FCDMC GIS DATA - 6-27-01 *
  19          ID
  20          ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
  21          ID        100-YEAR, 24-HOUR STORM                  original file: WTADMS.24
  22          ID
  23          ID        FUTURE CASE WITH RETENTION VOLUME DIVERTS
  24          ID
  25          ID                                      REVISED BY URS     DATE: 01-14-04
  26          ID                                                         FILE: L33PF6D.DAT
  27          ID
  28          ID  NOTES:
  29          ID  1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3
  30          ID  2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
  31          ID  2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
  32          ID  3. AVERAGE XKSAT VALUES FOR EACH SUBBASIN WAS RECEIVED FROM FCDMC
  33          ID  GIS DATA AND THEN ADJUSTED FOR VEGETATION, OR LEFT AS ORIGINALLY IN
  34          ID  THE WLB MODEL.
  35          ID  4. FOR NEW DEVELOPMENTS ONLY 80% OF REPORTED PROVIDED RETENTION
  36          ID  WAS INCLUDED IN THIS MODEL (AS A CONSERVATIVE ESTIMATE). RETENTION
  37          ID  CAPACITIES WERE ESTIMATED BY EEC FOR DEVELOPMENTS WITH NO
  38          ID  DRAINAGE REPORTS.
  39          ID  5. REVISED DRAINAGE BOUNDARIES BASED UPON FIELD INSPECTION OF SUN CITY.
  40          ID  GRAND.  COMBINED SEVERAL BASINS TOGETHER TO MAKE NEW BASINS 114 &115.
  41          ID  ALSO REROUTED SUBBASINS 100A, 101, 102A AND 106 TO THE SOUTH TO 113A.
  42          ID  6. CHANNEL ROUTE ALONG REEMS ROAD UPDATED TO REFLECT NEW CONSTRUCTION.
  43          ID  7. REVISED SCS TYPE II RAINFALL DISTRIBUTION FOR THE 24-HOUR GENERAL
  44          ID  STORM.
  45          ID  8. REVISED RAINFALL DEPTH-AREA REDUCTION FACTORS.
  46          ID  9. PSIF WERE ADJUSTED BASED ON THE VALUES OF XKSAT AND WERE EDITED INTO
  47          ID  THE DATA FILE BY THE FCDMC.
  48          ID  10. AVERAGE XKSAT VALUES FOR SUBBASINS WITH BORROW PITS (WHITE TANKS
  49          ID  AREAS #3 & #4) WERE ESTIMATED BY EEC.
  50          ID
              *DIAGRAM
  51          IT       5 03MAR03    1200    1000
  52          IO       5
  53          IN      15
  54          JD    4.03    .001
```

1 HEC-1 INPUT PAGE 2

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

  55          PC    .000    .002    .005    .008    .011    .014    .017    .020    .023    .026
  56          PC    .029    .032    .035    .038    .041    .044    .048    .052    .056    .060
  57          PC    .064    .068    .072    .076    .080    .085    .090    .095    .100    .105
  58          PC    .110    .115    .120    .126    .133    .140    .147    .155    .163    .172
  59          PC    .181    .191    .203    .218    .236    .257    .283    .387    .663    .707
```

```
8104          RS       2              -1       0
8105          RC    .025    .022    .025    3430   .0047
8106          RX    1000    1001    1060    1120    1190    1220    1240    1270
8107          RY    1104    1103    1102    1101    1101    1102    1104    1106
              *

8108          KK     295
8109          KM  RUNOFF HYDROGRAPH FROM SUB-BASIN 295
8110          BA     .31
8111          LG     .29     .33    5.10     .26    37.8
8112          UI     44.    159.    248.    346.    521.    388.    280.    190.     90.     59.
8113          UI     33.     13.     13.     13.      0.      0.      0.      0.      0.      0.
8114          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

8115          KK  295OUT
8116          KM  Storage divert at Subbasin 295
8117          KO       0       0       0       0       0
8118          DT  295RET   24.64
8119          DI       0   10000
8120          DQ       0   10000

8121          KK  2DLP12
8122          KM  RETURN DIVERT AT CP151
8123          DR  DILP13
              * KK CP295

8124          KK   !LP13
8125          KM  ADD HYDROGRAPHS AT CP295
8126          KO       0       0       0       0       0
8127          HC       3   39.62
8128          ZW   A=303  B=LP13  C=FLOW  E=5MIN
              * SLBA state land basin
              * 1 STOR 0 0
              * 0 13 26.5 40.8 55.88 71.61 88.08
              * 0 0 15 35 50 64 78
              * 993 994 995 996 997 998 999
              * KK  R295
              * HIGH ELEV'S FROM ORIGINAL ROUTE
              * DUMMY ROUTE
```



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

8129          KK   RLP13
8130          KM  ROUTE FLOW FROM CP295 TO CP311
8131          KO       0       0       0       0       0
8132          RS     1.8              -1.0     0.0
8133          RC   0.013   0.013   0.013    4020  0.0048
8134          RX       0    10.6    12.2    13.8    15.4    17.0    18.6    29.2
8135          RY   990.2   984.9   984.9   984.9   984.9   984.9   984.9   990.2
8136          ZW   A=303  B=RL13  C=FLOW  E=5MIN
              *
```

513519

```
8137          KK     311
8138          KM  RUNOFF HYDROGRAPH FROM SUB-BASIN 311
8139          BA     .73
8140          LG     .50       0    4.58    0.44    35.1
8141          UI     27.     27.     27.     27.     77.     97.    113.    128.    140.    152.
8142          UI    163.    177.    195.    210.    236.    283.    328.    353.    307.    272.
8143          UI    247.    228.    213.    194.    177.    162.    148.    135.    125.    105.
8144          UI     81.     66.     48.     48.     44.     44.     36.     27.     27.     27.
8145          UI     22.      8.      8.      8.      8.      8.      8.      8.      8.      8.
8146          UI      8.      8.      8.      8.      0.      0.      0.      0.      0.      0.
8147          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

8148          KK  311OUT
8149          KM  DIVERSION-RETENTION
8150          DT  311RET   64.06
8151          DI       0   10000
8152          DQ       0   10000
8153          ZW   A=303  B=3110  C=FLOW  E=5MIN
              * KK CP311

8154          KK   !LP14
              * KO     1                              21
8155          KM  ADD HYDROGRAPHS AT CP311
8156          HC       2   40.35
8157          ZW   A=303  B=LP14  C=FLOW  E=5MIN
              * STORAGE ROUTE THROUGH PROPOSED BASIN AT LP14 - YUMA (AREA HAS BEEN DEVELOPED W
              * SRLP14
              * KO     1                              21
              * STORAGE ROUTE
              * RS 1 STOR 0 0
              * SV 0 40.6 81.2 121.7 162.3 185
              * SQ 0 0 0 137 387 549
              * SE 959 961 963 965 967 968
              *

8158          KK   RLP14
8159          KM  ROUTE FLOW FROM CP311 TO CP330
8160          RS     1.7              -1       0
8161          RC   0.013   0.013   0.013    4196  0.0022
8162          RX       0    15.8    19.0    22.2    25.4    28.6    31.8    47.6
8163          RY  1118.5  1110.6  1110.6  1110.6  1110.6  1110.6  1110.6  1118.5
8164          ZW   A=303  B=RL14  C=FLOW  E=5MIN
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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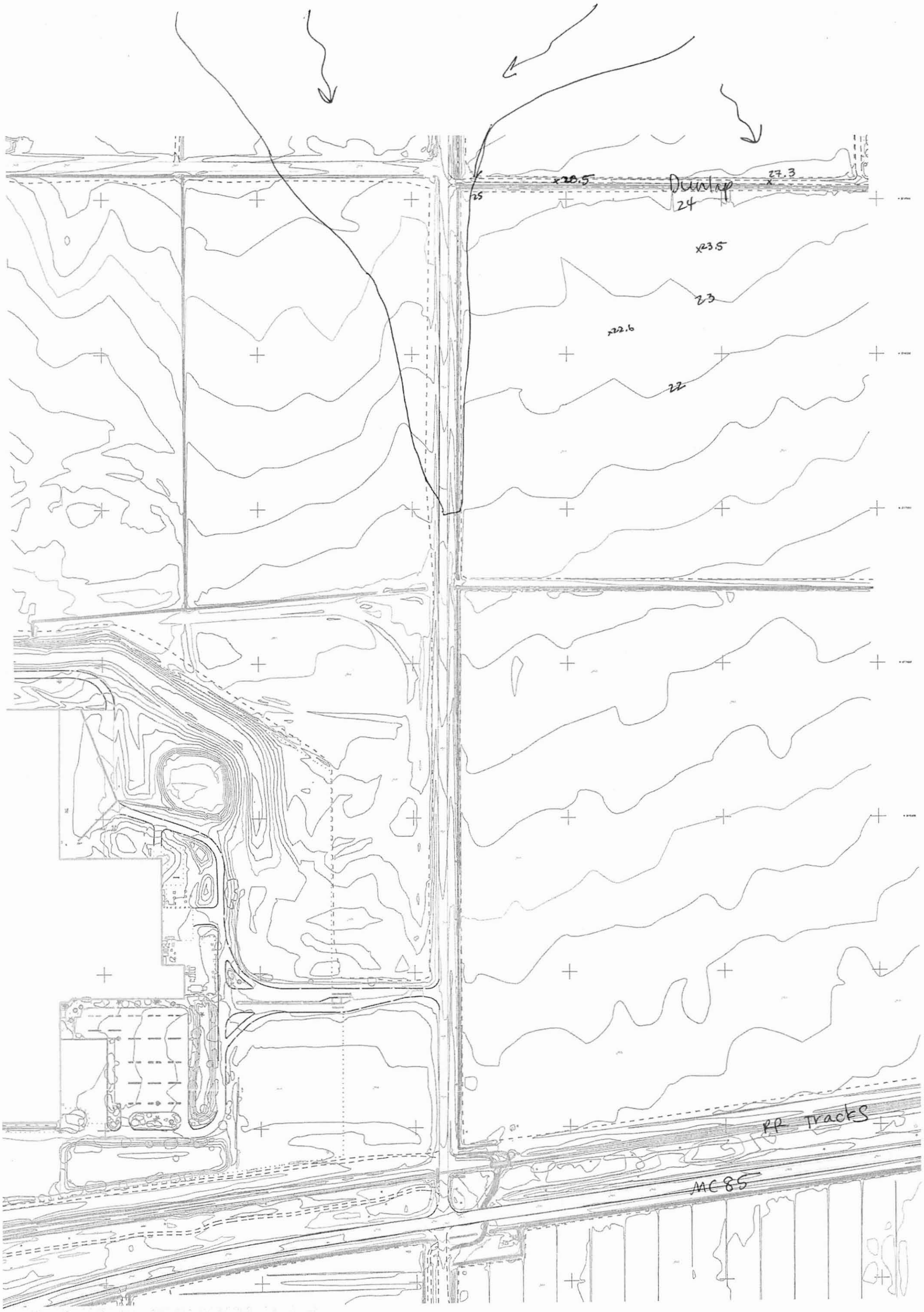
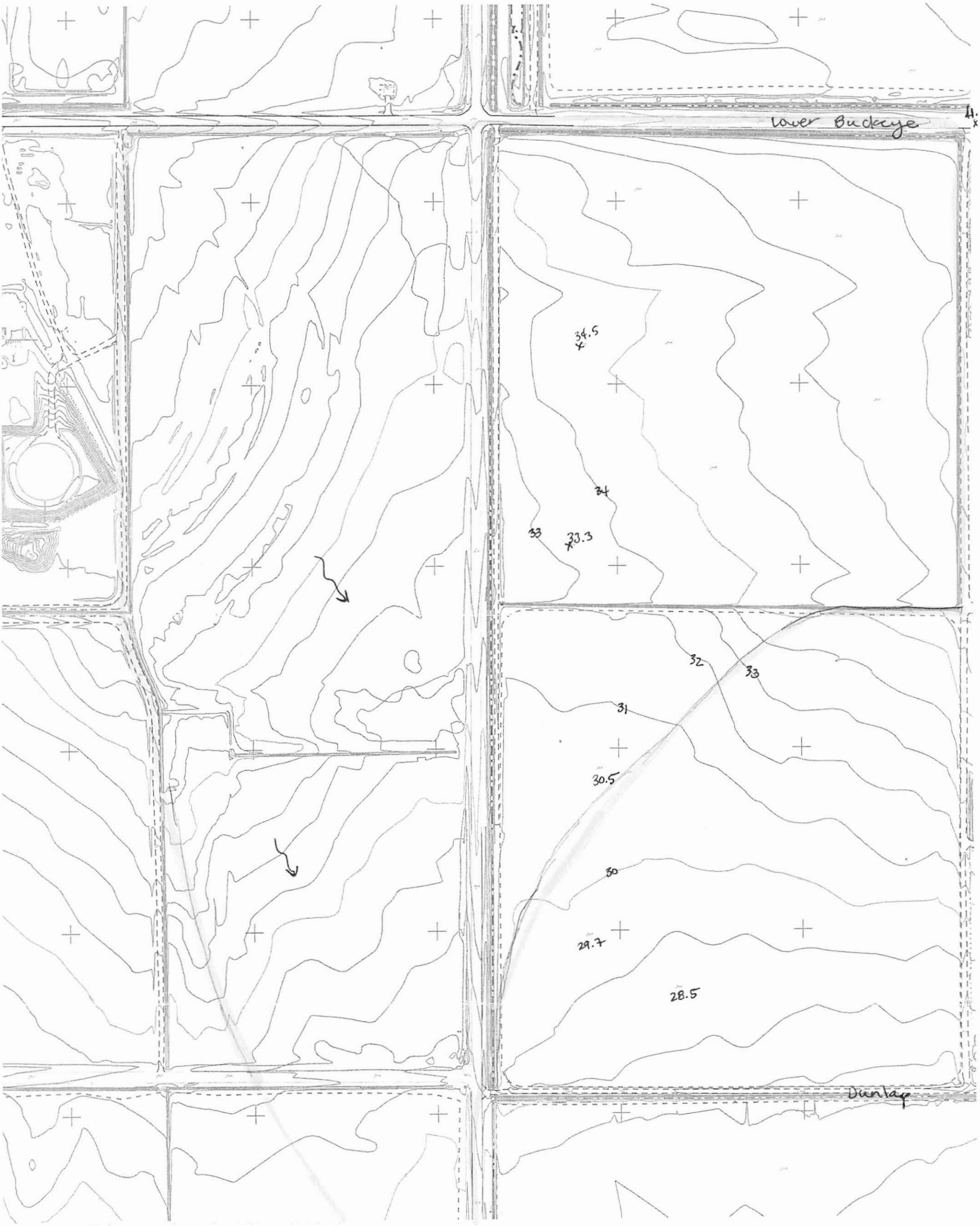
S21

Flow Split @ DS21


x28.5
Dunlap
x27.3
25
24
x23.5
23
x22.6
22
RR Tracks
MC 85

Lower Buckeye
@
L303



S 164th Dr
S 165th Ave
S 165th Ave
W Pioneer St
W Pioneer St
W Victory Ln
W Victory Ln
W Dunlap Rd
W Dunlap Rd
S 169th Ave
S 169th Ave
W Dunlap Rd
S Cotton Ln
S Cotton Ln
S Cotton Ln
W Lower Buckeye Rd
W Lower Buckeye Rd
W Elwood St
W Elwood St
S 175th Ave
S 175th Ave
500 ft
200 m
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← 2

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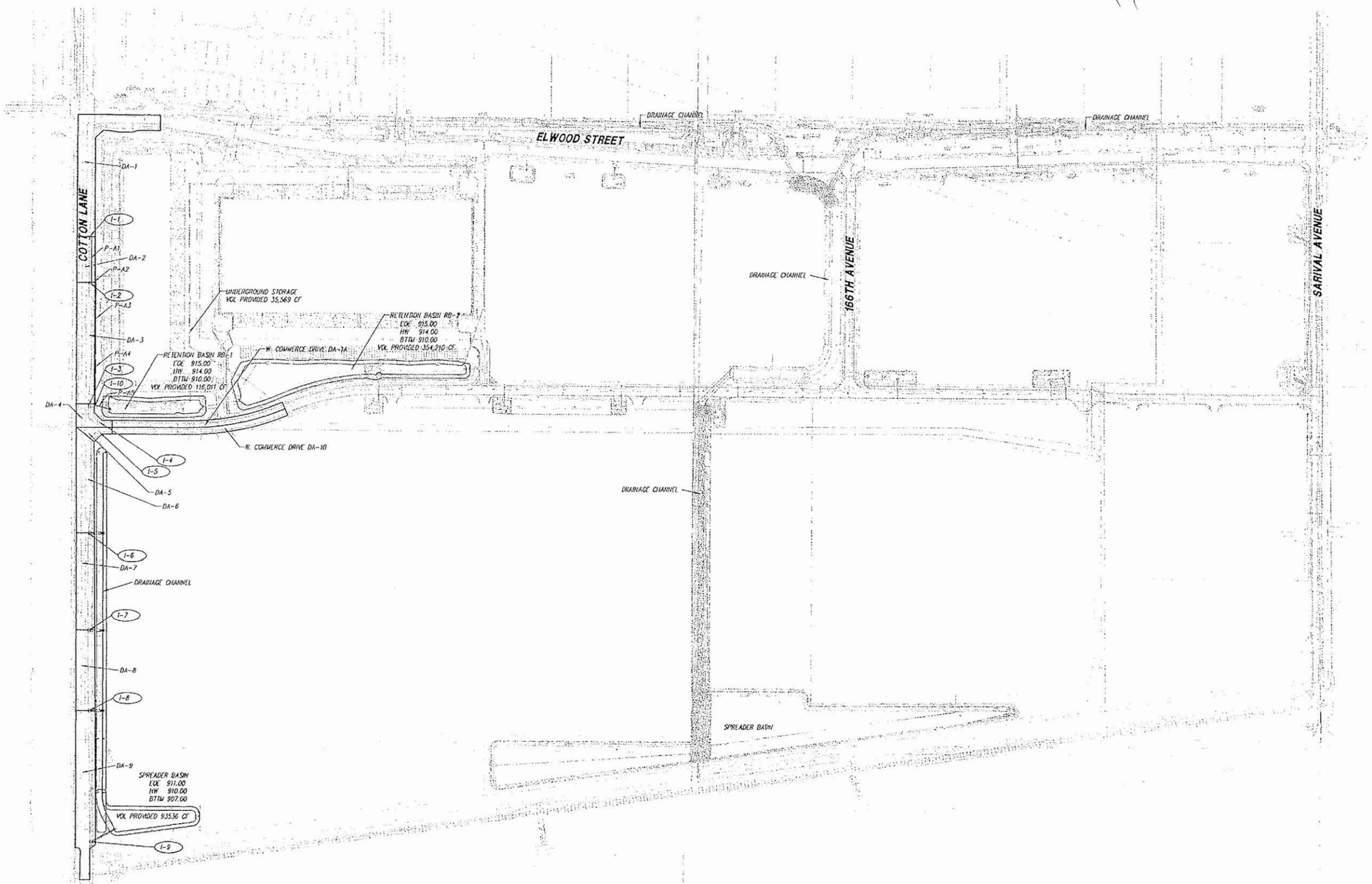
For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

S23

525

11/2/07

200 100 0 200 400
SCALE 1" = 200'



LEGEND

I-1	INLET NUMBER
DA-2	DRAINAGE AREA
RB-1	RETENTION BASIN

CALL TWO WORKING DAYS BEFORE YOU DIG
(602) 263-1100
1-800-STAKE-IT
(OUTSIDE MARICOPA COUNTY)

Duke
2425 EAST CAMELBACK RD.
SUITE 785
PHOENIX, ARIZONA 85016
PHONE: 480-606-9000
FAX: 480-606-9100

V3 COMPANIES OF ARIZONA
3044 North 44th Street
Suite 100
Phoenix, Arizona 85008
P. 602.648.4930
www.v3ca.com

Revisions:
07/16/07
09/05/07
11/02/07

Scale:

Date: 04/27/07

Drawn By: VFD

Checked By: MJD

GOODYEAR CROSSING INDUSTRIAL PARK – COTTON LANE

A PORTION OF SECTIONS 24 & 25
TOWNSHIP 1 NORTH, RANGE 2 WEST OF THE G. & S.R.B. & M.,
CITY OF GOODYEAR, MARICOPA COUNTY, ARIZONA

DRAINAGE EXHIBIT

Certified By:

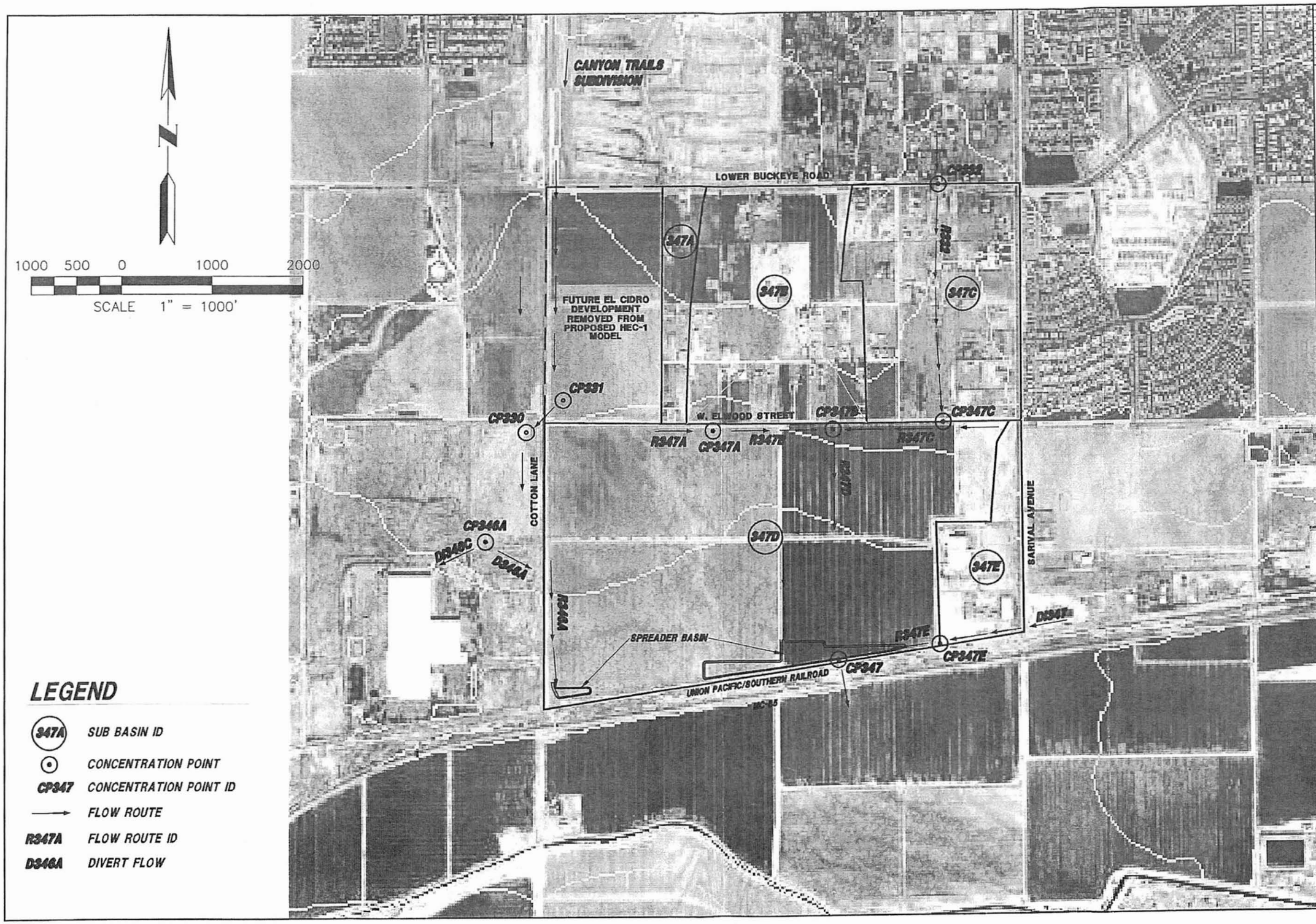
Drawing Number:

1 of 1 Sheets

Duke Realty Job Number:

A/E Job Number:
A06123

SL5



LEGEND

- 347A — SUB BASIN ID
- ⊙ — CONCENTRATION POINT
- CP347 — CONCENTRATION POINT ID
- → — FLOW ROUTE
- R347A — FLOW ROUTE ID
- D346A — DIVERT FLOW

REVISIONS		
NO	DESCRIPTION/DATE	BY

V3 COMPANIES OF ARIZONA
1248 North 44th Street
Suite 100
Phoenix, Arizona 85008
P. 602.648.4800
www.v3ca.com

PROPOSED HEC-1 MAP
GOODYEAR CROSSING INDUSTRIAL PARK

SECTION 24 AND SECTION 25
T.1N., R.2W., OF THE GILA AND SALT RIVER BASE AND MERIDIAN
GOODYEAR, MARICOPA COUNTY, ARIZONA

JOB NO.	A06123
DESIGNED	REM
DRAWN	REM
ACAD FILE	A06123PROHECI
CHECKED	GVW
DATE	04-26-2007

1 OF 1 SHEETS

SRS23

The WLB Group Inc. WLB

COMPUTATION DATA SHEET

Subject WHITE TANK/AGUA FRIA ADMS Prepared by JSE Date 1-29-91

STAGE - STORAGE - DISCHARGE TABLE

SUBBASIN 3-17 SRAR Bridge

① 1st West of Sarival Ave BW=6' D=1' LC=2.7' Invert=904.4 Top of RR=908.1
② ≈ 2050' West of Sarival BW=9' D=3' LC=3 Invert=906.0 Top of RR=910
③ ≈ 3400' West of Sarival BW=12' D=2.5' LC=2' Invert=905.5 Top of RR=910.0
④ ≈ 200' East of Cotton Lane BW=12' D=3' LC=5' Invert=905.0 Top of RR=911.2

ELEV. (FT)	AREA (AC)		VOLUME (AC-FT)	DISCHARGE (CFS)
Invert 904.4 ≈ ① Invert	0		0	0
		.004		
Invert 905.2 ≈ ④ Invert	.01		.04	11
		.006		
Invert 905.5 ≈ ③ Invert	.03		.1	13+1 = 14
		.02		
Invert 906 ≈ ② Invert	.05		.12	21+1+1 = 23
		.136		
908.1 ≈ Weir Flow	.08		.26	41+151+12+55 = 370
		58.5		
910	61.5		58.75	58+279+243+160+6780 = 7710
		97.9		
911.2	101.67		156.65	59+346+293+225+37465 = 38388

Weir Flow $Q = CLH^{3/2}$ C=2.6

at 910 L=2050'/2 H=1.9

Q at 910 = 6980 cfs

Q at 911.2 = 37465 cfs L=5280'/2 H=3.1

Form 209

BOX CULVERT ANALYSIS
COMPUTATION OF CULVERT PERFORMANCE CURVE
February 11, 1991

PROGRAM INPUT DATA:

DESCRIPTION	VALUE
Culvert Span (Width of Opening) (feet).....	6.00
Culvert Rise (Height of Opening) (feet).....	1.00
FHWA Chart Number (8,9,10,11,12 or 13).....	8
Scale Number on Chart (Type of Culvert Entrance).....	1
Manning's Roughness Coefficient (n-value).....	0.0300
Entrance Loss Coefficient of Culvert Opening.....	0.50
Culvert Length (feet).....	30.0
Culvert Slope (feet per foot).....	0.0050

PROGRAM RESULTS:

Flow Rate (cfs)	Tailwater Depth (ft)	Headwater (ft) Inlet Control	Headwater (ft) Outlet Control	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
11.0	0.74	0.75	0.79	0.74	0.47	0.74	2.48
13.0	0.83	0.85	0.97	0.83	0.53	0.83	2.61
21.0	1.00	1.18	1.60	1.00	0.72	1.00	3.50
41.0	1.00	2.61	3.69	1.00	1.00	1.00	6.83
53.0	1.00	3.81	5.60	1.00	1.00	1.00	8.83
59.0	1.00	4.53	6.74	1.00	1.00	1.00	9.83

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BOX CULVERT ANALYSIS
COMPUTATION OF CULVERT PERFORMANCE CURVE
February 11, 1991

PROGRAM INPUT DATA:

DESCRIPTION	VALUE
Culvert Span (Width of Opening) (feet).....	12.00
Culvert Rise (Height of Opening) (feet).....	3.00
FHWA Chart Number (8,9,10,11,12 or 13).....	8
Scale Number on Chart (Type of Culvert Entrance).....	1
Manning's Roughness Coefficient (n-value).....	0.0300
Entrance Loss Coefficient of Culvert Opening.....	0.50
Culvert Length (feet).....	30.0
Culvert Slope (feet per foot).....	0.0050

PROGRAM RESULTS:

Flow Rate (cfs)	Tailwater Depth (ft)	Headwater (ft) Inlet Control	Headwater (ft) Outlet Control	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
1.0	0.05	0.09	1.38	0.11	0.06	0.06	1.39
1.0	0.11	0.09	1.38	0.11	0.06	0.11	0.76
151.0	2.47	2.74	2.90	2.47	1.70	2.47	5.09
277.0	3.00	4.71	4.79	3.00	2.55	3.00	7.69
346.0	3.00	5.99	5.88	3.00	3.00	3.00	9.61

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BOX CULVERT ANALYSIS
COMPUTATION OF CULVERT PERFORMANCE CURVE
February 11, 1991

PROGRAM INPUT DATA:

DESCRIPTION	VALUE
Culvert Span (Width of Opening) (feet).....	12.00
Culvert Rise (Height of Opening) (feet).....	2.50
FHWA Chart Number (8,9,10,11,12 or 13).....	8
Scale Number on Chart (Type of Culvert Entrance).....	1
Manning's Roughness Coefficient (n-value).....	0.0300
Entrance Loss Coefficient of Culvert Opening.....	0.50
Culvert Length (feet).....	30.0
Culvert Slope (feet per foot).....	0.0050

PROGRAM RESULTS:

Flow Rate (cfs)	Tailwater Depth (ft)	Headwater (ft) Inlet Control	Headwater (ft) Outlet Control	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
1.0	0.02	0.09	1.13	0.11	0.06	0.06	1.39
123.0	2.15	2.39	2.59	2.15	1.48	2.15	4.77
240.0	2.50	4.49	4.58	2.50	2.32	2.50	8.00
293.0	2.50	5.70	5.68	2.50	2.50	2.50	9.77

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BOX CULVERT ANALYSIS
COMPUTATION OF CULVERT PERFORMANCE CURVE
February 11, 1991

PROGRAM INPUT DATA:

DESCRIPTION	VALUE
Culvert Span (Width of Opening) (feet).....	9.00
Culvert Rise (Height of Opening) (feet).....	3.00
FHWA Chart Number (8,9,10,11,12 or 13).....	8
Scale Number on Chart (Type of Culvert Entrance).....	1
Manning's Roughness Coefficient (n-value).....	0.0300
Entrance Loss Coefficient of Culvert Opening.....	0.50
Culvert Length (feet).....	30.0
Culvert Slope (feet per foot).....	0.0050

PROGRAM RESULTS:

Flow Rate (cfs)	Tailwater Depth (ft)	Headwater (ft) Inlet Control	Headwater (ft) Outlet Control	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
55.0	1.58	1.67	2.02	1.58	1.05	1.58	3.87
160.0	3.00	3.48	4.03	3.00	2.14	3.00	5.93
225.0	3.00	5.10	5.19	3.00	2.69	3.00	8.33

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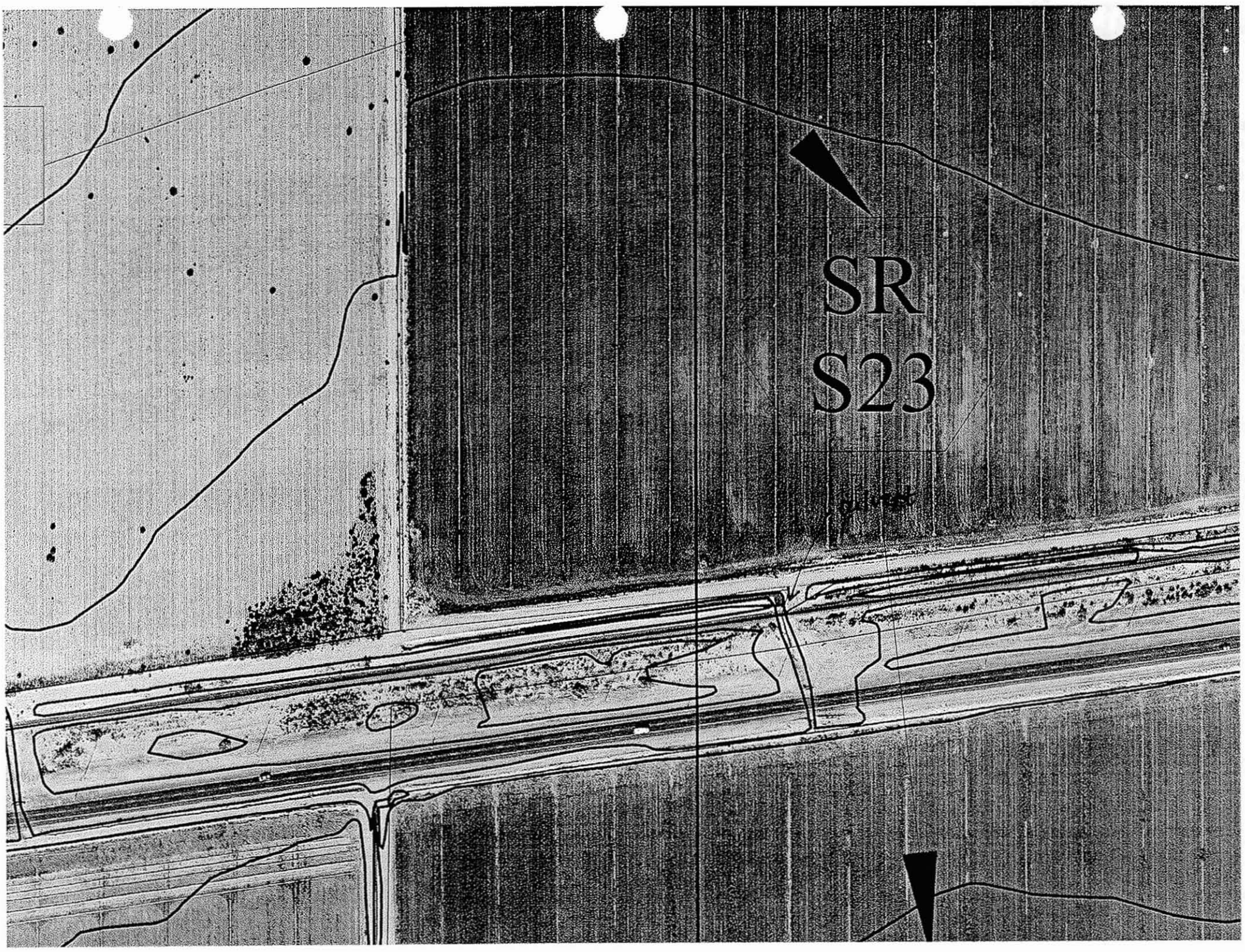

SR
S23

This Section Intentionally Left Blank

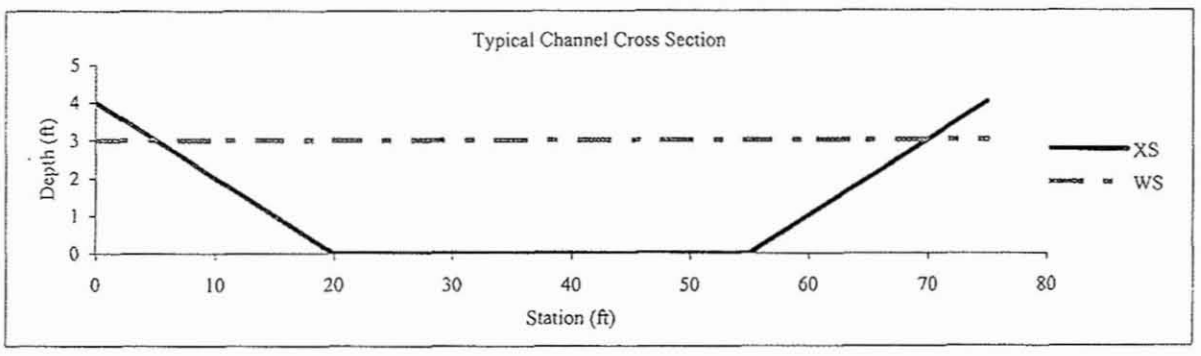
For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

Recommended Alternative
Below RR Basin

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

Channel Geometry:

X		0	10	15	20	55	60	65	75
Y		4	2	1	0	0	1	2	4
Z (WS)		3	3	3	3	3	3	3	3



Discharge:		193	cfs
Mannings n:		0.04	
Bottom Width:	1	35	ft
Side Slope	1	5	:1
Channel Slope:		0.0004	ft/ft
Water Depth:	2	3	ft
Top Width:	3	64.96	ft
Flow Area:	1	149.8	sq.ft
Velocity:		1.29	ft/s
Froud Number:		0.15	
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.

S35

CIP models

S26

```
1**********************************
*                                *
*  FLOOD HYDROGRAPH PACKAGE (HEC-1)  *
*            JUN  1998           *
*          VERSION 4.1           *
*                                *
*  RUN DATE  18JAN08  TIME  09:37:36  *
*                                *
**********************************
```

```
**********************************
*                                *
*  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  This is the selected alternative (Railroad Basin Alternative).
    2           ID  Details of the changes to the model are documented in Appendix D
    3           ID  of the Loop 303 Drainage Improvements CAR I-10 to Gila River
    4           ID  Phase 2 Report.  Updated Jan 18, 2008 by PK
    5           ID  Project Engineering Consultants, Ltd
    6           ID
    7           ID        FUTURE CONDITION HDYROLOGY MODEL WITH PROJECTS - LEVEL III
    8           ID
    9           ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
   10           ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
   11           ID        TANKS/AGUA FRIA ADMS, Date: October 1991
   12           ID
   13           ID        ***REMOVED RETENTION AT SUPER BASIN #5 SUB BASINS 297, 315, ***
   14           ID        ***334, 335A, 335, 316 TO REFLECT RELAXED RETENTION REQUIRE-***
   15           ID        ***MENTS ADJACENT TO THE BULLARD CHANNEL S. OF I-10.        ***
   16           ID
   17           ID       * URS REVISED RTIMP PERCENT IMPERVIOUS VALUES *
   18           ID       * AS PER FCDMC GIS DATA - 6-27-01 *
   19           ID
   20           ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
   21           ID        100-YEAR, 24-HOUR STORM                 original file: WTADMS.24
   22           ID
   23           ID        FUTURE CASE WITH RETENTION VOLUME DIVERTS
   24           ID
   25           ID                                     REVISED BY URS     DATE: 01-14-04
   26           ID                                                        FILE: L33PF6D.DAT
   27           ID
   28           ID  NOTES:
   29           ID  1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3
   30           ID  2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
   31           ID  2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
   32           ID  3. AVERAGE XKSAT VALUES FOR EACH SUBBASIN WAS RECEIVED FROM FCDMC
   33           ID  GIS DATA AND THEN ADJUSTED FOR VEGETATION, OR LEFT AS ORIGINALLY IN
   34           ID  THE WLB MODEL.
   35           ID  4. FOR NEW DEVELOPMENTS ONLY 80% OF REPORTED PROVIDED RETENTION
   36           ID  WAS INCLUDED IN THIS MODEL (AS A CONSERVATIVE ESTIMATE). RETENTION
   37           ID  CAPACITIES WERE ESTIMATED BY EEC FOR DEVELOPMENTS WITH NO
   38           ID  DRAINAGE REPORTS.
   39           ID  5. REVISED DRAINAGE BOUNDARIES BASED UPON FIELD INSPECTION OF SUN CITY.
   40           ID  GRAND.  COMBINED SEVERAL BASINS TOGETHER TO MAKE NEW BASINS 114 &115.
   41           ID  ALSO REROUTED SUBBASINS 100A, 101, 102A AND 106 TO THE SOUTH TO 113A.
   42           ID  6. CHANNEL ROUTE ALONG REEMS ROAD UPDATED TO REFLECT NEW CONSTRUCTION.
   43           ID  7. REVISED SCS TYPE II RAINFALL DISTRIBUTION FOR THE 24-HOUR GENERAL
   44           ID  STORM.
   45           ID  8. REVISED RAINFALL DEPTH-AREA REDUCTION FACTORS.
   46           ID  9. PSIF WERE ADJUSTED BASED ON THE VALUES OF XKSAT AND WERE EDITED INTO
   47           ID  THE DATA FILE BY THE FCDMC.
   48           ID  10. AVERAGE XKSAT VALUES FOR SUBBASINS WITH BORROW PITS (WHITE TANKS
   49           ID  AREAS #3 & #4) WERE ESTIMATED BY EEC.
   50           ID
                *DIAGRAM
   51           IT       5 03MAR03    1200    1000
   52           IO       5
   53           IN      15
   54           JD    4.03    .001
1                                   HEC-1 INPUT                                   PAGE  2

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

   55           PC    .000    .002    .005    .008    .011    .014    .017    .020    .023    .026
   56           PC    .029    .032    .035    .038    .041    .044    .048    .052    .056    .060
   57           PC    .064    .068    .072    .076    .080    .085    .090    .095    .100    .105
   58           PC    .110    .115    .120    .126    .133    .140    .147    .155    .163    .172
   59           PC    .181    .191    .203    .218    .236    .257    .283    .387    .663    .707
```

```
8165          KK     330
8166          KM  RUNOFF HYDROGRAPH FROM SUB-BASIN 330
8167          BA     .59
8168          LG     .33      .11     4.65      .46     30.6
8169          UI     39.      39.     100.     161.     198.     228.     263.     308.     404.     496.
8170          UI    425.     354.     308.     261.     223.     190.     144.      93.      69.      65.
8171          UI     46.      39.      28.      12.      12.      12.      12.      12.      12.      12.
8172          UI      0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
8173          UI      0.       0.       0.       0.       0.       0.       0.       0.       0.       0.

8174          KK  330OUT
8175          KM  Storage Divert at Subbasin 330
8176          DT  330RET   45.57
8177          DI       0   10000
8178          DQ       0   10000
8179          ZW   A=303  B=3300  C=FLOW  E=5MIN

8180          KK   1I330
8181          KM  ADD HYDROGRAPHS AT CP330
8182          HC       2   38.03
8183          ZW   A=303  B=I330  C=FLOW  E=5MIN
              * KK CP330

8184          KK   !LP15 gdgrdsg
8185          KM  ADD HYDROGRAPHS AT CP330 INCLUDING HYDROGRAPH AT CP331
8186          HC       2   45.87
              * KK  R330
              * HIGH ELEV'S FROM ORIGINAL ROUTE
              * DUMMY ROUTE

8187          KK   RLP15
8188          KM  ROUTE FLOW FROM CP330 TO CP346A
8189          RS     1.0              -1.0     0.0
8190          RC   0.013   0.013   0.013    3477  0.0056
8191          RX     0.0    11.0    12.6    14.2    15.8    17.4    19.0    30.0
8192          RY   925.0   919.5   919.5   919.5   919.5   919.5   919.5   925.0
              *
              * ************************************************************************
              * ***THE FOLLOWING SECTION TAKEN FROM NEW SUPER BASIN 11 WITH NEW SOILS*****
              * ************************************************************************
              *

8193          KK    346A
8194          KM  RUNOFF HYDROGRAPH FROM SUB-BASIN 346A
8195          BA     .16
8196          LG     .50      .00     4.66      .53     41.9
8197          UI      7.       7.       7.      18.      27.      32.      37.      41.      45.      49.
8198          UI     55.      62.      78.      92.      90.      76.      67.      61.      56.      49.
8199          UI     44.      40.      35.      30.      23.      17.      13.      12.      12.       9.
8200          UI      7.       7.       6.       2.       2.       2.       2.       2.       2.       2.
8201          UI      2.       2.       2.       0.       0.       0.       0.       0.       0.       0.
8202          UI      0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
```

S20526


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

8203          KK  346AOT
8204          KM  DIVERSION-RETENTION
8205          DT  346ART   11.84
8206          DI       0   10000
8207          DQ       0   10000
              *
              * MODIFY PER LEVEL III
              *
              * KKCP346A

8208          KK   !LP16
              * KO     1                                21
8209          KM  ADD HYDROGRAPHS AT CP346A
8210          HC       2   46.03
              * SIMULATE RETENTION BASIN CONCEPT USED BY DCR
              * KK SRLP16
              * KO     1                                21
              * KM          PROPOSED BASIN AT MC85
              * RS 1 STOR 0 0
              * SV 0 63 126 189 252 315
              * SQ 0 0 0 49 263 460
              * SE 903 905 907 909 911 913
              * KKLP16OT
              * KO     1                                21
              * KM      DIVERSION-RETENTION AT CACTUS BASIN
              * 50-YR VOLUME IS 78AF PER THE BASELINE
              * VOLUME IS NOT SPECIFIED BY DCR
              * DTLP16RT
              * DI     0   20000
              * DQ     0   20000

8211          KK  2DLP16
8212          KM  DIVERT LP16 FOR RETRIEVAL LATER
8213          DT   2D378
8214          DI       0   10000
8215          DQ       0       0

8216          KK    DOWNFake for RR basin up stream channel
8217          DT   TO359   10000
8218          DI       0   10000
8219          DQ       0   10000
              *
              *

8220          KK   D346A
```

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Job No.	79902
Subject	Weir Flow Analysis	No.	
Task	Weir Calculations	Computed	lp
		Date	5/21/2009
		Checked	
		Date	3/10/09
		Sheet	1
		Of	x

Location: 175th Ave Alignment at RR Tracks (DS26)

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	910	909	352	909.5	908	0	0.00	908.5	0	0.00	909	0	0.00	CHECK	909.5	0	0.00	DONE
south	909	908.2	305	908.6	908	0	0.00	908.5	0	0.00	909	0.4	231.48		909.5	0.9	781.24	
west	908.2	908	3	908.1	908	0	0.00	908.5	0.4	2.28	909	0.9	7.68		909.5	1.4	14.91	
west	908	907.50	50	907.75	908	0.25	18.75	908.5	0.75	97.43	909	1.25	209.63		909.5	1.75	347.25	
west	907.5	908	50	907.75	908	0.25	18.75	908.5	0.75	97.43	909	1.25	209.63		909.5	1.75	347.25	
west	908	909	275	908.5	908	0	0.00	908.5	0	0.00	909	0.5	291.68		909.5	1	825.00	
west	909	910	275	909.5	908	0	0.00	908.5	0	0.00	909	0	0.00		909.5	0	0.00	
west	910	910	1	910	908	0	0.00	908.5	0	0.00	909	0	0.00		909.5	0	0.00	
west	910	910	1	910	908	0	0.00	908.5	0	0.00	909	0	0.00		909.5	0	0.00	
				0														
						TOTALS:	37.50			197.13			950.11				2315.66	

Graph Computations:

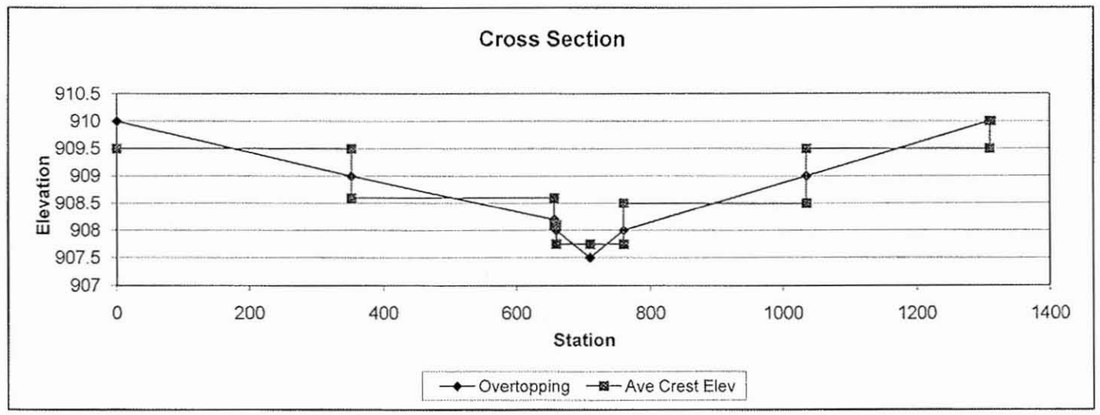
Station	Elevation
0	910
352	909
657	908.2
660	908
710	907.5
760	908
1035	909
1310	910
1311	910
1312	910

Weir Approximation:

Station	Elevation
0	909.5
352	909.5
352	908.6
657	908.6
657	908.1
660	908.1
660	907.75
710	907.75
710	907.75
760	907.75
760	908.5
1035	908.5
1035	909.5
1310	909.5
1310	910
1311	910
1311	910
1312	910

Culvert Flows (cfs):

south	0
southwest	0
west	0



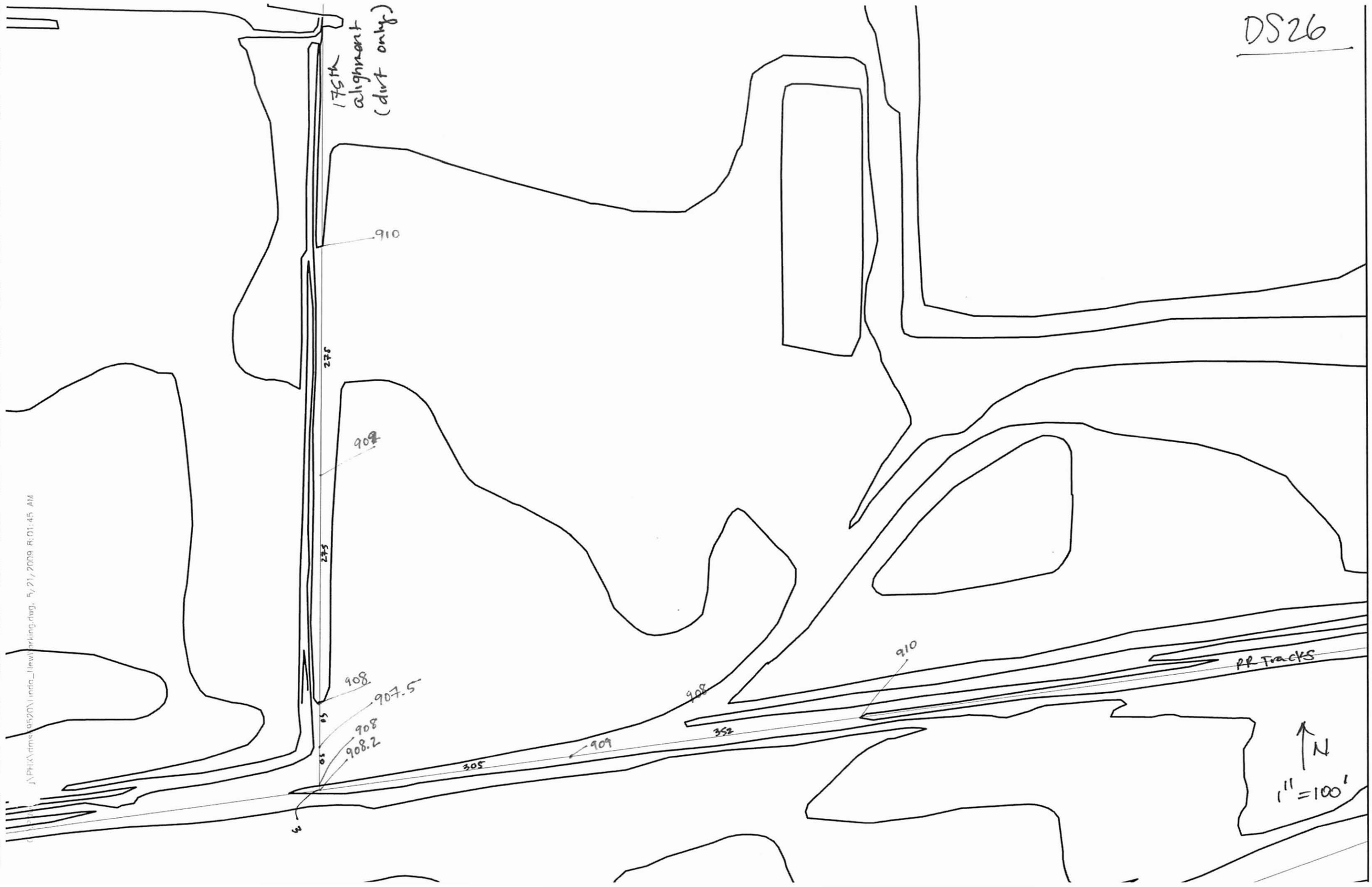
Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	0.00	0%	Q(south)	0.00	0%	Q(south)	231.48	24%	Q(south)	781.24	34%
Q(southwest)	0.00	0%	Q(southwest)	0.00	0%	Q(southwest)	0.00	0%	Q(southwest)	0.00	0%
Q(west)	37.50	100%	Q(west)	197.13	100%	Q(west)	718.63	76%	Q(west)	1534.42	66%
	37.50			197.13			950.11			2315.66	

First DI	West to South			
Inflow	37.50	197.13	950.11	2315.66
Outflow	0.00	0.00	231.48	781.24

Assumes diversion is to south

Second DI	West to Southwest			
Inflow	37.50	197.13	718.63	1534.42
Outflow	0.00	0.00	0.00	0.00

Assumes diversion is to southwest

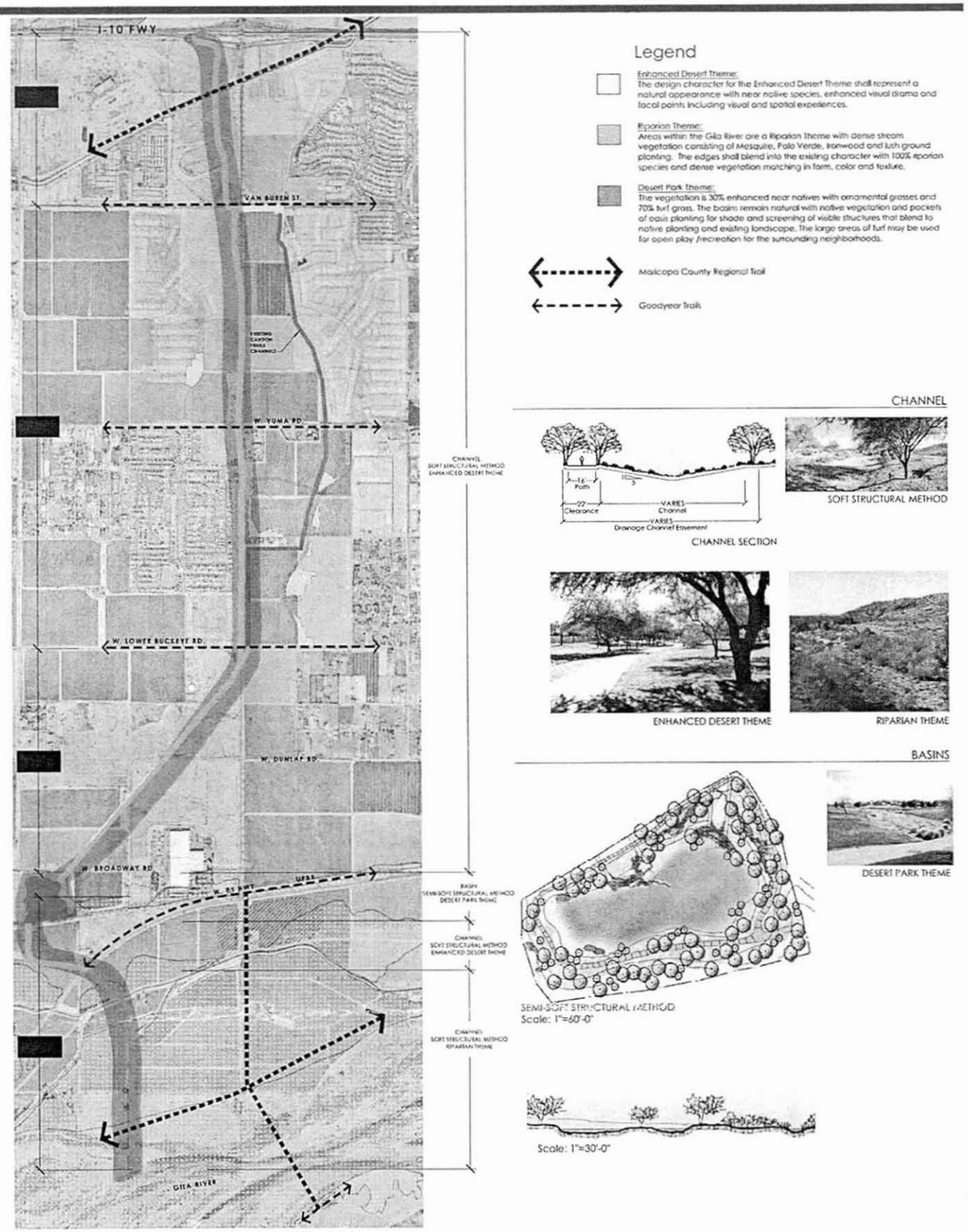

DS26
175th alignment (dirt only)
910
275
909
275
908
907.5
50
908
908.2
30
3
305
909
908
352
910
RR Tracks
N
1" = 100'

S26, S20, S19, S13, S12

CIP

RECOMMENDED ALTERNATIVE DUAL SYSTEM

LOOP 303 DRAINAGE IMPROVEMENTS



LOOP 303 DRAINAGE IMPROVEMENTS JANUARY 2008 EDAW | AECOM FIGURE 6-1

CIP models

527

```
1*************************************
*                                   *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            JUN   1998             *
*          VERSION 4.1              *
*                                   *
*  RUN DATE   18JAN08  TIME  09:37:36  *
*                                   *
*************************************
```

```
*************************************
*                                   *
*   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  This is the selected alternative (Railroad Basin Alternative).
   2          ID  Details of the changes to the model are documented in Appendix D
   3          ID  of the Loop 303 Drainage Improvements CAR I-10 to Gila River
   4          ID  Phase 2 Report.  Updated Jan 18, 2008 by PK
   5          ID  Project Engineering Consultants, Ltd
   6          ID
   7          ID        FUTURE CONDITION HDYROLOGY MODEL WITH PROJECTS - LEVEL III
   8          ID
   9          ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
  10          ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
  11          ID        TANKS/AGUA FRIA ADMS, Date: October 1991
  12          ID
  13          ID        ***REMOVED RETENTION AT SUPER BASIN #5 SUB BASINS 297, 315, ***
  14          ID        ***334, 335A, 335, 316 TO REFLECT RELAXED RETENTION REQUIRE-***
  15          ID        ***MENTS ADJACENT TO THE BULLARD CHANNEL S. OF I-10.        ***
  16          ID
  17          ID       * URS REVISED RTIMP PERCENT IMPERVIOUS VALUES *
  18          ID       * AS PER FCDMC GIS DATA - 6-27-01 *
  19          ID
  20          ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
  21          ID        100-YEAR, 24-HOUR STORM                 original file: WTADMS.24
  22          ID
  23          ID        FUTURE CASE WITH RETENTION VOLUME DIVERTS
  24          ID
  25          ID                                     REVISED BY URS     DATE: 01-14-04
  26          ID                                                        FILE: L33PF6D.DAT
  27          ID
  28          ID  NOTES:
  29          ID  1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3
  30          ID  2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
  31          ID  2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
  32          ID  3. AVERAGE XKSAT VALUES FOR EACH SUBBASIN WAS RECEIVED FROM FCDMC
  33          ID  GIS DATA AND THEN ADJUSTED FOR VEGETATION, OR LEFT AS ORIGINALLY IN
  34          ID  THE WLB MODEL.
  35          ID  4. FOR NEW DEVELOPMENTS ONLY 80% OF REPORTED PROVIDED RETENTION
  36          ID  WAS INCLUDED IN THIS MODEL (AS A CONSERVATIVE ESTIMATE). RETENTION
  37          ID  CAPACITIES WERE ESTIMATED BY EEC FOR DEVELOPMENTS WITH NO
  38          ID  DRAINAGE REPORTS.
  39          ID  5. REVISED DRAINAGE BOUNDARIES BASED UPON FIELD INSPECTION OF SUN CITY.
  40          ID  GRAND.  COMBINED SEVERAL BASINS TOGETHER TO MAKE NEW BASINS 114 &115.
  41          ID  ALSO REROUTED SUBBASINS 100A, 101, 102A AND 106 TO THE SOUTH TO 113A.
  42          ID  6. CHANNEL ROUTE ALONG REEMS ROAD UPDATED TO REFLECT NEW CONSTRUCTION.
  43          ID  7. REVISED SCS TYPE II RAINFALL DISTRIBUTION FOR THE 24-HOUR GENERAL
  44          ID  STORM.
  45          ID  8. REVISED RAINFALL DEPTH-AREA REDUCTION FACTORS.
  46          ID  9. PSIF WERE ADJUSTED BASED ON THE VALUES OF XKSAT AND WERE EDITED INTO
  47          ID  THE DATA FILE BY THE FCDMC.
  48          ID  10. AVERAGE XKSAT VALUES FOR SUBBASINS WITH BORROW PITS (WHITE TANKS
  49          ID  AREAS #3 & #4) WERE ESTIMATED BY EEC.
  50          ID
              *DIAGRAM
  51          IT       5 03MAR03    1200    1000
  52          IO       5
  53          IN      15
  54          JD    4.03    .001
```



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

  55          PC    .000    .002    .005    .008    .011    .014    .017    .020    .023    .026
  56          PC    .029    .032    .035    .038    .041    .044    .048    .052    .056    .060
  57          PC    .064    .068    .072    .076    .080    .085    .090    .095    .100    .105
  58          PC    .110    .115    .120    .126    .133    .140    .147    .155    .163    .172
  59          PC    .181    .191    .203    .218    .236    .257    .283    .387    .663    .707
```

```
10869          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

10870          KK  346COT
10871          KM  DIVERSION-RETENTION
10872          DT  346CRT   13.10
10873          DI       0   10000
10874          DQ       0   10000

10875          KK  CP346C
10876          KM  ADD HYDROGRAPHS AT CP346C
10877          HC       2   38.31

10878          KK  SR346C
10879          KM  STORAGE ROUTE BEHIND S.P.R.R. SPUR AT CP346C
10880          RS       1    STOR       0       0
10881          SV       0     .55   10.29   18.98   32.91   43.76
10882          SQ       0       0       0       0    1040    2866
10883          SE   905.4     906     908     909     910   910.5
               *

10884          KK    346B
10885          KM  RUNOFF HYDROGRAPH FROM SUB-BASIN 346B
10886          BA     .27
10887          LG     .50     .00    4.58     .55    55.9
10888          UI     10.     10.     10.     10.     32.     38.     44.     49.     55.     59.
10889          UI     63.     69.     76.     83.     96.    116.    133.    125.    109.     98.
10890          UI     90.     83.     77.     69.     63.     58.     52.     48.     41.     33.
10891          UI     27.     18.     18.     17.     17.     14.     10.     10.     10.      7.
10892          UI      3.      3.      3.      3.      3.      3.      3.      3.      3.      3.
10893          UI      3.      3.      0.      0.      0.      0.      0.      0.      0.      0.
10894          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1                                          HEC-1 INPUT                                          PAGE280

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

10895          KK  346BOT
10896          KM  DIVERSION-RETENTION
10897          DT  346BRT    29.6
10898          DI       0   10000
10899          DQ       0   10000

10900          KK  CP346B
10901          KM  ADD HYDROGRAPHS AT CP346B
10902          HC       2   38.58

10903          KK  SR346B
10904          KM  STORAGE ROUTE BEHIND S.P.R.R. AT CP346B
10905          RS       1    STOR       0       0
10906          SV       0     .84    1.72    3.88    7.13   16.26
10907          SQ       0       0      27     349    1675    5428
10908          SE     907   907.7     908   908.5     909     910

10909          KK   D346B
10910          KM  DIVERT FLOW FROM CP346B TO CP360
10911          DT   DI360
10912          DI       0      27     349    1675    5428
10913          DQ       0       0      69     423    2390

10914          KK   R346B
10915          KM  ROUTE REMAINDER FROM CP346B TO CP359
10916          RS       5              -1       0
10917          RC    .035    .035     .07    2600   .0038
10918          RX    1000    1001    1002    1020    1310    2038    2039    2040
10919          RY     910     903     903   901.5   901.5     904     904     910

10920          KK  GTLP16Fake for RR basin upstream channel
10921          DR   TO359

10922          KK   CP359
10923          KM  ADD HYDROGRAPHS AT CP359
10924          HC       3   40.58

10925          KK   SR359
10926          KM  STORAGE ROUTE BEHIND S.P.R.R. AT CP357 AND CP359
10927          KO       3
10928          RS       1    STOR       0       0
10929          SV       0     0.1     5.9    19.1    33.6    49.2   142.2   163.5   184.7
10930          SQ       0      59      98     129     158     200     450    1135    1270
10931          SE  891.28     893     894     895     896     897     902     903     904

10932          KK    R359
10933          KM  ROUTE FLOW FROM CP357 AND CP359 TO CP360
10934          RS      10              -1
10935          RC    .075    .075    .075    1790   .0022
10936          RX    1000    1001    1002    1220    2380    2758    2759    2760
10937          RY     900     897     897     896     896     897     897     900
               *
1                                          HEC-1 INPUT                                          PAGE281

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

10938          KK     360
10939          KM  RUNOFF HYDROGRAPH FROM SUB-BASIN 360
10940          BA     .25
10941          LG     .46     .08    6.60     .20    72.3
10942          UI     11.     11.     11.     27.     41.     50.     57.     63.     69.     76.
10943          UI     85.     95.    117.    142.    142.    120.    106.     96.     88.     78.
10944          UI     70.     63.     56.     49.     38.     28.     20.     20.     19.     16.
10945          UI     11.     11.     11.      4.      3.      3.      3.      3.      3.      3.
10946          UI      3.      3.      3.      3.      0.      0.      0.      0.      0.      0.
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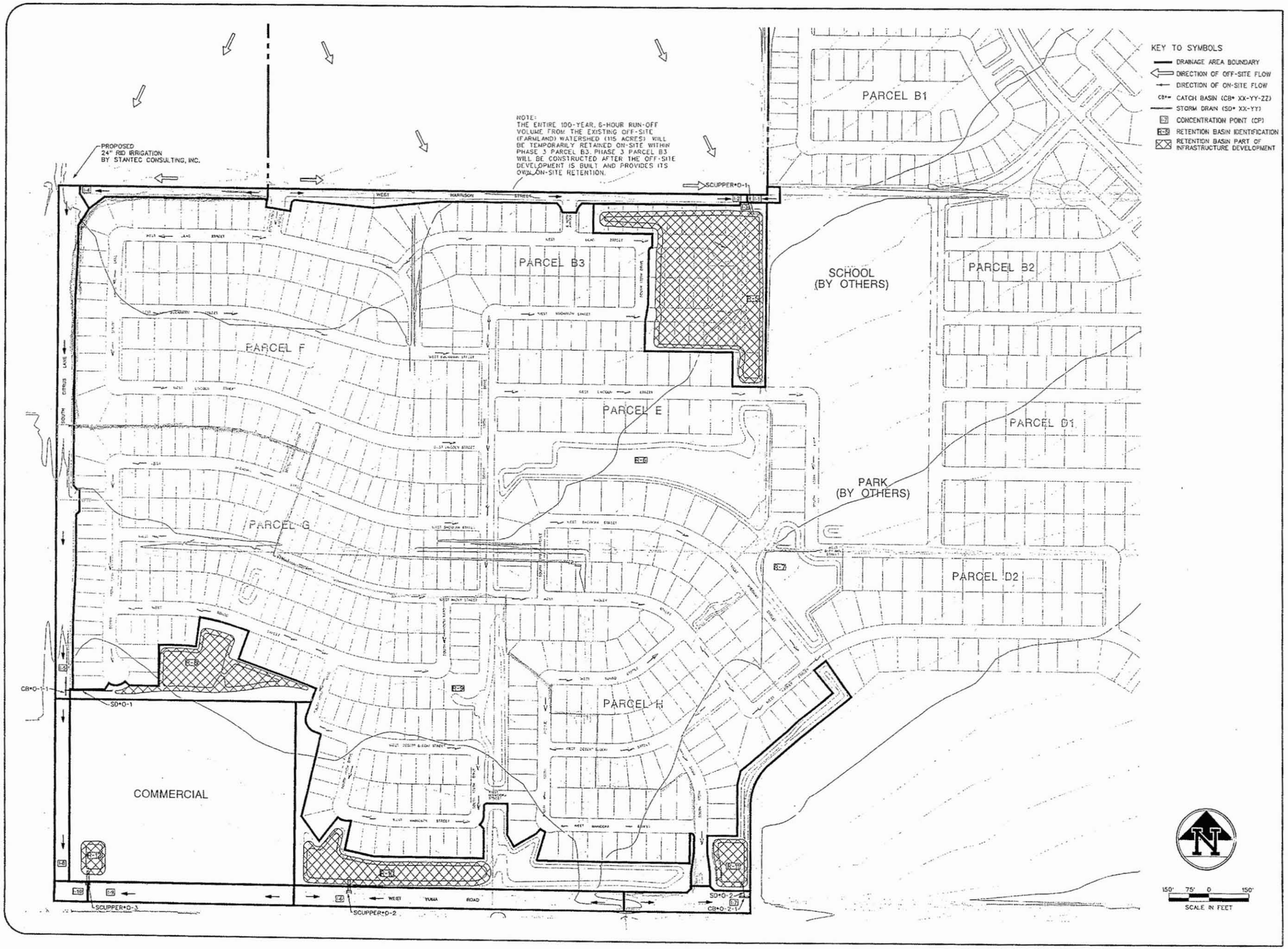
S31527

S28



CANYON TRAILS UNIT 4 WEST
PHASE 3&4 INFRASTRUCTURE

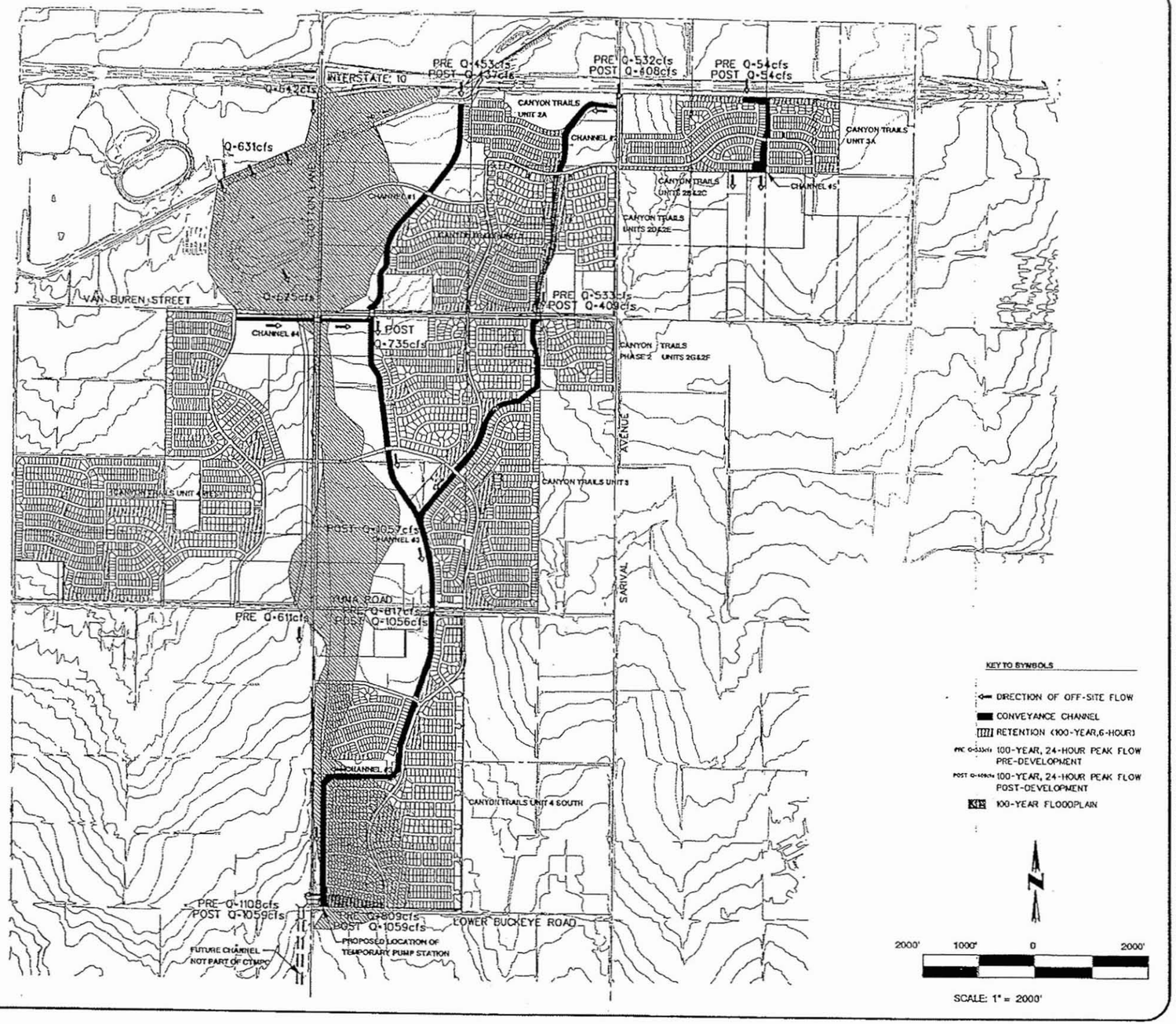
COE & VAN LOO
PLANNING • ENGINEERING • LANDSCAPE ARCHITECTURE

DRAINAGE MAP

4550 NORTH 12TH STREET
PHOENIX, ARIZONA 85014
TELEPHONE (602) 264-6831

JOB NO.
037005-45

PLATE
1



Jun. 19, 2004
12:33:59
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1105

CANYON TRAILS

COE & VAN LOO
PLANNING • ENGINEERING • LANDSCAPE ARCHITECTURE

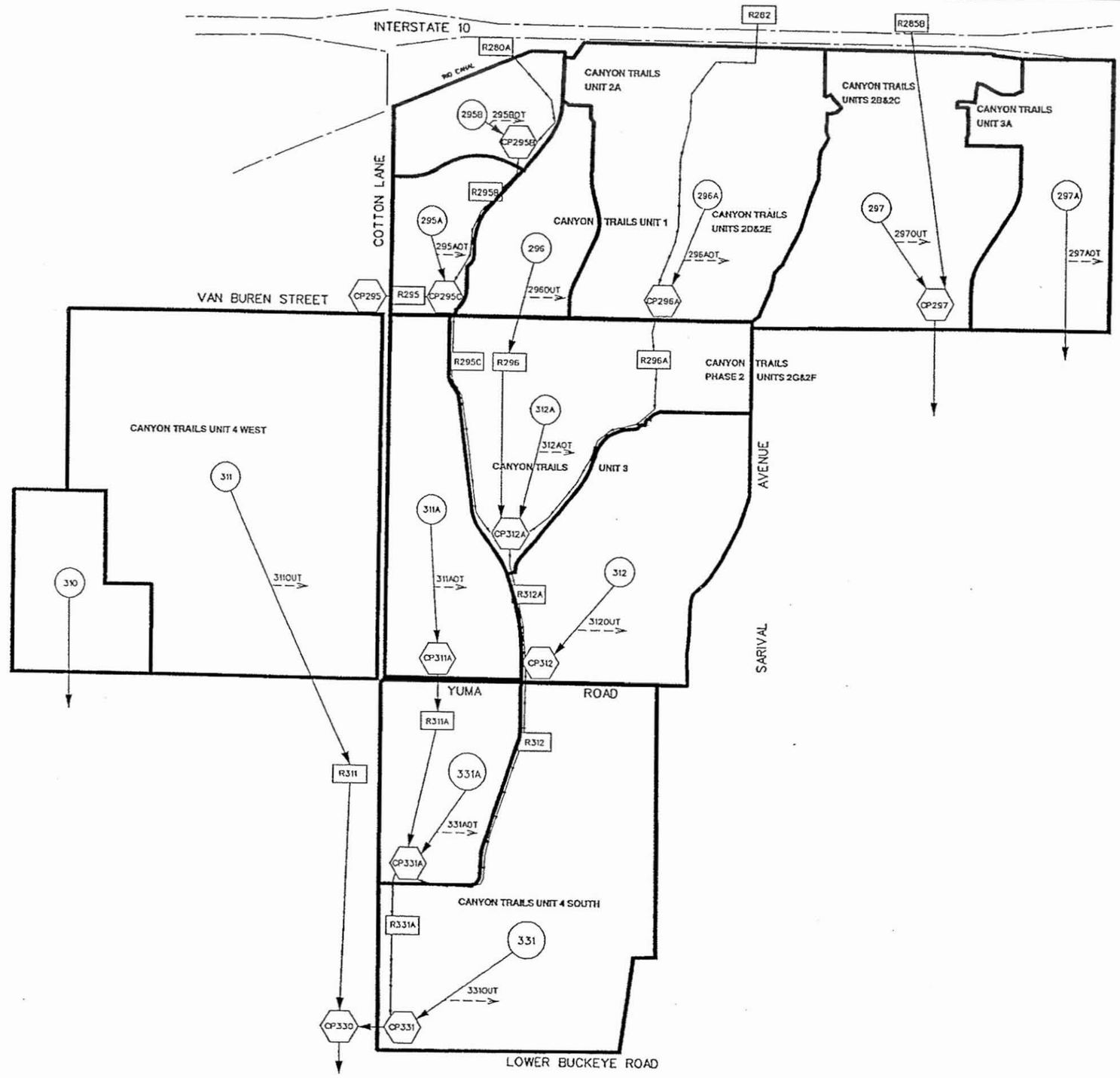
DRAINAGE MAP

4550 NORTH 12TH STREET
PHOENIX, ARIZONA 85014
TELEPHONE (602) 264-6831

JOB NO
020026

PLATE 1

n:/970091/hydro/sdmap2.dgn Apr. 27, 2005 09:38:59



S01, S06
S15, S14
S19, S28
S17, S16
S18

4105

KEY TO SYMBOLS

- 297A — SUB-BASIN ID
- CP296A — CONCENTRATION POINT
- R296A — ROUTE ID
- SUB-BASIN BOUNDARY
- CHANNEL (GREENBELT) FLOWLINE
- RETENTION DIVERSION

N

1600' 800' 0 1600'

SCALE: 1" = 1600'

CANYON TRAILS

COE & VAN LOO
PLANNING • ENGINEERING • LANDSCAPE ARCHITECTURE

HEC-1 ROUTING MAP

4550 NORTH 12TH STREET
PHOENIX, ARIZONA 85014
TELEPHONE (602) 264-6831

JOB NO
020026

PLATE 2

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

CIP models

S31

```
1*************************************
*                                   *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN  1998             *
*           VERSION 4.1             *
*                                   *
*  RUN DATE   18JAN08  TIME  09:37:36  *
*                                   *
*************************************
```

```
*************************************
*                                   *
*   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  This is the selected alternative (Railroad Basin Alternative).
   2          ID  Details of the changes to the model are documented in Appendix D
   3          ID  of the Loop 303 Drainage Improvements CAR I-10 to Gila River
   4          ID  Phase 2 Report.  Updated Jan 18, 2008 by PK
   5          ID  Project Engineering Consultants, Ltd
   6          ID
   7          ID        FUTURE CONDITION HDYROLOGY MODEL WITH PROJECTS - LEVEL III
   8          ID
   9          ID        WHITE TANKS AREA DRAINAGE MASTER STUDY *UPDATE*
  10          ID        Original MODEL BY THE WLB Group for FCDMC AS PART OF THE WHITE
  11          ID        TANKS/AGUA FRIA ADMS, Date: October 1991
  12          ID
  13          ID        ***REMOVED RETENTION AT SUPER BASIN #5 SUB BASINS 297, 315, ***
  14          ID        ***334, 335A, 335, 316 TO REFLECT RELAXED RETENTION REQUIRE-***
  15          ID        ***MENTS ADJACENT TO THE BULLARD CHANNEL S. OF I-10.        ***
  16          ID
  17          ID       * URS REVISED RTIMP PERCENT IMPERVIOUS VALUES *
  18          ID       * AS PER FCDMC GIS DATA - 6-27-01 *
  19          ID
  20          ID        REVISED HYDROLOGY HEC-1 RUN FOR WHITE TANKS ADMS
  21          ID        100-YEAR, 24-HOUR STORM                 original file: WTADMS.24
  22          ID
  23          ID        FUTURE CASE WITH RETENTION VOLUME DIVERTS
  24          ID
  25          ID                                     REVISED BY URS     DATE: 01-14-04
  26          ID                                                        FILE: L33PF6D.DAT
  27          ID
  28          ID  NOTES:
  29          ID  1. THIS HEC-1 MODEL CONTAINS THE FOLLOWING SUPER BASINS: WHITE TANKS 3
  30          ID  2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2 & 3, 4 THRU 26.
  31          ID  2. REVISED TO REFLECT UPDATED SOILS MAPS AND NEW DEVELOPMENT.
  32          ID  3. AVERAGE XKSAT VALUES FOR EACH SUBBASIN WAS RECEIVED FROM FCDMC
  33          ID  GIS DATA AND THEN ADJUSTED FOR VEGETATION, OR LEFT AS ORIGINALLY IN
  34          ID  THE WLB MODEL.
  35          ID  4. FOR NEW DEVELOPMENTS ONLY 80% OF REPORTED PROVIDED RETENTION
  36          ID  WAS INCLUDED IN THIS MODEL (AS A CONSERVATIVE ESTIMATE). RETENTION
  37          ID  CAPACITIES WERE ESTIMATED BY EEC FOR DEVELOPMENTS WITH NO
  38          ID  DRAINAGE REPORTS.
  39          ID  5. REVISED DRAINAGE BOUNDARIES BASED UPON FIELD INSPECTION OF SUN CITY.
  40          ID  GRAND.  COMBINED SEVERAL BASINS TOGETHER TO MAKE NEW BASINS 114 &115.
  41          ID  ALSO REROUTED SUBBASINS 100A, 101, 102A AND 106 TO THE SOUTH TO 113A.
  42          ID  6. CHANNEL ROUTE ALONG REEMS ROAD UPDATED TO REFLECT NEW CONSTRUCTION.
  43          ID  7. REVISED SCS TYPE II RAINFALL DISTRIBUTION FOR THE 24-HOUR GENERAL
  44          ID  STORM.
  45          ID  8. REVISED RAINFALL DEPTH-AREA REDUCTION FACTORS.
  46          ID  9. PSIF WERE ADJUSTED BASED ON THE VALUES OF XKSAT AND WERE EDITED INTO
  47          ID  THE DATA FILE BY THE FCDMC.
  48          ID  10. AVERAGE XKSAT VALUES FOR SUBBASINS WITH BORROW PITS (WHITE TANKS
  49          ID  AREAS #3 & #4) WERE ESTIMATED BY EEC.
  50          ID
              ^DIAGRAM
  51          IT       5 03MAR03    1200    1000
  52          IO       5
  53          IN      15
  54          JD    4.03    .001
```



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

  55          PC    .000    .002    .005    .008    .011    .014    .017    .020    .023    .026
  56          PC    .029    .032    .035    .038    .041    .044    .048    .052    .056    .060
  57          PC    .064    .068    .072    .076    .080    .085    .090    .095    .100    .105
  58          PC    .110    .115    .120    .126    .133    .140    .147    .155    .163    .172
  59          PC    .181    .191    .203    .218    .236    .257    .283    .387    .663    .707
```

```
10869          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

10870          KK  346COT
10871          KM  DIVERSION-RETENTION
10872          DT  346CRT   13.10
10873          DI       0   10000
10874          DQ       0   10000

10875          KK  CP346C
10876          KM  ADD HYDROGRAPHS AT CP346C
10877          HC       2   38.31

10878          KK  SR346C
10879          KM  STORAGE ROUTE BEHIND S.P.R.R. SPUR AT CP346C
10880          RS       1    STOR       0       0
10881          SV       0     .55   10.29   18.98   32.91   43.76
10882          SQ       0       0       0       0    1040    2866
10883          SE   905.4     906     908     909     910   910.5
               *

10884          KK    346B
10885          KM  RUNOFF HYDROGRAPH FROM SUB-BASIN 346B
10886          BA     .27
10887          LG     .50     .00    4.58     .55    55.9
10888          UI     10.     10.     10.     10.     32.     38.     44.     49.     55.     59.
10889          UI     63.     69.     76.     83.     96.    116.    133.    125.    109.     98.
10890          UI     90.     83.     77.     69.     63.     58.     52.     48.     41.     33.
10891          UI     27.     18.     18.     17.     17.     14.     10.     10.     10.      7.
10892          UI      3.      3.      3.      3.      3.      3.      3.      3.      3.      3.
10893          UI      3.      3.      0.      0.      0.      0.      0.      0.      0.      0.
10894          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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1 HEC-1 INPUT PAGE280

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

10895          KK  346BOT
10896          KM  DIVERSION-RETENTION
10897          DT  346BRT    29.6
10898          DI       0   10000
10899          DQ       0   10000

10900          KK  CP346B
10901          KM  ADD HYDROGRAPHS AT CP346B
10902          HC       2   38.58

10903          KK  SR346B
10904          KM  STORAGE ROUTE BEHIND S.P.R.R. AT CP346B
10905          RS       1    STOR       0       0
10906          SV       0     .84    1.72    3.88    7.13   16.26
10907          SQ       0       0      27     349    1675    5428
10908          SE     907   907.7     908   908.5     909     910

10909          KK   D346B
10910          KM  DIVERT FLOW FROM CP346B TO CP360
10911          DT   DI360
10912          DI       0      27     349    1675    5428
10913          DQ       0       0      69     423    2390

10914          KK   R346B
10915          KM  ROUTE REMAINDER FROM CP346B TO CP359
10916          RS       5              -1       0
10917          RC    .035    .035     .07    2600   .0038
10918          RX    1000    1001    1002    1020    1310    2038    2039    2040
10919          RY     910     903     903   901.5   901.5     904     904     910

10920          KK  GTLP16Fake for RR basin upstream channel
10921          DR   TO359

10922          KK   CP359
10923          KM  ADD HYDROGRAPHS AT CP359
10924          HC       3   40.58

10925          KK   SR359
10926          KM  STORAGE ROUTE BEHIND S.P.R.R. AT CP357 AND CP359
10927          KO       3
10928          RS       1    STOR       0       0
10929          SV       0     0.1     5.9    19.1    33.6    49.2   142.2   163.5   184.7
10930          SQ       0      59      98     129     158     200     450    1135    1270
10931          SE  891.28     893     894     895     896     897     902     903     904
```

SRS31

```
10932          KK    R359
10933          KM  ROUTE FLOW FROM CP357 AND CP359 TO CP360
10934          RS      10              -1
10935          RC    .075    .075    .075    1790   .0022
10936          RX    1000    1001    1002    1220    2380    2758    2759    2760
10937          RY     900     897     897     896     896     897     897     900
               *
```

1 HEC-1 INPUT PAGE281

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

10938          KK     360
10939          KM  RUNOFF HYDROGRAPH FROM SUB-BASIN 360
10940          BA     .25
10941          LG     .46     .08    6.60     .20    72.3
10942          UI     11.     11.     11.     27.     41.     50.     57.     63.     69.     76.
10943          UI     85.     95.    117.    142.    142.    120.    106.     96.     88.     78.
10944          UI     70.     63.     56.     49.     38.     28.     20.     20.     19.     16.
10945          UI     11.     11.     11.      4.      3.      3.      3.      3.      3.      3.
10946          UI      3.      3.      3.      3.      0.      0.      0.      0.      0.      0.
```

```
8165          KK     330
8166          KM  RUNOFF HYDROGRAPH FROM SUB-BASIN 330
8167          BA     .59
8168          LG     .33      .11     4.65      .46     30.6
8169          UI     39.      39.     100.     161.     198.     228.     263.     308.     404.     496.
8170          UI    425.     354.     308.     261.     223.     190.     144.      93.      69.      65.
8171          UI     46.      39.      28.      12.      12.      12.      12.      12.      12.      12.
8172          UI      0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
8173          UI      0.       0.       0.       0.       0.       0.       0.       0.       0.       0.

8174          KK  330OUT
8175          KM  Storage Divert at Subbasin 330
8176          DT  330RET   45.57
8177          DI       0   10000
8178          DQ       0   10000
8179          ZW   A=303  B=3300  C=FLOW  E=5MIN

8180          KK   1I330
8181          KM  ADD HYDROGRAPHS AT CP330
8182          HC       2   38.03
8183          ZW   A=303  B=I330  C=FLOW  E=5MIN
              * KK CP330

8184          KK   !LP15 gdgrdsg
8185          KM  ADD HYDROGRAPHS AT CP330 INCLUDING HYDROGRAPH AT CP331
8186          HC       2   45.87
              * KK  R330
              * HIGH ELEV'S FROM ORIGINAL ROUTE
              * DUMMY ROUTE

8187          KK   RLP15
8188          KM  ROUTE FLOW FROM CP330 TO CP346A
8189          RS     1.0              -1.0      0.0
8190          RC   0.013    0.013    0.013     3477  0.0056
8191          RX     0.0     11.0     12.6     14.2     15.8     17.4     19.0     30.0
8192          RY   925.0    919.5    919.5    919.5    919.5    919.5    919.5    925.0
              *
              * ***********************************************************************
              * ***THE FOLLOWING SECTION TAKEN FROM NEW SUPER BASIN 11 WITH NEW SOILS*****
              * ***********************************************************************
              *

8193          KK    346A
8194          KM  RUNOFF HYDROGRAPH FROM SUB-BASIN 346A
8195          BA     .16
8196          LG     .50      .00     4.66      .53     41.9
8197          UI      7.       7.       7.      18.      27.      32.      37.      41.      45.      49.
8198          UI     55.      62.      78.      92.      90.      76.      67.      61.      56.      49.
8199          UI     44.      40.      35.      30.      23.      17.      13.      12.      12.       9.
8200          UI      7.       7.       6.       2.       2.       2.       2.       2.       2.       2.
8201          UI      2.       2.       2.       0.       0.       0.       0.       0.       0.       0.
8202          UI      0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
```

S26531


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

8203          KK  346AOT
8204          KM  DIVERSION-RETENTION
8205          DT  346ART   11.84
8206          DI       0   10000
8207          DQ       0   10000
              *
              * MODIFY PER LEVEL III
              *
              * KKCP346A

8208          KK   !LP16
              * KO     1                                21
8209          KM  ADD HYDROGRAPHS AT CP346A
8210          HC       2   46.03
              * SIMULATE RETENTION BASIN CONCEPT USED BY DCR
              * KK SRLP16
              * KO     1                                21
              * KM         PROPOSED BASIN AT MC85
              * RS 1 STOR 0 0
              * SV 0 63 126 189 252 315
              * SQ 0 0 0 49 263 460
              * SE 903 905 907 909 911 913
              * KKLP16OT
              * KO     1                                21
              * KM      DIVERSION-RETENTION AT CACTUS BASIN
              * 50-YR VOLUME IS 78AF PER THE BASELINE
              * VOLUME IS NOT SPECIFIED BY DCR
              * DTLP16RT
              * DI     0   20000
              * DQ     0   20000

8211          KK  2DLP16
8212          KM  DIVERT LP16 FOR RETRIEVAL LATER
8213          DT   2D378
8214          DI       0   10000
8215          DQ       0       0

8216          KK    DOWNFake for RR basin up stream channel
8217          DT   TO359   10000
8218          DI       0   10000
8219          DQ       0   10000
              *
              *

8220          KK   D346A
```

SRS31
(From URS Model)

```
8201      KK  SRLP16
        * KO   1                    21
8202      KM  PROPOSED BASIN AT MC85
8203      RS    1   STOR     0     0
8204      SV    0    63   126   189   252   315
8205      SQ    0     0     0    49   263   460
8206      SE  903   905   907   909   911   913
```

SR3227

The WLB Group Inc. WLB

COMPUTATION DATA SHEET

Subject WHITE TANK/AGUA FRIA ADMS Prepared by JSE Date 1-29-91

STAGE - STORAGE - DISCHARGE TABLE

SUBBASIN 35.7 + 35.9 Citrus Road Junction BW=6' SS=0:1 LC=2.2' D=4'
SP RR Bridge Invert = 894.5' Top of RR 901.7'

ELEV. (FT)	AREA (AC)		VOLUME (AC-FT)	DISCHARGE (CFS)
894.5 * Invert	0		0	0
		.17		
898	.1		.17	90
		39.96		
900	42.06		40.13	120
		93.39		
901.7 * Weir over RR	67.81		133.48	242
		21.07		
902.0	72.35		154.54	253 + 684 = 937
		38.08		
902.5	80.0		192.63	253 + 1488 = 1741

Q = CLH^3/2 H = .3 C = 2.6
L = 600

Q at 902 = 684 cfs

Q at 902.5 = 1488 cfs = H = .8
L = 800

Form 209

BOX CULVERT ANALYSIS
COMPUTATION OF CULVERT PERFORMANCE CURVE
February 11, 1991

PROGRAM INPUT DATA:

DESCRIPTION	VALUE
Culvert Span (Width of Opening) (feet).....	6.00
Culvert Rise (Height of Opening) (feet).....	4.00
FHWA Chart Number (8,9,10,11,12 or 13).....	8
Scale Number on Chart (Type of Culvert Entrance).....	1
Manning's Roughness Coefficient (n-value).....	0.0300
Entrance Loss Coefficient of Culvert Opening.....	0.50
Culvert Length (feet).....	30.0
Culvert Slope (feet per foot).....	0.0050

PROGRAM RESULTS:

Flow Rate (cfs)	Tailwater Depth (ft)	Headwater (ft) Inlet Control	Headwater (ft) Outlet Control	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
90.0	3.20	3.06	3.51	3.20	1.91	3.20	4.69
120.0	4.00	3.73	4.67	3.99	2.32	4.00	5.00
242.0	4.00	7.15	7.19	4.00	3.70	4.00	10.08
253.0	4.00	7.52	7.50	4.00	3.81	4.00	10.54

BOX CULVERT ANALYSIS COMPUTER PROGRAM Version 1.4 Copyright (c) 1986
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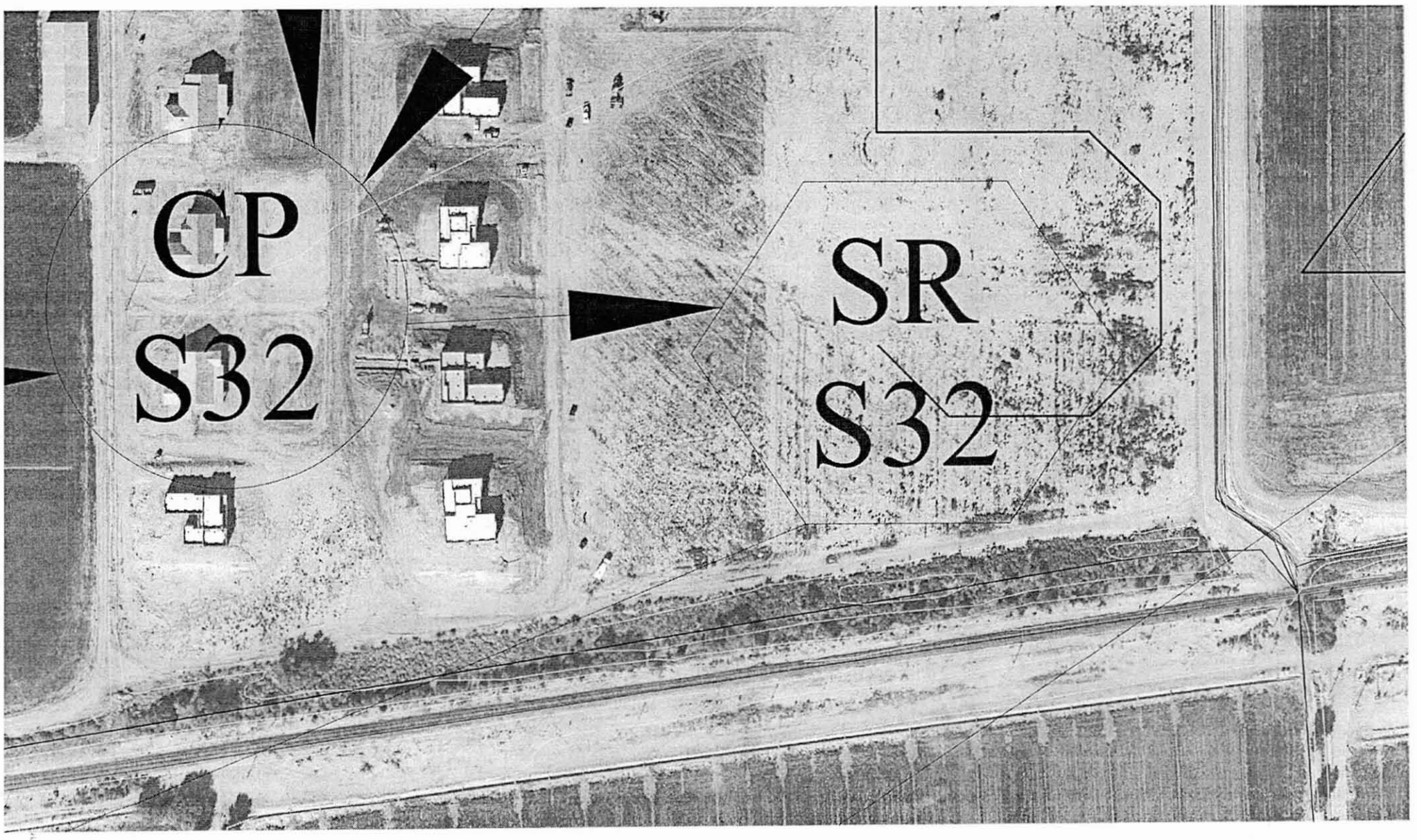
SRS32



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

Job No.	79902	No.	

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Computed	AHM	Date	10/28/2008
Subject	Weir Flow Analysis	Checked	HP	Date	3/10/09
Task	Weir Calculations	Sheet	1	Of	X

Location: Van Buren & Perryville (DS34)

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	1018	1016	430	1017	1015.5	0	0.00	1016	0	0.00	1016.5	0	0.00	CHECK	1017	0	0.00	DONE
south	1016	1016	450	1016	1015.5	0	0.00	1016	0	0.00	1016.5	0.5	477.30		1017	1	1350.00	
south	1016	1014	340	1015	1015.5	0.5	360.62	1016	1	1020.00	1016.5	1.5	1873.86		1017	2	2885.00	
east	1014	1014.4	20	1014.2	1015.5	1.3	88.93	1016	1.8	144.90	1016.5	2.3	209.29		1017	2.8	281.12	
east	1014.4	1014.2	10	1014.3	1015.5	1.2	39.44	1016	1.7	66.50	1016.5	2.2	97.89		1017	2.7	133.10	
east	1014.2	1015	80	1014.6	1015.5	0.9	204.92	1016	1.4	397.56	1016.5	1.9	628.55		1017	2.4	892.34	
east	1015	1016	230	1015.5	1015.5	0	0.00	1016	0.5	243.95	1016.5	1	690.00		1017	1.5	1267.61	
east	1016	1016	190	1016	1015.5	0	0.00	1016	0	0.00	1016.5	0.5	201.53		1017	1	570.00	
east	1016	1018	340	1017	1015.5	0	0.00	1016	0	0.00	1016.5	0	0.00		1017	0	0.00	
						TOTALS:	693.91			1872.91			4178.42				7379.16	

Graph Computations:

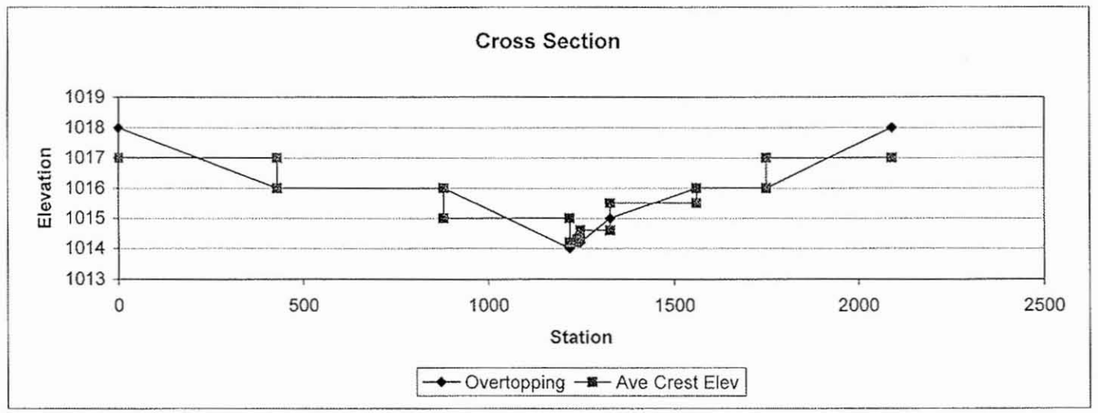
Station	Elevation
0	1018
430	1016
880	1016
1220	1014
1240	1014.4
1250	1014.2
1330	1015
1560	1016
1750	1016
2090	1018

Weir Approximation:

Station	Elevation
0	1017
430	1017
430	1016
880	1016
880	1015
1220	1015
1220	1014.2
1240	1014.2
1240	1014.3
1250	1014.3
1250	1014.6
1330	1014.6
1330	1015.5
1560	1015.5
1560	1016
1750	1016
1750	1017
2090	1017

Culvert Flows (cfs):

south	0
southeast	0
east	0



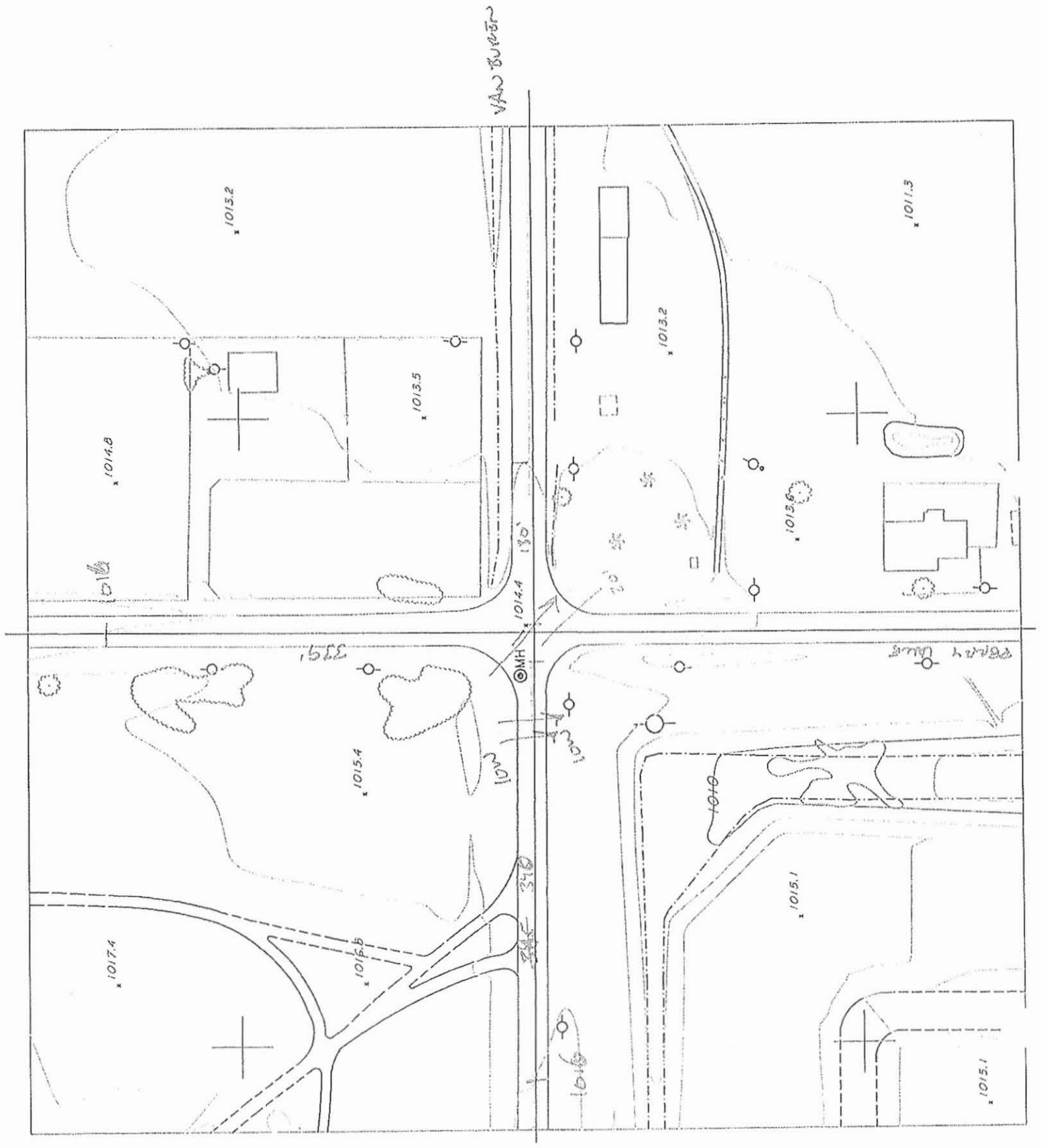
Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	360.62	52%	Q(south)	1020.00	54%	Q(south)	2351.16	56%	Q(south)	4235.00	57%
Q(southeast)	0.00	0%	Q(southeast)	0.00	0%	Q(southeast)	0.00	0%	Q(southeast)	0.00	0%
Q(east)	333.29	48%	Q(east)	852.91	46%	Q(east)	1827.26	44%	Q(east)	3144.16	43%
	693.91			1872.91			4178.42			7379.16	

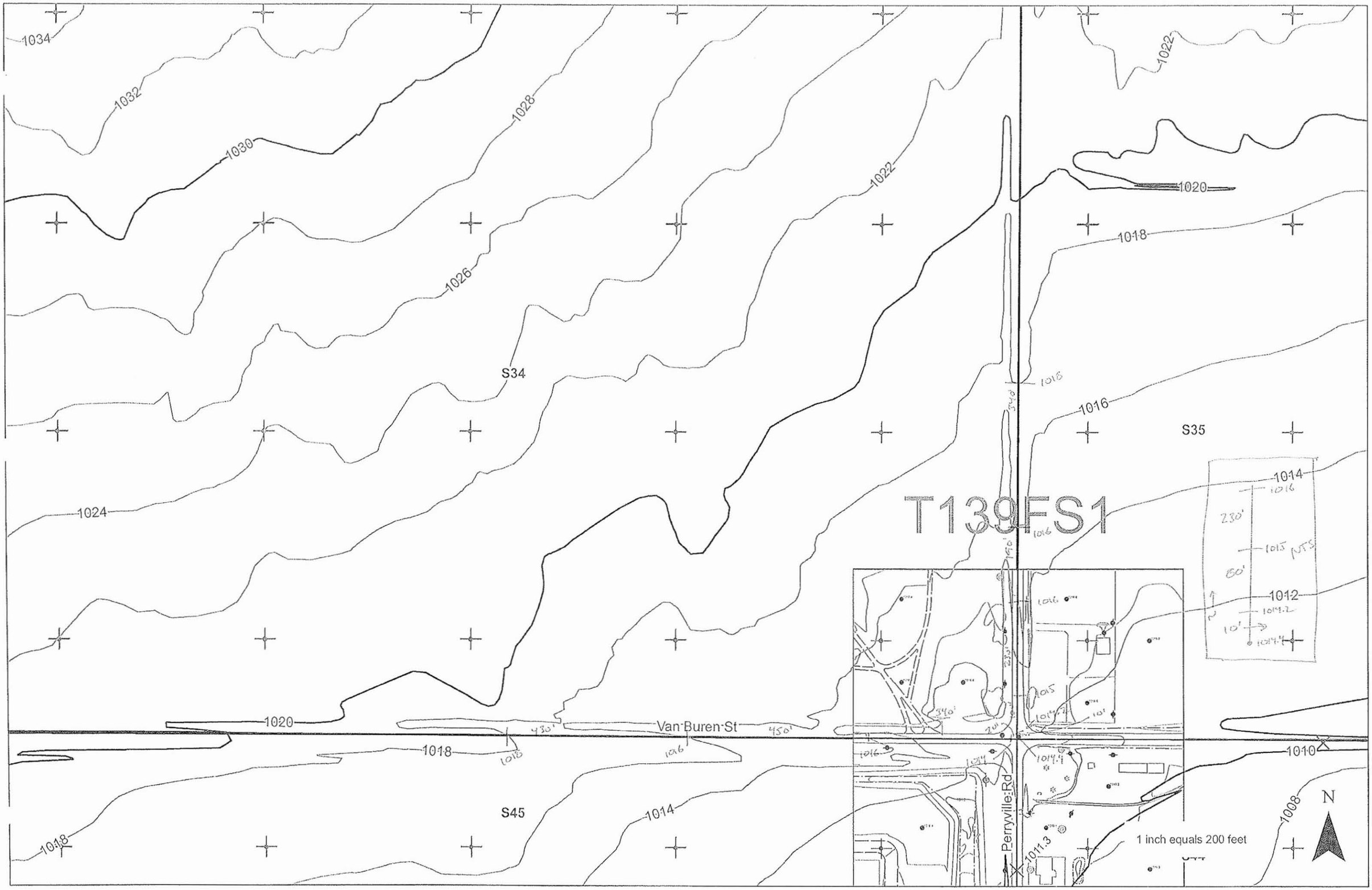
First DI	East to South			
Inflow	693.91	1872.91	4178.42	7379.16
Outflow	360.62	1020.00	2351.16	4235.00

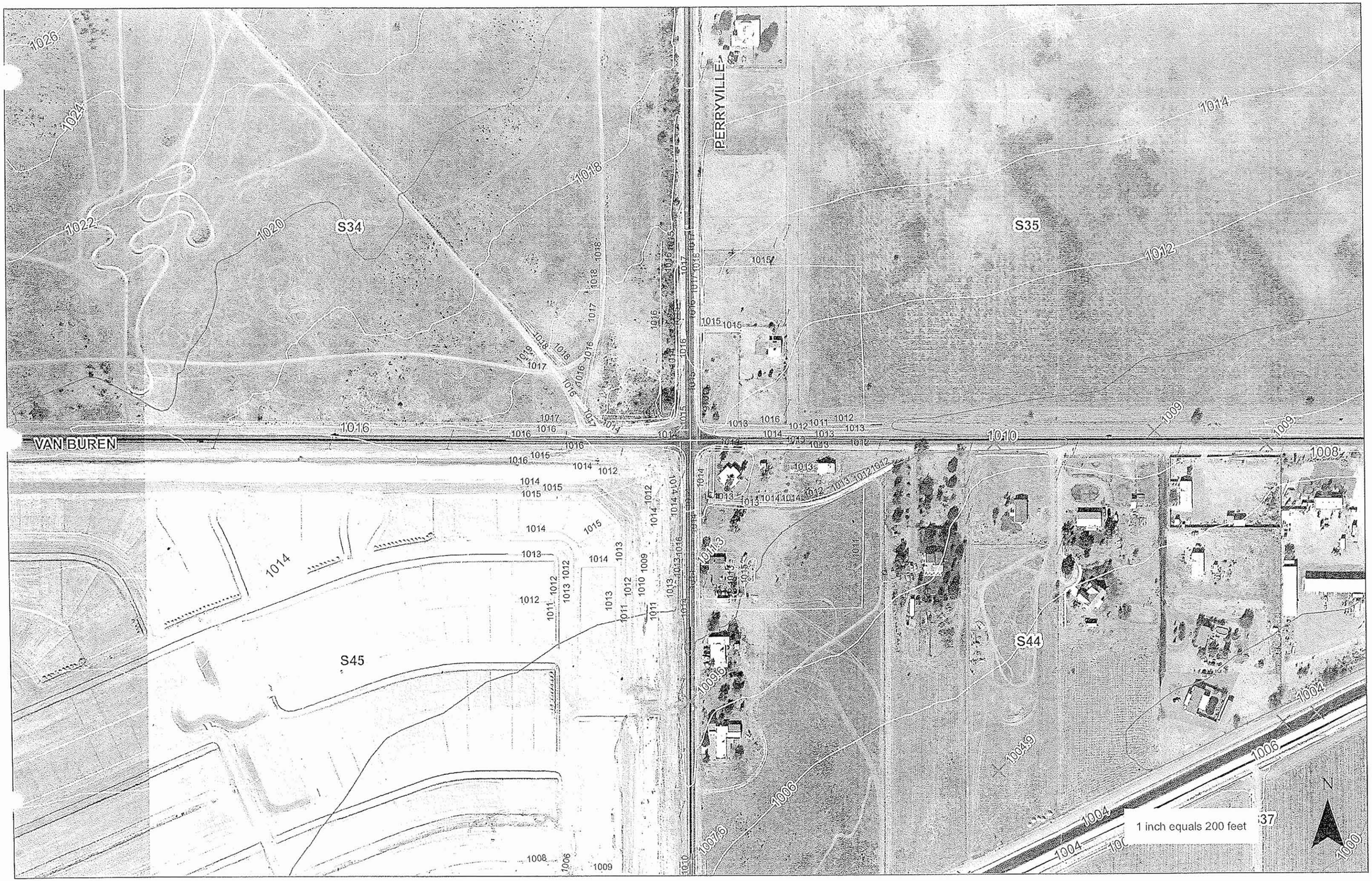
Assumes diversion is to south

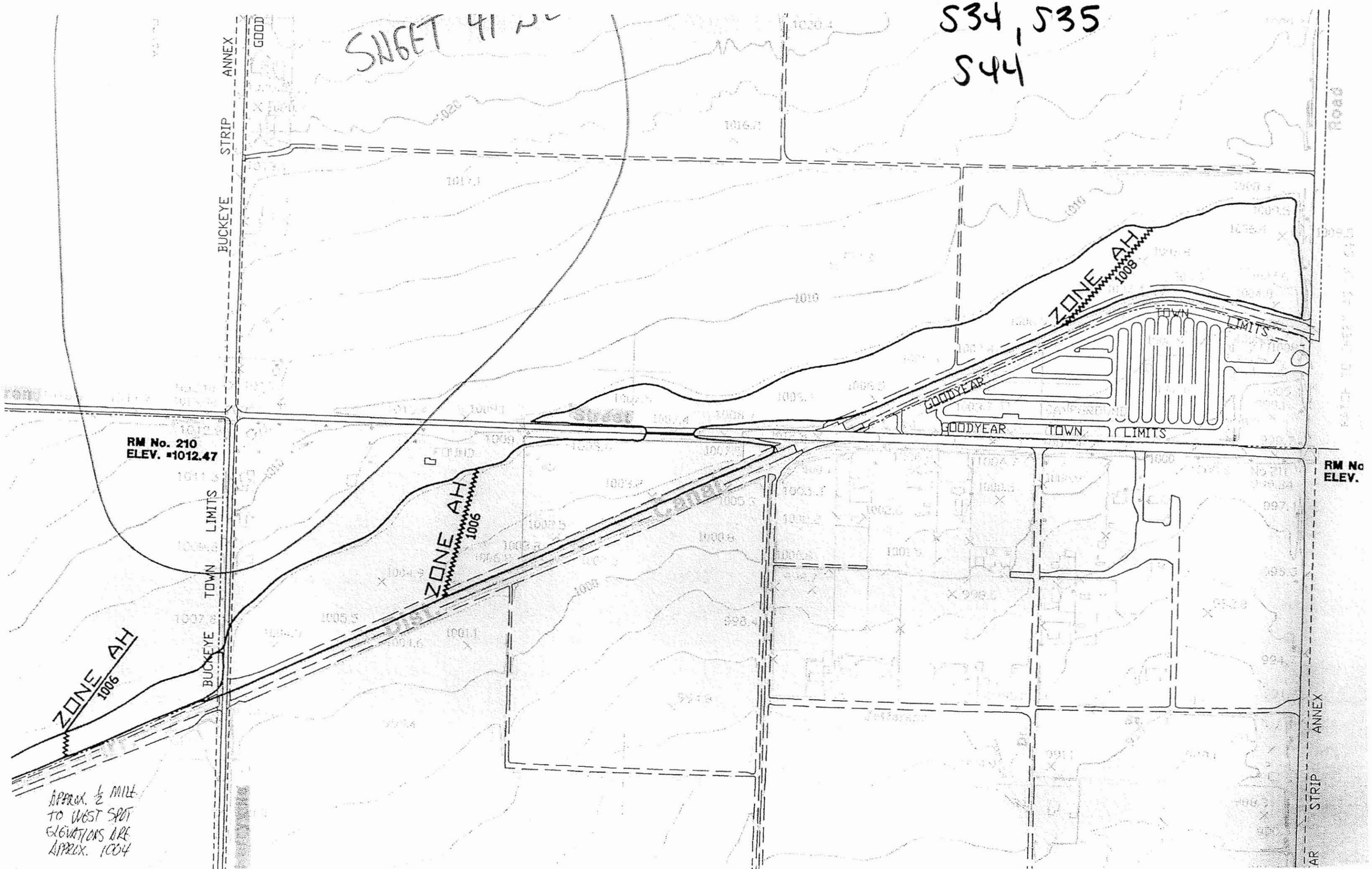
Second DI	East to Southeast			
Inflow	333.29	852.91	1827.26	3144.16
Outflow	0.00	0.00	0.00	0.00

Assumes diversion is to southeast


1013.2
1014.8
1013.5
1014.4
1013.2
1013.6
1011.3
1015.4
1017.4
1016.6
1015.1
1015.1
MH

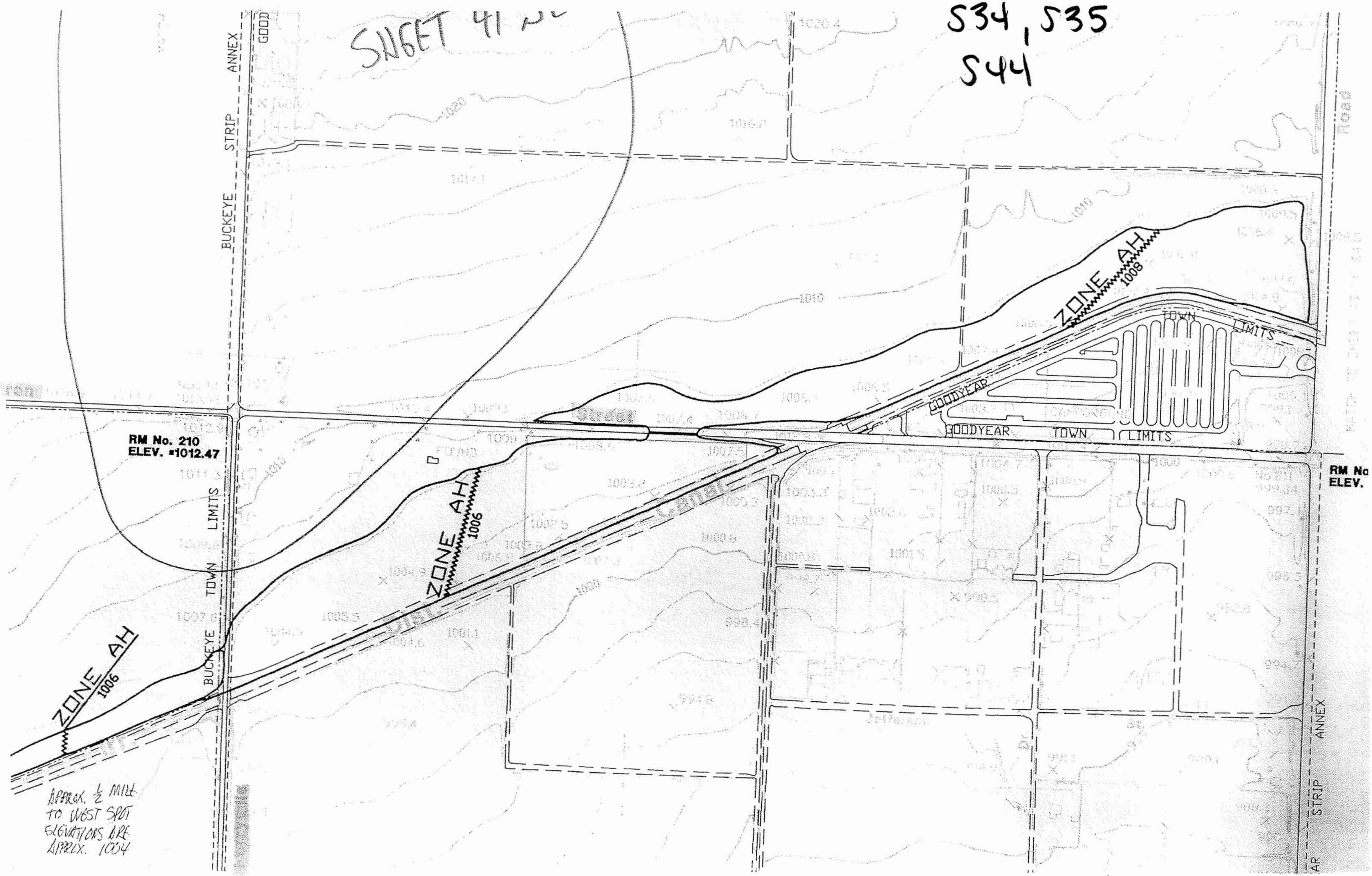

1034
1032
1030
1028
1026
1024
1022
1020
1018
1016
1014
1012
1010
1008
S34
S35
S45
T139FS1
Van Buren St
Perryville Rd
1 inch equals 200 feet
N


PERRYVILLE
VAN BUREN
S34
S35
S44
S45
1 inch equals 200 feet
N



...ver'd 2/11/09 From M. Duncan, FCDMC "I-10 Culvert Wash FDS"

S34, S35
S44



rec'd 2/11/09 From M. Duncan, FCDMC "I-10 Culvert Wash FDS"

SRS36

The WLB Group Inc. WLB

COMPUTATION DATA SHEET

Subject WHITE TANK/AGUA FRIA ADMS Prepared by JSE Date 1-29-91

STAGE - STORAGE - DISCHARGE TABLE

SUBBASIN (294) Borrow Pit

ELEV. (FT)	AREA (AC)		VOLUME (AC-FT)	DISCHARGE (CFS)
970.4	0		0	0
		6.32		
972	7.90		6.32	0
		13.24		
980	25.20		19.56	0
		28.35		
990	31.07		300.91	0
		33.4.4		
1000	35.81		635.31	0
		2.64.64		
1007 * Weir Flow Over Canal	39.8		899.95	0
		42.16		
1008	44.52		942.11	715
		37.35		
1008.8	48.85		979.46	2198

Weir Flow
$Q = CLH^{3/2}$

C = 2.6
H = 1.0
L = 550 ft

Q at 1008 = 715 cfs
Q at 1008.8 = 2198

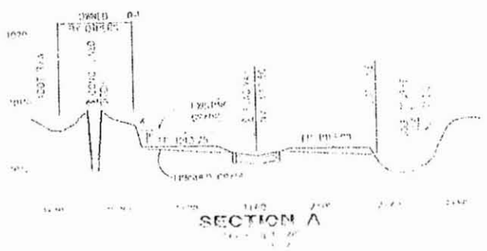
C = 2.6
H = 1.8
L = 700 ft

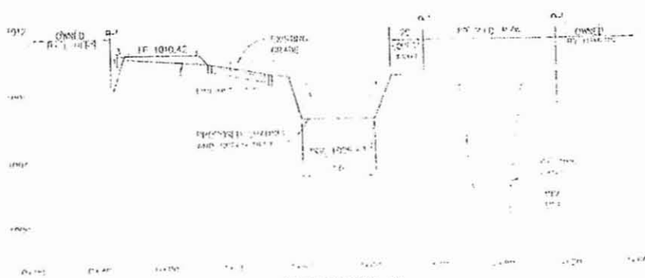
Form 209

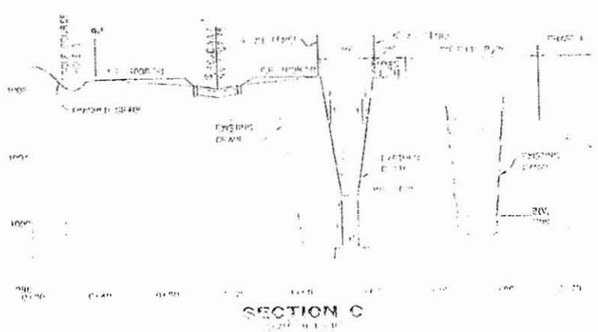
1012 area = 17.7 acres
S36
retention area
1012
1008
1006
106.2 ac·ft
SRS 36 borrow pit

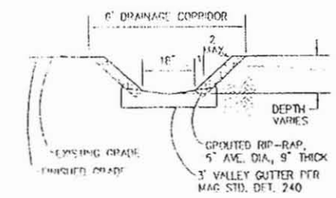
S12 & S36

KAMINSKI HUBBARD engineering, inc.









Note: See Appendix A for Rating Tables and Discharge Curves.

6' CHANNEL TYPICAL SECTION
N.T.S.

INVERTED CROWN ROADWAY CAPACITY FROM B/C TO B/C

ROAD WIDTH	CURB TYPE	DEPTH	CROWN SLOPE	LONGITUDINAL SLOPE	CAPACITY CFS
28'	RIBBON	0.28'	2%	0.5%	7.43
28'	RIBBON	0.42'	3%	0.5%	14.55
28'	ROLLED	0.61'	2%	0.5%	51.13
40'	RIBBON	0.40'	2%	0.5%	19.13
40'	RIBBON	0.60'	3%	0.5%	37.65
40'	ROLLED	0.73'	2%	0.5%	81.12

Note: See Appendix A for Rating Tables and Plotted Curves.

PHASE II SUMMARY

SUBAREA IDENT.	TOTAL ACRES	VOL. REQD.	MIN. VOL. PROVIDED
G	2.31	0.47	0.47
H	13.35	2.19	2.19
I	15.00	2.30	2.30
J	24.42	3.98	3.98
K	6.78	0.79	0.79
L	13.50	1.77	1.77
M	11.98	1.84	1.84
N	24.37	3.81	3.81
O	13.84	1.61	1.61
P	4.21	0.59	0.59
Q	3.46	0.42	0.42
TOTAL	133.22	19.79*	19.79

* = 10 BE PROVIDED AT TIME OF DEVELOPMENT

10 YEAR & 100 YEAR PEAK FLOW (CFS) AT CONCENTRATION POINTS

POINT ID	FLOW Q_{10}	FLOW Q_{100}	POINT ID	FLOW Q_{10}	FLOW Q_{100}
1	3.9	7.4	18	4.9	9.6
2	15.0	28.6	19	1.6	3.1
3	4.3	8.11	20	1.2	2.3
4	4.7	8.9	21	2.2	4.1
5	7.1	13.6	22	3.0	5.7
6	3.8	7.2	23	9.4	12.7
7	7.0	13.5	24	3.0	5.8
8	6.6	13.0	25	3.8	7.4
9	9.7	19.2	26	3.2	6.2
10	2.2	4.4	27	5.0	9.7
11	2.8	5.5	28	4.7	3.2
12	1.2	2.4	29	1.9	3.6
13	6.7	13.1	30	12.7	24.4
14	5.9	11.5	31	11.7	22.4
15	4.8	9.5	32	5.3	10.0
16	0.9	1.8	33	10.7	20.5
17	3.9	7.6	34	11.3	21.6

COTTON LANE RV & GOLF RESORT
MASTER DRAINAGE REPORT

PHASE II DRAINAGE PLAN
EXHIBIT III

DRN BY: DATE 6/97	SCALE	JOB NO.	SHEET
DES BY: DATE 6/97	1" = 200' HORZ	0376	3 of 4
CHK BY: DATE 6/97	VERT		

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

S38

This Section Intentionally Left Blank

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

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

SRS43

The WLB Group Inc. WLB

COMPUTATION DATA SHEET

Subject WHITE TANK/AGUA FRIA ADMS Prepared by JSE Date 1-29-91

STAGE - STORAGE - DISCHARGE TABLE

SUBBASIN 556 Bridge just at Peoryville Road BWL 6' Depth .74 LC-3
SPER Bridge Invert 1074.5 Top of Rd 1078.9

ELEV. (FT)	AREA (AC)	VOLUME (AC-FT)	DISCHARGE (CFS)
896.5 Invert	0	0	0
	.22		
896	.3	.22	24
	18.58		
898	18.28	18.8	57
	22.87		
898.9 Weir Flow	32.54	41.67	67
	2.0256		
899.5	36.0	62.23	73 + 725 = 798
	20.5		
900	45.0	82.48	73 + 3000 = 3073

Weir Flow
$Q = CLH^{3/2}$

C = 2.6
L = 1200/2
H = .6

Q at 899.5 = 725 cfs

Q at 900 = 3000

L = 2000/2
H = 1.1

Form 209

BOX CULVERT ANALYSIS
COMPUTATION OF CULVERT PERFORMANCE CURVE
February 11, 1991

PROGRAM INPUT DATA:

DESCRIPTION	VALUE
Culvert Span (Width of Opening) (feet).....	6.00
Culvert Rise (Height of Opening) (feet).....	1.40
FHWA Chart Number (8,9,10,11,12 or 13).....	8
Scale Number on Chart (Type of Culvert Entrance).....	1
Manning`s Roughness Coefficient (n-value).....	0.0300
Entrance Loss Coefficient of Culvert Opening.....	0.50
Culvert Length (feet).....	30.0
Culvert Slope (feet per foot).....	0.0050

PROGRAM RESULTS:

Flow Rate (cfs)	Tailwater Depth (ft)	Headwater (ft) Inlet Control	Headwater (ft) Outlet Control	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
24.0	1.24	1.28	1.49	1.24	0.79	1.24	3.23
57.0	1.40	2.91	3.51	1.40	1.40	1.40	6.79
67.0	1.40	3.58	4.38	1.40	1.40	1.40	7.98
73.0	1.40	4.04	4.96	1.40	1.40	1.40	8.69

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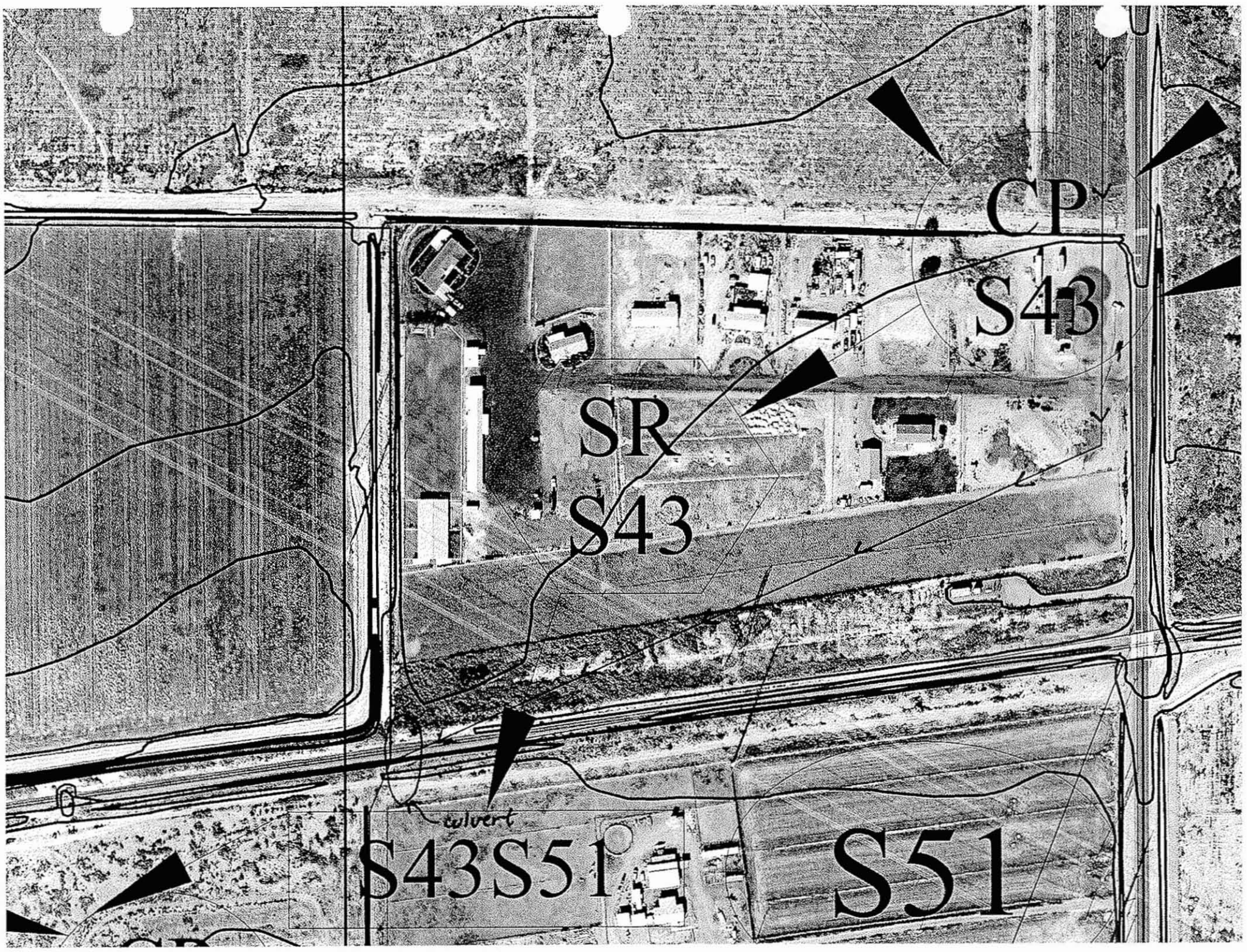
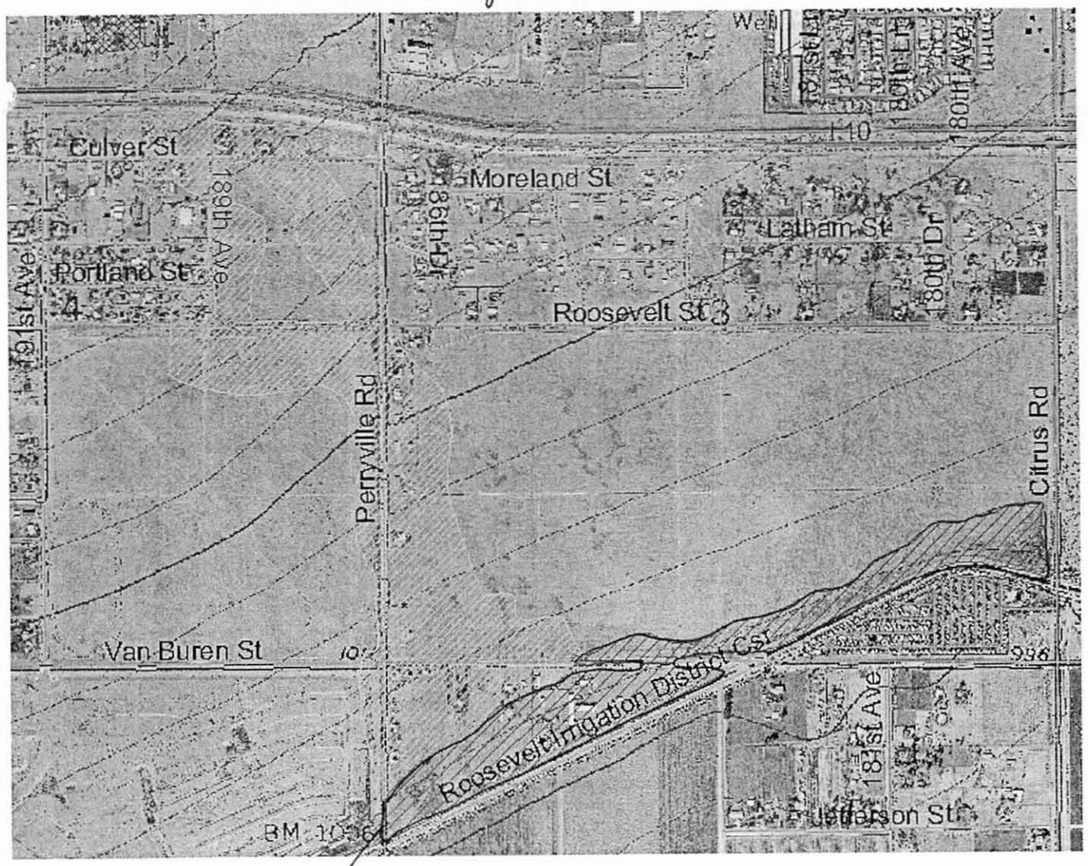

CP
S43
SR
S43
culvert
S43S51
S51

Storage @ 544



overtopping elevation = 1009.7 (2008 Topo)

see I-10 culvert wash FDS

Perryville Weir S44

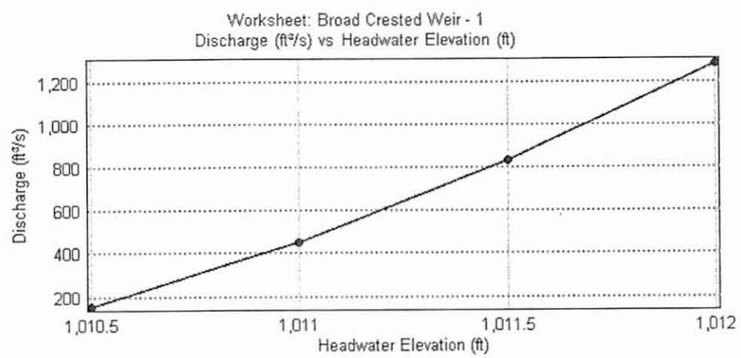
Project Description

Solve For	Discharge

Input Data

Headwater Elevation	1012.00	ft
Crest Elevation	1010.00	ft
Tailwater Elevation	1008.00	ft
Crest Surface Type	Paved	
Crest Breadth	30.00	ft
Crest Length	150.00	ft

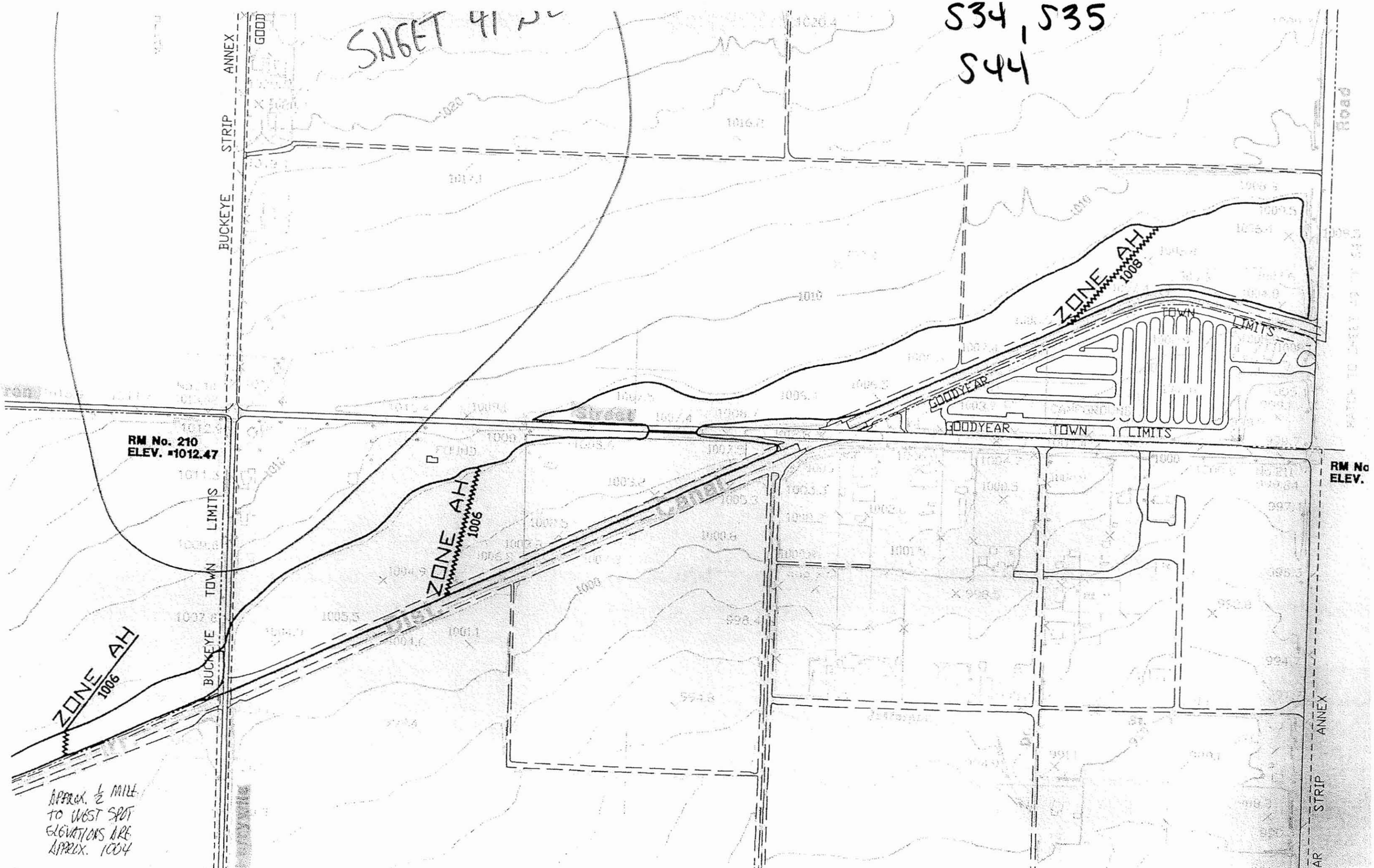
Rating Curve Plot



Stage	Storage	Discharge
1009	12.2	0
1010	42.3	0
1011	67.4	420
1012	241.4	1290

SHEET 41 of

S34, S35
S44



rec'd 2/11/09 From M. Duncan, FCDMC "I-10 Culvert Wash FDS"

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

South
Blue Horizons

RID @ Blue Horizons
(546)

SRS46

The WLB Group Inc. WLB

COMPUTATION DATA SHEET

Subject WHITE TANK/AGUA FRIA ADMS Prepared by JSE Date 1-29-91

STAGE - STORAGE - DISCHARGE TABLE

SUBBASIN 305

ELEV. (FT)	AREA (AC)	VOLUME (AC-FT)	DISCHARGE (CFS)
1001.5	0	0	0
	.32		
1002	1.28	.32	0
	4.2		
1003 x Weir Flow Across Canal	7.12	4.52	0
	10.54		
1004	13.96	15.06	845 cfs
	7.56		
1004.5	24.3	24.62	4777 cfs

Weir Flow
$Q = CLH^{3/2}$

C = 2.6
L = 650/2
H = 1.0

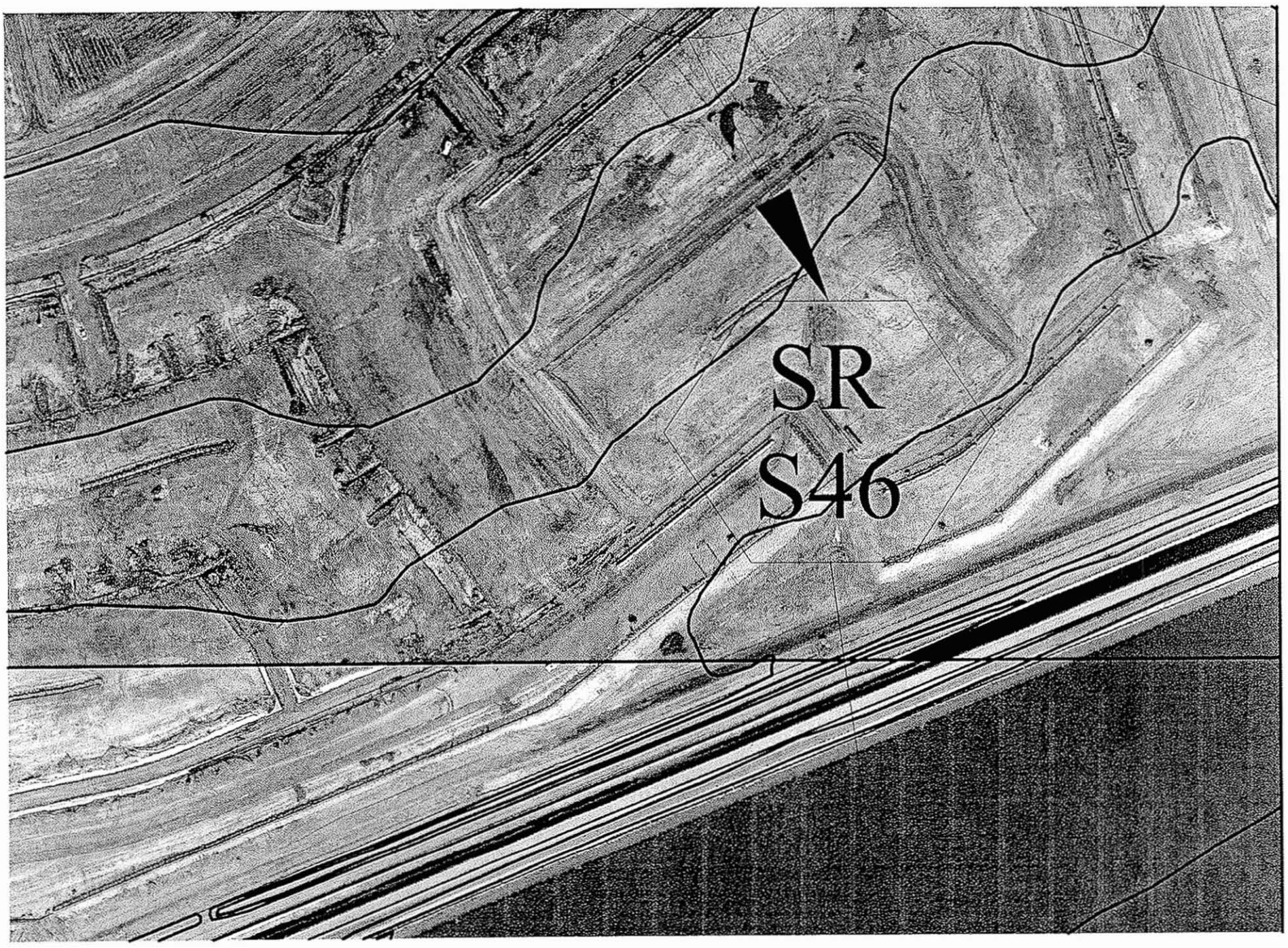
Q at 1004 = 845 cfs

C = 2.6
L = 2000/2
H = 1.5

Q at 1004.5 = 4777

Form 209

1"=200'



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

Job No.	79902	No.	

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Computed	AHM	Date	10/23/2008
Subject	Weir Flow Analysis	Checked		Date	3/10/09
Task	Weir Calculations	Sheet	1	Of	x

Location: Broadway & Jack Rabbit Trail (S48)

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	918.5	918	100	918.25	916.75	0	0.00	917.25	0	0.00	917.75	0	0.00	CHECK	918.25	0	0.00	DONE
south	918	917	90	917.5	916.75	0	0.00	917.25	0	0.00	917.75	0.25	33.75		918.25	0.75	175.37	
south	917	916.3	45	916.65	916.75	0.1	4.27	917.25	0.6	62.74	917.75	1.1	155.75		918.25	1.6	273.22	
southeast	916.3	916	30	916.15	916.75	0.6	41.83	917.25	1.1	103.83	917.75	1.6	182.15		918.25	2.1	273.89	
southeast	916	915.1	100	915.55	916.75	1.2	394.36	917.25	1.7	664.96	917.75	2.2	978.94		918.25	2.7	1330.97	
southeast	915.1	916	90	915.55	916.75	1.2	354.92	917.25	1.7	598.46	917.75	2.2	881.04		918.25	2.7	1197.87	
southeast	916	916.7	610	916.35	916.75	0.4	462.96	917.25	0.9	1562.48	917.75	1.4	3031.40		918.25	1.9	4792.71	
southeast	916.7	917	30	916.85	916.75	0	0.00	917.25	0.4	22.77	917.75	0.9	76.84		918.25	1.4	149.09	
southeast	917	918.5	20	917.75	916.75	0	0.00	917.25	0	0.00	917.75	0	0.00		918.25	0.5	21.21	
						TOTALS:	1258.34			3015.25			5339.87				8214.33	

Graph Computations:

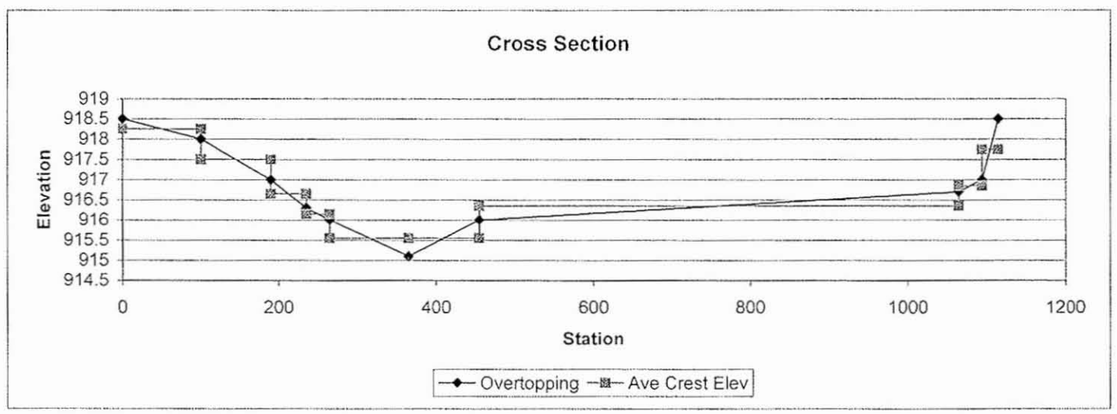
Station	Elevation
0	918.5
100	918
190	917
235	916.3
265	916
365	915.1
455	916
1065	916.7
1095	917
1115	918.5

Weir Approximation:

Station	Elevation
0	918.25
100	918.25
100	917.5
190	917.5
190	916.65
235	916.65
235	916.15
265	916.15
265	915.55
365	915.55
365	915.55
455	915.55
455	916.35
1065	916.35
1065	916.85
1095	916.85
1095	917.75
1115	917.75

Culvert Flows (cfs):

south	0
southeast	0
east	0



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	4.27	0%	Q(south)	62.74	2%	Q(south)	189.50	4%	Q(south)	448.59	5%
Q(southeast)	1254.07	100%	Q(southeast)	2952.50	98%	Q(southeast)	5150.37	96%	Q(southeast)	7765.73	95%
Q(east)	0.00	0%	Q(east)	0.00	0%	Q(east)	0.00	0%	Q(east)	0.00	0%
	1258.34			3015.25			5339.87			8214.33	

First DI	East to South			
Inflow	1258.34	3015.25	5339.87	8214.33
Outflow	4.27	62.74	189.50	448.59

Assumes diversion is to south

Second DI	East to Southeast			
Inflow	1254.07	2952.50	5150.37	7765.73
Outflow	1254.07	2952.50	5150.37	7765.73

Assumes diversion is to southeast

S57
S48
S49
S58
S50
Broadway Rd
Jackrabbit Tr
926
930
928
926
924
922
920
926
925
923.6
920.3
920.9
919
918
916.6
916.7
921.4
921.8
922.3
921.7
920.9
919.0
918.5
918.3
917
916.3
916
915.1
914
916.3
918
916.7
920
916.1
916.3
916
916
916
914
910
912
916
915.1
908
907.3
90'
200'
100'
90'
45'
30'
100'
90'
310'
300'
470'
N
1 inch equals 200 feet

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

S50

SRS50

The WLB Group Inc. WLB

COMPUTATION DATA SHEET

Subject WHITE TANK/AGUA FRIA ADMS Prepared by JSE Date 1-29-91

STAGE - STORAGE - DISCHARGE TABLE

SUBBASIN (354)
SPRR Dikes

1-48" x 32' HERCP Invert = 887.0' Top of RR = 896'
1550' East of Jackrabbit Trail
1820' West of Perryville Road BW-15 GS-0.1 LC-3'
Invert = 891.9' Top of RR = 896.4'

ELEV. (FT)	AREA (AC)	VOLUME (AC-FT)	DISCHARGE (CFS)
887.0 + Invert 48" x 32' HERCP	0	0	0
	.24		
891.9 + Invert Bridge	.1	0.24	74
	17.67		
895 + Weir Flow Over RR at Jackrabbit Road	11.30	17.91 109 + 143	252
	22.6		
896	33.90	40.51 116 + 179 + 1170 = 1465	

* Weir Flow
$Q = CLH^{3/2}$
C = 2.6
L = 450
H = 1.0

Qat 896 = 1170 cfs

Form 209

:NT DATE: 02-11-1991
CURRENT TIME: 13:34:17

FILE DATE: 01-23-1991
FILE NAME: WT2

FHWA CULVERT ANALYSIS
HY-8, VERSION 3.2

CULV	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	887.00	886.95	30.00	1 RCPE	4.08	2.67	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: WT2 DATE: 01-23-1991

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
887.00	0	0	0	0	0	0	0	0	1
893.83	100	100	0	0	0	0	0	0	1
895.39	400	113	0	0	0	0	0	286	7
895.54	600	114	0	0	0	0	0	480	4
895.67	800	116	0	0	0	0	0	681	4
895.79	1000	117	0	0	0	0	0	881	4
895.90	1200	117	0	0	0	0	0	1074	3
896.00	1400	116	0	0	0	0	0	1274	3
896.10	1600	114	0	0	0	0	0	1477	3
896.20	1800	112	0	0	0	0	0	1680	3
896.29	2000	109	0	0	0	0	0	1884	3
895.00	110	110	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: WT2 DATE: 01-23-1991

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
887.00	0.00	0	0	0.00
893.83	0.00	100	0	0.00
895.39	-0.00	400	1	0.26
895.54	-0.01	600	5	0.91
895.67	-0.01	800	4	0.47
895.79	-0.01	1000	2	0.25
895.90	-0.00	1200	9	0.75
896.00	-0.00	1400	10	0.72
896.10	-0.00	1600	9	0.58
896.20	-0.00	1800	8	0.45
896.29	-0.00	2000	7	0.34

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

C..NT DATE: 02-11-1991
ENT TIME: 13:34:17

FILE DATE: 01-23-1991
FILE NAME: WT2

CULVERT # 1

PERFORMANCE CURVE FOR 1 BARREL(S)

Q (cfs)	HWE (ft)	TWE (ft)	ICH (ft)	OCH (ft)	FLOW TYPE	CCE (ft)	FCE (ft)	TCE (ft)	VO (fps)
0	887.00	886.95	0.00	-0.05	0-NF	0.00	887.00	0.00	0.00
100	893.83	887.87	6.83	5.91	4-FF	0.00	0.00	0.00	11.36
113	895.27	889.04	8.27	6.88	4-FF	0.00	0.00	0.00	12.66
114	895.42	889.59	8.42	6.98	4-FF	0.00	0.00	0.00	12.80
116	895.54	890.07	8.54	7.51	4-FF	0.00	0.00	0.00	12.92
117	895.66	890.49	8.66	8.01	4-FF	0.00	0.00	0.00	13.03
117	895.74	890.88	8.74	8.45	4-FF	0.00	0.00	0.00	13.11
116	895.75	891.24	8.65	8.75	4-FF	0.00	0.00	0.00	13.22
114	895.89	891.57	8.36	8.89	4-FF	0.00	0.00	0.00	12.94
112	896.03	891.88	8.09	9.03	4-FF	0.00	0.00	0.00	12.67
109	896.16	892.18	7.83	9.16	4-FF	0.00	0.00	0.00	12.41

El. inlet face invert 887.00 ft El. outlet invert 886.95 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	887.00
OUTLET STATION (FT)	30.00
OUTLET ELEVATION (FT)	886.95
NUMBER OF BARRELS	1.00
SLOPE (V-FT/H-FT)	0.0017
CULVERT LENGTH ALONG SLOPE (FT)	30.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	ELLIPTICAL
BARREL SPAN	49.00 FT
BARREL RISE	32.00 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQ. EDGE WITH HEADWALL
INLET DEPRESSION	NONE

ENT DATE: 02-11-1991 FILE DATE: 01-23-1991
RENT TIME: 13:34:17 FILE NAME: WT2

TAILWATER

******* REGULAR CHANNEL CROSS SECTION **********

BOTTOM WIDTH (FT)	30.00
SIDE SLOPE H/V (X:1)	2.0
CHANNEL SLOPE V/H (FT/FT)	0.006
MANNING'S N (.01-0.1)	0.030
CHANNEL INVERT ELEVATION (FT)	886.95
CULVERT NO.1 OUTLET INVERT ELEVATION	886.95 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	VEL. (FPS)	SHEAR (PSF)
0.00	886.95	0.000	0.00	0.00
100.00	887.87	0.626	3.41	0.33
400.00	889.04	0.684	5.61	0.76
600.00	889.59	0.698	6.44	0.96
800.00	890.07	0.706	7.08	1.13
1000.00	890.49	0.713	7.61	1.28
1200.00	890.88	0.717	8.07	1.42
1400.00	891.24	0.721	8.47	1.55
1600.00	891.57	0.724	8.83	1.67
1800.00	891.88	0.726	9.15	1.79
2000.00	892.18	0.728	9.45	1.89

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	20.00
CREST LENGTH (FT)	450.00
OVERTOPPING CREST ELEVATION (FT)	895.00

BOX CULVERT ANALYSIS
COMPUTATION OF CULVERT PERFORMANCE CURVE
February 11, 1991

PROGRAM INPUT DATA:

DESCRIPTION	VALUE
Culvert Span (Width of Opening) (feet).....	15.00
Culvert Rise (Height of Opening) (feet).....	1.50
FHWA Chart Number (8,9,10,11,12 or 13).....	8
Scale Number on Chart (Type of Culvert Entrance).....	1
Manning`s Roughness Coefficient (n-value).....	0.0300
Entrance Loss Coefficient of Culvert Opening.....	0.50
Culvert Length (feet).....	30.0
Culvert Slope (feet per foot).....	0.0050

PROGRAM RESULTS:

Flow Rate (cfs)	Tailwater Depth (ft)	Headwater (ft) Inlet Control	Headwater (ft) Outlet Control	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
143.0	1.50	2.77	3.11	1.50	1.41	1.50	6.36
179.0	1.50	3.65	4.11	1.50	1.50	1.50	7.96

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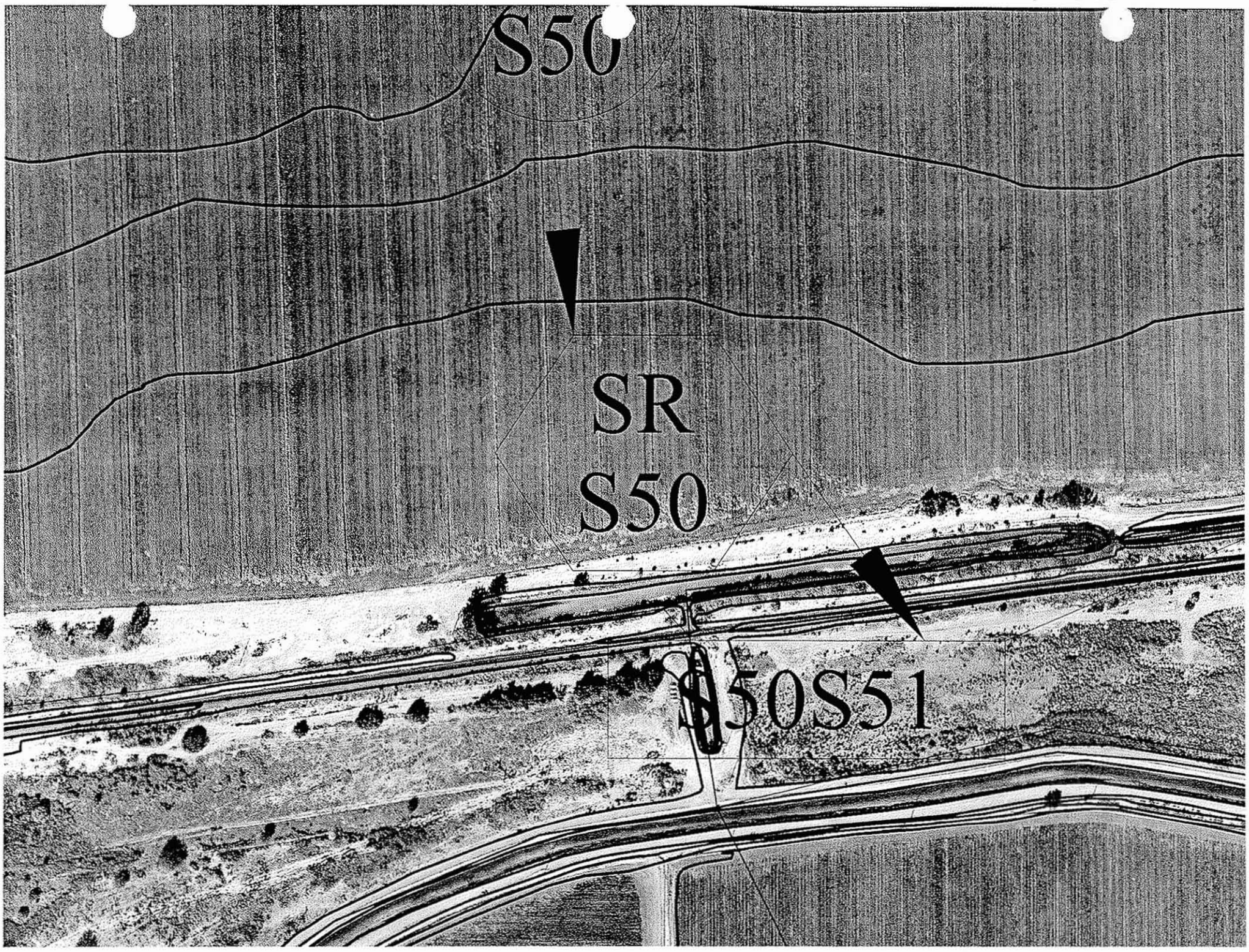
S50
SR
S50
S50S51

The WLB Group Inc. WLB

COMPUTATION DATA SHEET

Subject WHITE TANK/AGUA FRIA ADMS Prepared by JSE Date 1-29-91

STAGE - STORAGE - DISCHARGE TABLE

SUBBASIN 355

ELEV. (FT)	AREA (AC)	VOLUME (AC-FT)	DISCHARGE (CFS)
890.2	0	0	0
	3.80		
892	4.22	3.80	0
	57.62		
894	53.4	61.42	0
	27.18		
894.5 x-Weir Flow	55.33	88.6	0
	28.14		
895	57.26	116.74	1041 cfs
	29.82		
895.5	62.0	146.56	3120 cfs
	33		
899	70.0	179.56	5732 cfs

Q at 895 = 1041 cfs L = 2200/2 H = .5

Q at 895.5 = 3120 L = 2400/2 H = 1.0

Q at 899 = 5732 L = 2400/2 H = 1.5

Form 209

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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

S55

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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

S58

SRS58

The WLB Group Inc. WLB

COMPUTATION DATA SHEET

Subject WHITE TANK/AGUA FRIA ADMS Prepared by JSE Date 1-30-91

STAGE - STORAGE - DISCHARGE TABLE

Just West of Jackrabbit Rd. 10 cs 0:1 Height = 2' LC=2'

SUBBASIN (353) Invert = 894.4 Top RR Bed = 898.4

Bridge Under SPRR

ELEV. (FT)	AREA (AC)	VOLUME (AC-FT)	DISCHARGE (CFS)
894.4 x Invert	0	0	0
	.19		
898	.11	.19	138
	.35		
898.4 Weir Flow	1.63	.54	153
	2.80		
890	7.71	3.31 167+1315 =	1483
	4.43		
890.5	10.0	7.74 167+3165 =	3332
		Weir Flow	= 2.6
		Q = CLH 3/2	L = 500/2
			H = 1.6
		Q at 890 = 1315 cfs	
		Q at 890.5 = 3165	L = 500/2
			H = 2'

Form 209

BOX CULVERT ANALYSIS
COMPUTATION OF CULVERT PERFORMANCE CURVE
February 11, 1991

PROGRAM INPUT DATA:

DESCRIPTION	VALUE
Culvert Span (Width of Opening) (feet).....	10.00
Culvert Rise (Height of Opening) (feet).....	2.00
FHWA Chart Number (8,9,10,11,12 or 13).....	8
Scale Number on Chart (Type of Culvert Entrance).....	1
Manning's Roughness Coefficient (n-value).....	0.0300
Entrance Loss Coefficient of Culvert Opening.....	0.50
Culvert Length (feet).....	25.0
Culvert Slope (feet per foot).....	0.0050

PROGRAM RESULTS:

Flow Rate (cfs)	Tailwater Depth (ft)	Headwater (ft) Inlet Control	Headwater (ft) Outlet Control	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
138.0	2.00	3.45	3.60	2.00	1.81	2.00	6.90
153.0	2.00	3.87	3.99	2.00	1.94	2.00	7.65
167.0	2.00	4.30	4.40	2.00	2.00	2.00	8.35

BOX CULVERT ANALYSIS COMPUTER PROGRAM Version 1.4 Copyright (c) 1986
Dodson & Associates, Inc., 7015 W. Tidwell, #107, Houston, TX 77092
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The WLB Group Inc. WLB

COMPUTATION DATA SHEET

Subject WHITE TANK/AGUA FRIA ADMS Prepared by JSE Date 1-29-91

STAGE - STORAGE - DISCHARGE TABLE

SUBBASIN 352

ELEV. (FT)	AREA (AC)	VOLUME (AC-FT)	DISCHARGE (CFS)
889.9	0	0	0
	.08		
890	1.85	.08	0
	14.08		
891.7 x Weir Flow Across Canal	14.92	14.16	0
	4.83		
892	17.26	18.99	21
	45.87		
894	28.61	64.86	2267

Weir Flow
$Q = CLH^{3/2}$

C = 2.6
L = 50
H = .3

Qat 892 = 21 cfs

Qat 894 = 2267 cfs

L = 500/2
H = 2.3

Form 209

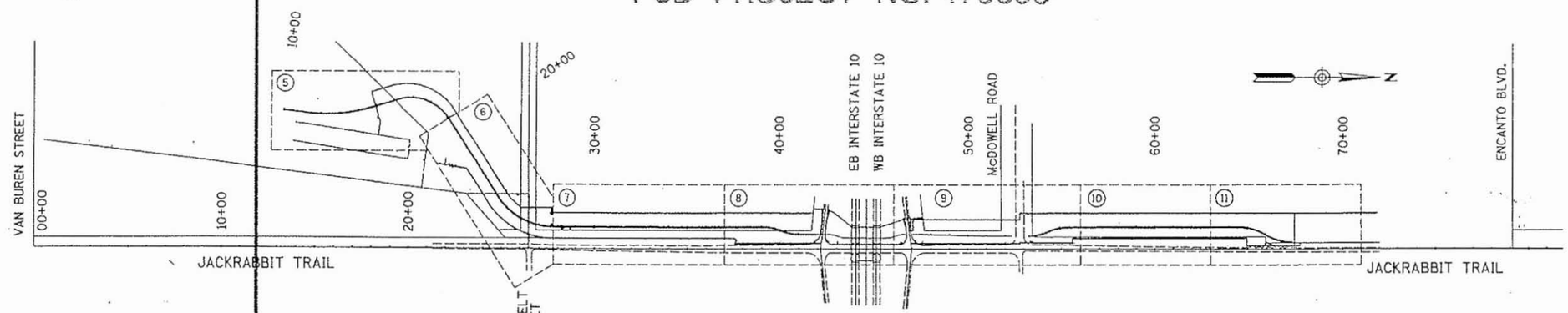
S60

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

PLANS FOR THE CONSTRUCTION OF:

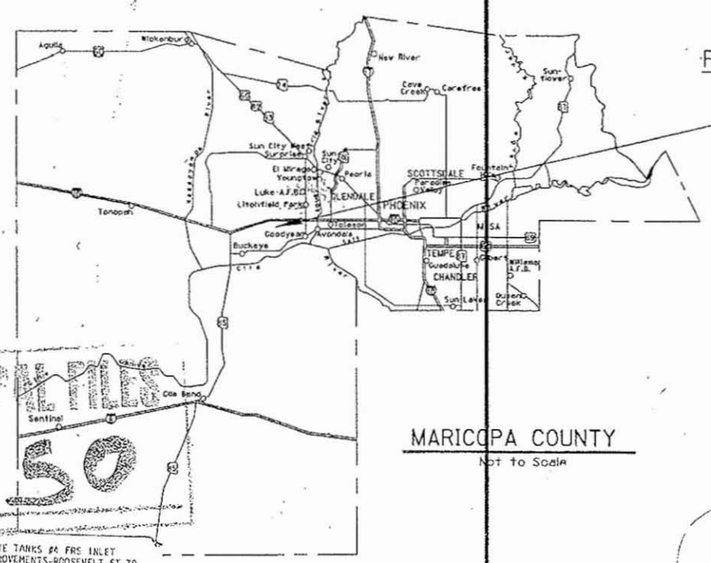
WHITE TANKS #4 FRS INLET IMPROVEMENTS - ROOSEVELT STREET TO McDOWELL ROAD

FCD CONTRACT NO. 94-09
FCD PROJECT NO. 470050



KEY MAP
Scale: 1"=300'
PLAN & PROFILE SHEETS

PROJECT NO. 94-09



MARICOPA COUNTY
Not to Scale

VICINITY MAP
Not to Scale

INDEX OF SHEETS

1	COVER
2	QUANTITY SUMMARY, NOTES
3-4	TYPICAL SECTIONS
5-11	CHANNEL PLAN & PROFILE
12-13	DROP STRUCTURE DETAILS
14	RETAINING WALL DETAILS
15-16	MISCELLANEOUS DETAILS
17	SOIL BORING LOGS

DIBBLE & ASSOCIATES
CONSULTING ENGINEERS
3625 NORTH 16TH STREET, PHOENIX, AZ 85016

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ISSUED FOR PUBLIC BIDDING BY:

DIRECTOR DATE

COUNTY BOARD OF SUPERVISORS

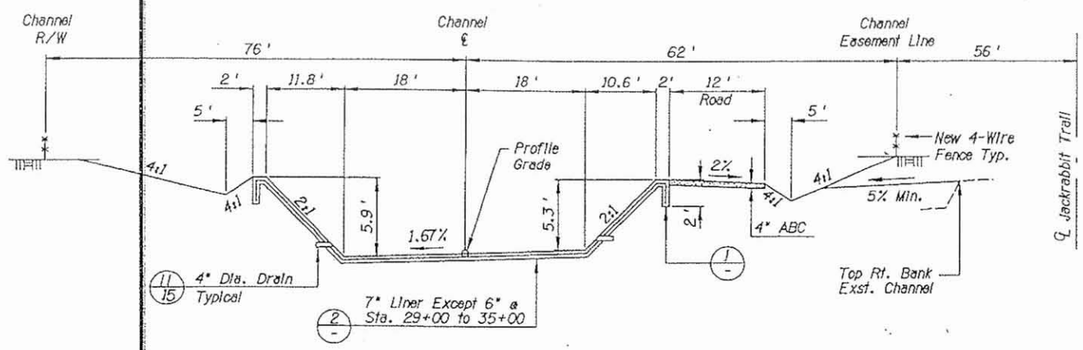
DON STAPLEY - CHAIRMAN

DISTRICT 1	FULTON BROCK
DISTRICT 2	DON STAPLEY
DISTRICT 3	ANDY KUNASEK
DISTRICT 4	JAN BREWER
DISTRICT 5	MARY ROSE WILCOX

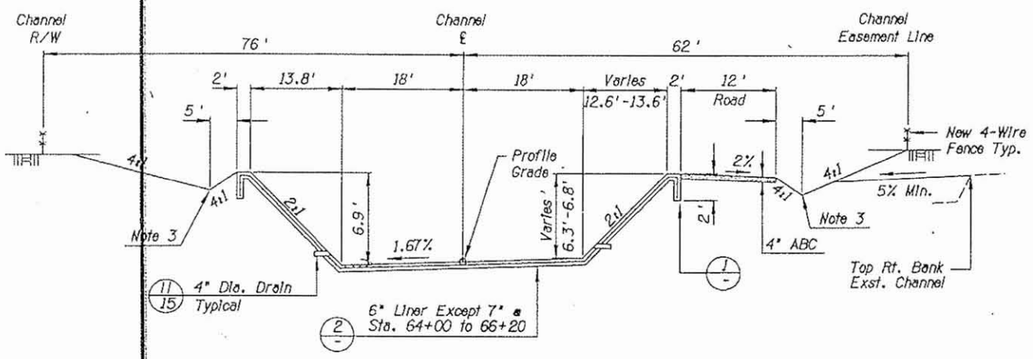
CENTRAL FILES
50

WHITE TANKS #4 FRS INLET IMPROVEMENTS-ROOSEVELT ST TO MCDOWELL RD CONSTRUCTION PLANS
FCD 94- 470

White Tanks #4FRS Inlet Improvements Roosevelt St. to Mcdowell Road
FCD 94-09 470
(Record Drawing) HSC

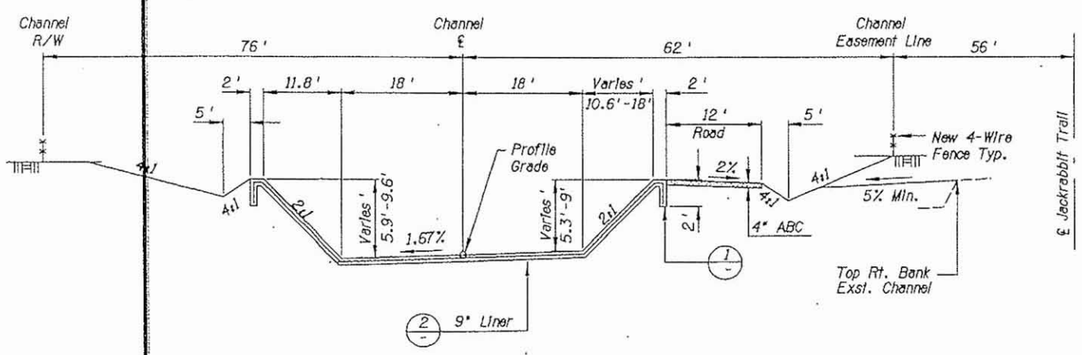


STA. 29+00 TO STA. 37+00
STA. 59+00 TO STA. 63+40



STA. 19+31.29 TO STA. 28+00
STA. 54+34.27 TO STA. 58+00

STA. 38+00 TO STA. 40+00
STA. 64+00 TO STA. 66+20.93

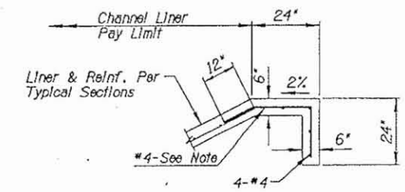


AT DROP STRUCTURES

TYPICAL SECTIONS
NTS

NOTES:

1. See concrete notes, Sheet 3
2. See plans for non-typical slopes and widths.
3. See plans for non-typical swale locations.

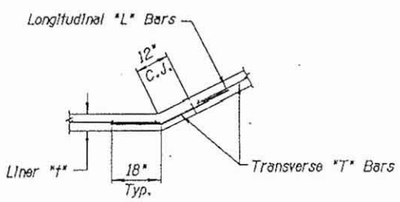


NOTE:
Match Transverse Bar Spacing of Bank Liner

1/- LONGITUDINAL CUTOFF WALL

LINER "t"	"L" BARS	"T" BARS
6"	#4@12"	#4@16"
7"	#4@9"	#5@16"
9"	#5@12"	#5@12"

NOTE: Schedule does not apply to Channel Sta. 47+37.89 to Sta. 50+92 See Section Sh.3.



2/- CHANNEL LINER REINFORCING

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY
ENGINEERING DIVISION

WHITE TANKS #4 FRS INLET IMPROVEMENTS
ROOSEVELT STREET TO McDOWELL ROAD
PROJECT NO. 94-09

	BY	DATE
DESIGNED	K. SNYDER	7-28-94
DRAWN	R. CARLSON	7-28-94
CHECKED	J. DOSS	7-28-94

DIBBLE & ASSOCIATES CONSULTING ENGINEERS 3625 N 16TH ST PHOENIX, AZ 85016

TYPICAL SECTIONS

SHEET 4 OF 17

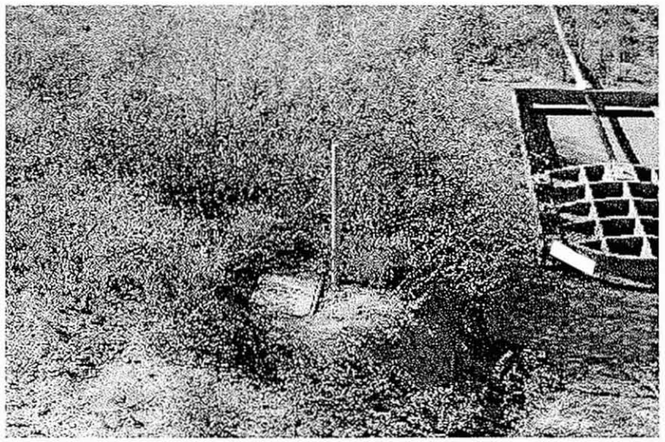
W3756D-S6D

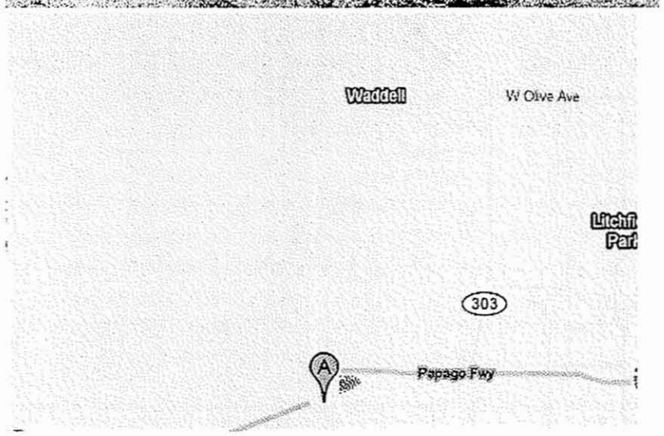
White Tanks #4 FRS - ID # 6823

Current at Gage | Station Description | Q Rating Curve | Vol Rating Curve | Q Rating Table | Vol Rating Table | Dambreak Data

Wednesday, February 18, 2009 :: 1:24:34 pm

Page Last Updated: January 8, 2009





View Larger Map

ID History | Site Data | Brief Rating | Water Year Peaks | Impound History | Staff Gages | Site Precip Data

Reload Page | Setup Parameters | ASWR | Streamflow Homepage | FCD Home Page

GAGE ID HISTORY

ID	Elevation of Instrument in Gage Height	Elevation of Instrument in Datum	Period
6823	0.00 feet	1,041.97 feet M.S.L.	08/10/1992 -- Current
1633	0.00 feet	1,041.97 feet M.S.L.	10/01/1987 -- 08/10/1992
0084	0.00 feet	1,041.97 feet M.S.L.	01/09/1986 -- 09/30/1987

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SITE DATA

LOCATION	Located south of I-10 and west of Jackrabbit Trail
DRAINAGE AREA	18.6 mi^2
STREAM TYPE	Dam of natural drainage
JURISDICTION	Buckeye, Arizona
WATERSHED	White Tanks B
SECTION/TOWNSHIP/RANGE	S05 T1N R2W
LATITUDE	N 33° 27' 02.3" | +33.4506
LONGITUDE	W 112° 29' 39.7" | -112.4944
ARIZONA STATE PLANE	E 523795 | N 891981
USGS QUAD SHEET	Perryville 7.5-Minute
STREAMGAGE INSTALLATION DATE	01/09/1986 - WY 1986
PERIOD OF AVAILABLE DATA RECORD	10/01/1987 - Current
LENGTH OF AVAILABLE DATA RECORD (AS OF 10/01/2008)	21.00 Years
GAPS (> 2 DAYS) IN RECORD	None
STAGE GAGE TYPE	Pressure Transducer
STAGE GAGE ELEVATION	0.00 feet Gage Height
STAFF GAGES	3
CREST STAGE GAGES	0
ZERO GAGE HEIGHT ELEVATION	1,041.97 feet M.S.L.
POINT OF ZERO FLOW	0.00 feet Gage Height
SPILLWAY ELEVATION	7.6 feet Gage Height
TOP OF DAM ELEVATION	14.0 feet Gage Height

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BRIEF RATING

Current Discharge Rating = #4 - Applied since 10/01/1996
Current Capacity Rating = #2 - Applied since 06/08/1994

Gage Height	Elevation	Discharge	Volume

(feet)	(feet M.S.L.)	(cfs)	(acre-feet)
0.0	1,041.97	0	573
1.0	1,042.97	70	627
2.0	1,043.97	76	689
3.0	1,044.97	87	760
4.0	1,045.97	95	840
5.0	1,046.97	104	934
7.6	1,049.57	123	1,214
8.0	1,049.97	166	1,263
10.0	1,051.97	2,444	1,524
12.0	1,053.97	7,600	1,787
13.2	1,055.17	No Data	1,944
14.0	1,055.97	No Data	No Data

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WATER YEAR PEAKS

Water Year	Peak Gage Height (feet)	Peak Volume (acre-feet)	Date of Peak
2010			
2009			
2008	None	0	None
2007	None	0	None
2006	None	0	None
2005	None	0	None
2004	None	0	None
2003	None	0	None
2002	None	0	None
2001	None	0	None
2000	None	0	None
1999	None	0	None
1998	None	0	None
1997	None	0	None
1996	None	0	None
1995	None	0	None
1994	None	0	None
1993	0.20	599	01/10/1993
1992	None	0	None
1991	0.35	610	01/30/1991
1990	0.75	644	08/15/1990
1989	None	0	None
1988	None	0	None

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IMPOUNDMENT EVENT HISTORY

Date of Peak	Time of Peak	Runoff Start	Runoff End	Duration (hours)	Peak Stage (feet GH)	Peak Volume (acre-feet)	Water Year
View a Graph of These Data							
01/10/1993	23:39	01/10/1993 20:48	01/14/1993 23:43	98.9	0.20	599	1993
01/30/1991	03:07	Data Unavailable	Data Unavailable		0.35	610	1991
08/15/1990	04:42	08/15/1990 03:30	08/15/1990 14:21	10.9	0.75	644	1990

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STAFF GAGES

Staff Gage Range	Staff Gage Information
0 - 5	At east outlet, subtract 4.22 for gage height
5 - 10	At east outlet, subtract 4.47 for gage height
10 - 15	At east outlet, subtract 4.67 for gage height

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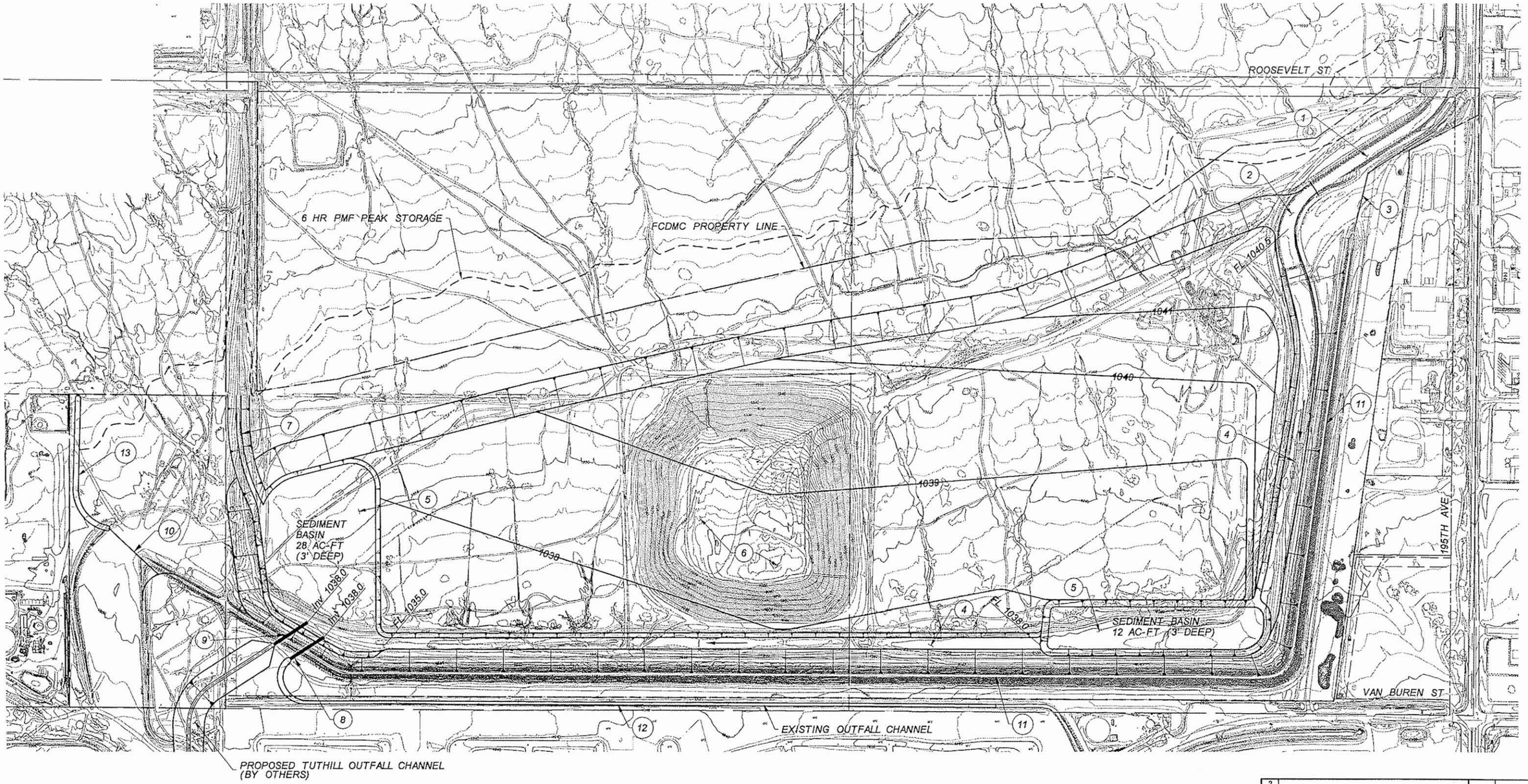
560

White Tanks FRS#4 Design Concept Elevation-Storage-Discharge Relationships

Stage	West P. Spillway	NRCS Riser	Adj. Vol Sediment	Infiltration	Emergency Spillway - Proposed Crest Elevation = 1054'			Total Discharge (SQ)			
(ft)	Q(cfs)	Q(cfs)	(ac-ft)	(cfs)	East	West	Total	(cfs)	(cfs)	(cfs)	(cfs)
MODEL	33" PS	48" PS	40 Ac-Ft	0.7"/Hour	(cfs)	(cfs)	(cfs)	FC10PSI0.DAT	FC10PS_F.DAT	FPMF6PIE.DAT	FPMF6PFE.DAT
	1	2	3	4			6	1+4+6	1+2+4+6	1+6	1+2+6
1037											
1038	**0.0**	**0.0**	**0.0**	**0.0**				**0.0**	**0.0**	**0.0**	**0.0**
1039	7.1	3.4		18.5				25.6	29.0	7.1	10.5
1040	17.7	9.6		20.3				38.0	47.6	17.7	27.3
1041	31.9	16.0		22.4				54.3	70.3	31.9	47.9
1042	**43.7**	**19.4**	**287.0**	**25.8**				**69.5**	**88.9**	**43.7**	**63.1**
1043	53.1	74.4		30.5				83.6	158.0	53.1	127.5
1044	61.0	201.8		35.3				96.3	298.1	61.0	262.8
1045	67.8	211.0		40.5				108.3	319.3	67.8	278.8
1046	73.8	219.7		46.3				120.1	339.8	73.8	293.5
1047	79.5	228.0		52.7				132.2	360.2	79.5	307.5
1048	84.5	236.0		59.5				144.0	380.0	84.5	320.5
1049	89.3	243.8		66.5				155.8	399.6	89.3	333.1
1050	93.6	251.3		73.6				167.2	418.5	93.6	344.9
1051	97.9	258.7		81.5				179.4	438.1	97.9	356.6
1052	101.8	265.9		89.1				190.9	456.8	101.8	367.7
1053	105.4	272.8		96.8				202.2	475.0	105.4	378.2
1054	**109.0**	**279.6**	**1600.0**	**105.6**	**0.0**	**0**	**0.0**	**214.6**	**494.2**	**109.0**	**388.6**
1055	112.7	286.3		114.4	742.0	924	1666.0	1893.1	2179.4	1778.7	2065.0
1056	**116.3**	**292.7**	**1934.0**	**122.9**	**2732.3**	**2693**	**5424.9**	**5664.1**	**5956.8**	**5541.2**	**5833.9**
1057	119.9	299.0		131.5	5965.2	5092	11057.4	11308.8	11607.8	11177.3	11476.3
1058	**123.5**	**305.2**	**2316.0**	**139.7**	**14000.0**	**8064**	**22064.0**	**22327.2**	**22632.4**	**22187.5**	**22492.7**
All Elevation at NAVD88											

Need to adjust infiltration for grading concept plan area. Existing should be conservative.

560



NOTES:

1. EXISTING CONCRETE INLET CHANNEL TO REMAIN
2. REGRADE EXISTING RIPRAP CHANNEL
3. RAISE EMERGENCY SPILLWAY CREST TO 1054.0
4. CONSTRUCT LOW FLOW CHANNEL
5. CONSTRUCT SEDIMENT BASIN (3' DEEP DEAD STORAGE)
6. FILL EXISTING BARROW PIT
7. REGRADE CHANNEL OUTLET INTO SEDIMENT BASIN
8. CONSTRUCT 33" INTERIM PRINCIPLE OUTLET & INTERIM OUTFALL CHANNEL
9. CONSTRUCT ULTIMATE NRCS RISER
10. RAISE EMERGENCY SPILLWAY CREST TO 1054.0 AND INCREASE BOTTOM WIDTH TO 320'
11. RAISE DAM ELEVATION TO 1059.0 (TYP)
12. REGRADE INTERIM OUTFALL CHANNEL
13. CONSTRUCT EARTHEN FILL, TOP = 1059.0

— — — — — — — — FUTURE DAM 6 HR PMF PEAK STAGE = 1057.7

N

100 0 100 200
Scale In Feet

NO.	REVISION	BY	DATE
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
ENGINEERING DIVISION

WHITE TANKS FRS NO.4 REHABILITATION
DNC 201.02.26
FCD NO 2004C019

PRELIMINARY NOT FOR CONSTRUCTION

	BY	DATE
DESIGNED	JGT	2/09
DRAWN	DBB	2/09
CHECKED	JRM	2/09

WOOD/PATEL & ASSOCIATES, INC.
(602) 335-8500
PHOENIX • MESA • TUCSON

DRAWING NO.

PROPOSED DESIGN

SHEET 1 OF 1

W:\2008 Projec. 33264.01 - White Tanks Flood Retarding Structure No. 4\Dwg\Exhibit\ProposedDesign.o

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

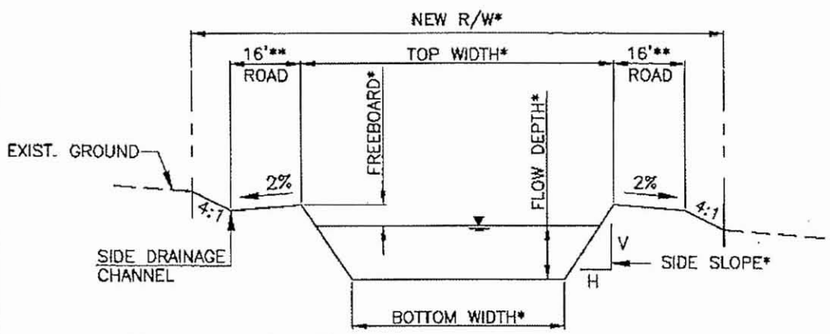
S64

BUCKEYE AREA DRAINAGE MASTER PLAN
F.C.D. CONTRACT NO. 2004C058
Conceptual Design Plans

Flood Control District of Maricopa County

LEGEND

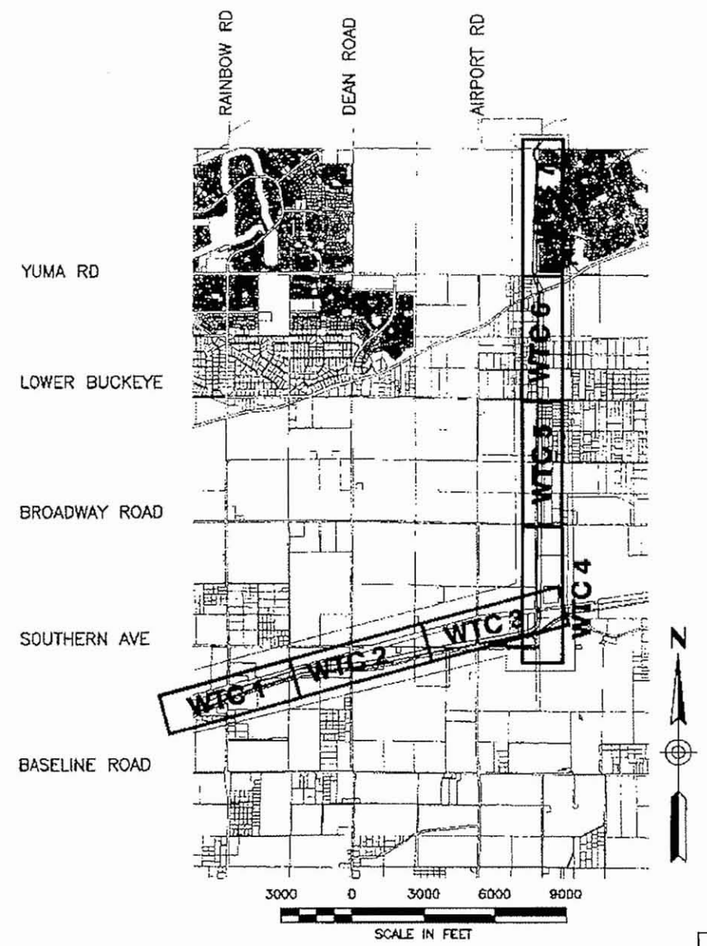
- XX-01 — CHANNEL REACH
- NEW CHANNEL
- NEW DETENTION BASIN SLOPE
- NEW DRAIN PIPE
- NEW CULVERT
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- EXISTING ROAD
- 1410 — EXIST. INDEX CONTOUR
- EXIST. INTERMEDIATE CONTOUR
- 15"S — EXISTING UTILITY
- EXISTING STRUCTURE
- 304 — ENVIRONMENTAL SITE



*DIMENSIONS PER PLANS

**NOT ALL LOCATIONS REQUIRE DUAL MAINTENANCE ROADS– SEE PLANS

TYPICAL CHANNEL SECTION
N.T.S.



KEY MAP

SHEET INDEX

WT 0	WHITE TANKS SYSTEM COVER SHEET
WTC G	WHITE TANKS SYSTEM GENERAL NOTES SHEET
WTC 1 TO WTC 7	WHITE TANKS SYSTEM PLAN & PROFILE SHEETS

FCD 2004C058	BUCKEYE AREA DRAINAGE MASTER PLAN	
WHITE TANKS SYSTEM		
Dibble Engineering	DRN. CDF DATE: 04/09 DES. JTB DATE: 04/09 CKD. DCF DATE: 04/09	SHEET WTC 0

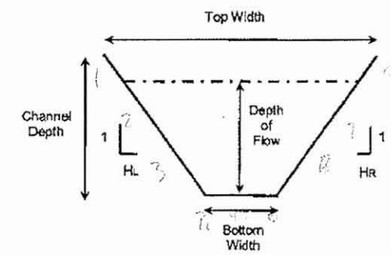
FILE:J:\2005\10-0807\CAD\COVR02-WT.dwg DATE:Apr. 29 2009 TIME: 12:02 pm

Buckeye Area Drainage Master Plan
White Tanks System

Channel Properties

Plan ID	HEC-1 I.D.	Design Q100 (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Design Invert Slope (ft./ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (HL)	Sideslope (H:1) Right (HR)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
WT-11	MCWT01	353	1001.8	1027.05	3278	0.0077	LE	0.045	13	2.7	7	7	86.1	51.2	0.55	Sub	4.1	1.0	3.7	65	131

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth, LLE = Light Lanscaped Earth



Typical Channel Section

Culvert Properties

I.D.	Design Q100 (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Number of Barrels	Culvert Span (ft.)	Culvert Dia./ Height (ft.)	Barrel/ Material	Manning's "n" Value	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D
WT-C10	353	110	1001.80	1001.69	0.0010	2	6	4	RCBC	0.012	Wingwall	4.28	5.65	0.67
WT-SD1	353	2,324	1,032.64	1,027.05	0.0024	2	8	4	RCBC	0.012	Wingwall	4.28	4.00	1.00

Utility Crossings

Plan ID	Plan	Sheet	ANPP	Ditch - Irrigation	Fiber Optic	Gas	Petroleum	Telephone	Sewer	Water	Total
WT-11	White Tanks	WTC 7	0	0	0	0	0	1	0	0	1

Landscape Notes:

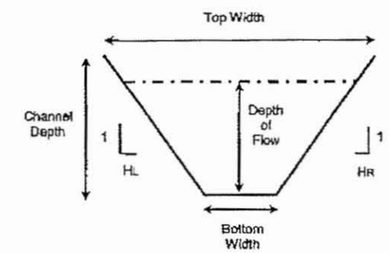
SC2564-S64

Buckeye Area Drainage Master Plan
White Tanks System

Channel Properties

Plan ID	HEC-1 I.D.	Design Q100 (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Design Invert Slope (ft./ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (HL)	Sideslope (H:1) Right (HR)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
WT-08	MCWT04	1452	963.97	973.62	1821	0.0053	LE	0.045	38	4.4	7	7	291.7	97.9	0.51	Sub	5.0	1.2	5.6	160	229
WT-09	MCWT03	1452	977.78	994.73	2523	0.0067	LE	0.045	34	4.2	7	7	266.9	93.7	0.57	Sub	5.4	1.2	5.3	165	236
WT-10	MCWT02	1317	998.17	1001.69	685	0.0051	LE	0.045	34	4.3	7	7	273.8	94.5	0.50	Sub	4.8	1.2	5.4	110	176

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth, LLE = Light Lanscaped Earth



Typical Channel Section

Culvert Properties

I.D.	Design Q100 (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Number of Barrels	Culvert Span (ft.)	Culvert Dia./ Height (ft.)	Barrel/ Material	Manning's "n" Value	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D
WT-C7	1452	110	960.65	960.54	0.0010	5	8	5	RCBC	0.012	Wingwall	3.64	5.59	0.88
WT-C8	1452	110	973.73	973.62	0.0010	4	8	4	RCBC	0.012	Wingwall	4.38	8.19	1.05
WT-C9	1317	111	998.17	994.73	0.0311	4	8	5	RCBC	0.012	Wingwall	4.19	6.02	0.86

Utility Crossings

Plan ID	Plan	Sheet	ANPP	Ditch - Irrigation	Fiber Optic	Gas	Petroleum	Telephone	Sewer	Water	Total
WT-08	White Tanks	WTC 6	0	0	0	0	0	0	0	0	0
WT-09	White Tanks	WTC 6	0	0	0	0	0	0	0	0	0
WT-10	White Tanks	WTC 6	0	0	0	0	0	0	1	0	1

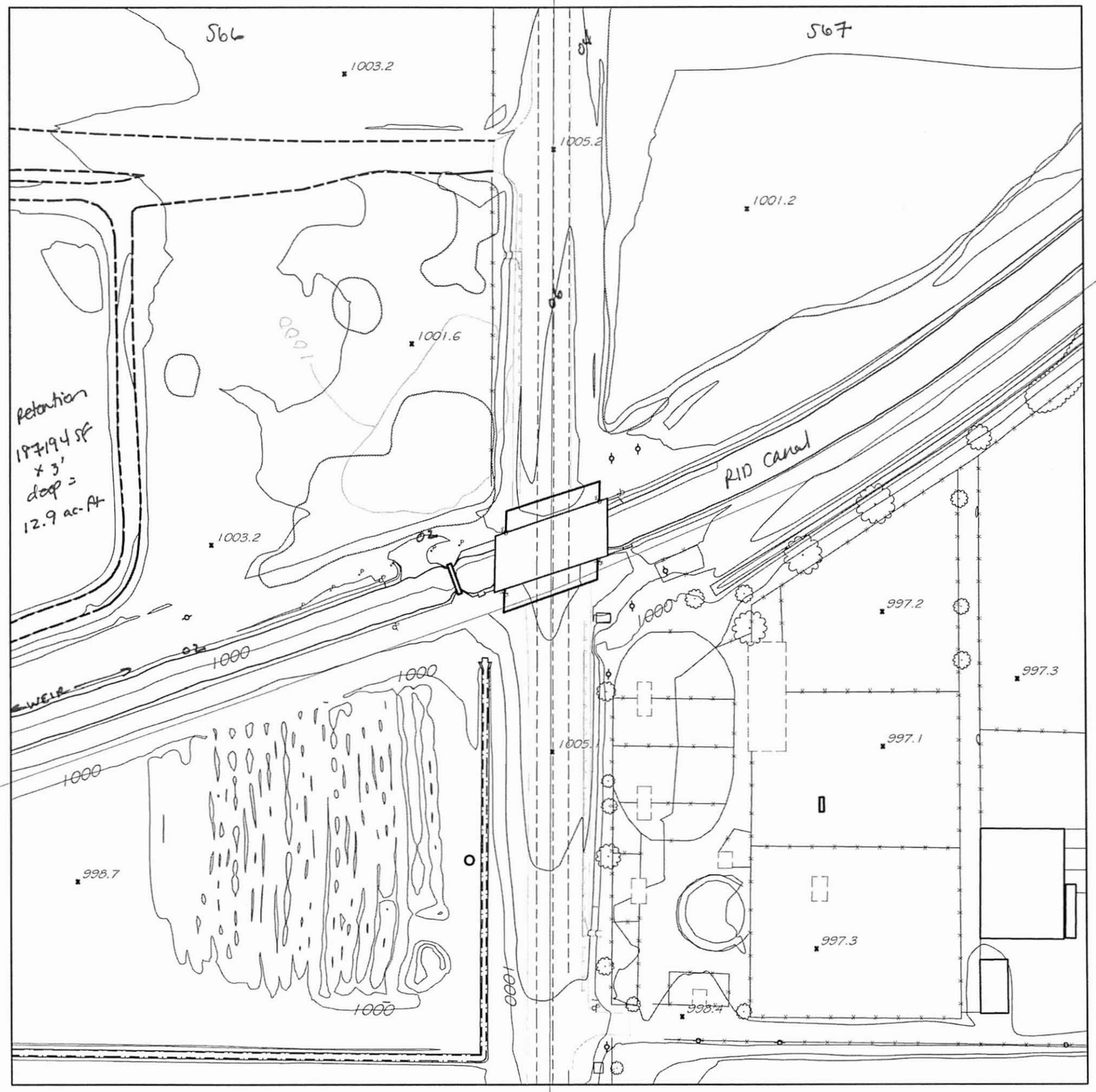
Landscape Notes:

S64S67 - S67
S64S68A - S68
S64S68B

This Section Intentionally Left Blank

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

S66



S66/S67
Boundary

Sundance
Retention =
63.0 ac-ft
(see drainage
rpts)

Storage: (NOT included
in retention)
= 26.5 ac ft @ 02
= 36.7 ac ft @ 03

C:\PW\ g:\PHX\dms68520\Linda_NewWorking.dwg, 2/20/2009 9:42:07 AM

S66 Weir at Canal

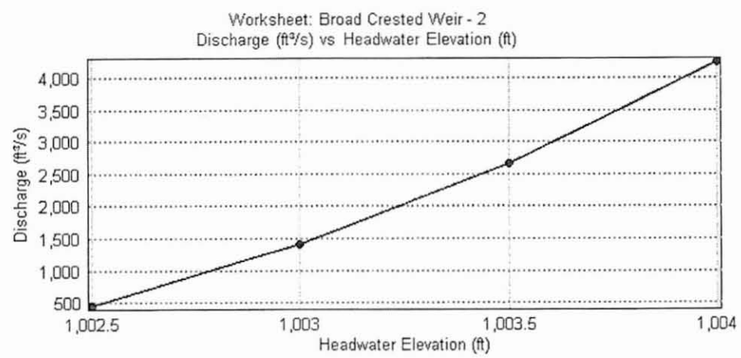
Project Description

Solve For	Discharge

Input Data

Headwater Elevation	1003.00	ft
Crest Elevation	1002.00	ft
Tailwater Elevation	1000.00	ft
Crest Surface Type	Gravel	
Crest Breadth	10.00	ft
Crest Length	500.00	ft

Rating Curve Plot



Stage	Storage	Discharge
1002	26.5	0
1003	36.7	1414
1003.5	50.0	2600

SR567

The WLB Group Inc. WLB

COMPUTATION DATA SHEET

Subject WHITE TANK/AGUA FRIA ADMS Prepared by JSE Date 1-29-91

STAGE - STORAGE - DISCHARGE TABLE

SUBBASIN 323

ELEV. (FT)	AREA (AC)	VOLUME (AC-FT)	DISCHARGE (CFS)
998.7	0	0	0
	.39		
1000	2.61	.39	0
	11.06		
1001.5 * Weir Flow Across Road & Canal	12.14	11.45	0
	2.81		
1001.8	15.96	14.26	64.64 128
	5.65		
1002.0	21.68	19.91	2114 + 230 = 2344

Weir Flow Across Canal C=2.6
L=300/2
H=3

Q at 1001.8 64 cfs
Q at 1002 = 2114
H=5 L=300

Weir Flow Across Road
C=2.6
L=500/2
H=.5

Q at 1002 = 230 cfs

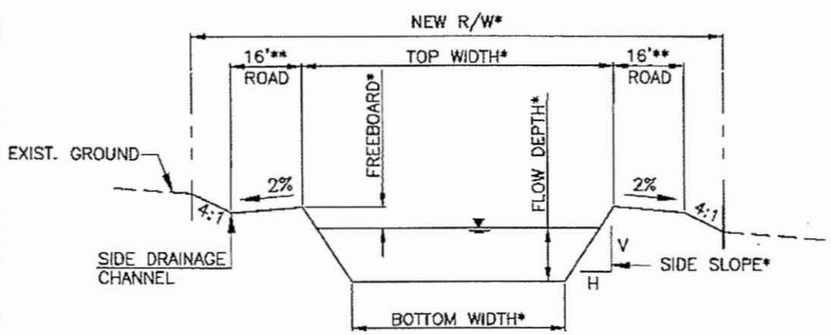
Form 209

BUCKEYE AREA DRAINAGE MASTER PLAN
F.C.D. CONTRACT NO. 2004C058
Conceptual Design Plans

Flood Control District of Maricopa County

LEGEND

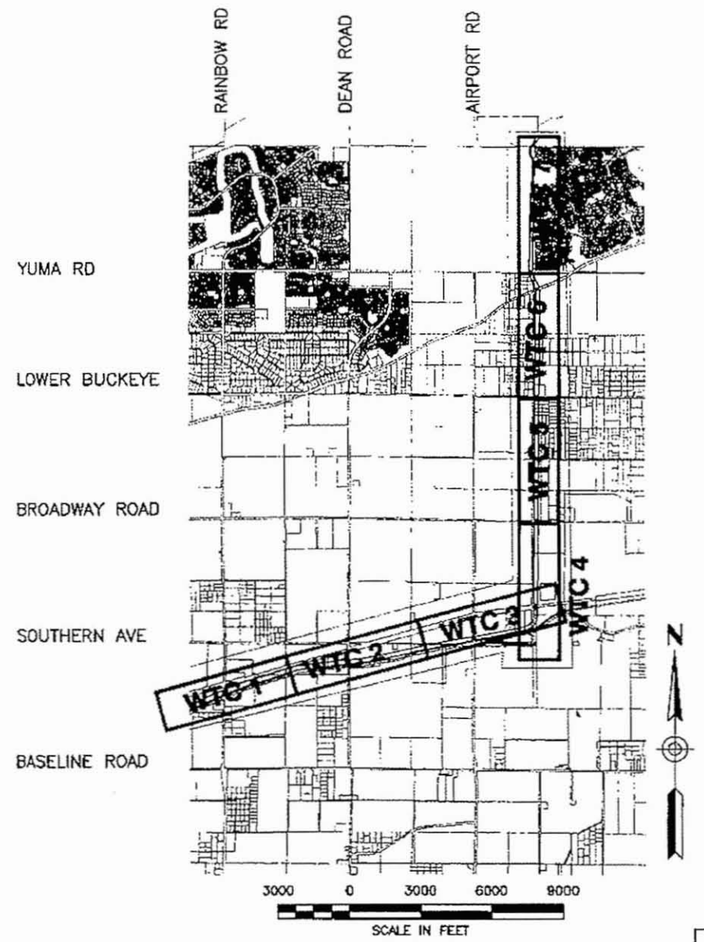
- XX–01 — CHANNEL REACH
- NEW CHANNEL
- NEW DETENTION BASIN SLOPE
- NEW DRAIN PIPE
- NEW CULVERT
- PROPERTY LINE
- RIGHT–OF–WAY LINE
- EXISTING ROAD
- 1410 — EXIST. INDEX CONTOUR
- EXIST. INTERMEDIATE CONTOUR
- 15"S — EXISTING UTILITY
- EXISTING STRUCTURE
- 304 — ENVIRONMENTAL SITE



*DIMENSIONS PER PLANS

**NOT ALL LOCATIONS REQUIRE DUAL MAINTENANCE ROADS– SEE PLANS

TYPICAL CHANNEL SECTION
N.T.S.



KEY MAP

SHEET INDEX

WT 0	WHITE TANKS SYSTEM COVER SHEET
WTC G	WHITE TANKS SYSTEM GENERAL NOTES SHEET
WTC 1 TO WTC 7	WHITE TANKS SYSTEM PLAN & PROFILE SHEETS

FCD 2004C058	BUCKEYE AREA DRAINAGE MASTER PLAN		
WHITE TANKS SYSTEM			
Dibble Engineering	DRN. CDF DATE: 04/09		SHEET WTC 0
	DES. JTB DATE: 04/09		
	CKD. DCF DATE: 04/09		

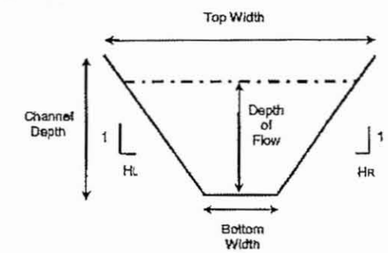
FILE:J:\2008\10-0807\CAD\COVR02-WT.dwg DATE:Apr. 29 2009 TIME: 12:02 pm

Buckeye Area Drainage Master Plan
White Tanks System

Channel Properties

Plan ID	HEC-1 I.D.	Design Q100 (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Design Invert Slope (ft./ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (HL)	Sideslope (H:1) Right (HR)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
WT-08	MCWT04	1452	963.97	973.62	1821	0.0053	LE	0.045	38	4.4	7	7	291.7	97.9	0.51	Sub	5.0	1.2	5.6	160	229
WT-09	MCWT03	1452	977.76	994.73	2523	0.0067	LE	0.045	34	4.2	7	7	266.9	93.7	0.57	Sub	5.4	1.2	5.3	165	236
WT-10	MCWT02	1317	998.17	1001.69	685	0.0051	LE	0.045	34	4.3	7	7	273.8	94.5	0.50	Sub	4.8	1.2	5.4	110	176

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth, LLE = Light Lanscaped Earth



Typical Channel Section

Culvert Properties

I.D.	Design Q100 (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Number of Barrels	Culvert Span (ft.)	Culvert Dia./ Height (ft.)	Barrel/ Material	Manning's "n" Value	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D
WT-C7	1452	110	960.65	960.54	0.0010	5	8	5	RCBC	0.012	Wingwall	3.64	6.59	0.88
WT-C8	1452	110	973.73	973.62	0.0010	4	8	4	RCBC	0.012	Wingwall	4.38	8.19	1.05
WT-C9	1317	111	998.17	994.73	0.0311	4	8	5	RCBC	0.012	Wingwall	4.19	6.02	0.86

Utility Crossings

Plan ID	Plan	Sheet	ANPP	Ditch - Irrigation	Fiber Optic	Gas	Petroleum	Telephone	Sewer	Water	Total
WT-08	White Tanks	WTC 6	0	0	0	0	0	0	0	0	0
WT-09	White Tanks	WTC 6	0	0	0	0	0	0	0	0	0
WT-10	White Tanks	WTC 6	0	0	0	0	0	0	1	0	1

Landscape Notes:

SEC 29 T1S R4W
SEC 29 T1S R4W
SEC 29 T1S R4W

BUCKEYE AREA DRAINAGE MASTER PLAN
F.C.D. CONTRACT NO. 2004C058
Conceptual Design Plans

Flood Control District of Maricopa County

LEGEND

- XX-01 — CHANNEL REACH
- NEW CHANNEL
- NEW DETENTION BASIN SLOPE
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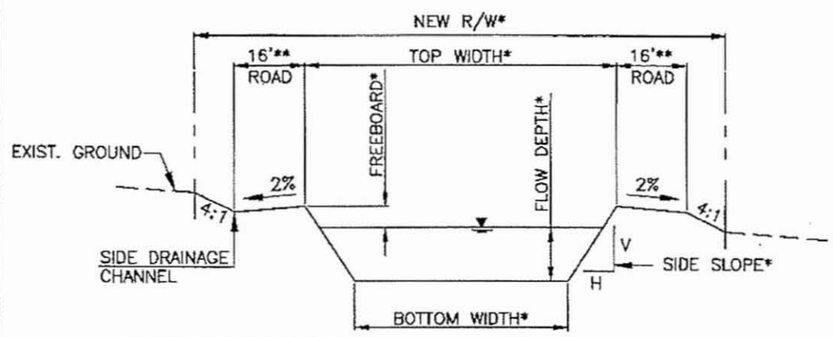
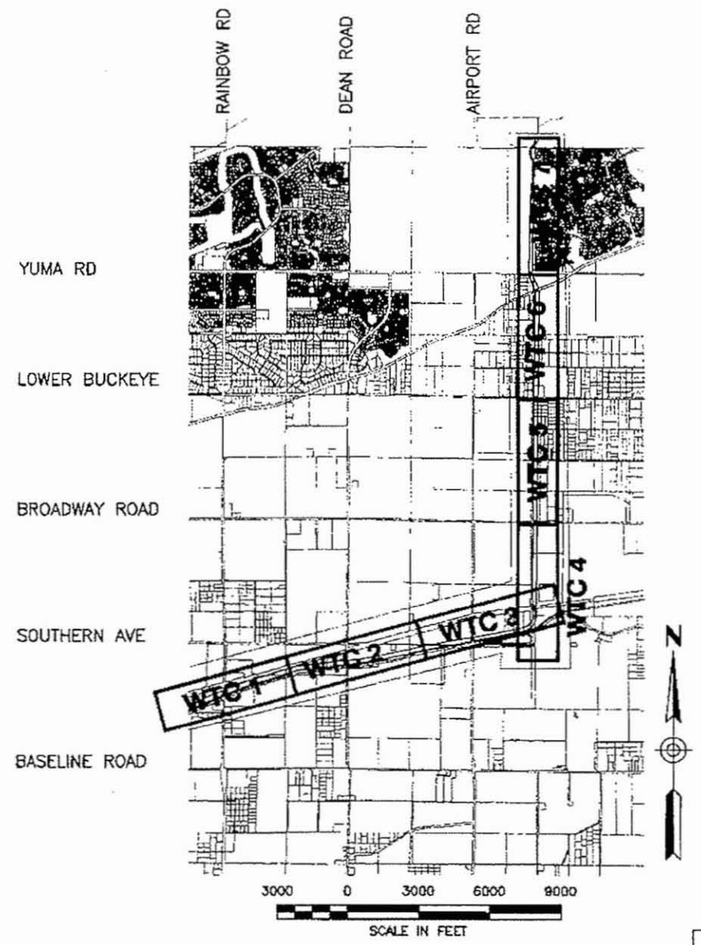
- 1410 — EXIST. INDEX CONTOUR
- EXIST. INTERMEDIATE CONTOUR
- 15"S — EXISTING UTILITY
- EXISTING STRUCTURE
- 304 — ENVIRONMENTAL SITE



*DIMENSIONS PER PLANS

**NOT ALL LOCATIONS REQUIRE DUAL MAINTENANCE ROADS– SEE PLANS

TYPICAL CHANNEL SECTION
N.T.S.



KEY MAP

SHEET INDEX

WT 0	WHITE TANKS SYSTEM COVER SHEET
WTC G	WHITE TANKS SYSTEM GENERAL NOTES SHEET
WTC 1 TO WTC 7	WHITE TANKS SYSTEM PLAN & PROFILE SHEETS

FCD 2004C058	BUCKEYE AREA DRAINAGE MASTER PLAN	
WHITE TANKS SYSTEM		
Dibble Engineering	DRN. CDF DATE: 04/09 DES. JTB DATE: 04/09 CKD. DCF DATE: 04/09	SHEET WTC 0

FILE:J:\2008\10-0807\CAD\COVR02-WT.dwg DATE:Apr. 29 2009 TIME: 12:02 pm

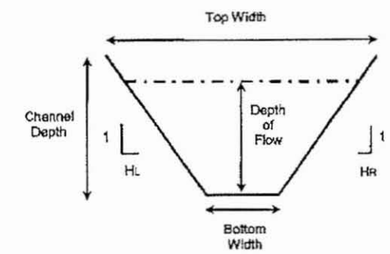
S64, S67, S68, S69, S70, S71, S18

Buckeye Area Drainage Master Plan
White Tanks System

Channel Properties

Plan ID	HEC-1 I.D.	Design Q100 (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Design Invert Slope (ft./ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (HL)	Sideslope (H:1) Right (HR)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
WT-06	MCWT06	898	921.62	943.28	2535	0.0085	LE	0.045	24	3.5	7	7	168.7	73.3	0.62	Sub	5.3	1.0	4.5	87	153
WT-07	MCWT05	898	943.39	960.54	2535	0.0068	LE	0.045	25	3.6	7	7	184.2	76.6	0.55	Sub	4.9	1.0	4.6	90	156

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth, LLE = Light Lanscaped Earth



Typical Channel Section

Culvert Properties

I.D.	Design Q100 (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Number of Barrels	Culvert Span (ft.)	Culvert Dia./ Height (ft.)	Barrel Material	Manning's "n" Value	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D
WT-C5	898	110	921.62	921.51	0.0010	3	8	4	RCBC	0.012	Wingwall	3.41	6.60	0.87
WT-C6	898	110	943.39	943.28	0.0010	3	8	4	RCBC	0.012	Wingwall	3.49	6.60	0.91

Utility Crossings

Plan ID	Plan	Sheet	ANPP	Ditch - Irrigation	Fiber Optic	Gas	Petroleum	Telephone	Sewer	Water	Total
WT-06	White Tanks	WTC 5	0	0	0	0	0	0	0	0	0
WT-07	White Tanks	WTC 5	0	1	1	0	0	1	0	0	3

Landscape Notes:

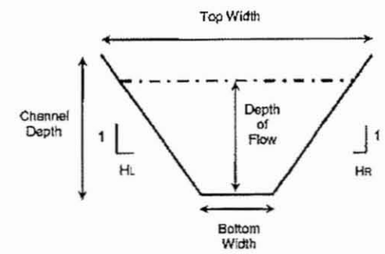
56869A-569
56869B

Buckeye Area Drainage Master Plan
White Tanks System

Channel Properties

Plan ID	HEC-1 I.D.	Design Q100 (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Design Invert Slope (ft./ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (HL)	Sideslope (H:1) Right (HR)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
WT-06	MCWT06	898	921.62	943.28	2535	0.0085	LE	0.045	24	3.5	7	7	168.7	73.3	0.62	Sub	5.3	1.0	4.5	87	153
WT-07	MCWT05	898	943.39	960.54	2535	0.0068	LE	0.045	25	3.6	7	7	184.2	76.6	0.55	Sub	4.9	1.0	4.6	90	156

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth, LLE = Light Lanscaped Earth



Typical Channel Section

Culvert Properties

I.D.	Design Q100 (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Number of Barrels	Culvert Span (ft.)	Culvert Dia./ Height (ft.)	Barrel Material	Manning's "n" Value	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D
WT-C5	898	110	921.62	921.51	0.0010	3	8	4	RCBC	0.012	Wingwall	3.41	6.60	0.87
WT-C6	898	110	943.39	943.28	0.0010	3	8	4	RCBC	0.012	Wingwall	3.49	6.60	0.91

Utility Crossings

Plan ID	Plan	Sheet	ANPP	Ditch - Irrigation	Fiber Optic	Gas	Petroleum	Telephone	Sewer	Water	Total
WT-06	White Tanks	WTC 5	0	0	0	0	0	0	0	0	0
WT-07	White Tanks	WTC 5	0	1	1	0	0	1	0	0	3

Landscape Notes:

S6869A-S6869B

BUCKEYE AREA DRAINAGE MASTER PLAN

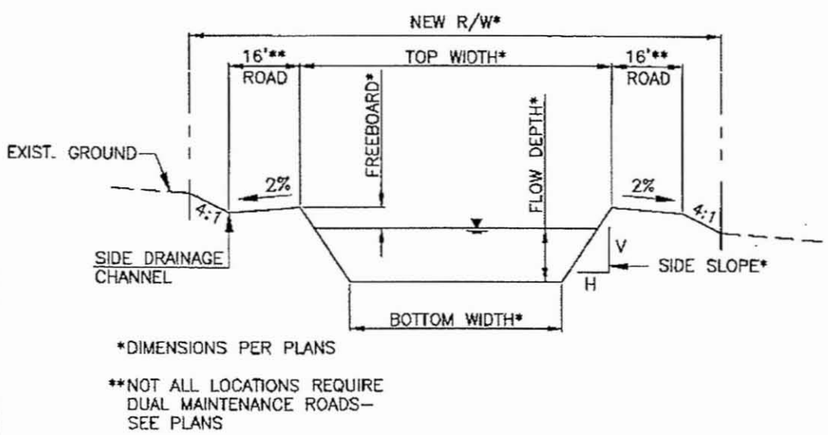
F.C.D. CONTRACT NO. 2004C058

Conceptual Design Plans

Flood Control District of Maricopa County

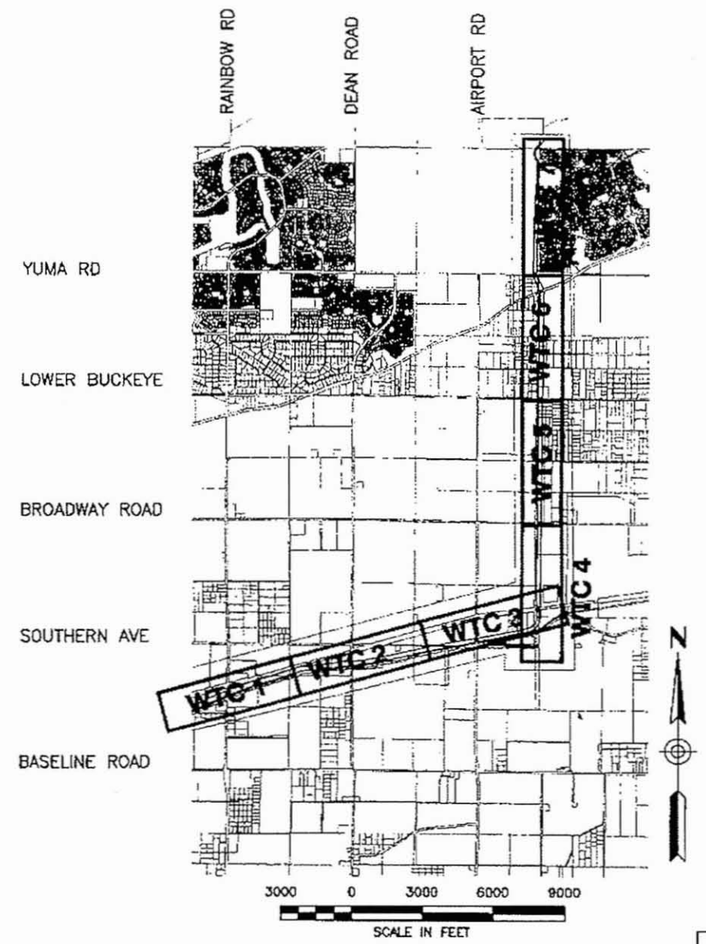
LEGEND

- XX-01 — CHANNEL REACH
- NEW CHANNEL
- NEW DETENTION BASIN SLOPE
- NEW DRAIN PIPE
- NEW CULVERT
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- EXISTING ROAD
- 1410 — EXIST. INDEX CONTOUR
- EXIST. INTERMEDIATE CONTOUR
- 15"S — EXISTING UTILITY
- EXISTING STRUCTURE
- 304 — ENVIRONMENTAL SITE



TYPICAL CHANNEL SECTION

N.T.S.



KEY MAP

SHEET INDEX

WT 0	WHITE TANKS SYSTEM COVER SHEET
WTC G	WHITE TANKS SYSTEM GENERAL NOTES SHEET
WTC 1 TO WTC 7	WHITE TANKS SYSTEM PLAN & PROFILE SHEETS

FCD 2004C058	BUCKEYE AREA DRAINAGE MASTER PLAN	
WHITE TANKS SYSTEM		
Dibble Engineering	DWN. CDF DATE: 04/09 DES. JTB DATE: 04/09 CKD. DCF DATE: 04/09	SHEET WTC 0

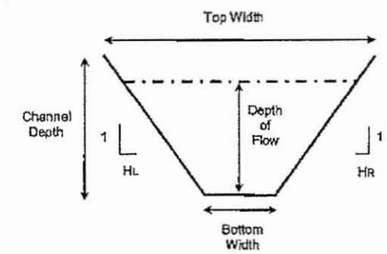
FILE:J:\2004\10-0807\CAD\COVR02-WT.dwg DATE:Apr. 29 2009 TIME: 12:02 pm

Buckeye Area Drainage Master Plan
White Tanks System

Channel Properties

Plan ID	HEC-1 I.D.	Design Q100 (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Design Invert Slope (ft./ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (HL)	Sideslope (H:1) Right (HR)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
WT-05	MCWT07	781	894.46	921.51	3458	0.0078	LE	0.045	22	3.4	7	7	156.7	70.4	0.59	Sub	5.0	1.0	4.4	122	188

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth, LLE = Light Lanscaped Earth



Typical Channel Section

Culvert Properties

I.D.	Design Q100 (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Number of Barrels	Culvert Span (ft.)	Culvert Dia./ Height (ft.)	Barrel/ Material	Manning's "n" Value	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D
WT-C4	781	202	891.76	891.66	0.0005	3	8	4	RCBC	0.012	Wingwall	4.02	5.95	0.85

Utility Crossings

Plan ID	Plan	Sheet	ANPP	Ditch - Irrigation	Fiber Optic	Gas	Petroleum	Telephone	Sewer	Water	Total
WT-05	White Tanks	WTC 4	0	0	0	0	0	1	0	0	1

Landscape Notes:

SG9S70-S70

BUCKEYE AREA DRAINAGE MASTER PLAN
F.C.D. CONTRACT NO. 2004C058
Conceptual Design Plans

Flood Control District of Maricopa County

S64, S67, S68, S69, S70, S71, S78

LEGEND

- XX–01 — CHANNEL REACH
- NEW CHANNEL
- NEW DETENTION BASIN SLOPE
- NEW DRAIN PIPE
- NEW CULVERT
- PROPERTY LINE
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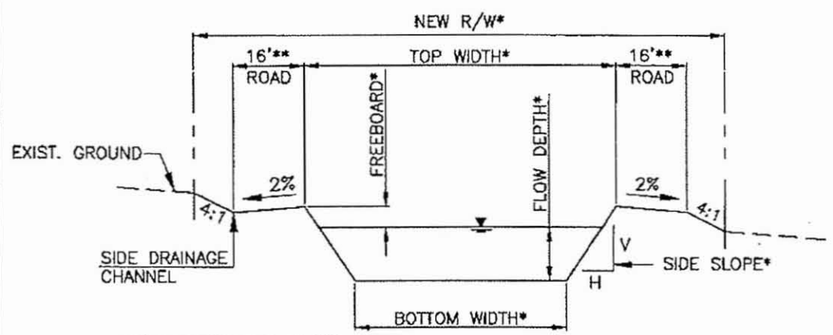
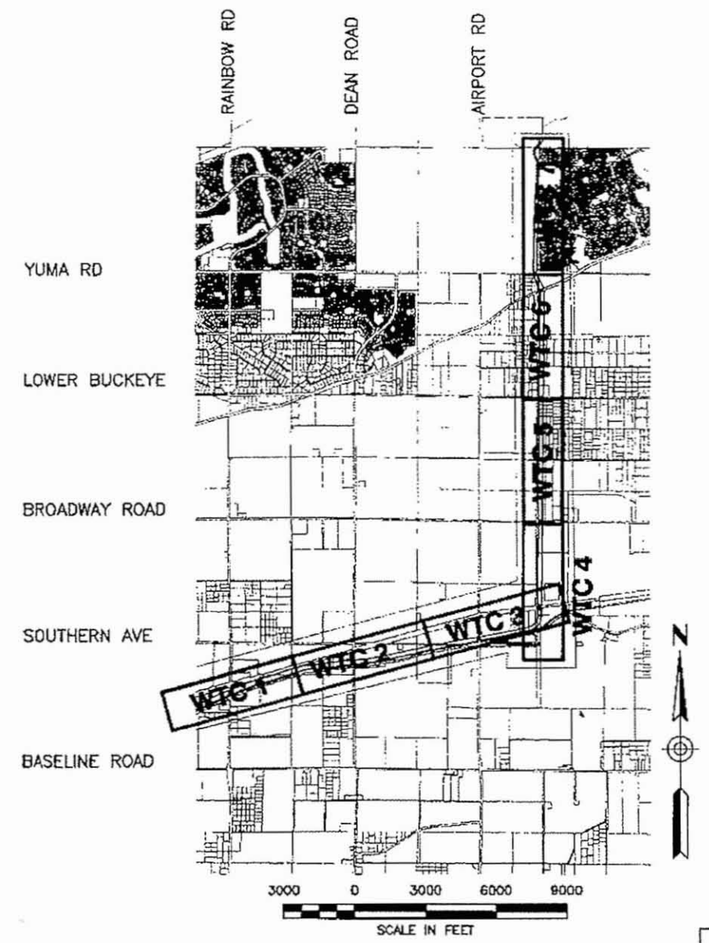
- EXIST. INTERMEDIATE CONTOUR
- 15"S — EXISTING UTILITY
- EXISTING STRUCTURE
- 304 — ENVIRONMENTAL SITE



*DIMENSIONS PER PLANS

**NOT ALL LOCATIONS REQUIRE DUAL MAINTENANCE ROADS– SEE PLANS

TYPICAL CHANNEL SECTION
N.T.S.



KEY MAP

SHEET INDEX

WT 0	WHITE TANKS SYSTEM COVER SHEET
WTC G	WHITE TANKS SYSTEM GENERAL NOTES SHEET
WTC 1 TO WTC 7	WHITE TANKS SYSTEM PLAN & PROFILE SHEETS

FCD 2004C058	BUCKEYE AREA DRAINAGE MASTER PLAN	
WHITE TANKS SYSTEM		
Dibble Engineering	DRN. CDF DATE: 04/09 DES. JTB DATE: 04/09 CKD. DCF DATE: 04/09	SHEET WTC 0

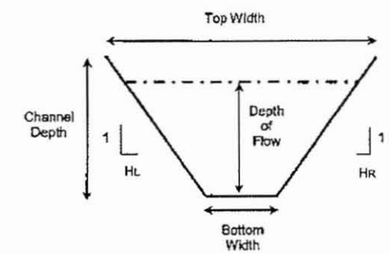
FILE:J:\2008\10-060\CAD\COVR02-WT.dwg DATE:Apr. 29 2009 TIME: 12:02 pm

Buckeye Area Drainage Master Plan
White Tanks System

Channel Properties

Plan ID	HEC-1 I.D.	Design Q100 (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Design Invert Slope (ft./ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (HL)	Sideslope (H:1) Right (HR)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
WT-03	MCWT09	949	885.06	887.7	5278	0.0005	LLE	0.030	36	5.2	7	7	376.4	109.6	0.24	Sub	2.5	1.3	6.5	127	177
WT-04	MCWT08	704	887.75	891.66	3193	0.0012	LLE	0.030	25	4.0	7	7	214.2	82.0	0.36	Sub	3.3	1.0	5.1	96	146

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth, LLE = Light Lanscaped Earth



Typical Channel Section

Culvert Properties

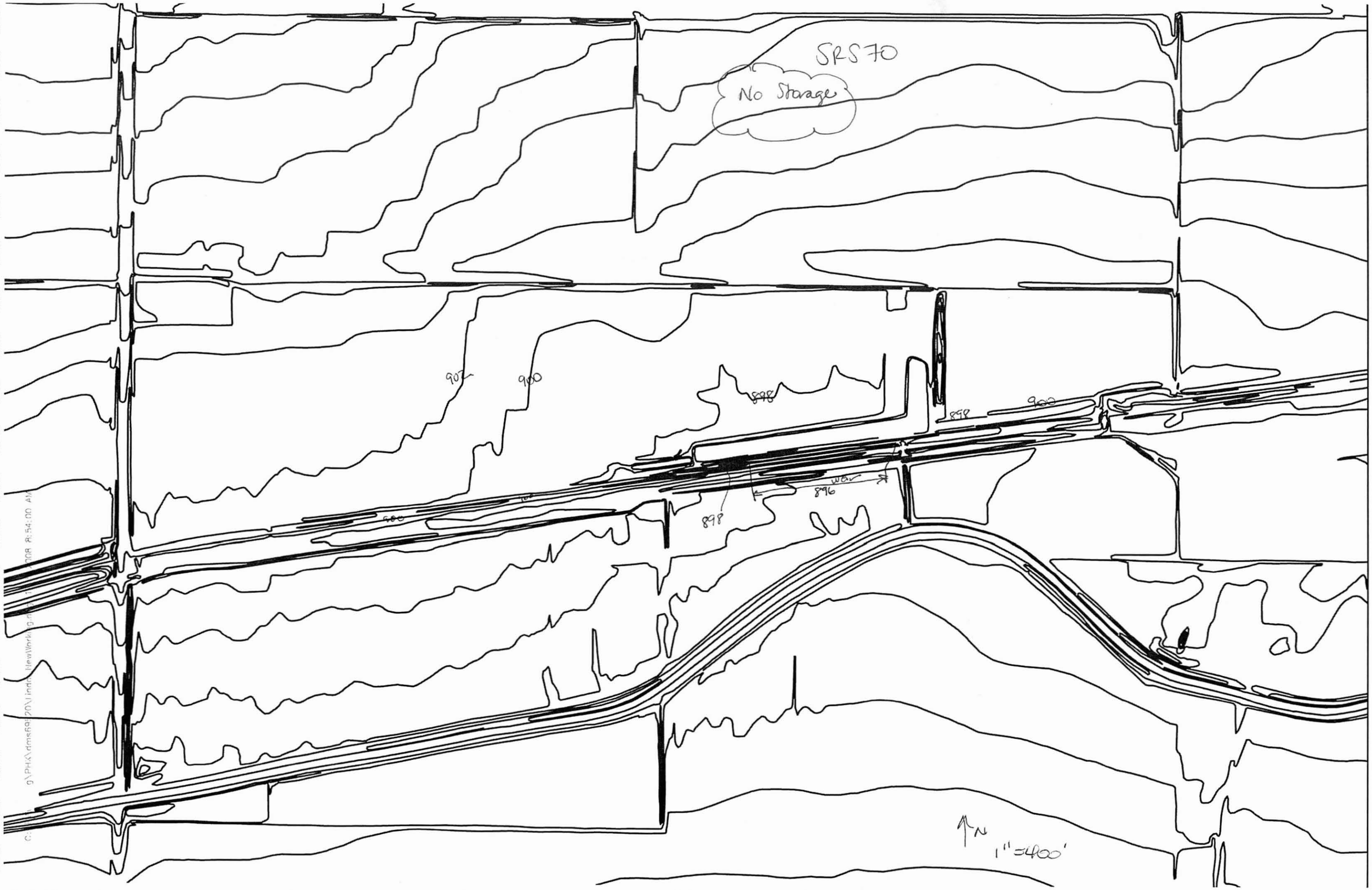
I.D.	Design Q100 (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Number of Barrels	Culvert Span (ft.)	Culvert Dia./ Height (ft.)	Barrel/ Material	Manning's "n" Value	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D
WT-C3	704	112	887.75	887.70	0.0004	3	8	4	RCBC	0.012	Wingwall	5.18	6.57	1.00

Utility Crossings

Plan ID	Plan	Sheet	ANPP	Ditch - Irrigation	Fiber Optic	Gas	Petroleum	Telephone	Sewer	Water	Total
WT-03	White Tanks	WTC 3	0	0	0	0	0	0	0	0	0
WT-04	White Tanks	WTC 3	0	0	1	0	2	0	0	0	3

Landscape Notes:

ILS-ILSOLS
ILS18-S18


SRS70
No Storage
905
900
898
900
898
900
900
898
896
N
1"=400'

RECOMMENDED PLAN

BUCKEYE AREA DRAINAGE MASTER PLAN

FLOOD CHANNEL CONVEYANCE

TOTAL RECOMMENDED ROW
- 125' - 200'
- 200' - 250'
- 250' - 350'

DETENTION BASINS

BUCKEYE ADMP BOUNDARY

FEMA FLOODPLAINS
- Approximate
- Flood Fringe
- Floodway

0 0.5 1 2 Miles

October 20, 2008

2801 West Durango Street, Phoenix, Arizona 85009 602.506.1501

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						

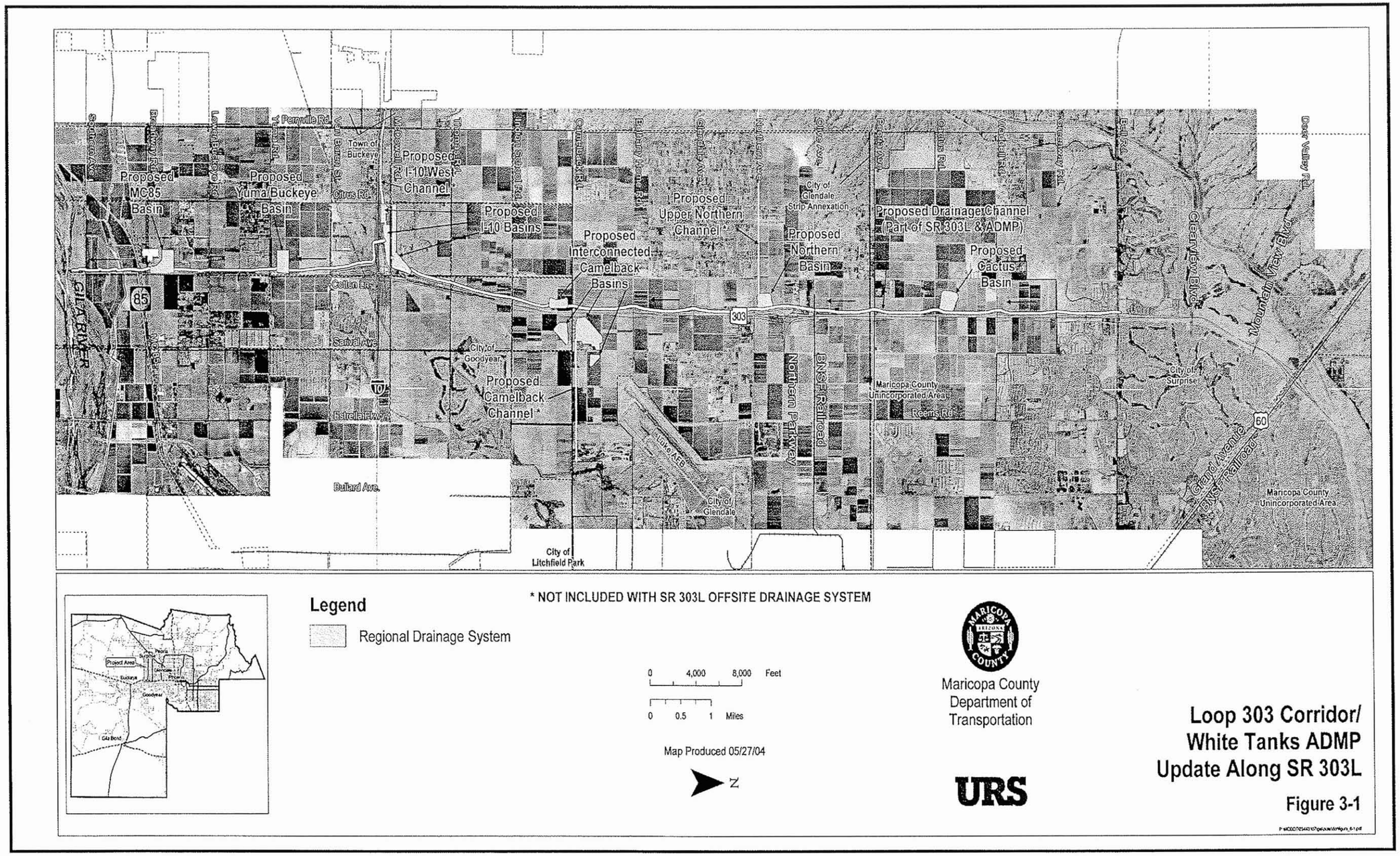


Figure 3 - Loop 303 Corridor/White Tanks ADMP Update Along SR303L

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

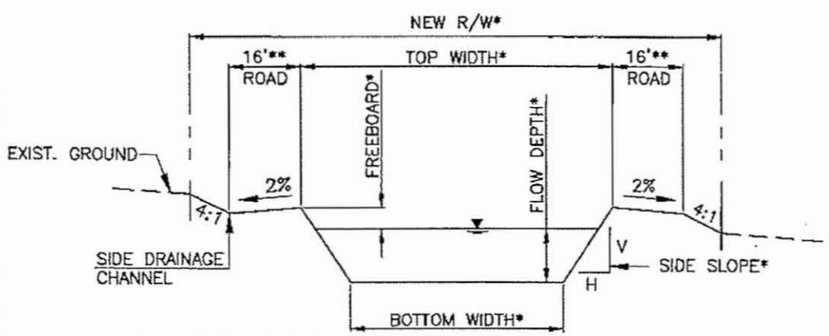
1. By normal depth computation.
2. Channel reach exists.
3. Top width.

BUCKEYE AREA DRAINAGE MASTER PLAN
F.C.D. CONTRACT NO. 2004C058
Conceptual Design Plans

Flood Control District of Maricopa County

LEGEND

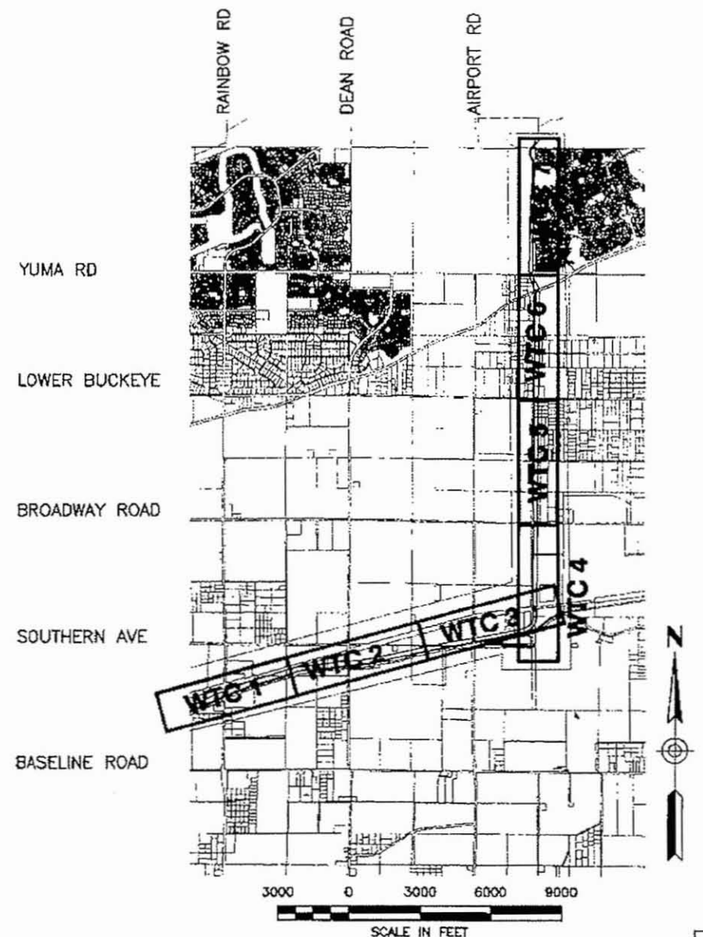
- XX-01 — CHANNEL REACH
- NEW CHANNEL
- NEW DETENTION BASIN SLOPE
- NEW DRAIN PIPE
- NEW CULVERT
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- EXISTING ROAD
- 1410 — EXIST. INDEX CONTOUR
- EXIST. INTERMEDIATE CONTOUR
- 15"S — EXISTING UTILITY
- EXISTING STRUCTURE
- 304 — ENVIRONMENTAL SITE



*DIMENSIONS PER PLANS

**NOT ALL LOCATIONS REQUIRE DUAL MAINTENANCE ROADS– SEE PLANS

TYPICAL CHANNEL SECTION
N.T.S.



KEY MAP

SHEET INDEX

WT 0	WHITE TANKS SYSTEM COVER SHEET
WTC G	WHITE TANKS SYSTEM GENERAL NOTES SHEET
WTC 1 TO WTC 7	WHITE TANKS SYSTEM PLAN & PROFILE SHEETS

FCD 2004C058	BUCKEYE AREA DRAINAGE MASTER PLAN	
WHITE TANKS SYSTEM		
Dibble Engineering	DRN. CDF DATE: 04/09 DES. JTB DATE: 04/09 CKD. DCF DATE: 04/09	SHEET WTC 0

FILE:J:\2005\10-060?\CAD\COVR02-WT.dwg DATE:Apr. 29 2009 TIME: 12:02 pm

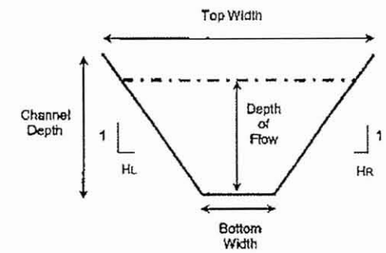
S69, S67, S68, S69, S70 (S18)

Buckeye Area Drainage Master Plan
White Tanks System

Channel Properties

Plan ID	HEC-1 I.D.	Design Q100 (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Design Invert Slope (ft./ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (HL)	Sideslope (H:1) Right (HR)	Area (s.f.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
WT-03	MCWT09	949	885.06	887.7	5278	0.0005	LLE	0.030	36	5.2	7	7	376.4	109.6	0.24	Sub	2.5	1.3	6.5	127	177
WT-04	MCWT06	704	887.75	891.66	3193	0.0012	LLE	0.030	25	4.0	7	7	214.2	82.0	0.36	Sub	3.3	1.0	5.1	95	146

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth, LLE = Light Lanscaped Earth



Typical Channel Section

Culvert Properties

I.D.	Design Q100 (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Number of Barrels	Culvert Span (ft.)	Culvert Dia./ Height (ft.)	Barrel/ Material	Manning's "n" Value	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D
WT-C3	704	112	887.75	887.70	0.0004	3	8	4	RCBC	0.012	Wingwall	5.16	6.57	1.00

Utility Crossings

Plan ID	Plan	Sheet	AWPP	Ditch - Irrigation	Fiber Optic	Gas	Petroleum	Telephone	Sewer	Water	Total
WT-03	White Tanks	WTC 3	0	0	0	0	0	0	0	0	0
WT-04	White Tanks	WTC 3	0	0	1	0	2	0	0	0	3

Landscape Notes:

S71578-S71505

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Job No.	79902
Subject	Weir Flow Analysis	No.	
Task	Weir Calculations	Computed	AHM
		Date	10/28/2008
		Checked	LP
		Date	3/10/09
		Sheet	1
		Of	x

Location: Rooseveld Irigation Canal & Airport Rd (S71)

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	892.6	892.4	120	892.5	891.5	0	0.00	891.7	0	0.00	891.9	0	0.00	CHECK	892.1	0	0.00	DONE
south	892.4	892	350	892.2	891.5	0	0.00	891.7	0	0.00	891.9	0	0.00		892.1	0	0.00	
south	892	891	460	891.5	891.5	0	0.00	891.7	0.2	123.43	891.9	0.4	349.12		892.1	0.6	641.37	
south	891	891	570	891	891.5	0.5	604.58	891.7	0.7	1001.48	891.9	0.9	1460.02		892.1	1.1	1972.81	
south	891	891	90	891	891.5	0.5	95.46	891.7	0.7	158.13	891.9	0.9	230.53		892.1	1.1	311.50	
south	891	891	40	891	891.5	0.5	42.43	891.7	0.7	70.28	891.9	0.9	102.46		892.1	1.1	138.44	
south	891	891	50	891	891.5	0.5	53.03	891.7	0.7	87.85	891.9	0.9	128.07		892.1	1.1	173.05	
west	891	892	80	891.5	891.5	0	0.00	891.7	0.2	21.47	891.9	0.4	60.72		892.1	0.6	111.54	
west	892	892.6	180	892.3	891.5	0	0.00	891.7	0	0.00	891.9	0	0.00		892.1	0	0.00	
						TOTALS:	795.50			1462.64			2330.91				3348.71	

Graph Computations:

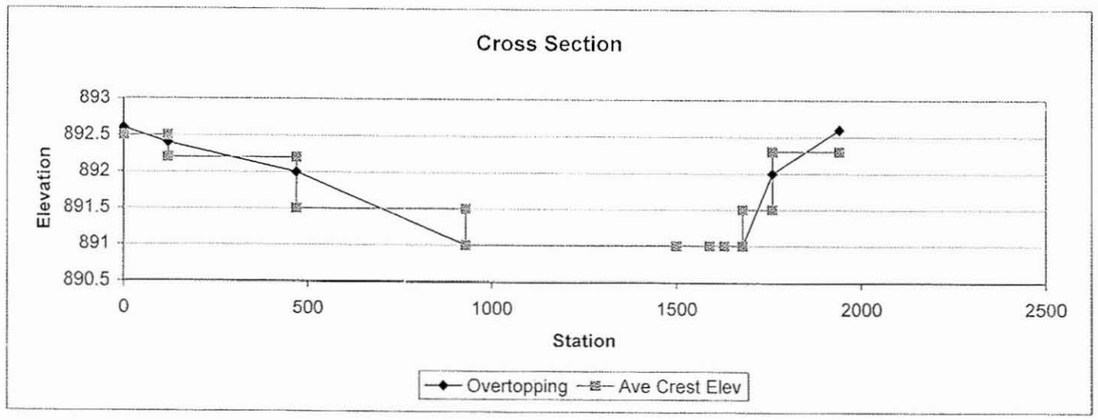
Station	Elevation
0	892.6
120	892.4
470	892
930	891
1500	891
1590	891
1630	891
1680	891
1760	892
1940	892.6

Weir Approximation:

Station	Elevation
0	892.5
120	892.5
120	892.2
470	892.2
470	891.5
930	891.5
930	891
1500	891
1500	891
1590	891
1590	891
1630	891
1630	891
1680	891
1680	891.5
1760	891.5
1760	892.3
1940	892.3

Culvert Flows (cfs):

south	0
southwest	0
west	0



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	795.50	100%	Q(south)	1441.17	99%	Q(south)	2270.20	97%	Q(south)	3237.17	97%
Q(southwest)	0.00	0%	Q(southwest)	0.00	0%	Q(southwest)	0.00	0%	Q(southwest)	0.00	0%
Q(west)	0.00	0%	Q(west)	21.47	1%	Q(west)	60.72	3%	Q(west)	111.54	3%
	795.50			1462.64			2330.91			3348.71	

First DI	South to West			
Inflow	795.50	1462.64	2330.91	3348.71
Outflow	0.00	21.47	60.72	111.54

Assumes diversion is to west

Second DI	Southwest to West			
Inflow	0.00	21.47	60.72	111.54
Outflow	0.00	0.00	0.00	0.00

Assumes diversion is to west

C:\PW g\PHX\dms6 _NewWorking.dwg, 10/28/2008 9:44:00 AM

S70
S77
S71
S78
S74
S79
Airport Rd
Buckeye Csr
Buckeye Csr
GREEN ADOT CONTOUR
Black Maricopa Co CONTOUR
890
892
892.4
1 inch equals 200 feet
N

SRS71

The WLB Group Inc. WLB

COMPUTATION DATA SHEET

Subject WHITE TANK/AGUA FRIA ADMS Prepared by JSE Date 1-30-91

STAGE - STORAGE - DISCHARGE TABLE

SUBBASIN 352A

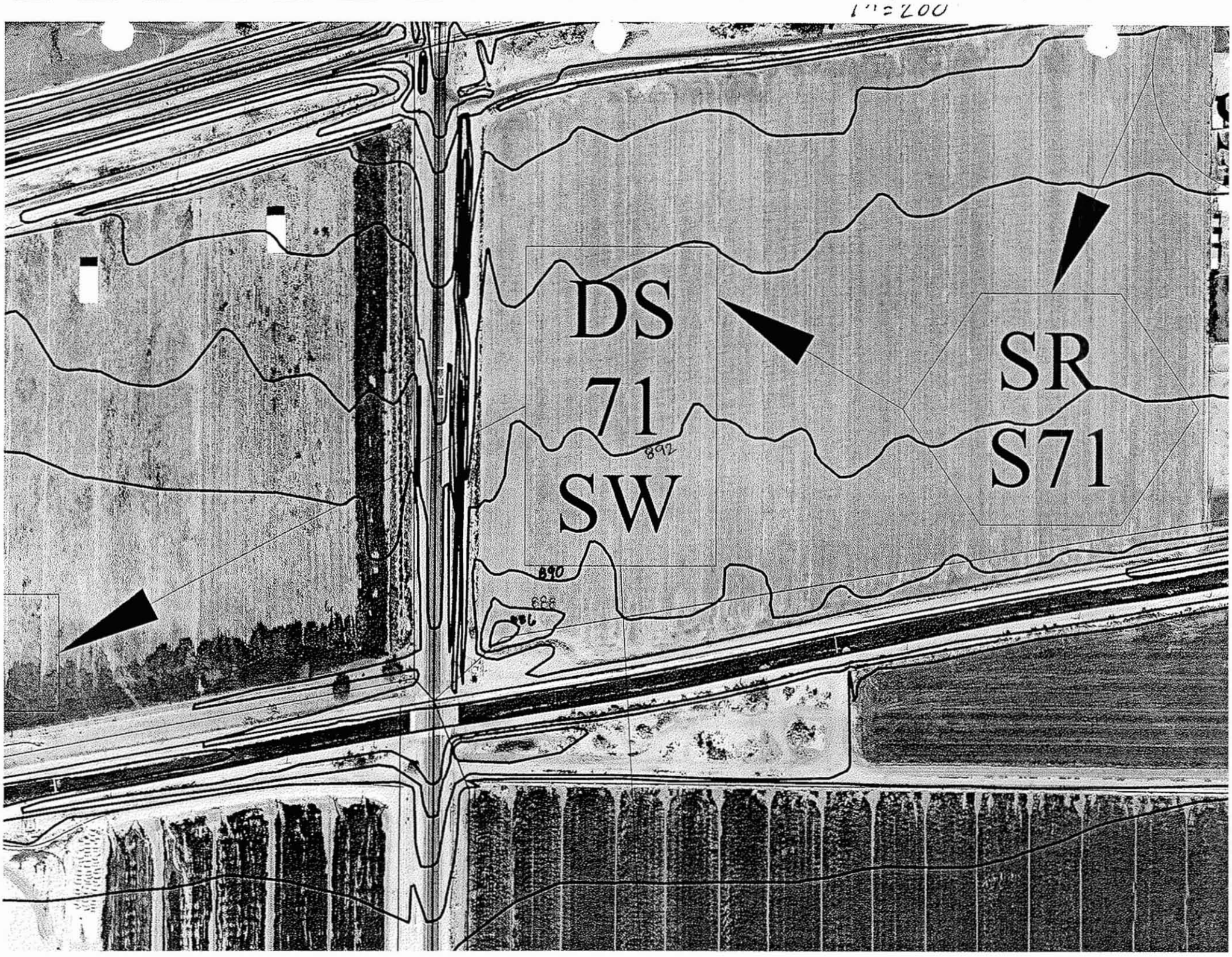
ELEV. (FT)		AREA (AC)	VOLUME (AC-FT)	DISCHARGE (CFS)
884.7		0	0	0
		.48		
888		.29	.48	0
		8.0		
890		7.71	8.48	0
		16.28		
891.1	* Weir Flow	26.89	24.76	0
		24.92		
892		33.49	49.68	1664

C=2.6
L=1500/2
H=.9

Weir Flow
$Q = CLH^{3/2}$

Q at 892 = 1664 cfs

Form 209


DS
71
SW
SR
S71
892
890
888

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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

S74

Job No.	79902	No.	

Computation

Project	Loop 303 / White Tanks ADMPU AHA	Computed	ahm	Date	10/16/2008
Subject	Weir Flow Analysis	Checked		Date	3/10/09
Task	Weir Calculations	Sheet	1	Of	x

Location: MC 85 at Airport Rd (DS74)

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	770	11.5	10.8	0	0.00	11.3	0	0.00	11.8	0.3	379.57	CHECK	12.3	0.8	1652.90	DONE
south	11	10.8	150	10.9	10.8	0	0.00	11.3	0.4	113.84	11.8	0.9	384.22		12.3	1.4	745.43	
south	10.8	10.3	380	10.55	10.8	0.25	142.50	11.3	0.75	740.45	11.8	1.25	1593.20		12.3	1.75	2639.14	
southwest	10.3	10.30	20	10.3	10.8	0.5	21.21	11.3	1	60.00	11.8	1.5	110.23		12.3	2	169.71	
west	10.3	10.8	450	10.55	10.8	0.25	168.75	11.3	0.75	876.85	11.8	1.25	1886.68		12.3	1.75	3125.29	
west	10.8	11	175	10.9	10.8	0	0.00	11.3	0.4	132.82	11.8	0.9	448.25		12.3	1.4	869.66	
west	11	12	920	11.5	10.8	0	0.00	11.3	0	0.00	11.8	0.3	453.51		12.3	0.8	1974.90	
west	12	12	1	12	10.8	0	0.00	11.3	0	0.00	11.8	0	0.00		12.3	0.3	0.49	
west	12	12	1	12	10.8	0	0.00	11.3	0	0.00	11.8	0	0.00		12.3	0.3	0.49	
				0														
						TOTALS:	332.46			1923.96			5255.66				11178.01	

Graph Computations:

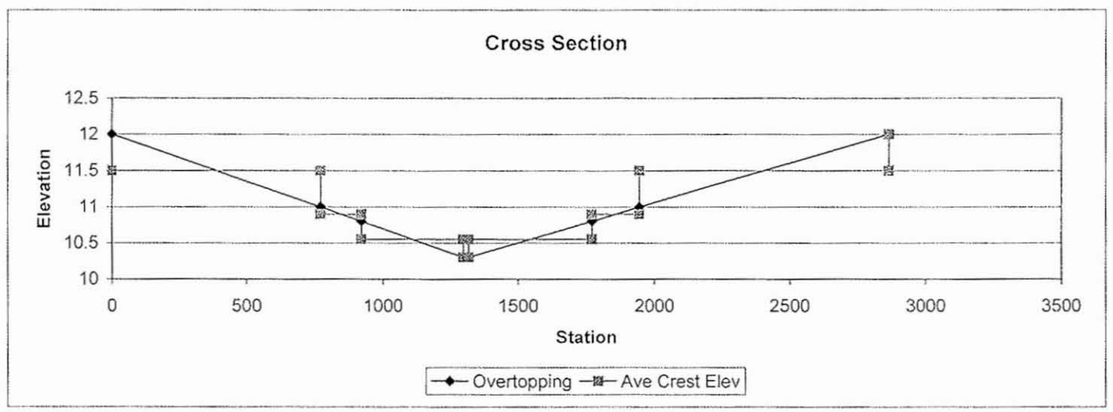
Station	Elevation
0	12
770	11
920	10.8
1300	10.3
1320	10.3
1770	10.8
1945	11
2865	12
2866	12
2867	12

Weir Approximation:

Station	Elevation
0	11.5
770	11.5
770	10.9
920	10.9
920	10.55
1300	10.55
1300	10.3
1320	10.3
1320	10.55
1770	10.55
1770	10.9
1945	10.9
1945	11.5
2865	11.5
2865	12
2866	12
2866	12
2867	12

Culvert Flows (cfs):

south	0 (note: culverts
southwest	0 disregarded,
west	0 small, irr, plugged)



Iteration Iter 1			Iteration Iter 2			Iteration Iter 3			Iteration Iter 4		
Q(south)	142.50	43%	Q(south)	854.29	44%	Q(south)	2356.99	45%	Q(south)	5037.46	45%
Q(southwest)	21.21	6%	Q(southwest)	60.00	3%	Q(southwest)	110.23	2%	Q(southwest)	169.71	2%
Q(west)	168.75	51%	Q(west)	1009.67	52%	Q(west)	2788.45	53%	Q(west)	5970.84	53%
	332.46			1923.96			5255.66			11178.01	

First DI	West to South			
Inflow	332.46	1923.96	5255.66	11178.01
Outflow	142.50	854.29	2356.99	5037.46

Assumes diversion is to south

Second DI	West to Southwest			
Inflow	189.96	1069.67	2898.68	6140.54
Outflow	21.21	60.00	110.23	169.71

Assumes diversion is to southwest

MC85 @ airport DS74
1" = 200'
N
Airport Rd
920'
11
175
10.8
460'
10.5
10.3
10
20'
380'
10.8
150'
770'
12
MC85

MO Hwy 85
85
MO Hwy 85
85
S Airport Rd
S Airport Rd
7652
S Airport Rd
21000
85
MO Hwy 85
85
MO Hwy 85
85

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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

S77

SRS77

The WLB Group Inc. WLB

COMPUTATION DATA SHEET

Subject WHITE TANK/AGUA FRIA ADMS Prepared by JSE Date 1-30-91

STAGE - STORAGE - DISCHARGE TABLE

L=25' S=.005%

SUBBASIN (349) 700' East of Dean Road BW=10' Height=5' Invert=889.1' L=3'

SRPR Bridges 3450' West of Airport Rd BW=38 Height=5' Invert=890.9'

RSS=0:1 LSS=3:1

ELEV. (FT)	AREA (AC)	VOLUME (AC-FT)	DISCHARGE (CFS)
889.1 x Invert	0	0	0
890.9 x Invert	0	0	0
	.065		
894.1	.17	.085	265+375 = 640
	5.68		
896.1	5.51	5.76	435+1245 = 1680
	8.82		
897.1 x Weir Flow Over RR	10.52	14.59	596+1495 = 2001
	15.41		
898	23.73	29.99	555+1695+666 = 2916

Weir Flow
Q=CLH^3/2

C=3.6
L=600/2=300
H=.9

Q at 898 = 666 cfs

Form 209

BOX CULVERT ANALYSIS
COMPUTATION OF CULVERT PERFORMANCE CURVE
February 11, 1991

PROGRAM INPUT DATA:

DESCRIPTION	VALUE
Culvert Span (Width of Opening) (feet).....	10.00
Culvert Rise (Height of Opening) (feet).....	5.00
FHWA Chart Number (8,9,10,11,12 or 13).....	8
Scale Number on Chart (Type of Culvert Entrance).....	1
Manning's Roughness Coefficient (n-value).....	0.0300
Entrance Loss Coefficient of Culvert Opening.....	0.50
Culvert Length (feet).....	25.0
Culvert Slope (feet per foot).....	0.0050

PROGRAM RESULTS:

Flow Rate (cfs)	Tailwater Depth (ft)	Headwater (ft) Inlet Control	Headwater (ft) Outlet Control	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
265.0	4.32	4.50	4.99	4.32	2.79	4.32	6.13
435.0	5.00	6.95	7.03	5.00	3.89	5.00	8.70
506.0	5.00	7.99	7.79	5.00	4.30	5.00	10.12
555.0	5.00	8.79	8.38	5.00	4.57	5.00	11.10

BOX CULVERT ANALYSIS COMPUTER PROGRAM Version 1.4 Copyright (c) 1986
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BOX CULVERT ANALYSIS
COMPUTATION OF CULVERT PERFORMANCE CURVE
February 11, 1991

PROGRAM INPUT DATA:

DESCRIPTION	VALUE
Culvert Span (Width of Opening) (feet).....	38.00
Culvert Rise (Height of Opening) (feet).....	5.00
FHWA Chart Number (8,9,10,11,12 or 13).....	8
Scale Number on Chart (Type of Culvert Entrance).....	1
Manning's Roughness Coefficient (n-value).....	0.0300
Entrance Loss Coefficient of Culvert Opening.....	0.50
Culvert Length (feet).....	25.0
Culvert Slope (feet per foot).....	0.0050

PROGRAM RESULTS:

Flow Rate (cfs)	Tailwater Depth (ft)	Headwater (ft) Inlet Control	Headwater (ft) Outlet Control	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
375.0	1.93	2.28	3.20	1.93	1.45	1.93	5.11
1245.0	4.14	5.21	5.17	4.14	3.22	4.14	7.92
1495.0	4.66	5.95	6.20	4.66	3.64	4.66	8.44
1695.0	5.00	7.11	7.01	5.00	3.95	5.00	8.92

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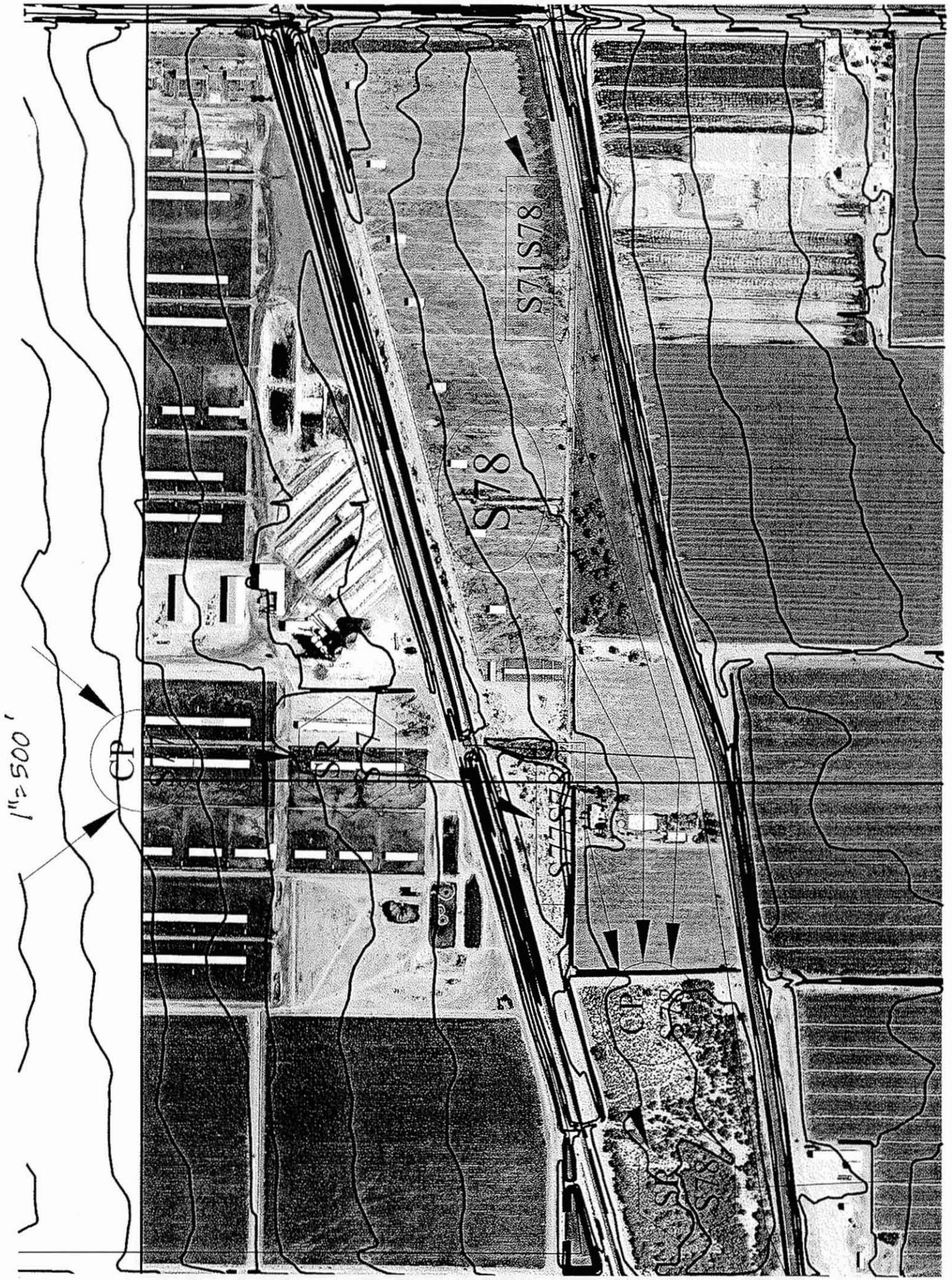
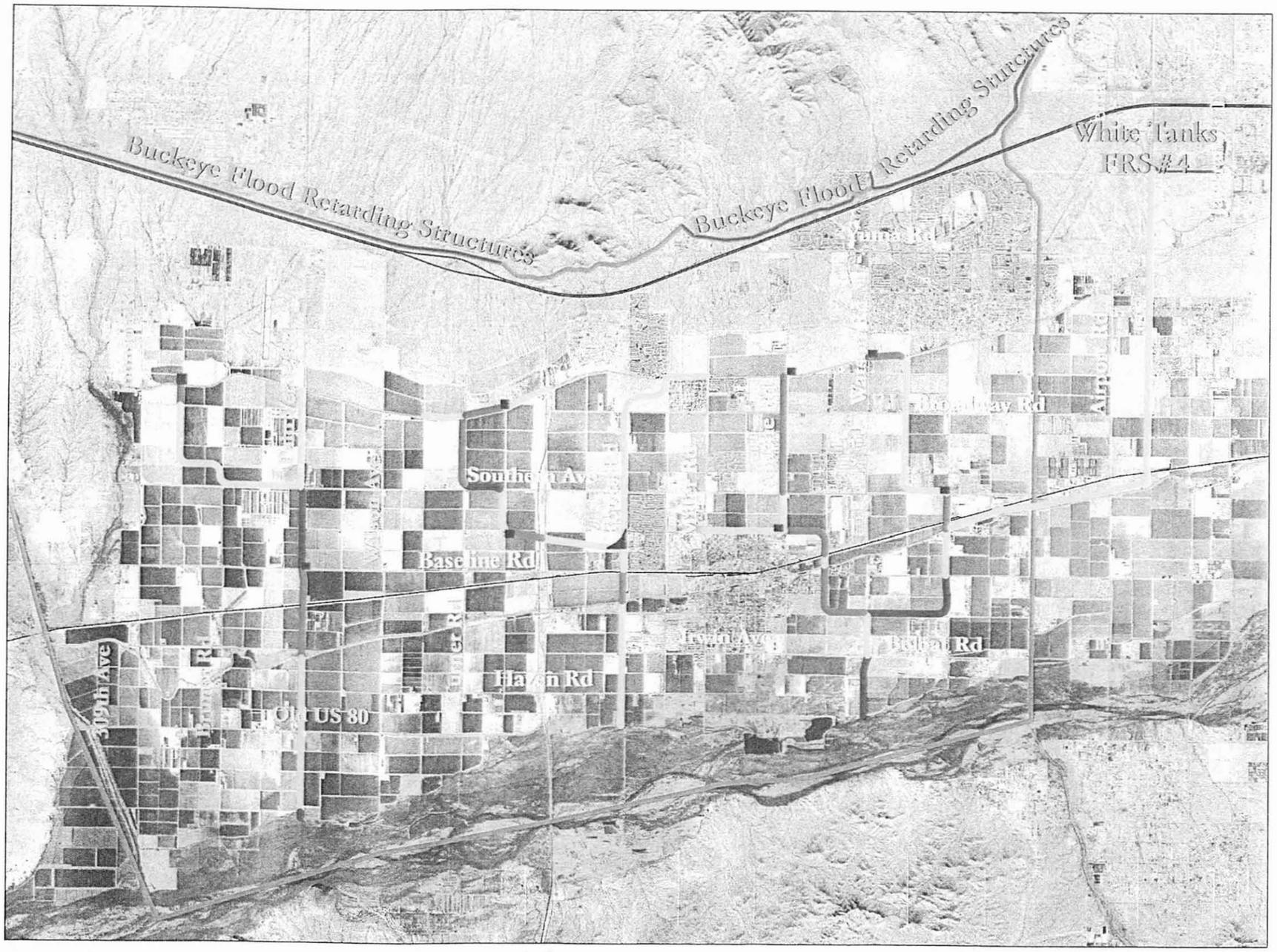

1"=500'
CP
S78
S71S78
S77S78
CP
SK
S78

RECOMMENDED PLAN

BUCKEYE AREA DRAINAGE MASTER PLAN



FLOOD CHANNEL CONVEYANCE

TOTAL RECOMMENDED ROW
- 125' - 200'
- 200' - 250'
- 250' - 350'

DETENTION BASINS

BUCKEYE ADMP BOUNDARY

FEMA FLOODPLAINS
- Approximate
- Flood Fringe
- Floodway

0 0.5 1 2 Miles

October 20, 2008

SRS78

The WLB Group Inc. WLB

COMPUTATION DATA SHEET

Subject WHITE TANK/AGUA FRIA ADMS Prepared by JSE Date 1-30-91

STAGE - STORAGE - DISCHARGE TABLE

SUBBASIN (350)

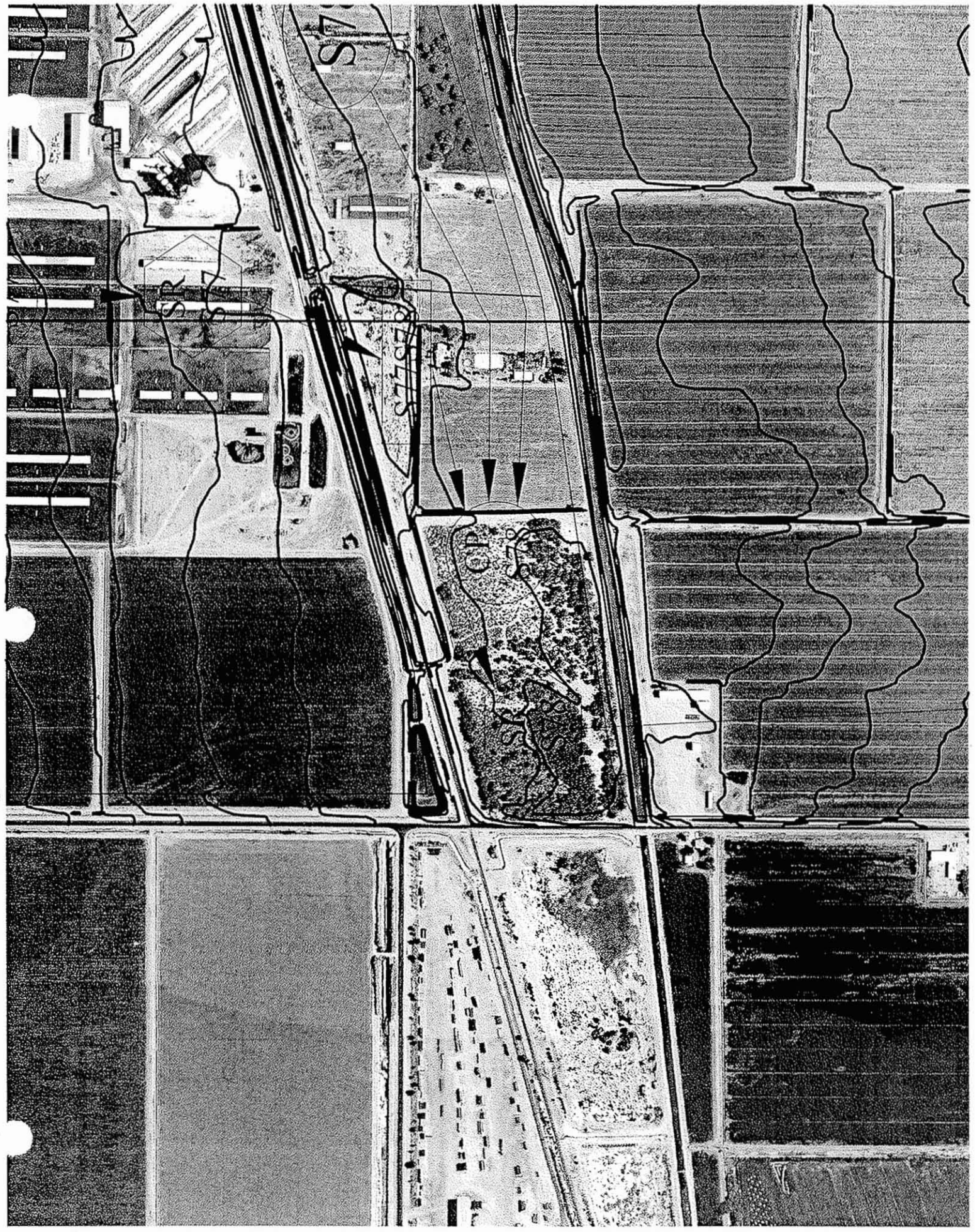
ELEV. (FT)	AREA (AC)	VOLUME (AC-FT)	DISCHARGE (CFS)
886.8	0	0	0
	4.41		
888	7.35	4.41	0
	19.73		
889 * Weir Flow Over Canal	32.10	24.14	0
	44.48		
890	56.86	68.62	3900

* Weir Flow
$Q = CLH^{3/2}$

Q at 890 = 3900 cfs

C = 2.6
L = 3000/2
H = 1.0

Form 209


S7
PETERS
1:300'

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

S80

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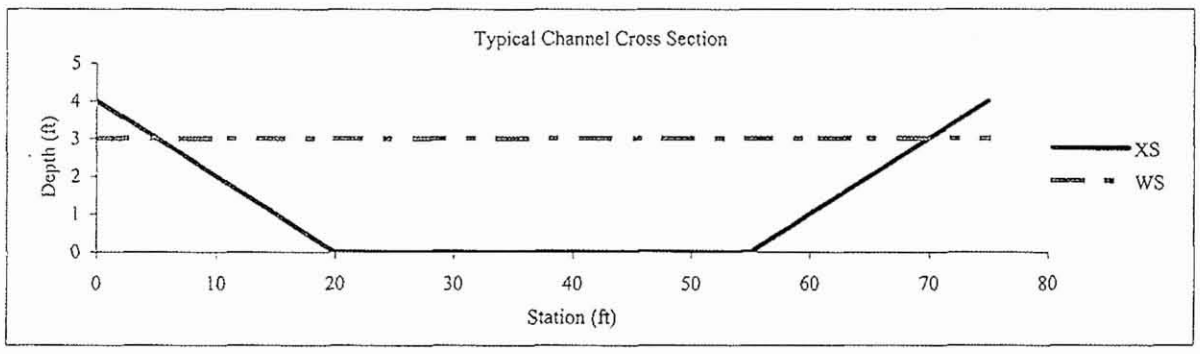
For information on this sub-basin, reference the hydrology model
Loop 303/White Tanks ADMPU Area Hydrologic Analysis

Recommended Alternative
Below RR Basin

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

Channel Geometry:

X		0	10	15	20	55	60	65	75
Y		4	2	1	0	0	1	2	4
Z (WS)		3	3	3	3	3	3	3	3



Discharge:		193	cfs
Mannings n:		0.04	
Bottom Width:	1	35	ft
Side Slope	1	5	:1
Channel Slope:		0.0004	ft/ft
Water Depth:	2	3	ft
Top Width:	3	64.96	ft
Flow Area:	1	149.8	sq.ft
Velocity:		1.29	ft/s
Froud Number:		0.15	
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.

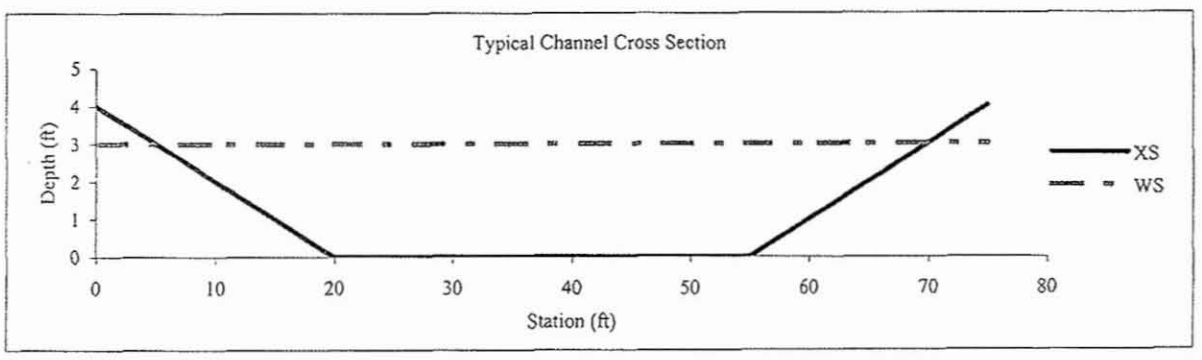
581A

Recommended Alternative
Below RR Basin

Check: MDH
Date: 12/20/2007

Channel Geometry:

X		0	10	15	20	55	60	65	75
Y		4	2	1	0	0	1	2	4
Z (WS)		3	3	3	3	3	3	3	3



Discharge:		193	cfs
Mannings n:		0.04	
Bottom Width:	1	35	ft
Side Slope	1	5	:1
Channel Slope:		0.0004	ft/ft
Water Depth:	2	3	ft
Top Width:	3	64.96	ft
Flow Area:	1	149.8	sq.ft
Velocity:		1.29	ft/s
Froud Number:		0.15	
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.

582

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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

S85

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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

S87

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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

S90

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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

S92

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